

GMES Initial Operations / Copernicus Land monitoring services – Validation of products - (Second Specific Contract)

Validation Services for the geospatial products of the
Copernicus land Continental and local components
including in-situ data (lot 1)

Open Call for Tenders - EEA/MDI/14/010/SC2

CORINE LAND COVER 2012 FINAL VALIDATION REPORT



GAFAG

JOANNEUM
RESEARCH



e-geos
AN ASI/TELESPAZIO COMPANY



ISPRA  **IGN**  **terranea**



Consortium Partners

Prime Contractor SIRS SAS, France

Main Partners
GAF AG, Germany
Joanneum Research, Austria
e-GEOS, Italy

Experts
Specto Natura, UK
ISPRA, Italy
IGN France International, France
Terranea, Germany
NLSI, Iceland

Document Preparation and Release

	Affiliation	Name(s)	Date	Signature
Author	SIRS	Gabriel Jaffrain, IGN-FI		
Contributions	IGN FI	Christophe Sannier, SIRS		
Review	SIRS	Alexandre Pennec, SIRS		
Approval	EEA	Hans Dufourmont		

Document Issue Record

Issue	Date	Author(s)	Description of Change
1.0	13/07/2015	Christophe Sannier	Document creation
1.1	14/11/2016	Gabriel Jaffrain, Michel Bossard, Jan Feranec	First draft
1.2	23/12/2016	Gabriel Jaffrain	Second draft – insertion of plausibility analysis
1.3	12/01/2017	Alexandre Pennec	Integration of 95% CI results
1.4	10/02/2017	Alexandre Pennec, Annalaura Di Federico	Final review and revision

Executive Summary

This report provides the evaluation results of the CORINE Land Cover (CLC) data layers, specifically the Land Cover 2012 status and the Land Cover 2006-2012 change layers. This analysis was performed over 100% of coverage for each of the EEA39 countries during the two Specific Contracts (SC) of the validation project. No semantic checks were envisaged for this product and documentation on previous semantic checks was not made available to the validation team.

The thematic accuracy assessment was conducted in a two-stage process:

1. An initial blind interpretation in which the validation team did not have knowledge of the product's thematic classes. However, the product polygon was provided to the validation team together with the point sample unit to consider boundary effects and geometric differences between the validation and production data (without access to the different attributes)
2. A plausibility analysis was performed on all sample units in disagreement with the production data to consider the following cases:
 - 1: Uncertain code, both producer and operator codes are plausible. Final validation code used is producer code
 - 2: Error from first validation interpretation. Final validation used is producer code
 - 3: Error from producer. Final validation code used is from first validation interpretation
 - 4: Producer and operator are both wrong. Final Validation code used is a new code from this second interpretation.

Resulting to this two-stage approach, it should be noticed that the plausibility analysis shows better results than the blind analysis (for each level of reporting: biogeographical or country level).

The reporting for validation was done at 3 levels: pan-European, country (or group of countries) and by biogeographical regions. A dedicated sampling design has been developed and applied using two levels of stratification according to (1) countries and group of countries greater than 90,000km² and (2) the CLC2012 or CLCC2006-2012 classes. The thematic accuracy assessment (in a blind approach) was carried out over 25,182 point (including sample units for SC1 and SC2) covering the EEA39.

The final results show that the CLC2012 products meet the thematic validation requirement, i.e. 85 % in a plausibility analysis, even if the blind interpretation results are slightly above the threshold. Indeed, the overall accuracies obtained for CLC2012 are **83.6 %** for the blind analysis and **89.7 %** for the plausibility analysis. The overall accuracy for the CLCCH2006-2012 data layer at CLC level 3 is **81.8%** for the blind analysis and **88.6 %** for the plausibility analysis. Those fully acceptable results are related to the fact that the 2012 dataset was the third update of CORINE Land Cover data, and that each time the database has undergone corrections performed by the national teams.

The lower results can be observed in the Anatolian and Black Sea region as well as in the Mediterranean area. The most consistent results can be observed within the Eastern temperate zones.

For each country or biogeographical region, the overall accuracy for the CLCCH2006-2012 change layer is systematically lower than the CLC2012 overall accuracy. However it is quite surprising to note that good results for the CLC2012 status layer does not guarantee good results for the changes CLCCH2006-2012 layer, and vice versa. But a deeper analysis shows that there is generally a link between landscape complexity, diversity of actual changes and the overall accuracy of change detection. The more various are the changes (at level 3), the weaker overall accuracy will be.

Quality checks of the validation points have been made by European experts, partners in the consortium. It should be noted that for the blind analysis, the 2006 and 2012 source images were used as reference data for validation, with the only help of Google Earth as very high resolution ancillary data. Unlike the national photo-interpretation teams, we did not have any additional thematically source of information such as forest stand maps, peatland maps, etc. Control has thus been performed with a lack of source information.

Table of Contents

.....	1
Executive Summary	3
List of Figures.....	10
List of Tables.....	11
List of Abbreviations.....	18
1. Validation Framework.....	19
1.1. Products to be validated.....	19
1.2. Validation Criteria.....	20
1.2.1. CLC2012.....	20
1.2.2. CLCCH2006-2012	20
2. Validation approach	20
2.1. Completeness	20
2.2. Logical consistency	20
2.2.1. Conceptual consistency.....	21
2.2.2. Domain consistency	21
2.2.3. Format consistency	21
2.2.4. Topological consistency.....	21
2.2.5. Additional logical consistency checks	22
2.3. Positional Accuracy.....	22
2.4. Thematic Accuracy.....	23
2.4.1. Level of reporting	23
2.4.2. Stratification and sample design	25
2.4.3. Response Design.....	28
2.4.4. Estimation and analyses procedures.....	29
2.5. Temporal Quality	30
2.6. Usability	30
2.7. INSPIRE compliant metadata.....	30
3. Validation check list.....	31
4. Additional tables	36
4.1. Coordinate reference system description	36
4.2. Nomenclature	37
4.3. Thematic accuracy	38
4.3.1. CORINE Land Cover 2012 layer	38
4.3.2. CLCCH2006-2012 change layer	43

5. Conclusions and recommendations	47
Annex 1. Confusion matrix of CLC2012 European level – Blind and plausibility analysis	50
Annex 2. Producer and user accuracy of CLC2012 per country or group of countries	52
Annex 3. Confusion matrix CLC2012 per Country or group of countries	56
Zone 1: part of Turkey Confusion matrix CLC2012 – Blind and plausibility analysis	56
Zone 2: France confusion matrix CLC2012 - Blind and plausibility analysis.....	58
Zone 3: Spain - confusion matrix CLC2012 - Blind and plausibility analysis	60
Zone 4: Sweden confusion matrix CLC2012 - Blind and plausibility analysis.....	62
Zone 5: Germany confusion matrix CLC2012 - Blind and plausibility analysis.....	64
Zone 6: Finland confusion matrix CLC2012 - Blind and plausibility analysis.....	66
Zone 7: Norway confusion matrix CLC2012- Blind and plausibility analysis.....	68
Zone 8: Poland- Confusion matrix CLC2012 - Blind and plausibility analysis.....	70
Zone 9: Italy confusion matrix CLC2012 - Blind and plausibility analysis	72
Zone 10: United Kingdom/Ireland confusion matrix CLC2012 - Blind and plausibility analysis	74
Zone 11: Romania confusion matrix CLC2012 - Blind and plausibility analysis	76
Zone 12: Greece confusion matrix CLC2012 - Blind and plausibility analysis.....	78
Zone 13: Bulgaria confusion matrix CLC2012- Blind and plausibility analysis	80
Zone 14: Island confusion matrix CLC2012 - Blind and plausibility analysis.....	82
Zone 15: Hungary confusion matrix CLC2012 - Blind and plausibility analysis.....	84
Zone 16: Portugal confusion matrix CLC2012 - Blind and plausibility analysis.....	86
Zone 17: Austria/Switzerland confusion matrix CLC2012 - Blind and plausibility analysis .	88
Zone 18: Denmark/Netherland/Belgium /Luxembourg confusion matrix CLC2012 - Blind and plausibility analysis.....	90
Zone 19: Albania/Serbia/Macedonia confusion matrix CLC2012 - Blind and plausibility analysis	92
Zone 20: Bosnia and Herzegovina/Croatia confusion matrix CLC2012 - Blind and plausibility analysis	94
Zone 21: Czech Republic/Slovakia confusion matrix CLC2012 - Blind and plausibility analysis	96
Zone 22: Estonia/Latvia/Lithuania confusion matrix CLC2012 - Blind and plausibility analysis	98
Zone 23: Overseas departments confusion matrix CLC2012 - Blind and plausibility analysis	100
Annex 4. Producer and user accuracy per bio-geographical region – Blind and plausibility analysis	102
Annex 5. Confusion matrix CLC2012 per Bio-geographical region	104

Bio-geographical region ALP - Alpine - confusion matrix CLC2012 - Blind and plausibility analysis	104
Bio-geographical region ANA - Anatolian- confusion matrix CLC2012 - Blind and plausibility analysis	106
Bio-geographical region ARC - Arctic - confusion matrix CLC2012 - Blind and plausibility analysis	108
Bio-geographical region ATL - Atlantic - confusion matrix CLC2012 - Blind and plausibility analysis	110
Bio-geographical region BLS – Black sea - confusion matrix CLC2012 - Blind and plausibility analysis	112
Bio-geographical region BOR - Boreal - confusion matrix CLC2012 - Blind and plausibility analysis	114
Bio-geographical region CON - Continental - confusion matrix CLC2012 - Blind and plausibility analysis.....	116
Bio-geographical region - Macaronesia - confusion matrix CLC2012 - Blind and plausibility analysis	118
Bio-geographical region MED- Mediterranean - confusion matrix CLC2012 - Blind and plausibility analysis	120
Bio-geographical region PAN – Pannonian - confusion matrix CLC2012 - Blind and plausibility analysis	122
Bio-geographical region STE - Steppic - confusion matrix CLC2012 - Blind and plausibility analysis	124
Bio-geographical region DOM - Overseas department (tropical region) - confusion matrix CLC2012 - Blind and plausibility analysis.....	126
Annex 6. Confusion matrix of CLCCH2006-12 – European level – Blind and plausibility analysis	128
Annex 7. Confusion matrix of CLCCH2006-12 per zone-country	130
Zone 1: Turkey - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis..	130
Zone 2: France - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis..	132
Zone 3: Spain - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis....	134
Zone 4: Sweden - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	136
Zone 5: Germany - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	138
Zone 6: Finland - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis.	140
Zone 7: Norway - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	142
Zone 8: Poland- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis ..	144
Zone 9: Italy - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis.....	146
Zone 10: United Kingdom / Ireland - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis.....	148

Zone 11: Romania - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	150
Zone 12: Greece - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	152
Zone 13: Bulgaria- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	154
Zone 14: Island- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis ..	156
Zone 15: Hungary - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	158
Zone 16: Portugal- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	160
Zone 17: Austria / Swiss - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	162
Zone 18: Denmark/Netherland/Belgium/Luxembourg - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	164
Zone 19: Albania/Serbia /Macedonia - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	166
Zone 20: Bosnia and Herzegovina/Croatia - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	168
Zone 21: Czech Republic / Slovakia - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	170
Zone 22: Estonia/Latvia/Lithuania - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	172
Zone 23: Oversea departments - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	174
Annex 8. Confusion matrix of CLCCH2006-12 per bio-geographical region	176
Bio-geographical region ALP - Alpine - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	176
Bio-geographical region ANA - Anatolian - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	178
Bio-geographical region ARC - Arctic - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	180
Bio-geographical region ATL – Atlantic - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	182
Bio-geographical region BLS – Black sea - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	184
Bio-geographical region BOR – Boreal - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	186
Bio-geographical region CON – Continental - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	188

Bio-geographical region MAC– Macaronesia- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis.....	190
Bio-geographical region MED – Mediterranean - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis.....	192
Bio-geographical region PAN- Pannonic - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis.....	194
Bio-geographical region STE – Steppic - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis.....	196
Bio-geographical region DOM – Oversea departments - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis	198
Annex 9. Observations for the main problematic countries showing land cover changes	200
Annex 10. Illustrations of some confusion or difficulties of interpretation met during the validation process.....	211

List of Figures

<i>Figure 1: Stratification according to countries and group of countries greater than 90,000km² (total of 23 zones including French oversea department)</i>	24
<i>Figure 2: The European Biogeographical region 2016</i>	24
<i>Figure 3: Replicates and sub-replicates used on LUCAS grid</i>	25
<i>Figure 4: Distribution of the sample units according to the stratification into countries and group of countries</i>	26
<i>Figure 5: Example of a sample unit used for the validation of CLC2012</i>	28
<i>Figure 6: illustration of wrong polygon in CLC2012 – Wrong 222</i>	211
<i>Figure 7: illustration of wrong polygon in CLC2012 – Wrong 122</i>	212
<i>Figure 8: illustration of wrong polygon in CLC2012 – Wrong 221</i>	213
<i>Figure 9: illustration of bad polygon drawing in CLC2012</i>	214
<i>Figure 10: illustration of interpretation difficulties due to the location of the control point</i>	214

List of Tables

Table 1: Attribute name and attribute type of CLC2012 database	19
Table 2: Attribute name and attribute type of CLCCH2006-2012 database	19
Table 3: relationship between positional accuracy and the scale of the data according to INSPIRE Technical guidelines document on land cover	22
Table 4: Distribution of sample units per main strata and substrata for the CLC012 and CLCCH2006-12 products	27
Table 5: Validation check list	31
Table 6: Coordinate reference system description	36
Table 7: Nomenclature table	37
Table 8 Overall accuracy for blind and plausibility accuracy and confidence interval (95%) for CLC2012 per country or group of countries.	38
Table 9: Overall accuracy for blind and plausibility analysis per bio-geographical region	39
Table 10: Producer and user accuracy of CLC2012 given by land cover classes – Blind and plausibility analysis	40
Table 11: assessment of CLCCH2006-2012 for blind and plausibility analysis per bio-geographical region at the second and third CLC level	44
Table 12: assessment of CLCCH2006-2012 for blind and plausibility analysis and confidence interval (95%) per country or group of countries at the second or third CLC level	44
Table 13: Main problematic flow observed at the European level (commission and omission)	45
Table 14: Confusion matrix of CLC 2012 – blind analysis	50
Table 15: Confusion matrix of CLC 2012 - Plausibility analysis	51
Table 16: Producer, user and overall accuracy per country (from zone 1 to zone 6) – BLIND and PLAUSIBILITY analysis	52
Table 17: Producer, user and overall accuracy per country (from zone 07 to zone 12) - BLIND and PLAUSIBILITY analysis	53
Table 18: Producer, user and overall accuracy per country (from zone 13 to zone 18) - BLIND and PLAUSIBILITY analysis	54
Table 19: Producer, user and overall accuracy per country (from zone 19 to zone 23 - BLIND and PLAUSIBILITY analysis	55
Table 20: Confusion matrix CLC 2012 for zone 1 (Turkey) – BLIND ANALYSIS - In column the validation and line the production	56
Table 21: Confusion matrix CLC 2012 for zone 1 (Turkey) – PLAUSIBILITY ANALYSIS - In column the validation and line the production	57
Table 22: Confusion matrix CLC 2012 for zone2 (France) – BLIND ANALYSIS- In column the validation and line the production	58
Table 23: Confusion matrix CLC 2012 for zone2 (France) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	59
Table 24: Confusion matrix CLC 2012 for zone2 (SPAIN) – BLIND ANALYSIS- In column the validation and line the production	60
Table 25: Confusion matrix CLC 2012 for zone2 (SPAIN) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	61
Table 26: Confusion matrix CLC 2012 for zone4 (Sweden – BLIND ANALYSIS - In column the validation and line the production	62
Table 27: Confusion matrix CLC 2012 for zone4 (Sweden – PLAUSIBILITY ANALYSIS - In column the validation and line the production	63
Table 28: Confusion matrix CLC 2012 for zone5 (Germany) – BLIND ANALYSIS- In column the validation and line the production	64
Table 29: Confusion matrix CLC 2012 for zone5 (Germany) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	65

Table 30: Confusion matrix CLC 2012 for zone6 (Finland) – BLIND ANALYSIS- In column the validation and line the production	66
Table 31: Confusion matrix CLC 2012 for zone6 (Finland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	67
Table 32: Confusion matrix CLC 2012 for zone 7 (Norway) – BLIND ANALYSIS- In column the validation and line the production	68
Table 33: Confusion matrix CLC 2012 for zone 7 (Norway) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	69
Table 34: Confusion matrix CLC 2012 for zone 8 (Poland) – BLIND ANALYSIS- In column the validation and line the production	70
Table 35: Confusion matrix CLC 2012 for zone 8 (Poland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	71
Table 36: Confusion matrix CLC 2012 for zone 9 (Italy) – BLIND ANALYSIS - In column the validation and line the production	72
Table 37: Confusion matrix CLC 2012 for zone 9 (Italy) – PLAUSIBILITY ANALYSIS - In column the validation and line the production	73
Table 38: Confusion matrix CLC 2012 for zone 10 (United Kingdom & Ireland) – BLIND ANALYSIS- In column the validation and line the production	74
Table 39: Confusion matrix CLC 2012 for zone 10 (United Kingdom & Ireland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	75
Table 40: Confusion matrix CLC 2012 for zone 11 (Romania) – BLIND ANALYSIS -In column the validation and line the production	76
Table 41: Confusion matrix CLC 2012 for zone 11 (Romania) – PLAUSIBILITY ANALYSIS -In column the validation and line the production	77
Table 42: Confusion matrix CLC 2012 for zone 12 (Greece) –BLIND ANALYSIS - In column the validation and line the production	78
Table 43: Confusion matrix CLC 2012 for zone 12 (Greece) –PLAUSIBILITY ANALYSIS - In column the validation and line the production	79
Table 44: Confusion matrix CLC 2012 for zone 13 (Bulgaria) – BLIND ANALYSIS -In column the validation and line the production	80
Table 45: Confusion matrix CLC 2012 for zone 13 (Bulgaria) – PLAUSIBILITY ANALYSIS -In column the validation and line the production	81
Table 46: Confusion matrix CLC 2012 for zone 14 (Island) –BLIND ANALYSIS - In column the validation and line the production	82
Table 47: Confusion matrix CLC 2012 for zone 14 (Island) –PLAUSIBILITY ANALYSIS - In column the validation and line the production	83
Table 48: Confusion matrix CLC 2012 for zone 15 (Hungary) – BLIND ANALYSIS -In column the validation and line the production	84
Table 49: Confusion matrix CLC 2012 for zone 15 (Hungary) – PLAUSIBILITY ANALYSIS -In column the validation and line the production	85
Table 50: Confusion matrix CLC 2012 for zone 16 (Portugal) – BLIND ANALYSIS - In column the validation and line the production	86
Table 51: Confusion matrix CLC 2012 for zone 16 (Portugal) – PLAUSIBILITY ANALYSIS - In column the validation and line the production	87
Table 52: Confusion matrix CLC 2012 for zone 17 (Austria/Switzerland) – BLIND ANALYSIS- In column the validation and line the production	88
Table 53: Confusion matrix CLC 2012 for zone 17 (Austria / Switzerland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	89
Table 54: Confusion matrix CLC 2012 for zone 18 (Denmark, Netherland, Belgium, Luxembourg) – BLIND ANALYSIS - In column the validation and line the production	90
Table 55: Confusion matrix CLC 2012 for zone 18 (Denmark, Netherland, Belgium, Luxembourg) –PLAUSIBILITY ANALYSIS - In column the validation and line the production	91

Table 56: Confusion matrix CLC 2012 for zone 19 (Albania/Serbia/Macedonia) – BLIND ANALYSIS -In column the validation and line the production	92
Table 57: Confusion matrix CLC 2012 for zone 19 (Albania/Serbia/Macedonia) – PLAUSIBILITY ANALYSIS In column the validation and line the production	93
Table 58: Confusion matrix CLC 2012 for zone 20 (Bosnia Herzegovina/Croatia) – BLIND ANALYSIS -In column the validation and line the production	94
Table 59: Confusion matrix CLC 2012 for zone 20 (Bosnia Herzegovina/Croatia) – PLAUSIBILITY ANALYSIS -In column the validation and line the production	95
Table 60: Confusion matrix CLC 2012 for zone 21 (Czech Republic/Slovakia) – BLIND ANALYSIS- In column the validation and line the production	96
Table 61: Confusion matrix CLC 2012 for zone 21 (Czech Republic/Slovakia) –PLAUSIBILITY ANALYSIS- In column the validation and line the production	97
Table 62: Confusion matrix CLC 2012 for zone 22 (Estonia/Latvia/Lithuania) – BLIND ANALYSIS -In column the validation and line the production	98
Table 63: Confusion matrix CLC 2012 for zone 22 (Estonia/Latvia/Lithuania) – PLAUSIBILITY ANALYSIS -In column the validation and line the production	99
Table 64: Confusion matrix CLC 2012 for zone 23 (Guyana/Guadeloupe/La reunion/Martinique/Mayotte) – BLIND ANALYSIS- In column the validation and line the production	100
Table 65: Confusion matrix CLC 2012 for zone 23 (Guyana/Guadeloupe/La reunion/Martinique/Mayotte) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	101
Table 66: Producer, user and overall accuracy for Blind and plausibility analysis per bio-geographical region (6 regions from ALP to BOR region)	102
Table 67: Producer, user and overall accuracy for Blind and plausibility analysis per bio-geographical region (6 regions from CON to STE region)	103
Table 68: Confusion matrix CLC 2012 for Alpine region –BLIND ANALYSIS- In column the validation and line the production	104
Table 69: Confusion matrix CLC 2012 for Alpine region –PLAUSIBILITY ANALYSIS- In column the validation and line the production	105
Table 70: Confusion matrix CLC 2012 for Anatolian region – BLIND ANALYSIS- In column the validation and line the production	106
Table 71: Confusion matrix CLC 2012 for Anatolian region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	107
Table 72: Confusion matrix CLC 2012 for Arctic region – BLIND ANALYSIS-In column the validation and line the production	108
Table 73: Confusion matrix CLC 2012 for Arctic region – PLAUSIBILITY ANALYSIS-In column the validation and line the production	109
Table 74: Confusion matrix CLC 2012 for Atlantic region – BLIND ANALYSIS- In column the validation and line the production	110
Table 75: Confusion matrix CLC 2012 for Atlantic region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	111
Table 76: Confusion matrix CLC 2012 for Black sea region – BLIND ANALYSIS -In column the validation and line the production	112
Table 77: Confusion matrix CLC 2012 for Black sea region – PLAUSIBILITY ANALYSIS -In column the validation and line the production	113
Table 78: Confusion matrix CLC 2012 for Boreal region – BLIND ANALYSIS- In column the validation and line the production	114
Table 79: Confusion matrix CLC 2012 for Boreal region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	115
Table 80: Confusion matrix CLC 2012 for Continental region – BLIND ANALYSISIIS - In column the validation and line the production	116
Table 81: Confusion matrix CLC 2012 for Continental region – PLAUSIBILITY ANALYSIIS - In column the validation and line the production	117

Table 82: Confusion matrix CLC 2012 for Macaronesia region – BLIND ANALYSIS - In column the validation and line the production	118
Table 83: Confusion matrix CLC 2012 for Macaronesia region – PLAUSIBILITY ANALYSIS - In column the validation and line the production	119
Table 84: Confusion matrix CLC 2012 for Mediterranean region – BLIND ANALYSIS - In column the validation and line the production	120
Table 85: Confusion matrix CLC 2012 for Mediterranean region – PLAUSIBILITY ANALYSIS - In column the validation and line the production	121
Table 86: Confusion matrix CLC 2012 for Pannonian region – BLIND ANALYSIS- In column the validation and line the production	122
Table 87: Confusion matrix CLC 2012 for Pannonian region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	123
Table 88: Confusion matrix CLC 2012 for steppic region – BLIND ANALYSS- In column the validation and line the production	124
Table 89: Confusion matrix CLC 2012 for steppic region – PLAUSIBILITY ANALYSIS In column the validation and line the production	125
Table 90: Confusion matrix CLC 2012 for Tropical region – BLIND ANALYSIS- In column the validation and line the production	126
Table 91: Confusion matrix CLC 2012 for Tropical region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	127
Table 92: Confusion matrix of change CLCCH2006-2012 for blind analysis (at level 2 of CLC nomenclature) between the validation and the production	128
Table 93: Confusion matrix of change CLCCH2006-2012 for plausibility analysis (at level 2 of CLC nomenclature) between the validation and the production	129
Table 94: Confusion matrix CLCCH2006-2012 level 2 for zone 1 (Turkey) – BLIND ANALYSIS - In column the validation and line the production	130
Table 95: Confusion matrix CLCCH2006-2012 level 2 for zone 1 (Turkey) – PLAUSIBILITY ANALYSIS - In column the validation and line the production	131
Table 96: Confusion matrix CLCCH2006-2012 for zone 2 (France) –BLIND ANALYSIS- In column the validation and line the production	132
Table 97: Confusion matrix CLCCH2006-2012 for zone 2 (France) –PLAUSIBILITY ANALYSIS- In column the validation and line the production	133
Table 98: Confusion matrix CLCCH2006-2012 for zone 3 (Spain) – BLIND ANALYSIS -In column the validation and line the production	134
Table 99: Confusion matrix CLCCH2006-2012 for zone 3 (Spain) – PLAUSIBILITY ANALYSIS -In column the validation and line the production	135
Table 100: Confusion matrix CLCCH2006-2012 for zone 4 (Sweden) – BLIND ANALYSIS- In column the validation and line the production	136
Table 101: Confusion matrix CLCCH2006-2012 for zone 4 (Sweden) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	137
Table 102: Confusion matrix CLCCH2006-2012 for zone 5 (Germany) – BLIND ANALYSIS- In column the validation and line the production	138
Table 103: Confusion matrix CLCCH2006-2012 for zone 5 (Germany) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	139
Table 104: Confusion matrix CLCCH2006-2012 for zone 6 (Finland) – BLIND ANALYSIS- In column the validation and line the production	140
Table 105: Confusion matrix CLCCH2006-2012 for zone 6 (Finland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	141
Table 106: Confusion matrix CLCCH2006-2012 for zone 7 (Norway) – BLIND ANALYSIS- In column the validation and line the production	142
Table 107: Confusion matrix CLCCH2006-2012 for zone 7 (Norway) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	143

Table 108: Confusion matrix CLCCH2006-2012 for zone 8 (Poland) – BLIND ANALYSIS- In column the validation and line the production	144
Table 109: Confusion matrix CLCCH2006-2012 for zone 8 (Poland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	145
Table 110: Confusion matrix CLCCH2006-2012 for zone 9 (Italy) – BLIND ANALYSIS- In column the validation and line the production	146
Table 111: Confusion matrix CLCCH2006-2012 for zone 9 (Italy) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	147
Table 112: Confusion matrix CLCCH2006-2012 for zone 10 (United Kingdom, Ireland) – BLIND ANALYSIS - In column the validation and line the production	148
Table 113: Confusion matrix CLCCH2006-2012 for zone 10 (United Kingdom, Ireland) – PLAUSIBILITY ANALYSIS - In column the validation and line the production	149
Table 114: Confusion matrix CLCCH2006-2012 for zone 11 (Romania) – BLIND ANALYSIS- In column the validation and line the production	150
Table 115: Confusion matrix CLCCH2006-2012 for zone 11 (Romania) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	151
Table 116: Confusion matrix CLCCH2006-2012 for zone 12 (Greece) – BLIND ANALYSIS- In column the validation and line the production	152
Table 117: Confusion matrix CLCCH2006-2012 for zone 12 (Greece) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	153
Table 118: Confusion matrix CLCCH2006-2012 for zone 13 (Bulgaria) – BLIND ANALYSIS In column the validation and line the production	154
Table 119: Confusion matrix CLCCH2006-2012 for zone 13 (Bulgaria) – PLAUSIBILITY ANALYSIS In column the validation and line the production	155
Table 120: Confusion matrix CLCCH2006-2012 for zone 14 (Island) – BLIND ANALYSIS- In column the validation and line the production	156
Table 121: Confusion matrix CLCCH2006-2012 for zone 14 (Island) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	157
Table 122: Confusion matrix CLCCH2006-2012 for zone 15 (Hungary) – BLIND ANALYSIS- In column the validation and line the production	158
Table 123: Confusion matrix CLCCH2006-2012 for zone 15 (Hungary) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	159
Table 124: Confusion matrix CLCCH2006-2012 for zone 16 (Portugal) –BLIND ANALYSIS- In column the validation and line the production	160
Table 125: Confusion matrix CLCCH2006-2012 for zone 16 (Portugal) –PLAUSIBILITY ANALYSIS- In column the validation and line the production	161
Table 126: Confusion matrix CLCCH2006-2012 for zone 17 (Austria / Swiss) – BLIND ANALYSIS - In column the validation and line the production	162
Table 127: Confusion matrix CLCCH2006-2012 for zone 17 (Austria / Swiss) – PLAUSIBILITY ANALYSIS - In column the validation and line the production	163
Table 128: Confusion matrix CLCCH2006-2012 for zone 18 (Denmark/Netherland/Belgium/Luxembourg) –BLIND ANALYSIS- In column the validation and line the production	164
Table 129: Confusion matrix CLCCH2006-2012 for zone 18 (Denmark / Netherland / Belgium / Luxembourg) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	165
Table 130: Confusion matrix CLCCH2006-2012 for zone 19 (Albania/Serbia/Macedonia) – BLIND ANALYSIS - in column the validation and line the production	166
Table 131: Confusion matrix CLCCH2006-2012 for zone 19 (Albania / Serbia / Macedonia) – PLAUSIBILITY ANALYSIS - in column the validation and line the production	167
Table 132: Confusion matrix CLCCH2006-2012 for zone 20 (Bosnia and Herzegovina / Croatia) –BLIND ANALYSIS- In column the validation and line the production	168
Table 133: Confusion matrix CLCCH2006-2012 for zone 20 (Bosnia and Herzegovina / Croatia) –PLAUSIBILITY ANALYSIS- In column the validation and line the production	169

Table 134: Confusion matrix CLCCH2006-2012 for zone 21 (Czech Republic / Slovakia) – BLIND ANALYSIS - In column the validation and line the production	170
Table 135: Confusion matrix CLCCH2006-2012 for zone 21 (Czech Republic / Slovakia) – PLAUSIBILITY ANALYSIS - In column the validation and line the production	171
Table 136: Confusion matrix CLCCH2006-2012 for zone 22 (Estonia / Latvia / Lithuania) – BLIND ANALYSIS- In column the validation and line the production	172
Table 137: Confusion matrix CLCCH2006-2012 for zone 22 (Estonia / Latvia / Lithuania) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	173
Table 138: Confusion matrix CLCCH2006-2012 for zone 23 (Guadeloupe / Guyana / La reunion/ Martinique/ Mayotte) – BLIND ANALYSIS- In column the validation and line the production	174
Table 139: Confusion matrix CLCCH2006-2012 for zone 23 (Guadeloupe / Guyana / La reunion/ Martinique/ Mayotte) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	175
Table 140: Confusion matrix CLCCH2006-2012 for Alpine region –BLIND ANALYSIS- In column the validation and line the production	176
Table 141: Confusion matrix CLCCH2006-2012 for Alpine region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	177
Table 142: Confusion matrix CLCCH2006-2012 for Anatolian region– BLIND ANALYSIS- In column the validation and line the production	178
Table 143: Confusion matrix CLCCH2006-2012 for Anatolian region– PLAUSIBILITY ANALYSIS- In column the validation and line the production	179
Table 144: Confusion matrix CLCCH2006-2012 for Arctic region –BLIND ANALYSIS- In column the validation and line the production	180
Table 145: Confusion matrix CLCCH2006-2012 for Arctic region –PLAUSIBILITY ANALYSIS- In column the validation and line the production	181
Table 146: Confusion matrix CLCCH2006-2012 for Atlantic region –BLIND ANALYSIS- In column the validation and line the production	182
Table 147: Confusion matrix CLCCH2006-2012 for Atlantic region –PLAUSIBILITY ANALYSIS- In column the validation and line the production	183
Table 148: Confusion matrix CLCCH2006-2012 for black sea region –BLIND ANALYSIS - In column the validation and line the production	184
Table 149: Confusion matrix CLCCH2006-2012 for black sea region –PLAUSIBILITY ANALYSIS - In column the validation and line the production	185
Table 150: Confusion matrix CLCCH2006-2012 for Boreal region – BLIND ANALYSIS- In column the validation and line the production	186
Table 151: Confusion matrix CLCCH2006-2012 for Boreal region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	187
Table 152: Confusion matrix CLCCH2006-2012 for Continental region – BLIND ANALYSIS- In column the validation and line the production	188
Table 153: Confusion matrix CLCCH2006-2012 for Continental region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	189
Table 154: Confusion matrix CLCCH2006-2012 for Macaronesia region – IBLIND ANALYSIS- In column the validation and line the production	190
Table 155: Confusion matrix CLCCH2006-2012 for Macaronesia region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	191
Table 156: Confusion matrix CLCCH2006-2012 for Mediterranean region – BLIND ANALYSIS- In column the validation and line the production	192
Table 157: Confusion matrix CLCCH2006-2012 for Mediterranean region – PLAUSIBILITY ANALYSIS -In column the validation and line the production	193
Table 158: Confusion matrix CLCCH2006-2012 for Pannonian region – BLIND ANALYSIS- In column the validation and line the production	194
Table 159: Confusion matrix CLCCH2006-2012 for Pannonian region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	195

Table 160: Confusion matrix CLCCH2006-2012 for Steppic region – BLIND ANALYSIS- In column the validation and line the production	196
Table 161: Confusion matrix CLCCH2006-2012 for Steppic region – PLAUSIBILITY ANALYSIS- In column the validation and line the production	197
Table 162: Confusion matrix CLCCH2006-2012 for Oversea departments (Guadeloupe, French Guyana, Martinique, La Reunion, Mayotte) – BLIND ANALYSIS- In column the validation and line the production	198
Table 163: Confusion matrix CLCCH2006-2012 for Oversea departments (Guadeloupe, French Guyana, Martinique, La Reunion, Mayotte) – PLAUSIBILITY ANALYSIS- In column the validation and line the production	199
Table 164: Commission and omission of land cover changes and main problematic CLC 2012 classes for Turkey (zone 1)	200
Table 165: Commission and omission of land cover changes and main problematic CLC 2012 classes for Finland (Zone 6)	203
Table 166: Commission and omission of land cover changes and main problematic CLC 2012 classes for Italy (zone 9)	205
Table 167: Commission and omission of land cover changes and main problematic CLC 2012 classes for Greece (zone 12)	207
Table 168: Commission and omission of land cover changes and main problematic CLC 2012 classes for Portugal (zone 16)	209

List of Abbreviations

CLC	CORINE Land Cover
CLCCH2006-2012	Corine land cover change between 2006 and 2012
EEA	European Environment Agency
EU-DEM	Digital Elevation Model over Europe
ESA	European Spatial Agency
FAO	Food and Agriculture Organization of the United Nations
FTY	Forest Type
GIO	GMES Initial Operations
GMES	Global Monitoring for Environment and Security
HRL	High Resolution Layer
IGN FI	IGN France International
JRC	Joint Research Centre
LAEA	Lambert Azimuthal Equal-Area
LUCAS	Land Use/Cover Area frame Survey
MMU	Minimum Mapping Unit
MMW	Minimum Mapping Width
PSU	Primary Sample Unit
SP	Service Provider
TCD	Tree Cover Density
UA	Urban Atlas

1. Validation Framework

The validation framework is defined by a comprehensive analysis of the product specifications to determine the criteria to be used for the validation exercise.

1.1. Products to be validated

The CORINE Land Cover (CLC) dataset was initiated for the reference year 1990 in the late 80s. Updates were then regularly produced for 2000, 2006 and the latest 2012. The CLC applies a pragmatic nomenclature of 44 land cover/land use classes with a Minimum Mapping Unit (MMU) of 25 hectares (ha) and a Minimum Mapping Width (MMW) of 100 m.

Updates are created by generating a change layer. Interpreted changes that have occurred between the two reference years considered are mapped with a 5 ha MMU. It means that the change layer has a higher level of spatial detail than the status layer. Changes are then aggregated to unchanged areas to produce the updated status layer with a 25 ha MMU.

Therefore, the products to be validated as part of the CLC2012 exercise are the following:

- CORINE Land Cover 2012 map (CLC2012) nomenclature with 44 classes
- CORINE Land Cover 2006-2012 change map (CLCCH2006-2012)

Table 1: Attribute name and attribute type of CLC2012 database

ATTRIBUTE NAME	ATTRIBUTE TYPE
OBJECTID	Object ID
Shape	Geometry
ID	String, Length 18
Remark	String, Length 20
Area_ha	Double
Code_12	String, Length 3
Shape_Length	Double
Shape_Area	Double

Table 2: Attribute name and attribute type of CLCCH2006-2012 database

ATTRIBUTE NAME	ATTRIBUTE TYPE
OBJECTID	Object ID
Shape	Geometry
ID	String, Precision 18
Change	String, Precision 7
Code_06	String, Precision 3
Code_12	String, Precision 3
Chtype	String, Precision 1
Remark	String, Precision 20
Area_ha	Double
Shape_Length	Double
Shape_Area	Double

1.2. Validation Criteria

1.2.1. CLC2012

The validation exercise focuses on thematic accuracy. The CLC expected overall accuracy is greater than 85% for both the status and change layers. Former validation exercises have been undertaken for previous version of CLC; the most recent available by Büttner et al. (2012).

1.2.2. CLCCH2006-2012

The validation exercise should contribute to determine a suitable accuracy threshold for CLC changes between 2006 and 2012. An overall accuracy will be calculated and another will be specified by country or group of small countries and by biogeographical region. The European countries are divided into 23 areas.

2. Validation approach

The validation approach will provide guidance on how the products will be validated by defining suitable indicators or metrics. Detailed completeness and Logical consistency checks are performed as part of the semantic checks undertaken by ETC ULS for most products. Therefore, the aim of this validation exercise is not to repeat these, but to review the existing documentation and perform additional checks if deemed necessary.

Thematic accuracy will represent the bulk of the work undertaken as part of this validation exercise.

The quality assessment is performed according to INSPIRE Data Specifications. The data quality elements considered are: (i) Completeness, (ii) Logical Consistency, (iii) Positional Accuracy, (iv) Thematic Accuracy, (v) Temporal quality and (vi) Usability. Each of them forms a section in the Validation Check list.

Logical consistency checks do not consist in a duplication of Semantic checks, but are performed to identify missing information if relevant.

2.1. Completeness

Completeness should only be performed when the product is complete

Description: For non-thematic raster products (Image mosaics & EU-DEM), Completeness provides an indication for missing data or omission within the intended area. For land cover and land use products (both raster & vector), the notion of Completeness in INSPIRE provides an indication of omission and commission errors.

Indicators: the rate of excess items is used for commission errors and the rate of missing items is used to verify omission errors.

2.2. Logical consistency

Logical consistency evaluates the degree of adherence to logical rules of data structure, attribution and relationships. In INSPIRE Data Specifications; Logical Consistency comprises four sub-elements

described hereafter: conceptual consistency, domain consistency, format consistency and topological consistency.

2.2.1. Conceptual consistency

Description: indicates that the data structure follows the data specifications in terms of data model and relationships.

Indicators:

- Type of feature used
- Minimum Mapping Unit (MMU)
- Coordinate Reference System
- The presence of a unique identifier for each feature
- Nomenclature used

2.2.2. Domain consistency

Description: involves the detection of attribute values that are outside the pre-defined range of values. For vector data each attribute has a pre-defined set of range of values. For raster data, the correct encoding of data is checked.

Indicator: Value domain non-conformance: number of items not in conformance with their expected value domain.

2.2.3. Format consistency

Description: includes detection of file format, file or attribute names or attribute types which do not correspond to the specifications. In addition, for raster data the pixel depth is also considered here.

Indicators:

- File format conformance
- File name conformance
- Attribute names conformance
- Attribute types conformance

2.2.4. Topological consistency

Description: topological consistency is applicable to vector data and describes the degree of correctness of the topological characteristics described in the product specification of the dataset.

Indicators:

- | | |
|---|---|
| <ul style="list-style-type: none"> - Number of overlaps - Number of gaps - Number of multipart features - Number of neighbouring features - Number of self-intersections | <ul style="list-style-type: none"> - Number of null geometries - Number of unclosed rings - Number of duplicate vertex - Number of pseudo nodes - Number of non-matching nodes |
|---|---|

2.2.5. Additional logical consistency checks

- **Labelling or symbology:** the conformity of a layer with the symbology or style given in the product specifications is checked;
- **Map projection:** the conformity of the map projection parameters is also checked.

2.3. Positional Accuracy

Detailed positional accuracy as described below is only required for the validation of image mosaics. CLC2012 is dependent on the underlying imagery, but some scattered systematic shifts still remain due to historical reasons. Assessments of these systematic shifts are envisaged based on the comparison of CLC2012 with HRL PWB which provides a basis for comparison considering the distinct nature of the Permanent Water Bodies features. Any discrepancies detected by overlaying CLC2012 with HRL PWB will be assessed visually to ensure that the differences are effectively due to geometric shifts.

Positional accuracy of HR and VHR mosaics will be evaluated by RMSE of planimetry as an indication of the closeness of the position values of gridded data (for raster) or vertices along lines (for vector) to values accepted as being true. However, it should be noted that RMSE does represent an “average” error more or less representing 68% of the total errors (assuming errors are normally distributed). The Root Mean Square Error of Planimetry (RMSEP) is given by:

$$\text{RMSEP} = \sqrt{\frac{1}{n} \sum_{i=1}^n (x_{Ref_i} - x_{Map_i})^2 + (y_{Ref_i} - y_{Map_i})^2}$$

There is a close relationship between positional accuracy and the scale of the data according to INSPIRE Technical guidelines document on land cover.

Table 3: relationship between positional accuracy and the scale of the data according to INSPIRE Technical guidelines document on land cover

Scale, 1:	Estimated Positional accuracy
1 000 000	500 m
500 000	250 m
250 000	125 m
100 000	50 m
50 000	25 m
20 000	10 m
10 000	5 m
5 000	2,5 m
2 000	1 m
1 000	0,5 m

For raster elevation data, positional accuracy metrics are generally related to the vertical height and are expressed as an absolute Linear Error (LE) expressed in metre at 90% or 95% confidence interval meaning that an LE95 of 8m indicates that 95% of the height measurements are within 8m. LE90 or

LE95 can only be estimated and require the knowledge of how errors are distributed. It is usually assumed that errors are normally distributed. In which case, Root Mean Square Error (RMSE) can be used to estimate a DEM's absolute accuracy with 68% of values within the RMSE value and $LE95 \approx 1.96 \cdot RMSE$.

RMSE is calculated based on the comparison between reference and DEM elevation values according to the following formula: $RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^n (Z_{Ref_i} - Z_{DEM_i})^2}$, where n is the number of observations.

Concerning the positional accuracy of CLC2012, only areas where the problem of systematic shift occurs are identified (as most of the shifts were corrected in previous updates), and therefore no comprehensive assessment of the whole dataset is performed. A pragmatic approach is to compare CLC2012 with distinct thematic features such as water bodies. Therefore, the detection of systematic geometric shifts in CLC2012 is performed based on the comparison with HRL PWB. Areas where discrepancies are detected through this automated comparison are further investigated by visual comparison.

2.4. Thematic Accuracy

2.4.1. Level of reporting

The level of reporting for the validation results is at pan-European level. However, results are also provided at different levels of aggregation:

- Countries or group of countries with an area greater than 90,000km² level (Figure 1)
- European Biogeographical regions 2016 level (Figure 2). The French overseas departments are aggregated into one specific biogeographical region named DOM. In fact, this region corresponds to the tropical climate and includes French Guiana, Martinique, Guadeloupe, La Réunion and Mayotte.

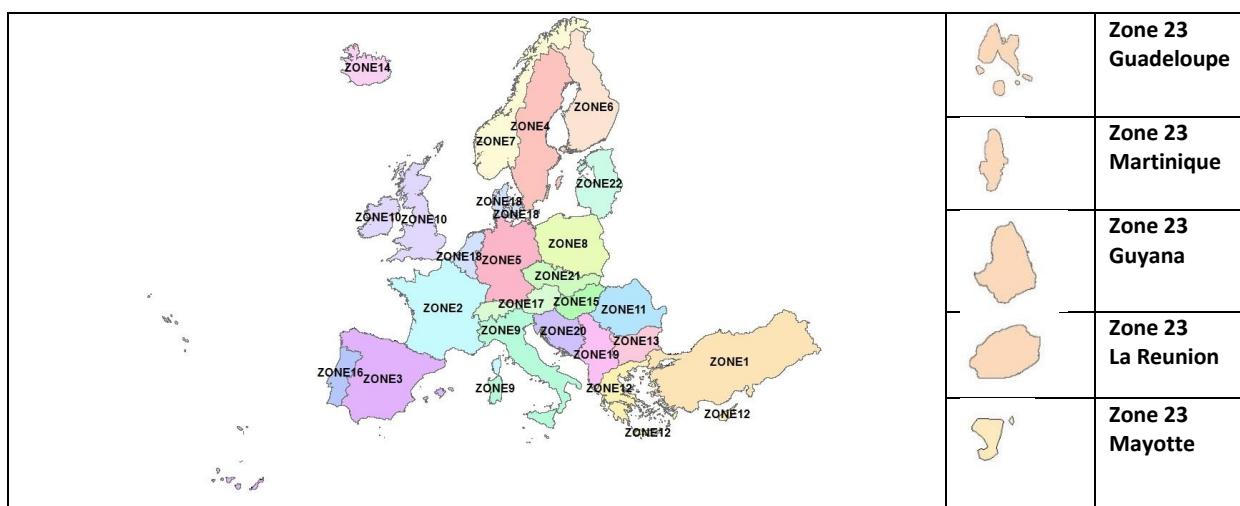


Figure 1: Stratification according to countries and group of countries greater than 90,000km² (total of 23 zones including French overseas department)

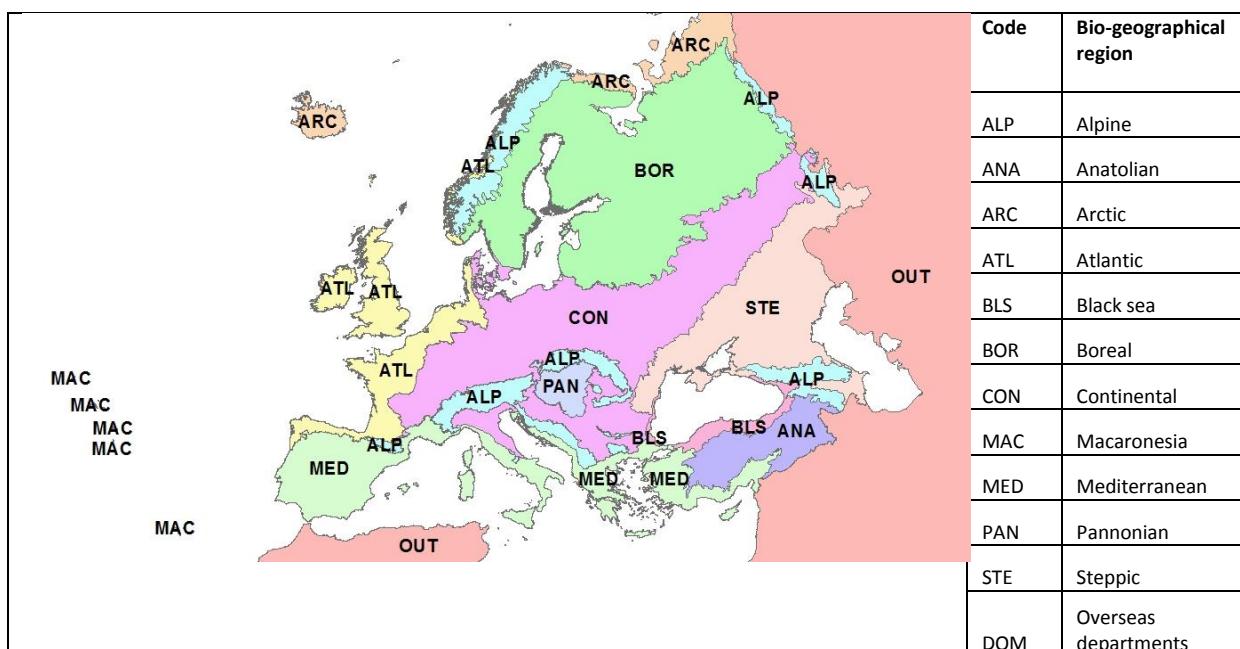


Figure 2: The European Biogeographical region 2016

Analysis of the results at a more disaggregated scale will contribute to assess regional differences if any and the causes of these differences.

2.4.2. Stratification and sample design

A stratified systematic sampling approach based on the LUCAS sampling frame is used for all thematic layers adapting the number of replicates to each stratum. The LUCAS sampling is densified for small strata based on a 200m grid. Using LUCAS sampling ensures coherence between the different layers and traceability.

A set of 81 points located on an 18x18 km square constitutes a group (red points shown in Figure 3) in which every point is associated with a number comprised between 0 and 81 (the numbers do not follow each other spatially). The same pattern with the same numbers allocation is repeated all over the grid. A replicate refers to the points with the same number selected on the whole LUCAS grid.

At first, the number of samples to allocate to each stratum (or land cover class) was calculated as a function of their area. In this manner the sampling design is not only systematic but also stratified. A minimum number of sample units per stratum was defined to ensure that even small strata are represented in the sample.

The number of replicates to be selected for a stratum depends on its area and the number of LUCAS points intersecting the stratum.

For land cover classes covering a large proportion of the study area, 1 replicate may already exceed the defined number of samples for this class. To solve this problem, replicates are split into four sub-replicates, as illustrated by the blue numbers in Figure 3.

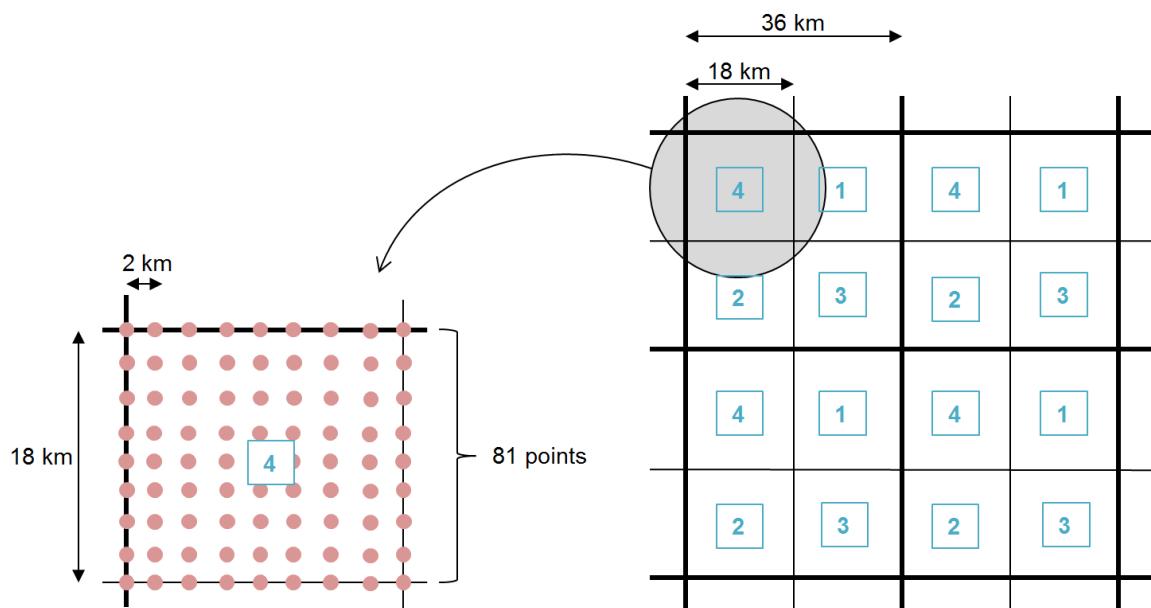


Figure 3: Replicates and sub-replicates used on LUCAS grid

The opposite problem is encountered for land cover classes covering a small proportion of the study area: even by selecting 81 replicates (the maximum number), the intersecting area between the stratum and LUCAS points is too small to reach the required number of samples. Therefore LUCAS grid was densified by creating one point every 200 m.

For the CLC2012 status and change layers, stratification is applied at two levels:

1. Stratification according to countries and group of countries greater than 90,000km²
2. Stratification based on the CLC2012 classes and CLCCH2006-2012 classes based on the map products

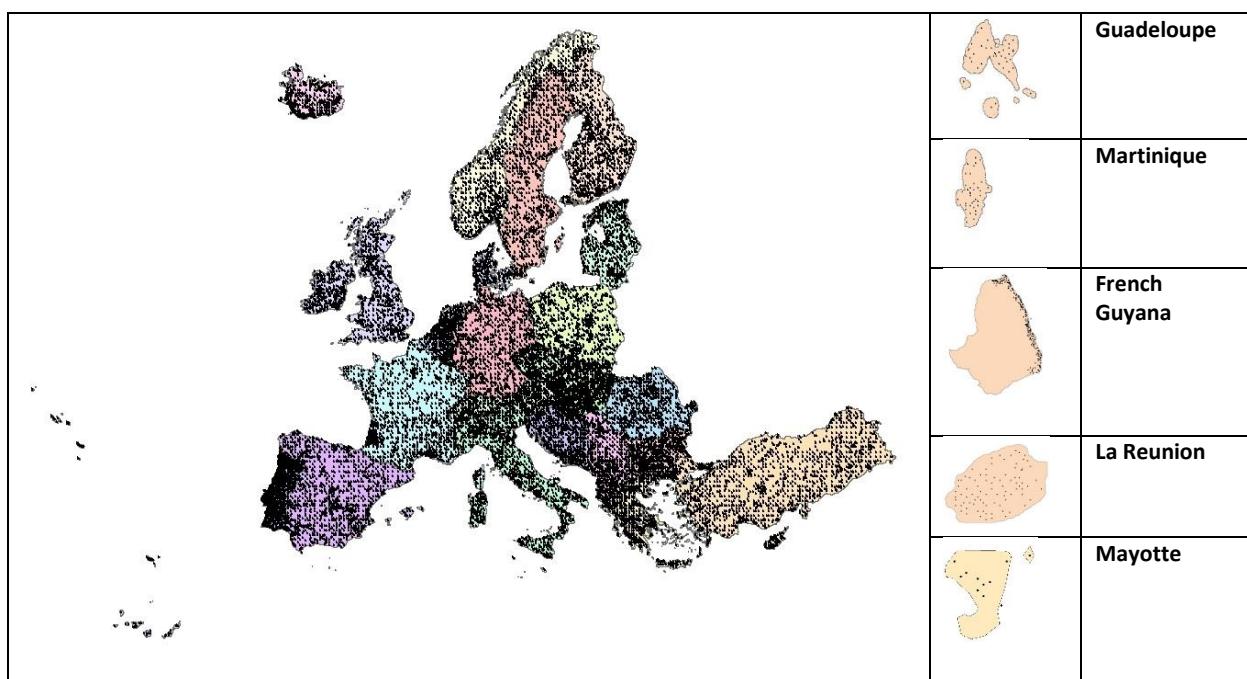


Figure 4: Distribution of the sample units according to the stratification into countries and group of countries

The number of sample units per stratum should be such to ensure a sufficient level of precision at reporting level. The minimum number of sample units per stratum should be set at 5 if possible. Priority is given to strata which are known to be difficult to map: i.e. changes and difficult classes.

The validation exercise covers the whole study area in order to be valid.

There were a total of 25,182 sample units selected and covering the entire of EEA39 area. The overall share of sample units per main strata and per country (or aggregated countries) is presented in Table 4.

