Framework contract
Provision of forest data and services

EUROPEAN COMMISSION
DIRECTORATE-GENERAL
Joint Research Centre

E-forest
European forest information system

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Service Contract 5
Validation of JRC Forest Layer 1990
& 2006

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Agenda

- The JRC request
- The consortium proposal (pre-study in four steps)
- Possible difficulties (data provision, reference years, Forest map precision)
- Tour de table (first feedback)
- Conclusion

Validation of JRC Forest Layer

Forest Map specification:

1990

Forest Layers Specification	Minimum Mapping Unit	full pixel resolution
	Map Classes	**1990** Forest/Non-Forest
		1 - forest
		2 - non-forest
		3 - clouds&snow
		0 - no data
	Format	GeoTIFF 8-bit LZW compressed.
Data Basis	Satellite Imagery	Image1990
		Landsat4
		Landsat5
	Spatial Resolution	resampled to 25m
	Map Projection	ETRS89 Lambert Azimuthal Equal Area (ETRS-LAEA)
	Acquisition years	1985-1993
	Ancillary data	CORINE Land Cover 1990 *comparable land cover information for CH, IS, TR, NO*
	Coverage	EU27 plus CH, BA, HR, MK, LI, RS, ME, AL

2006

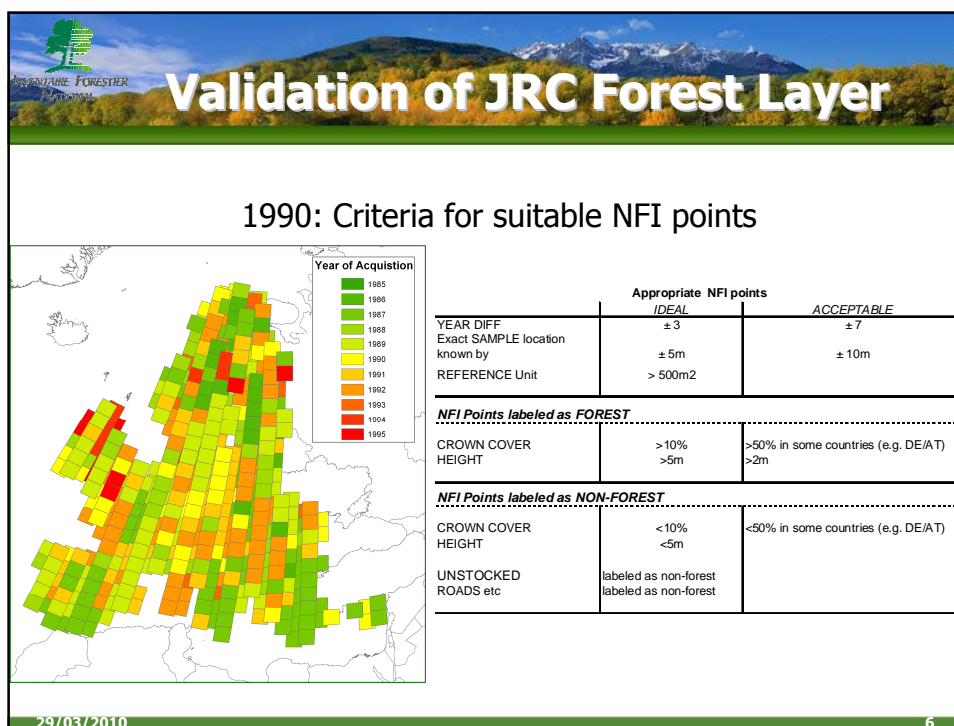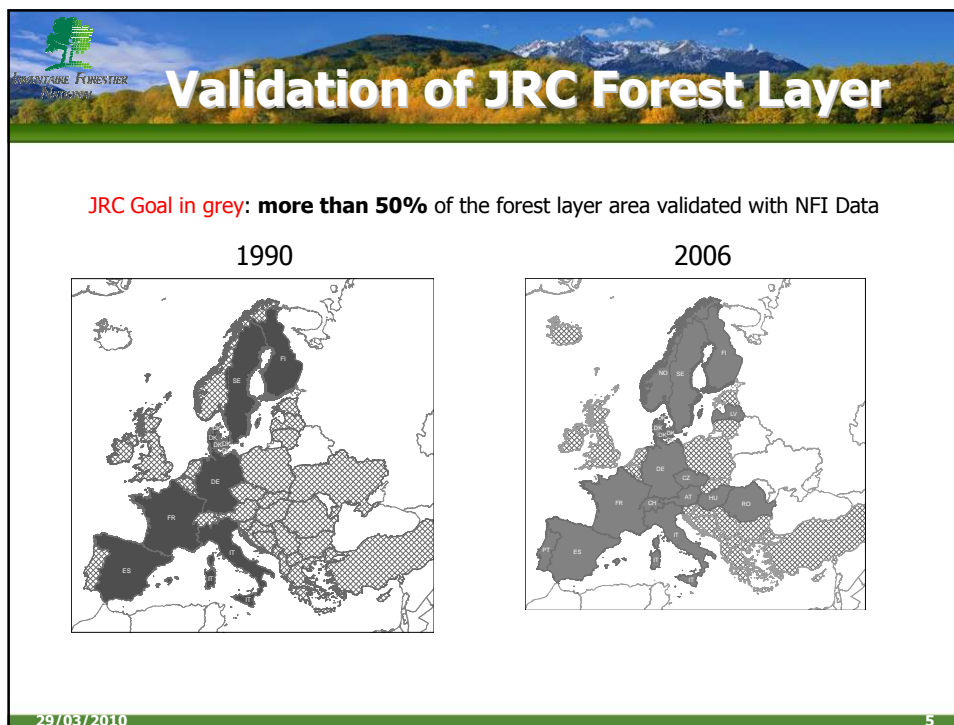| Forest Layer Specification	Minimum Mapping Unit	full pixel resolution
	Map Classes	Forest Types
		23 - broadleaved
		24 - conifers
		12 - non-forest
		40 - water
		250 - cloud&snow
		0 - no data
	Format	GeoTIFF 8-bit LZW compressed.
Data Basis	Satellite Imagery	Image2006
		Spot4 (