Table 4: Distribution of sample units per main strata and substrata for the CLC012 and CLCCH2006-12 products

		TR	FR	ES	SE	DE	FI	NO	PL	IT	IE+UK	RO	EL	BG	IS	HU	PT	AT+CH+LI	BE+LU+NL+DK	AL+ME+MK+RS+XK	BA+HR+SI	CZ+SK	EE+LT+LV	DOM		
	CLASS / ZONE	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	Z11	Z12	Z13	Z14	Z15	Z16	Z17	Z18	Z19	Z20	Z21	Z22	Z23	Total général	
111	Continuous urban fabric	25	10	20	5	10	0	15	10	20	20	2	15	1	0	2	20	20	20	2	5	10	2	1	235	
112	Discontinuous urban fabric	29	50	20	20	50	20	20	20	50	30	50	25	20	20	20	20	20	20	30	20	30	20	20	624	
121	Industrial or commercial units	30	20	20	15	30	20	20	20	20	20	20	20	15	20	20	20	20	20	20	20	20	20	20	1	451
122	Road and rail networks and ass.	8	10	10	10	10	1	15	20	20	20	15	15	15	1	20	20	20	20	4	20	20	20	20	1	315
123	Port areas	2	10	5	5	10	5	15	5	20	20	5	5	2	5	1	10	2	20	2	2	1	10	1	163	
124	Airports	8	10	10	10	10	10	15	15	20	20	10	10	5	3	5	10	10	15	3	3	10	10	2	224	
131	Mineral extraction sites	25	10	10	10	20	20	20	20	20	20	15	20	5	20	20	20	20	20	23	20	20	20	20	1	399
132	Dump sites	3	5	10	10	10	15	3	20	10	20	10	1	5	0	15	10	1	15	4	3	20	10	1	201	
133	Construction sites	10	5	10	5	5	5	5	20	20	20	10	10	2	2	10	15	5	50	3	10	10	10	1	243	
141	Green urban areas	6	10	10	10	20	20	20	20	20	20	15	5	10	5	20	10	20	20	11	10	20	20	1	323	
142	Sport and leisure facilities	8	20	10	15	20	20	20	20	20	20	20	15	20	20	20	20	20	20	16	20	20	20	1	405	
211	Non-irrigated arable land	70	50	50	50	60	50	20	20	50	50	50	35	50	5	50	50	50	50	35	20	50	20	20	955	
212	Permanently irrigated land	60	0	40	0	0	0	0	0	5	0	3	30	0	0	0	50	0	0	2	2	0	0	0	192	
213	Rice fields	30	10	20	1	0	0	0	0	20	1	5	15	5	0	2	20	0	0	1	0	0	0	2	132	
221	Vineyards	30	50	40	0	20	0	0	0	20	0	20	20	0	20	20	20	20	2	20	20	20	0	0	342	
222	Fruit trees and berry plantation	40	20	40	5	20	0	0	20	20	15	20	25	20	0	50	20	10	25	20	30	20	10	10	450	
223	Olive groves	21	10	40	0	0	0	0	0	20	0	0	30	0	0	0	20	0	0	11	20	0	0	0	172	
231	Pastures	40	50	20	20	50	20	20	20	20	50	50	25	50	30	50	20	20	20	30	20	50	20	10	705	
241	Annual crops associated with permanent crops	1	5	10	0	0	0	0	0	20	0	0	15	0	0	0	20	0	1	2	1	0	0	0	75	
242	Complex cultivation patterns	60	50	40	20	20	0	20	20	50	20	20	30	20	20	20	20	20	50	30	20	20	20	10	600	
243	Land principally occupied by agriculture, forestry and fisheries	60	50	40	30	20	50	20	20	50	50	50	35	20	0	20	20	20	20	53	50	20	20	20	738	
244	Agro-forestry areas	1	40	0	0	0	0	0	20	0	0	0	0	0	0	0	20	0	0	1	0	0	0	1	83	
311	Broad-leaved forest	60	50	40	50	50	50	50	20	50	20	50	35	50	20	50	50	50	50	53	50	50	50	20	978	
312	Coniferous forest	60	50	40	50	50	50	50	20	50	50	50	30	50	10	50	50	50	50	30	50	50	50	20	961	
313	Mixed forest	40	50	40	50	50	50	50	20	20	50	50	30	50	15	50	50	50	50	30	20	30	20	1	866	
321	Natural grasslands	80	50	40	20	20	15	50	20	20	20	20	35	20	20	20	20	20	20	30	20	20	20	10	610	
322	Moors and heathland	1	20	40	50	20	20	50	5	20	20	20	15	20	0	20	20	20	20	20	15	20	10	10	466	
323	Sclerophyllous vegetation	21	20	40	0	0	0	0	50	0	0	40	0	0	0	20	0	0	0	30	20	0	0	10	251	
324	Transitional woodland-shrub	60	50	40	50	30	50	15	20	50	50	50	35	50	20	50	50	50	20	53	50	50	20	20	933	
331	Beaches, dunes, sands	20	10	10	5	10	3	15	10	20	20	20	15	10	50	0	15	5	20	13	2	0	15	1	289	
332	Bare rocks	40	20	20	20	10	20	20	5	20	20	15	15	20	20	20	0	9	20	0	20	20	5	0	340	
333	Sparsely vegetated areas	80	20	20	30	10	20	50	10	20	20	10	25	20	30	5	20	20	0	30	20	10	5	10	485	
334	Burnt areas	2	1	10	4	0	0	1	0	20	5	0	15	1	0	0	30	0	0	8	3	1	0	0	101	
335	Glaciers and perpetual snow	1	10	1	10	0	0	20	0	20	0	0	0	0	30	0	0	50	0	0	1	0	0	0	143	
411	Inland marshes	30	10	10	15	10	20	1	20	20	20	20	15	20	20	20	5	20	20	18	20	20	20	30	404	
412	Peat bogs	5	1	50	20	50	50	15	1	50	0	0	1	20	10	3	5	20	1	1	10	20	0	1	333	
421	Salt marshes	21	10	10	5	10	20	0	0	20	20	1	15	0	10	0	20	0	20	2	1	0	1	1	187	
422	Salines	5	10	10	0	0	0	0	5	0	0	5	1	0	0	10	0	0	2	1	0	0	0	0	49	
423	Intertidal flats	5	2	0	10	0	20	0	0	20	0	0	15	0	20	0	5	0	15	0	1	0	0	1	114	
511	Water courses	20	20	10	20	20	20	10	20	10	20	0	5	20	10	5	5	5	10	10	10	10	10	10	290	
512	Water bodies	30	20	20	50	30	50	50	20	20	20	20	20	20	20	20	20	20	25	20	20	20	20	1	556	
521	Coastal lagoons	11	10	5	5	3	0	0	1	20	5	1	5	1	15	0	5	0	10	4	1	0	2	1	105	
522	Estuaries	1	10	5	5	3	0	0	0	1	20	0	3	0	5	0	2	0	1	0	0	0	0	10	66	
523	Sea and ocean	12	1	10	10	3	15	15	1	2	3	1	5	1	1	0	1	4	1	1	0	1	10	1	98	
TOTAL CLC2012 classes		1161	908	939	740	744	709	775	487	1004	859	743	774	640	497	650	865	683	715	711	638	662	476	272	16652	
CLCCH2006-2012		535	520	530	360	355	590	195	470	570	450	171	326	220	135	620	525	250	355	223	195	455	340	140	8530	
Total général		1696	1428	1469	1100	1099	1299	970	957	1574	1309	914	1100	860	632	1270	1390	933	1070	934	833	1117	816	412	25182	

The sample units were provided to the bulk interpretation team as one shapefile along with the polygons from the original dataset in which all the information on strata or thematic classes were removed to ensure the independence of the interpretation and to ensure that actual thematic interpretation errors are separated from thematic errors due to potential geometric shifts.

2.4.3. Response Design

LUCAS points are re-interpreted based on available in situ data. LUCAS thematic information is not used directly.

Response design for most data set are based on the interpretation of thematic class at the point level taking into account product specifications (MMU, MMW, class definitions,...) based on combination of available in situ data. For CLC2012, the VHR dataset can be used alongside the imagery used in production (CORE01 imagery with a 20 meters spatial resolution) and virtual globes data (Bing or Google Earth images) as illustrated in Figure 5. These images are used in case there is a discrepancy between the independent imagery acquisition date and the imagery used in production. It is also used to confirm geometry in case of a geometric shift between the thematic data and the reference data. In detail, hereafter the reference data used during the validation are listed, covering the EEA39 area at a wall-to-wall basis:

- CORE3 VHR image Mosaic 2012, RGB with spatial resolution of 2.5m (Web map service provided by JRC) during SC1
- VHR Image 2012 NIR with spatial resolution of 2.5m for the SC2

A double blind approach guarantees complete independence from the map products and may underestimate their accuracy for complicated and difficult classes when sometimes several LC/LU classes are possible. This is resolved by the plausibility approach for which the interpreter checks the map value to assess whether it can be considered correct or not, within the frame of accepted product specifications. However, the plausibility analysis should be combined with the double-blind approach to ensure full traceability and transparency of the validation process.

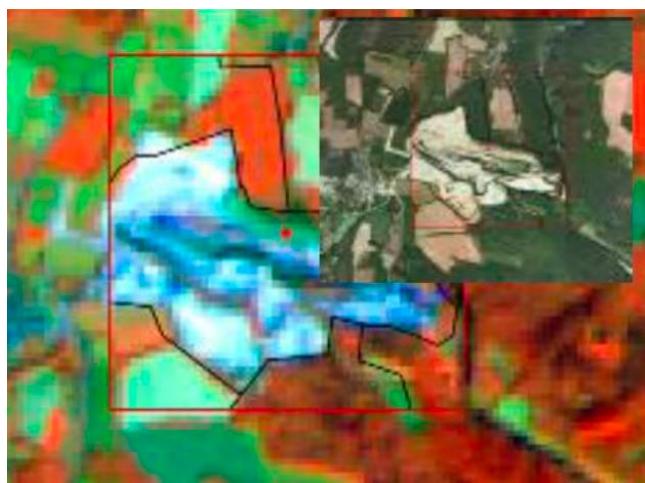


Figure 5: Example of a sample unit used for the validation of CLC2012

A double-blind approach was first applied. This consists in constructing the validation data set without any knowledge about the corresponding map layer information, i.e. the validation team did not have knowledge of the product's thematic classes for the selected sample units. However, the product polygon was provided as guidance to the validation team together with the sample unit to consider

boundary effects and geometric differences between the validation and production data. Two parameters were considered to interpret the sample unit along with the polygon:

- the area to be checked
- the size of the polygon

The maximum area to be verified was 100ha (=1 sq.km), e.g. 4 times the size of MMU (25ha).

The expert only interpreted the polygon which contains the sample unit. For each sample unit, two thematic fields were filled:

- code2006: the land-cover class value for 2006 (one of the 44 CLC codes)
- code2012: the land-cover class value for 2012 (one of the 44 CLC codes)

Additional fields were filled if necessary:

- uncertain: drop-down menu (2006/2012/2006&2012/none) in case of uncertainty of the interpretation
- comment: free text if any comment is needed

The sample unit was first blindly interpreted by the validation expert, i.e. only the limit of the polygon is visible without knowing the CLC thematic attribute of the area; but interpretation have to be made at sample unit level.

A second interpretation, carried out by a second interpreter as part of the plausibility analysis, was done only on the sample units in disagreement with product codes. The operator assigned a QC code modifying the validation code if necessary:

- 1: Uncertain code, both producer and operator codes are plausible. Final validation code used is producer code
- 2: Error from first validation interpretation. Final validation used is producer code
- 3: Error from producer. Final validation code used is from first validation interpretation
- 4: Error of both producer and operator. The controller should inform the new CLC field by a new land cover classes. Final validation code used is the new CLC code.

The Plausibility Analysis resulted in revised accuracy metrics.

2.4.4. Estimation and analyses procedures

Thematic accuracy should be presented in the form of an error matrix. Unequal sampling intensity resulting from the stratified systematic sampling approach should be accounted for by applying a weight factor (p) to each sample unit based on the ration between the number of samples and the size of the stratum considered:

$$\hat{p}_{ij} = \left(\frac{1}{N}\right) \sum_{x \in (i,j)} \frac{1}{\pi_{uh}^*}$$

Where i and j are the columns and rows in the matrix, N is the total number of possible units (population) and π is the sampling intensity for a given stratum.

Overall accuracy and User and producer accuracy should be computed for all thematic classes and 95% confidence intervals should be calculated for each overall accuracy.

The standard error of the error rate can be calculated as follows: $\sigma_h = \sqrt{\frac{p_h(1-p_h)}{n_h}}$ where nh is the sample size for stratum h and ph is the expected error rate. The standard error is calculated for each stratum and an overall standard error is calculated based on the following formula:

$$\sigma = \sqrt{\sum w_h^2 \cdot \sigma_h^2}$$

In which is the proportion of the total area covered by each stratum. The 95% confidence interval is +/- 1.96.

2.5. Temporal Quality

Temporal quality is evaluated by providing an indication of the closeness of the acquired image data to the reference year, e.g. the percentage area covered outside the accepted reference period as defined in the tender/product specification i.e. 2012 +/- 1-2 year(s).

2.6. Usability

Usability relates to the appropriateness of the metadata description and accompanying documentation to describe the processes and workflows involved in the production of the data. Although it is difficult to describe usability in quantitative terms, it provides a clear evaluation based on objective criteria of any limitation in the intended use of the data.

2.7. INSPIRE compliant metadata

Presence of INSPIRE compliant metadata should be verified.

3. Validation check list

Table 5: Validation check list

PRODUCT: CLC2012							
VALIDATION LEVEL: EEA39							
SERVICE PROVIDER: IGN FI			SERVICE USER:	ISSUE/REVISION:			
VALIDATION DATE: 28/10/2015			REVIEW DATE:				
CONDUCTED BY: SIRS			REVIEWED BY:	APPROVED BY:			
No.	Data Quality Sub-	Data Quality Measure	Data Quality Result	COMMENTS BY AUDIT TEAM		Draft Audit Conclusion	Final Audit Conclusion
1	COMPLETENESS						
1.1	Commission	Rate of excess items	n/a	Please refer to the chapter 4			
1.2	Omission	Rate of missing items	n/a	Please refer to the chapter 4			
2	LOGICAL CONSISTENCY						
2.1	Format consistency	File format	This was not assessed				
2.2		File name	X	File name expected is CLC12_FR			
2.3		Attributes names	X	Attribute names expected: "Remark" and "Code_12"			
2.4		Attributes types	Conform with criteria				

PRODUCT: CLC2012							
VALIDATION LEVEL: EEA39							
SERVICE PROVIDER: IGN FI			SERVICE USER:	ISSUE/REVISION:			
VALIDATION DATE: 28/10/2015			REVIEW DATE:				
CONDUCTED BY: SIRS			REVIEWED BY:	APPROVED BY:			
No.	Data Quality Sub-	Data Quality Measure	Data Quality Result	COMMENTS BY AUDIT TEAM		Draft Audit Conclusion	Final Audit Conclusion
2.5	Conceptual consistency	Feature type	Conform with the criteria				
2.6		MMU	X	Polygons < 25ha are present: 5019 features			
2.7		Coordinate reference system	Conform with the criteria				
2.8		Unique identifier	Conform with the criteria				
2.9		Nomenclature	Conform with the criteria				
2.10	Domaine consistency	Value domain non-conformance	Conform with the criteria				
2.11	Topological consistency	Overlaps	Conform with the criteria	No overlapping polygons			
2.12		Gaps	This was not assessed	Request for clarification or completion			

PRODUCT: CLC2012						
VALIDATION LEVEL: EEA39						
SERVICE PROVIDER: IGN FI			SERVICE USER:	ISSUE/REVISION:		
VALIDATION DATE: 28/10/2015			REVIEW DATE:			
CONDUCTED BY: SIRS			REVIEWED BY:	APPROVED BY:		
No.	Data Quality Sub-	Data Quality Measure	Data Quality Result	Comments by Audit Team		Draft Audit Conclusion
2.13		Multipart features	Conform with the criteria	No multipart polygons		
2.14		Neighbouring features	X	Neighbouring polygons with the same code are present: 142 features (maximum).		
2.15		Self-intersections	X	Polygons with self-intersections are present: 817 features		
2.16		Null geometry	Conform with the criteria			
2.17		Unclosed rings	Conform with the criteria			
2.18		Duplicate vertex	Conform with the criteria			
2.19		Pseudo nodes	This was not assessed			
2.20		Non matching nodes	Conform with the criteria			

PRODUCT: CLC2012						
VALIDATION LEVEL: EEA39						
SERVICE PROVIDER: IGN FI			SERVICE USER:	ISSUE/REVISION:		
VALIDATION DATE: 28/10/2015			REVIEW DATE:			
CONDUCTED BY: SIRS			REVIEWED BY:	APPROVED BY:		
No.	DATA QUALITY SUB-	DATA QUALITY MEASURE	DATA QUALITY RESULT	COMMENTS BY AUDIT TEAM	DRAFT AUDIT CONCLUSION	FINAL AUDIT CONCLUSION
3	POSITIONAL ACCURACY					
3.1	Absolute or external accuracy	RMSEP	n/a	This is dependent on the assessment of the CORE001 mosaic		
3.2	Relative or internal accuracy	RMSEP	n/a	This is dependent on the assessment of the CORE001 mosaic		
4	THEMATIC ACCURACY					
4.1	Classification correctness	Overall accuracy	83.3%	Including the overall area	See & 4.4	
4.2		Min. producer's accuracy	34.0%	Class 133 – Construction site	See & 4.4	
4.3		Min. user's accuracy	29.0%	Class 241 – Annual crops associated with permanent crops	See & 4.4	
4.4		Kappa				
5	TEMPORAL QUALITY					

PRODUCT: CLC2012						
VALIDATION LEVEL: EEA39						
SERVICE PROVIDER: IGN FI			SERVICE USER:	ISSUE/REVISION:		
VALIDATION DATE: 28/10/2015			REVIEW DATE:			
CONDUCTED BY: SIRS			REVIEWED BY:	APPROVED BY:		
No.	DATA QUALITY SUB-	DATA QUALITY MEASURE	DATA QUALITY RESULT	COMMENTS BY AUDIT TEAM	DRAFT AUDIT CONCLUSION	FINAL AUDIT CONCLUSION
5.1	Temporal quality	Closeness of the acquired image data to the reference		Acquisition windows from 2011 to 2013 'More detailed' is not assessed'		
6	USABILITY					
6.1	Usability	Usability description		N/A		
7	METADATA					
7.1	INSPIRE compliant metadata	Presence		N/A		
7.2		File format		N/A		
7.3		File name		N/A		
7.4		INSPIRE compliance		N/A		

4. Additional tables

4.1. Coordinate reference system description

Table 6: Coordinate reference system description

NAME OF COORDINATE REFERENCE SYSTEM	ETRS_1989_LAEA
WKID	EPSG:3035
PROJECTION	Lambert_Azimuthal_Equal_Area
FALSE EASTING	4321000.0
FALSE NORTHING	3210000.0
CENTRAL MERIDIAN	10.0
LATITUDE OF ORIGIN	52,0
LINEAR UNIT	(1,0)
GEOGRAPHIC COORDINATE SYSTEM	GCS_ETRS_1989
ANGULAR UNIT	Degree (0.0174532925199433)
PRIME MERIDIAN	Greenwich (0,0)
DATUM	D_ETRS_1989
SPHEROID	GRS_1980
SEMIMAJOR AXIS	6378137.0
SEMIMINOR AXIS	6356752.314140356
INVERSE FLATTENING	298.257222101

4.2. Nomenclature

Table 7: Nomenclature table

CODE	CLASS NAME	CODE	CLASS NAME
111	Continuous urban fabric	311	Broad-leaved forests
112	Discontinuous urban fabric	312	Coniferous forests
121	Industrial and commercial units	313	Mixed forests
122	Road and rail network and associated land	321	Natural grassland
123	Port areas	322	Moors and heathland
124	Airports	323	Sclerophyllous vegetation
131	Mineral extraction sites	324	Transitional woodland/shrub
132	Dump sites	331	Beaches, dunes, and sand plains
133	Construction sites	332	Bare rocks
141	Green urban areas	333	Sparsely vegetated areas
142	Sport and leisure facilities	334	Burnt area
211	non-irrigated arable land	335	Glaciers and perpetual snow
212	Permanently irrigated land	411	Inland marshes
213	Rice field	412	Peatbogs
221	Vineyard	421	Salt marshes
222	Fruit trees and berry plantation	422	Salines
223	Olive grove	423	Intertidal flats
231	Pastures	511	Water courses
241	Annual crops associated with permanent crops	512	Water bodies
242	Complex cultivation patterns	521	Coastal lagoons
243	Land principally occupied by agriculture, with significant areas of natural vegetation	522	Estuaries
244	Agro-forestry areas	523	Sea and Ocean

4.3. Thematic accuracy

This section provides the evaluation results of the CORINE Land Cover layers, specifically the Land Cover 2012 status and the change layer for 2006 and 2012. This analysis was performed over 100% of the coverage. The thematic accuracy assessment was conducted in a two-stage process: an initial blind interpretation in which the validation team did not have knowledge of the product's thematic classes and a plausibility analysis performed on all sample units in disagreement with the production. This chapter provides both results. It should be noticed that among the 25,182 validation points, 442 sample units (around 1.7 %) could not be checked due to the lack of suitable data source imagery (either satellite images 2006 or satellite image 2012 or both).

4.3.1. CORINE Land Cover 2012 layer

4.3.1.1. Results

The overall accuracies obtained in the frame of the Validation exercise are **83.6%** for the blind interpretation and **89.7%** for the plausibility analysis, so the results are, respectively, under and above the 85% threshold expected. The confusion matrices at the European level including the blind and plausibility analysis are provided in Annex 1.

Table 8 summarizes overall accuracies obtained by zone (country or group of countries) for the blind and plausibility interpretations including the 95% confidence interval. For the detailed analysis, for both blind and plausibility analysis, accuracy assessments and metrics (Confusion matrices, Producer, User and overall accuracies per zones) are provided in Annex 1, Annex 3 and Annex 6.

Table 8 Overall accuracy for blind and plausibility accuracy and confidence interval (95%) for CLC2012 per country or group of countries.

		Overall accuracy	Confidence interval of 95%	Overall accuracy	Confidence interval of 95%
Z1	Turkey	78,61%	2,80%	85,17%	2,44%
Z2	France	86,35%	3,33%	89,33%	3,11%
Z3	Spain	85,10%	2,68%	89,42%	2,27%
Z4	Sweden	87,91%	3,92%	93,08%	3,10%
Z5	Germany	82,83%	4,16%	89,05%	3,43%
Z6	Finland	74,32%	6,11%	81,66%	5,73%
Z7	Norway	93,22%	2,66%	96,61%	1,99%
Z8	Poland	92,06%	2,37%	94,15%	2,21%
Z9	Italy - Sardinia	76,01%	4,15%	85,01%	3,53%
Z10	United Kingdom - Ireland	87,07%	3,75%	92,67%	2,78%
Z11	Roumania	78,90%	4,11%	91,21%	2,61%
Z12	Greece	80,21%	3,63%	87,28%	3,01%
Z13	Bulgaria	86,90%	3,54%	94,53%	2,03%
Z14	Island	85,13%	7,41%	93,68%	4,91%
Z15	Hungaria	86,08%	3,97%	91,28%	3,28%
Z16	Portugal	75,91%	3,68%	84,80%	3,17%
Z17	Switzerland - Austria	76,07%	4,74%	86,77%	3,72%
Z18	Belgium - Danmark - Luxembourg - Netherlands	84,75%	4,21%	88,18%	4,05%
Z19	Albania - Serbia - Macedonia - Montenegro	82,08%	3,87%	93,46%	2,18%
Z20	Bosnia Herzegovina - Croatia - Slovenia	77,38%	5,20%	89,27%	3,81%
Z21	Czech Republic - Slovakia	85,68%	3,77%	93,31%	2,40%
Z22	Estonia - Latvia - Lithuania	88,63%	3,68%	91,69%	3,22%
Z23	French overseas departments	96,41%	1,03%	97,61%	0,90%
	GLOBAL ACCURACY	83,60%	0,91%	89,66%	0,77%

	Accuracy better than 85%
	Accuracy between 80% and 85%
	Accuracy less than 80%

The overall accuracies at the biogeographical regions level illustrated in Table 9 show good to very good final results except for Black Sea regions with slightly lower accuracies. Annex 2 provides the producer and user accuracies for each land cover classes and the Annex 4 accuracies for each biogeographical region. Confusion matrices per biogeographical regions are presented in Annex 5.

Table 9: Overall accuracy for blind and plausibility analysis per bio-geographical region

	Overall accuracy CLC2012	
	Blind analysis	Plausibility analysis
Alpine	84,29%	92,49%
Anatolian	77,15%	86,44%
Arctic	85,29%	93,75%
Atlantic	87,75%	91,30%
BlackSea	81,70%	84,45%
Boreal	84,35%	89,12%
Continental	83,91%	90,74%
Macaronesia	80,32%	90,33%
Mediterranean	80,69%	86,54%
Pannonic	86,87%	93,48%
Steppic	87,03%	96,40%
Oversea department	96,41%	97,61%

	Accuracy better than 85%
	Accuracy between 80% and 85%
	Accuracy less than 80%

Table 10 summarizes Producer and User accuracies obtained by biogeographical region, for the blind and plausibility interpretations.

Table 10: Producer and user accuracy of CLC2012 given by land cover classes – Blind and plausibility analysis

	Code CLC	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244
BLIND ANALYSIS	User accuracy	0,773	0,903	0,895	0,892	0,954	0,960	0,840	0,777	0,763	0,857	0,881	0,899	0,942	0,952	0,674	0,679	0,854	0,769	0,312	0,720	0,785	0,928
	Producer accuracy	0,831	0,891	0,743	0,663	0,878	0,965	0,806	0,804	0,633	0,663	0,719	0,937	0,966	0,941	0,792	0,768	0,886	0,802	0,207	0,625	0,652	0,751
PLAUSIBILITY ANALYSIS	User accuracy	0,791	0,948	0,938	0,919	0,954	0,981	0,868	0,860	0,793	0,887	0,929	0,932	0,979	0,984	0,766	0,740	0,898	0,846	0,412	0,798	0,844	0,930
	Producer accuracy	0,837	0,929	0,838	0,858	0,884	0,966	0,976	0,929	0,624	0,686	0,765	0,954	0,981	0,973	0,938	0,896	0,918	0,870	0,279	0,736	0,747	0,789
	Code CLC	311	312	313	321	322	323	324	331	332	333	334	335	411	412	421	422	423	511	512	521	522	523
BLIND ANALYSIS	User accuracy	0,873	0,847	0,856	0,690	0,851	0,780	0,779	0,861	0,780	0,744	0,800	0,985	0,858	0,854	0,570	0,849	0,728	0,902	0,984	0,968	0,860	0,989
	Producer accuracy	0,945	0,945	0,753	0,684	0,837	0,802	0,607	0,768	0,929	0,841	0,626	0,817	0,791	0,921	0,865	0,939	0,882	0,917	0,985	0,969	0,639	0,933
PLAUSIBILITY ANALYSIS	User accuracy	0,918	0,902	0,943	0,806	0,912	0,875	0,884	0,924	0,862	0,842	0,790	0,992	0,913	0,965	0,582	0,932	0,855	0,930	0,989	0,978	0,938	0,993
	Producer accuracy	0,976	0,976	0,817	0,813	0,939	0,847	0,734	0,867	0,963	0,955	0,784	0,868	0,804	0,958	0,928	0,951	0,958	0,986	0,987	0,982	0,676	0,998

	Accuracy better than 85%
	Accuracy between 80% and 85%
	Accuracy less than 80%

4.3.1.2. Main findings and discussion

The CLC2012 status product exceeds the accuracy requirements for the plausibility analysis. In addition, these results are relatively homogenous across the European zones or bio-geographical regions from an overall accuracy of 84.5% for the Black Sea region to 97% for the French overseas departments. For the blind analysis, the requirement is not met but results show that the product is close to the thematic threshold, i.e. 85 % (the overall accuracy at the pan-European scale assessed for CLC2012 is 83.6%).

The differences between the blind interpretation and plausibility results (for some particular biogeographical regions) highlights the complexity of the nomenclature in liaison with the complexity of the landscape and suggests that several interpretations are sometimes possible for a given land unit despite the detailed documentation available

The CLC2012 product shows both low producer and user accuracies accuracies for blind and plausibility analysis for the following land cover classes: 133, 221, 222, 241, 242, 243, 324 and 334. Reasons for main sources of errors can be summarised as follows:

- **Main sources of both omission and commission errors (producer and user accuracy):**
 - Class 111 “Continuous urban fabric”: some difficulties in the visual interpretation of the urban density. Mainly the confusion concerns the class 112 “discontinuous urban fabric”
 - Class 132 “Dump sites”: some confusion with the classes 131 “Mineral extraction sites” and 133 “Construction sites”.
 - Class 133 “Construction sites”: some confusion with artificial classes 112, 121, 122 due to temporal issues (progress of construction development)
 - Class 221 “Vineyards” and 222 “Fruit trees and berry plantations”: confusion with the classes 242 “Complex cultivation patterns” when the density of plots planted with permanent crops is not enough sufficient and not representative (Density of permanent crops must occupy more than 75 %.). Other possible confusion with the class 223 “Olive groves” in the Mediterranean countries. According to the type of plantation possible confusion between 221 and 222.
 - Class 231 “pasture”. Possible confusion with 321 “Natural grassland”
 - Class 241 “annual crops associated with permanent crops”. The use of the production imagery alone is not sufficient to characterise some of the complexity of the nomenclature (which leads to misunderstanding of the land-cover classes’ content by the interpreters) and the use of very high resolution data such as google earth or aerial photography is necessary in order to identify the land-cover strata.
 - Class 242 and 243: “heterogeneous agricultural areas” including the complex cultivation pattern and the land principally occupied by agriculture with significant areas of natural vegetation. Classes in general underestimated or overestimated in the CLC production. Bad assessment of mosaic composed of permanent & annual crops / grassland or mixed with natural area. Classes easily generalizable where it is possible to identify other homogeneous land cover classes more than 25 ha inside the polygon such as 211, 231...
 - Class 321 “Natural grassland” possible confusion according the country with 231 “pasture”, 322 “Moors and heathland”, 333 “sparsely vegetation”, 324 “transitional woodland”.
 - Class 323 “sclerophylous vegetation” possible confusion with 321 “Natural grassland”, 324 “transitional woodland”, 333 “sparsely vegetation”, in Mediterranean countries*

- Class 324 “transitional woodland” which characterizes both a dynamic aspect of the vegetation and a physiognomic state of the vegetation everywhere in Europe (from Boreal to Mediterranean region). Possible confusion with forest according to the forest growing 311 “broad-leaved forest”/ 312 “coniferous forest” / 313 “mixed forest” or 321 “Natural grassland” /323 “sclerophylous vegetation”
- Class 332 “Bare rock”, 333 “sparsely vegetation” possible confusion between them.
- Class 334: “burnt area” Class difficult to assess from the satellite images (acquisition dates of satellite images, and vegetation growing). Confusion with 324
- Class 421 “salt marshes” Possible confusion with humid grass and water 411 “inland marshes”, and sometime with 423 “intertidal flats”.
- Class 423 “intertidal flats”. Possible confusion with 421 “salt marshes”, 522 “estuaries”
- Main sources of omission errors (producer accuracy):
- Class 121 “industrial area”/122 “Road”. Confusion with 133 “construction sites” and vice-versa: the reason is the precision to identify the building or houses. Need to respect the date of the google earth regarding to the date of satellite image 2012.
- Class 132 “Dump site”/133 “construction site”. Internal confusion between these classes. Need to have ancillary data in order to identify 131 from 132. Class 133 could be classify into 112/ 121/ 122 according to progress of the construction site.
- Class 133 “construction site”: In direct relation with the progress of construction development (possible confusion with 112, 121, 122)
- Class 141 “green urban area”: Confused class when it’s localized around cities!
- Class 142 “sport and leisure facilities”- Need to analyses per zone (cottage communities confusion with 112)
- Class 241 “annual crops associated with permanent crops”. The use of the production imagery alone is not sufficient to characterise some of the complexity of the nomenclature (which leads to misunderstanding of the land-cover classes’ content by the interpreters) and the use of very high resolution data such as google earth or aerial photography is necessary in order to identify the land-cover strata.
- Class 242 and 243: “heterogeneous agricultural areas” including the complex cultivation pattern and the land principally occupied by agriculture with significant areas of natural vegetation. Classes in general underestimated or overestimated in the CLC production. Bad assessment of mosaic composed of permanent & annual crops / grassland or mixed with natural area. Classes easily generalizable where is it possible to identify other homogeneous land cover classes more than 25 ha inside the polygon such as 211, 231...
- Class 313 “mixed forest” possible confusion with 312 / 311 or 324
- Class 321 “Natural grassland” possible confusion according the country with 231, 322, 333, 324
- Class 324 “transitional woodland” Transitional woodland” which characterizes both a dynamic aspect of the vegetation and a physiognomic state of the vegetation everywhere in Europe (from Boreal to Mediterranean region). - Possible confusion with 31x or 321 /323
- Class 334 “burnt area” Class difficult to assess from the satellite images (acquisition dates of satellite images, and vegetation growing). Confusion with 324
- Class 411 “inland marshes”. Possible confusion with humid grass and water
- Class 423 “intertidal flats”. Need topographic maps. Possible confusion with 421, 521, 522, 523
- Class 522 “estuaries” is difficult to delineate and need to have bathymetry data and other marine maps. Possible confusion with 511 or 523

The stratification and sampling design proved efficient ensuring a good representation of all Land-Cover classes whilst providing precise overall thematic accuracy results at EEA39, zones and biogeographical region level.

4.3.2. CLCCH2006-2012 change layer

4.3.2.1. Main observation at the European and bio-geographical region

The first observation is an **overestimation of changes** during the interpretation phase. This is because the satellite image used during the validation step allowed identifying a land cover change but in some case it's not clear which kind of change has occurred. Changes are identified and considered when the difference in the spectral radiometry of satellite images acquired between 2006 and 2012 corresponds to a real land cover or land use change.

For the blind analysis, the overall accuracy of CLCCH2006-2012 at the third level of nomenclature is 81.8%. The overall accuracy of CLCCH2006-2012 at the level 2 is 85.9%.

For the plausibility analysis, the overall accuracy of CLCCH2006-2012 at the third level is 88.6%. The overall accuracy of CLCCH2006-2012 at the second level is 91.2%.

The level 3 of the nomenclature permits a high number of changes combinations (44×43 classes = 1892 possible changes), which makes the analysis very complex. Since the goal of the validation is to provide an overall picture about the accuracy of CLC-Change, the analyses were focused essentially at CLC level 2. Main findings are only provided where significant differences are found between the validation.

The matrix of change at the European level (CLC level 2) is provided in Annex 6 and at the biogeographical region in Annex 8.

Table 11 shows the overall accuracy of CLCCH2006-2012 for each bio-geographical region at the second and third level both for the blind and the plausibility analysis. The plausibility analysis shows a very good overall accuracy both at the second and at the third level.

Confusion matrix of CLCCH2006-2012 per Bio-geographical region is presented in Annex 8 of the document.

Table 11: assessment of CLCCH2006-2012 for blind and plausibility analysis per bio-geographical region at the second and third CLC level

	Overall accuracy CLCCH2006-2012 level 3		Overall accuracy CLCCH2006-2012 level 2	
	Blind analysis CLC level 3	Plausibility analysis CLC level 3	Blind analysis CLC level 2	Plausibility analysis CLC level 2
Alpine	83,47%	91,94%	88,55%	94,62%
Anatolian	75,62%	85,93%	79,28%	88,01%
Arctic	83,12%	93,38%	93,16%	99,47%
Atlantic	85,89%	89,81%	87,97%	91,36%
BlackSea	81,54%	84,31%	86,32%	87,89%
Boreal	80,21%	86,69%	84,78%	90,06%
Continental	82,98%	90,25%	85,31%	91,76%
Macaronesia	79,95%	89,95%	83,49%	93,23%
Mediterranean	79,06%	85,54%	85,80%	89,78%
Pannonian	85,29%	92,25%	85,83%	92,86%
Steppic	86,99%	96,38%	86,99%	96,38%
Oversea departments	96,38%	97,58%	97,58%	98,07%

Green	Accuracy better than 85%
Orange	Accuracy between 80% and 85%
Red	Accuracy less than 80%

4.3.2.2. Assessment of CLCCH2006-2012 overall accuracy per country or group of countries at the second and third level

Table 12: assessment of CLCCH2006-2012 for blind and plausibility analysis and confidence interval (95%) per country or group of countries at the second or third CLC level

		Overall accuracy CLCCH2006-2012 level 3				Overall accuracy CLCCH2006-2012 level 2	
		BLIND ANALYSIS	Confidence interval of 95%	PLAUSIBILITY ANALYSIS	Confidence interval of 95%	BLIND ANALYSIS	PLAUSIBILITY ANALYSIS
Z1	Turkey	77,30%	2,84%	84,50%	2,47%	83,16%	88,57%
Z2	France	84,80%	3,36%	88,11%	3,15%	88,37%	90,88%
Z3	Spain	84,23%	2,69%	88,71%	2,28%	89,58%	92,01%
Z4	Sweden	81,42%	4,77%	89,51%	3,59%	82,17%	90,02%
Z5	Germany	80,59%	4,37%	88,12%	3,62%	83,30%	89,96%
Z6	Finland	72,92%	6,15%	80,67%	5,76%	85,92%	89,87%
Z7	Norway	93,07%	2,67%	96,02%	1,99%	95,00%	97,59%
Z8	Poland	91,52%	2,37%	93,80%	2,21%	92,35%	94,81%
Z9	Italy - Sardinia	75,23%	4,16%	84,74%	3,53%	80,20%	87,37%
Z10	United Kingdom - Ireland	85,60%	3,77%	91,67%	2,79%	87,09%	92,72%
Z11	Roumania	77,65%	4,30%	90,94%	2,61%	79,74%	92,05%
Z12	Greece	78,64%	3,67%	86,28%	3,04%	85,08%	90,63%
Z13	Bulgaria	86,52%	3,55%	94,36%	2,03%	89,02%	95,62%
Z14	Island	82,94%	7,95%	93,31%	4,91%	93,09%	99,46%
Z15	Hungaria	84,01%	3,98%	89,67%	3,31%	84,73%	90,54%
Z16	Portugal	68,26%	3,88%	80,87%	3,43%	78,92%	85,63%
Z17	Switzerland - Austria	75,27%	4,75%	86,39%	3,72%	80,48%	88,72%
Z18	Belgium - Denmark - Luxembourg - Netherlands	84,45%	4,21%	87,77%	4,05%	86,81%	89,20%
Z19	Albania - Serbia - Macedonia - Montenegro	80,87%	4,02%	92,61%	2,21%	84,18%	94,18%
Z20	Bosnia Herzegovina - Croatia - Slovenia	76,89%	5,21%	88,89%	3,82%	84,83%	90,79%
Z21	Czech Republic - Slovakia	84,10%	3,80%	91,82%	2,45%	84,23%	92,96%
Z22	Estonia - Latvia - Lithuania	86,95%	3,81%	90,17%	3,40%	87,82%	90,72%
Z23	French overseas departments	96,38%	1,03%	97,58%	0,90%	97,58%	98,07%
	GLOBAL ACCURACY	81,80%	0,95%	88,60%	0,79%	85,90%	91,23%

Table 12 shows the overall accuracy of CLCCH2006-2012 for each zone (country or group of countries) at the second and third level for the blind and plausibility analysis. The European countries have been gathered into 23 areas. Overall, the land cover changes are very good at the second level and good at the third level

Confusion matrixes of CLCCH2006-2012 per zone/country, group of countries are presented in Annex 7.

Table per country are presented in Annex 9 of the document. These include observations and discussion for the main problematic countries (overall accuracy CLCCH2006-2012 less than 80%).

4.3.2.1. Main findings and discussion

Table 13 below summarizes and explains the main differences encountered between the validation and production interpretation at level 2 of the nomenclature for the 2006-2012 changes.

Table 13: Main problematic flow observed at the European level (commission and omission)

CLC Change Classes	Weight	User Accuracy	Comments
32-31	282.016	0.730	Overestimation of forest regeneration. It was still forest in 2006 (31-31) or still transitional woodland in 2012 (32-32).
21-23	17.832	0.292	Overestimation of agriculture intensification flow. Possible confusion with temporary grass which have to be classified into 211. Confusion with 21-21 or 23-23
23-21	15.865	0.635	Overestimation of intensification of agriculture area It was still grass in 2012 (23-23) or already annual crops in 2012 (21-21)
21-13	7.260	0.818	Construction site area slightly overestimated.
33-32	7.236	0.771	Overestimation of change – it was already 32 in 2006 (32-32)
21-22	6.927	0.813	Difficult change to assess. Need VHR data both in 2006 an in 2012 in order to better analyse this change. Change overestimated. Often there were still annual crops (21-21) in the satellite images 2012 (confirmed by historical images in comparison with google earth).
21-12	5.836	0.802	Commission, with other land cover change and mainly with grassland (23) in 2006. Classic confusion and not important confusion.
32-33	5.483	0.645	Classical confusion (321, 322 /333, Mountain region, due to the density of vegetation and the weakness resolution of satellite images to appreciate the density of the vegetation Not a real change
22-21	5.252	0.499	Difficult change to assess. Need VHR data both in 2006 an in 2012 in order to better analyse this change. Change overestimated. Often there was still

			permanent crops (22-22) in the satellite images 2012 (Confirmed by historical images in google earth)
--	--	--	--

CLC Change classes	Weight	Producer Accuracy	Comments
31-32	322.54	0.545	Underestimation of change. It should be analysed at country level because it's a significant change
32-31	249.77	0.824	Slight underestimation of forest regeneration
24-21	15.99	0.035	Intensification of agriculture areas – Missing of change
21-12	15.21	0.308	Problem of industrial building density or localisation of the point or the MMU.
23-21	14.69	0.686	Under-estimation of intensification of agriculture area.
13-12	13.13	0.309	Industrial areas into the construction site are more or less clearly identified.
23-24	10.90	0.025	
21-13	10.19	0.583	Some missing change in 2006- Building and houses into the construction site are more or less clearly identified. Omission from the classes 13-13. We have to consider the date of the satellite images used for the production and quality assessment. ,

5. Conclusions and recommendations

This validation exercise shows anyway satisfactory overall accuracies, both for CLC2012 and for CLCCH2006-2012 changes products, for the blind and the plausibility analysis. Indeed, the CLC2012 and CLCCH2006-2012 products show an overall accuracy which meets the product specification in the plausibility analysis (and nearly meets the threshold of 85% for the blind approach). The plausibility analysis metrics are significantly better than the blind interpretation because the plausibility analysis results in revised accuracy metrics based on the results of the blind analysis.

However, disparities exist from a country to another, from 74% (blind analysis) of overall accuracy for Finland to 96% for French overseas departments regarding the CLC2012 product.

The CLCCH2006-2012 change product also contains a high disparity in overall accuracy, from 68% (blind analysis) for Portugal to 96% for French overseas departments. There is an obvious link between landscape complexity and weaker overall accuracy.

	Overall accuracy CLC 2012		Overall accuracy CLCCH2006-2012 level 3		Overall accuracy CLCCH2006-2012 level 2	
	Blind analysis	Plausibility analysis	Blind analysis	Plausibility analysis	Blind analysis	Plausibility analysis
Alpine	84,29%	92,49%	83,47%	91,94%	88,55%	94,62%
Anatolian	77,15%	86,44%	75,62%	85,93%	79,28%	88,01%
Arctic	85,29%	93,75%	83,12%	93,38%	93,16%	99,47%
Atlantic	87,75%	91,30%	85,89%	89,81%	87,97%	91,36%
BlackSea	81,70%	84,45%	81,54%	84,31%	86,32%	87,89%
Boreal	84,35%	89,12%	80,21%	86,69%	84,78%	90,06%
Continental	83,91%	90,74%	82,98%	90,25%	85,31%	91,76%
Macaronesia	80,32%	90,33%	79,95%	89,95%	83,49%	93,23%
Mediterranean	80,69%	86,54%	79,06%	85,54%	85,80%	89,78%
Pannonian	86,87%	93,48%	85,29%	92,25%	85,83%	92,86%
Steppic	87,03%	96,40%	86,99%	96,38%	86,99%	96,38%
Oversea departments	96,41%	97,61%	96,38%	97,58%	97,58%	98,07%

Considering the plausibility approach the CLC2012 product show that the most problematic biogeographical regions are the ones located in the south of Europe including the Black Sea, Anatolian and Mediterranean region with respectively 84%, 86% and 87% overall accuracies. The results from the plausibility analysis of the CLCCH2006-2012 product show the same problematic biogeographical regions with respectively 84%, 86% and 86% overall accuracies.

It should be noted that lower level of changes were found by the validation team with respect to the ones in the production data (conducting to an overestimations of the changes). For the plausibility analysis, the overall accuracy of CLCCH2006-2012 at the second level is very good and higher than 90% while at the third level the overall accuracy is around 88%.

Although the overall accuracy obtained by the plausibility analysis improves the one from the blind analysis and exceeds the expected value, better results in terms of overall accuracy might be obtained by introducing an error typology.

A typology of mistake or confusion would allow classifying the relevance of the errors without affecting the final accuracy. Indeed “minor confusion” might be filtered such as:

- Natural grassland (321), heathland (322) and sparsely vegetation (333) in Anatolian region or Mountain region are sometime difficult to determine precisely.
- In Mediterranean region sclerophylous vegetation (323) are also confused with transitional woodland (324) according to the density of trees.

- In Arctic and boreal region peatbogs (412) heathland and moor land (322) and natural grassland (321) are confused in some part and needed to have thematic data or to organize some field control.

There are “minor error or normal confusion” met regarding data source resolution and difficult to discriminate without field true or other very precise thematic data. They happen in transitions between neighbouring classes with uncertain thresholds such as broadleaves (or coniferous) forests vs. mixed forests, shrubs vs. low density forests, altitude grassland vs. sparsely vegetated areas. Ecotone and other transitional natural formation constitute part of these difficulties.

If we integrate this typology of “minor error or normal confusion” the overall accuracy will be still better than 90 %.

Some other errors can be explained by various reasons:

- A correct identification of certain CLC classes requires the use of topical ancillary data. These were missing during our control work (Forest, peat, sclerophylous vegetation maps...)
- Errors might be related to the interpretation of CLC classes by the national team interpreters (333/421 for inland salt marshes with halophyte communities must be classified into 333 and not 421...).
- The location of the validation points could sometimes be confusing inside the selected polygon (e.g. on the boundary between two land cover types bigger than 25 ha).
- The spatial resolution of satellite images might not be sufficient to identify specific classes (e.g. young vineyards and orchards)
- Generalisation of some polygons including different land cover type.
- The temporal resolution of satellite images is not enough to distinguish grasslands from arable land with vegetation.
- Different acquisition period of satellite images (1 or two years) for the same area could induce some interpretation difference (notably for land cover changes) in forest area.
- Problem of the MMU for the land cover change assessment. Indeed in some cases the photo-interpreter could generalize the change while the check point itself falls in a part without change.

These errors and difficulties can only be overcame/resolved if:

- Very High Resolution satellite imagery is used for the production
- Multi-temporal HR satellite imagery is available (Landsat or Sentinel-2)
- Auxiliary data sources are available.
- Organisation of some field control

The analysis of the **validation results at class and disaggregated zone or biogeographical level** should provide insights on where the product could be improved thematically focusing on weaker classes and geographical regions.

Another recommendation would be to use the user and producer accuracy of the change classes (or regrouped change classes at Level 2 of the nomenclature) as an indicator of the quality of the change layer rather than overall accuracy which is always likely to be dominated by unchanged areas.

ANNEX

Annex 1. Confusion matrix of CLC2012 European level – Blind and plausibility analysis

A total of 25,182 sample units located according to the sampling design have been interpreted by an independent expert's team. Table 14 and Table 15 shows the confusion matrix between the validation results in column and the production map in line for both blind and plausibility analysis.

Table 14: Confusion matrix of CLC 2012 – blind analysis

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	335	411	412	421	422	423	511	512	521	522	523 Total	User Acc
111	22,783	4,347	0,578				0,657	0,074															0,509		0,509										29,457	0,773									
112	4,523	632,927	5,443	2,238	0,014		0,038		3,039	4,065	0,022	4,526						0,444	0,021		26,246	12,102		2,238	1,306	0,528	1,088											700,876	0,903						
121		3,924	119,153	0,640	0,493		0,095	0,777	2,475	0,023	0,110	0,453			0,007		0,035	1,520		0,559	0,177			0,709	0,701	0,086	0,034	0,925										133,084	0,895						
122		0,140	0,445	16,239	0,019		0,058		0,348		0,143									0,234		0,225	0,056		0,216	0,019		0,034									18,204	0,892							
123	0,021	0,021	0,002	0,050	3,981					0,029										0,034		0,034														4,172	0,954								
124		0,020	0,141		14,377				0,015		0,082	0,044							0,025	0,221															14,973	0,960									
131		0,261	0,280	0,068		33,663	0,161	0,775	0,103	0,114	0,280		0,020				0,836		0,068	0,327		0,087	0,179	0,203	0,109		0,892			0,230		0,034	0,016		0,059	1,289	40,055	0,840							
132		0,024	0,173	0,019		0,392	4,246	0,066	0,042	0,043	0,090									0,146																	5,461	0,777							
133	0,050	1,241	1,278	0,437	0,008		0,226	0,052	15,930		0,597	0,355					0,040		0,096	0,141	0,091		0,010	0,004	0,062	0,009	0,042		0,056			0,136					20,891	0,763							
141		0,366	0,293						12,980	0,399	0,198								0,566		0,187	0,064		0,026												15,145	0,857								
142		1,375	0,058		0,277			0,029	1,213	46,897	0,625								1,170		0,156	0,059		0,017	0,475	0,030	0,103	0,028		0,148	0,012		0,152					53,204	0,881						
211		10,889	13,759	4,023			0,036	0,015		10,539	4594,710	2,360	0,049	13,046	16,776	0,080	117,047	6,805	208,774	90,644	6,755	0,121	0,061	1,304	0,007		0,012	13,684										5111,519	0,899						
212		4,522	0,036							12,007	415,669	0,066				0,095		5,048		3,596															441,049	0,942									
213										0,413	0,062	31,515					0,096		0,290			0,617													33,098	0,952									
221		0,384	0,168						10,005	0,037	118,644	1,835	1,332	0,772	1,126	33,731	6,799		0,435			0,384		0,007	0,273									175,934	0,674										
222		1,223	1,199						8,267	1,241	0,893	119,788	1,652	0,229	5,869	19,744	13,055		0,955	0,015		1,199			1,409									176,538	0,679										
223		0,045							3,300		3,680	184,778		5,042	5,850	8,615		1,110	0,045	0,045			1,027	2,813										216,351	0,854										
231		19,393	3,614	0,082			0,334	0,023	0,153	4,035	85,863	1,576	1,701	0,161	0,330	1371,727		101,762	109,313		9,589	9,773	5,106	29,469	1,261	1,547	20,907			0,066	0,019	5,856	0,012		0,593	1784,264	0,769								
241		1,376	0,096							0,888	0,022			0,028	1,973	7,838	6,185	4,590	1,802					0,096		0,216									25,111	0,312									
242		8,472	6,546		0,250	0,016		0,030	0,542	82,342	6,022	1,872	14,756	9,087	9,681	69,095	4,918	763,987	71,319	3,011	4,376		0,250		0,214	0,007	3,500									1060,485	0,720								
243		5,242						0,003		53,843				1,594	1,485	56,804	6,296	45,721	901,866	1,485	14,975	6,017	6,431	3,385	0,503	5,905	26,540			6,277		2,391	0,503		1,784			1149,049	0,785						
244									1,311								2,980	127,138							2,588	3,036										137,053	0,928								
311		0,038	1,275						7,160	0,013			0,891		4,205		0,023	40,247	11,584	2178,595	2,678	105,284	2,069	0,201	13,977	126,619												0,013	2494,893	0,873					
312		0,800	0,400	0,076		6,632			1,063	11,916					12,335			17,981		2,923	3062,486	202,111		0,034	9,662	257,417			2,812			23,662			0,030	4,956	361,294	0,847							
313		2,084				1,428	0,542	2,064																																					

Table 15: Confusion matrix of CLC 2012 - Plausibility analysis

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	335	411	412	421	422	423	511	512	521	522	523 Total	User Acc
111	23,310	4,042	0,503				0,509	0,074															0,509		0,509									29,457	0,791										
112	4,515	664,721	3,157	2,242			2,348	2,085	2,015	0,117					0,006	2,238		10,013	2,208				3,537	0,533	0,070			1,069									700,876	0,948							
121		1,795	124,767	0,160	0,493		0,012	0,201	1,640	0,014	0,087	0,409				0,729		0,417	0,157			0,024	0,691	0,065	0,016		0,930										133,084	0,938							
122		0,068	0,364	16,724			0,058		0,150			0,091					0,202		0,225	0,024		0,216		0,036			0,046									18,204	0,919								
123	0,021	0,021	0,036	0,050	3,981				0,029																										4,172	0,954									
124	0,020	0,082		14,683						0,082								0,057																	14,973	0,981									
131	0,244	0,204			34,743	0,054	0,625	0,103	0,114	0,082					0,706		0,454		0,054	0,104	0,055	0,109		0,968		0,107		0,034	0,016						40,046	0,868									
132	0,024	0,099	0,019		0,215	4,695	0,084		0,037	0,090					0,030										0,149									5,461	0,860										
133	0,937	1,039	0,202	0,008	0,315	0,098	16,541		0,585	0,714					0,107		0,063	0,034		0,007	0,004	0,039	0,009	0,017	0,013	0,054									20,857	0,793									
141	0,288	0,307					13,429	0,331	0,030								0,527		0,164	0,012	0,026				0,014									15,145	0,887										
142	0,764	0,027		0,262			0,005	0,288	49,321	0,625							0,923		0,060	0,059		0,006	0,319	0,030	0,170		0,139		0,067							53,094	0,929								
211	3,537	6,755	0,004		0,009	0,007	3,537	6,763	4763,782	0,195	0,049	1,751	1,065	0,056	86,277	6,755	135,673	71,162	6,755	0,102	8,415			0,036	8,801									511,490	0,932										
212	4,522	0,012							0,381	431,856	0,019		0,223		0,028		3,824	0,183																441,049	0,979										
213									0,092	0,031	32,580						0,290																	33,098	0,984										
221	0,384						4,609	0,037	134,698	1,598	1,339	2,274	1,126	25,090	4,016		0,201			0,384		0,177										175,934	0,766												
222	1,223						4,239		0,137	130,603	0,035	0,820	6,752	17,710	11,819		0,836	0,015				2,341										176,529	0,740												
223	0,045								2,573		1,163	194,288		2,662	6,522	4,992		1,110	0,045	0,045	0,092		0,046	2,767									216,351	0,898											
231	9,086	0,631	0,075		0,018	2,195	3,959	81,523	1,576	0,154	0,161	0,289	1508,542		53,647	82,110		6,948	0,037	0,696	16,144	0,712	1,547	7,475		0,014	5,811								178,922	0,846									
241	1,376	0,096							0,647	0,022		0,028	0,432	10,338	8,516	1,899	1,541							0,216									25,111	0,412											
242	4,990	4,175		0,250	0,016	0,030	0,542	70,896	6,022	0,042	6,478	5,336	7,814	43,924	3,089	846,122	50,174	3,011	0,193		5,137		0,193	1,841									1060,474	0,798											
243	5,242	0,028					0,003	0,503	35,067	0,797		0,797	3,269	42,551	6,296	38,819	968,016	1,485	8,363	6,017	5,387	3,385		1,047	17,647									1147,612	0,844										
244									1,311							2,980	127,495							2,588	2,679									137,053	0,930										
311		1,237					1,683		2,958			4,102		0,023		17,926	6,237	2290,790	0,901	78,600		0,134	14,868	74,903									0,013	2494,375	0,918										
312	0,800		0,025				11,916					0,095		14,869		0,556	3250,600	155,145				4,831	152,658									3603,329	0,902												
313	0,434				0,434	0,847					0,286		2,324		7,229	13,673	1183,594	1,027	0,063		45,073										1254,987	0,943													
321	4,122				0,084	4,600			4,504	29,549		0,309	15,472	12,903	3,682	0,111	1,143	766,111	14,753	22,333	51,637	2,477	4,902	10,250		2,026								951,019	0,806										
322	4,024								1,260			1,863			1,856		16,366	658,129	7,412	29,311	0,203		1,462		0,028			</																	

Annex 2. Producer and user accuracy of CLC2012 per country or group of countries

Table 16: Producer, user and overall accuracy per country (from zone 1 to zone 6) – BLIND and PLAUSIBILITY analysis

CLASSES	Z1				Z2				Z3				Z4				Z5				Z6									
	Turkey				France				Spain				Sweden				Germany				Finland									
	Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis							
	Producer	User	Producer	User	Producer	User																								
111	0,656	1,000	0,665	1,000	0,700	1,000	0,700	1,000	0,800	0,989	0,800	0,995	0,800	1,000	0,800	1,000	0,800	1,000	0,900	1,000										
112	0,980	0,765	0,994	0,771	0,999	0,989	0,999	0,992	0,950	0,760	0,948	0,758	0,997	0,998	0,998	0,998	0,940	0,915	0,960	0,987	0,790	0,963	0,948	0,973						
121	0,893	0,919	0,900	0,933	0,992	0,982	0,992	0,985	0,952	0,633	0,952	0,677	0,870	0,984	0,875	0,984	0,776	0,988	0,875	0,990	0,898	0,647	0,893	0,779						
122	0,948	1,000	0,966	1,000	0,915	1,000	0,915	1,000	0,934	0,979	0,934	1,000	1,000	0,982	1,000	0,990	0,900	0,975	0,900	0,975	1,000	1,000	1,000	1,000	1,000	1,000				
123	1,000	0,209	1,000	0,209	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,800	1,000	0,800	1,000	0,988	0,988	0,988	0,988						
124	1,000	1,000	1,000	1,000	1,000	0,890	1,000	0,890	0,800	1,000	0,800	1,000	1,000	0,713	1,000	0,713	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000				
131	0,862	0,546	0,881	1,000	0,740	0,994	0,740	0,994	0,987	1,000	0,987	1,000	0,923	0,947	0,923	0,947	0,919	0,947	0,963	0,955	0,855	0,835	0,861	0,905						
132	0,513	1,000	0,513	1,000	0,600	1,000	0,800	0,863	0,934	0,940	0,934	0,940	0,900	0,658	0,900	0,658	0,900	0,954	0,900	0,954	0,475	1,000	0,766	1,000						
133	0,807	0,624	0,857	0,908	0,696	0,806	0,758	0,830	0,820	0,802	0,767	0,786	0,976	0,969	0,976	0,090	0,738	0,159	0,766	0,162	0,860	0,163	0,916	0,884						
141	0,802	1,000	0,802	1,000	1,000	0,504	1,000	1,000	0,752	1,000	0,752	1,000	0,987	1,000	0,987	1,000	0,850	0,553	0,850	0,553	0,611	0,866	0,722	1,000						
142	0,809	1,000	0,809	1,000	0,806	0,996	0,855	0,989	1,000	0,773	1,000	0,773	1,000	1,000	1,000	1,000	0,852	0,975	0,951	0,978	0,908	0,977	0,952	0,977						
211	0,841	0,882	0,873	0,924	0,920	0,966	0,920	0,976	0,960	0,969	0,980	0,969	0,700	0,991	0,720	0,991	0,916	0,948	0,950	0,953	0,917	0,706	0,979	0,750						
212	0,930	0,971	0,984	0,973					0,974	0,987	0,974	0,999																		
213	0,941	0,993	0,946	0,993	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000																		
221	0,414	1,000	0,486	1,000	0,900	0,894	0,920	0,896	0,679	0,996	0,754	0,997						0,850	0,970	0,850	0,970									
222	0,707	0,863	0,739	0,874	0,501	0,982	0,501	0,992	0,708	0,936	0,781	0,989	0,600	1,000	0,600	1,000	0,500	0,959	0,550	1,000										
223	0,854	0,580	0,854	0,692	0,400	1,000	0,400	1,000	0,973	0,932	0,998	0,972																		
231	0,762	0,584	0,843	0,667	0,860	0,849	0,880	0,890	0,743	0,510	0,743	0,552	0,501	0,181	0,601	0,251	0,636	0,858	0,717	0,986	0,220	0,058	0,220	0,059						
241									0,200	1,000	0,700	0,074	0,900	0,103																
242	0,666	0,718	0,682	0,797	0,760	0,775	0,820	0,791	0,848	0,699	0,873	0,816	0,300	0,129	0,350	0,149	0,800	0,023	0,850	0,038										
243	0,769	0,716	0,823	0,766	0,940	0,480	0,960	0,530	0,872	0,583	0,872	0,661	0,867	0,686	0,867	0,642	0,550	0,063	0,750	0,107	0,646	0,848	0,708	0,901						
244										0,925	0,877	0,925	0,889																	
311	0,822	0,918	0,884	0,943	0,856	0,986	0,899	0,992	0,950	0,972	0,975	0,989	0,860	1,000	0,900	1,000	0,780	0,938	0,840	0,956	0,635	0,768	0,727	0,999						
312	0,905	0,910	0,961	0,937	0,880	0,947	0,940	0,984	0,900	0,953	0,925	0,933	0,874	0,976	0,935	0,991	0,840	0,987	0,940	1,000	0,686	0,873	0,702	0,970						
313	0,744	0,774	0,843	0,859	0,914	0,624	0,973	0,652	0,824	0,900	0,950	0,963	0,911	0,896	0,979	0,902	0,840	0,596	0,979	0,690	0,815	0,565	0,9							

Table 17: Producer, user and overall accuracy per country (from zone 07 to zone 12) - BLIND and PLAUSIBILITY analysis

CLASSES	Z7				Z8				Z9				Z10				Z11				Z12					
	Norway				Poland				Italy Sardinia				United Kingdom				Roumania				Greece					
	Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis			
	Producer	User	Producer	User																						
111	0,933	1,000	0,933	1,000	0,900	1,000	0,900	1,000	0,898	0,753	0,900	0,754	0,600	1,000	0,650	1,000			0,500	1,000	0,933	1,000	0,933	1,000		
112	0,996	0,994	0,997	0,996	0,849	0,990	0,900	0,996	0,917	0,844	0,937	0,894	0,933	0,803	0,966	0,812	0,560	0,861	0,900	0,995	0,960	0,953	1,000	0,969		
121	0,882	0,964	0,887	0,964	0,900	0,992	0,951	0,987	0,949	0,493	0,997	0,566	0,843	0,930	0,894	0,946	0,934	0,660	0,984	0,995	0,883	0,680	0,891	0,655		
122	0,643	1,000	0,597	1,000	0,838	0,893	0,984	0,953	0,807	1,000	0,845	0,990	0,800	0,970	0,800	0,970	0,602	0,695	0,763	0,959	0,895	0,863	0,895	0,854		
123	1,000	0,320	1,000	0,310	1,000	1,000	1,000	1,000	0,907	1,000	0,907	1,000	0,950	1,000	0,950	1,000	1,000	0,874	1,000	1,000	1,000	1,000	1,000	1,000		
124	0,933	1,000	0,933	1,000	0,852	1,000	0,934	1,000	0,950	1,000	0,950	1,000	0,950	1,000	1,000	1,000	0,900	1,000	1,000	1,000	1,000	1,000	1,000	1,000		
131	0,842	0,986	0,927	0,987	0,905	0,972	0,910	0,974	0,718	0,989	0,764	0,985	0,857	0,974	0,859	0,984	0,718	0,988	0,873	0,990	0,876	0,923	0,938	0,897		
132	0,342	1,000	0,342	1,000	0,850	1,000	0,950	1,000	0,800	0,473	0,900	1,000	0,650	1,000	0,750	0,943	1,000	0,404	1,000	0,968	1,000	1,000	1,000	1,000		
133	0,725	0,410	0,725	0,380	0,679	0,735	0,774	0,989	0,936	0,976	0,941	0,978	0,588	0,225	0,614	0,387	0,387	0,246	0,721	0,064	0,798	0,831	0,760	0,953		
141	0,950	1,000	0,950	1,000	0,850	0,622	0,900	0,840	0,850	1,000	0,900	1,000	0,795	0,461	0,844	0,960	0,933	0,947	0,933	1,000	0,800	1,000	0,800	1,000		
142	0,901	0,998	0,938	1,000	0,850	0,973	0,950	0,991	1,000	0,158	1,000	0,158	0,898	0,996	0,948	0,828	0,633	0,128	0,962	1,000	0,856	1,000	0,856	1,000		
211	0,899	0,994	0,949	0,999	1,000	0,972	1,000	0,983	0,738	0,902	0,818	0,931	0,958	0,960	0,958	0,961	0,880	0,944	0,960	0,978	0,971	0,828	0,969			
212									0,800	0,991	1,000	1,000								0,333	1,000	0,998	1,000	0,999	1,000	
213									0,943	0,866	0,996	1,000							1,000	1,000	1,000	0,619	0,873	0,954	0,937	0,987
221									0,451	0,857	0,700	1,000							0,263	0,311	0,368	0,997	0,300	1,000	0,650	1,000
222					0,896	1,000	0,945	0,672	0,751	0,766	0,801	0,952	0,600	1,000	0,733	1,000	0,399	0,361	0,548	0,912	0,800	0,679	0,840	0,690		
223									0,750	0,912	0,850	0,887									0,733	0,972	0,767	0,946		
231	0,800	1,000	0,900	0,995	0,699	0,931	0,749	0,998	0,700	0,243	0,800	0,376	0,897	0,949	0,958	0,959	0,660	0,793	0,900	0,899	0,679	0,226	0,798	0,429		
241									0,350	0,257	0,450	0,362									0,400	0,210	0,400	0,210		
242	0,800	0,809	0,900	1,000	0,800	0,542	0,800	0,577	0,540	0,496	0,700	0,706	0,550	0,188	0,550	0,976	0,700	0,394	0,950	0,552	0,633	0,650	0,700	0,670		
243	0,950	0,935	0,950	0,950	0,683	0,579	0,842	0,684	0,600	0,613	0,700	0,736	0,673	0,366	0,755	0,561	0,571	0,370	0,694	0,822	0,886	0,677	0,885	0,759		
244									0,900	0,443	0,950	0,471														
311	0,826	0,994	0,870	1,000	0,799	0,998	0,800	0,999	0,920	0,889	0,960	0,958	0,750	0,867	0,800	0,933	0,939	0,995	0,979	0,980	0,884	0,869	0,940	0,944		
312	0,918	0,986	0,959	0,993	0,998	0,965	0,998	0,981	0,936	1,000	0,956	1,000	0,871	0,785	0,876	0,945	0,667	0,994	0,881	1,000	0,866	0,918	1,000	1,000		
313	0,940	0,585	1,000	0,594	0,994	0,956	0,995	0,956	0,798	0,867	0,951	0,919	0,720	0,844	0,820	0,829	0,939	0,822	0,980	0,967	0,867	0,643	0,934	0,875		
321					0,500	0,953	0,650	1,000	0,750	0,752	0,900	0,912	0,789	0,815	0,895	0,927			0,500	0,923	0,569	0,771	0,682	0,852		
322	0,960	0,948	1,000	0,966	1,000	0,524	1,000	0,660	0,800	0,578	0,900	0,882	0,850													

Table 18: Producer, user and overall accuracy per country (from zone 13 to zone 18) - BLIND and PLAUSIBILITY analysis

CLASSES	Z13				Z14				Z15				Z16				Z17				Z18				
	Bulgaria				Island				Hungaria				Portugal				Swiss Austria				Belgium-Danmark- Luxembourg-Netherlands				
	Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		
	Producer	User	Producer	User	Producer	User	Producer	User																	
111	1,000	1,000	1,000	1,000					1,000	1,000	1,000	1,000	0,650	0,384	0,900	0,476	0,850	1,000	0,850	1,000	0,950	0,177	0,950	0,177	
112	0,750	0,957	1,000	0,985	1,000	0,944	1,000	0,944	0,899	0,991	0,950	0,991	0,901	0,666	0,901	0,672	0,900	0,901	0,900	0,989	0,800	0,777	0,802	0,855	
121	0,795	0,344	0,949	0,980	0,816	1,000	0,878	1,000	0,932	0,360	0,992	0,415	0,984	0,751	0,992	0,762	0,946	0,909	0,946	0,982	0,843	0,924	0,938	0,987	
122	0,769	0,186	0,808	0,903	1,000	1,000	1,000	1,000	0,844	0,106	0,872	0,828	0,955	0,968	1,000	0,969	0,890	0,970	0,918	1,000	0,996	0,283	0,996	0,317	
123	1,000	0,628	1,000	0,628	1,000	0,619	1,000	0,619	1,000	0,462	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,952	0,985	0,952	0,985	
124	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,800	1,000	1,000	1,000	0,906	1,000	1,000	1,000	0,901	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
131	0,566	0,723	0,571	0,995	1,000	1,000	1,000	1,000	0,758	0,985	0,875	1,000	0,818	1,000	0,818	1,000	0,727	0,152	0,856	0,996	0,825	0,986	0,825	0,986	
132	1,000	1,000	1,000	1,000					0,737	0,948	0,859	0,991	0,823	1,000	0,911	1,000			1,000	1,000	0,733	0,252	0,733	0,896	
133	0,573	0,662	0,573	1,000	0,323	1,000	0,488	1,000	0,289	0,495	0,572	0,724	0,811	0,887	0,847	0,891	0,200	0,326	0,400	1,000	0,821	0,676	0,874	0,560	
141	0,900	0,953	0,900	1,000	0,800	1,000	1,000	1,000	1,000	0,941	1,000	0,941	0,600	1,000	0,700	1,000	0,750	1,000	0,850	1,000	0,865	0,787	0,910	0,251	
142	0,842	0,300	0,842	0,444	0,980	1,000	0,980	1,000	0,902	1,000	0,902	1,000	0,941	0,935	0,941	0,961	0,637	0,853	0,727	0,926	0,906	0,649	0,956	0,663	
211	0,919	0,965	0,979	0,992	1,000	0,116	1,000	0,118	0,934	0,954	0,955	0,973	0,757	0,737	0,878	0,820	0,660	0,949	0,700	0,972	0,937	0,927	0,937	0,958	
212													0,784	0,768	0,822	0,984									
213	1,000	1,000	1,000	1,000					0,500	0,778	1,000	0,875	0,953	1,000	1,000	1,000									
221	0,745	0,695	0,799	0,998					0,899	0,452	0,948	0,879	0,718	0,835	0,857	0,858	0,900	0,638	1,000	0,665	1,000	0,611	1,000	1,000	
222	0,702	0,281	0,852	0,735					0,804	0,789	0,909	0,878	0,748	0,742	0,752	0,717	0,600	1,000	0,700	1,000	0,654	1,000	0,750	1,000	
223													0,781	0,996	0,827	0,976									
231	0,757	0,701	0,917	0,691	0,897	0,991	0,934	0,992	0,784	0,817	0,840	0,919	0,659	0,494	0,903	0,689	0,473	0,584	0,842	0,740	0,850	0,804	0,850	0,846	
241													0,250	0,773	0,350	0,878									
242	0,199	0,459	0,449	0,959	0,789	1,000	0,986	1,000	0,738	0,847	0,802	0,673	0,650	0,610	0,750	0,600	0,800	0,338	0,900	0,525	0,720	0,823	0,800	0,919	
243	0,842	0,704	0,947	0,863					0,814	0,760	0,904	0,508	0,801	0,688	0,801	0,854	0,500	0,364	0,750	0,446	0,650	0,813	0,850	0,771	
244													0,950	0,656	0,950	0,781									
311	0,979	0,991	1,000	0,992	0,611	1,000	0,778	1,000	0,793	0,929	0,878	0,968	0,734	0,959	0,816	0,973	0,842	0,879	0,899	0,991	0,991	0,809	0,997	0,971	
312	0,860	0,998	0,980	0,998	0,500	1,000	0,700	1,000	0,808	0,981	0,953	0,914	0,959	0,853	0,959	0,840	0,734	0,949	0,857	0,974	0,796	0,933	0,819	0,850	
313	0,898	0,926	0,939	1,000	0,667	0,845	0,667	0,891	0,768	0,730	0,833	0,789	0,827	0,981	0,941	0,995	0,920	0,797	1,000	0,908	0,821	0,880	0,894	0,897	
321	0,750	0,925	0,800	0,975	0,890	0,969	0,951	0,972	0,650	0,975	0,700	0,999	0,598	0,281	0,801	0,577	0,840	0,835	0,997	0,920	0,635	0,843	0,660	0,880	
322	0,800	0,475	0,929	0,595	0,850	0,962	0,950	0,991					0,802	0,454	1,000	0,779	0,842	0,823	0,842	1,000					

Table 19: Producer, user and overall accuracy per country (from zone 19 to zone 23 - BLIND and PLAUSIBILITY analysis)

CLASSES	Z19				Z20				Z21				Z22				Z23					
	Albania - Serbia - Macedonia - Montenegro		Bosnia Herzegovina - Croatia -Slovenia		Czech Republic - Slovakia				Estonia - Latvia- Lithuania				French overseas departments									
	Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis		Blind analysis		Plausibility analysis			
Producers	User	Producers	User	Producers	User	Producers	User	Producers	User	Producers	User	Producers	User	Producers	User	Producers	User	Producers	User	Producers	User	
111	1,000	1,000	1,000	1,000	0,200	1,000	0,600	1,000	1,000	0,928	1,000	1,000	0,500	1,000	0,500	1,000	1,000	1,000	1,000	1,000	1,000	
112	1,000	0,999	1,000	1,000	0,949	0,959	0,949	0,974	0,993	0,871	0,996	0,997	0,995	0,982	0,998	0,982	0,993	0,846	0,993	0,878		
121	0,924	0,982	0,969	0,992	0,819	0,953	0,909	0,983	0,981	0,516	0,989	0,991	0,903	0,976	0,903	0,984	0,896	1,000	0,896	1,000		
122	0,727	0,737	1,000	0,928	0,700	1,000	0,744	1,000	0,893	0,919	0,966	0,982	0,955	1,000	0,955	1,000	0,916	1,000	0,916	1,000		
123	1,000	0,777	1,000	0,777	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000		
124	1,000	0,882	1,000	0,937	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000		
131	0,874	0,882	0,903	0,960	0,839	0,963	0,943	0,918	0,813	0,921	0,862	0,988	0,892	0,950	0,929	0,960	1,000	1,000	1,000	1,000		
132	0,941	0,931	0,941	0,979	0,667	1,000	0,667	1,000	0,593	0,874	0,818	0,980	0,768	1,000	0,904	1,000	1,000	1,000	1,000	1,000		
133	0,775	0,814	0,915	0,853	0,769	0,832	0,873	0,783	0,339	0,816	0,627	0,961	0,568	0,640	1,000	1,000	0,249	1,000	0,331			
141	0,910	1,000	0,910	1,000	1,000	1,000	1,000	1,000	0,700	1,000	0,900	1,000	0,950	1,000	1,000	1,000	1,000	1,000	1,000	1,000		
142	0,818	0,924	0,939	1,000	0,700	0,967	0,700	1,000	0,924	0,246	0,930	0,973	0,828	1,000	0,852	0,976	1,000	1,000	1,000	1,000		
211	0,734	0,981	0,957	0,997	0,898	0,651	0,998	0,676	0,938	0,956	0,999	0,976	0,988	0,867	0,990	0,870	0,950	1,000	0,950	1,000		
212	0,894	0,965	0,894	0,965	1,000	1,000	1,000	1,000														
213	1,000	1,000	1,000	1,000													1,000	1,000	1,000	1,000		
221	0,734	0,226	0,838	0,990	0,502	0,393	0,509	1,000	0,830	0,930	0,830	0,930										
222	0,542	0,190	0,787	1,000	0,595	0,981	0,607	0,981	0,607	0,952	0,646	0,975	0,700	1,000	0,800	1,000	0,700	0,987	0,700	0,987		
223	0,485	1,000	0,582	1,000	0,255	1,000	0,454	0,965														
231	0,566	0,520	0,733	0,745	0,749	0,769	0,899	0,860	0,767	0,931	0,835	0,943	0,496	0,851	0,598	0,881	0,691	0,994	0,789	0,995		
241							1,000	1,000														
242	0,825	0,707	0,975	0,900	0,700	0,926	0,850	0,987	1,000	0,598	1,000	0,600	0,850	0,864	0,850	0,999	0,900	0,725	0,900	0,725		
243	0,868	0,786	0,918	0,925	0,800	0,720	0,840	0,978	0,947	0,947	0,947	0,948	0,901	0,873	0,950	0,879	0,749	0,771	0,751	0,771		
244																						
311	0,923	0,920	0,982	0,984	0,860	0,901	0,940	0,954	0,931	0,985	0,955	0,988	0,846	0,865	0,848	0,927	1,000	0,973	1,000	0,984		
312	0,832	0,898	0,941	0,952	0,841	0,655	0,940	0,898	0,601	0,986	0,827	0,995	0,996	0,961	0,998	0,966	1,000	1,000	1,000	1,000		
313	0,818	0,758	0,919	0,817	0,700	0,737	0,901	0,956	0,851	0,991	0,930	0,871	0,896	0,956	0,949	0,971		1,000	1,000			
321	0,755	0,814	0,896	0,941	0,600	0,697	0,750	0,880	0,833	0,991	0,833	0,991	0,559	1,000	0,712	1,000	0,996	1,000	0,996	1,000		
322	0,667	0,237	0,800	1,000	0,550	0,197	0,850	1,000	0,943	1,000	0,917	0,650	0,336	0,650	0,895	0,880	0,699	0,990	0,878			
323	0,677	0,786	0,805	0,813	0,900	0,290	0,950	0,325									0,600	0,994	0,900	0,996		
324	0,768	0,744	0,883	0,860	0,665	0,762	0,880	0,875	0,887	0,256	0,890	0,506	0,842	0,779	0,906	0,856	0,656	0,729	0,753	0,843		
331	0,935	0,594	0,935	0,787		1,000	1,000						0,933	0,775	0,933	0,874	1,000	0,202	1,000	0,202		
332	0,402	0,915	0,721	0,951	0,600	0,723	0,900	1,000	0,500	1,000	0,500	1,000					1,000	1,000	1,000	1,000		
333	0,756	0,846	0,933	0,886	0,387	0,888	0,628	0,968	0,857	0,560	0,857											

Annex 3. Confusion matrix CLC2012 per Country or group of countries

Zone 1: part of Turkey Confusion matrix CLC2012 – Blind and plausibility analysis

Table 20: Confusion matrix CLC 2012 for zone 1 (Turkey) – BLIND ANALYSIS - In column the validation and line the production

Overall accuracy = 78.6%

Table 21: Confusion matrix CLC 2012 for zone 1 (Turkey) – PLausibility analysis - In column the validation and line the production

CLC Clas	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	335	411	421	422	511	512	521	522	523	Total	User Acc
111	1,83	0,92																																2,757	0,665									
112	17,30																																17,400	0,994										
121	0,06	4,04							0,03																							4,489	0,900											
122	0,03	0,80							0,05																							0,825	0,966											
123																																	0,048	1,000										
124																																	0,630	1,000										
131																																	3,000	0,881										
132																																	0,077	0,513										
133	0,04	0,22																															2,005	0,857										
141	0,04																																0,217	0,802										
142	0,15																																0,834	0,809										
211																																	245,100	0,873										
212	2,26																																149,734	0,984										
213																																	3,325	0,946										
221	0,19																																4,483	0,486										
222																																	25,908	0,739										
223																																	9,871	0,854										
231									0,02			1,62	0,79																				43,551	0,843										
241																																	0,005	0,000										
242	1,51								0,02			6,22	3,01	0,02																				92,415	0,682									
243																																	156,050	0,823										
311																																	79,350	0,884										
312																																	113,797	0,961										
313																																	54,301	0,843										
321																																	196,791	0,883										
322																																	0,004	0,000										
323																																	17,867	0,750										
324																																	170,718	0,904										
331																																	1,981	0,927										
332																																	53,521	0,716										
333																																	204,219	0,729										
334																																	0,041	0,500										
335																																	0,014	1,000										
411																																	4,670	0,965										
421																																	3,894	0,101										
422																																	0,283	0,800										
511																																	2,321	0,803										
512																																	28,319	0,999										
521																																	0,156	1,000										
522																																	0,001	1,000										
523																																	1,026	1,026										
Total	1,83	22,43	4,33	0,80	0,23	0,63	2,64	0,04	1,89	0,17	0,67	231,46	151,44	3,16	2,18	21,90	12,18	55,09	3,69	79,07	167,69	3,75	74,39	116,65	53,29	238,19	2,25	15,82	184,60	2,05	41,11	162,40	0,04	0,01	4,91	0,39	0,23	1,86	29,36	0,16	0,001	1,026	1444,466	
Prod Acc	1,000	0,771	0,933	1,000	0,209	1,000	1,000	1,000	0,908	1,000	1,000	0,924	0,973	0,993	1,000	0,874	0,692	0,667	0,000	0,797	0,766	0,000	0,943	0,937	0,859	0,729	0,000	0,847	0,836	0,896	0,932	0,917	0,494	1,000	0,917	1,000	1,000	0,964	1,000	1,000	1,000	Global Acc	0,852	

Overall accuracy = 85.2%

Zone 2: France confusion matrix CLC2012 - Blind and plausibility analysis

Table 22: Confusion matrix CLC 2012 for zone2 (France) – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy = 86.3%

Table 23: Confusion matrix CLC 2012 for zone2 (France) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	311	312	313	321	322	323	324	331	332	333	334	335	411	412	421	422	423	511	512	521	522	523	Total	User Acc
111	0,79	0,34																																	1,127	0,700									
112		58,92																																	59,004	0,999									
121		0,02	10,95																			0,03													11,033	0,992									
122				1,42																		0,04													1,552	0,915									
123					0,28																		1,21													0,276	1,000								
124						1,21																		1,92													1,211	1,000							
131							0,22																		0,15													2,592	0,740						
132								0,04																		1,16													0,191	0,800					
133									0,07																		0,13													1,534	0,758				
141										0,64																											0,637	1,000							
142											0,15																										3,092	0,855							
211												0,01																									391,592	0,920							
213													360,19																							0,940	1,000								
221														25,57																						27,793	0,920								
222														0,45																							4,528	0,501							
223															0,11																						0,273	0,400							
231															4,37																						217,928	0,880							
241															0,02																						0,086	0,200							
242															2,96																						148,153	0,820							
243															0,78																						38,975	0,960							
244																																						0,009	0,000						
311																																						229,414	0,899						
312																																						89,673	0,940						
313																																						51,349	0,973						
321																																						31,328	0,560						
322																																						10,079	0,600						
323																																						14,662	1,000						
324																																						50,854	0,930						
331																																						0,802	1,000						
332																																						10,628	0,800						
333																																						10,936	0,500						
334																																						0,003	1,000						
335																																						0,650	1,000						
411																																						2,079	0,997						
412																																						0,118	1,000						
421																																						1,699	0,900						
422																																						0,322	1,000						
423																																						0,210	1,000						
511																																						3,003	0,950						
512																																						5,575	0,949						
521																																						1,653	1,000						
522																																						0,314	1,000						
523																																						0,123	1,000						

Overall accuracy = 89.3%

Zone 3: Spain - confusion matrix CLC2012 - Blind and plausibility analysis

Table 24: Confusion matrix CLC 2012 for zone2 (SPAIN) – BLIND ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	335	411	412	421	422	423	511	512	521	522	523 Total	User Acc
111	5,571	0,348																																6,964	0,800										
112	0,027	13,658																																14,382	0,950										
121		7,769																																8,164	0,952										
122		1,571																																1,682	0,934										
123		0,128																																0,128	1,000										
124	0,056		0,450																																0,562	0,800									
131		2,491	0,034																																2,525	0,987									
132		0,529	0,037																																0,566	0,934									
133	0,034	0,244	0,054	0,033																																3,958	0,820								
141	0,083																																				0,540	0,752							
142																																					1,546	1,000							
211			#####																																		287,932	0,960							
212			68,830																																		70,648	0,974							
213			3,907																																		3,907	1,000							
221		0,032	0,026	21,471	0,026	0,770																													31,601	0,679									
222	0,820	0,820		1,640	0,820																															33,791	0,708								
223			0,136	64,271	1,628																															66,035	0,973								
231			18,639																																		25,093	0,743							
241			0,572	0,163																																0,817	0,700								
242		2,848		0,082	1,330	2,661	1,330	46,032																										54,283	0,848										
243			1,016	1,016	1,016	1,071	35,616	1,016																										40,861	0,872										
244			1,770	65,538																																70,849	0,925								
311																																					146,958	0,950							
312																																					132,497	0,900							
313																																					40,555	0,824							
321	2,820		0,045	2,820																																113,846	0,599								
322																																					56,792	0,727							
323	3,565																																				143,362	0,725							
324		1,463	0,045																																		62,904	0,784							
331																																					0,988	0,888							
332																																					8,232	0,740							
333																																					21,996	0,548							
334																																					0,998	0,931							
335																																					0,006	1,000							
411																																					1,293	1,000							
412																																					0,021	1,000							
421																																					0,957	0,900							
422																																					0,527	0,800							
423																																					0,018	1,000							
511																																					1,354	0,900							
512																																					8,022	1,000							
521																																					0,237	1,000							
522																																					0,243	1,000							
523																																					0,322	0,357							
Total	5,632	17,973	12,264	1,604	0,128	0,450	2,491	0,562	4,049	0,406	1,998 #####	69,721	3,907	21,553	25,561	68,957	36,527	7,777	65,811	61,055	74,769	143,676	125,091	37,101	92,942	41,300	124,444	101,791	0,877	6,094	13,467	0,977	0,006	1,346	0,021	0,914	0,422	0,018	1,219	8,178	0,237	0,257	0,322	1250,070	
Prod Acc	0,989	0,760	0,633	0,979	1,000	1,000	1,000	0,940	0,802	1,000	0,773	0,969	0,987	1,000	0,996	0,936	0,932	0,510	0,074	0,699	0,583	0,877	0,972	0,953	0,900	0,734	0,999	0,835	0,484	1,000	1,000	0,894	0,951	1,000	0,961	1,000	0,942	1,000	1,000	0,981	1,000	0,947	1,000	Global Acc	0,851

Overall accuracy = 85.10%

Table 25: Confusion matrix CLC 2012 for zone2 (SPAIN) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy = 89.41%

Zone 4: Sweden confusion matrix CLC2012 - Blind and plausibility analysis

Table 26: Confusion matrix CLC 2012 for zone4 (Sweden – BLIND ANALYSIS - In column the validation and line the production

CLC Cl:	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	332	333	334	335	411	412	421	511	512	521	522	523	Total	User A
111	0,063	0,016																													0,079	0,800					
112		8,973	0,014																												8,996	0,997					
121			1,375																												1,581	0,870					
122			0,613																												0,613	1,000					
123			0,058																												0,058	1,000					
124			0,315																												0,315	1,000					
131							0,378																								0,409	0,923					
132							0,021	0,190																							0,211	0,900					
133							0,085																								0,087	0,976					
141			0,009																													0,680	0,987				
142																																1,199	1,000				
211																																63,717	0,700				
213																																0,001	0,000				
222																																0,038	0,600				
231																																5,679	0,501				
242			0,127																													2,544	0,300				
243																																11,940	0,867				
311																																42,905	0,860				
312			0,011																													571,291	0,874				
313																																52,556	0,911				
321																																4,097	0,900				
322																																58,750	0,920				
324																																106,536	0,888				
331																																0,092	0,600				
332																																8,111	0,750				
333																																14,656	0,767				
334																																0,024	0,500				
335																																0,568	0,700				
411																																1,292	0,867				
412																																60,463	1,000				
421																																0,028	0,800				
511																																2,517	0,950				
512																																77,030	0,980				
521																																0,057	1,000				
522																																0,067	0,800				
523																																0,813	1,000				

Overall accuracy = 87.9%

Table 27: Confusion matrix CLC 2012 for zone4 (Sweden – PLAUSIBILITY ANALYSIS - In column the validation and line the production)

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	332	333	334	335	411	412	421	511	512	521	522	523 Total	User Acc
111	0,063	0,016																													0,079	0,800				
112		8,977	0,014						0,003																						8,996	0,998				
121			1,384						0,099																						1,581	0,875				
122				0,613																											0,613	1,000				
123					0,058																										0,058	1,000				
124						0,315																									0,315	1,000				
131							0,378											0,032													0,409	0,923				
132							0,021	0,190																						0,211	0,900					
133									0,085										0,002											0,087	0,976					
141		0,009								0,670																					0,680	0,987				
142										1,199																					1,199	1,000				
211											45,870		8,923	5,100	3,821																63,717	0,720				
213																															0,001	0,000				
222												0,023																			0,038	0,600				
231												3,413		1,130				0,003	0,282												5,679	0,601				
242			0,127									0,635	0,889	0,762						0,127										2,544	0,350					
243												0,398	0,398	10,348						0,398										11,940	0,867					
311				0,855								0,013	38,601						1,711										42,905	0,900						
312		0,006										0,003					0,002	534,373	3,024											571,291	0,935					
313																		51,459													52,556	0,979				
321												0,205						3,892													4,097	0,950				
322																		1,175	57,575												58,750	0,980				
324													0,002	0,009	4,856	0,059		101,609												106,536	0,954					
331													0,018					0,018	0,055											0,092	0,600					
332																		0,406		7,300	0,406										8,111	0,900				
333																		0,489	13,679												14,656	0,933				
334																	0,006					0,018									0,024	0,750				
335																			0,057	0,114	0,398										0,568	0,700				
411																				1,120												1,292	0,867			
412																				60,463												60,463	1,000			
421																					0,022												0,028	0,800		
511																					2,392												2,517	0,950		
512																					1,541												77,030	0,980		
521																						0,057												0,057	1,000	
522																							0,054												0,067	0,800
523																								0,813											0,813	0,813
Total	0,063	8,993	1,407	0,619	0,058	0,442	0,399	0,288	0,943	0,670	1,199	46,271	0,023	13,592	5,990	16,111	38,616	539,373	57,063	5,961	57,575	139,704	0,055	7,845	14,199	0,018	0,398	1,122	62,003	0,022	2,392	75,661	0,057	0,054	0,813	1023,844
Prod Acc	1,000	0,998	0,984	0,990	1,000	0,713	0,947	0,658	0,090	1,000	1,000	0,991	1,000	0,251	0,149	0,642	1,000	0,991	0,902	0,653	1,000	0,727	1,000	0,930	0,963	1,000	0,998	0,975	1,000	1,000	1,000	1,000	Global Ac 0,931			

Overall accuracy = 93.1%

Zone 5: Germany confusion matrix CLC2012 - Blind and plausibility analysis

Table 28: Confusion matrix CLC 2012 for zone5 (Germany) – BLIND ANALYSIS- In column the validation and line the production

CLC Cl:	111	112	121	122	123	124	131	132	133	141	142	211	221	222	231	241	242	243	311	312	313	321	322	324	331	332	333	411	412	421	423	511	512	521	522	523	Total	User A			
111	0,307	0,038	0,038																														0,383	0,800							
112		70,681							1,502	1,502			1,502																					75,186	0,940						
121		1,023	12,599						0,020				0,059				1,023	0,010			0,502	0,502			0,502									16,238	0,776						
122			0,062	0,557																														0,619	0,900						
123				0,197													0,025			0,025														0,246	0,800						
124					1,281																													1,281	1,000						
131		0,110							2,717				0,110				0,013				0,007												2,957	0,919							
132									0,400																									0,444	0,900						
133		0,049							0,037	0,019	0,295																							0,401	0,738						
141										1,858	0,109						0,109		0,109															2,186	0,850						
142		0,247									4,260	0,247					381,277		7,304	27,690															5,002	0,852					
211																	3,194																	416,354	0,916						
221																	0,460	2,300	0,230	1,150	0,230													3,757	0,850						
222																																		4,599	0,500						
231		3,919		0,014					0,028				13,081				125,933		35,313	15,674	3,919	0,013	0,014													198,005	0,636				
242		0,098											0,098	0,098				1,574	0,098																1,967	0,800					
243													0,135				0,135		0,539	1,481	0,269		0,135											2,693	0,550						
311													4,223				2,112			82,672		16,907													106,043	0,780					
312													7,191				3,596		151,501	7,250															3,596	180,414	0,840				
313		0,883							0,883				0,883				0,883	0,892	0,910	37,269															44,385	0,840					
321													1,844				0,922			1,620		0,230													4,616	0,351					
322													0,147				0,147	1,767	0,736	0,147														2,945	0,600						
324		0,227							0,237				0,069				0,227	0,352	0,508	0,513	0,014	7,199															9,574	0,752			
331									0,069	0,010																										0,363	0,477				
332									0,026	0,007																										0,336	0,700				
333																																						0,270	0,585		
411																																						1,132	0,900		
412																	0,013																				2,284	0,895			
421																	0,064																				0,639	0,900			
423																	0,032																				0,320	0,700			
511																																						2,235	1,000		
512																																							10,229	0,965	
521																		0,040		0,331																		0,060	0,333		
522																																							0,715	1,000	
523																																							0,081	0,121	0,667
Total	0,307	77,226	1																																						

Table 29: Confusion matrix CLC 2012 for zone5 (Germany) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	221	222	231	241	242	243	311	312	313	321	322	324	331	332	411	412	421	423	511	512	521	522	523 Total	User Acc	
111	0,345		0,038																													0,383	0,900				
112		72,183																														75,186	0,960				
121	0,502	14,203																	0,020			0,502		0,010								16,238	0,875				
122		0,062	0,557																													0,619	0,900				
123		0,025		0,197																												0,246	0,800				
124				1,281																												1,281	1,000				
131	0,110																															2,957	0,963				
132																			0,019													0,444	0,900				
133		0,019																	0,037	0,019	0,307											0,401	0,766				
141																			1,858	0,109													2,186	0,850			
142																			4,755	0,247													5,002	0,951			
211																			395,562															416,354	0,950		
221																			3,194														3,757	0,850			
222																			0,230	2,530													4,599	0,550			
231		0,014																	16,816		141,902		19,639	15,674	3,919										198,005	0,717	
242	0,098																		0,098					1,672	0,098									1,967	0,850		
243																			0,135		0,269	2,019	0,135		0,135										2,693	0,750	
311																			2,112					89,094		14,782									106,043	0,840	
312																								169,598	3,596									180,414	0,940		
313																				0,018	43,466															44,385	0,979
321																			0,922		0,691			2,542		0,230									4,616	0,551	
322																			0,147		0,147			0,147	1,767	0,589	0,147								2,945	0,600	
324	0,227																		0,227					0,066	0,513										9,574	0,862	
331																			0,069							0,035	0,225									3,363	0,618
332																			0,026							0,034	0,034	0,269								3,336	0,800
333																								0,026		0,026	0,191							2,271	0,708		
411																				0,013																1,132	0,900
412																				0,064																2,284	0,994
421																				0,032																0,639	0,900
423																																		0,320	0,900		
511																																		2,235	1,000		
512																			0,010																	10,229	0,999
521																																		0,060	0,667		
522																																		0,715	1,000		
523																																		0,081	0,121		
Total	0,345	73,120	14,346	0,572	0,197	1,281	2,979	0,419	1,891	3,359	4,864	415,232	3,292	2,530	143,909	0,230	44,037	18,885	93,148	169,682	62,993	2,749	1,802	18,197	0,372	0,269	0,191	1,249	2,271	0,708	0,363	2,463	10,219	0,040	0,715	0,081	978,659
Prod Acc	1,000	0,987	0,990	0,975	1,000	1,000	0,955	0,954	0,162	0,553	0,978	0,953	0,970	1,000	0,986	0,000</td																					

Zone 6: Finland confusion matrix CLC2012 - Blind and plausibility analysis

Table 30: Confusion matrix CLC 2012 for zone6 (Finland) – BLIND ANALYSIS- In column the validation and line the production

CLC Cl.	112	121	122	123	124	131	132	133	141	142	211	212	231	242	243	311	312	313	321	322	323	324	332	333	411	412	421	511	512	523	Total	User A
112	9,307	1,230						0,633							0,615															11,784	0,790	
121	0,247	2,296				0,009		0,002									0,002													2,555	0,898	
122			0,016																											0,016	1,000	
123		0,002		0,171																										0,173	0,988	
124				0,332																										0,332	1,000	
131	0,044	0,002					0,869		0,002								0,097													1,017	0,855	
132							0,161	0,165		0,021																			0,347	0,475		
133	0,012	0,004		0,002		0,002		0,125																					0,146	0,860		
141	0,050	0,013						0,138	0,013																				0,225	0,611		
142								0,531																					0,027	0,585	0,908	
211								52,538			0,014	1,166	2,341			0,021	1,175				0,057									57,322	0,917	
231											0,063		0,004	0,004	0,028	0,012	0,012				0,125		0,012	0,024					0,002	0,287	0,220	
243								11,111			1,010	1,010	31,312	0,002	3,030	1,012														48,488	0,646	
311													15,149				3,812				4,896								23,861	0,635		
312								10,655						353,662	117,289					12,272				21,318					515,196	0,686		
313											4,568	18,359	170,666					15,697									209,296	0,815				
321													0,322								0,281								0,603	0,533		
322													1,317	11,856			10,539												23,712	0,500		
324						0,003		0,024	2,454		2,513		30,027	7,773	2,454	78,207												128,370	0,609			
331															0,031														0,046	0,000		
332															1,414	0,566	0,870	1,980	0,566										5,396	0,367		
333															0,081				1,546										1,627	0,950		
411																			1,093	0,064									1,286	0,850		
412						0,006										0,014	0,007	4,808		8,027			59,600					1,603		74,064	0,805	
421													0,022	0,011	0,011			0,011		0,011			0,132						0,208	0,632		
511													0,115			0,115													2,180	0,895		
512																													118,074	1,000		
523								0,066								0,066				0,066									0,664	0,996	0,667	
Total	9,661	3,546	0,016	0,173	0,332	1,041	0,165	0,771	0,159	0,543	74,394	2,454	1,087	2,176	36,922	19,735	405,252	301,927	1,651	20,655	0,566	130,809	1,980	2,420	1,129	85,916	0,264	1,951	119,834	0,664	912,764	
Prod A	0,963	0,647	1,000	0,988	1,000	0,835	1,000	0,163	0,866	0,977	0,706	0,000	0,058	0,000	0,848	0,768	0,873	0,565	0,195	0,574	0,000	0,598	1,000	0,639	0,969	0,694	0,498	1,000	0,985	1,000	Glob Acc 0,743	

Overall accuracy = 74.3%

Table 31: Confusion matrix CLC 2012 for zone6 (Finland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	112	121	122	123	124	131	132	133	141	142	211	231	242	243	311	312	313	321	322	324	332	333	411	412	421	511	512	523 Total	User Acc	
112	11,170	0,615																										11,784	0,948	
121	0,247	2,282				0,009		0,018																				2,555	0,893	
122			0,016																									0,016	1,000	
123		0,002		0,171																								0,173	0,988	
124				0,332																								0,332	1,000	
131	0,044	0,002				0,876											0,094			0,002								1,017	0,861	
132						0,081	0,266																					0,347	0,766	
133	0,006	0,002	0,002		0,002		0,134																					0,146	0,916	
141	0,013	0,025					0,163	0,013												0,013								0,225	0,722	
142								0,531																				0,027	0,558	0,952
211								56,101	0,002		1,166								0,038			0,004						57,311	0,979	
231									0,063		0,004					0,028	0,008	0,012		0,133		0,012	0,027						0,287	0,220
243								8,081	1,010	1,010	34,342	0,002	3,030	1,012															48,488	0,708
311											17,319					2,167				4,342								23,828	0,727	
312								10,655				353,931	95,891				33,222				10,663								504,362	0,702
313												189,540					15,184				0,003								204,728	0,926
321													0,442								0,161								0,603	0,733
322														14,491	7,904					1,317								23,712	0,611	
324								0,011		2,469		7,656	2,784			2,454	110,479				2,460								128,314	0,861
331													0,015	0,031														0,046	0,000	
332														0,566	1,435	3,112	0,283											5,396	0,577	
333													0,081				1,546												1,627	0,950
411																	1,158	0,064											1,286	0,900
412															0,007			1,603				70,852							74,064	0,957
421													0,011	0,011							0,011	0,165						0,198	0,833	
511													0,115		0,115								1,951						2,180	0,895
512																						118,074						118,074	1,000	
523																	0,066					0,199						0,730	0,996	0,733
Total	11,479	2,927	0,016	0,173	0,332	0,968	0,266	0,151	0,163	0,543	74,847	1,075	1,010	38,096	17,332	364,757	291,517	0,470	17,623	174,421	3,112	3,319	1,195	84,047	0,364	1,951	119,768	0,730	990,235	
Prod Acc	0,973	0,779	1,000	0,988	1,000	0,905	1,000	0,884	1,000	0,977	0,750	0,059	0,000	0,901	0,999	0,970	0,650	0,941	0,822	0,633	1,000	0,466	0,969	0,843	0,452	1,000	0,986	1,000	Global Acc	0,817

Overall accuracy = 81.7%

Zone 7: Norway confusion matrix CLC2012- Blind and plausibility analysis

Table 32: Confusion matrix CLC 2012 for zone 7 (Norway) – BLIND ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	231	242	243	311	312	313	321	322	324	331	332	333	335	411	412	423	511	512	523	Total	User Acc
111	0,055	0,004																													0,059	0,933	
112		5,481	0,006						0,009			0,002						0,005														5,503	0,996
121			0,596		0,063							0,017																				0,676	0,882
122				0,046					0,012									0,013														0,071	0,643
123					0,031																											0,031	1,000
124	0,014					0,199																										0,213	0,933
131		0,011				0,264												0,013														0,314	0,842
132		0,005				0,009												0,013														0,027	0,342
133			0,004			0,031						0,009						0,004														0,043	0,725
141						0,178				0,009																					0,187	0,950	
142	0,017					0,003		1,423										0,012	0,026				0,013								1,579	0,901	
211								15,446			0,858	0,858					0,012					0,008									17,189	0,899	
231									0,599	0,037								0,037	0,037				0,037								0,748	0,800	
242									3,792	0,948																					4,741	0,800	
243									27,344																							28,783	0,950
311										99,184	0,004	2,610						18,275														120,072	0,826
312										163,301	7,124							7,424														177,849	0,918
313									0,585	0,004	13,747							0,292														14,628	0,940
322																	134,687		2,806	2,806												140,299	0,960
324		0,004				0,003	0,078				0,005	2,193	0,012					21,177														23,473	0,902
331																		0,047														0,047	1,000
332																	59,161	3,287	3,287												65,734	0,900	
333																4,848		227,852														232,700	0,979
334																0,023															0,023	0,000	
335																		8,692														8,692	1,000
411																		0,009														0,009	1,000
412																	2,543		1,271		58,482											62,296	0,939
423					0,003		0,003										0,003		0,003		0,003	0,052								0,069	0,750		
511																						1,296								1,296	1,000		
512																						39,812								39,812	1,000		
523																0,087														1,215	1,302	0,933	
Total	0,055	5,516	0,618	0,046	0,098	0,199	0,268	0,009	0,077	0,178	1,426	15,539	0,599	4,688	29,236	99,790	165,585	23,493	0,037	142,128	48,712	0,047	61,967	235,283	11,979	0,009	58,508	0,052	1,296	39,812	1,215	884,206	
Prod Acc	1,000	0,994	0,964	1,000	0,320	1,000	0,986	1,000	0,410	1,000	0,998	0,994	1,000	0,809	0,935	0,994	0,986	0,585	0,000	0,948	0,435	1,000	0,955	0,968	0,726	1,000	1,000	1,000	1,000	Glob Acc 0,932			

Overall accuracy = 93.2%

Table 33: Confusion matrix CLC 2012 for zone 7 (Norway) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	231	242	243	311	312	313	321	322	324	331	332	333	334	335	411	412	423	511	512	523 Total	User Acc	
111	0,055	0,004																												0,059	0,933			
112		5,485	0,006						0,009																					5,503	0,997			
121			0,599		0,063																									0,676	0,887			
122				0,043																										0,071	0,597			
123					0,031																									0,031	1,000			
124	0,014					0,199																								0,213	0,933			
131		0,011					0,291																							0,314	0,927			
132		0,005						0,009	0,013																					0,027	0,342			
133			0,004					0,031																						0,043	0,725			
141								0,178		0,009																				0,187	0,950			
142	0,007							0,003		1,478																				1,576	0,938			
211										16,319																					17,189	0,949		
231										0,673																					0,748	0,900		
242										4,266	0,474																			4,741	0,900			
243										27,344																					28,783	0,950		
311										104,404																					120,072	0,870		
312										170,575	7,174																			177,849	0,959			
313										14,336																					14,336	1,000		
322										140,299																					140,299	1,000		
324										1,095	0,005																				23,394	0,953		
331											22,290																					0,051	1,000	
332											0,051																					65,734	1,000	
333											65,734																					232,700	0,979	
334											227,852																					0,023	1,000	
335											0,023																					8,692	1,000	
411											8,692																					0,009	1,000	
412											0,009																					62,296	1,000	
423											62,296																					0,069	0,800	
511											0,055																					1,296	1,000	
512											1,296																					39,812	1,000	
523											39,812																					1,215	1,302	0,933
Total	0,055	5,509	0,622	0,043	0,102	0,199	0,295	0,009	0,083	0,178	1,478	16,329	0,677	4,266	28,769	104,412	171,694	24,125	0,037	145,188	36,975	0,051	65,734	227,852	0,023	8,692	0,009	62,311	0,055	1,296	39,812	1,215	915,940	
Prod Acc	1,000	0,996	0,964	1,000	0,310	1,000	0,987	1,000	0,380	1,000	1,000	0,999	0,995	1,000	0,950	1,000	0,993	0,594	0,000	0,966	0,603	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	Global Acc	0,966		

Overall accuracy = 96.6%

Zone 8: Poland- Confusion matrix CLC2012 - Blind and plausibility analysis

Table 34: Confusion matrix CLC 2012 for zone 8 (Poland) – BLIND ANALYSIS- In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	332	333	411	412	511	512	521	523	Total	User Acc
111	0,216	0,024																												0,240	0,900		
112		37,893								0,011	0,016	0,023			6,671	0,006															44,620	0,849	
121		0,185	3,535						0,185			0,021																			3,926	0,900	
122		0,038		0,852					0,122			0,006																			1,018	0,838	
123				0,078						0,011				0,083																	0,078	1,000	
124					0,541						0,011																				0,635	0,852	
131						2,078				0,075		0,023		0,011		0,011							0,022							0,075	2,296	0,905	
132		0,017				0,034	0,292																								0,343	0,850	
133	0,109	0,028	0,102						0,879			0,120			0,028				0,028												1,294	0,679	
141	0,026									0,440	0,026				0,026																0,518	0,850	
142									0,179	1,518												0,089									1,786	0,850	
211				0,020						412,992		0,065																			413,077	1,000	
222										0,265	4,533		0,259																		5,058	0,896	
231										4,197		58,309	8,330	4,165								4,197			4,165					83,363	0,699		
242										2,546		20,384	2,546																	25,475	0,800		
243										3,929		3,848	1,924	25,093		1,924															36,718	0,683	
311										0,010			4,678	37,369		2,328			2,388											46,773	0,799		
312										0,061			0,061		172,222	0,061		0,121												172,525	0,998		
313												0,099		0,049	75,240			0,296												75,684	0,994		
321										0,099					0,493	0,099	0,296													0,985	0,500		
322															0,125															0,125	1,000		
324										0,882		0,026	6,647	0,086	4,227	1,047	0,024	6,357											19,297	0,329			
331															0,141															0,141	1,000		
332														0,015		0,015	0,030													0,061	0,250		
333															0,025		0,226														0,251	0,900	
411										0,154						0,463				2,159	0,154		0,154						3,084	0,700			
412										0,018		0,018		0,018			0,018				0,185								0,258	0,714			
511																			0,228		2,053								2,282	0,900			
512										0,006		0,003	0,006									11,948								11,964	0,999		
521																						0,017								0,017	1,000		
523																						0,034								0,034	1,000		
Total	0,216	38,292	3,563	0,955	0,078	0,541	2,138	0,292	1,196	0,708	1,560	425,080	4,533	62,613	37,622	43,324	37,455	178,530	78,704	0,517	0,239	14,183	0,141	0,015	0,256	6,552	0,339	2,053	12,177	0,017	0,034	878,215	
Prod Acc	1,000	0,990	0,992	0,893	1,000	1,000	0,972	1,000	0,735	0,622	0,973	0,972	1,000	0,931	0,542	0,579	0,998	0,965	0,956	0,953	0,524	0,448	1,000	1,000	0,881	0,330	0,545	1,000	0,981	1,000	1,000	Glob Acc	0,921

Overall accuracy = 92.1%

Table 35: Confusion matrix CLC 2012 for zone 8 (Poland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	332	333	411	412	511	512	521	523 Total	User Acc
111	0,216	0,024																											0,240	0,900		
112		40,171								0,011	0,016	0,012			4,405	0,006														44,620	0,900	
121			3,736													0,190														3,926	0,951	
122				1,001					0,011						0,006														1,018	0,984		
123					0,078																								0,078	1,000		
124						0,593										0,042														0,635	0,934	
131							2,089		0,075		0,023		0,011		0,011														2,296	0,910		
132		0,017						0,326																					0,343	0,950		
133	0,088	0,028	0,049				0,049		1,002				0,021		0,028			0,028											1,294	0,774		
141	0,026									0,466						0,026														0,518	0,900	
142										1,696																				1,786	0,950	
211											412,992		0,065		0,020														413,077	1,000		
222												4,780		0,278															5,058	0,945		
231												4,185	62,474	8,330	4,165													83,363	0,749			
242												2,546		20,384	2,546													25,475	0,800			
243		0,020											1,924	30,925		1,924			1,924									36,718	0,842			
311												2,328		2,340	37,409		2,328											46,773	0,800			
312												0,061					172,222	0,121											172,525	0,998		
313													0,099				75,289												75,684	0,995		
321													0,049		0,640	0,049	0,246											0,985	0,650			
322																0,125													0,125	1,000		
324													5,088	0,036	1,245	0,999		11,928										19,297	0,618			
331																	0,141												0,141	1,000		
332																0,015		0,046											0,061	0,750		
333																	0,251												0,251	1,000		
411																	0,154		2,930										3,084	0,950		
412																	0,018		0,203										0,258	0,786		
511																		0,228		2,053										2,282	0,900	
512													0,006		0,003	0,003	0,003											11,964	0,999			
521																												0,017	1,000			
523																												0,034	1,000			
Total	0,216	40,326	3,784	1,050	0,078	0,593	2,145	0,326	1,013	0,555	1,712	420,038	7,108	62,620	35,349	45,237	37,445	175,529	78,766	0,640	0,190	17,112	0,141	0,046	0,251	7,323	0,203	2,053	12,023	0,017	0,034	898,165
Prod Acc	1,000	0,996	0,987	0,953	1,000	1,000	0,974	1,000	0,989	0,840	0,991	0,983	0,672	0,998	0,577	0,684	0,999	0,981	0,956	1,000	0,660	0,697	1,000	1,000	0,400	1,000	1,000	0,994	1,000	1,000	Global Acc	0,942

Overall accuracy = 94.2%

Zone 9: Italy confusion matrix CLC2012 - Blind and plausibility analysis

Table 36: Confusion matrix CLC 2012 for zone 9 (Italy) – BLIND ANALYSIS - In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	335	411	421	422	423	511	512	521	523 Total	User Acc	
111	6,551	0,384	0,364																															7,300	0,83									
112	2,121	49,210	2,125																															53,673	0,91									
121	0,733	15,128																																15,946	0,94									
122		0,078	0,817																															1,013	0,80									
123	0,026	0,026			0,502																												0,554	0,90										
124					1,135																												1,194	0,95										
131					2,050	0,132				0,132	0,005											0,009										2,855	0,71											
132		0,030				0,119																											0,148	0,80										
133	0,020	0,020			0,023	1,179																										1,260	0,93											
141	0,029					0,501				0,029																						0,590	0,81											
142						1,796																											1,796	1,00										
211	0,029	8,351					8,351	310,322				0,821		25,082	8,412	33,628	8,404	8,351	0,150															420,251	0,71									
212								1,694				0,423																				2,117	0,80											
213							0,122	14,650																								15,535	0,94											
221							4,482		13,503	0,006	0,006			10,435	1,490																	29,922	0,41											
222							1,090		16,407				2,179	1,090	1,090																	21,856	0,71											
223							3,112		3,112	46,678			3,112	3,112																		62,238	0,71											
231							1,109	1,109				15,520		1,109	3,326																	22,183	0,70											
241							1,054				1,582	3,690	2,636	1,054	0,527																	10,544	0,31											
242	4,523	4,523					18,093	2,262	2,262		4,523	6,785	2,262	61,125	4,523																		113,142	0,54										
243	2,206						2,206					11,028		8,822	66,166	8,822																	110,333	0,60										
244							0,027	0,016																								8,812	0,90											
311																																	289,968	0,91										
312																																		67,060	0,91									
313																																		57,734	0,71									
321																																		71,362	0,71									
322																																		7,689	0,80									
323							1,054																										53,743	0,71										
324	1,077						1,077				1,077		1,077		5,404	1,077	6,005	2,160	9,697		3,238	24,928	0,255												57,074	0,43								
331																																		4,879	0,80									
332																																		22,496	0,90									
333																																		18,572	0,71									
334								0,027							0,010		0,017		0,076															1,008	0,61									
335																																		2,020	0,81									
411															0,048		0,011																		0,992	0,81								
412																																		0,021	0,00									
421		0,055						0,055																										1,103	0,71									
422		0,096																																	0,478	0,80								
511																0,011																	2,439	0,71										
512																																		9,082	0,90									
521																																		2,256	0,90									
522																																		0,013	0,00									
523																																		0,749	0,749									
Total	8,698	58,292	30,715	0,817	0,502	1,135	2,073	0,251	1,207	0,501	11,395	344,009	1,710	16,911	15,765	21,424	51,208	63,924	14,364	123,354	107,884	17,887	299,904	62,797	53,150	71,179	10,648	59,451	60,256	4,700	20,549	16,310	0,676	1,717	0,906	0,843	0,549	0,121	4,134	9,251	2,085	0,749	1196,347	
Prod Acc	0,753	0,844	0,493	1,000	1,000	1,000	0,989	0,473	0,976	1,000	0,158	0,902	0,991	0,866	0,857	0,766	0,912	0,243	0,257	0,496	0,613	0,443	0,889	1,000	0,867	0,752	0,578	0,722	0,414	0,894	0,985	0,854	1,000	1,000	0,977	0,985	0,695	0,000	0,444	0,981	0,974	1,000	Global Acc	0,71

Overall accuracy = 76.0%

Table 37: Confusion matrix CLC 2012 for zone 9 (Italy) – PLAUSIBILITY ANALYSIS - In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	335	411	412	421	422	511	512	521	523 Total	User Acc
111	6,572	0,364	0,364																															7,300	0,900								
112	2,121	50,284	1,150	0,005					0,015																							53,673	0,937										
121		15,905	0,004						0,007			0,030																			15,946	0,997											
122		0,039	0,856								0,039											0,078									1,013	0,845											
123	0,026	0,026		0,502																											0,554	0,907											
124				1,135																											1,194	0,950											
131					2,182				0,005		0,132	0,009																		2,855	0,764												
132		0,015				0,133																								0,148	0,900												
133	0,020	0,020			0,023			1,185														0,011								1,260	0,941												
141	0,029							0,531													0,029									0,590	0,900												
142								1,796																						1,796	1,000												
211		8,351						8,351	343,872			0,882		16,731	8,351	8,482	8,375	8,351	0,126					0,029	8,351						420,251	0,818											
212									2,117																					2,117	1,000												
213									0,061	15,474																				15,535	0,996												
221									1,502		20,952	0,006	0,006								5,965	1,490								29,922	0,700												
222									1,090		17,497										2,179	1,090								21,856	0,801												
223									3,112		52,902										3,112								62,238	0,850													
231					0,011		1,109				17,738			1,109	2,217														22,183	0,800													
241						0,527					0,527	4,745	3,163	0,527	1,054														10,544	0,450													
242	2,262	2,262					15,831				4,523	2,262	79,218	4,523															113,142	0,700													
243	2,206						2,206				2,206	8,822	8,822	77,251		4,411													110,333	0,700													
244												0,441	8,372																8,812	0,950													
311						0,059						0,035	#####									5,736	5,913						289,968	0,960													
312													64,134	2,672									0,255							67,060	0,956												
313												2,848		54,885															57,734	0,951													
321												3,568		64,226		3,568													71,362	0,900													
322												0,769	6,920																7,689	0,900													
323					1,054						2,107		1,054	48,475	1,054														53,743	0,902													
324	1,077								1,077		3,282	4,728	2,160	3,232	2,160	39,068	0,255						0,033								57,074	0,685											
331																4,879														4,879	1,000												
332																	21,371	1,125												22,496	0,950												
333																	15,786														18,572	0,850											
334		0,017										0,034	0,166		0,027	0,158	0,110		0,027	0,470			0,101	1,919							1,008	0,466											
335																							0,933							2,020	0,950												
411									0,011																					0,992	0,940												
412																								0,021							0,021	1,000											
421																								0,994	0,055						1,103	0,901											
422																								0,478							0,478	1,000											
511																		0,121	0,121											2,439	0,901												
512																									9,082							9,082	1,000										
521																									0,113							2,256	0,900										
522																									0,013							0,013	0,000										
523																									0,749							0,749	1,000										
Total	8,718	56,268	28,124	0,864	0,502	1,135	2,216	0,133	1,212	0,531	11,387	369,392	2,117	15,474	20,952	18,385	59,645	47,197	13,096	#####	#####	17,777	#####	64,134	59,718	70,428	7,849	60,126	65,828	5,255	21,472	17,070	0,504	1,919	0,933	0,021	1,007	0,645	2,197	9,262	2,085	0,749	1338,062
Prod Acc	0,754	0,894	0,566	0,990	1,000	1,000	0,985	1,000	0,978	1,000	0,158	0,931	1,000	1,000	0,952	0,887	0,376	0,362	0,706	0,736	0,471	0,958	1,000	0,919	0,912	0,882	0,806	0,593	0,929	0,995	0,925	0,934	1,000	1,000	1,000	0,987	0,740	1,000	0,981	0,974	1,000	Global Acc	0,850

Overall accuracy = 85.0%

Zone 10: United Kingdom/Ireland confusion matrix CLC2012 - Blind and plausibility analysis

Table 38: Confusion matrix CLC 2012 for zone 10 (United Kingdom & Ireland) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	332	333	334	411	412	421	423	511	512	521	522	523 Total	User Acc		
111	0,867	0,144	0,217						0,144	0,072																						1,444	0,600					
112		54,661							0,047	1,930							1,930		0,016														58,583	0,933				
121		0,439	8,063						0,947										0,016															9,559	0,843			
122		0,139	0,704														0,037																	0,880	0,800			
123			0,536						0,028										0,104															0,564	0,950			
124			1,978							0,007	0,007							0,169															2,082	0,950				
131	0,005						3,085		0,007		0,007																					3,601	0,857					
132		0,018					0,018	0,232		0,018	0,036							0,018														0,357	0,650					
133	0,021	0,089	0,022				0,043	0,332					0,016					0,026														0,565	0,588					
141		0,141						2,285			0,141						0,308															2,875	0,795					
142								0,620	11,280				0,655																			12,555	0,898					
211									269,374		6,216	5,720																				281,310	0,958					
213																							0,005									0,005	0,000					
222										0,052	0,232		0,077																			0,387	0,600					
231	8,855								9,606	392,526	8,855	8,855		8,855																	437,560	0,897						
242									0,563	0,375	2,064	0,188	0,188																		3,753	0,550						
243									0,490	5,391	16,172																					24,013	0,673					
311										1,147	2,295	17,212																				22,950	0,750					
312										0,093			56,943	1,345																		65,383	0,871					
313									0,278	0,278	0,557	1,949	0,835	10,026																13,925	0,720							
321										3,021	3,011				45,169	3,011	0,020														57,241	0,789						
322	3,922		0,010															3,922	66,675	3,922													78,451	0,850				
324		0,010							0,360		0,030	0,512	3,192	0,512				1,588	33,161														39,931	0,830				
331																	0,097	0,097	0,097	1,556													0,097	1,946	0,800			
332											0,072							0,144	0,289		0,433	0,505											1,443	0,300				
333																	0,645	1,270			10,157												12,071	0,841				
334																		0,028			0,014													0,042	0,333			
411										0,217								0,069	0,069			0,966	0,069										1,390	0,695				
412										2,706	5,413	2,706		5,413	21,651								97,429										135,319	0,720				
421																							1,611										1,611	1,000				
423																		0,058	0,117			0,175	0,757										0,058	1,165	0,650			
511										0,044																									0,445	0,900		
512																																					13,723	1,000
521																																					0,050	0,012
522																																					0,062	0,800
523																																					0,357	0,750
Total	0,867	68,047	8,666	0,725	0,536	1,978	3,166	0,232	1,477	4,953	11																											

Table 39: Confusion matrix CLC 2012 for zone 10 (United Kingdom & Ireland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	332	333	334	411	412	421	423	511	512	521	522	523	Total	User Acc
111	0,939	0,289	0,144						0,072																							1,444	0,650				
112		56,569							0,069		1,930							0,016														58,583	0,966				
121		8,544							0,473									0,023		0,016	0,016	0,039									9,559	0,894					
122		0,139	0,704										0,037																			0,880	0,800				
123			0,536						0,028																							0,564	0,950				
124				2,082																												2,082	1,000				
131					3,095		0,007		0,007			0,164						0,164												3,601	0,859						
132						0,018	0,268				0,036		0,018					0,018												0,357	0,750						
133	0,021	0,063	0,022		0,022	0,016	0,347		0,016			0,042					0,016												0,565	0,614							
141		0,141							2,426			0,308																			2,875	0,844					
142									11,900			0,655																			12,555	0,948					
211									269,459		6,131	5,720																			281,310	0,958					
213																		0,005														0,005	0,000				
222										0,026	0,283	0,052							0,026												0,387	0,733					
231	8,855									9,451	419,254																				437,560	0,958					
242									0,563		0,375	2,064	0,188	0,188				0,188												3,753	0,550						
243									0,490	0,490	3,430	18,132						0,980												24,013	0,755						
311											2,295	18,360						2,295													22,950	0,800					
312										0,093			57,222	1,345					6,631												65,290	0,876					
313									0,278		0,278	1,114	0,278	11,418				0,278												13,925	0,820						
321										3,021	3,011		51,200																	57,231	0,895						
322	3,922											3,922	66,685	3,922																	78,451	0,850					
324			0,010						0,324		0,020	0,007	2,987	1,011		0,529	34,479														39,931	0,863					
331										0,138							0,097	1,848														1,946	0,950				
332												0,072	0,216				1,010	0,144													1,443	0,700					
333											0,010	0,635				11,426															12,071	0,947					
334																	0,042															0,042	1,000				
411																		1,183	0,069														1,390	0,851			
412												2,706	2,706		5,413					124,493														135,319	0,920		
421																																		1,611	1,000		
423																		0,058															0,058	1,165			
511									0,044																								0,445	0,900			
512																																		13,723	1,000		
521																																		0,050	0,012		
522																																		0,286	0,036		
523																																		0,927	0,927		
Total	0,939	69,656	9,031	0,725	0,536	2,082	3,144	0,284	0,896	2,526	14,379	280,267	0,283	437,021	2,116	32,350	19,669	60,526	13,774	55,220	73,756	48,934	1,848	1,010	11,571	0,042	1,183	126,254	1,746	0,932	0,418	13,888	0,050	0,298	1,021	1193,897	
Prod Acc	1,000	0,812	0,946	0,970	1,000	1,000	0,984	0,943	0,387																												

Zone 11: Romania confusion matrix CLC2012 - Blind and plausibility analysis

Table 40: Confusion matrix CLC 2012 for zone 11 (Romania) – BLIND ANALYSIS -In column the validation and line the production

CLC Classes	112	121	122	123	124	131	132	133	141	142	211	213	221	222	231	242	243	311	312	313	321	322	324	331	332	333	411	421	423	511	512	521	523 Total	User Acc	
111	0,350																													0,350	0,000				
112	23,540							0,042										11,730	6,703												42,015	0,560			
121	0,005	3,897						0,206	0,048	0,008								0,005													4,174	0,934			
122	0,017	0,017	0,196	0,017				0,077																							0,326	0,602			
123				0,121																											0,121	1,000			
124				0,134													0,015														0,149	0,900			
131	0,054	0,054				0,846		0,042										0,108												1,178	0,718				
132							0,140																							0,140	1,000				
133	0,011	0,032				0,011	0,074											0,032	0,011												0,192	0,387			
141								0,151											0,011													0,162	0,933		
142	0,030						0,008	0,142									0,022													0,011	0,225	0,633			
211								292,216			6,639	6,639	6,650	13,278	6,639															332,061	0,880				
212	0,033																													0,033	0,000				
213								1,184																						1,184	1,000				
221								3,604	3,003		0,601	1,802	2,403																11,412	0,263					
222								1,393	0,011	5,581		2,785	3,482																13,990	0,399					
231	1,891	1,891				0,008		9,455			62,415		9,455																94,571	0,660					
242	1,509							1,509		1,509	21,129	1,509																	30,184	0,700					
243								1,456	5,108	2,913	20,401																		35,716	0,571					
311									0,009		3,758	176,689		0,018															188,102	0,939					
312						0,971												27,209	6,800											40,817	0,667				
313								1,131			1,131								35,221	0,766										37,518	0,939				
321																														22,625	0,000				
322											0,275	0,549	0,799	0,821	0,032	0,807	0,274	0,141	0,141	1,980	0,141											2,404	0,824		
324											0,025									10,525												14,080	0,747		
331											0,025									0,025	0,356	0,025									0,509	0,700			
332																			0,016	0,047	0,031	0,047									0,140	0,222			
333																					0,132												0,151	0,875	
411						0,203					0,609											10,207	0,600											12,220	0,835
421																																0,255	0,000		
511																						0,347												6,949	0,950
512																						0,606												6,107	0,901
521																																2,568	1,000		
523																																0,081	0,081		
Total	27,343	5,903	0,282	0,139	0,134	0,857	0,346	0,301	0,160	1,114	309,526	1,184	9,653	15,461	78,718	53,691	55,170	177,510	27,382	42,872	1,181	1,995	55,737	4,108	0,056	4,704	11,093	0,600	0,019	6,706	6,113	2,568	0,081	712,274	
Prod Acc	0,861	0,660	0,695	0,874	1,000	0,988	0,404	0,246	0,947	0,128	0,944	1,000	0,311	0,361	0,793	0,394	0,370	0,995	0,994	0,822	0,000	0,992	0,189	0,087	0,549	0,028	0,920	0,000	0,984	0,900	1,000	1,000	Global Acc	0,789	

Overall accuracy = 78.9%

Table 41: Confusion matrix CLC 2012 for zone 11 (Romania) – PLAUSIBILITY ANALYSIS -In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	231	242	243	311	312	313	321	322	324	331	332	333	411	511	512	521	523 Total	User Acc		
111	0,175	0,175																													0,350	0,500				
112	37,826																			3,351	0,838										42,015	0,900				
121	0,005	4,108					0,005	0,035													0,021											4,174	0,984			
122		0,249						0,077																								0,326	0,763			
123			0,121																													0,121	1,000			
124				0,149																												0,149	1,000			
131					1,028		0,021											0,054														1,178	0,873			
132						0,140																									0,140	1,000				
133	0,011	0,011	0,011			0,011		0,138												0,011											0,192	0,721				
141								0,151																								0,162	0,933			
142	0,008								0,216																							0,225	0,962			
211									318,772										0,011	13,278												332,061	0,960			
212	0,011									0,011	0,011										1,184											0,033	0,333			
213											1,201			4,204		1,802	3,003	1,201														1,184	1,000			
221												0,011	7,670	0,696	0,696	2,785	0,696															11,412	0,368			
222													85,107																			13,990	0,548			
231				1,900			5,673							1,509	28,675																94,571	0,900				
242										0,011	0,728	0,728	4,369	2,913	24,771																	30,184	0,950			
243																																35,716	0,694			
311														0,009	#####	0,009	0,018															188,102	0,979			
312															35,952	0,971															40,809	0,881				
313															36,752	0,766																37,518	0,980			
321															2,262		11,312	5,656	2,262												22,625	0,500				
322																0,141	2,262															2,404	0,941			
324												0,008	0,532	0,532	0,821		0,274	0,008	11,903												14,080	0,845				
331															0,025		0,025	0,458														0,509	0,900			
332																0,016	0,047		0,047	0,031											0,140	0,333				
333																		0,151															0,151	1,000		
411								0,203						0,600																			12,220	0,885		
421																																	0,255	0,000		
511																				0,347															6,949	0,950
512																					6,601														6,107	0,901
521																					0,606	5,502												2,568	1,000	
523																						2,568													0,081	0,081
Total	0,175	38,025	4,130	0,259	0,121	0,149	1,039	0,144	2,171	0,151	0,216	325,871	0,011	1,913	4,215	8,407	94,681	51,949	30,148	#####	35,961	38,016	12,253	2,278	30,954	3,068	0,047	0,182	12,808	6,601	6,102	2,568	0,081	823,327		
Prod Acc	1,000	0,995	0,995	0,959	1,000	1,000	0,990	0,968	0,064	1,000	1,000	0,978	1,000	0,619	0,997	0,912	0,899	0,552	0,822	0,980	1,000	0,967	0,923	0,993	0,385	0,149	1,000	0,830	0,844	1,000	0,902	1,000	Global Acc 0,912			

Overall accuracy = 91.2%

Zone 12: Greece confusion matrix CLC2012 - Blind and plausibility analysis

Table 42: Confusion matrix CLC 2012 for zone 12 (Greece) –BLIND ANALYSIS - In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	311	312	313	321	322	323	324	331	332	333	334	411	421	422	511	512	521	522	523 Total	User Acc
111	1,832	0,131																																1,963	0,933						
112		19,586																																20,396	0,960						
121	0,250	4,884	0,287																														5,534	0,883							
122		1,809																															2,021	0,895							
123			0,103																													0,103	1,000								
124				1,154																												1,154	1,000								
131					2,457																										2,805	0,876									
132						0,073																									0,073	1,000									
133	0,128	0,033				0,098																									1,764	0,798									
141							0,142																								0,178	0,800									
142	0,142							1,496																							1,748	0,856									
211								96,028																							115,947	0,828									
212									62,071	0,120																				62,209	0,998										
213									0,180		2,476																			2,836	0,873										
221										2,201		0,367																		7,338	0,300										
222									0,442			8,845																		11,056	0,800										
223												41,212		1,873	1,873	7,493	1,873												56,198	0,733											
231	0,310											5,290		0,929	0,619													7,795	0,679												
241		0,175											1,053	0,526	0,526													2,632	0,400												
242	2,088						2,111					4,176		2,088	2,088	39,690	10,439											62,679	0,633												
243												2,861		88,734	2,861		2,861	2,861										100,180	0,886												
311													5,405	85,370		2,796												96,570	0,884												
312													2,257		0,022	2,279	58,836	4,536										67,929	0,866												
313													1,386	0,036	0,036	36,701												42,353	0,867												
321													2,374				47,514	4,749	7,123	19,399	2,374									83,533	0,569										
322														1,119	2,239														3,731	0,600											
323													4,761		9,523	0,203	4,761	4,761	162,535	4,964									191,509	0,849											
324													2,582		2,785	5,222	5,247	5,247	0,044	0,083	1,353	74,215		0,203	2,582	0,083				99,646	0,745										
331													0,164																	2,454	0,800										
332														0,156																2,343	0,400										
333														0,105																22,434	0,423										
334																															2,916	0,878									
411																															1,785	0,867									
421														0,165																2,474	0,933										
422																															0,217	1,000									
511																															1,798	0,933									
512																															8,086	1,000									
521																															0,654	1,000									
522																															0,148	0,667									
523																															2,812	1,000									
Total	1,832	20,547	7,180	2,096	0,103</																																				

Table 43: Confusion matrix CLC 2012 for zone 12 (Greece) –PLAUSIBILITY ANALYSIS - In column the validation and line the production

Overall accuracy = 87.3%

Zone 13: Bulgaria confusion matrix CLC2012- Blind and plausibility analysis

Table 44: Confusion matrix CLC 2012 for zone 13 (Bulgaria) – BLIND ANALYSIS -In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	213	221	222	223	231	242	243	311	312	313	321	322	324	331	332	333	411	412	422	511	512	521	523	Total	User Acc
111	0,063																															0,063	1,000				
112		22,390	1,493																	4,478	1,493											29,853	0,750				
121	0,295	4,795					0,026					0,308		0,013							0,295											6,028	0,795				
122		0,067	0,266																0,013													0,346	0,769				
123			0,059																													0,059	1,000				
124			0,441																													0,441	1,000				
131				1,606								0,013							0,672		0,134										2,837	0,566					
132					0,258																										0,258	1,000					
133		0,030			0,009		0,052																								0,091	0,573					
141						0,292														0,032											0,325	0,900					
142	0,114	0,050											0,918																			1,091	0,842				
211		5,930												273,831		0,013	6,008		5,995		6,059											297,862	0,919				
213														1,493																	1,493	1,000					
221												1,536		7,679	0,043						1,045										10,303	0,745					
222												0,209		0,192	2,813		0,200	0,209		0,384											4,007	0,702					
231	0,607	0,607		0,607								0,064			0,607	23,083			1,886				1,822	1,215								30,500	0,757				
242		0,998						0,998	1,062		1,995				0,998	3,991		9,976													20,017	0,199					
243									4,057							64,917																77,089	0,842				
311																170,164																173,839	0,979				
312															0,833		35,833	3,333													41,667	0,860					
313							0,999										43,967														48,963	0,898					
321							1,562				1,562					23,436			4,700											31,261	0,750						
322		1,132				0,014	1,145		1,159	1,132		0,046		4,529	1,522	0,014	0,038	1,147	46,401												2,059	0,800					
324															0,016					0,016	0,115										58,279	0,796					
331																0,049		0,049			0,438	0,292									0,016	0,165	0,700				
332								0,151				0,301		0,151					0,151		1,808										0,828	0,529					
333																			0,301												2,862	0,632					
334																				0,034												0,034	0,000				
411			0,035						0,035			0,070									0,559											0,699	0,800				
412																				0,101												0,101	1,000				
422																				0,061												0,061	1,000				
511																0,482				0,482											2,412	0,600					
512																			0,252		0,252										5,077	0,901					
521																					4,574											0,057	1,000				
523																					0,057											0,079	0,079				
Total	0,063	23,406	13,940	1,428	0,094	0,441	2,222	0,258	0,078	0,307	3,066	283,823	1,493	11,052	9,996	0,607	32,940	8,694	92,218	171,686	35,896	47,472	25,344	3,469	70,849	0,115	0,438	2,520	0,559	0,101	0,061	1,447	4,869	0,057	0,095	739,635	
Prod Acc	1,000	0,957	0,344	0,186	0,628	1,000	0,723	1,000	0,662	0,953	0,300	0,965	1,000	0,695	0,281	0,000	0,701	0,459	0,704	0,991	0,998	0,926	0,														

Table 45: Confusion matrix CLC 2012 for zone 13 (Bulgaria) – PLausibility Analysis -In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	213	221	222	231	242	243	311	312	313	321	322	324	331	332	333	411	412	422	511	512	521	523 Total	User Acc
111	0,063																														0,063	1,000			
112		29,853																													29,853	1,000			
121		0,295	5,720																												6,028	0,949			
122			0,067	0,279																											0,346	0,808			
123				0,059																											0,059	1,000			
124					0,441																										0,441	1,000			
131						1,619													0,806		0,269									2,837	0,571				
132							0,258																								0,258	1,000			
133			0,030				0,009		0,052																					0,091	0,573				
141	0,032							0,292																							0,325	0,900			
142	0,114	0,050								0,918																					1,091	0,842			
211										291,661			0,013	0,077	6,033		0,064														297,862	0,979			
213											1,493																			1,493	1,000				
221											1,003		8,234	0,021	0,555		0,491													10,303	0,799				
222											0,209		3,414			0,384														4,007	0,852				
231									0,064			27,399									1,215	1,215								29,893	0,917				
242								0,998	1,062		1,995	8,979	6,983				73,032														20,017	0,449			
243																															77,089	0,947			
311																			173,789													173,839	1,000		
312																			40,833													41,667	0,980		
313																			45,965													48,963	0,939		
321													1,562		1,562					24,998		3,138								31,261	0,800				
322													1,132	1,132	2,264	1,389	0,014	0,019	0,014	52,291										1,921	0,929				
324													0,013								0,132									58,270	0,897				
331													0,016																	0,016	0,800				
332													0,151		0,151					0,049										0,828	0,529				
333																				0,452		0,151									2,862	0,684			
334																				0,034											0,034	0,000			
411													0,035		0,035																0,699	0,900			
412																															0,101	1,000			
422																															0,061	1,000			
511																															2,412	1,000			
512																															5,077	0,901			
521																															0,057	1,000			
523																															0,079	1,000			
Total	0,063	30,294	5,837	0,309	0,094	0,441	1,628	0,258	0,052	0,292	2,067	294,076	1,493	8,247	4,645	39,634	9,363	84,666	175,178	40,896	45,984	25,636	2,999	65,150	0,132	0,438	2,299	0,881	0,101	0,061	2,412	4,574	0,057	0,095	803,869
Prod Acc	1,000	0,985	0,980	0,903	0,628	1,000	0,995	1,000	1,000	1,000	0,444	0,992	1,000	0,998	0,735	0,691	0,959	0,863	0,992	0,998	1,000	0,975	0,595	0,803	1,000	1,000	0,852	0,714	1,000	1,000	1,000	1,000	0,827		
																																		Global Acc	0,945

Overall accuracy = 94.5%

Zone 14: Island confusion matrix CLC2012 - Blind and plausibility analysis

Table 46: Confusion matrix CLC 2012 for zone 14 (Island) –BLIND ANALYSIS - In column the validation and line the production

CLC Classes	112	121	122	123	124	131	133	141	142	211	231	242	243	311	312	313	321	322	324	331	332	333	335	411	412	421	423	511	512	521	522	523	Total	User Acc
112	0,628																														0,628	1,000		
121		0,354				0,027																									0,434	0,816		
122			0,017																												0,017	1,000		
123				0,043																											0,043	1,000		
124					0,171																										0,171	1,000		
131						0,072																									0,072	1,000		
133	0,037						0,036																								0,111	0,323		
141								0,081																							0,102	0,800		
142									0,889																						0,907	0,980		
211										0,138																					0,138	1,000		
231											1,032	13,893		0,512						0,025	0,013									15,493	0,897			
242											0,016	0,020	0,253									0,032									0,320	0,789		
311														1,070						0,292	0,389									1,752	0,611			
312															0,094	0,056					0,037									0,187	0,500			
313																0,305	0,061	0,092												0,458	0,667			
321																	16,753	1,859				0,218									18,831	0,890		
322																		183,402				32,365									215,767	0,850		
324															0,113	0,095				0,204	0,773	0,853									2,037	0,419		
331																			18,965	2,253										0,318	21,536	0,881		
332																			117,863	14,448	14,648									0,018	146,977	0,802		
333																			2,844	10,941	68,615	0,109										82,509	0,832	
335																				64,568											64,568	1,000		
411																		0,235		0,117	0,117										2,349	0,600		
412																			4,034	2,017												38,322	0,789	
421																				0,032		0,127									0,159	0,800		
423																					0,026	0,388									0,078	0,026	0,518	0,750
511																				0,351												5,071	0,931	
512																						4,720										8,968	1,000	
521																						8,968										0,899	1,000	
522																						0,899										0,172	0,400	
523																						0,103										0,153	0,153	
Total	0,665	0,354	0,017	0,070	0,171	0,072	0,036	0,081	0,889	1,186	14,025	0,253	0,607	1,070	0,094	0,361	17,296	190,580	3,297	22,278	131,173	115,673	79,325	3,458	30,624	0,153	0,388	5,141	9,103	0,977	0,095	0,153	536,050	
Prod Acc	0,944	1,000	1,000	0,619	1,000	1,000	1,000	0,116	0,991	1,000	0,000	1,000	1,000	0,845	0,969	0,962	0,259	0,851	0,899	0,593	0,814	0,408	0,988	0,830	1,000	0,918	0,985	0,921	0,727	1,000	Global Acc	0,851		

Overall accuracy = 85.1%

Table 47: Confusion matrix CLC 2012 for zone 14 (Island) –PLAUSIBILITY ANALYSIS - In column the validation and line the production

CLC Classe	112	121	122	123	124	131	133	141	142	211	231	242	243	311	312	313	321	322	323	324	331	332	333	335	411	412	421	423	511	512	521	522	523	Total	User Acc	
112	0,628																															0,628	1,000			
121		0,381				0,027																										0,434	0,878			
122			0,017																													0,017	1,000			
123				0,043																												0,043	1,000			
124					0,171																											0,171	1,000			
131						0,072																										0,072	1,000			
133	0,037						0,036																									0,073	0,488			
141								0,102																								0,102	1,000			
142									0,889																							0,907	0,980			
211										0,138																						0,138	1,000			
231											1,028	14,465																			15,493	0,934				
242												0,004	0,300																		0,304	0,986				
311														1,362								0,195									1,752	0,778				
312															0,131	0,037						0,019									0,187	0,700				
313																0,305	0,061	0,092													0,458	0,667				
321																	17,901	0,930													18,831	0,951				
322																		204,979	10,788												215,767	0,950				
324																			0,113	0,095												2,037	0,472			
331																				0,204	0,664											21,536	0,914			
332																					0,962												146,977	0,901		
333																						19,690	1,846											82,509	0,931	
335																							132,444	14,515											64,568	1,000
411																								0,109	5,470	76,820	0,109						2,349	0,750		
412																																	36,305	0,944		
421																																	0,159	1,000		
423																																	0,518	0,800		
511																																	5,071	0,931		
512																																	8,968	1,000		
521																																	0,899	1,000		
522																																	0,172	1,000		
523																																	0,153	1,000		
Total	0,665	0,381	0,017	0,070	0,171	0,072	0,036	0,102	0,889	1,166	14,582	0,300	0,095	1,362	0,131	0,343	18,419	206,858	10,788	1,176	20,267	139,760	76,847	79,192	3,778	34,405	0,159	0,414	4,720	9,103	0,977	0,198	0,153	587,938		
Prod Acc	0,944	1,000	1,000	0,619	1,000	1,000	1,000	1,000	1,000	0,118	0,992	1,000	0,000	1,000	0,891	0,972	0,991	0,000	0,819	0,972	0,948	1,000	0,815	0,466	0,997	1,000	1,000	0,985	0,921	0,870	1,000	Global Acc	0,937			

Overall accuracy = 93.7%

Zone 15: Hungary confusion matrix CLC2012 - Blind and plausibility analysis

Table 48: Confusion matrix CLC 2012 for zone 15 (Hungary) – BLIND ANALYSIS -In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	213	221	222	231	242	243	311	312	313	321	324	333	411	412	511	512 Total	User Acc	
111	0,228																										0,228	1,000		
112		52,114	2,878		0,044																						57,941	0,899		
121			8,332	0,400			0,006	0,032	0,044		0,076				0,044		0,006										8,937	0,932		
122			0,087	1,589				0,027			0,087																1,882	0,844		
123				0,037																							0,037	1,000		
124		0,183			0,733																						0,917	0,800		
131							1,187					0,059		0,062		0,062			0,006	0,068							0,059	1,566	0,758	
132				0,059				0,552				0,046			0,046												0,749	0,737		
133	0,103	0,092	0,206			0,006		0,226			0,060				0,040	0,044				0,006							0,781	0,289		
141								0,697																			0,697	1,000		
142	0,226								4,167								0,226										4,619	0,902		
211		0,023	12,582								594,943	0,154	12,766	1,187	1,710	1,326											637,294	0,934		
213											0,540	0,540															1,080	0,500		
221											0,766	13,453	0,017						0,731								14,967	0,899		
222											1,219	0,089	7,841		0,609												9,759	0,804		
231		3,774	0,171		0,012	0,025	0,171				11,993	0,482	0,482	76,104												2,031	0,012	1,825	97,084	0,784
242		3,757									0,059		1,878	0,079	0,482	28,296	3,757											0,039	38,348	0,738
243											0,965				18,388	2,163												1,082	22,598	0,814
311	0,119	3,989									3,989			0,334			158,390		3,871		29,139							199,832	0,793	
312															0,011	9,872	0,251			2,078								12,212	0,808	
313											0,399					0,486	0,029	15,757		3,850								20,520	0,768	
321												10,470						19,444									29,914	0,650		
324		0,044									8,397		1,003	0,334	1,790		2,005	8,563	0,166	1,696	48,905	0,023						72,928	0,671	
333																			0,355								0,355	1,000		
411														1,003					0,502	1,003	7,525							10,034	0,750	
412														0,247							0,987							1,234	0,800	
511																					6,067							6,067	1,000	
512											0,009			0,851								16,455							17,315	0,950
Total	0,228	52,562	23,160	15,007	0,081	0,733	1,205	0,582	0,456	0,740	4,167	623,607	0,694	29,735	9,941	93,143	33,402	24,199	170,407	10,067	21,574	19,951	100,897	0,424	7,538	0,987	6,067	18,339	1093,183	
Prod Acc	1,000	0,991	0,360	0,106	0,462	1,000	0,985	0,948	0,495	0,941	1,000	0,954	0,778	0,452	0,789	0,817	0,847	0,760	0,929	0,981	0,730	0,975	0,485	0,837	0,998	1,000	1,000	0,897		
																											Global Acc	0,861		

Overall accuracy = 86.1%

Table 49: Confusion matrix CLC 2012 for zone 15 (Hungary) – PLausibility Analysis -In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	213	221	222	231	242	243	311	312	313	321	324	333	411	412	511	512	Total	User Acc
111	0,228																											0,228	1,000	
112		55,063	2,878																									57,941	0,950	
121			8,867					0,006		0,044			0,021															8,937	0,992	
122				1,642									0,087					0,061				0,006	0,087					1,882	0,872	
123					0,037																							0,037	1,000	
124						0,917																						0,917	1,000	
131							1,371						0,059						0,062			0,006	0,068					1,566	0,875	
132					0,059				0,644				0,046															0,749	0,859	
133	0,034	0,036	0,097						0,447			0,048				0,034		0,078	0,006									0,781	0,572	
141										0,697																		0,697	1,000	
142	0,452									4,167																		4,619	0,902	
211				0,012							608,469	0,154	0,105	0,705	0,830	14,366	12,557					0,097						637,294	0,955	
213												1,080																1,080	1,000	
221												0,035	14,184	0,017				0,731									14,967	0,948		
222												0,273	0,030	8,847		0,580											9,729	0,909		
231	1,973	0,171				0,171					10,021	0,482	0,482	81,532						0,171	0,012	0,255		0,012		1,802	97,084	0,840		
242	3,757							0,039				0,020		30,755	3,757								0,020					38,348	0,802	
243													20,434	2,163														22,598	0,904	
311	3,871												0,119	175,538			3,871			16,434								199,832	0,878	
312														11,641	0,251													12,212	0,953	
313								0,399							0,486	0,058	17,098											20,520	0,833	
321								1,496					4,487		1,496													29,914	0,700	
324								4,272		1,337		0,089			1,002	3,062	1,044	0,270	61,851									72,928	0,848	
333																					0,355							0,355	1,000	
411													1,505								0,502	8,027						10,034	0,800	
412													0,247										0,987						1,234	0,800
511																						6,067						6,067	1,000	
512								0,009													0,023						17,283	17,315	0,998	
Total	0,228	55,549	21,381	1,982	0,037	0,917	1,371	0,649	0,618	0,740	4,167	625,273	1,234	16,137	10,071	88,724	45,700	40,236	181,317	12,743	21,666	20,958	83,631	0,355	8,040	0,987	6,067	19,085	1159,168	
Prod Acc	1,000	0,991	0,415	0,828	1,000	1,000	1,000	0,991	0,724	0,941	1,000	0,973	0,875	0,879	0,878	0,919	0,673	0,508	0,968	0,914	0,789	0,999	0,740	1,000	0,998	1,000	1,000	0,906		
																												Global Acc	0,913	

Overall accuracy = 91.3%

Zone 16: Portugal confusion matrix CLC2012 - Blind and plausibility analysis

Table 50: Confusion matrix CLC 2012 for zone 16 (Portugal) – BLIND ANALYSIS - In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	411	412	421	422	423	511	512	521	522	523	Total	User Acc
111	1,120	0,603																																		1,723	0,650								
112	1,710	30,956	1,710																																	34,376	0,901								
121		6,242																																		6,340	0,984								
122		1,495																																		1,565	0,955								
123		0,246																																		0,246	1,000								
124		0,778																																		0,858	0,906								
131	0,206																																			2,257	0,818								
132	0,021																																			0,235	0,823								
133	0,093	0,049																																		1,215	0,811								
141	0,080	0,040																																		0,399	0,600								
142	0,139																																			2,344	0,941								
211												91,054	7,524						4,735	9,470	4,784															120,357	0,757								
212												3,250	24,903						0,602	3,009																	31,764	0,784							
213												6,395						0,314																	6,709	0,953									
221												2,926	22,362						2,926	2,926																31,140	0,718								
222												8,404						1,114	1,720																	11,238	0,748								
223												2,566	40,658						2,202	4,404	2,202															52,031	0,781								
231												1,894	12,827						3,787																	19,454	0,659								
241	4,513											2,257	11,284	11,284	11,284	4,513																	45,135	0,250											
242	5,637											17,631	4,408						4,408	57,348	4,408															88,202	0,650								
244												4,300							5,637	90,661																113,209	0,801								
311												2,923							37,996	157,308																86,041	0,950								
312																		2,834	5,668	2,834	62,076														214,312	0,734									
313																		0,839	0,839															71,813	0,959										
321																		0,839		0,839	0,839	0,920													75,037	0,827									
322																			10,132	41,273																16,882	0,598								
323																		0,081		1,521																51,488	0,802								
324	4,143											0,126							4,287	0,363	1,000	8,996	0,338	8,327	45,541	0,085	163,909											30,496	0,947						
331	0,089																		1,156																	237,114	0,691								
332																		0,124																		1,333	0,867								
333																		0,624	3,007	0,601															0,497	0,750									
334																		0,090	0,090		0,327														12,051	0,649									
411																		0,232																		3,840	0,868								
412																		0,737																		0,232	1,000								
421																		2,207																		2,323	0,950								
422																		0,092	0,827																	0,918	0,900								
423																		0,065	0,259																	0,324	0,800								
511																																					2,564	1,000							
512																																					8,783	0,856							
521																		0,422																		1,107	0,800								
522	0,398																																				0,795	0,500							
523																																					0,451	0,451							
Total	2,919	46,469	8,311	1,544	0,246	0,778	1,845	0,193	1,111	0,239	2,359	123,620	32,427	6,395	26,770	11,327	40,820	25,981	14,600	94,078	131,839	124,613	163,975	80,732	63,253	35,845	90,875	30,499	196,090	1,156	0,373	7,819	3,333	0,232	0,737	2,609	0,891	0,259	3,408	7,516	0,886	0,514	0,451	1055,148	
Prod Acc	0,384	0,666	0,751	0,968	1,000	1,000	1,000	0,887	1,000	0,935	0,737	0,768	1,000	0,835	0,742	0,996	0,494	0,773	0,610	0,688	0,656	0,959	0,853	0,981	0,281	0,454	0,947	0,836	1,000	1,000	1,000	1,000	1,000	1,000	0,752	1,000	1,000	0,774	1,000	Global Acc	0,759				

Overall accuracy = 75.9%

Table 51: Confusion matrix CLC 2012 for zone 16 (Portugal) – PLAUSIBILITY ANALYSIS - In column the validation and line the production

Overall accuracy = 84.8%

Zone 17: Austria/Switzerland confusion matrix CLC2012 - Blind and plausibility analysis

Table 52: Confusion matrix CLC 2012 for zone 17 (Austria/Switzerland) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	133	141	142	211	221	222	231	242	243	311	312	313	321	322	324	331	332	333	335	411	412	511	512	Total	User Acc
111	0,888	0,157																											1,045	0,850		
112		40,739																											45,281	0,900		
121	0,187	3,618					0,004					0,015																	3,823	0,946		
122	0,048		0,519					0,016																					0,583	0,890		
123			0,031																										0,031	1,000		
124				0,447								0,049																	0,496	0,901		
131	0,044	0,044	0,016				0,757					0,093		0,088														1,041	0,727			
132														0,035															0,035	0,000		
133		0,022					0,011								0,022														0,056	0,200		
141	0,046						0,343					1,591				0,008					0,495	0,134	0,016	0,016		0,235			0,458	0,750		
142													98,501	2,985	23,878	23,878													2,496	0,637		
211													5,335				0,296												149,241	0,660		
221		0,296											0,042	0,254			0,085												5,927	0,900		
222	0,042																												0,423	0,600		
231	3,937												35,429	11,810	11,810					7,873	3,937			0,031					74,826	0,473		
242											2,972			23,773	2,972														29,716	0,800		
243											2,148			1,074	6,445	10,741					1,074								21,482	0,500		
311													1,702	36,151							4,255								42,958	0,842		
312			4,227																	152,209	12,682								207,240	0,734		
313															4,444	2,222	102,772					2,222								111,661	0,920	
321															3,915			0,007	62,647	3,915	0,215			3,915					74,614	0,840		
322																	1,207			19,316	2,415								22,938	0,842		
324							0,007	0,137								0,478	1,927	0,248	0,186	0,093	5,011								8,088	0,620		
331																					0,030	0,119						0,148	0,200			
332								0,137												2,364		40,408	4,727	0,097				47,596	0,849			
333																				5,726	0,137	1,909	28,629					36,544	0,783			
335																					0,685		10,724						11,408	0,940		
411																0,088					0,088								1,760	0,850		
412																	0,025			0,025									0,127	0,600		
511																												1,928	1,000			
512																												0,006	13,817	13,823	1,000	
Total	0,888	45,200	3,981	0,535	0,031	0,447	4,988	0,034	0,343	1,866	103,777	8,362	0,254	60,631	70,271	29,483	41,120	160,439	128,904	74,993	23,478	48,971	0,030	43,120	37,506	10,821	1,503	0,076	1,928	13,817	698,193	
Prod Acc	1,000	0,901	0,909	0,970	1,000	1,000	0,152	0,326	1,000	0,853	0,949	0,638	1,000	0,584	0,338	0,364	0,879	0,949	0,797	0,835	0,823	0,102	1,000	0,937	0,763	0,991	0,996	1,000	1,000	Global Acc	0,761	

Overall accuracy = 76.1%

Table 53: Confusion matrix CLC 2012 for zone 17 (Austria / Switzerland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	221	222	231	241	242	243	311	312	313	321	322	324	331	332	333	335	411	412	511	512	Total	User Acc
111	0,888	0,157																													1,045	0,850		
112	40,748																		0,016	2,259		2,259									45,281	0,900		
121	0,187	3,618					0,004												0,015												3,823	0,946		
122	0,048		0,535																												0,583	0,918		
123			0,031																												0,031	1,000		
124			0,496																												0,496	1,000		
131		0,044					0,877					0,016				0,044					0,044									1,025	0,856			
132		0,022					0,035				0,022								0,011										0,035	1,000				
133											0,022									0,046										0,056	0,400			
141											0,389								0,023											0,458	0,850			
142											1,717								0,008				0,260		0,252		0,008		0,118		2,362	0,727		
211												104,470	2,985			20,893		20,893												149,241	0,700			
221												5,927																		5,927	1,000			
222	0,042											0,296			0,042	0,042														0,423	0,700			
231												62,998					11,810														74,826	0,842		
242												2,972			1,074		26,744														29,716	0,900		
243															3,222	16,112				1,074											21,482	0,750		
311															1,702	37,853				1,702											42,107	0,899		
312															4,227		177,614		8,454				16,944								207,240	0,857		
313																	111,661														111,661	1,000		
321																	0,020		74,408		0,186										74,614	0,997		
322																	1,207		19,316		2,415										22,938	0,842		
324																0,293	0,843	0,102		6,758											7,995	0,845		
331																			0,030	0,119											0,148	0,200		
332																			2,364		42,853	2,364	0,016								47,596	0,900		
333												0,137				0,006					3,817	0,137	1,909	30,537									36,544	0,836
335																					0,228		11,180									11,408	0,980	
411																0,088		0,088				0,088										1,760	0,850	
412																	0,025		0,025												0,127	0,600		
511																															1,928	1,000		
512																															13,823	1,000		
Total	0,888	41,182	3,684	0,535	0,031	0,496	0,881	0,035	0,022	0,389	1,854	107,473	8,912	0,296	85,137	0,042	50,952	36,110	38,191	182,316	123,037	80,840	19,316	27,406	0,030	45,108	33,018	11,196	1,503	0,076	1,928	13,817	795,431	
Prod Acc	1,000	0,989	0,982	1,000	1,000	1,000	0,996	1,000	1,000	1,000	0,926	0,972	0,665	1,000	0,740	0,000	0,525	0,446	0,991	0,974	0,908	0,920	1,000	0,247	1,000	0,950	0,925	0,999	0,996	1,000	1,000	Global Acc	0,868	

Overall accuracy = 86.8%

Zone 18: Denmark/Netherland/Belgium /Luxembourg confusion matrix CLC2012 - Blind and plausibility analysis

Table 54: Confusion matrix CLC 2012 for zone 18 (Denmark, Netherland, Belgium, Luxembourg) – BLIND ANALYSIS - In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	221	222	231	242	243	311	312	313	321	322	324	331	411	412	421	423	511	512	521	522	523 Total	User Acc	
111	1,069	0,056																													1,125	0,950			
112	4,965	81,492	0,128	4,965					0,221			5,102																			101,837	0,800			
121		14,546	0,788	0,035				0,788	0,930		0,160																			17,248	0,843				
122			2,375						0,011																						2,386	0,996			
123			0,111	2,217																											2,328	0,952			
124					1,864																										1,864	1,000			
131		0,076				1,429																									1,733	0,825			
132		0,025					0,276	0,025										0,025											0,377	0,733					
133	0,035	0,037	0,037				0,020	0,032	2,651		0,084	0,130				0,130	0,072												3,227	0,821					
141	0,140								2,701	0,140						0,140														3,121	0,865				
142	0,640								0,732	13,241																				14,612	0,906				
211	15,690								353,346			0,020	0,020	7,845																376,922	0,937				
221										0,141																				0,141	1,000				
222										0,199	0,090	1,225				0,269	0,090													1,873	0,654				
231									6,791	0,060			115,453	13,583																135,887	0,850				
241										0,008																				0,008	0,000				
242									17,969			13,477	80,883																	112,329	0,720				
243	3,113								3,113			12,451	3,113	40,487																62,276	0,650				
311															38,004																38,367	0,991			
312	1,773	0,887	0,119													35,584	4,433														44,688	0,796			
313	1,925								0,962						3,850	1,925	39,697													48,359	0,821				
321		0,040				0,040						1,440	0,383	0,343				4,842		0,423								0,119		7,630	0,635				
322									0,080						1,020		0,618	0,632			9,217									10,634	0,701				
324										0,503						0,503	7,450	2,178												11,567	0,797				
331																		1,894				0,105	0,105								2,105	0,900			
411									0,045									0,316		5,868											6,636	0,884			
412															0,173		0,345	0,218	0,173	0,345		0,345	1,899								3,498	0,543			
421																		0,179					3,037								3,573	0,850			
423																						0,031	0,310							0,031	0,093	0,466	0,667		
511																							3,899	0,045							4,919	0,793			
512																							2,964	23,982							29,910	0,802			
521																								0,369							0,369	1,000			
522																								0,444							0,444	1,000			
523																								0,748							0,748	1,000			
Total	6,033	104,864	15,739	8,395	2,251	1,864	1,449	1,096	3,923	3,433	20,417	380,971	0,230	1,225	143,641	98,322	49,784	46,991	38,127	45,107	5,742	7,622	14,836	1,894	6,392	1,899	3,174	0,416	7,224	24,344	0,548	4,414	0,842	892,642	
Prod Acc	0,177	0,777	0,924	0,283	0,985	1,000	0,986	0,252	0,676	0,787	0,649	0,927	0,611	1,000	0,804	0,823	0,813	0,809	0,933	0,880	0,843	0,977	0,621	1,000	0,918	1,000	0,957	0,747	0,540	0,985	0,674	0,101	0,889	Global Acc	0,848

Overall accuracy = 84.8%

Table 55: Confusion matrix CLC 2012 for zone 18 (Denmark, Netherland, Belgium, Luxembourg) –PLAUSIBILITY ANALYSIS - In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	221	222	231	242	243	311	312	313	321	322	324	331	411	412	421	423	511	512	521	522	523 Total	User Acc
111	1,069	0,056																													1,125	0,950		
112	4,965	81,680	0,043	4,965					0,221			0,035			4,965				4,965											101,837	0,802			
121			16,173		0,035				0,880		0,160																				17,248	0,938		
122				2,375					0,011																						2,386	0,996		
123				0,111	2,217																										2,328	0,952		
124						1,864																									1,864	1,000		
131		0,076					1,429																								1,733	0,825		
132		0,025						0,276	0,025									0,025												0,377	0,733			
133	0,014	0,068	0,037				0,020	0,032	2,803			0,093			0,093	0,014														3,207	0,874			
141	0,140									2,841	0,140																				3,121	0,910		
142										0,640	13,972																				14,612	0,956		
211	7,845						7,845		353,346			0,020	0,020	7,845																	376,922	0,937		
221										0,141																					0,141	1,000		
222									0,020		1,404			0,359	0,090																1,873	0,750		
231									6,791	0,060		115,453	6,791	6,791																	135,887	0,850		
241														0,008																	0,008	0,000		
242									11,231			11,231	89,867																		112,329	0,800		
243	3,113								3,113			3,113		52,938																		62,276	0,850	
311														38,242																		38,367	0,997	
312	1,773														36,590	4,433																44,688	0,819	
313	0,962						0,962			0,962					0,962	0,962	40,660														45,472	0,894		
321							0,040								1,052	0,685			5,008		0,685										7,590	0,660		
322															0,503				0,503	8,960	0,668										10,634	0,843		
324							0,014		0,040							1,020		0,537	0,068		9,862									11,540	0,855			
331																				2,000											2,105	0,950		
411							0,045													6,184											6,636	0,932		
412															0,173	0,173		0,218			2,935										3,498	0,839		
421																	0,179			0,179	3,037										3,573	0,850		
423																				0,403												0,466	0,867	
511																				3,899	0,045											4,919	0,793	
512																				26,946													29,910	0,901
521																				0,369													0,369	1,000
522																				0,444													0,444	1,000
523																				0,748													0,748	1,000
Total	6,033	95,585	16,385	7,488	2,251	1,864	1,449	0,308	5,001	11,326	21,064	368,901	0,141	1,404	136,455	97,745	68,684	39,377	43,054	45,333	5,690	8,960	13,552	2,000	6,363	2,935	3,143	0,403	4,292	27,308	0,548	4,414	0,779	926,136
Prod Acc	0,177	0,855	0,987	0,317	0,985	1,000	0,986	0,896	0,560	0,251	0,663	0,958	1,000	1,000	0,846	0,919	0,771	0,971	0,850	0,897	0,880	1,000	0,728	1,000	0,972	1,000	0,967	1,000	0,908	0,987	0,674	0,101	0,960	Global Acc 0,882

Overall accuracy = 88.2%

Zone 19: Albania/Serbia/Macedonia confusion matrix CLC2012 - Blind and plausibility analysis

Table 56: Confusion matrix CLC 2012 for zone 19 (Albania/Serbia/Macedonia) – BLIND ANALYSIS -In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	242	243	311	312	313	321	322	323	324	331	332	333	334	411	412	421	422	511	512	521	523	Total	User Acc
111	0,082																																0,082	1,0							
112		22,454																															22,454	1,0							
121		2,576	0,005				0,099		0,081		0,020																					2,787	0,9								
122		0,025	0,095					0,010																									0,130	0,7							
123		0,019																															0,019	1,0							
124		0,270																															0,270	1,0							
131							1,202	0,005											0,041		0,005	0,041										1,376	0,8								
132							0,015	0,247																								0,262	0,9								
133		0,034					0,020	0,013	0,400		0,044										0,005											0,516	0,7								
141		0,022							0,219																								0,241	0,9							
142	0,018					0,036				0,244			104,413		6,110	0,051	25,580	6,060																0,298	0,8						
211										1,238									0,147															142,214	0,7						
212										0,416																							1,385	0,8							
213										0,163		2,105		0,137	0,163	0,137																	0,416	1,0							
221										0,419		0,442	1,430																				2,869	0,7							
222													1,606																				2,636	0,5							
223													1,330																				3,312	0,4							
231										0,046				14,801	3,089		1,305			3,467	0,429		1,746										26,165	0,5							
241										0,051		6,748		4,217	83,564	6,748																	0,052	0,0							
242													2,278	3,441	86,660	3,441		2,278					1,721										101,329	0,8							
243														0,024																			99,819	0,8							
244																																	0,024	0,0							
311							0,035																									242,938	0,9								
312																																	20,368	0,8							
313																																	19,266	0,8							
321														4,334																			58,368	0,7							
322																																		2,424	0,6						
323																																		25,069	0,6						
324	0,026														2,490	1,731	3,369	12,577	1,678															104,901	0,7						
331																																		1,689	0,9						
332																																		1,462	0,4						
333																																		19,915	0,7						
334																																		4,137	0,8						
411															0,129																		2,219	0,7							
412																																		0,003	1,0						
421																																		0,186	1,0						
422																																		0,123	1,0						
511																																		3,977	0,7						
512																																		8,927	1,0						
521																																		0,434	1,0						
523																																		0,494	1,0						
Total	0,082	22,472	2,623	0,128	0,024	0,307	1,363	0,265	0,491	0,219	0,264	106,454	1,284	0,416	9,295	7,540	1,606	28,482	118,157	110,185	243,665	18,876	20,796	54,194	6,811	21,621	108,223	2,658	0,642	17,798	3,504	1,783	0,003	0,186	0,123	2,989	9,097	0,434	0,494	759,672	0,8
Prod Acc	1,000	0,999	0,982	0,737	0,777	0,882	0,882	0,931	0,814	1,000	0,924	0,981	0,965	1,000	0,226	0,190	1,000	0,520	0,707	0,786	0,920	0,898	0,758	0,814	0,237	0,786	0,744	0,594	0,915	0,846	1,000	0,977	1,000	1,000	0,970	0,981	1,000	1,000	Global Acc	0,8	

Overall accuracy = 82.1%

Table 57: Confusion matrix CLC 2012 for zone 19 (Albania/Serbia/Macedonia) – PLausibility analysis In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	242	243	311	312	313	321	322	323	324	331	332	333	334	411	412	421	422	511	512	521	523 Total	User Acc
111	0,082																																0,082	1,00						
112		22,454																															22,454	1,00						
121			2,701		0,005																											2,787	0,96							
122				0,130																												0,130	1,00							
123					0,019																											0,019	1,00							
124						0,270																										0,270	1,00							
131							1,243	0,005																								1,376	0,90							
132							0,015	0,247																								0,262	0,94							
133			0,010				0,010																										0,516	0,91						
141		0,022																																0,241	0,91					
142			0,018																															0,298	0,93					
211												136,078																						142,214	0,95					
212													1,238																					1,385	0,89					
213													0,416																					0,416	1,00					
221												0,163																						2,869	0,83					
222												0,217																						2,636	0,78					
223													2,405																					3,312	0,58					
231													2,074																					26,165	0,73					
241													1,927																					0,052	0,00					
242													19,169																					101,329	0,97					
243													1,355																					98,099	0,91					
244													0,006																					0,024	0,00					
311													98,746																					242,938	0,98					
312													3,999	1,721	90,102																		20,368	0,94						
313														2,278																				19,266	0,91					
321														0,024																				58,368	0,89					
322														52,308																				2,424	0,80					
323														1,939																				25,069	0,80					
324			0,026												1,536	1,536																		104,901	0,88					
331															0,271																			1,689	0,93					
332															1,678	2,497	1,698	1,678	2,232													1,462	0,72							
333																0,116																		19,915	0,93					
334																0,441																		4,137	0,86					
411																	0,566																	2,219	1,00					
412																		0,055	1,580	0,055												0,003	1,00							
421																		0,058	1,053	0,234												0,186	1,00							
422																		0,441	0,886	18,587												0,123	1,00							
511																		0,566	3,571	2,219												3,977	0,89							
512																			0,428															8,927	1,00					
521																				0,434														0,434	1,00					
523																				0,494														0,494	1,00					
Total	0,082	22,454	2,722	0,140	0,024	0,288	1,295	0,252	0,553	0,219	0,280	136,532	1,284	0,416	2,431	2,074	1,927	25,721	109,726	97,405	242,525	20,130	21,658	55,597	1,939	24,828	107,640	2,007	1,108	20,988	3,571	2,260	0,003	0,186	0,123	3,549	8,927	0,494	863,449	0,93
Prod Acc	1,000	1,000	0,992	0,928	0,777	0,937	0,960	0,979	0,853	1,000	1,000	0,997	0,965	1,000	0,990	1,000	1,000	0,745	0,900	0,925	0,984	0,952	0,817	0,941	1,000	0,813	0,860	0,787	0,951	0,886	1,000	0,982	1,000	1,000	0,995	1,000	1,000	Global Acc 0,93		

Overall accuracy = 93.5%

Zone 20: Bosnia and Herzegovina/Croatia confusion matrix CLC2012 - Blind and plausibility analysis

Table 58: Confusion matrix CLC 2012 for zone 20 (Bosnia Herzegovina/Croatia) – BLIND ANALYSIS -In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	141	142	211	212	221	222	223	231	242	243	311	312	313	321	322	323	324	331	332	333	334	411	421	422	511	512	521	523	Total	User Acc
111	0,012	0,037	0,012																													0,061	0,20					
112		15,511	0,010																													16,350	0,94					
121		0,347	1,568																													1,915	0,81					
122		0,053		0,846				0,044											0,159	0,053				0,053								1,208	0,70					
123				0,034																												0,034	1,00					
124					0,295																											0,295	1,00					
131		0,047					0,834												0,010	0,010				0,047								0,994	0,83					
132			0,038					0,015	0,105																						0,157	0,66						
133			0,018					0,018	0,216	0,015																					0,281	0,76						
141									0,149																							0,149	1,00					
142		0,181							0,422																							0,603	0,70					
211									39,726				0,013		0,066	4,417								0,010								44,233	0,89					
212										0,828																					0,828	1,00						
221										0,031		1,543							0,744	0,447											3,073	0,50						
222										0,165		0,686		0,055	0,123	0,123															1,153	0,59						
223											0,366							0,855													1,435	0,25						
231										2,388		35,845		0,013	4,777				2,439		2,388	0,021								47,870	0,74							
241										0,005																				0,005	0,00							
242									19,378				0,013	90,429	12,918	6,459								0,010							129,208	0,70						
243									1,612				6,447	1,612	64,489	1,612								1,612	1,612						80,606	0,80						
311													0,036	4,805	208,307									14,416	4,948						242,122	0,86						
312														0,790	33,305	4,737									0,790						39,622	0,84						
313													3,763				0,143	15,051	52,964											75,683	0,70							
321														3,721	1,860	1,860	22,324							5,581	1,860						37,207	0,60						
322															0,593															2,964	0,55							
323														0,660				0,660												13,190	0,90							
324													0,026				1,404	7,219	0,015	1,404	4,212	5,616	4,212	47,895									72,053	0,66				
331																		0,027														0,054	0,00					
332														0,090				0,090	0,181	0,090											1,808	0,60						
333																		2,908	0,831	0,702	0,415										8,595	0,38						
334																		0,287														0,928	0,69					
335																		0,005														0,005	0,00					
411													0,086		0,171	0,086								0,086							1,753	0,75						
412																		0,090	0,181	0,090											0,045	0,00						
421																		0,047														0,047	0,00					
422																		0,278														0,064	1,00					
423																															0,001	0,00						
511																		0,020														2,796	0,89					
512																															3,324	0,95						
521																															0,003	0,00						
523																															0,277	1,00						
Total	0,012	16,175	1,646	0,846	0,034	0,295	0,866	0,105	0,260	0,149	0,437	61,028	0,828	3,932	0,700	0,366	46,638	97,616	89,588	231,167	50,823	71,875	32,051	8,258	40,898	62,868	0,020	1,500	3,743	0,693	1,417	0,001	0,064	2,498	3,161	0,166	0,277	644,572
Prod Acc	1,000	0,959	0,953	1,000	1,000	0,963	1,000	0,832	1,000	0,967	0,651	1,000	0,393	0,981	1,000	0,769	0,926	0,720	0,901	0,655	0,737	0,697	0,197	0,290	0,762	0,000	0,723	0,888	0,926	0,935	0,000	1,000	0,999	0,000	1,000	Global Acc 0,77		

Overall accuracy = 77.4%

Table 59: Confusion matrix CLC 2012 for zone 20 (Bosnia Herzegovina/Croatia) – PLAUSIBILITY ANALYSIS -In column the validation and line the production

Overall accuracy = 89.3%

Zone 21: Czech Republic/Slovakia confusion matrix CLC2012 - Blind and plausibility analysis

Table 60: Confusion matrix CLC 2012 for zone 21 (Czech Republic/Slovakia) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	221	222	231	242	243	311	312	313	321	322	324	332	333	411	412	511	512	Total	User Acc
111	0,198																												0,198	1,000	
112	0,015	52,390	0,015						0,046			0,046			0,018	0,230													52,761	0,993	
121			8,411										0,066			0,085													8,571	0,981	
122				1,282									0,153																1,436	0,893	
123					0,028																							0,028	1,000		
124						0,615																						0,615	1,000		
131		0,088					1,606									0,088												0,097	1,977	0,813	
132		0,040					0,116	0,514								0,040												0,040	0,867	0,593	
133	0,051	0,089	0,098					0,205		0,025	0,038			0,022		0,077												0,605	0,339		
141	0,034								0,469	0,101	0,034																	0,034	0,670	0,700	
142									2,596	0,077						0,119			0,009									2,808	0,924		
211	7,674	7,643				0,029			7,658	352,138		0,089	0,171						0,031								375,466	0,938			
221										0,641	3,122																	3,763	0,830		
222									0,796	0,234	2,211	0,171															3,646	0,607			
231		0,015	0,015			0,029			0,155	14,057				78,590	5,348	3,720			0,155	0,155							0,015	102,468	0,767		
242															9,191													9,191	1,000		
243													4,534		81,608													86,142	0,947		
311															100,059			0,048										107,474	0,931		
312													0,021			0,069	107,984	0,207		0,069	71,325							179,676	0,601		
313															0,096	0,193	76,119											89,460	0,851		
321													0,225					0,225	3,371								4,045	0,833			
322																		1,148										1,148	1,000		
324			0,021					0,107		0,021	0,122	0,594	0,637	1,405	1,068	0,060	0,030	31,959										36,039	0,887		
332																				0,209	0,209							0,417	0,500		
333																			0,044	0,265								0,309	0,857		
334																			0,010									0,010	0,000		
411													0,042		0,042			0,042									0,084	0,629	0,839		
412																			0,242								0,161		0,403		
511									0,130																	1,166		1,295			
512								0,015			0,015			0,316													6,114		6,460		
Total	0,213	60,149	16,301	1,395	0,028	0,615	1,744	0,588	0,251	0,469	10,534	368,298	3,356	2,322	84,446	15,362	86,203	101,628	109,482	76,832	3,400	1,217	124,847	0,209	0,474	0,784	0,176	1,166	6,299	924,356	
Prod Acc	0,928	0,871	0,516	0,919	1,000	1,000	0,921	0,874	0,816	1,000	0,246	0,956	0,930	0,952	0,931	0,598	0,947	0,985	0,986	0,991	0,991	0,943	0,256	1,000	0,560	0,802	0,915	1,000	0,971	Global Acc	0,857

Overall accuracy = 85.7%

Table 61: Confusion matrix CLC 2012 for zone 21 (Czech Republic/Slovakia) –PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	221	222	231	242	243	311	312	313	321	322	324	332	333	411	412	511	512 Total	User Acc
111	0,198																											0,198	1,000	
112		52,530	0,015						0,015			0,046				0,153												52,761	0,996	
121			8,478									0,017				0,077												8,571	0,989	
122				1,387								0,048																1,436	0,966	
123					0,028																							0,028	1,000	
124						0,615																						0,615	1,000	
131	0,088						1,703																					0,097	1,977	0,862
132								0,709																				0,040	0,867	0,818
133	0,051	0,064	0,025						0,379			0,025	0,038			0,022												0,605	0,627	
141										0,603	0,034	0,034																0,670	0,900	
142										2,613	0,077					0,119												2,808	0,930	
211				0,015						0,015	375,176		0,059	0,109	0,030			0,031									375,435	0,999		
221											0,641	3,122															3,763	0,830		
222											0,707	0,234	2,355	0,117													3,646	0,646		
231											7,633		85,538	5,348	3,735				0,155								102,468	0,835		
242															9,191													9,191	1,000	
243												4,534		81,608														86,142	0,947	
311															102,588			0,048										107,474	0,955	
312															145,607	11,280			19,074									175,961	0,827	
313															83,128				6,236									89,364	0,930	
321												0,225				0,225	3,371			0,225								4,045	0,833	
322																	1,148												1,148	1,000
324				0,021						0,064			0,594	0,637	1,257	0,719	0,634	0,030	32,069								36,039	0,890		
332																	0,104		0,209	0,104								0,417	0,500	
333																	0,044		0,265									0,309	0,857	
334																	0,010											0,010	0,000	
411												0,042				0,042			0,084		0,629						0,042	0,839	0,750	
412																	0,202			0,202								0,403	0,500	
511																	0,130				1,166								1,295	0,900
512												0,015															6,445	6,460	0,998	
Total	0,198	52,670	8,557	1,413	0,028	0,615	1,725	0,724	0,395	0,603	2,687	384,495	3,356	2,415	90,662	15,315	86,099	103,845	146,400	95,469	3,400	1,252	63,410	0,209	0,369	0,629	0,216	1,166	6,624	1003,060
Prod Acc	1,000	0,997	0,991	0,982	1,000	1,000	0,988	0,980	0,961	1,000	0,973	0,976	0,930	0,975	0,943	0,600	0,948	0,988	0,995	0,871	0,991	0,917	0,506	1,000	0,718	1,000	0,931	1,000	0,973	
																												Global Acc	0,933	

Overall accuracy = 93.3%

Zone 22: Estonia/Latvia/Lithuania confusion matrix CLC2012 - Blind and plausibility analysis

Table 62: Confusion matrix CLC 2012 for zone 22 (Estonia/Latvia/Lithuania) – BLIND ANALYSIS -In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	411	412	421	511	512	521	523	Total	User Acc	
111	0,030	0,030																											0,060	0,500			
112		12,574							0,009			0,043		0,009															12,643	0,995			
121		0,169	3,137													0,169														3,475	0,903		
122			0,443						0,021																				0,464	0,955			
123			0,143																										0,143	1,000			
124				0,352																									0,352	1,000			
131					0,857				0,036			0,016						0,036											0,961	0,892			
132					0,028	0,160													0,020										0,208	0,768			
133	0,029	0,043							0,108										0,010											0,190	0,568		
141									0,716											0,038											0,754	0,950	
142	0,033						0,016		0,549											0,033	0,033											0,663	0,828
211									180,002		2,205																			182,225	0,988		
222									0,029	0,404		0,144																		0,578	0,700		
231									20,321		32,766	6,467	6,553																	66,107	0,496		
242			0,017						7,011		3,505	59,592																		70,126	0,850		
243											2,582	46,935																		52,099	0,901		
311											0,030	51,282			3,091					6,212										60,615	0,846		
312											0,048	107,746		0,048					0,381										108,222	0,996			
313											0,209	0,104	111,205						12,646										124,164	0,896			
321											0,102		0,017		1,117				0,153	0,609										1,998	0,559		
322												0,089			0,387		0,089		0,030										0,595	0,650			
324					0,185		0,019				0,125	7,721	4,115	1,211				71,543											84,919	0,842			
331																		0,022	0,312												0,334	0,933	
333																		0,045	0,045	0,090										0,181	0,000		
411																				4,856	0,540										5,396	0,900	
412																		0,017	0,720	0,720	0,737				12,300						14,493	0,849	
421																									0,015						0,015	1,000	
511																									1,700						1,700	1,000	
512																									19,359						19,359	1,000	
521																									0,018						0,018	1,000	
523																									0,193						0,193	1,000	
Total	0,030	12,802	3,213	0,443	0,143	0,352	0,902	0,160	0,189	0,716	0,549	207,608	0,404	38,505	68,964	53,782	59,296	112,141	116,306	1,117	1,152	91,870	0,402	8,077	12,840	0,015	1,700	19,359	0,018	0,193	720,802		
Prod Acc	1,000	0,982	0,976	1,000	1,000	0,950	1,000	0,568	1,000	0,867	1,000	0,851	0,864	0,873	0,865	0,961	0,956	1,000	0,336	0,779	0,775	0,601	0,958	1,000	1,000	1,000	1,000	1,000	Global Acc	0,886			

Overall accuracy = 88.6%

Table 63: Confusion matrix CLC 2012 for zone 22 (Estonia/Latvia/Lithuania) – PLAUSIBILITY ANALYSIS -In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	411	412	421	511	512	521	523	Total	User Acc
111	0,030	0,030																											0,060	0,500		
112		12,614																											12,643	0,998		
121		0,169	3,137																										3,475	0,903		
122			0,021	0,443																									0,464	0,955		
123					0,143																								0,143	1,000		
124						0,352																							0,352	1,000		
131							0,893																						0,961	0,929		
132							0,020	0,188																					0,208	0,904		
133	0,029	0,029																											0,190	0,640		
141										0,754																			0,754	1,000		
142										0,565																			0,663	0,852		
211										180,375			1,833																182,225	0,990		
222										0,029	0,462		0,087																0,578	0,800		
231										19,954		39,531		6,553															66,107	0,598		
242			0,017							7,011		3,505	59,592															70,126	0,850			
243												49,517																	52,099	0,950		
311												0,030	51,372		3,121													60,615	0,848			
312												0,048	108,031		0,048												108,222	0,998				
313												0,104		117,841														124,164	0,949			
321												0,034		1,422														1,998	0,712			
322												0,060		0,387		0,119											0,595	0,650				
324							0,011			0,017		0,095	3,875	3,668	0,258			76,477										84,402	0,906			
331																		0,022	0,312									0,334	0,933			
333																		0,045	0,090	0,045								0,181	0,000			
411																						4,856	0,540						5,396	0,900		
412																						14,476							14,493	0,999		
421																						0,015							0,015	1,000		
511																						1,700							1,700	1,000		
512																						19,359							19,359	1,000		
521																						0,018							0,018	1,000		
523																						0,193							0,193	1,000		
Total	0,030	12,842	3,187	0,443	0,143	0,352	0,930	0,188	0,121	0,754	0,579	207,421	0,462	44,887	59,679	56,364	55,400	111,843	121,301	1,422	0,432	89,319	0,357	7,976	15,015	0,015	1,700	19,359	0,018	0,193	745,177	
Prod Acc	1,000	0,982	0,984	1,000	1,000	0,960	1,000	1,000	1,000	0,976	0,870	1,000	0,881	0,999	0,879	0,927	0,966	0,971	1,000	0,895	0,856	0,874	0,609	0,964	1,000	1,000	1,000	1,000	Global Acc 0,917			

Overall accuracy = 91.7%

Zone 23: Overseas departments confusion matrix CLC2012 - Blind and plausibility analysis

Table 64: Confusion matrix CLC 2012 for zone 23 (Guyana/Guadeloupe/La reunion/Martinique/Mayotte) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	213	222	231	242	243	311	312	321	322	323	324	331	332	333	411	423	511	512	521	522	523 Total	User Acc
111	0,060																													0,060	1,000			
112		8,661							0,023									0,017	0,017											8,718	0,993			
121		0,046	0,541															0,017													0,604	0,896		
122		0,023		0,250																										0,273	0,916			
123				0,077																										0,077	1,000			
124					0,216																									0,216	1,000			
131						0,151																								0,151	1,000			
132						0,011																								0,011	1,000			
133							0,017																							0,017	1,000			
141								0,064																						0,064	1,000			
142									0,104																					0,104	1,000			
211									8,448								0,444													8,892	0,950			
213										0,953																				0,953	1,000			
222											1,674							0,239	0,478										2,391	0,700				
231	0,371										0,023	2,620						0,023	0,371										3,791	0,691				
242												4,894							0,544											5,438	0,900			
243	1,135						0,012					1,135	8,638					0,012											11,532	0,749				
244													1,135																	0,309	0,000			
311													113,040																	0,045	113,085	1,000		
312														0,312																0,312	1,000			
313														0,772																0,772	0,000			
321															0,015															3,741	0,996			
322																3,727														2,299	0,880			
323																	2,023													3,141	0,600			
324																		1,885	1,256											11,526	0,656			
331																		0,039												0,039	1,000			
332																		1,043												1,043	1,000			
333																		1,102												1,574	0,700			
411																		15,119												15,664	0,965			
421																		0,106												0,106	0,000			
423																		0,010												0,010	1,000			
511																		0,153												1,527	0,800			
512																			1,222												0,062	1,000		
521																			0,062												0,027	1,000		
522																			0,386												3,902	0,796		
523																			3,108	0,408											209,235	209,235	1,000	
Total	0,060	10,236	0,541	0,250	0,077	0,216	0,151	0,011	0,069	0,064	0,104	8,448	0,953	1,696	2,635	6,752	11,203	116,221	0,312	3,727	2,893	1,896	10,378	0,191	1,043	1,657	15,225	0,010	1,607	0,062	0,027	3,260	209,688	396,896
Prod Acc	1,000	0,846	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,998	Global Acc	0,964			

Overall accuracy = 96.4%

Table 65: Confusion matrix CLC 2012 for zone 23 (Guyana/Guadeloupe/La reunion/Martinique/Mayotte) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	213	222	231	242	243	311	312	313	321	322	323	324	331	332	333	411	423	511	512	521	522	523 Total	User Acc
111	0,060																														0,060	1,000			
112		8,661																													8,718	0,993			
121		0,046	0,541																												0,604	0,896			
122		0,023		0,250																										0,273	0,916				
123				0,077																										0,077	1,000				
124					0,216																									0,216	1,000				
131						0,151																								0,151	1,000				
132							0,011																							0,011	1,000				
133								0,017																						0,017	1,000				
141									0,064																					0,064	1,000				
142										0,104																				0,104	1,000				
211											8,448																			8,892	0,950				
213												0,953																		0,953	1,000				
222													1,674																	2,391	0,700				
231														0,023	2,991	0,023	0,371													3,791	0,789				
242															4,894	0,544															5,438	0,900			
243	1,135						0,012									1,135	8,661	0,012												11,532	0,751				
244																														0,309	0,000				
311																	113,040														0,045	113,085	1,000		
312																	0,312														0,312	1,000			
313																	0,772														0,772	1,000			
321														0,015				3,727													3,741	0,996			
322																	2,276														2,299	0,990			
323																	2,827	0,314													3,141	0,900			
324																1,156	1,696														11,526	0,753			
331																		0,039													0,039	1,000			
332																		1,043													1,043	1,000			
333																	0,157		0,315												1,574	0,700			
411																	0,023														15,664	0,999			
421																														0,106	0,000				
423																														0,010	1,000				
511																														1,527	0,900				
512																														0,062	1,000				
521																														0,027	1,000				
522																														3,902	1,000				
523																														209,235	209,235				
Total	0,060	9,865	0,541	0,250	0,077	0,216	0,151	0,011	0,051	0,064	0,104	8,448	0,953	1,696	3,006	6,752	11,226	114,927	0,312	0,772	3,727	2,591	2,838	10,287	0,191	1,043	1,102	15,747	0,010	1,374	0,062	0,027	3,902	209,279	401,836
Prod Acc	1,000	0,878	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	Global Acc	0,976			

Overall accuracy = 97.6%

Annex 4. Producer and user accuracy per bio-geographical region – Blind and plausibility analysis

Table 66: Producer, user and overall accuracy for Blind and plausibility analysis per bio-geographical region (6 regions from ALP to BOR region)

	ALP			ANA			ARC			ATL			BLS			BOR								
	Alpine		Anatolian		Arctic		Atlantic		BlackSea		Boreal													
	Blind Analysis	Plausibility analysis																						
	Producer User	Producer User																						
111	0,550	1,000	0,550	1,000	0,245	1,000	0,285	1,000			0,671	0,459	0,725	0,481	1,000	1,000	1,000	0,769	1,000	0,769	1,000			
112	0,820	0,905	0,904	0,966	0,970	0,929	0,994	0,933	1,000	0,944	1,000	0,944	0,931	0,871	0,941	0,892	0,990	0,915	1,000	0,986	0,934	0,984	0,983	0,986
121	0,866	0,769	0,924	0,992	0,942	0,942	0,956	0,974	0,816	1,000	0,878	1,000	0,848	0,966	0,877	0,973	0,846	0,991	0,985	0,992	0,890	0,845	0,891	0,910
122	0,947	0,935	0,926	0,975					1,000	1,000	1,000	1,000	0,867	0,574	0,867	0,613	0,946	0,988	0,988	0,989	0,960	0,984	0,957	0,991
123	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,619	1,000	0,619	0,930	0,947	0,930	0,945	1,000	0,854	1,000	1,000	0,993	0,993	0,993	0,993	
124	0,939	1,000	0,939	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,956	0,943	0,981	0,944	1,000	1,000	1,000	1,000	0,835	1,000	0,835	1,000	
131	0,795	0,937	0,823	0,939	0,967	0,982	1,000	1,000	1,000	1,000	1,000	0,860	0,983	0,863	0,990	0,310	1,000	0,310	1,000	0,875	0,913	0,896	0,948	
132	0,807	0,955	0,807	1,000	0,511	1,000	0,511	1,000					0,728	0,976	0,773	0,953	1,000	0,065	1,000	1,000	0,688	0,752	0,850	0,789
133	0,530	0,849	0,741	0,981	0,877	1,000	0,947	0,975	0,323	1,000	0,488	1,000	0,836	0,451	0,859	0,503	0,733	0,108	0,868	0,500	0,788	0,329	0,830	0,867
141	0,736	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,800	1,000	1,000	0,837	0,634	0,870	0,584	1,000	0,761	1,000	1,000	0,907	0,985	0,943	1,000	
142	0,757	0,646	0,832	0,964	0,667	1,000	0,667	1,000	0,980	1,000	0,980	1,000	0,852	0,863	0,916	0,793	0,850	0,763	0,889	0,771	0,947	0,996	0,965	0,993
211	0,912	0,988	0,910	0,991	0,893	0,750	0,946	0,828	1,000	0,116	1,000	0,118	0,925	0,961	0,936	0,972	0,819	0,982	0,838	0,998	0,874	0,852	0,894	0,865
212	1,000	1,000	1,000	1,000	0,944	0,960	1,000	0,962					0,500	0,827	0,500	0,827	0,500	0,989	1,000	0,994				
213					1,000	0,966	1,000	0,966								0,750	1,000	0,750	1,000					
221	0,852	0,492	0,903	0,981	0,178	1,000	0,342	1,000					0,945	0,760	1,000	0,772	0,552	1,000	0,552	1,000				
222	0,639	0,716	0,670	0,726	0,838	0,894	0,838	0,905					0,538	0,987	0,571	0,988	0,588	0,635	0,588	0,635	0,680	1,000	0,770	1,000
223					0,030	1,000	0,030	1,000																
231	0,642	0,830	0,873	0,858	0,739	0,607	0,834	0,711	0,897	0,991	0,934	0,992	0,857	0,926	0,897	0,936	0,927	0,318	0,993	0,333	0,491	0,519	0,597	0,615
241																0,007	1,000							
242	0,768	0,602	0,945	0,816	0,652	0,725	0,652	0,838	0,789	1,000	0,986	1,000	0,869	0,731	0,901	0,809	0,574	0,466	0,574	0,630	0,800	0,758	0,813	0,872
243	0,691	0,680	0,767	0,793	0,691	0,796	0,761	0,905					0,798	0,473	0,877	0,550	1,000	0,290	1,000	0,292	0,791	0,822	0,836	0,835
244																								
311	0,885	0,944	0,934	0,986	0,692	1,000	0,902	1,000	0,611	1,000	0,778	1,000	0,907	0,971	0,913	0,979	0,864	0,943	0,864	1,000	0,841	0,882	0,859	0,962
312	0,794	0,936	0,919	0,984	1,000	0,895	1,000	1,000	0,500	1,000	0,700	1,000	0,898	0,896	0,933	0,969	1,000	0,888	1,000	0,888	0,831	0,948	0,866	0,984
313	0,846	0,834	0,954	0,904	0,913	1,000	0,913	1,000	0,667	0,845	0,667	0,891	0,854	0,737	0,936	0,756	0,762	0,751	0,903	0,782	0,859	0,688	0,947	0,750
321	0,813	0,780	0,909	0,896	0,811	0,562	0,945	0,693	0,890	0,969	0,951	0,972	0,770	0,716	0,867	0,831	1,000	0,736	1,000	0,736	0,459	0,987	0,584	0,990
322	0,890	0,891	0,952	0,949					0,850	0,962	0,950	0,991	0,806	0,811	0,838	0,946					0,986	0,584	0,986	0,714
323	0,174	0,721	0,336	1,000	0,667	1,000	0,667	1,000																
324	0,778	0,350	0,891	0,562	0,852	0,837	0,926	0,961	0,419	0,259	0,472	0,819	0,819	0,756	0,862	0,810	0,816	0,822	0,817	0,823	0,791			

Table 67: Producer, user and overall accuracy for Blind and plausibility analysis per bio-geographical region (6 regions from CON to STE region)

	Continental		Oversea department		Macaronesia		Mediterranean		Pannonian		Steppic	
	Blind Analysis	Plausibility analysis	Blind Analysis	Plausibility analysis	Blind Analysis	Plausibility analysis	Blind Analysis	Plausibility analysis	Blind Analysis	Plausibility analysis	Blind Analysis	Plausibility analysis
	Producer User	Producer User	Producer User	Producer User	Producer User	Producer User	Producer User	Producer User	Producer User	Producer User	Producer User	Producer User
111	0,753	0,526	0,853	0,558	1,000	1,000	1,000	0,025	1,000	0,025	1,000	0,856
112	0,865	0,925	0,940	0,981	0,993	0,846	0,993	0,878	1,000	1,000	1,000	0,968
121	0,903	0,708	0,973	0,850	0,896	1,000	0,896	1,000	1,000	1,000	1,000	0,921
122	0,850	0,813	0,921	0,971	0,916	1,000	0,916	1,000	1,000	1,000	1,000	0,936
123	1,000	0,973	1,000	0,973	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,944
124	0,962	0,996	0,986	0,996	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,952
131	0,819	0,765	0,873	0,967	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,847
132	0,758	0,747	0,873	0,979	1,000	1,000	1,000					0,966
133	0,653	0,791	0,751	0,582	1,000	0,249	1,000	0,331	0,964	1,000	0,964	0,786
141	0,888	0,548	0,913	0,664	1,000	1,000	1,000					0,775
142	0,927	0,557	0,978	0,589	1,000	1,000	1,000	1,000	0,906	1,000	0,906	0,914
211	0,909	0,945	0,950	0,960	0,950	1,000	0,950	1,000				0,860
212			0,500	1,000				1,000	1,000	1,000	1,000	0,958
213	0,950	0,881	0,997	1,000	1,000	1,000	1,000					0,982
221	0,651	0,605	0,747	0,925								0,962
222	0,544	0,564	0,656	0,844	0,700	0,987	0,700	0,987				0,977
223												0,974
231	0,733	0,806	0,814	0,914	0,691	0,994	0,789	0,995	1,000	0,900	1,000	0,790
241	0,992	0,729	0,996	0,715								0,996
242	0,642	0,507	0,778	0,649	0,900	0,725	0,900	0,725				0,702
243	0,802	0,620	0,894	0,791	0,749	0,771	0,751	0,771	0,741	1,000	1,000	0,823
244												0,695
311	0,879	0,949	0,926	0,978	1,000	0,973	1,000	0,984	1,000	1,000	1,000	0,860
312	0,860	0,973	0,945	0,986	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,790
313	0,916	0,773	0,979	0,821			1,000	1,000				0,785
321	0,380	0,830	0,617	0,947	0,996	1,000	0,996	1,000	0,500	0,090	1,000	0,668
322	0,579	0,834	0,579	0,777	0,880	0,699	0,990	0,878	1,000	0,121	1,000	0,783
323	0,857	1,000	1,000	0,378	0,600	0,994	0,900	0,996	1,000	0,835	1,000	0,790
324	0,614	0,419	0,800	0,641	0,656	0,729	0,753	0,843	1,000	0,669	1,000	0,669
331	0,644	0,189	0,844	0,322	1,000	0,202	1,000	0,202	0,667	1,000	1,000	0,917
332	0,695	0,832	0,695	1,000	1,000	1,000	1,000	0,754	1,000	0,754	1,000	0,492
333	0,458	0,249	0,618	1,000	0,700	0,665	0,700	1,000	0,548	0,982	1,000	0,877
334	0,458	1,000	0,458	1,000				0,888	1,000	0,888	1,000	0,841
335												0,741
411	0,778	0,564	0,882	0,565	0,965	0,993	0,999	0,993				0,962
412	0,564	0,846	0,848	0,996				1,000	1,000	1,000	1,000	
421	0,668	1,000	0,668	0,961								0,886
422	0,349	0,483	1,000	0,729								0,928
423	1,000	0,139	1,000	0,335	1,000	1,000	1,000	1,000				0,794
511	0,882	0,900	0,942	1,000	0,800	0,760	0,900	1,000				0,824
512	0,965	0,986	0,978	0,994	1,000	1,000	1,000	1,000				0,984
521	0,873	0,890	0,897	0,892	1,000	1,000	1,000	1,000				0,969
522	1,000	1,000	1,000	1,000	0,796	0,953	1,000	1,000				0,925
523	0,936	0,141	0,936	1,000	1,000	0,998	1,000	1,000	1,000	1,000	1,000	1,000
Global Acc	0,839	0,907	0,964	0,976	0,803	0,903	0,903	0,807	0,865	0,869	0,935	0,870
												0,964

Annex 5. Confusion matrix CLC2012 per Bio-geographical region

Bio-geographical region ALP - Alpine - confusion matrix CLC2012 - Blind and plausibility analysis

Table 68: Confusion matrix CLC 2012 for Alpine region –BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	221	222	223	231	242	243	311	312	313	321	322	323	324	331	332	333	334	335	411	412	423	511	512	523 Total	User Acc
111	0,236	0,186	0,008																														0,430	0,55				
112		34,598							0,008																							42,212	0,82					
121		0,216	2,471																													0,160	2,852	0,86				
122		0,027	0,649						0,009																						0,685	0,94						
123			0,003																												0,003	1,00						
124		0,020			0,306																										0,326	0,93						
131	0,025				0,980													0,034	0,073		0,073										0,004	1,233	0,79					
132					0,054	0,227																								0,281	0,80							
133	0,013	0,025	0,045		0,012	0,011	0,173			0,042								0,006												0,326	0,53							
141	0,017					0,092	0,017																							0,125	0,73							
142	0,010					0,014		2,261										0,005	0,024	0,017	0,308	0,076	0,028	0,113		0,133				2,988	0,75							
211								53,107			0,007		5,110							0,005				0,012							58,242	0,91						
212									1,034																					1,034	1,00							
221		0,168							0,316	2,780																				3,264	0,85							
222	0,024								0,217		0,082	2,033			0,762																3,181	0,63						
231	2,228										1,547	0,330	78,778	6,736	16,374						4,455	5,960			6,235						122,643	0,64						
242	0,542										1,244			1,652	30,845	1,682	4,184														40,148	0,76						
243											0,797		6,720	8,685	69,599	3,221			1,652											100,665	0,69							
244														0,016																0,016	0,00							
311												4,011	423,111			9,407															478,070	0,88						
312								1,063				1,081		0,452	1,081	331,728	18,598			0,034		63,857								417,894	0,79							
313														7,323	13,838	192,032	0,985					12,838								227,015	0,84							
321												1,064	2,215	1,205	1,209	1,143	143,728	15,191			6,305								176,858	0,81								
322													0,830		1,222		9,612	296,295			14,563		3,937	6,344						332,803	0,89							
323																	1,735	1,622	5,965												9,322	0,17						
324	0,872					0,081						0,332		3,692	7,917	4,801	2,749	2,722	2,090	89,222	0,206										114,716	0,77						
331																	0,017		0,034		0,017	0,572	0,067	0,017								0,725	0,78					
332														0,059		0,046		3,220	1,335	0,628	0,348	142,180	15,354		4,666						167,835	0,84						
333						0,078						0,003					16,313	10,332		1,905	2,310	304,324									335,265	0,90						
334															0,120		0,056			0,186			0,018	0,344							0,724	0,47						
335																				0,744	0,224	21,514									22,482	0,95						
411												0,050								0,050									0,044	0,169								
412												0,040					0,014		7,125		1,779									0,980	0,68							
423																															100,203	0,89						
511								0,064																						0,014	1,00							
512																															1,949	0,96						
523																															89,782	1,00						
Total	0,236	38,235	3,214	0,694	0,003	0,306	1,046	0,238	0,204	0,092	3,500	53,746	1,034	5,652	2,837	0,330	94,875	51,270	102,316	448,178	354,449	230,186	184,350	332,464	2,250	255,036	0,778	149,238	330,006	0,377	26,180	0,856	89,281	0,014	1,930	91,892	0,365	2408,836
Prod Acc	1,000	0,905	0,769	0,935	1,000	1,000	0,937	0,955	0,849	1,000	0,646	0,988	1,000	0,492	0,716	0,000	0,830	0,602	0,680	0,944	0,936	0,834	0,780	0,891	0,721	0,350	0,735	0,953	0,922	0,912	0,822	0,779	1,000	1,000	0,977	1,000		
																																					Global Acc	0,84

Overall accuracy = 84.3%

Table 69: Confusion matrix CLC 2012 for Alpine region –PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	231	242	243	311	312	313	321	322	323	324	331	332	333	334	335	411	412	423	511	512	523 Total	User Acc
111	0,236	0,186	0,008																														0,430	0,55				
112		38,173																															42,212	0,90				
121		0,216	2,636																														2,852	0,92				
122		0,027	0,634																														0,685	0,92				
123			0,003																														0,003	1,00				
124		0,020		0,306																													0,326	0,93				
131			1,014																	0,146												0,004	1,233	0,82				
132			0,054	0,227																0,025												0,281	0,80					
133	0,013	0,013	0,016				0,012	0,242	0,013	0,013										0,006												0,326	0,74					
141								0,125																								0,125	1,00					
142	0,005						0,005	2,424											0,005		0,006	0,152		0,142							2,912	0,83						
211								53,028										0,007	5,124	0,078			0,005									58,242	0,91					
212									1,034																						1,034	1,00						
221								0,316	2,948																						3,264	0,90						
222	0,024						0,144		0,058	2,131									0,762													3,181	0,67					
231										107,032								13,407					1,096										122,643	0,87				
242										2,194	37,954																					40,148	0,94					
243								0,797		0,797	9,201	6,640	77,225	1,784					0,608													100,665	0,76					
244													0,016																			0,016	0,00					
311										0,023			0,482	446,042	0,010	4,742																477,589	0,93					
312										2,392			2,392	382,174	14,037																416,050	0,91						
313													3,245	216,249	0,985																226,605	0,95						
321													1,205	0,079	1,143	160,776	6,191						6,221								176,858	0,90						
322													0,971		3,163	316,654							10,478								332,728	0,95						
323													0,226		3,131	5,965															9,322	0,33						
324	0,872									1,163			1,999	3,442	0,614	2,362	1,789		102,107	0,206														114,553	0,89			
331																		0,017	0,034				0,607	0,067										0,725	0,83			
332							0,078						0,003					3,154	0,386		0,708		157,925	5,652		0,009									167,835	0,94		
333																	8,000	10,254		1,000		2,041	313,889											335,265	0,93			
334														0,018				0,330						0,323	0,224	21,936										0,724	0,51	
335																																		22,482	0,97			
411										0,050													0,050											0,169	0,980			
412										0,014			0,025		0,014																			0,72	0,72			
423																																		0,014	1,00			
511																																		1,949	0,96			
512																																		89,782	1,00			
523																																		0,365	0,365			
Total	0,236	39,534	2,657	0,651	0,003	0,306	1,080	0,227	0,246	0,125	2,514	53,523	1,034	0,797	3,006	2,935	124,815	46,515	97,371	452,478	388,543	239,165	179,366	333,519	3,131	181,722	0,813	160,356	322,536	0,376	21,945	0,714	98,370	0,014	1,885	91,731	0,365	2640,361
Prod Acc	1,000	0,966	0,992	0,975	1,000	1,000	0,939	1,000	0,981	1,000	0,964	0,991	1,000	0,000	0,981	0,726	0,858	0,816	0,793	0,986	0,984	0,904	0,896	0,949	1,000	0,562	0,747	0,985	0,973	1,000	1,000	0,995	1,000	1,000	0,979	1,000	Global Acc 0,92	

Overall accuracy = 92.5%

Bio-geographical region ANA - Anatolian- confusion matrix CLC2012 - Blind and plausibility analysis

Table 70: Confusion matrix CLC 2012 for Anatolian region – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	123	124	131	132	133	141	142	211	212	213	221	222	223	231	242	243	311	312	313	321	322	323	324	331	332	333	335	411	422	511	512	521	Total	User Acc
111	0,274	0,843																														1,116	0,2				
112		17,875																														18,434	0,9				
121	0,099	3,198																														3,395	0,9				
122		0,050																														0,050	0,0				
123		0,002																														0,002	1,0				
124		1,027																														1,027	1,0				
131	0,038		2,068																													2,138	0,9				
132		0,079																														0,154	0,5				
133	0,033	0,111				1,721																									1,963	0,8					
141			0,090																													0,090	1,0				
142			0,030																													0,045	0,6				
211			129,300			0,028												7,732	7,749													144,808	0,8				
212			6,440			184,332												4,522														195,294	0,9				
213			1,190																													1,190	1,0				
221	0,384																	0,610	0,994														3,434	0,1			
222																		16,746															19,980	0,8			
223																		0,964	0,030														0,994	0,0			
231			1,676			1,576												51,290															69,397	0,7			
241																		0,009														0,009	0,0				
242			5,941			6,022	0,042										2,940	44,854	8,952													68,783	0,6				
243			24,054														12,554	6,277	109,875														159,054	0,6			
311																		29,274	2,672														42,324	0,6			
312																		22,733															22,733	1,0			
313																		14,919															16,347	0,9			
321																	4,902																253,280	0,8			
322																		205,457	4,902														0,008	0,0			
323																		1,790															5,369	0,6			
324																		5,570															148,527	0,8			
331																	0,288																1,234	0,6			
332																		19,917															71,497	0,6			
333			4,839															9,695															319,933	0,5			
335																		111,576																0,025	1,0		
411																	4,839																	7,727	0,9		
421																	0,025																	6,625	0,0		
422																	0,284																	0,341	1,0		
511																		0,390																2,393	0,8		
512																		0,030																44,496	1,0		
521																		0,186	0,186														0,012	1,0			
Total	0,274	19,234	3,396	0,002	1,027	2,106	0,079	1,721	0,090	0,030	172,325	191,983	1,233	0,610	18,734	0,030	84,562	61,896	138,005	29,274	25,405	14,919	365,407	4,902	3,579	151,283	1,037	54,803	229,690	0,025	7,865	0,341	1,991	46,357	0,012	1260,789	
Prod Acc	1,000	0,929	0,942	1,000	1,000	0,982	1,000	1,000	1,000	0,750	0,960	0,966	1,000	0,894	1,000	0,607	0,725	0,796	1,000	0,895	1,000	0,562	0,000	1,000	0,837	0,821	0,911	0,823	1,000	0,901	1,000	0,960	1,000	Global Acc	0,7		

Overall accuracy = 77.1%

Table 71: Confusion matrix CLC 2012 for Anatolian region – PLausibility Analysis- In column the validation and line the production

CLC Clas	111	112	121	123	124	131	132	133	141	142	211	212	213	221	222	223	231	242	243	311	312	313	321	323	324	331	332	333	335	411	422	511	512	521	Total	User Acc
111	0,319	0,798																														1,116	0,285			
112		18,317																														18,434	0,994			
121	0,099	3,247						0,048																							3,395	0,956				
122		0,050																														0,050	0,000			
123		0,002																														0,002	1,000			
124			1,027																													1,027	1,000			
131			2,138																													2,138	1,000			
132				0,079																												0,154	0,511			
133	0,033	0,038																														1,963	0,947			
141									0,090																						0,090	1,000				
142									0,030																						0,045	0,667				
211										137,031	0,028										7,732	0,017									144,808	0,946				
212										0,030	195,236										0,028									195,294	1,000					
213											1,190																			1,190	1,000					
221	0,384											1,173	0,769								0,723	0,384								3,434	0,342					
222												16,746									1,617	1,617								19,980	0,838					
223												0,964	0,030																	0,994	0,030					
231												3,251	1,576								57,857									69,397	0,834					
241													5,941	6,022	0,042						0,009									0,009	0,000					
242													19,243								2,969	44,826	8,952								68,783	0,652				
243														12,554	6,277	120,963						0,017										159,054	0,761			
311																				38,165										42,324	0,902					
312																				22,733										22,733	1,000					
313																				14,919										16,347	0,913					
321																				239,372										253,280	0,945					
322																				1,790										0,008	0,000					
323																				10,962	137,564									5,369	0,667					
324																				0,946										148,527	0,926					
331																				14,956										1,234	0,766					
332																				72,690										71,497	0,721					
333																				247,243										319,933	0,773					
335																				0,025										0,025	1,000					
411																				0,390										0,302	0,958					
421																				3,897										6,625	0,000					
422																				0,372										0,341	1,000					
511																				0,740										2,393	0,845					
512																				0,021										44,496	1,000					
521																				0,012										0,012	1,000					
Total	0,319	19,630	3,335	0,002	1,027	2,138	0,079	1,906	0,090	0,030	165,572	202,887	1,233	1,173	18,509	0,030	81,428	53,468	133,707	38,165	22,733	14,919	345,212	3,579	143,160	1,318	56,481	265,134	0,025	8,209	0,341	2,021	46,357	0,012	1412,552	
Prod Acc	1,000	0,933	0,974	1,000	1,000	1,000	0,975	1,000	1,000	0,828	0,962	0,966	1,000	0,905	1,000	0,711	0,838	0,905	1,000	1,000	1,000	1,000	0,693	1,000</td												

Bio-geographical region ARC - Arctic - confusion matrix CLC2012 - Blind and plausibility analysis

Table 72: Confusion matrix CLC 2012 for Arctic region – BLIND ANALYSIS-In column the validation and line the production

CLC Classes	112	121	122	123	124	131	133	141	142	211	231	242	243	311	312	313	321	322	324	331	332	333	335	411	412	421	423	511	512	521	522	523	Total	User Acc		
112	0,431																														0,431	1,000				
121		0,243				0,018																									0,298	0,816				
122			0,012																													0,012	1,000			
123				0,030																												0,030	1,000			
124					0,118																											0,118	1,000			
131						0,049																										0,049	1,000			
133	0,026						0,025																									0,076	0,323			
141								0,056																								0,070	0,800			
142									0,611																							0,623	0,980			
211										0,095																						0,095	1,000			
231											0,709	9,544		0,352						0,017	0,009										10,644	0,897				
242											0,011	0,014	0,174									0,022										0,220	0,789			
311														0,735							0,201	0,267										1,203	0,611			
312															0,064	0,039					0,026											0,129	0,500			
313																0,210	0,042	0,063														0,315	0,667			
321																	11,510	1,277				0,150										12,937	0,890			
322																		126,001			22,235											148,236	0,850			
324																	0,077	0,065					0,140	0,531	0,586									1,400	0,419	
331																			13,029	1,548													14,795	0,881		
332																			85,585	9,926	10,063											105,587	0,811			
333																		1,954	7,516	47,140	0,075												56,685	0,832		
335																				44,360														44,360	1,000	
411																	0,161				0,081	0,081										1,614	0,600			
412																		2,771	1,386														26,328	0,789		
421																				1,386	20,785												0,109	0,800		
423																				0,022	0,087												0,360	0,753		
511																				0,241														3,484	0,931	
512																						3,243													6,161	1,000
521																						6,161													0,618	1,000
522																						0,071													0,118	0,400
523																							0,047												0,105	1,000
Total	0,457	0,243	0,012	0,048	0,118	0,049	0,025	0,056	0,611	0,815	9,636	0,174	0,417	0,735	0,064	0,248	11,883	130,932	2,265	15,305	94,730	79,470	54,498	2,376	21,039	0,105	0,272	3,532	6,254	0,671	0,065	0,105	372,892			
Prod Acc	0,944	1,000	1,000	0,619	1,000	1,000	1,000	1,000	1,000	0,116	0,991	1,000	0,000	1,000	1,000	0,845	0,969	0,962	0,259	0,851	0,903	0,593	0,814	0,408	0,988	0,830	1,000	0,918	0,985	0,921	0,727	1,000	Global Acc	0,853		

Overall accuracy = 85.3%

Table 73: Confusion matrix CLC 2012 for Arctic region – PLAUSIBILITY ANALYSIS-In column the validation and line the production

CLC Classe	112	121	122	123	124	131	133	141	142	211	231	242	243	311	312	313	321	322	323	324	331	332	333	335	411	412	421	423	511	512	521	522	523	Total	User Acc					
112	0,431																															0,431	1,000							
121		0,261				0,018																										0,298	0,878							
122			0,012																													0,012	1,000							
123				0,030																												0,030	1,000							
124					0,118																											0,118	1,000							
131						0,049																										0,049	1,000							
133	0,026						0,025																									0,050	0,488							
141								0,070																								0,070	1,000							
142									0,611																							0,623	0,980							
211										0,095																						0,095	1,000							
231											0,706	9,938																			10,644	0,934								
242												0,003	0,206																		0,209	0,986								
311													0,936									0,134		0,134						1,203	0,778									
312														0,090	0,026							0,013								0,129	0,700									
313														0,210	0,042	0,063														0,315	0,667									
321															12,298	0,639														12,937	0,951									
322																140,824	7,412													148,236	0,950									
324																	0,077	0,065													1,400	0,472								
331																		0,140	0,456												14,800	0,914								
332																			13,532	1,268											105,587	0,905								
333																				95,602	9,972											56,685	0,931							
335																				0,075	3,758	52,777	0,075									44,360	1,000							
411																					1,210	0,081										0,081	1,614	0,750						
412																					1,386	23,556											24,942	0,944						
421																						0,109											0,109	1,000						
423																							0,289											0,053	0,018					
511																								3,243											3,484	0,931				
512																									6,161											6,161	1,000			
521																										0,618											0,618	1,000		
522																											0,118											0,118	1,000	
523																												0,105											0,105	1,000
Total	0,457	0,261	0,012	0,048	0,118	0,049	0,025	0,070	0,611	0,801	10,018	0,206	0,065	0,936	0,090	0,235	12,654	142,115	7,412	0,808	13,929	100,629	52,795	54,406	2,596	23,637	0,109	0,289	3,243	6,254	0,671	0,136	0,105	408,545						
Prod Acc	0,944	1,000	1,000	0,619	1,000	1,000	1,000	1,000	1,000	0,118	0,992	1,000	0,000	1,000	1,000	0,891	0,972	0,991	0,000	0,819	0,972	0,950	1,000	0,815	0,466	0,997	1,000	1,000	0,985	0,921	0,870	1,000	Global Acc	0,937						

Overall accuracy = 93.7%

Bio-geographical region ATL - Atlantic - confusion matrix CLC2012 - Blind and plausibility analysis

Table 74: Confusion matrix CLC 2012 for Atlantic region – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	221	222	231	242	243	311	312	313	321	322	323	324	331	332	333	334	411	412	421	422	423	511	512	521	522	523 Total	User Acc	
111	1,919	0,496	0,222						0,148	0,074																							2,859	0,671							
112	2,238	175,548	0,064	2,238					2,220	1,980		2,309						1,980		0,016													188,644	0,931							
121		1,169	26,192	0,355	0,104				1,447		0,072	0,021					0,691	0,014		0,016												30,871	0,848								
122			0,142	3,684					0,005									0,202		0,216													4,249	0,867							
123			0,050	1,954					0,029								0,034		0,034													2,101	0,930								
124			0,082		4,064												0,107															4,254	0,956								
131	0,005	0,034			6,563		0,007	0,007								0,173															7,634	0,860									
132		0,036			0,018	0,598	0,066	0,018	0,037							0,030														0,821	0,728										
133	0,079	0,165	0,037	0,006	0,044	0,014	3,255		0,038	0,115						0,086	0,032	0,006			0,017									3,894	0,836										
141		0,145					5,317	0,063	0,145							0,530	0,151														6,350	0,837									
142	0,629			0,247				0,966	20,664	0,587						1,165															24,259	0,852									
211	7,074				0,009				913,729	0,038			19,735	36,812	10,609						0,005									988,023	0,925										
212									0,183				0,183																		0,367	0,500									
213																					0,005										0,005	0,000									
221									15,580				0,915																	16,495	0,945										
222									0,465	0,040	2,150		1,316									0,026									3,998	0,538									
231	9,086				0,009		3,062	10,008				593,006	27,785	39,616		9,086		0,052	0,052		0,008		0,052	0,019								691,840	0,857								
241	0,688							0,028		0,028		1,461	2,064																		4,270	0,000									
242								19,699	4,878		3,351	190,659	0,193	0,193					0,193												219,358	0,869									
243	1,403							3,070			9,741	1,403	75,349	1,284			0,186		0,503		1,006									94,447	0,798										
311									1,177			9,751	283,616	0,005	14,857						3,163									312,589	0,907										
312	0,800	0,054									0,095		4,831		215,948	2,979				15,683									240,419	0,898											
313	0,434							0,286			0,286		2,225	3,278	2,970	58,635				0,526									68,640	0,854											
321		0,018					0,018				6,051	0,173	5,470				60,996	3,089		0,211		3,089								0,030	0,770										
322	4,024				0,010						0,227		0,830		2,889		17,582	144,666		9,157										179,386	0,806										
324					0,020			0,331			0,370	0,009	0,573	3,524	7,296	2,805	0,026	5,464	96,587			0,030	0,009	0,580						117,937	0,819										
331	0,027																0,100	0,100	0,100	2,912										0,120	3,501	0,832									
332												0,074					0,148	0,315		5,668	0,518										6,724	0,843									
333					0,009											0,662	1,669	0,183	0,036		81,260									83,820	0,969										
334																0,029			0,626											0,655	0,956										
411					0,020						0,232						0,071		0,213			6,211	0,071	0,156						7,157	0,868										
412								2,795	5,554		2,777	0,078	5,631	22,214						1,784		119,018		4,053							159,850	0,745									
421								0,368																						4,420	0,917										
422								0,053															0,212								0,265	0,800									
423							0,005	0,005			0,044							0,060		0,005	0,164		0,005		0,005	0,237	1,618		0,014	0,102											
511											0,046																			2,263	0,715										
512		0,009			0,014																									6,717	0,925										
521																															40,034	0,933									
522	0,121																														2,261	0,906									
523												0,122					0,052														2,463	0,929									
Total	4,184	201,556	27,111	6,419	2,064	4,311	6,678	0,612	7,209	8,384	23,943	950,798	0,222	20,499	2,178	640,725	260,783	159,274	292,117	241,002	79,539	85,229	178,457	0,236	127,734	3,075	5,668	86,727	0,676	6,220	120,424	4,512	0,212	1,713	8,042	38,070	0,084	3,971	2,446	3170,410	
Prod Acc	0,459	0,871	0,966	0,574	0,947	0,943	0,983	0,976	0,451	0,634	0,863	0,961	0,827	0,760	0,987	0,926	0,731	0,473	0,971	0,896	0,737	0,716	0,811	0,000	0,756	0,947	1,000	0,937	0,927	0,998	0,988	0,898	1,000	0,944	0,772	0,981	1,000	0,516	0,936	Global Acc	0,877

Overall accuracy = 87.7%

Table 75: Confusion matrix CLC 2012 for Atlantic region – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	212	221	222	231	241	242	243	311	312	313	321	322	323	324	331	332	333	334	411	412	421	422	423	511	512	521	522	523 Total	User Acc
111	2,072	0,565	0,148						0,074																										2,859	0,725					
112	2,238	177,567	0,025	2,238					2,243		1,980	0,048			2,238				0,016						0,050									188,644	0,941						
121	0,691	27,086		0,104					0,923		0,072	0,043			0,691		0,014			0,024	0,016	0,016	0,731										30,871	0,877							
122		0,142	3,684						0,005							0,202			0,216															4,249	0,867						
123		0,034	0,050	1,954					0,029									0,034																2,101	0,930						
124		0,082		4,171																														4,254	0,981						
131		0,034			6,591				0,007		0,007				0,168								0,203									7,634	0,863								
132		0,018				0,018	0,634	0,066		0,037					0,030								0,018									0,821	0,773								
133	0,070	0,103	0,037	0,006		0,022	0,031	3,338		0,067	0,082				0,085		0,006	0,006				0,017									3,885	0,859									
141		0,145					5,525	0,063							0,467		0,151																6,350	0,870							
142			0,247					0,288	22,218	0,587					0,918																	24,259	0,916								
211	3,537			0,009			3,537		925,176	0,038			19,368	25,743	10,614							0,183									988,023	0,936									
212																																0,367	0,500								
213																																0,005	0,000								
221										16,495																						16,495	1,000								
222										0,398		2,284		1,290										0,026									3,998	0,571							
231	9,086						3,062	9,848			620,491		15,637	33,593					0,052	0,052	0,019										691,840	0,897									
241	0,688							0,028		0,028	0,028		3,497																			4,270	0,007								
242								12,795	4,878	3,342	197,563	0,193	0,193		0,009		0,193														219,358	0,901									
243	1,403						0,503	1,786			4,923		82,854	1,284		0,186		1,006														94,447	0,877								
311												9,751	285,481		14,792																	312,589	0,913								
312	0,800											4,831	224,324	2,979																			240,324	0,933							
313	0,434											0,286		1,577	0,745	64,215																68,640	0,936								
321								0,018				5,241	0,309	4,438			68,608			0,472													79,140	0,867							
322	4,024							0,020				0,430		0,830	0,830	12,489	150,281		10,503													179,386	0,838								
324												0,332		0,009	0,250	2,841	5,587	2,794	1,282	1,839	101,696											117,937	0,862								
331	0,027																		0,100	3,259															3,501	0,931					
332																			0,074	0,222		6,279	0,148												6,724	0,934					
333																			0,010	0,651	0,036	83,122													83,820	0,992					
334																						0,655														0,655	1,000				
411							0,020					0,151											6,576	0,071	0,156									7,157	0,919						
412												2,795	2,777		5,554		0,078						148,647		4,053									159,850	0,930						
421												0,368											0,265										4,420	0,917							
422																																	0,265	1,000							
423							0,005					0,049											0,120	1,932																	

Bio-geographical region BLS – Black sea - confusion matrix CLC2012 - Blind and plausibility analysis

Table 76: Confusion matrix CLC 2012 for Black sea region – BLIND ANALYSIS -In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	231	242	243	244	311	312	313	321	324	331	332	333	411	421	422	511	512	521	523 Total	User Acc		
111	0,255																														0,255	1,000						
112		2,360							0,023																						2,383	0,990						
121			1,345							0,221	0,014	0,009																			1,589	0,846						
122				0,012	0,988	0,019																									1,044	0,946						
123					0,112																											0,112	1,000					
124						0,064																										0,064	1,000					
131							0,132		0,220																						0,425	0,310						
132								0,015																								0,015	1,000					
133				0,012					0,205																						0,280	0,733						
141										0,029																						0,029	1,000					
142	0,034									0,264																						0,310	0,850					
211											287,358						9,913	13,387	40,196													350,855	0,819					
212											4,522	4,522																			9,044	0,500						
213												0,870																				1,159	0,750					
221											0,658		0,811																		1,468	0,552						
222												5,244			0,104		3,574															8,922	0,588					
231									0,035					4,635				0,330														5,000	0,927					
242											3,011		12,044		2,930	3,011															20,997	0,574						
243													19,243																			19,243	1,000					
311														51,487		8,017																	59,578	0,864				
312														24,399																			24,399	1,000				
313			1,428											3,068	3,068	24,195																31,761	0,762					
321															28,614																		28,614	1,000				
324														0,040		5,426	24,214															29,680	0,816					
331																0,463																	0,009	0,500				
332																	4,961																	4,961	1,000			
333								0,082									4,839	4,839															14,616	0,332				
411																		4,058	0,657															4,715	0,861			
421																		0,279																	0,279	0,000		
422																			0,033																0,033	1,000		
511																			0,245																1,605	0,847		
512																				1,360															1,130	0,954		
521																				1,078															2,902	1,000		
523			0,185																		2,902															0,334	0,519	
Total	0,255	2,580	1,357	1,000	0,131	0,064	0,132	0,236	1,891	0,039	0,346	292,573	4,574	0,870	0,811	8,255	14,573	25,826	66,273	3,011	54,595	27,467	32,212	38,880	29,446	0,475	4,961	4,894	4,365	0,657	0,033	1,360	1,104	2,902	0,343	513,452		
Prod Acc	1,000	0,915	0,991	0,988	0,854	1,000	1,000	0,065	0,108	0,761	0,763	0,982	0,989	1,000	1,000	0,635	0,318	0,466	0,290	0,000	0,943	0,888	0,751	0,736	0,822	0,975	1,000	0,992	0,930	0,000	1,000	1,000	0,977	1,000	0,974			
																																					Global Acc	0,817

Table 77: Confusion matrix CLC 2012 for Black sea region – PLAUSIBILITY ANALYSIS -In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	231	242	243	244	311	312	313	321	324	331	332	333	411	422	511	512	521	523 Total	User Acc		
111	0,255																														0,255	1,000					
112		2,383																													2,383	1,000					
121			1,566																												1,569	0,985					
122			0,012	1,032																										1,044	0,988						
123				0,112																										0,112	1,000						
124					0,064																									0,064	1,000						
131						0,132																								0,425	0,310						
132							0,015																							0,015	1,000						
133		0,012						0,243																						0,280	0,868						
141									0,029																					0,029	1,000						
142	0,034									0,276																				0,310	0,889						
211										#####								9,948	6,694	40,162										350,855	0,838						
212											9,044																			9,044	1,000						
213												0,870									0,290								1,159	0,750							
221												0,658																		1,468	0,552						
222													5,244									0,104	3,574								8,922	0,588					
231													0,035																	5,000	0,993						
242													3,011																	20,997	0,574						
243														12,044																19,243	1,000						
311															4,965															59,578	0,864						
312															19,243															24,399	1,000						
313																51,487														31,761	0,903						
321																	24,399													28,614	1,000						
324																		3,068	28,692										29,680	0,817							
331																			28,614											0,500	0,982						
332																			5,426	24,254										4,961	1,000						
333																				0,491											14,616	0,332					
411													0,082																	4,715	1,000						
421																					0,279										0,279	0,000					
422																						0,033										0,033	1,000				
511																							0,245										1,605	0,847			
512																								1,360										1,130	0,954		
521																									1,078										2,902	1,000	
523																										2,902										0,519	1,000
Total	0,255	2,418	1,578	1,044	0,112	0,064	0,132	0,015	0,487	0,029	0,358	#####	9,096	0,870	0,811	8,255	14,913	19,132	65,909	3,011	51,487	27,467	36,709	38,880	29,486	0,491	4,961	4,856	4,994	0,033	1,360	1,104	2,902	0,528	530,743		
Prod Acc	1,000	0,986	0,992	0,989	1,000	1,000	1,000	1,000	0,500	1,000	0,771	0,998	0,994	1,000	1,000	0,635	0,333	0,630	0,292	0,000	1,000	0,888	0,782	0,736	0,823	1,000	1,000	1,000	0,944	1,000	1,000	0,977	1,000	0,983	Global Acc 0,844		

Overall accuracy = 84.4%

Bio-geographical region BOR - Boreal - confusion matrix CLC2012 - Blind and plausibility analysis

Table 78: Confusion matrix CLC 2012 for Boreal region – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	222	231	242	243	311	312	313	321	322	324	331	332	333	334	411	412	421	423	511	512	521	522	523	Total	User Acc
111	0,196	0,059							0,720		0,050			0,008		0,683		0,012				0,008										0,255	0,769					
112	40,279	1,376							0,010	0,194	0,002			0,018		0,157		0,002				0,194									43,135	0,934						
121	0,431	8,184									0,036																					9,191	0,890					
122			1,336								0,002																				1,391	0,960						
123		0,002		0,338																											0,340	0,993						
124				1,269																											1,269	1,000						
131	0,049	0,018				2,509		0,035			0,015				0,062		0,034	0,127				0,018									2,866	0,875						
132					0,205	0,586		0,024										0,037													0,852	0,688						
133	0,041	0,044		0,002		0,002		0,401										0,009		0,004											0,510	0,788						
141	0,056	0,032						1,594	0,014	0,013								0,035													1,757	0,907						
142	0,014	0,030						0,015		3,815																					4,027	0,947						
211									293,427			24,625	8,812	7,610		0,040	1,304		0,079												335,909	0,874						
213																															0,002	0,000						
222									0,027		0,405		0,134					0,015				0,015									0,595	0,680						
231									18,826		34,321	5,990	7,740	0,004	0,592	0,569	0,014	1,805		0,014	0,027										69,904	0,491						
242			0,250	0,016					6,493		4,747	58,357	2,830					0,250		0,005									72,948	0,800								
243									13,116		1,904	3,513	102,292	0,002	3,363	1,907		0,783			2,391									129,271	0,791							
311			0,022						11,833					0,028	93,382		9,908		7,743				0,003								111,064	0,841						
312													0,005	0,044	1565,133	146,106		133,492		2,812	23,662								1883,108	0,831								
313													5,264	20,481	377,111			36,149			0,006								439,011	0,859								
321													0,403		0,094		0,016	1,035		0,141			0,564							2,253	0,459							
322																		7,906	0,083		0,028								8,016	0,986								
324				0,005		0,004			0,308	2,724		0,075		2,905	7,170	60,008	9,809	2,724	344,322				5,476							435,529	0,791							
331																		0,057	0,315										0,371	0,847								
332																		0,314	0,651	2,054	0,314									3,333	0,616							
333																		0,132	0,042	0,042	7,072									7,288	0,970							
334																		0,012			0,023									0,046	0,500							
411																		0,012			7,576	0,571								8,459	0,896							
412																		0,031	0,674	2,445	7,813		173,332								184,302	0,940						
421															0,024	0,012	0,012	0,012	0,012	0,012	0,012	0,204		0,005							0,290	0,706						
423																		0,127	0,248	0,127										0,005	1,000							
511																														9,197	0,945							
512																														270,547	0,989							
521																														0,129	1,000							
522																														0,080	0,667							
523																		0,074			0,074	0,074								2,440	2,808	0,869						
Total	0,196	40,928	9,687	1,358	0,340	1,519	2,747	0,780	1,221	1,618	3,829	344,198	2,724	0,405	66,083	77,032	124,374	105,913	1650,195	547,868	1,048	1																

Table 79: Confusion matrix CLC 2012 for Boreal region – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	222	231	242	243	311	312	313	321	322	324	331	332	333	334	411	412	421	423	511	512	521	522	523	Total	User Acc
111	0,20	0,06																														0,255	0,769				
112		42,40	0,69					0,01		0,01	0,01							0,00															43,135	0,983			
121	0,43	8,19					0,01	0,19	0,02									0,16															9,191	0,891			
122		0,02	1,33						0,02									0,00															1,391	0,957			
123		0,00		0,34																												0,340	0,993				
124					1,27																										1,269	1,000					
131	0,05	0,02					2,57				0,01						0,06		0,10				0,05								2,866	0,896					
132							0,11	0,72	0,02									0,00														0,852	0,850				
133	0,03	0,03	0,00	0,00				0,42			0,01							0,00														0,510	0,830				
141	0,01	0,05						1,66	0,01	0,01													0,01								1,757	0,943					
142	0,00								3,85									0,04	0,03			0,03									3,992	0,965					
211									300,24		19,26	7,52	8,81				0,01				0,06				0,00					335,896	0,894						
213																															0,002	0,000					
222										0,03	0,46		0,08					0,02				0,02									0,595	0,770					
231										18,48	41,70		7,18				0,04	0,56	0,01		1,88			0,01	0,03						69,904	0,597					
242		0,25	0,02							6,49	4,50	59,27	2,17					0,25				0,01								72,948	0,813						
243										9,75	1,90	1,12	108,05	0,00	3,36	1,91			0,78				2,39								129,271	0,836					
311											0,03	95,32					8,08				7,60									111,028	0,859						
312		0,01								11,83				0,00	0,04	1621,24	122,42			103,69				11,84							1871,082	0,866					
313														0,10		410,78				23,06				0,00					433,940	0,947							
321										0,40				0,03		1,32			0,03				0,47							2,253	0,584						
322																7,91	0,08					0,03								8,016	0,986						
324		0,01								0,02	0,02	2,83	3,61	22,88	3,45		2,72	396,72					2,73							434,989	0,912						
331																	0,06	0,31												0,371	0,847						
332																0,31	0,97	2,05											3,333	0,616							
333														0,13	0,04	0,04	7,07											7,288	0,970								
334															0,01				0,03										0,046	0,750							
411																			7,65	0,57									8,459	0,904							
412																	0,02		1,78										184,302	0,990							
421															0,01	0,01					0,01	0,24								0,277	0,868						
423																						0,00								0,005	1,000						
511												0,13		0,25	0,13														9,197	0,945							
512																					3,03									270,547	0,989						
521																							0,13							0,129	1,000						
522																								0,05							0,080	0,667					
523																								0,22							2,51	2,808					
Total	0,20	42,99	9,00	1,34	0,34	1,52	2,71	0,92	0,49	1,66	3,88	346,90	0,46	67,78	67,99	129,43	99,09	1648,02	547,61	1,33	11,08	537,19	0,36	2,05	7,09	0,03	10,58	200,68	0,46	0,00	8,69	267,79	0,13	0,05	2,51	3584,720	
Prod Acc	1,000	0,986	0,910	0,991	0,993	0,835	0,948	0,789	0,867	1,000	0,993	0,865	1,000	0,615	0,872	0,835	0,962	0,984	0,750	0,990	0,714</td																

Bio-geographical region CON - Continental - confusion matrix CLC2012 - Blind and plausibility analysis

Table 80: Confusion matrix CLC 2012 for Continental region – BLIND ANALYSIS - In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	231	241	242	243	311	312	313	321	322	323	324	331	332	333	334	411	412	421	422	423	511	512	521	522	523 Total	User Acc
111	1,912	0,574	0,053																															2,539	0,753							
112	1,723	244,485	2,562					0,050	2,085	0,022	2,160				0,013		21,838	4,955	2,238			0,528				0,009								282,667	0,865							
121		1,170	43,612				0,085	0,355	0,349	0,008	0,365			0,007		0,766	0,016	0,160		0,691	0,696											48,282	0,903									
122		0,087	0,181	3,883				0,191		0,083					0,007		0,103	0,034														4,571	0,850									
123				0,680																												0,680	1,000									
124				3,932				0,015		0,028					0,115															4,089	0,962											
131	0,182	0,127	0,068				10,521	0,111	0,046	0,103	0,107	0,243			0,609		0,006	0,030	0,034	0,010	0,035										12,848	0,819										
132	0,024	0,119					0,105	1,567							0,102															2,066	0,758											
133	0,530	0,335	0,181				0,112	0,027	2,909		0,018	0,146					0,075	0,059	0,004		0,062									4,458	0,653											
141	0,125	0,018						4,222	0,219	0,024					0,036		0,037	0,029	0,026											4,752	0,888											
142	0,100	0,027				0,015			0,246	11,549	0,038									0,123									0,012	12,455	0,927											
211	3,815	13,751					0,028	0,015		6,755	1890,619				8,964	10,596	25,669		96,942	15,603	0,121	0,015									2079,787	0,909										
212			0,024																											0,024	0,000											
213										0,099	13,527									0,617									14,243	0,950												
221										2,696		20,082	0,023	0,658		4,750	2,654														30,864	0,651										
222										2,835		0,485	17,871	0,216	0,317		6,243	3,659												32,867	0,544											
231	5,731	0,337	0,027				0,330	0,015	0,102		0,973	47,038			507,007		58,741	43,297	9,584	0,095	0,082	0,033	0,989								692,075	0,733										
241										0,007				0,853															0,860	0,992												
242	3,795									0,542	27,705		1,829	3,048	1,788	46,278	204,467	27,482												318,585	0,642											
243	1,784											13,253			0,797	17,479	7,249	229,037	6,420	2,653										285,703	0,802											
311												5,856	0,013				2,920		0,023	11,074	704,410									801,242	0,879											
312		0,400			2,392							0,084					9,922			7,850	0,034	504,865	19,004								4,956	586,781	0,860									
313	1,650									0,542	1,650					3,653		1,216	1,352	4,780	2,723	263,095									287,069	0,916										
321						1,032			2,087							9,828		4,472			26,392	0,136		16,828	3,715		4,954				69,443	0,380										
322																0,830		1,033		0,083		6,350		2,472	0,203						10,970	0,579										
323																0,113					0,679								0,792	0,857												
324	0,313	0,615				0,032		0,004	0,008		2,795		0,629	0,635	1,388	1,774	15,946	13,371	7,440	4,295	3,605		84,169								137,026	0,614										
331								0,096	0,014							0,064	0,009					0,048		0,289	1,200	0,028	0,057				1,863	0,644										
332																				0,026		0,017		0,017	0,138				0,198	0,695												
333						0,036									0,164			0,082			1,673		0,035	0,042	1,731					3,783	0,458											
334																	0,120								0,101					0,222	0,458											
411			0,019						0,113			1,049							0,071				0,875								12,006	0,778										
412																	0,025	0,078	0,025	0,078	0,020	0,078		0,301								2,146	0,564									
421																		0,011			0,081										1,026	0,668										
422			0,077																											0,119	0,349											
423																															0,028	1,000										
511																0,180		0,262					0,262	1,183								19,486	0,882									
512																0,156		0,456	0,456				0,137		0,345						49,196	0,965										
521																0,055							0,091								1,151	0,873										
522																															0,053	1,000										
523																															0,056	0,815										
Total	3,636	264,363	61,624	4,775	0,699	3,947	13,758	2,097	3,680	7,700	20,736	1999,939	0,013	15,356	33,216	31,710	629,162	1,170	403,490	369,667	742,305	518,821	340,170	31,804	7,618	0,679	201,040	6,344	0,166	6,951	0,101	16,581	1,431	0,685	0,086	0,202	19,089	48,123	1,129	0,053	5,770	4883,694
Prod Acc	0,526	0,925	0,708	0,813	0,973	0,996	0,765	0,747	0,791	0,548	0,557	0,945	0,000	0,881	0,605	0,564	0,806	0,729	0,507	0,620	0,949	0,973	0,773	0,830	1,000	0,419	0,189	0,832	0,249	1,000	0,564	0,846	1,000	0,483	0,139	0,900	0,986	0,890	1,000	0,141	Global Acc	0,839

Overall accuracy = 83.9%

Table 81: Confusion matrix CLC 2012 for Continental region – PLausibility Analysis - In column the validation and line the production

CLC Class	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	311	312	313	321	322	323	324	331	332	333	334	411	412	421	422	423	511	512	521	522	523 Total	User Acc
111	2,16	0,32	0,05																															2,539	0,853								
112	1,72	265,83	0,89	0,00						0,03	2,08	0,02	0,05								7,98	1,29		2,24	0,53											282,667	0,940						
121	0,17	46,97	0,00				0,00			0,02			0,36						0,04		0,04													48,282	0,973								
122	0,03	0,14	4,21							0,04			0,01								0,10				0,03										4,571	0,921							
123							0,68																										0,680	1,000									
124							4,03												0,06															4,089	0,986								
131	0,20	0,02					11,21	0,00	0,03	0,10	0,11	0,04						0,54		0,03	0,03		0,03										12,839	0,873									
132	0,02	0,06					0,02	1,80																								2,066	0,873										
133	0,21	0,29	0,10				0,17	0,03	3,35			0,21								0,05	0,01		0,04									4,458	0,751										
141	0,12	0,02								4,34	0,17								0,06		0,01	0,01	0,03										4,752	0,913									
142	0,08	0,03			0,02					12,18	0,04										0,12											12,455	0,978										
211	6,76				0,01			6,76	1974,96			1,72	0,12		6,94		75,44	0,08	0,10	0,02					6,88									2079,772	0,950								
212										0,01	0,01																					0,024	0,500										
213										0,05	14,19																					14,243	0,997										
221										0,54		23,04	0,01		2,27		3,30	1,70														30,864	0,747										
222										0,57		0,01	21,55		0,82	0,34	4,17	2,64	0,76												32,867	0,656											
231		0,02			0,01		0,08		0,90	46,00					563,25		36,93	27,15	6,95		0,08		0,66		3,97								691,732	0,814									
241										0,54	26,69		0,14		24,13	247,92	12,32			4,88												0,860	0,996										
242	1,97																															318,585	0,778										
243	1,78	0,03													4,24		1,78	8,92	4,62	254,14	1,23	2,65										284,266	0,894										
311							1,68			2,96			3,21					3,75	741,94			38,98										801,242	0,926										
312										0,08								2,81	554,49	11,27													586,781	0,945									
313							0,43			0,43								0,14	0,03	0,46	279,68											285,719	0,979										
321															5,72		3,55	2,48	42,88	1,10	1,30	8,39	2,48										69,443	0,617									
322															0,83		1,03	0,06	0,20	6,35		2,30	0,20										10,970	0,579									
323																			0,79														0,792	1,000									
324	0,31						0,03	0,09		0,06		0,62		1,85		1,71	10,77	4,60	2,27	4,19	0,90		109,59										137,009	0,800									
331							0,10			0,01				0,04					0,03	0,05		0,07	1,57										1,863	0,844									
332							0,04											0,03			0,02		0,02	0,14									0,198	0,695									
333															0,08				1,20			0,12		2,34									3,783	0,618									
334																			0,12			0,10											0,222	0,458									
411					0,02					0,02				0,80				0,06	0,07				0,45										12,006	0,882									
412																		0,03	0,08		0,08		0,15										2,146	0,848									
421																		0,01		0,08														1,026	0,668								
422																																	0,119	1,000									
423																																	0,028	1,000									
511															0,18								0,63										19,486	0,942									
512							0,01		0,00	0,01			0,00			0,46				0,14			0,09										49,196	0,978									
521																				0,09													1,151	0,897									
522																																	0,053	1,000									
523																																	0,06										
Total	3,88	271,04	55,26	4,34	0,70	4,05	11,59	1,84	5,75	6,53	20,67	2057,35	0,01	14,19	24,91	25,51	1,78	616,53	1,20	382,27	321,43	758,75	562,41	340,48	45,29	8,17	2,09	170,88	4,88	0,14	2,34	0,10	18,76	1,83	0,71	0,16	0,08	18,36	48,41	1,16	0,05	0,81	5278,173
Prod Acc	0,56	0,98	0,85	0,97	0,97	1,00	0,97	0,98	0,58	0,66	0,59	0,96	1,00	1,00	0,93	0,84	0,00	0,91	0,72	0,65	0,79	0,98	0,99	0,82	0,95	0,78	0,38	0,64	0,32	1,00	1,00	0,56	0,73	0,34	1,00	0,99	0,89	1,00	1,00	Global Acc	0,907		

Overall accuracy = 90.7%

Bio-geographical region - Macaronesia - confusion matrix CLC2012 - Blind and plausibility analysis

Table 82: Confusion matrix CLC 2012 for Macaronesia region – BLIND ANALYSIS - In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	133	142	212	231	242	243	311	312	313	321	322	323	324	331	332	333	334	412	523 Total	User Acc								
111	0,026															0,509		0,509							1,044	0,025									
112		1,027																								1,027	1,000								
121			0,025																							0,025	1,000								
122				0,008																						0,008	1,000								
123					0,090																					0,090	1,000								
124						0,074																				0,074	1,000								
131							0,063																			0,063	1,000								
133		0,013						0,356																		0,369	0,964								
141									0,012																	0,012	0,000								
142									0,117																	0,117	1,000								
212										2,563																2,563	1,000								
231											2,309															2,309	1,000								
243												1,719	4,922													6,640	0,741								
311													2,673														2,673	1,000							
312														5,659													5,659	1,000							
321															0,256												1,023	0,500							
322																0,256	0,512										0,025	1,000							
323																		0,025										10,421	1,000						
324																			1,256										1,256	1,000					
331																				0,285		0,142							0,427	0,667					
332																				1,820										2,414	0,754				
333																					7,721										14,081	0,548			
334																						0,217										0,244	0,888		
412																							0,225										0,225	1,000	
523																								0,052										0,052	1,000
Total	0,026	1,027	0,038	0,008	0,090	0,074	0,063	0,356	0,129	2,563	2,565	1,719	4,922	2,673	5,659	0,256	5,653	0,209	12,475	1,878	0,285	1,820	7,863	0,217	0,225	0,052	42,445								
Prod Acc	1,000	1,000	0,651	1,000	1,000	1,000	1,000	1,000	0,906	1,000	0,900	0,000	1,000	1,000	1,000	0,000	0,090	0,121	0,835	0,669	1,000	1,000	0,982	1,000	1,000	1,000		Global Acc	0,803						

Overall accuracy = 80.3%

Table 83: Confusion matrix CLC 2012 for Macaronesia region – PLAUSIBILITY ANALYSIS - In column the validation and line the production

CLC Classe	111,00	112,00	121,00	122,00	123,00	124,00	131,00	133,00	142,00	212,00	231,00	242,00	243,00	311,00	312,00	321,00	322,00	323,00	324,00	331,00	332,00	333,00	334,00	412,00	523,00	Total	User Acc		
111	0,03															0,51		0,51								1,044	0,025		
112		1,03																									1,027	1,000	
121			0,02																								0,025	1,000	
122				0,01																							0,008	1,000	
123					0,09																						0,090	1,000	
124						0,07																					0,074	1,000	
131							0,06																				0,063	1,000	
133	0,01							0,36																			0,369	0,964	
141									0,01																		0,012	0,000	
142										0,12																	0,117	1,000	
212										2,56																	2,563	1,000	
231											2,31																2,309	1,000	
243												1,72	4,92													6,640	0,741		
311													2,67														2,673	1,000	
312														5,66													5,659	1,000	
321															1,02												1,023	1,000	
322																0,03											0,025	1,000	
323																	10,42										10,421	1,000	
324																		1,26									1,256	1,000	
331																			0,43								0,427	1,000	
332																			1,82								2,414	0,754	
333																			12,35								14,081	0,877	
334																				0,22							0,244	0,888	
412																					0,22						0,225	1,000	
523																												0,052	1,000
Total	0,026	1,027	0,038	0,008	0,090	0,074	0,063	0,356	0,129	2,563	2,309	1,719	4,922	2,673	5,659	1,532	0,209	12,475	1,878	0,427	1,820	12,354	0,217	0,225	0,052	47,732			
Prod Acc	1,000	1,000	0,651	1,000	1,000	1,000	1,000	1,000	0,906	1,000	1,000	0,000	1,000	1,000	1,000	0,668	0,121	0,835	0,669	1,000	1,000	1,000	1,000	1,000					
																											Global Acc	0,903	

Overall accuracy = 90.3%

Bio-geographical region MED- Mediterranean - confusion matrix CLC2012 - Blind and plausibility analysis

Table 84: Confusion matrix CLC 2012 for Mediterranean region – BLIND ANALYSIS - In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331	332	333	334	411	421	422	423	511	512	521	522	523 Total	User Acc
111	17,864	2,190	0,294						0,509																									20,858	0,856								
112	0,561	83,287	0,521						0,011									0,444		0,218													86,061	0,968									
121	0,826	28,903	0,157	0,366					0,648		0,021	0,024					0,035		0,372	0,015											31,371	0,921											
122		0,032	4,902					0,058		0,037		0,032								0,121	0,022											5,237	0,936										
123	0,021	0,021			0,702																											0,744	0,944										
124			3,092							0,082						0,025																3,248	0,952										
131		0,063			10,320	0,050	0,466			0,004						0,224		0,042	0,095	0,107										0,370	0,370	12,185	0,847										
132		0,018			0,009	0,960				0,006																					0,994	0,966											
133	0,050	0,480	0,556	0,048		0,054		6,730		0,529				0,040		0,018														8,568	0,786												
141	0,169	0,098						1,247	0,074																						1,609	0,775											
142	0,500		0,015			6,080							0,060																		6,656	0,914											
211						608,002	2,294			0,711	0,080	23,673	6,805	39,456	16,625	6,755				0,007	0,012	2,665									707,084	0,860											
212	4,522								1,045	223,034	0,066		0,095	0,343	3,596																232,711	0,958											
213									0,141	0,062	14,696			0,096																15,093	0,974												
221									3,380	0,037	71,996	0,812	1,332	1,126	26,461	2,990		0,201			0,384	0,007	0,273								108,999	0,661											
222	1,199	1,199							3,964	1,241		71,879	1,652	5,553	10,064	3,301		0,882			1,199		0,063								102,194	0,703											
223	0,045								3,300			2,717	184,748	5,042	5,850	8,615	1,110	0,045	0,045		1,027	2,813									215,357	0,858											
231	0,170					0,042			0,577					57,528		2,505	1,494			8,537	0,211	1,547	0,234								72,844	0,790											
241	0,688	0,096						0,853	0,022				1,973	6,985	4,724	2,517	1,802				0,096		0,216								19,973	0,350											
242	3,025	4,803				0,030			20,821		1,463	4,233	9,681	9,958	4,918	204,131	25,888						0,007	1,829							290,789	0,702											
243	1,719							0,042				1,485	8,405	6,296	16,540	277,049	1,485	3,352		2,687	3,368	5,901	8,196								336,525	0,823											
244						1,311								2,964	127,138								2,588	2,944							136,946	0,928											
311							0,891					15,383	11,584	478,595				9,539		13,977	26,248									556,217	0,860												
312			4,240									1,237		4,843	1,760	389,168	15,383			9,662	6,497									432,790	0,899												
313												3,300	1,470	8,590	9,657	145,161				15,934			0,760							184,872	0,785												
321	4,122					0,065		4,122				8,626	20,611		5,583	12,903	2,886	4,122	2,886	170,488	14,617	27,569	32,314	1,301	4,504	0,067						316,788	0,538										
322		5,211						0,852						0,025	3,462		14,730		0,865		3,037	11,229	333,984	49,496								41,863	0,783										
323	1,263					0,038		2,176	0,065		0,937	0,041	2,287		13,026	3,120	14,134	12,238	4,091	8,713	12,862	13,743	343,637		0,111	1,415	0,199					422,890	0,790										
331									0,090		0,132					0,086					0,155	0,155	8,630	0,046							9,413	0,917											
332																0,134	0,953	0,738		0,086	16,581	15,093									33,670	0,492											
333												0,369					18,820	3,530	6,763	16,042		0,901	53,542	0,719								100,685	0,532										
334						0,022					0,066			0,014		0,181			0,085	0,027	0,268	0,338		0,041	5,193							6,235	0,833										
335																			0,003										0,003	0,000													
411												0,056										0,065			5,715						5,940	0,962											
421	0,044							0,135	0,390												0,140				0,030	6,345						7,163	0,886										
422																						0,114		0,077	0,105	1,760						2,056	0,856										
423								0,018																	0,001	0,020	0,079						0,099	0,794									
511																													5,287	0,443													
512								0,018								0,009		0,129				0,261	0,406								6,415	0,824											
521																													0,258	33,112	0,108												
522																													0,002	4,977													
523																													0,010		0,027	0,462											
Total Prod Acc	18,496	104,271	41,794	5,107	1,069	3,108	14,700	1,010	8,595	1,247	6,793	650,801	227,146	14,762	73,459	82,314	208,173	129,737	36,725	314,654	398,815	166,258	512,558	415,272	182,924	227,432	64,966	417,950	516,504	9,121	18,940	75,019	6,177	6,602	6,834	1,871	0,079	5,654	33,966	5,111	0,498	4,784	4051,540
	0,966	0,799	0,692	0,960	0,657	0,995	0,702	0,951	0,783	1,000	0,895	0,934	0,982	0,996	0,980	0,873	0,887	0,443	0,190	0,649	0,695	0,765	0,934	0,937	0,794	0,750	0,504	0,799	0,665	0,946	0,875	0,714	0,841	0,866	0,928	0,941	1,000	0,935	0,975	0,974	0,929	1,000	
																																							Global Acc	0,807			

Overall accuracy = 80.7%

Table 85: Confusion matrix CLC 2012 for Mediterranean region – PLAUSIBILITY ANALYSIS - In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	311	312	313	321	322	323	331	332	333	334	411	421	422	423	511	512	521	522	523 Total	User Acc
111	17,94	2,11	0,29						0,51																									20,858	0,860						
112	0,56	83,70	0,63						0,01																									86,061	0,973						
121	0,18	29,63	0,16	0,37					0,66		0,02																						31,371	0,945							
122		5,00					0,06		0,03			0,03																					5,237	0,954							
123	0,02	0,02		0,70																														0,744	0,944						
124			3,12						0,08																									3,248	0,960						
131		0,13			10,46	0,05	0,37			0,01									0,22														12,185	0,858							
132		0,02			0,01	0,97																											0,994	0,972							
133	0,53	0,54		0,11	0,04	6,42			0,51	0,36																						8,568	0,750								
141	0,16	0,10			1,26	0,07																											1,609	0,783							
142	0,50				6,10																													6,656	0,916						
211					641,89	0,13					0,71	0,06	17,60	6,76	15,46	7,48	6,76		8,39															707,084	0,908						
212	4,52					0,34	223,78	0,02			0,22								3,82														232,711	0,962							
213					0,04	0,03	14,92																									15,093	0,989								
221					2,34	0,04	81,78	0,81	1,34		1,13	19,10	1,70		0,20			0,38				0,18										108,999	0,750								
222	1,20				2,77		78,27	0,03			6,41	10,20	3,08										0,23									102,194	0,766								
223	0,05				2,57		0,20	194,26			2,66	6,52	4,99		1,11	0,05	0,05	0,09		0,05	2,77											215,357	0,902								
231			0,01		0,04					0,29	60,61		1,08	0,67				8,29		1,55	0,31										72,844	0,832									
241	0,69	0,10				0,62	0,02				0,43	9,45	5,01	1,90	1,54															19,973	0,473										
242	3,03	2,97			0,03	18,96		1,46	2,29	7,81	6,79	3,09	220,27	22,26								0,01	1,83								290,789	0,757									
243	1,72					0,04				1,48	5,05	6,30	18,11	285,46	1,48	3,37		2,69	3,37		1,04	6,41										336,525	0,848								
244					1,31						2,96	127,49										2,59	2,59									136,946	0,931								
311							0,89				3,88	6,24	507,82	0,89	2,72			14,87	18,91													556,217	0,913								
312		0,01									4,83	0,51	412,29	4,33				4,83	5,99												432,790	0,953									
313											1,90	5,37	6,14	163,16					8,30											184,872	0,883										
321	4,12				0,07	4,12				4,50	16,74		7,01	12,90			203,43	6,82	21,03	36,04												316,788	0,642								
322																	0,51	35,41		5,94											41,863	0,846									
323	5,21					0,85				0,03	2,61		12,95		0,87		3,46	374,60	22,31												422,890	0,886									
324	1,26				0,04	2,18	0,07			0,07	0,04		8,77	2,19	9,77	11,42	4,81	0,87	2,60	6,65	381,84											434,098	0,880								
331									0,09												9,19	0,05										9,413	0,976								
332	0,09																	0,09	0,88	0,68	0,05	21,23	10,58										33,670	0,630							
333	0,01																	7,12	0,18	6,70	20,87	0,90	64,62	0,28										100,685	0,642						
334											0,10		0,03	0,26	0,43		0,02	5,03													6,235	0,807									
335																		0,00														0,003	0,000								
411																			0,13			5,72		</td																	

Bio-geographical region PAN – Pannonian - confusion matrix CLC2012 - Blind and plausibility analysis

Table 86: Confusion matrix CLC 2012 for Pannonian region – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	213	221	222	231	242	243	311	312	313	321	324	333	411	412	511	512	Total	User Acc
111	0,083																											0,083	1,000	
112		26,803	0,920		0,014							0,008						0,052										27,796	0,964	
121			3,493	0,128	0,004			0,007	0,010	0,014	0,008	0,024				0,014		0,002										3,705	0,943	
122			0,028	0,626					0,009			0,028																0,720	0,870	
123					0,022																							0,022	1,000	
124		0,059			0,318																							0,376	0,844	
131					0,413							0,019		0,020		0,020			0,020			0,002	0,022		0,034		0,019	0,569	0,727	
132			0,019				0,196					0,015				0,015							0,015					0,259	0,757	
133	0,039	0,029	0,113		0,002	0,150			0,013	0,052			0,004	0,024	0,014								0,002					0,443	0,339	
141					0,302			0,1463			0,017																	0,319	0,948	
142	0,087											1,463						0,072	0,059									1,682	0,870	
211		0,007	4,023									3,784	307,515	0,049	4,081	5,462	0,589	5,485										335,024	0,918	
212		0,012																										0,012	0,000	
213												0,173	0,173															0,345	0,500	
221												0,984		6,128	0,006	0,114			0,234									7,465	0,821	
222												0,759		0,086	2,966	0,013	0,195		0,074									4,093	0,725	
231		1,207	0,055		0,004	0,008						4,924		0,154	0,154	26,323							0,649	0,004		0,583	34,065	0,773		
242		1,201										0,019		4,122	0,025	0,154	15,355	1,201										22,091	0,695	
243												0,308					10,347	0,692										12,490	0,828	
311	0,038	1,275										1,304			0,107			69,606	1,261									84,100	0,828	
312																	0,004	2,696	0,004									3,291	0,819	
313												0,128					0,155	0,009	5,037		1,231								6,560	0,768
321															3,347							6,216	0,011						9,574	0,649
324		0,014										2,685		0,321	0,107	0,572		0,641	2,913	0,053	0,542		16,763	0,007				24,619	0,681	
333																						0,113					0,113	1,000		
411																0,429		0,021				0,160	0,289	3,212					4,111	0,781
412																0,079								0,316					0,395	0,800
511																									2,892		2,892	1,000		
512												0,003			0,272									6,196		6,471		0,958		
Total	0,083	26,967	8,246	4,963	0,040	0,318	0,419	0,211	0,169	0,316	5,268	318,962	0,222	14,913	8,719	32,052	21,184	12,284	73,697	2,759	6,845	6,379	35,278	0,136	3,250	0,316	2,892	6,799	515,725	
Prod Acc	1,000	0,994	0,424	0,126	0,543	1,000	0,986	0,930	0,888	0,956	0,278	0,964	0,778	0,411	0,340	0,821	0,725	0,842	0,944	0,977	0,736	0,975	0,475	0,837	0,988	1,000	1,000	0,911	Global Acc	0,869

Overall accuracy = 86.9%

Table 87: Confusion matrix CLC 2012 for Pannonian region – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	213	221	222	231	242	243	311	312	313	321	324	333	411	412	511	512	Total	User Acc	
111	0,08																											0,083	1,000		
112		26,83	0,92									0,01					0,04											27,796	0,965		
121			3,67	0,00			0,01			0,01		0,01																3,705	0,991		
122				0,64								0,03						0,02			0,00		0,03					0,720	0,893		
123					0,02																							0,022	1,000		
124					0,38																							0,376	1,000		
131						0,47						0,02						0,02			0,00	0,02		0,03				0,569	0,830		
132					0,02							0,01																0,259	0,870		
133	0,02	0,01	0,04									0,04					0,02	0,01	0,02	0,00								0,443	0,630		
141												0,30					0,02												0,319	0,948	
142	0,14											1,48						0,06											1,682	0,879	
211			0,00									0,01	325,76	0,05	0,03	0,23	0,31	4,59	4,01										335,024	0,972	
212		0,01																											0,012	0,000	
213												0,35																0,345	1,000		
221												0,09		6,48	0,01		0,66	0,23										7,465	0,868		
222												0,33		0,07	3,43		0,19		0,07									4,083	0,839		
231		0,63	0,05									3,20		0,15	0,15	29,15					0,05	0,00	0,08					0,58	34,065	0,856	
242		1,20										0,01		0,01		19,66	1,20												22,091	0,890	
243																11,00	0,69												12,490	0,881	
311		1,24															0,04	75,11		1,26		6,46							84,100	0,893	
312												0,13					0,16	0,02	5,47		0,79								3,291	0,945	
313												0,48			1,43		0,48												6,560	0,833	
321												1,37		0,43		0,03		0,32	1,03	0,33	0,09	21,02								9,574	0,699
324																												24,619	0,854		
333																						0,11							0,113	1,000	
411																	0,48					0,02	3,59							4,111	0,873
412																	0,08						0,32							0,395	0,800
511																	0,00													2,892	1,000
512																												6,471	0,998		
Total	0,08	26,99	7,69	0,76	0,03	0,38	0,47	0,23	0,28	0,32	1,49	331,51	0,39	7,16	3,82	31,49	25,15	17,39	77,09	3,46	6,95	6,70	29,86	0,11	3,63	0,32	2,89	7,06	554,973		
Prod Acc	1,000	0,994	0,478	0,846	0,831	1,000	1,000	0,971	1,000	0,956	0,995	0,983	0,875	0,905	0,897	0,926	0,782	0,633	0,974	0,898	0,786	0,999	0,704	1,000	0,990	1,000	1,000	0,915			
																												Global Acc	0,935		

Overall accuracy = 93.5%

Bio-geographical region STE - Steppic - confusion matrix CLC2012 - Blind and plausibility analysis

Table 88: Confusion matrix CLC 2012 for steppic region – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	112	121	122	123	124	132	133	141	142	211	213	221	222	231	242	243	311	321	324	331	411	511	512	Total	User Acc
112	3,669													0,917	0,917								5,503	0,667	
121		1,325																					1,325	1,000	
122	0,019		0,077				0,061																0,157	0,487	
123			0,027																				0,027	1,000	
124				0,049								0,016											0,065	0,750	
132					0,015																		0,015	1,000	
141						0,012																	0,012	1,000	
142								0,012															0,012	1,000	
211									109,058														109,058	1,000	
213										0,778													0,778	1,000	
221										1,973		0,658			0,658	0,658							3,945	0,167	
231	2,070	2,070								2,070				6,211									12,421	0,500	
242	1,652									1,652				1,652									4,957	0,333	
243														1,594										1,594	1,000
311														8,229		4,115							12,344	0,667	
324											0,291	0,291			0,291	0,291	0,365						1,530	0,238	
331																	0,111		0,028				0,139	0,800	
411									0,222				0,009							4,601		0,657	5,490	0,838	
511																				1,521			1,521	1,000	
512																			0,332		2,699		3,030	0,891	
Total	7,411	3,396	0,077	0,027	0,049	0,015	0,061	0,012	0,012	114,991	0,778	0,658	0,291	6,511	3,227	3,169	8,520	0,291	4,479	0,111	4,933	1,549	3,356	142,663	
Prod Acc	0,495	0,390	1,000	1,000	1,000	1,000	0,000	1,000	1,000	0,948	1,000	1,000	0,000	0,954	0,512	0,503	0,966	0,000	0,081	1,000	0,933	0,982	0,804		
																								Global Acc	0,870

Overall accuracy = 87.0%

Table 89: Confusion matrix CLC 2012 for steppic region – PLausibility Analysis In column the validation and line the production

CLC Classe	112	121	122	123	124	132	133	141	142	211	213	221	231	242	243	311	324	331	411	511	512	Total	User Acc					
112	5,503																					5,503	1,000					
121		1,325																				1,325	1,000					
122			0,096																			0,157	0,609					
123				0,027																		0,027	1,000					
124					0,065																	0,065	1,000					
132						0,015																0,015	1,000					
141							0,012															0,012	1,000					
142								0,012														0,012	1,000					
211									109,058													109,058	1,000					
213										0,778												0,778	1,000					
221										0,658		1,973		1,315									3,945	0,500				
231						2,070							10,351										12,421	0,833				
242														4,957										4,957	1,000			
243															1,594									1,594	1,000			
311																12,344								12,344	1,000			
324															0,291		0,291	0,948						1,530	0,619			
331																		0,139							0,139	1,000		
411																			4,611							5,490	0,840	
511																				1,521							1,521	1,000
512																					0,332		2,699				3,030	0,891
Total	5,503	1,325	0,096	0,027	0,065	0,015	2,132	0,012	0,012	109,937	0,778	1,973	10,642	6,272	1,594	12,635	0,948	0,139	4,942	1,521	3,356	158,027						
Prod Acc	1,000	1,000	1,000	1,000	1,000	1,000	0,000	1,000	1,000	0,992	1,000	1,000	0,973	0,790	1,000	0,977	1,000	1,000	1,000	0,933	1,000	0,804						
																									Global Acc 0,964			

Overall accuracy = 96.4%

Bio-geographical region DOM - Overseas department (tropical region) - confusion matrix CLC2012 - Blind and plausibility analysis

Table 90: Confusion matrix CLC 2012 for Tropical region – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	111	112	121	122	123	124	131	132	133	141	142	211	213	222	231	242	243	311	312	321	322	323	324	331	332	333	411	423	511	512	521	522	523 Total	User Acc		
111	0,018																														0,018	1,000				
112		2,565																													2,582	0,993				
121	0,014	0,160																													0,179	0,896				
122	0,007		0,074																												0,081	0,916				
123			0,023																												0,023	1,000				
124				0,064																										0,064	1,000					
131					0,045																									0,045	1,000					
132					0,003																									0,003	1,000					
133						0,005																								0,005	1,000					
141							0,019																							0,019	1,000					
142							0,031																							0,031	1,000					
211								2,502																						2,633	0,950					
213								0,282																						0,282	1,000					
222									0,496																					0,708	0,700					
231	0,110								0,007	0,776	0,007	0,110																		1,123	0,691					
242										1,449	0,161																				1,610	0,900				
243	0,336						0,003																									3,415	0,749			
244																																0,091	0,000			
311																			33,476														0,013	33,489	1,000	
312																			0,092														0,092	1,000		
313																			0,229														0,229	0,000		
321												0,004								1,104														1,108	0,996	
322																			0,599														0,681	0,880		
323																			0,558	0,372														0,930	0,600	
324													0,342	0,502						0,164	2,240														3,413	0,656
331														0,047						0,093														0,011	1,000	
332															0,161																	0,309	1,000			
333																0,047																0,466	0,700			
411																	0,161															4,639	0,965			
421																			0,031														0,031	0,000		
423																			0,011														0,003	1,000		
511																			0,045														0,452	0,800		
512																			0,018														0,018	1,000		
521																			0,008														0,008	1,000		
522																			0,114														0,121	1,155		
523																			61,963														61,963	1,000		
Total	0,018	3,031	0,160	0,074	0,023	0,064	0,045	0,003	0,020	0,019	0,031	2,502	0,282	0,502	0,780	2,000	3,318	34,418	0,092	1,104	0,857	0,562	3,073	0,057	0,309	0,491	4,509	0,003	0,476	0,018	0,008	0,965	62,097	117,537		
Prod Acc	1,000	0,846	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000					
																																		Global Acc	0,964	

Overall accuracy = 96.4%

Table 91: Confusion matrix CLC 2012 for Tropical region – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	111	112	121	122	123	124	131	132	133	141	142	211	213	222	231	242	243	311	312	313	321	322	323	324	331	332	333	411	423	511	512	521	522	523 Total	User Acc
111	0,018																														0,018	1,000			
112		2,565							0,007									0,005	0,005												2,582	0,993			
121	0,014	0,160																													0,179	0,896			
122	0,007		0,074																												0,081	0,916			
123			0,023																												0,023	1,000			
124				0,064																										0,064	1,000				
131					0,045																									0,045	1,000				
132						0,003																								0,003	1,000				
133							0,005																							0,005	1,000				
141							0,019																							0,019	1,000				
142								0,031																						0,031	1,000				
211								2,502									0,131														2,633	0,950			
213									0,282																					0,282	1,000				
222										0,496							0,071	0,142											0,708	0,700					
231										0,007	0,886						0,007	0,110											1,123	0,789					
242											1,449						1,449	0,161												1,610	0,900				
243	0,336					0,003						0,336	2,565		0,003					0,003	0,168								3,415	0,751					
244																														0,091	0,000				
311													33,476																	0,013	33,489	1,000			
312														0,092																0,092	1,000				
313															0,229															0,229	1,000				
321									0,004							1,104														1,108	0,996				
322																0,674		0,007												0,681	0,990				
323																0,837		0,093												0,930	0,900				
324																2,569														3,413	0,753				
331																	0,011													0,011	1,000				
332																	0,309													0,309	1,000				
333																	0,326													0,466	0,700				
411																	4,632													4,639	0,999				
421																		0,031												0,031	0,000				
423																		0,003												0,003	1,000				
511																		0,045													0,452	0,900			
512																			0,018												0,018	1,000			
521																				0,008											0,008	1,000			
522																				1,155											1,155	1,000			
523																					61,963											61,963	1,000		
Total	0,018	2,921	0,160	0,074	0,023	0,064	0,045	0,003	0,015	0,019	0,031	2,502	0,282	0,502	0,890	2,000	3,325	34,035	0,092	0,229	1,104	0,767	0,841	3,046	0,057	0,309	0,326	4,663	0,003	0,407	0,018	0,008	1,155	61,976	119,000
Prod Acc	1,000	0,878	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	Global Acc	0,976				

Overall accuracy = 97.6%

Annex 6. Confusion matrix of CLCCH2006-12 – European level – Blind and plausibility analysis

Table 92: Confusion matrix of change CLCCH2006-2012 for blind analysis (at level 2 of CLC nomenclature) between the validation and the production

Cell A	Cell B	Cell C	Cell D	Cell E	Cell F	Cell G	Cell H	Cell I	Cell J	Cell K	Cell L	Cell M	Cell N	Cell O	Cell P	Cell Q	Cell R	Cell S	Cell T	Cell U	Cell V	Cell W	Cell X	Cell Y	Cell Z
Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8	Value 9	Value 10	Value 11	Value 12	Value 13	Value 14	Value 15	Value 16	Value 17	Value 18	Value 19	Value 20	Value 21	Value 22	Value 23	Value 24	Value 25	
Value 26	Value 27	Value 28	Value 29	Value 30	Value 31	Value 32	Value 33	Value 34	Value 35	Value 36	Value 37	Value 38	Value 39	Value 40	Value 41	Value 42	Value 43	Value 44	Value 45	Value 46	Value 47	Value 48	Value 49	Value 50	
Value 51	Value 52	Value 53	Value 54	Value 55	Value 56	Value 57	Value 58	Value 59	Value 60	Value 61	Value 62	Value 63	Value 64	Value 65	Value 66	Value 67	Value 68	Value 69	Value 70	Value 71	Value 72	Value 73	Value 74	Value 75	
Value 76	Value 77	Value 78	Value 79	Value 80	Value 81	Value 82	Value 83	Value 84	Value 85	Value 86	Value 87	Value 88	Value 89	Value 90	Value 91	Value 92	Value 93	Value 94	Value 95	Value 96	Value 97	Value 98	Value 99	Value 100	
Total Row	Value 101	Value 102	Value 103	Value 104	Value 105	Value 106	Value 107	Value 108	Value 109	Value 110	Value 111	Value 112	Value 113	Value 114	Value 115	Value 116	Value 117	Value 118	Value 119	Value 120	Value 121	Value 122	Value 123	Value 124	

For the blind analysis, the overall accuracy of CLCCH2006-2012 at the third level of nomenclature is **81.8%**. The overall accuracy of CLCCH2006-2012 at the level 2 is **85.9%**.

Table 93: Confusion matrix of change CLCCH2006-2012 for plausibility analysis (at level 2 of CLC nomenclature) between the validation and the production

For the plausibility analysis, the overall accuracy of CLCCH2006-2012 at the third level is 88.6%. The overall accuracy of CLCCH2006-2012 at the second level is 91.2%.

Annex 7. Confusion matrix of CLCCH2006-12 per zone-country

Zone 1: Turkey - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 94: Confusion matrix CLCCH2006-2012 level 2 for zone 1 (Turkey) – BLIND ANALYSIS - In column the validation and line the production

Overall accuracy at the second level = 83.2%

Overall accuracy at the third level = 77.3%

Table 95: Confusion matrix CLCCH2006-2012 level 2 for zone 1 (Turkey) – PLAUSIBILITY ANALYSIS - In column the validation and line the production

Overall accuracy at the second level = 88.6%

Overall accuracy at the third level = 84.53%

Zone 2: France - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 96: Confusion matrix CLCCH2006-2012 for zone 2 (France) –BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 88.4%

Overall accuracy at the third level = 84.8%

Table 97: Confusion matrix CLCCH2006-2012 for zone 2 (France) –PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 90.9%

Overall accuracy at the third level = 88.1%

Zone 3: Spain - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 98: Confusion matrix CLCCH2006-2012 for zone 3 (Spain) – BLIND ANALYSIS -In column the validation and line the production

Overall accuracy at the second level = 89.6%

Overall accuracy at the third level = 84.2%

Table 99: Confusion matrix CLCCH2006-2012 for zone 3 (Spain) – PLAUSIBILITY ANALYSIS -In column the validation and line the production

Overall accuracy at the second level = 92.1%

Overall accuracy at the third level = 88.7%

Zone 4: Sweden - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 100: Confusion matrix CLCCH2006-2012 for zone 4 (Sweden) – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 82.2%

Overall accuracy at the third level = 81.4%

Table 101: Confusion matrix CLCCH2006-2012 for zone 4 (Sweden) – PLausibility analysis- In column the validation and line the production

CLC	Classe	11-11	12-12	13-11	13-12	13-13	13-14	13-21	13-24	13-31	13-32	14-14	21-11	21-12	21-13	21-14	21-21	21-41	22-22	23-11	23-12	23-13	23-23	24-13	24-24	24-32	31-11	31-12	31-13	31-21	31-23	31-31	31-32	31-33	31-41	32-12	32-23	32-31	32-32	33-33	41-32	41-41	41-51	42-42	51-51	52-52	Total	User Acc		
11-11		8,92																																		8,922	1,00													
12-12			2,24																																	2,436	0,91													
13-11				0,00																																0,010	0,50													
13-12					0,02																															0,024	1,00													
13-13						0,47																														0,565	0,83													
13-14						0,00																														0,005	1,00													
13-21							0,01																													0,016	0,66													
13-31								0,01																												0,056	0,68													
13-32									0,00																											0,024	1,00													
14-11																																					0,010	0,00												
14-14																																					1,855	1,00												
21-11		0,01																																			0,045	0,44												
21-12			0,01																																		0,018	0,50												
21-13																																					0,027	1,00												
21-14																																					0,018	0,50												
21-21																																					63,686	0,72												
21-23																																					0,018	0,00												
21-31																																					0,002	0,00												
21-32																																					0,012	0,00												
22-22																																					0,038	0,60												
23-12																																					0,009	1,00												
23-21																																					0,005	0,00												
23-23																																					5,648	0,60												
24-24		0,13																																			14,481	0,82												
24-31																																					0,002	0,00												
24-32																																					0,007	0,66												
31-11																																					0,062	0,92												
31-12																																					0,067	1,00												
31-13																																					0,102	0,91												
31-21																																					0,011	0,50												
31-23																																					0,008	0,33												
31-24																																					0,003	0,00												
31-31																																					563,223	0,92												
31-32																																					39,422	0,94												
31-41																																					0,021	0,50												
32-11		0,01																																			0,027	0,00												
32-12																																					0,013	1,00												
32-13																																					0,013	1,00												
32-23																																					0,005	0,50												
32-31																																					103,468	0,74												
32-32																																					128,559	0,89												
33-33																																					23,451	0,96												
41-32																																					0,016	1,00												
41-41																																					61,734	0,99												
42-42																																					0,028	0,80												
51-51																																					79,547	0,97												
52-52																																					0,938	0,98												
Total		8,941	2,375	0,008	0,031	0,471	0,005	0,014	0,005	0,038	0,032	1,855	0,020	0,027	0,038	0,009	46,251	0,002	0,023	0,012	0,009	0,008	13,584	0,002	0,005	0,076	0,071	1,094	0,005	0,005	548,28	57,431	0,006	0,011	0,013	0,017	0,003	86,730	144,415	22,508	0,016	63,113	0,086	0,022	77,967	0,925	989,027			
Prod Acc		0,998	0,943	0,644	0,790	1,000	1,000	0,766	0,000	1,000	0,748	1,000	1,000	0,333	0,726	1,000	0,991	0,000	1,000	0,000	0,000	13,249	0,000	0,000	2,543	1,000	0,760	0,938	1,085	1,000	0,500	0,951	0,647	0,000	1,000	1,000	0,767	1,000	0,890	0,796	1,000	1,000	0,975	0,000	1,000	0,999	1,000	0,925	989,027	
																																					Global Acc	0,90												

Overall accuracy at the second level = 90.0%

Overall accuracy at the third level = 89.5%

Zone 5: Germany - Confusion matrix of CLC2006-2012 - Blind and plausibility analysis

Table 102: Confusion matrix CLCCH2006-2012 for zone 5 (Germany) – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 83.3%

Overall accuracy at the third level = 80.6%

Table 103: Confusion matrix CLCCH2006-2012 for zone 5 (Germany) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 90.0%

Overall accuracy at the third level = 88.1%

Zone 6: Finland - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 104: Confusion matrix CLCCH2006-2012 for zone 6 (Finland) – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 85.9%

Overall accuracy at the third level = 72.9%

Table 105: Confusion matrix CLCCH2006-2012 for zone 6 (Finland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 89.9%

Overall accuracy at the third level = 80.7%

Zone 7: Norway - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 106: Confusion matrix CLCCH2006-2012 for zone 7 (Norway) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-11	13-12	14-13	14-14	21-11	21-12	21-13	21-21	23-12	23-23	24-11	24-12	24-13	24-24	31-11	31-12	31-13	31-14	31-21	31-31	31-32	32-11	32-12	32-13	32-31	32-32	33-13	33-33	41-11	41-13	41-41	42-13	42-42	51-51	52-52	Total	User Acc	
11-11	5,504																																5,504	1,000						
12-12	0,014	0,873																															0,918	0,951						
13-12			0,004																													0,004	1,000							
13-13	0,011		0,004	0,209																											0,264	0,791								
13-14				0,004																											0,004	0,000								
13-32			0,004																												0,004	0,000								
14-11																															0,004	0,000								
14-12			0,004																												0,004	0,000								
14-14			1,523																												1,604	0,950								
21-11	0,002			0,002	0,002	0,002	0,002																							0,011	0,200									
21-12			0,002	0,002																											0,006	0,333								
21-13			0,002																												0,002	1,000								
21-21				15,442																											17,158	0,900								
23-23											0,599																				0,748	0,800								
24-11											0,002	0,002																		0,004	0,500									
24-12											0,002																			0,002	1,000									
24-13											0,002																			0,004	0,500									
24-14			0,002								32,084																			0,002	0,000									
31-11	0,002										0,010	0,002	0,007																0,026	0,400										
31-12											0,013																			0,027	0,500									
31-13											0,013																			0,080	0,500									
31-14	0,003										0,010		0,003	0,051															0,092	0,550										
31-21											0,004		0,008	0,004															0,019	0,200										
31-31											285,899																			311,244	0,919									
31-32				0,078							0,567	2,860																	3,591	0,796										
32-11											0,013																			0,013	1,000									
32-12											0,013																			0,027	0,500									
32-14											0,013																			0,040	0,333									
32-21											0,004																			0,004	0,000									
32-31											0,454																			1,013	0,202									
32-32											1,565	0,391																		157,058	0,952									
33-13											0,013																			0,027	0,500									
33-14											4,871	297,478																		0,013	0,000									
33-33											0,004																			302,349	0,984									
41-13											0,004																			0,008	0,500									
41-14											0,004																			0,008	0,000									
41-21																															0,008	0,000								
41-41																															62,305	0,939								
42-42				0,003																										0,069	0,750									
51-51											0,087																			41,108	1,000									
52-52																															1,215	1,302								
Total	5,518	0,885	0,004	0,008	0,213	0,004	1,533	0,002	0,004	0,006	15,535	0,002	0,599	0,002	0,008	0,029	33,924	0,020	0,037	0,080	0,051	0,004	288,586	3,255	0,017	0,013	0,002	0,020	0,204	184,290	0,013	304,429	0,004	0,004	58,517	0,003	0,052	41,108	1,215	893,222
Prod Acc	0,997	0,987	0,000	0,492	0,982	0,000	0,994	1,000	0,500	0,333	0,994	0,000	1,000	1,000	0,281	0,074	0,946	0,517	0,358	0,501	1,000	1,000	0,991	0,879	0,774	1,000	0,000	0,671	1,000	0,811	1,000	0,977	0,000	1,000	1,000	1,000	1,000	1,000	Global Acc	0,950

Overall accuracy at the second level = 95.0%

Overall accuracy at the third level = 93.1%

Table 107: Confusion matrix CLCCH2006-2012 for zone 7 (Norway) – PLausibility analysis- In column the validation and line the production

Overall accuracy at the second level = 97.6%

Overall accuracy at the third level = 96.0%

Zone 8: Poland- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 108: Confusion matrix CLCCH2006-2012 for zone 8 (Poland) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	12-13	13-11	13-12	13-13	13-14	13-23	13-32	13-51	14-14	21-11	21-12	21-13	21-21	21-22	21-24	21-31	21-32	21-51	22-21	22-22	23-11	23-12	23-13	23-21	23-23	23-51	24-11	24-14	24-24	24-32	31-12	31-13	31-21	31-31	31-32	32-11	32-13	32-21	32-23	32-31	41-13	41-41	51-51	52-52	Total	User Acc			
11-11																																				44,229	0,85														
12-12	0,223	4,006	0,185	0,046	0,070	1,150	0,010	0,012	0,024	0,012	2,254	0,105	0,886	0,847	424,913	0,025	0,061	0,099	0,346	0,019	0,040	4,508	0,155	0,067	0,290	0,080	62,552	4,476	0,025	0,150	0,603	0,003	80,885	0,178	0,072	0,179	0,010	293,497	3,174	0,017	0,285	0,036	0,049	1,083	6,740	0,413	0,011	6,891	14,172	0,050	880,838
13-11	0,030		0,020			0,010																													5,177	0,77															
13-12		0,020			0,060																													0,080	0,25																
13-13	0,017			1,150																														0,080	0,75																
13-21			0,012																															0,075	2,274	0,50															
13-32				0,024																														0,012	0,00																
13-51					0,012																												0,012	1,00																	
14-14		0,026				2,162																											2,304	0,93																	
21-11		0,006	0,064				0,023																										0,116	0,55																	
21-12	0,005					0,163	0,017	0,027																							0,212	0,77																			
21-13			0,021	0,063	0,402	0,086																										0,651	0,61																		
21-21					412,835																												412,835	1,00																	
21-22					0,019	0,025																										0,125	0,20																		
21-23						0,020																										0,020	0,00																		
21-24					0,080	0,020																										0,181	0,11																		
21-32					0,077	0,019	0,038	0,173																							0,384	0,45																			
21-51		0,003	0,006				0,016																									0,031	0,50																		
22-21		0,020					0,020																								0,040	0,50																			
22-22		0,247						0,020																								4,933	0,90																		
22-23																																	0,020	0,00																	
23-11																																	0,134	1,00																	
23-12																																	0,067	1,00																	
23-13					0,067																											0,335	0,60																		
23-21						4,165																										0,121	0,66																		
23-23						0,022	0,044																								4,165	83,298	0,70																		
23-32							0,003																									0,440	0,45																		
23-51	0,134																															0,268	0,25																		
24-11		0,067																															0,067	0,00																	
24-12		0,067																															0,468	0,71																	
24-13																																	0,020	0,00																	
24-21																																	62,012	0,80																	
24-24						6,394																										0,012	0,00																		
24-32							0,039																									0,259	0,30																		
31-11			0,011																														0,011	0,00																	
31-12																																	0,033	0,66																	
31-13																																	0,098	0,66																	
31-23																																	0,012	0,00																	
31-31																																	292,087	0,97																	
31-32																																	2,809	0,54																	
32-11																																	0,022	0,50																	
32-12																																	0,011	0,00																	
32-13																																	0,033	0,66																	
32-21																																	0,049	0,50																	
32-23																																	0,012	0,00																	
32-31																																	2,873	0,37																	
32-32																																	16,491	0,21																	
33-33																																	0,453	0,91																	
41-41																																	3,343	0,74																	
51-51																																	14,171	0,98																	
52-52																																	0,228	13,943																	
Total	38,035	4,031	0,185	0,046	0,070	1,150	0,010	0,012	0,024	0,012	2,254	0,105	0,886	0,847	424,913	0,025	0,061	0,099	0,346	0,019	0,040	4,508	0,155	0,067	0,290	0,080	62,552	4,476	0,025	0,150	0,603	0,003	80,885	0,178	0,072	0,179	0,010	293,497	3,174	0,017	0,285	0,036	0,049	1,083	6,740	0,413	0,011	6,891	14,172	0,050	880,838
Prod Acc	0,989	0,994	0,000	0,437	0,857	1,000	0,000</																																												

Overall accuracy at the second level = 92.3%

Overall accuracy at the third level = 91.5%

Table 109: Confusion matrix CLCCH2006-2012 for zone 8 (Poland) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 94.8%

Overall accuracy at the third level = 93.8%

Zone 9: Italy - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 110: Confusion matrix CLCCH2006-2012 for zone 9 (Italy) – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 80.2%

Overall accuracy at the third level = 75.2%

Table 111: Confusion matrix CLCCH2006-2012 for zone 9 (Italy) – PLausibility ANALYSIS- In column the validation and line the production

CLC Classe	11-11	12-12	12-13	13-11	13-12	13-13	13-51	14-32	21-11	21-12	21-13	21-14	21-21	21-22	21-31	21-41	21-51	22-12	22-13	22-21	23-11	23-13	23-14	24-11	24-12	24-21	24-22	24-32	31-12	31-13	31-14	31-31	31-32	31-33	32-11	32-12	32-13	32-21	32-23	32-32	33-32	33-33	33-52	41-41	41-51	42-42	51-33	51-51	52-52	Total	User Acc
11-11	58,873 1,424																																					60,298 0,976													
11-13	0,020																																					0,020 0,000													
12-12	0,051 16,901	0,026																0,039																		17,156 0,985															
12-13		0,020																	0,020																	0,040 0,500															
13-11	0,050		0,192 0,010																																	0,256 0,750															
13-12	0,037		0,283 0,132																	0,037																0,327 0,863															
13-13		0,015 2,206	0,132 0,040																	0,011																0,327 0,722															
13-14				0,011																0,037																0,040 1,000															
13-32					0,011																															0,011 1,000															
14-14	0,029					2,011																														2,070 0,972															
14-32						0,011																														0,011 1,000															
21-11	0,030		0,007				0,060			0,015											0,007	0,007										0,150 0,400																			
21-12			0,030				0,708			0,030												0,007	0,007									0,768 0,922																			
21-13				0,005			0,397			0,009																							0,416 0,955																		
21-14						8,351			360,013			0,170									16,702										0,170 1,000																				
21-21																						33,404										435,172 0,827																			
21-22																																		0,188 0,798																	
21-31																						0,013										0,401 0,316																			
21-32																																		0,032 0,000																	
21-33																																		0,016 0,000																	
21-51																																		0,034 0,333																	
21-52																																		0,045 0,750																	
22-11	0,085		0,011																																0,085 0,000																
22-12	0,085																																		0,341 0,250																
22-13																																			0,170 1,000																
22-14																																			0,085 1,000																
22-21																																			1,102 0,200																
22-22																																			113,828 0,801																
22-32																																			0,061 0,000																
23-13																																			0,016 0,000																
23-23																																			22,172 0,800																
23-51																																			0,011 0,500																
24-11	0,014		0,004																																0,070 0,600																
24-13																																			0,426 1,000																
24-21																																			0,627 0,618																
24-24	4,467																																		242,113 0,775																
24-32																																																			

Zone 10: United Kingdom / Ireland - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 112: Confusion matrix CLCCH2006-2012 for zone 10 (United Kingdom, Ireland) – BLIND ANALYSIS - In column the validation and line the production

Overall accuracy at the second level = 87.1%

Overall accuracy at the third level = 85.6%

Table 113: Confusion matrix CLCCH2006-2012 for zone 10 (United Kingdom, Ireland) – PLausibility analysis - In column the validation and line the production

Overall accuracy at the second level = 92.7%

Overall accuracy at the third level = 91.7%

Zone 11: Romania - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 114: Confusion matrix CLCCH2006-2012 for zone 11 (Romania) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-11	13-12	13-13	13-23	13-51	14-14	14-21	21-11	21-12	21-13	21-21	21-22	21-23	21-24	21-31	21-32	22-21	23-11	23-12	23-13	23-31	24-24	31-12	31-13	31-14	31-31	31-32	32-13	32-22	32-31	33-23	33-32	33-51	41-33	41-41	41-51	42-42	51-13	51-51	52-52	Total	User Acc
11-11	23,810																								18,433											42,243	0,564							
12-12	0,017	4,281		0,202																					0,017											4,568	0,937							
13-11		0,017																																			0,017	1,000						
13-12																										0,008											0,025	0,000						
13-13	0,118		0,011	0,893	0,108																				0,011											0,054	1,268	0,704						
13-14	0,008																																				0,008	0,000						
13-51																										0,008											0,008	1,000						
14-14	0,022																									0,033											0,011	0,370	0,793					
21-11	0,042		0,021																																		0,106	0,000						
21-12	0,014		0,005																							0,005											0,155	0,343						
21-13																										0,021	0,148										0,169	0,875						
21-21	0,033																			286,666	6,639	6,639	13,278														333,173	0,860						
21-22																			0,011		0,042	0,011															0,063	0,167						
21-23																										0,011											0,011	0,000						
21-41																			0,203																		0,203	0,000						
22-13																										0,021											0,021	0,000						
22-21																			0,021							0,011											0,032	0,000						
22-22																			0,696	3,699	6,639	8,574															25,339	0,338						
22-24																				0,601	8,574																		0,032	0,000				
23-13																				0,032							0,042											0,021	0,000					
23-21																					1,891	62,404	9,455															0,074	0,571					
23-23	1,891																		9,455		1,891	62,404	9,455														94,552	0,660						
23-32																			0,008																		0,008	0,000						
23-41																				0,008																		0,008	0,000					
23-51																																						0,008	0,000					
24-12																			0,021																			0,021	0,000					
24-13																										0,021											0,021	0,000						
24-24	1,509																		1,509	2,966	6,607	45,942															65,868	0,697						
31-13																				3,758		0,971	241,341	6,261													0,008	1,000						
31-31																			0,008			0,062	1,420															261,713	0,922					
31-32																				0,009		0,054		0,009	0,110												1,530	0,928						
32-14																			1,672	0,799	1,739	1,065	0,266	14,507	1,131	7,919	3,394	0,266	4,525											0,008	0,000			
32-31																				0,009							0,054																	

Table 115: Confusion matrix CLCCH2006-2012 for zone 11 (Romania) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Classe	11-11	12-12	13-11	13-12	13-23	13-32	13-51	14-13	21-11	21-12	21-13	21-21	21-22	21-32	22-21	23-12	23-13	23-21	23-23	23-41	24-24	31-13	31-31	31-32	32-31	32-32	32-33	33-32	33-33	41-32	41-41	41-51	51-13	51-41	51-51	52-52	Total	User Acc			
11-11			38,053																														42,243	0,90							
12-12			4,515																														4,568	0,98							
13-11			0,017																													0,017	1,00								
13-12																																0,025	0,00								
13-13																																1,268	0,83								
13-14			0,008																													0,008	0,00								
13-51																																0,008	1,00								
14-14																																0,370	0,97								
21-11			0,021																													0,106	0,60								
21-12			0,005																													0,155	0,43								
21-13			0,005																													0,169	1,00								
21-21			0,011																													333,173	0,96								
21-22																																0,063	0,16								
21-23																																0,011	0,00								
21-41																																0,203	0,00								
22-13																																0,021	0,00								
22-21																																0,032	0,66								
22-22																																25,339	0,46								
22-24																																0,032	0,00								
23-13																																0,021	0,00								
23-21																																0,074	0,57								
23-23																																94,552	0,90								
23-32																																0,008	0,00								
23-41																																0,008	1,00								
23-51																																0,008	0,00								
24-12																																0,021	0,00								
24-13																																0,021	0,00								
24-24																																65,868	0,85								
31-13																																0,008	1,00								
31-31																																261,713	0,96								
31-32																																1,530	0,98								
32-14																																0,008	0,00								
32-31																																0,182	0,20								
32-32																																37,282	0,74								
32-51																																0,008	1,00								
33-33																																0,800	0,85								
33-51																																0,008	0,00								
41-41																																12,009	0,90								
42-42																																0,255	0,00								
51-23																																0,008	0,00								
51-51																																13,022	0,92								
52-52																																2,649	2,649								
Total	38,083	4,542	0,049	0,015	1,054	0,054	0,017	0,008	0,368	0,068	0,075	0,291	326,402	0,011	0,042	0,622	12,611	0,027	1,963	94,627	0,008	0,011	82,096	0,019	256,449	5,791	0,999	38,154	1,131	0,008	2,165	1,131	12,497	0,609	0,008	3,030	12,069	2,649	826,483		
Prod Acc	0,999	0,994	0,347	0,000	1,000	0,000	0,500	0,000	0,977	0,933	0,888	0,582	0,980	1,000	0,000	0,034	0,941	0,000	0,000	0,055	0,899	1,000	0,000	0,686	0,442	0,988	0,259	0,037	0,729	0,000	1,000	0,000	0,317	0,000	0,865	0,000	0,000	1,000	1,000	Global Acc	0,920

Overall accuracy at the second level = 92.0%

Overall accuracy at the third level = 90.9%

Zone 12: Greece - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 116: Confusion matrix CLCCH2006-2012 for zone 12 (Greece) – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 85.1%

Overall accuracy at the third level = 78.6%

Table 117: Confusion matrix CLCCH2006-2012 for zone 12 (Greece) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 90.6%

Overall accuracy at the third level = 86.3%

Zone 13: Bulgaria- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 118: Confusion matrix CLCCH2006-2012 for zone 13 (Bulgaria) – BLIND ANALYSIS In column the validation and line the production

CLC Classes	11-11	12-12	13-12	13-13	13-14	13-23	13-51	14-14	21-13	21-21	21-22	22-13	22-21	22-22	22-23	22-32	23-12	23-13	23-21	23-22	23-32	24-13	24-21	24-24	31-12	31-13	31-14	31-31	31-32	32-12	32-13	32-31	33-32	33-33	41-12	41-21	41-23	41-41	51-51	52-52	Total	User Acc		
11-11	22,453	1,493																																29,916	0,75									
12-12	0,295	5,553																															6,733	0,82										
13-13		0,030	1,488		0,403																											2,996	0,49											
13-14				0,053																												0,066	0,80											
13-51					0,026																											0,026	1,00											
14-14	0,100				1,095																											1,328	0,82											
21-12		0,013				0,013	0,013				0,013																			0,093	0,00													
21-13						0,013	0,013																								0,026	0,50												
21-21	5,930					274,295						5,930																		298,017	0,92													
21-22						0,081	0,194				0,293																		0,592	0,32														
22-12							0,013																								0,013	0,00												
22-13																																0,013	0,00											
22-21						0,513					0,192	0,064																		0,898	0,21													
22-22						1,472	0,192			0,192	10,048																		13,654	0,73														
22-23						0,064						0,064																		0,128	0,00													
22-24						0,064																									0,064	0,00												
22-32						0,013				0,026		0,013																		0,066	0,20													
23-12												0,013																			0,013	1,00												
23-13		0,013																														0,013	0,00											
23-21	0,607	0,607				0,194	0,013					0,607			0,607	0,607	22,475	1,215												0,259	0,15													
23-23																															29,765	0,75												
23-32																															0,013	0,00												
24-12						0,026																								0,013	0,00													
24-13																															0,066	0,00												
24-14	0,013																														0,013	0,00												
24-21	0,998				0,998		5,055			1,995									0,998		78,884										97,042	0,81												
24-32																															0,013	0,00												
31-13						0,999																									0,035	1,00												
31-31						0,014																									264,134	0,95												
31-32						0,013																									1,580	0,66												
31-51																																0,013	0,00											
32-12						0,009																									0,009	1,00												
32-13							0,013			0,013																					0,035	0,25												
32-14																																0,009	0,00											
32-21																																0,040	0,00											
32-31																																0,336	0,25											
32-32	1,132									1,132	2,264					1,562	1,562				4,529		1,132		75,333						88,647	0,85												
33-33						0,151																									0,016	0,389												
41-41																																0,801	0,82											
42-42																																0,061	1,00											
51-21																																0,013	0,00											
51-51																																5,981	7,450											
52-52																																0,136	0,136											
Total	23,469	15,713	0,043	1,537	0,053	0,403	0,040	3,257	0,026	282,099	0,399	0,013	1,517	20,648	0,607	0,064	0,013	0,040	0,768	1,601	0,607	31,760	1,215	0,022	0,064	100,848	0,050	0,169	0,063	254,948	5,628	0,022	0,097	90,929	0,134	3,074	0,035	0,035	0,661	0,061	6,276	0,152	755,977	0,89
Prod Acc	0,957	0,353	0,000	0,968	1,000	0,000	0,667	0,336	0,500	0,972	0,486	0,000	0,127	0,487	0,000	0,000	0,333	0,000	0,024	0,000	0,000	0,782	0,000	0,206	0,000	0,993	0,186	0,397	0,397	0,864	0,828	0,000	0,874	0,000	1,000	1,000	0,953	0,892	Global Acc	0,89				

Overall accuracy at the second level = 89.0%

Overall accuracy at the third level = 85.5%

Table 119: Confusion matrix CLCCH2006-2012 for zone 13 (Bulgaria) – PLAUSIBILITY ANALYSIS In column the validation and line the production

Overall accuracy at the second level = 95.6%

Overall accuracy at the third level = 94.4%

Zone 14: Island- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 120: Confusion matrix CLCCH2006-2012 for zone 14 (Island) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-11	13-12	13-13	13-14	13-33	13-51	14-14	21-21	23-21	23-23	24-24	31-31	32-13	32-21	32-23	32-32	32-33	32-51	33-33	33-51	33-52	41-13	41-41	42-42	51-33	51-51	52-12	52-33	52-52	Total	User Acc
11-11	0,565		0,063																												0,628	0,900	
12-12		0,533			0,017																										0,603	0,883	
12-32																															0,018	0,000	
12-33																															0,018	0,000	
13-12					0,018																									0,018	1,000		
13-13				0,037	0,072																									0,109	0,657		
13-14						0,018																								0,018	1,000		
13-33							0,018	0,018																						0,036	0,500		
14-14									0,934																					0,955	0,979		
21-21										0,138																				0,138	1,000		
23-14																															0,018	0,000	
23-23											0,512	0,512	13,311	0,512																14,847	0,897		
23-32																															0,018	0,000	
24-24																															0,300	0,842	
31-31																															2,397	0,636	
32-13																															0,018	1,000	
32-14																															0,018	0,000	
32-23																															0,080	0,263	
32-24																															0,004	0,000	
32-32																															225,593	0,856	
32-51																															0,619	1,000	
33-32																															0,218	0,000	
33-33																															312,376	0,999	
33-51																															1,030	0,893	
41-13																															0,018	1,000	
41-23																															0,054	0,000	
41-41																															36,636	0,874	
41-51																															0,018	0,000	
42-42																															0,104	0,650	
51-33																															0,989	0,422	
51-51																															11,977	0,948	
52-12																															0,018	1,000	
52-33																															0,018	1,000	
52-52																															1,225	0,867	
Total	0,565	0,533	0,100	0,035	0,072	0,018	0,018	0,018	0,952	0,650	0,512	13,492	0,859	1,525	0,018	0,008	0,021	198,330	0,117	0,619	345,292	1,315	0,060	0,018	32,065	0,515	0,852	11,898	0,018	0,018	1,165	569,392	
Prod Acc	1,000	1,000	0,000	0,508	1,000	1,000	0,000	0,981	0,212	0,000	0,987	0,294	1,000	1,000	0,000	1,000	0,973	0,000	1,000	0,903	0,700	0,000	1,000	0,998	1,000	0,490	0,955	1,000	1,000	0,911		Global Acc 0,931	

Overall accuracy at the second level = 93.1%

Overall accuracy at the third level = 82.9%

Table 121: Confusion matrix CLCCH2006-2012 for zone 14 (Island) – PLausibility Analysis- In column the validation and line the production

CLC Classe	11-11	12-12	13-11	13-12	13-13	13-14	13-33	13-51	14-14	21-21	23-21	23-23	24-24	31-31	32-13	32-21	32-23	32-51	33-33	33-51	41-13	41-41	42-42	51-33	51-51	52-12	52-33	52-52	Total	User Acc
11-11	0,597			0,031																								0,628	0,950	
12-12		0,559			0,017																							0,603	0,927	
12-32																												0,018	0,000	
12-33																												0,018	0,000	
13-12							0,018																					0,018	1,000	
13-13							0,037		0,072																			0,109	0,657	
13-14									0,018																			0,018	1,000	
13-33																												0,036	0,500	
14-14																												0,955	1,000	
21-21																												0,138	1,000	
23-14																												0,018	0,000	
23-23																												14,847	0,931	
23-32																												0,018	0,000	
24-24																												0,300	1,000	
31-31																												1,836	0,561	
32-13																												0,018	1,000	
32-14																												0,018	0,000	
32-23																												0,021	0,080	
32-24																												0,004	0,000	
32-32																												0,095	225,593	
32-51																												0,619	1,000	
33-32																												0,218	1,000	
33-33																												312,376	1,000	
33-51																												0,110	1,030	
41-13																												0,920	0,893	
41-23																												0,018	0,333	
41-41																												0,235	36,636	
41-51																												0,117	0,987	
42-42																												0,018	0,000	
51-33																												0,318	0,989	
51-51																												0,223	11,977	
52-12																												11,754	0,981	
52-33																												0,018	0,018	
52-52																												1,225	1,000	
Total	0,597	0,559	0,069	0,035	0,072	0,018	0,018	0,973	0,650	0,512	13,993	0,395	1,836	0,018	0,004	0,059	226,234	0,117	0,619	0,218	313,089	0,920	0,018	36,167	0,547	11,872	0,018	0,018	1,328	608,378
Prod Acc	1,000	1,000	0,000	0,508	1,000	1,000	1,000	0,982	0,212	0,000	0,988	0,760	1,000	1,000	0,000	0,929	0,996	0,000	1,000	1,000	0,998	1,000	1,000	1,000	1,000	0,990	1,000	0,922	Global Acc 0,995	

Overall accuracy at the second level = 99.5%

Overall accuracy at the third level = 93.3%

Zone 15: Hungary - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 122: Confusion matrix CLCCH2006-2012 for zone 15 (Hungary) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-11	13-12	13-13	13-14	13-23	13-32	13-33	13-51	14-12	14-14	21-11	21-12	21-13	21-14	21-21	21-22	21-32	21-51	22-21	22-24	23-12	23-13	23-24	23-32	23-51	24-12	24-24	24-31	24-32	31-11	31-12	31-13	31-21	31-31	31-32	32-12	32-31	33-23	33-33	41-32	41-41	41-51	51-23	51-51	Total	User Acc
11-11	51,738	2,862																																	57,461	0,900												
12-12		9,408	0,645																																10,175	0,925												
12-13	0,044																																		0,087	0,000												
12-21																																			0,012	0,000												
13-11	0,169	0,060	0,300																																0,589	0,509												
13-12			0,366	0,027																													0,667	0,549														
13-13	0,034	0,069	1,362	0,027	0,108	0,062	0,046																									2,280	0,598															
13-14				0,044																														0,044	1,000													
13-21			0,025		0,012	0,012																											0,037	0,000														
13-23			0,025		0,012	0,012																										0,137	0,091															
13-31				0,023																													0,023	0,000														
13-32				0,023																													0,023	0,000														
13-51					0,046																												0,046	1,000														
14-12		0,226	0,452			0,044	4,309																									0,087	0,500															
21-11		0,021				0,059																											5,212	0,827														
21-12		0,021					0,295	0,032																								0,059	1,000															
21-13		0,024					0,120	0,274	0,120																						0,597	0,460																
21-14						0,059																											0,059	1,000														
21-21				12,557		590,978																										629,190	0,939															
21-22						0,154	0,176																									0,913	0,193															
21-23	0,342						2,985																										5,829	0,000														
21-24						0,965																											0,965	0,000														
21-32						3,999	0,669	4,087																							10,919	0,374																
21-51						0,009		0,081																								0,090	0,900															
22-21						1,314			1,518	1,396	0,517																				5,555	0,273																
22-22						1,281	0,550		0,550	20,121																					23,782	0,846																
22-23							0,965																										0,965	0,000														
22-24						0,039			0,020	0,079																						0,296	0,000															
22-32						0,669																													0,669	0,000												
23-12	0,059																																		0,296	0,800												
23-21	1,802						1,541																											3,371	0,057													
23-23	1,802						3,603																											90,084	0,820													
23-24																																			0,482	0,000												
23-31																																			0,334	0,000												
23-32							0,044																											0,889	0,100													
23-51								0,178																										0,081	1,000													
24-11	0,059																																															

Table 123: Confusion matrix CLCCH2006-2012 for zone 15 (Hungary) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 90.5%

Overall accuracy at the third level = 89.7%

Zone 16: Portugal- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 124: Confusion matrix CLCCH2006-2012 for zone 16 (Portugal) –BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 78.9%

Overall accuracy at the third level = 68.3%

Table 125: Confusion matrix CLCCH2006-2012 for zone 16 (Portugal) –PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 85.6%

Overall accuracy at the third level = 80.9%

Zone 17: Austria / Swiss - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 126: Confusion matrix CLCCH2006-2012 for zone 17 (Austria / Swiss) – BLIND ANALYSIS - In column the validation and line the production

CLC Classes	11-11	12-12	13-12	13-13	13-23	13-32	13-51	14-14	21-11	21-12	21-13	21-14	21-21	22-12	22-22	23-11	23-14	23-23	24-24	31-12	31-13	31-14	31-24	31-31	31-32	31-51	32-14	32-31	32-32	32-33	33-32	33-33	41-41	51-51	Total	User Acc
11-11	41,703																		2,259													46,221	0,902			
12-12	0,235	4,413	0,048																0,049													4,745	0,930			
13-12		0,006	0,037																												0,043	0,857				
13-13	0,044	0,011	0,055	0,670	0,122														0,044												0,969	0,691				
13-14																		0,006													0,006	0,000				
13-21																		0,006													0,006	0,000				
13-23																		0,006													0,006	0,000				
13-32																															0,006	0,000				
13-51																		0,012													0,012	1,000				
14-14	0,046																	1,871													2,691	0,695				
21-11	0,049																	0,016													0,065	0,250				
21-12		0,011	0,020															0,069	0,020	0,015										0,138	0,500					
21-13			0,016														0,049		0,016											0,081	0,600					
21-14																	0,016		0,016											0,032	0,500					
21-21																		98,495	2,985	23,878	23,878										149,235	0,660				
22-22	0,042																	0,296	5,631		0,381										6,350	0,887				
23-11																			0,016												0,016	1,000				
23-23																		3,937	35,429	23,620				7,873								74,796	0,474			
23-33																			0,006												0,006	0,000				
24-11																			0,016												0,016	0,000				
24-13																	0,016		0,016											0,032	0,000					
24-24																	5,120	1,074	42,444												49,712	0,854				
31-11																			1,074	42,444												0,008	0,000			
31-12			0,008																												0,008	0,000				
31-13																				0,033												0,033	1,000			
31-14																			0,016		0,016	0,016	0,008								0,041	0,400				
31-23																					0,018			0,006								0,025	0,000			
31-31			4,227																1,702			307,816	19,131											354,864	0,867	
31-32																			0,007	0,137	1,130	1,737											3,339	0,520		
31-33																																0,137	0,000			
31-51																				0,006													0,006	1,000		
32-14																			0,008													0,049	0,167			
32-31																				0,982	0,007		0,007	0,070									1,066	0,007		
32-32																			3,915			2,645	0,752		90,597		0,093	3,915						101,917	0,889	
32-33																																0,137	0,000			
33-33																																8,089	1,938			
41-41																			0,113			0,113									77,738					
41-51																																1,573				
51-51																																15,726	15,726			
Total	42,119	4,450	0,176	4,897	0,122	0,006	0,012	1,878	0,016	0,069	0,085	0,016	103,761	0,296	8,615	3,953	0,016	60,509	98,260	0,004	0,040	0,154	0,008	324,308	21,654	0,006	0,146	0,007	125,397	1,938	0,093	81,888	1,579	15,726	726,130	
Prod Acc	0,990	0,992	0,209	0,137	0,000	0,000	1,000	0,997	1,000	1,000	0,574	1,000	0,949	0,000	0,654	0,004	0,000	0,586	0,432	0,000	0,826	0,107	0,000	0,949	0,080	1,000	0,0057	1,000	0,722	0,000	0,000	0,949	0,996	1,000	Global Acc	0,805

Overall accuracy at the second level = 80.5%

Overall accuracy at the third level = 75.3%

Table 127: Confusion matrix CLCCH2006-2012 for zone 17 (Austria / Swiss) – PLausibility analysis - In column the validation and line the production

CLC Classe	11-11	12-12	13-12	13-21	13-23	13-32	13-51	14-14	21-11	21-12	21-13	21-14	21-21	22-22	23-11	23-14	23-23	24-13	24-21	24-24	31-11	31-13	31-14	31-23	31-31	31-32	31-51	32-14	32-23	32-31	32-32	33-14	33-33	41-41	51-51	Total	User Acc
11-11	41,703																				2,259											46,221	0,902				
12-12	0,235	4,486	0,024																														4,745	0,945			
13-12		0,006	0,037																														0,043	0,857			
13-13		0,011	0,055	0,749		0,044					0,044										0,011	0,011										0,969	0,772				
13-14											0,006																					0,006	0,000				
13-21											0,006																					0,006	1,000				
13-23											0,006																					0,006	0,000				
13-32																																	0,006	0,000			
13-51																																	0,012	1,000			
14-14																																	2,691	0,712			
21-11	0,049																																0,065	0,250			
21-12		0,011	0,020																														0,138	0,644			
21-13																																	0,081	1,000			
21-14																																	0,032	0,500			
21-21																																	149,235	0,700			
22-22	0,042																																6,350	0,980			
23-11																																	0,016	1,000			
23-23																																	74,796	0,842			
23-33																																	0,006	0,000			
24-11																																	0,016	0,000			
24-13			0,016																													0,032	0,000				
24-24																																	49,712	0,897			
31-11																																0,008	1,000				
31-12		0,008																															0,008	0,000			
31-13																																	0,033	1,000			
31-14																																	0,041	0,400			
31-23																																	0,025	0,500			
31-31																																	354,864	0,933			
31-32																																	3,339	0,790			
31-33																																	0,137	0,000			
31-51																																	0,006	1,000			
32-14																																	0,049	0,333			
32-31																																	1,066	0,710			
32-32																																	101,917	0,976			
32-33																																	0,137	0,000			
33-33																																	87,766	0,930			
41-41																					0,113										1,887	0,833					
41-51																						0,113									0,006	0,000					
51-51																																	15,726	15,726			
Total	42,029	4,523	0,136	0,765	0,006	0,044	0,006	0,012	1,923	0,016	0,089	0,129	0,016	107,450	9,208	0,016	0,016	85,072	0,011	0,016	85,618	0,008	0,033	0,016	0,012	337,710	7,675	0,006	0,154	0,008	0,757	119,595	0,118	81,702	1,579	15,726	800,444
Prod Acc	0,992	0,992	0,271	0,979	1,000	0,000	0,000	1,000	0,997	1,000	1,000	0,630	1,000	0,972	0,676	1,000	0,000	0,740	0,000	0,000	0,521	1,000	1,000	1,000	0,981	0,344	1,000	0,107	0,000	1,000	0,832	0,000	0,999	0,996	1,000	Global Acc 0,887	

Overall accuracy at the second level = 88.7%

Overall accuracy at the third level = 86.4%

Zone 18: Denmark/Netherland/Belgium/Luxembourg - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 128: Confusion matrix CLCCH2006-2012 for zone 18 (Denmark/Netherland/Belgium/Luxembourg) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	12-13	13-11	13-12	13-13	13-14	13-21	13-32	13-51	14-12	14-13	21-11	21-12	21-13	21-14	21-21	21-22	21-23	21-32	22-21	22-22	22-24	23-11	23-12	23-13	23-14	23-21	23-23	23-32	23-41	24-11	24-13	24-22	24-23	24-24	24-51	31-11	31-13	31-31	31-32	32-12	32-31	32-32	32-51	33-13	33-32	33-42	41-13	41-41	42-42	51-51	52-52	Total	User Acc
11-11	85,524	4,965																																								100,418	0,852												
12-12		19,164																																								20,963	0,914												
12-13			0,092																																							0,092	1,000												
13-11	0,043		0,789	0,128	0,043																																			1,131	0,698														
13-12			0,824	0,092																																				1,013	0,813														
13-13	0,101	0,032		1,843	0,032																																			3,429	0,538														
13-14			0,552																																						0,736	0,750													
13-21			0,091																																						0,091	1,000													
13-31				0,045																																				0,045	0,000														
13-32				0,045																																				0,181	0,250														
13-41																																									0,045	0,000													
13-51																																									0,091	1,000													
14-14	0,780																																								15,683	0,932													
21-11	0,017	0,035																																							0,349	0,600													
21-12	0,013																																								0,257	0,800													
21-13																																									0,855	0,743													
21-14																																									0,802	1,000													
21-21	15,690																																								376,567	0,938													
21-22																																									0,060	0,667													
21-23																																									0,060	0,000													
21-31																																									0,080	0,000													
21-32																																									0,362	0,000													
21-41																																									0,045	0,000													
21-51																																									0,045	1,000													
22-21																																									0,080	0,750													
22-22																																									1,934	0,722													
23-11																																									0,481	1,000													
23-12																																									0,481	0,667													
23-13																																									0,385	0,579													
23-14																																									0,160	1,000													
23-21																																									0,099	0,400													
23-22																																																							

Table 129: Confusion matrix CLCCH2006-2012 for zone 18 (Denmark / Netherland / Belgium / Luxembourg) – PLausibility analysis- In column the validation and line the production

Overall accuracy at the second level = 89.2%

Overall accuracy at the third level = 87.8%

Zone 19: Albania/Serbia /Macedonia - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 130: Confusion matrix CLCCH2006-2012 for zone 19 (Albania/Serbia/Macedonia) – BLIND ANALYSIS - in column the validation and line the production

Overall accuracy at the second level = 84.2%

Overall accuracy at the third level = 80.9%

Table 131: Confusion matrix CLCC2006-2012 for zone 19 (Albania / Serbia / Macedonia) – PLAUSIBILITY ANALYSIS - in column the validation and line the production

Overall accuracy at the second level = 94.2%

Overall accuracy at the third level = 92.6%

Zone 20: Bosnia and Herzegovina/Croatia - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 132: Confusion matrix CLCCH2006-2012 for zone 20 (Bosnia and Herzegovina / Croatia) –BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 84.8%

Overall accuracy at the third level = 76.9%

Table 133: Confusion matrix CLCCH2006-2012 for zone 20 (Bosnia and Herzegovina / Croatia) –PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 90.8%

Overall accuracy at the third level = 88.9%

Zone 21: Czech Republic / Slovakia - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 134: Confusion matrix CLCCH2006-2012 for zone 21 (Czech Republic / Slovakia) – BLIND ANALYSIS - In column the validation and line the production

Overall accuracy at the second level = 84.2%

Overall accuracy at the third level = 84.1%

Table 135: Confusion matrix CLC2006-2012 for zone 21 (Czech Republic / Slovakia) – PLausibility analysis - In column the validation and line the production

Overall accuracy at the second level = 92.9%

Overall accuracy at the third level = 91.8%

Zone 22: Estonia/Latvia/Lithuania - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 136: Confusion matrix CLCH2006-2012 for zone 22 (Estonia / Latvia / Lithuania) – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 87.8%

Overall accuracy at the third level = 87.0%

Table 137: Confusion matrix CLCCH2006-2012 for zone 22 (Estonia / Latvia / Lithuania) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Clas	11-11	12-12	12-13	13-11	13-12	13-13	13-14	13-24	13-32	13-51	14-14	21-11	21-12	21-13	21-21	21-23	21-24	21-32	22-22	22-24	23-12	23-13	23-14	23-21	23-23	23-32	24-11	24-13	24-24	24-32	31-12	31-13	31-14	31-31	31-32	31-41	32-12	32-13	32-23	32-31	32-32	32-41	32-51	33-33	41-13	41-41	41-51	42-42	51-51	52-52	Total	User Acc
11-11	12,38																																				12,384	1,000														
12-12	0,169	3,939																	0,021																		4,298	0,916														
12-13		0,014																																				0,014	1,000													
13-11	0,031		0,189																	0,014																		0,251	0,753													
13-12			0,082																	0,014																		0,096	0,857													
13-13	0,029	0,029	0,716																0,072																		1,011	0,708														
13-14			0,041																	0,017																		0,041	1,000													
13-23				0,017																																		0,017	0,000													
13-24					0,017																																	0,017	0,000													
13-32						0,034																																0,034	1,000													
13-51						0,017																																0,017	1,000													
14-11	0,014						0,014																															0,027	0,000													
14-14							1,171																															1,307	0,896													
21-11							0,016																															0,016	1,000													
21-13							0,080	0,016																													0,112	0,714														
21-21							176,05																															176,049	1,000													
21-23							0,553	0,069																													1,176	0,059														
21-32							0,011	0,154																													0,208	0,737														
22-22							0,029	0,462	0,029																										0,578	0,800																
23-11							0,016																															0,016	0,000													
23-12	0,016																																							0,016	0,000											
23-13																			0,064	0,032																	0,064	1,000														
23-14																			3,495	1,833																	0,032	1,000														
23-21							0,602												38,80																		5,930	0,589														
23-23							19,400											0,019		0,270																	64,668	0,600														
23-32																				0,016																		0,366	0,737													
24-13																				0,016																		0,016	1,000													
24-21																				0,229																		0,229	0,000													
24-23																				0,229																		0,229	0,000													
24-24																				7,011	0,229																		122,207	0,891												
24-32																				3,505																		0,297	0,446													
31-12																				0,015																		0,017	1,000													
31-13																				108,88																		0,067	0,750													
31-31																																																				

Zone 23: Oversea departments - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 138: Confusion matrix CLCCH2006-2012 for zone 23 (Guadeloupe /Guyana / La reunion/ Martinique/ Mayotte) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-11	13-12	13-32	14-14	21-11	21-21	21-52	22-22	23-11	23-23	23-32	24-11	24-13	24-24	31-12	31-13	31-23	31-24	31-31	31-32	31-52	32-21	32-24	32-31	32-32	33-33	41-41	42-42	51-51	52-31	52-52	Total	User Acc			
11-11	8,613																															8,613	1,000					
12-12		1,039																														1,039	1,000					
13-12	0,023		0,046	0,023																											0,091	0,250						
13-13			0,138																												0,138	1,000						
14-14				0,169																										0,169	1,000							
21-11					0,034																									0,034	1,000							
21-13						0,017																								0,017	1,000							
21-21							9,366																							9,810	0,955							
21-23																	0,023													0,023	0,000							
21-52																	0,069													0,069	1,000							
22-22																	1,674													2,391	0,700							
22-23																	0,023													0,023	0,000							
23-23																	0,371	2,598												3,711	0,700							
23-32																	0,023													0,023	1,000							
24-11																	0,051													0,085	0,600							
24-12																	0,017													0,017	0,000							
24-23																	0,023													0,023	0,000							
24-24	1,135																15,083													17,094	0,882							
31-11	0,023																														0,023	0,000						
31-12																		0,023												0,023	1,000							
31-13																		0,023												0,023	1,000							
31-23																															0,012	0,000						
31-24																		0,012												0,092	0,625							
31-31																			113,374												113,374	1,000						
31-32																		0,015	0,045	0,030	0,375									0,465	0,807							
31-41																			0,023												0,023	0,000						
31-52																				0,367												0,367	1,000					
32-11																		0,023												0,023	0,000							
32-21																					0,035											0,035	1,000					
32-24					0,012												0,035												0,092	0,250								
32-31																			0,029												0,102	0,714						
32-32																		0,555		1,666											20,219	0,835						
33-33																			0,157												2,656	0,822						
41-41																			0,521												15,641	0,967						
42-42																					15,119											0,116	0,088					
51-51																					0,106	0,010										0,153	1,589					
52-31																					0,153											0,649	0,022					
52-52																					0,212	0,341										0,386	212,727					
Total	9,794	1,039	0,046	0,023	0,138	0,012	0,169	0,034	0,017	9,366	0,069	1,696	0,371	2,620	0,023	0,051	0,017	17,274	0,023	0,046	0,015	0,658	115,812	0,781	0,390	0,012	0,035	0,023	0,073	18,079	2,892	15,225	0,010	1,669	0,649	212,516	401,722	
Prod Acc	0,879	1,000	0,000	1,000	1,000	0,000	1,000	1,000	1,000	1,000	1,000	0,987	0,000	0,991	1,000	1,000	0,000	0,000	0,873	1,000	0,500	0,000	0,088	0,979	0,481	0,943	0,000	1,000	1,000	0,934	0,755	0,993	1,000	0,769	1,000	0,999	Global Acc	0,976

Overall accuracy at the second level = 97.6%

Overall accuracy at the third level = 96.4%

Table 139: Confusion matrix CLCCH2006-2012 for zone 23 (Guadeloupe /Guyana / La reunion/ Martinique/ Mayotte) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	11-11	12-12	13-11	13-12	14-14	21-11	21-13	21-21	21-52	22-22	23-23	23-32	24-11	24-24	24-32	31-12	31-13	31-23	31-24	31-31	31-32	31-52	32-13	32-21	32-24	32-31	32-32	33-33	41-41	42-42	51-51	52-31	52-52	Total	User Acc				
11-11	8,613																																8,613	1,000					
12-12		1,039																															1,039	1,000					
13-12	0,023		0,046	0,023																													0,091	0,250					
13-13				0,138																													0,138	1,000					
14-14					0,169																												0,169	1,000					
21-11						0,034																											0,034	1,000					
21-13							0,017																										0,017	1,000					
21-21								9,366																									9,810	0,955					
21-23									0,023																								0,023	0,000					
21-52									0,069																								0,069	1,000					
22-22									1,674																								2,391	0,700					
22-23									0,023																								0,023	0,000					
23-23									2,969																								3,711	0,800					
23-32										0,023																							0,023	1,000					
24-11				0,017							0,034																					0,085	0,400						
24-12												0,017																					0,017	0,000					
24-23												0,023																					0,023	0,000					
24-24	1,135										15,083																						17,094	0,882					
31-11	0,023																																	0,023	0,000				
31-12												0,023																					0,023	1,000					
31-13												0,023																					0,023	1,000					
31-23																			0,012														0,012	0,000					
31-24													0,069		0,012																	0,092	0,750						
31-31													113,374																				113,374	1,000					
31-32													0,015		0,045	0,030	0,375															0,465	0,807						
31-41													0,023																				0,023	0,000					
31-52																			0,367															0,367	1,000				
32-11													0,023																					0,023	0,000				
32-21																			0,035															0,035	1,000				
32-24													0,012									0,012	0,035		0,012							0,092	0,375						
32-31																			0,029					0,073											0,102	0,714			
32-32													0,555											17,443											20,219	0,863			
33-33																			0,157					0,315	2,184											2,656	0,822		
41-41																									15,641											15,641	1,000		
42-42																									0,106	0,010											0,116	0,088	
51-51																									0,153		1,437										1,589	0,904	
52-31																			0,022																			0,694	0,936
52-52																										212,727		212,727										212,727	1,000
Total	9,794	1,039																																					

Annex 8. Confusion matrix of CLCCH2006-12 per bio-geographical region

Bio-geographical region ALP - Alpine - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 140: Confusion matrix CLCCH2006-2012 for Alpine region –BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 88.6%

Overall accuracy at the third level = 83.5%

Table 141: Confusion matrix CLCCH2006-2012 for Alpine region – PLausibility Analysis- In column the validation and line the production

CLC Classe	11-11	12-12	13-11	13-12	13-13	13-14	13-21	13-32	13-51	14-12	14-14	21-11	21-12	21-13	21-14	21-21	21-23	22-12	22-22	23-11	23-12	23-13	23-21	23-22	23-23	24-11	24-12	24-31	24-32	31-11	31-12	31-13	31-21	31-23	31-31	31-32	31-33	31-51	32-12	32-13	32-14	32-23	32-32	33-33	33-32	34-14	41-41	41-51	42-42	51-41	51-51	52-52	Total	User Acc.
11-11	38,548	0,008																																				42,586	0,905															
12-12	0,263	3,085																																				3,436	0,898															
13-11		0,009																																				0,009	1,000															
13-12		0,090																																				0,090	1,000															
13-13		0,023	1,203																																			1,571	0,766															
13-14		0,007																																				0,011	0,673															
13-23																																						0,011	0,000															
13-32																																						0,023	0,851															
13-51																																						0,034	1,000															
14-14																																						2,763	0,820															
21-11																																						0,015	1,000															
21-12	0,007	0,009																																				0,126	0,871															
21-13																																						0,120	0,895															
21-14																																						0,018	0,500															
21-21																																						59,088	0,914															
21-22																																						0,242	0,000															
21-23																																						0,235	1,000															
22-12																																						0,008	1,000															
22-21	0,024																																					0,015	0,000															
23-11																																						0,009	1,000															
23-12																																						0,171	1,000															
23-13																																						0,008	1,000															
23-21																																						0,157	0,045															
23-23																																						122,376	0,873															
23-32																																						0,045	0,762															
23-33																																						0,003	0,000															
24-11																																						0,016	0,408															
24-12																																						0,010	0,283															
24-13																																						0,042	0,798															
24-14																																						0,003	0,000															
24-24																																						140,828	0,865															
24-31																																						0,006	0,000															
24-32																																						0,024	0,447															
31-11																																						0,007	1,000															
31-12			</																																																			

Bio-geographical region ANA - Anatolian - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 142: Confusion matrix CLCCH2006-2012 for Anatolian region– BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 79.3%

Overall accuracy at the third level = 75.6%

Table 143: Confusion matrix CLCCH2006-2012 for Anatolian region– PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 88.0%

Overall accuracy at the third level = 85.9%

Bio-geographical region ARC - Arctic - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 144: Confusion matrix CLCCH2006-2012 for Arctic region –BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-11	13-12	13-13	13-14	13-33	13-51	14-14	21-21	23-21	23-23	24-24	31-31	32-13	32-21	32-23	32-32	32-33	32-51	33-33	33-51	33-52	41-13	41-41	42-42	51-33	51-51	52-12	52-33	52-52	Total	User Acc
11-11	0,388		0,043																												0,431	0,900	
12-12		0,366		0,012																											0,414	0,883	
12-32																				0,012										0,012	0,000		
12-33																															0,012	0,000	
13-12																															0,012	1,000	
13-13																															0,075	0,657	
13-14																															0,012	1,000	
13-33																															0,025	0,500	
14-14																															0,656	0,979	
21-21																															0,095	1,000	
23-14																															0,012	0,000	
23-23																															10,200	0,897	
23-32																															0,012	0,000	
24-24																															0,206	0,842	
31-31																															1,647	0,636	
32-13																															0,012	1,000	
32-14																															0,012	0,000	
32-23																															0,055	0,263	
32-24																															0,003	0,000	
32-32																															154,986	0,856	
32-51																															0,425	1,000	
33-32																															0,150	0,000	
33-33																															219,219	0,999	
33-51																															0,708	0,893	
41-13																															0,012	1,000	
41-23																															0,037	0,000	
41-41																															25,170	0,874	
41-51																															0,012	0,000	
42-42																															0,071	0,452	
51-33																															0,680	0,422	
51-51																															8,229	0,948	
52-12																															0,012	1,000	
52-33																															0,012	1,000	
52-52																															0,729	0,842	
Total	0,388	0,366	0,069	0,024	0,049	0,012	0,012	0,012	0,654	0,446	0,352	9,269	0,590	1,048	0,012	0,006	0,015	136,257	0,081	0,425	241,833	0,903	0,041	0,012	22,029	0,359	0,585	8,174	0,012	0,800	395,798		
Prod Acc	1,000	1,000	0,000	0,508	1,000	1,000	1,000	0,000	0,981	0,212	0,000	0,987	0,294	1,000	1,000	0,000	1,000	0,973	0,000	1,000	0,905	0,700	0,000	1,000	0,998	1,000	0,490	0,955	1,000	0,911	Global Acc	0,932	

Overall accuracy at the second level = 93.2%

Overall accuracy at the third level = 83.1%

Table 145: Confusion matrix CLCCH2006-2012 for Arctic region –PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	11-11	12-12	13-11	13-12	13-13	13-14	13-33	13-51	14-14	21-21	23-21	23-23	24-24	31-31	32-13	32-21	32-23	32-32	32-51	33-32	33-33	33-51	41-13	41-23	41-41	42-42	51-33	51-51	52-12	52-33	52-52	Total	User Acc
11-11	0,410		0,022																												0,431	0,950	
12-12		0,384		0,012																											0,414	0,927	
12-32																															0,012	0,000	
12-33																															0,012	0,000	
13-12			0,012																												0,012	1,000	
13-13			0,026		0,049																										0,075	0,657	
13-14					0,012																										0,012	1,000	
13-33							0,012	0,012																						0,025	0,500		
14-14								0,656																							0,656	1,000	
21-21									0,095																						0,095	1,000	
23-14																				0,012										0,012	0,000		
23-23										0,352	0,352	9,497																		10,200	0,931		
23-32												0,012																		0,012	0,000		
24-24												0,206																		0,206	1,000		
31-31												1,261									0,385									1,647	0,766		
32-13												0,012																		0,012	1,000		
32-14							0,012																							0,012	0,000		
32-23									0,015				0,003	0,038															0,055	0,684			
32-24												0,003																		0,003	0,000		
32-32									0,065	0,065			154,856																154,986	0,999			
32-51													0,425																	0,425	1,000		
33-32													0,150																	0,150	1,000		
33-33													219,219																	219,219	1,000		
33-51													0,076	0,632																0,708	0,893		
41-13														0,012																0,012	1,000		
41-23							0,025							0,161	0,081															0,037	0,333		
41-41															0,012															25,170	0,987		
41-51																0,012														0,012	0,000		
42-42																	0,218														0,071	0,452	
51-33																		0,461													0,680	0,679	
51-51																		8,076													8,229	0,981	
52-12																			0,012												0,012	1,000	
52-33																			0,012												0,012	1,000	
52-52																				0,842											0,842	1,000	
Total	0,410	0,384	0,047	0,024	0,049	0,012	0,012	0,012	0,668	0,446	0,352	9,613	0,271	1,261	0,012	0,003	0,041	155,427	0,081	0,425	0,150	219,709	0,632	0,012	0,012	24,847	0,380	0,461	8,156	0,012	0,012	0,913	422,582
Prod Acc	1,000	1,000	0,000	0,508	1,000	1,000	1,000	0,000	0,982	0,212	0,000	0,988	0,760	1,000	1,000	0,000	0,929	0,996	0,000	1,000	1,000	0,998	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,922	Global Acc 0,995	

Overall accuracy at the second level = 99.5%

Overall accuracy at the third level = 93.4%

Bio-geographical region ATL – Atlantic - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 146: Confusion matrix CLCCH2006-2012 for Atlantic region –BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 88.0%

Overall accuracy at the third level = 85.9%

Table 147: Confusion matrix CLCCH2006-2012 for Atlantic region –PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 91.4%

Overall accuracy at the third level = 89.8%

Bio-geographical region BLS – Black sea - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 148: Confusion matrix CLCCH2006-2012 for black sea region –BLIND ANALYSIS - In column the validation and line the production

CLC Classes	11-11	12-12	13-12	13-13	13-14	13-23	13-51	14-14	21-13	21-21	21-22	21-51	22-11	22-21	22-33	23-13	23-21	23-23	23-51	24-13	24-24	24-51	31-12	31-13	31-14	31-31	31-32	32-13	32-31	32-32	32-51	33-33	41-41	42-42	51-13	51-51	52-52	Total	User Acc
11-11	2,546																																	2,546	1,000				
12-12		1,705	0,366	0,221		0,025																										2,583	0,660						
13-12		0,059	0,118					0,009										0,009														0,196	0,603						
13-13		0,012		0,147																													0,452	0,320					
13-14				0,021																													0,029	0,750					
13-51								0,018																									0,018	1,000					
14-14	0,027							0,237																									0,304	0,783					
21-11								0,023																									0,023	0,000					
21-12								0,005																									0,005	0,000					
21-13								0,038																									0,038	1,000					
21-21								297,231										9,913				53,839										360,983	0,823						
21-22									0,009					0,012																				0,021	0,434				
21-51									0,052		0,042			0,070																			0,093	0,448					
22-11															0,038																		0,070	1,000					
22-13															0,035																		0,038	0,000					
22-21															0,035																		0,070	0,000					
22-22															0,658	6,034							3,678										10,369	0,582					
22-23															0,035																		0,035	0,000					
23-21																0,007																	0,007	1,000					
23-23																4,635				0,330														4,965	0,934				
24-13																	0,025			0,025														0,050	0,500				
24-14	0,007																																	0,007	0,000				
24-24															3,011					37,229														40,240	0,925				
24-31																																		0,022	0,000				
31-12																				0,025															0,025	1,000			
31-13																			0,055															0,055	1,000				
31-31																		1,428		113,277														114,705	0,988				
31-32																	0,040	0,348																0,389	0,896				
32-13																			0,055															0,055	1,000				
32-31																			0,075		0,861	0,075											1,010	0,852					
32-32																			57,877																57,877	1,000			
32-51																			0,063																0,126	0,500			
33-32																				0,029															0,029	0,000			
33-33								0,082																											0,009	20,078			
33-51																																					0,014	0,000	
41-41																																					4,715	0,863	
42-42																																					0,312	0,106	
51-13																				0,011															0,032	0,667			
51-51																																					2,483	0,903	
52-52	0,185																																				3,236	3,421	
Total	2,765	1,776	0,484	0,368	0,021	0,025	0,018	0,329	0,066	297,352	0,009	0,042	0,070	0,658	9,057	0,038	0,009	0,007	14,549	0,063	0,025	0,292	1,714	0,034	113,392	0,348	0,055	0,883	67,977	0,063	10,292	4,365	0,690	0,021	2,252	3,245	542,541		
Prod Acc	0,921	0,960	0,244	0,400	1,000	0,000	1,000	0,723	0,572	1,000	1,000	1,000	1,000	0,000	0,666	0,000	0,000	1,000	0,319	0,000	0,086	0,032	0,000	0,999	0,999	1,000	0,976	0,851	1,000	0,999	0,930	0,048	1,000	0,994	0,997	Global Acc	0,863		

Overall accuracy at the second level = 86.3%

Overall accuracy at the third level = 81.5%

Table 149: Confusion matrix CLCCH2006-2012 for black sea region –PLAUSIBILITY ANALYSIS - In column the validation and line the production

CLC Clas	11-11	12-12	13-11	13-12	13-13	13-14	13-51	14-13	14-14	21-11	21-13	21-21	21-22	21-51	22-11	22-13	22-21	22-22	23-13	23-21	23-23	23-51	24-13	24-24	24-51	31-12	31-13	31-14	31-31	31-32	32-13	32-31	32-32	32-51	33-33	41-41	42-42	51-13	51-51	52-52	Total	User Acc
11-11	2,546																																		2,546	1,000						
12-12		1,951																																	2,583	0,755						
13-12	0,059		0,118																															0,196	0,603							
13-13	0,012		0,147																															0,452	0,326							
13-14			0,029																															0,029	1,000							
13-51				0,018																													0,018	1,000								
14-14	0,027							0,249																									0,304	0,821								
21-11								0,023																									0,023	1,000								
21-12									0,005																								0,005	0,000								
21-13									0,038																								0,038	1,000								
21-21									303,9																								360,983	0,842								
21-22										0,009																							0,021	0,434								
21-51										0,052				0,042																		0,093	0,448									
22-11											0,070																						0,070	1,000								
22-13											0,038																						0,038	1,000								
22-21											0,035																						0,070	0,500								
22-22												0,658	6,034																			10,369	0,582									
22-23												0,035																					0,035	0,000								
23-21																																		0,007	1,000							
23-23																																		4,965	1,000							
24-13																																		0,050	0,500							
24-14	0,007																																	0,007	0,000							
24-24																																		40,240	0,925							
24-31																																		0,022	0,000							
31-12																																		0,025	1,000							
31-13																																		0,055	1,000							
31-31																																		114,705	1,000							
31-32																																		0,389	1,000							
32-13																																		0,055	1,000							
32-31																																		1,010	0,926							
32-32																																		57,877	1,000							
32-51																																		0,126	0,500							
33-32																																		0,029	0,000							
33-33																																		0,009	20,078	0,513						
33-51																																		0,014	0,000							
41-41																																		4,715	1,000							
42-42																																		0,312	0,106							
51-13																																		0,032	1,000							
51-51																																		2,483	0,901							
52-52																																		3,421	3,421							
Total	2,573	2,022	0,007	0,484	0,147	0,029	0,018	0,009	0,331	0,023	0,043	304,0	0,009	0,042	0,070	0,038	0,692	9,057	0,009	0,007	14,9	0,063	0,025	88,1	0,039	0,292	0,275	0,027	114,7	0,389	0,055	0,957	67,98	0,063	10,31	4,994	0,033	0,032	2,238	3,430	552,349	
Prod Acc	0,989	0,965	0,000	0,244	1,000	1,000	0,000	0,753	1,000	0,883	1,000	1,000	1,000	0,050	0,666	0,000	1,000	0,333	0,000	1,000	0,423	0,000	0,086	0,200	0,000	1,000	1,000	1,000	0,977	0,851	1,000	1,000	0,944	1,000	1,000	0,997		Global Acc	0,879			

Overall accuracy at the second level = 87.9%

Overall accuracy at the third level = 84.3%

Bio-geographical region BOR – Boreal - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 150: Confusion matrix CLCCH2006-2012 for Boreal region – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 84.8%

Overall accuracy at the third level = 80.2%

Table 151: Confusion matrix CLCCH2006-2012 for Boreal region – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 90.1%

Overall accuracy at the third level = 86.7%

Bio-geographical region CON – Continental - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 152: Confusion matrix CLCCH2006-2012 for Continental region – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 85.3%

Overall accuracy at the third level = 83.0%

Table 153: Confusion matrix CLCCH2006-2012 for Continental region – PLAUSIBILITY ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 91.8%

Overall accuracy at the third level = 90.2%

Bio-geographical region MAC– Macaronesia- Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 154: Confusion matrix CLCCH2006-2012 for Macaronesia region – IBLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-12	13-13	13-14	14-14	21-21	23-23	24-11	24-12	24-24	31-31	32-14	32-31	32-32	32-33	33-33	41-41	52-52	Total	User Acc
11-11	1,045																			2,063	0,507
12-12		0,164																		0,164	1,000
13-12			0,025																	0,025	1,000
13-13				0,013	0,419														0,432	0,969	
13-14						0,012														0,012	1,000
14-14							0,102												0,102	1,000	
21-11								0,008											0,008	0,000	
21-21								2,563											2,563	1,000	
23-23									2,309										2,309	1,000	
24-12										0,008									0,008	1,000	
24-24											6,640								6,640	1,000	
31-31												8,332							8,332	1,000	
32-14													0,015						0,015	1,000	
32-32								0,256						0,256	12,189				12,701	0,960	
32-33																0,052			0,052	1,000	
33-32															0,025				0,025	0,000	
33-33															6,981	0,164	9,968		17,114	0,582	
41-41																	0,225		0,225	1,000	
52-52																	0,052		0,052	1,000	
Total	1,045	0,164	0,038	0,419	0,012	0,102	2,563	2,565	0,008	0,008	6,640	8,332	0,015	0,256	20,214	0,217	9,968	0,225	0,052	44,121	
Prod Acc	1,000	1,000	0,651	1,000	1,000	1,000	1,000	0,900	0,000	1,000	1,000	1,000	1,000	0,000	0,603	0,242	1,000	1,000	1,000		
																			Global Acc	0,835	

Overall accuracy at the second level = 83.5%

Overall accuracy at the third level = 79.9%

Table 155: Confusion matrix CLCCH2006-2012 for Macaronesia region – PLausibility Analysis- In column the validation and line the production

CLC Class	11-11	12-12	13-12	13-13	13-14	14-14	21-21	23-23	24-11	24-12	24-24	31-31	32-14	32-32	32-33	33-33	41-41	52-52	Total	User Acc
11-11	1,045																		2,063	0,507
12-12		0,164																	0,164	1,000
13-12			0,025																0,025	1,000
13-13			0,013	0,419															0,432	0,969
13-14					0,012														0,012	1,000
14-14						0,102													0,102	1,000
21-11									0,008										0,008	0,000
21-21							2,563												2,563	1,000
23-23								2,309											2,309	1,000
24-12									0,008										0,008	1,000
24-24										6,640									6,640	1,000
31-31											8,332								8,332	1,000
32-14												0,015							0,015	1,000
32-32													12,701						12,701	1,000
32-33														0,052					0,052	1,000
33-32												0,025							0,025	0,000
33-33													2,349	0,164	14,601				17,114	0,853
41-41																	0,225		0,225	1,000
52-52																		0,052	0,052	1,000
Total	1,045	0,164	0,038	0,419	0,012	0,102	2,563	2,309	0,008	0,008	6,640	8,332	0,015	16,093	0,217	14,601	0,225	0,052	49,265	
Prod Acc	1,000	1,000	0,651	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
																			Global Acc	0,932

Overall accuracy at the second level = 93.2%

Overall accuracy at the third level = 79.9%

Bio-geographical region MED – Mediterranean - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 156: Confusion matrix CLCCH2006-2012 for Mediterranean region – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 85.8%

Overall accuracy at the third level = 79.1%

Table 157: Confusion matrix CLCCH2006-2012 for Mediterranean region – PLAUSIBILITY ANALYSIS -In column the validation and line the production

Overall accuracy at the second level = 89.8%

Overall accuracy at the third level = 85.5%

Bio-geographical region PAN- Pannonian - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 158: Confusion matrix CLCCH2006-2012 for Pannonian region – BLIND ANALYSIS- In column the validation and line the production

Overall accuracy at the second level = 85.8%

Overall accuracy at the third level = 85.3%

Table 159: Confusion matrix CLCCH2006-2012 for Pannonian region – PLausibility analysis- In column the validation and line the production

Overall accuracy at the second level = 92.9%

Overall accuracy at the third level = 92.3%

Bio-geographical region STE – Steppic - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 160: Confusion matrix CLCCH2006-2012 for Steppic region – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-13	13-51	14-14	21-13	21-21	21-51	22-22	23-11	23-23	24-24	31-31	31-32	32-22	32-32	33-33	33-51	41-32	41-41	41-51	51-51	Total	User Acc		
11-11	3,669																							5,503	0,667	
12-12	0,019	1,477								0,038	0,016													1,551	0,952	
13-13			0,015																					0,015	1,000	
14-14					0,024																			0,024	1,000	
21-12						0,023																		0,023	0,000	
21-21								109,801																109,801	1,000	
21-41								0,222																0,222	0,000	
22-21								0,023																0,023	0,000	
22-22								1,973		0,658			1,315												3,945	0,167
23-21								0,012																0,012	0,000	
23-23		2,070						2,070		2,070	6,211													12,421	0,500	
23-41											0,009													0,009	0,000	
23-51																								0,009	0,009	0,000
24-24	1,652					1,652					3,247													6,551	0,496	
31-31											8,229			4,115										12,344	0,667	
31-32											0,073													0,073	1,000	
32-32									0,291		0,291		0,291	0,291						0,291				1,457	0,200	
32-51																								0,009	0,009	0,000
33-33															0,111	0,028								0,139	0,800	
33-51			0,009																					0,009	0,000	
41-41							0,657													4,601				5,259	0,875	
51-51																				0,332		4,192		4,524	0,927	
Total	5,340	3,548	0,015	0,009	0,024	0,061	115,769	0,657	0,658	2,070	6,511	6,396	8,520	0,073	0,291	4,406	0,111	0,028	0,291	4,933	0,009	4,201	142,600			
Prod Acc	0,687	0,416	1,000	0,000	1,000	0,000	0,948	0,000	1,000	0,000	0,954	0,508	0,966	1,000	0,000	0,066	1,000	0,000	0,000	0,933	0,000	0,998		Global Acc 0,870		

Overall accuracy at the second level = 87.0%

Overall accuracy at the third level = 87.0%

Table 161: Confusion matrix CLC2006-2012 for Steppic region – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	11-11	12-12	13-13	13-51	14-14	21-13	21-21	22-21	22-22	23-13	23-23	23-41	24-24	31-31	31-32	32-31	32-32	32-51	33-33	41-41	41-51	51-41	51-51	Total	User Acc	
11-11	5,503																								5,503	1,000
12-12		1,513																							1,551	0,975
13-13			0,015																						0,015	1,000
14-14				0,024																					0,024	1,000
21-12					0,023																				0,023	0,000
21-21						109,801																			109,801	1,000
21-41							0,222																		0,222	0,000
22-21								0,023																	0,023	1,000
22-22									0,658		1,973														3,945	0,500
23-21										0,012															0,012	0,000
23-23											2,070	10,351													12,421	0,833
23-41												0,009													0,009	1,000
23-51																									0,009	0,000
24-24													6,551												6,551	1,000
31-31														12,344											12,344	1,000
31-32															0,073										0,073	1,000
32-32																0,291									1,457	0,600
32-51																									0,009	1,000
33-33																									0,139	1,000
33-51																									0,009	0,000
41-41																									5,259	0,875
51-51																									4,524	0,927
Total	5,503	1,513	0,015	0,009	0,024	0,061	110,692	0,023	1,973	2,070	10,642	0,009	7,866	12,344	0,073	0,291	0,874	0,009	0,139	4,601	0,667	0,332	4,192	157,997		
Prod Acc	1,000	1,000	1,000	0,000	1,000	0,000	0,992	1,000	1,000	0,000	0,973	1,000	0,833	1,000	1,000	0,000	1,000	1,000	1,000	1,000	1,000	0,000	1,000	Global Acc	0,964	

Overall accuracy at the second level = 96.4%

Overall accuracy at the third level = 96.4%

Bio-geographical region DOM – Oversea departments - Confusion matrix of CLCCH2006-2012 - Blind and plausibility analysis

Table 162: Confusion matrix CLCCH2006-2012 for Oversea departments (Guadeloupe, French Guyana, Martinique, La Reunion, Mayotte) – BLIND ANALYSIS- In column the validation and line the production

CLC Classes	11-11	12-12	13-11	13-12	13-32	14-14	21-11	21-13	21-21	21-52	22-22	23-11	23-32	24-11	24-24	31-12	31-13	31-23	31-24	31-31	31-52	32-13	32-21	32-24	32-31	32-32	33-33	41-41	42-42	51-51	52-31	52-52	Total	User Acc			
11-11	2,551																														2,551	1,000					
12-12		0,308																													0,308	1,000					
13-12	0,007		0,014	0,007																											0,027	0,250					
13-13					0,041																										0,041	1,000					
14-14						0,050																									0,050	1,000					
21-11							0,010																								0,010	1,000					
21-13								0,005																							0,005	1,000					
21-21									2,774																						2,905	0,955					
21-23										0,007																					0,007	0,000					
21-52											0,020																				0,020	1,000					
22-22											0,496																				0,708	0,700					
22-23												0,007																			0,007	0,000					
23-23												0,110	0,769																	1,099	0,700						
23-32													0,007																		0,007	1,000					
24-11														0,015																	0,025	0,600					
24-12															0,005																0,005	0,000					
24-23																0,007															0,007	0,000					
24-24	0,336																4,467														5,062	0,882					
31-11	0,007																														0,007	0,000					
31-12																		0,007													0,007	1,000					
31-13																			0,007												0,007	1,000					
31-23																				0,003											0,003	0,000					
31-24																				0,003											0,027	0,625					
31-31																					33,575										33,575	1,000					
31-32																				0,004	0,013	0,009	0,111							0,138	0,807						
31-41																															0,007	0,000					
31-52																															0,109	1,000					
32-11																					0,007										0,007	0,000					
32-21																						0,010									0,010	1,000					
32-24					0,003																	0,003									0,027	0,250					
32-31																							0,009									0,030	0,714				
32-32																								0,164								5,988	0,835				
33-33																									0,047								0,787	0,822			
41-41																										0,154								4,632	0,967		
42-42																											4,477								0,034	0,088	
51-51																												0,045				0,471	0,808				
52-31																															0,192	0,007	0,205	0,936			
52-52																																0,114	62,883	62,997	0,998		
Total	2,900	0,308	0,014	0,007	0,041	0,003	0,050	0,010	0,005	2,774	0,020	0,502	0,110	0,776	0,007	0,015	0,005	5,116	0,007	0,014	0,004	0,195	34,297	0,231	0,115	0,003	0,010	0,007	0,021	5,354	0,856	4,509	0,003	0,494	0,192	62,935	118,966
Prod Acc	0,879																																				

Table 163: Confusion matrix CLCCH2006-2012 for Oversea departments (Guadeloupe, French Guyana, Martinique, La Reunion, Mayotte) – PLAUSIBILITY ANALYSIS- In column the validation and line the production

CLC Class	11-11	12-12	13-11	13-12	13-13	14-14	21-11	21-13	21-21	21-52	22-22	23-23	24-11	24-24	24-32	31-12	31-13	31-23	31-24	31-31	31-32	31-52	32-13	32-21	32-24	32-31	32-32	33-33	41-41	42-42	51-51	52-31	52-52	Total	User Acc
11-11	2,551																														2,551	1,000			
12-12		0,308																													0,308	1,000			
13-12	0,007		0,014	0,007																											0,027	0,250			
13-13					0,041																										0,041	1,000			
14-14						0,050																									0,050	1,000			
21-11							0,010																								0,010	1,000			
21-13								0,005																							0,005	1,000			
21-21									2,774																						2,905	0,955			
21-23										0,007																					0,007	0,000			
21-52										0,020																					0,020	1,000			
22-22											0,496																				0,708	0,700			
22-23											0,007																				0,007	0,000			
23-23												0,879																			1,099	0,800			
23-32												0,007																			0,007	1,000			
24-11													0,010	0,010																0,025	0,400				
24-12													0,005																		0,005	0,000			
24-23													0,007																		0,007	0,000			
24-24	0,336													4,467																	5,062	0,882			
31-11	0,007																														0,007	0,000			
31-12																															0,007	1,000			
31-13																															0,007	1,000			
31-23																															0,003	0,000			
31-24																															0,027	0,750			
31-31																															33,575	1,000			
31-32																															0,138	0,807			
31-41																															0,007	0,000			
31-52																															0,109	1,000			
32-11																															0,007	0,000			
32-21																															0,010	1,000			
32-24																															0,027	0,375			
32-31																															0,030	0,714			
32-32																															5,988	0,863			
33-33																															0,787	0,822			
41-41																															4,632	1,000			
42-42																															0,034	0,088			
51-51																															0,471	0,904			
52-31																															0,205	0,936			
52-52																															62,997	1,000			
Total	2,900	0,308	0,014	0,007	0,041	0,050	0,015	0,005	2,774	0,020	0,502	0,886	0,007	0,010	5,105	0,005	0,007	0,014	0,004	0,205	34,142	0,224	0,115	0,003	0,010	0,014	0,021	5,522	0,692	4,663	0,003	0,425	0,192	63,004	119,556
Prod Acc	0,879	1,000	0,000	1,000	1,000	0,667	1,000	1,000	1,000	0,987	0,992	1,000	1,000	1,000	0,875	0,000	1,000	0,500	0,000	0,100	0,983	0,495	0,943	0,000	1,000	0,750	1,000	0,936	0,99						

Annex 9. Observations for the main problematic countries showing land cover changes

Turkey

Table 164: Commission and omission of land cover changes and main problematic CLC 2012 classes for Turkey (zone 1)

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
111-111	0,648	111-111	0,991	confusion with 112-112	211-223	1,000	211-223	1,000	
112-111	0,400	112-111	0,547	confusion with 111-111; 112-112	211-231	0,200	211-231	0,440	confusion 211-211; 231-231
112-112	0,969	112-112	0,754		211-242	0,467	211-242	1,000	
121-121	0,818	121-121	0,916		211-243	0,000			
121-321		121-321	0,000		211-321	1,000	211-321	1,000	
122-122	0,752	122-122	0,947		211-324	0,500	211-324	1,000	
123-123	1,000	123-123	0,209	Confusion with 121-121	211-512	1,000	211-512	0,799	
124-124	1,000	124-124	1,000		212-112	1,000	212-112	1,000	
131-121	1,000	131-121	1,000		212-121	1,000	212-121	1,000	
131-131	0,617	131-131	0,976	overestimation of 131 in 2006 XXX - 131	212-131	1,000	212-131	0,241	
131-211		131-211	0,000		212-133	0,786	212-133	0,543	
131-231	0,000				212-212	0,930	212-212	0,971	
131-242	0,000				212-213	0,400	212-213	0,096	confusion with 212-212; 213-213
131-321	0,000	131-321	0,000		212-222	0,000			
131-324	1,000	131-324	0,210	omission change 131-324 instead to 131-131	212-231	0,000			
131-512	0,000				212-242	0,625	212-242	0,059	confusion with 242-242
132-132	0,487	132-132	1,000	confusion with 211-211	212-411	0,000			
133-112	0,800	133-112	0,755		212-512	0,800	212-512	1,000	
133-121	0,633	133-121	0,386	omission change 133-121 instead to 121-121	213-213	0,864	213-213	0,994	
133-122	0,750	133-122	1,000		213-512	1,000	213-512	1,000	
133-133	0,326	133-133	0,976	Confusion with 121-121 or XXX (2006) - 133	221-221	0,414	221-221	1,000	confusion with 242-242
133-142		133-142	0,000		221-512	0,000			
133-231	0,000	133-231	0,000		222-112	1,000	222-112	1,000	
133-242	0,000				222-133	0,000			
133-321	0,000	133-321	0,000		222-222	0,675	222-222	0,857	confusion with 242 or 243
133-324		133-324	0,000		222-333		222-333	0,000	
133-333		133-333	0,000		222-512	0,000			
133-511	0,000				223-223	0,850	223-223	0,678	omission from 242; 222
133-512	1,000	133-512	0,689	other changes 411-512	231-112	0,000	231-112	0,000	
141-141	0,802	141-141	1,000		231-121	0,000	231-121	0,000	
142-142	0,602	142-142	1,000	confusion with 112 and other change 133	231-131	0,308	231-131	1,000	
211-112	0,432	211-112	1,000	confusion with 242-242	231-133	0,683	231-133	0,785	
211-121	1,000	211-121	0,365	omission from 133-133	231-211	0,425	231-211	0,864	
211-131	1,000	211-131	0,488	omission from 131-131	231-212	0,429	231-212	1,000	
211-133	0,794	211-133	0,403	omission from 133-133	231-213	1,000	231-213	1,000	
211-211	0,841	211-211	0,882		231-231	0,764	231-231	0,584	Omission from 211,212, 242..
211-212	0,200	211-212	1,000	confusion 211-211; 212 -212	231-242	0,717	231-242	0,032	
211-213	0,000	211-213	0,000		231-512	1,000	231-512	0,182	other change 321-512
211-222		211-222	0,000						

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
241-241	0,000	241-241	0,000		321-231	0,000			
242-112	0,694	242-112	0,301		321-243	1,000	321-243	1,000	
242-121	1,000	242-121	1,000		321-321	0,774	321-321	0,610	confusion with 333; 231 and 332
242-212	0,400	242-212	1,000		321-324	0,497	321-324	0,061	
242-222	1,000	242-222	0,026		321-333		321-333	0,000	
242-223	0,400	242-223	1,000		321-512	0,740	321-512	1,000	
242-231	0,000				322-131		322-131	0,000	
242-242	0,629	242-242	0,704		322-322	0,000	322-322	0,000	
242-324		242-324	0,000		322-332		322-332	0,000	
242-411		242-411	0,000		323-112	1,000	323-112	0,441	
242-512	0,428	242-512	0,633		323-133		323-133	0,000	
243-112	0,500	243-112	1,000		323-142		323-142	0,000	
243-133	0,800	243-133	0,420		323-321	0,000			
243-211	0,000	243-211	0,000		323-323	0,700	323-323	0,638	Confusion with 333; 334 and 321
243-212	1,000	243-212	1,000		323-324		323-324	0,000	
243-222	0,500	243-222	1,000		323-334		323-334	0,000	
243-243	0,769	243-243	0,716		323-512	1,000	323-512	1,000	
243-311	0,000				324-131	0,824	324-131	0,472	
243-324	0,000				324-133	0,500	324-133	0,667	
243-512	0,747	243-512	0,630		324-142	0,000			
244-244		244-244	0,000		324-211	0,000			
311-121	0,344	311-121	1,000		324-223	1,000	324-223	1,000	
311-131	1,000	311-131	1,000		324-231		324-231	0,000	
311-311	0,806	311-311	0,915		324-243	0,000			
311-324	0,739	311-324	0,946		324-311	0,624	324-311	0,272	
311-512	1,000	311-512	1,000		324-312	0,700	324-312	1,000	
312-121	1,000	312-121	1,000		324-313	0,400	324-313	0,043	
312-122		312-122	0,000		324-321	0,660	324-321	0,660	
312-131	0,000	312-131	0,000		324-324	0,835	324-324	0,781	
312-133	1,000	312-133	0,939		324-333	0,000			
312-223	1,000	312-223	1,000		324-334		324-334	0,000	
312-312	0,906	312-312	0,909		324-512	0,828	324-512	0,827	
312-321	0,000				331-121	1,000	331-121	1,000	
312-324	0,933	312-324	0,411		331-142	1,000	331-142	1,000	
312-512		312-512	0,000		331-324		331-324	0,000	
313-133		313-133	0,000		331-331	0,900	331-331	0,944	
313-313	0,715	313-313	0,766	confusion with 311 and 312	331-411	0,000			
313-324	0,467	313-324	0,863		331-511	1,000	331-511	1,000	
313-334		313-334	0,000		331-512	0,000			
321-112		321-112	0,000		332-133	1,000	332-133	1,000	
321-121	1,000	321-121	0,429		332-332	0,669	332-332	1,000	
321-131	0,800	321-131	0,456		332-333		332-333	0,000	
321-132		321-132	0,000		333-112	0,000			
321-133	0,508	321-133	0,332		333-131	0,661	333-131	0,805	
321-211	0,765	321-211	0,649		333-133	0,291	333-133	0,117	
321-212		321-212	0,000		333-211	0,000			
GIO Land Product Validation		CORINE Land Cover 2012			333-211	201 / 214	333-222	0,000	
321-223		321-223	0,000		333-242	0,000			

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
333-243	1,000	333-243	1,000	
333-324	0,000			
333-333	0,546	333-333	0,790	confusion with 321 and 324
334-321	1,000	334-321	1,000	
334-324	0,318	334-324	0,811	confusion with 324
334-333	0,000			
334-334	0,000	334-334		
335-335	1,000	335-335	1,000	
411-211		411-211	0,000	
411-212	0,500	411-212	1,000	
411-213	1,000	411-213	1,000	
411-231	0,500	411-231	1,000	confusion with 231-231
411-411	0,897	411-411	0,915	
411-512	0,587	411-512	0,218	omission from 411-411
421-421	0,101	421-421	1,000	333-333 (Halophyte steppe)
422-422	0,800	422-422	1,000	
511-133	0,667	511-133	1,000	other change 312-133
511-511	0,800	511-511	1,000	
511-512	0,952	511-512	0,813	
512-131	0,500	512-131	1,000	commission from 131-131
512-211	1,000	512-211	1,000	
512-512	1,000	512-512	0,967	
521-521	1,000	521-521	1,000	
522-522	1,000	522-522	1,000	
523-523	0,910	523-523	1,000	

Finland

Table 165: Commission and omission of land cover changes and main problematic CLC 2012 classes for Finland (Zone 6)

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
112-112	0,789	112-112	0,964				231-512	0,000	
121-121	0,850	121-121	0,622	confusion 112-112			242-242	0,000	
121-123	0,000				243-112	0,000			
122-122	1,000	122-122	1,000		243-142	0,000			
123-123	0,800	123-123	0,860		243-243	0,646	243-243	0,849	confusion with 211-211
123-133	0,500	123-133	0,210	other change	243-324	0,083	243-324	1,000	
124-124	1,000	124-124	1,000		243-332	0,000			
131-131	0,800	131-131	0,887		243-412	0,000			
131-132	0,000						311-112	0,000	
132-132	0,500	132-132	0,984	confusion with 131-131	311-311	0,605	311-311	0,747	Confusion with 313-313/ 324-324
132-141		132-141	0,000		311-324	0,273	311-324	0,170	
132-313	0,000				312-112	0,722	312-112	0,730	
132-324	0,000				312-121	0,000	312-121	0,000	
133-112	1,000	133-112	0,246	omission with 211-112	312-131	0,353	312-131	0,214	
133-121	1,000	133-121	0,017		312-132	0,000			
133-122	0,500	133-122	1,000	confusion with 211-122	312-133	0,450	312-133	0,533	
133-123	1,000	133-123	0,066		312-142	0,000			
133-131	0,000						312-211	0,000	
133-133	0,000						312-212	0,000	
133-142	1,000	133-142	0,073		312-312	0,681	312-312	0,877	confusion with 313-313
141-141	0,611	141-141	1,000	commission 112-112	312-324	0,727	312-324	0,636	
142-142	0,842	142-142	0,924		312-412	0,350	312-412	1,000	
211-112	0,300	211-112	1,000		313-112	1,000	313-112	0,604	
211-121	1,000	211-121	0,732				313-121	0,000	
211-122		211-122	0,000		313-131	1,000	313-131	0,147	
211-133	0,667	211-133	0,170				313-132	0,000	
211-142	0,500	211-142	1,000				313-133	0,000	
211-211	0,918	211-211	0,706	omission with 243-243 and 312-312			313-142	0,000	
211-311		211-311	0,000		313-313	0,818	313-313	0,555	omission from 312-312
211-324	0,063	211-324	1,000		313-324	0,680	313-324	0,067	
211-412	0,167	211-412	1,000	overestimation of change (412-412)	313-412	0,000	313-412	0,000	
		231-112	0,000		321-321	0,533	321-321	0,195	
		231-133	0,000		322-322	0,500	322-322	0,574	
		231-211	0,000		324-112	0,000	324-112	0,000	
231-231	0,263	231-231	0,057	confusion with 243-243 / 324 -324	324-121	0,158	324-121	0,792	
231-324	0,063	231-324	0,307		324-123	0,000			
231-332	0,000				324-131	0,333	324-131	1,000	
231-412	0,000				324-133	0,667	324-133	1,000	

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
324-142	1,000	324-142	1,000	
324-211	0,176	324-211	0,929	
324-231	0,000	324-231	0,000	
324-311	0,091	324-311	1,000	
324-312	0,235	324-312	0,993	
324-313	0,262	324-313	0,171	
324-324	0,511	324-324	0,527	
324-412	0,364	324-412	0,670	
331-131	0,000			
331-331	0,000			
332-332	0,368	332-332	1,000	
333-333	0,950	333-333	0,639	
411-231	0,000			
411-243	0,000			
411-411	0,850	411-411	0,969	
412-121	0,000	412-121	0,000	
		412-131	0,000	
		412-133	0,000	
412-211	0,250	412-211	1,000	
412-243	0,000			
412-311	0,000			
412-312	0,000			
412-313	0,000			
412-324	0,000	412-324	0,000	
412-412	0,804	412-412	0,691	omission from 312-312 and 324-324
421-231	0,000			
421-324	0,000			
421-421	0,647	421-421	0,476	commission from other land cover and omission from 523
511-511	0,895	511-511	1,000	
512-512	1,000	512-512	0,985	
523-523	0,667	523-523	1,000	

Problematic classes and changes concern essentially the natural classes 311, 312, 313, 324, 322, 321

Italy

Table 166: Commission and omission of land cover changes and main problematic CLC 2012 classes for Italy (zone 9)

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
111-111	0,900	111-111	0,753	omission from 112-112	212-212	0,800	212-212	0,991	
112-112	0,900	112-112	0,873		213-213	0,950	213-213	0,859	
		112-121	0,000		221-121	0,000			
112-133	0,000				221-211	1,000	221-211	0,696	
121-121	0,950	121-121	0,656	omission from 112-112 and 242-242	221-221	0,450	221-221	0,855	242-242 or 211-211
121-133	0,500	121-133	1,000		222-121	0,500	222-121	1,000	
122-122	0,700	122-122	0,986		222-133	1,000	222-133	0,883	
123-123	0,850	123-123	1,000		222-142	1,000	222-142	1,000	
124-124	0,950	124-124	1,000		222-211	0,153	222-211	1,000	
					222-222	0,750	222-222	0,765	commission with 242, 243, 211 and omission from 223
131-131	0,700	131-131	0,985		222-242	0,000			
131-133	1,000	131-133	1,000		223-112	0,000			
131-231	0,000				223-121	0,000			
131-324	1,000	131-324	1,000		223-133	1,000	223-133	1,000	
		132-112	0,000		223-223	0,750	223-223	0,912	
		132-121	0,000		223-323	0,000			
132-132	0,600	132-132	0,403	Omission from 131-131			231-121	0,000	
132-133	1,000	132-133	1,000		231-133	0,000	231-133	0,000	
133-111	0,000				231-231	0,700	231-231	0,243	
133-112	0,709	133-112	0,957				231-243	0,000	
133-121	0,600	133-121	0,606				231-324	0,000	
133-122	0,888	133-122	0,757		231-512	0,500	231-512	1,000	
133-123	1,000	133-123	0,611		241-131	0,000			
133-133	0,200	133-133	1,000	commission with changes XXX-133	241-211	0,000			
					241-241	0,350	241-241	0,257	commission with 211; 231; 242; 243; and omission from 211 and 242
133-142	1,000	133-142	0,843		242-112	0,500	242-112	0,036	
		133-231	0,000		242-121	0,450	242-121	0,156	
		133-512	0,000				242-131	0,000	
141-141	0,850	141-141	1,000				242-143	0,000	
142-142	1,000	142-142	0,134	omission from 211-211	242-133	0,750	242-133	0,862	
142-324	1,000	142-324	1,000		242-211	0,468	242-211	1,000	
211-112	0,300	211-112	1,000	commission with other change or 112-112			242-223	0,000	
					242-242	0,540	242-242	0,495	commission with 211; 231; 223; 243; and omission from 211; 221; 243
211-121	0,825	211-121	0,063				242-243	0,000	
211-122	1,000	211-122	1,000				243-112	0,000	
211-131	0,750	211-131	1,000				243-121	0,000	
		211-132	0,000				243-131	0,000	
211-133	1,000	211-133	0,707				243-133	0,000	
211-142	1,000	211-142	1,000						
		211-211	0,904	commission with other agriculture classes 242, 231, 243, 244			243-211	0,000	commission with 231; 242; 311; 324 and omission from 211; 311
211-213	0,000				243-243	0,540	243-243	0,595	
211-221	0,700	211-221	1,000		243-323	0,500	243-323	1,000	
211-222	1,000	211-222	1,000		243-324	0,000			
		211-243	0,000		243-331	0,000			
211-311	0,265	211-311	1,000	311-311 or other changes			243-334	0,000	
211-324	0,000						243-511	0,000	
211-334	0,000				244-244	0,850	244-244	0,429	omission with 211-211
211-411	0,333	211-411	1,000	no change (231-231) or (411-411)	311-121	1,000	311-121	1,000	
		211-511	0,000		311-122	1,000	311-122	1,000	
211-512	0,750	211-512	1,000		311-131	1,000	311-131	1,000	

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
311-142	1,000	311-142	1,000				324-131	1,000	
311-211	0,604	311-211	0,303				324-133	0,000	
311-213	1,000	311-213	1,000				324-211	1,000	
		311-244	0,000				324-231	0,000	
311-311	0,920	311-311	0,897		324-313	1,000	324-313	1,000	
311-324	0,724	311-324	0,957		324-324	0,420	324-324	0,403	commission with 243, 311,321,323 and omission from 211, 243, 323, 311
311-334	0,500	311-334	0,342		324-331	0,750	324-331	0,632	
311-511	0,000						324-334	0,000	
311-512	1,000	311-512	1,000				324-423	0,000	
312-142	1,000	312-142	1,000				324-511	0,000	
312-312	0,939	312-312	1,000		331-324	0,500	331-324	0,571	
312-324	0,850	312-324	0,980		331-331	0,850	331-331	0,931	
313-131	1,000	313-131	1,000		331-511	0,000	331-511	0,000	
		313-132	0,000		331-523	1,000	331-523	1,000	
313-313	0,800	313-313	0,866		332-332	0,900	332-332	0,990	
313-324	0,700	313-324	1,000		333-323	0,000			
321-121	1,000	321-121	1,000		333-333	0,750	333-333	0,854	
321-131	1,000	321-131	1,000				334-311	0,000	
		321-311	0,000		334-313	0,000			
321-312	0,000				334-323	1,000	334-323	1,000	
321-321	0,750	321-321	0,752				334-324	0,000	
321-323	0,000				334-334	0,050	334-334	0,733	confusion with other land cover type
		321-324	0,000				335-332	0,000	
		321-334	0,000		335-335	0,850	335-335	1,000	
322-322	0,800	322-322	0,578	omission from 321	411-411	0,900	411-411	0,964	
323-112	0,500	323-112	1,000		411-512	1,000	411-512	1,000	
323-121	1,000	323-121	1,000		412-412	0,000			
323-133	1,000	323-133	0,500		421-421	0,750	421-421	0,971	
323-211	0,000				422-422	0,800	422-422	0,695	
		323-231	0,000		511-331	0,000			
323-243	0,000	323-243	0,000		511-511	0,700	511-511	0,433	omission from 243
323-323	0,800	323-323	0,715	omission from 311, 321,324	512-512	1,000	512-512	0,980	
		323-324	0,000		521-421	0,000			
323-334	0,333	323-334	0,316		521-521	0,900	521-521	0,974	
324-121	1,000				522-522	0,000			
324-131	1,000				523-523	1,000	523-523	1,000	
324-133	0,000								
324-211	0,333	324-311	0,614						
		324-121	1,000						

Greece

Table 167: Commission and omission of land cover changes and main problematic CLC 2012 classes for Greece (zone 12)

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
111-111	0,933	111-111	1,000		223-223	0,733	223-223	0,972	
112-112	0,960	112-112	0,952		231-121	0,500	231-121	1,000	
121-121	0,850	121-121	0,649		231-131	1,000	231-131	1,000	
122-122	0,533	122-122	0,772	commission with 133-122 and omission from 121	231-133	1,000	231-133	1,000	
123-123	1,000	123-123	1,000				231-142	0,000	
124-124	1,000	124-124	1,000		231-211	0,000			
131-131	0,867	131-131	0,917		231-231	0,640	231-231	0,272	commission with 242,243,321 and omission from 211, 242,243,312,324
131-231	0,000				231-323	0,000			
131-311	1,000	131-311	1,000		231-512	0,200	231-512	1,000	
131-321	1,000	131-321	0,500		241-241	0,400	241-241	0,210	commission with 242,243 and omission from 223,24
131-323	1,000	131-323	1,000		242-121	1,000	242-121	1,000	
131-324	0,750	131-324	1,000		242-133	0,500	242-133	0,250	
131-512	1,000	131-512	1,000		242-242	0,633	242-242	0,649	commission with 242,243,321 and omission from 211, 242,243,312,324
132-132	0,000						243-122	0,000	
133-112	0,000	133-112	0,000		243-131	1,000	243-131	1,000	
133-121	0,600	133-121	1,000				243-132	0,000	
133-122	1,000	133-122	0,521		243-133	1,000	243-133	0,492	
133-133	0,400	133-133	0,693	commission with XXX-133-and omission from 131	243-243	0,886	243-243	0,677	Omission from 223, 242,311,323
133-142	1,000	133-142	1,000		243-324	1,000	243-324	1,000	
133-231	1,000	133-231	1,000		311-131	1,000	311-131	1,000	
133-512	1,000	133-512	1,000		311-133	1,000	311-133	1,000	
141-141	0,800	141-141	1,000		311-311	0,886	311-311	0,859	
142-142	0,867	142-142	1,000		311-324	0,531	311-324	1,000	
		211-112	0,000				311-334	0,000	
211-121	1,000	211-121	1,000		312-312	0,867	312-312	0,918	
211-122	1,000	211-122	1,000				312-313	0,000	
211-133	0,400	211-133	1,000		312-321	0,000			
211-211	0,829	211-211	0,971				312-322	0,000	
211-242	0,000				312-324	0,633	312-324	0,302	
		212-121	0,000		312-333	0,000			
212-212	1,000	212-212	0,997		312-334	1,000	312-334	0,371	
212-213	0,167	212-213	1,000		313-313	0,800	313-313	0,647	omission from 243, 311, 312, 323, 32
		212-411	0,000		313-324	0,764	313-324	0,910	
213-212	0,000				313-334	0,800	313-334	0,360	
213-213	0,867	213-213	0,909		321-121	0,000	321-121	0,000	
221-221	0,300	221-221	1,000	commission with 242, 243			321-122	0,000	
221-242	0,000				321-131	0,000			
		222-133	0,000				321-133	0,000	
222-222	0,800	222-222	0,679	omission from 242	321-142	0,000			
223-133	1,000	223-133	0,592				321-231	0,000	

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
321-321	0,559	321-321	0,766	commission with 243, 322, 323,324 and omission from 243, 323,333	411-411	0,800	411-411	0,501	omission from 313
		321-323	0,000		421-421	0,929	421-421	0,809	
		321-334	0,000		422-422	1,000	422-422	1,000	
		322-131	0,000		511-511	0,933	511-511	1,000	
322-322	0,600	322-322	0,203	commission with 321 and omission from 321 , 333	512-512	1,000	512-512	0,942	
		322-332	0,000		521-521	1,000	521-521	0,930	
323-121	0,750	323-121	1,000		522-522	0,667	522-522	1,000	
323-131	1,000	323-131	1,000		523-523	1,000	523-523	1,000	
323-133	1,000	323-133	0,200						
323-142	0,000								
		323-231	0,000						
323-211	0,000								
323-321	0,000	323-321	0,000						
323-323	0,850	323-323	0,925						
323-324	0,000	323-324	0,000						
323-333	0,200	323-333	1,000						
323-334	0,900	323-334	0,303						
		324-112	0,000						
324-133	0,000								
324-243	0,000								
324-311	0,200	324-311	0,634						
324-312	0,500	324-312	0,480						
324-313	0,360	324-313	0,064						
		324-321	0,000						
324-323	0,000	324-323	0,000						
324-324	0,686	324-324	0,628	commission with 243,311, 312,313 and omission from 211,311,313,321,323					
324-333	0,000	324-334	0,000						
		324-511	0,000						
331-331	0,800	331-331	0,926						
332-332	0,400	332-332	1,000	commission with 333					
333-133	0,000								
333-333	0,440	333-333	0,666	commission with 321,322,323 and omission from 324					
334-323	0,563	334-323	1,000						
334-324	0,376	334-324	0,712						
334-334	0,000								

Portugal

Table 168: Commission and omission of land cover changes and main problematic CLC 2012 classes for Portugal (zone 16)

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
111-111	0,650	111-111	0,384	commission with 112 and omission from 112	213-213	0,850	213-213	1,000	
112-112	0,900	112-112	0,665	omission from 241, 243	213-231	0,000			
121-121	0,800	121-121	0,688	omission from 112	221-121	0,000			
		121-133	0,000				221-133	0,000	
122-122	0,650	122-122	1,000		221-211	0,000	221-211	0,000	
123-123	0,900	123-123	1,000		221-221	0,700	221-221	0,823	
124-124	0,800	124-124	1,000		222-212	0,000			
131-131	0,700	131-131	1,000		222-222	0,700	222-222	0,727	omission from 311
		131-321	0,000				223-121	1,000	
131-324	0,000	131-324	0,000		223-121	1,000			
131-333	0,000						223-142	0,000	
132-132	0,500	132-132	1,000		223-211	0,500	223-211	0,308	
132-321	1,000	132-321	1,000		223-223	0,650	223-223	0,980	commission with 242,241
		132-324	0,000				223-243	0,000	
133-112	1,000	133-112	1,000		223-323	0,000			
133-121	1,000	133-121	0,380		223-324	1,000	223-324	1,000	
133-122	1,000	133-122	0,223		223-512	0,667	223-512	1,000	
		133-123	0,000				231-132	0,000	
		133-132	0,000		231-133	0,600	231-133	1,000	
133-133	0,133	133-133	1,000	commission with XXX-133	231-142	0,000			
133-142	0,750	133-142	0,383		231-221	0,500	231-221	1,000	
133-323	0,000				231-223	0,000			
133-324	0,000				231-231	0,650	231-231	0,644	commission with 243,321 and omission from 241, 211
133-512	1,000	133-512	1,000				231-243	0,000	
141-141	0,600	141-141	1,000	commission with 112, 121	231-321	0,000			
141-142	1,000	141-142	1,000		231-323	0,500	231-323	0,500	
142-142	0,750	142-142	0,960	commission with 112 and change XXX-142			231-324	0,500	
211-112	0,000						241-112	1,000	
211-121	1,000	211-121	0,226		231-324	1,000			
		211-124	0,000		241-112	1,000			
211-132	0,000						241-211	0,000	
		211-142	0,000		241-241	0,250	241-241	0,773	commission with 242,243 and omission from 222,223
211-211	0,740	211-211	0,764	commission with 212,242,243	241-512	1,000	241-512	0,500	
211-212	0,750	211-212	0,509				242-112	0,000	
211-221	1,000	211-221	0,667		242-122	1,000	242-122	1,000	
211-223	0,873	211-223	0,927				242-133	0,000	
211-243	0,000	211-243	0,000		242-231	0,000			
211-323	1,000	211-323	1,000		242-242	0,650	242-242	0,609	commission with 211,221,243 and omission from 211,212, 223, 241
211-324	0,889	211-324	0,215				242-512	0,000	
211-512	0,750	211-512	0,750		243-133	0,667	243-133	0,552	
212-211	0,000						243-211	0,000	
212-212	0,780	212-212	0,752	commission with 211,242 and omission from 211	243-212	0,000			
212-213	1,000	212-213	0,401		243-243	0,800	243-243	0,704	omission from 211,221, 231,241,242,324
212-223	1,000	212-223	0,222		243-323	0,500	243-323	0,500	

CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V	CLCCHN3P	User accuracy	CLCCHN3V	Producer accuracy	Main confusion with CLCCHN3V
243-324	1,000	243-324	0,032		323-512	0,500	323-512	1,000	
243-512	0,500	243-512		1,000	324-121	1,000	324-121	0,142	
		244-142	0,000				324-122	0,000	
244-244	0,950	244-244	0,656	omission from 311, 241	324-124	1,000	324-124	1,000	
244-324	0,200	244-324	1,000		324-131	1,000	324-131	0,490	
311-221	0,000	311-221	0,000				324-132	0,000	
311-223	1,000	311-223	1,000		324-133	0,800	324-133	0,523	
311-231	0,000				324-142	1,000	324-142	0,500	
311-244	0,000				324-211	0,750	324-211	0,257	
				commission with 244, 324 and omission from 313 and change 324-311, 334-311	324-221	0,500	324-221	0,500	
311-311	0,520	311-311	0,741		324-222	0,500	324-222	1,000	
311-324	0,840	311-324	0,491		324-223	1,000	324-223	1,000	
312-121	1,000	312-121	1,000		324-231	1,000	324-231	0,500	
312-131	1,000	312-131	1,000		324-242	1,000	324-242	1,000	
312-133	0,000	312-133	0,000				324-243	0,000	
312-142	0,000						324-244	0,000	
312-312	0,900	312-312	0,921		324-311	0,747	324-311	0,762	
312-324	0,760	312-324	0,328		324-312	0,850	324-312	0,232	
		312-334	0,000		324-313	0,850	324-313	0,809	
313-121	0,500	313-121	1,000				324-321	0,000	
313-313	0,820	313-313	0,987				324-322	0,000	
		313-322	0,000						
		313-323	0,000		324-324	0,440	324-324	0,804	commission with 322, 312-324, 322-324
313-324	0,740	313-324	0,636		324-334	0,850	324-334	0,576	
		313-334	0,000		331-331	0,867	331-331	1,000	
		321-131	0,000		332-332	0,750	332-332	1,000	
		321-133	0,000				333-323	0,000	
321-142	1,000	321-142	0,500						
		321-211	0,000		333-333	0,650	333-333	1,000	
321-321	0,600	321-321	0,387	commission with 231, 243, 322, 323 and omission from 322, 324	333-512	0,000			
		321-322	0,000		334-311	0,000			
		321-323	0,000		334-322	0,400	334-322	1,000	
		321-324	0,000		334-324	0,700	334-324	0,353	
321-512	1,000	321-512	0,333		334-334	0,000	334-334	0,000	
322-133	0,000	322-133	0,000		411-411	1,000	411-411	1,000	
322-211	1,000	322-211	1,000		412-412	1,000	412-412	1,000	
322-322	0,800	322-322	0,471	omission from 324	421-421	0,950	421-421	0,846	
323-121	0,000				422-422	0,900	422-422	0,927	
		322-324	0,000		423-423	0,800	423-423	1,000	
		322-334	0,000		511-511	1,000	511-511	0,752	omission from 512
323-131	1,000	323-131	1,000				512-132	0,000	
		323-142	0,000		512-512	0,850	512-512	1,000	
323-221	1,000	323-221	1,000		521-521	0,800	521-521	1,000	
323-243	0,000				522-522	0,500	522-522	0,774	omission from 421
323-323	0,900	323-323	0,970		523-523	1,000	523-523	1,000	
323-324	1,000	323-324	0,965						

Annex 10. Illustrations of some confusion or difficulties of interpretation met during the validation process.

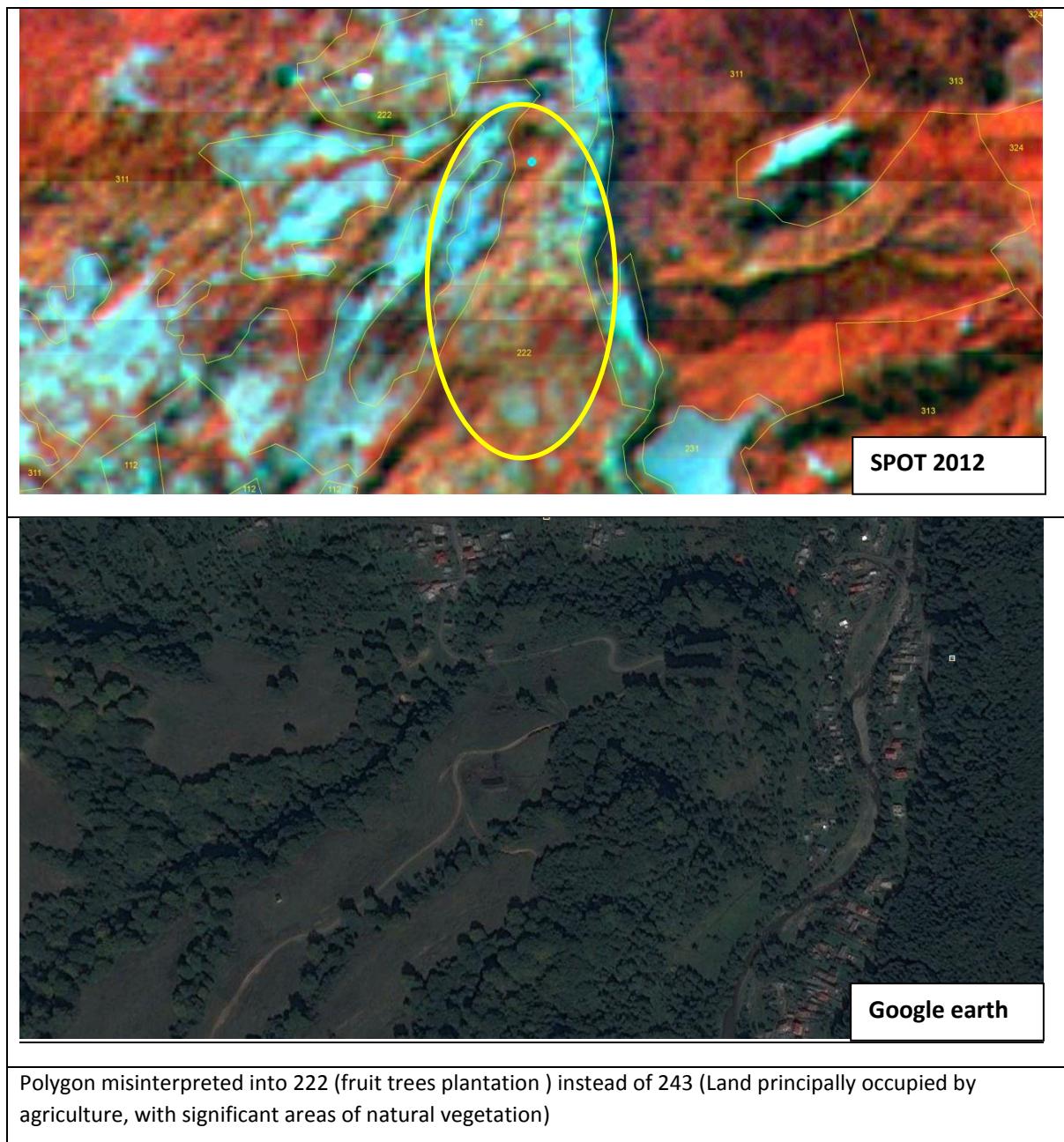
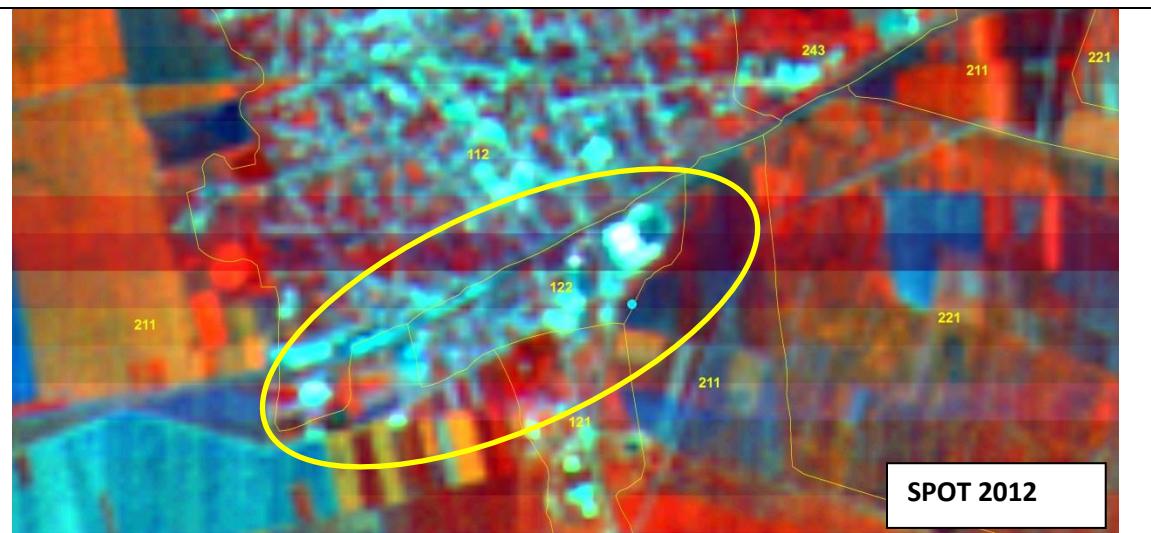
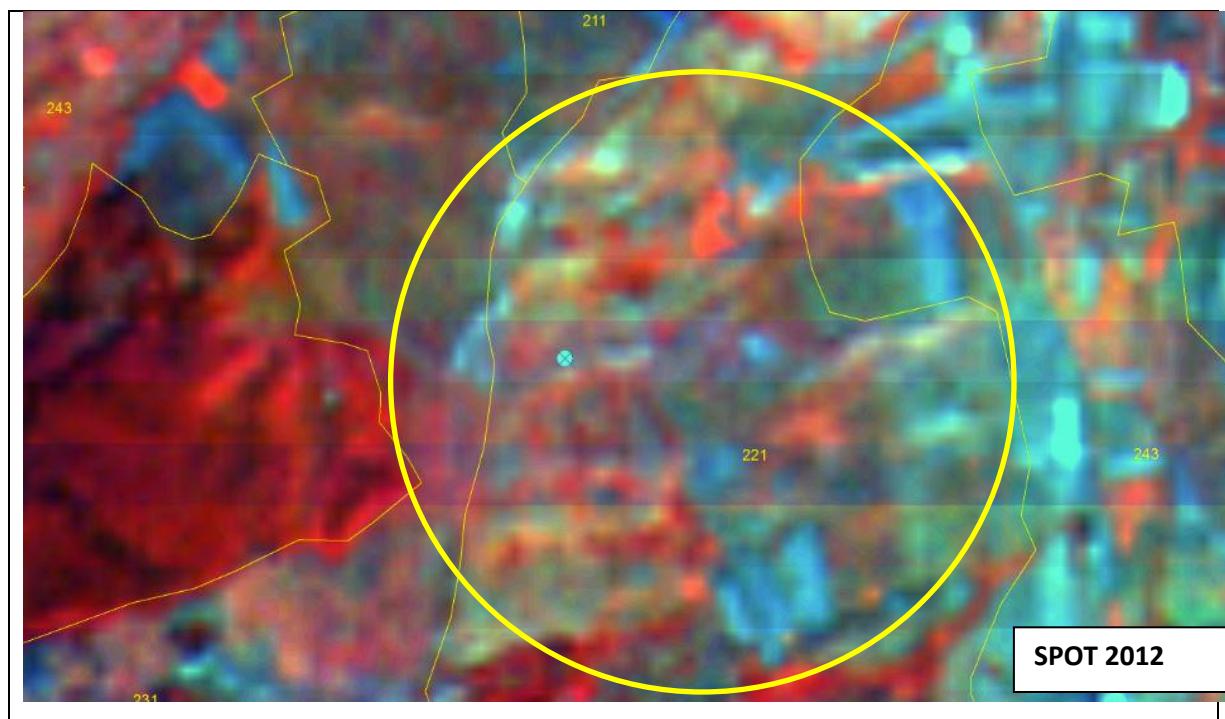


Figure 6: illustration of wrong polygon in CLC2012 – Wrong 222



Polygon misclassified into 122 (road and rail networks) instead of 121 (industrial and commercial units)

Figure 7: illustration of wrong polygon in CLC2012 – Wrong 122

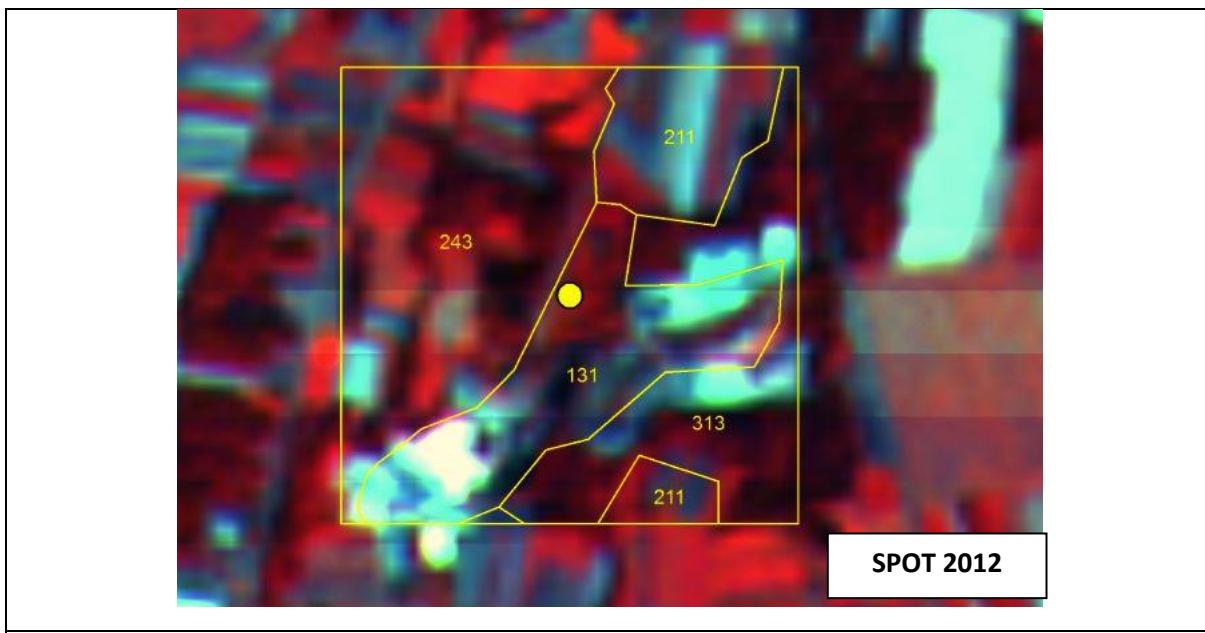




Polygon misclassified into 221 (Fruit trees and berry plantations) instead of 231 (Pastures)

Figure 8: illustration of wrong polygon in CLC2012 – Wrong 221

Example of some bad vector polygon drawing of CLC2012



Polygon misinterpreted into 243 and shouldn't be classified into the 131

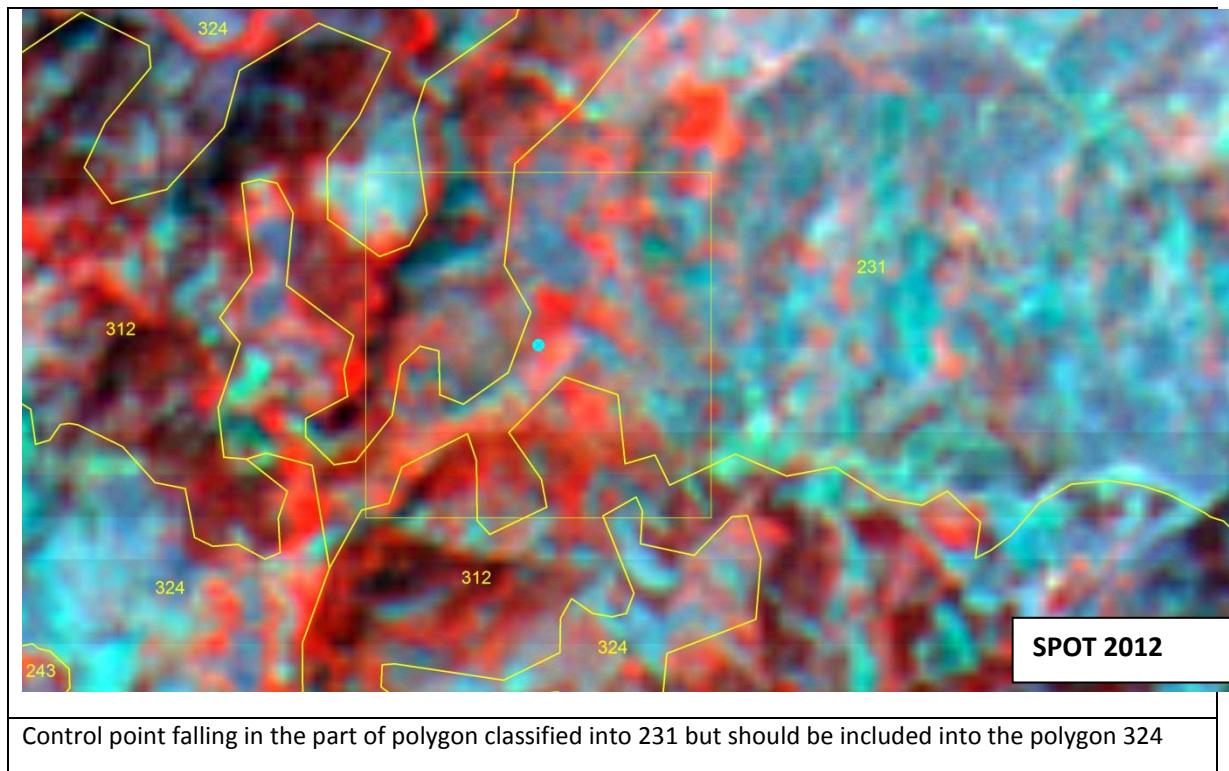


Figure 9: illustration of bad polygon drawing in CLC2012

Interpretation difficulties due to the location of the control point

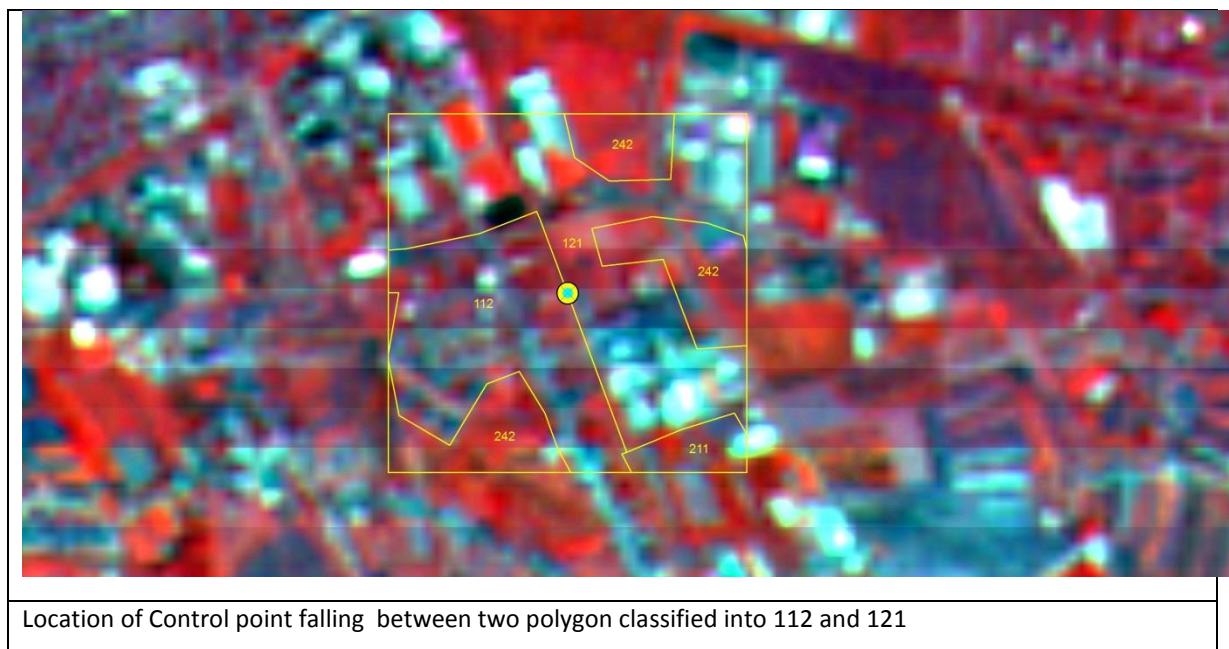


Figure 10: illustration of interpretation difficulties due to the location of the control point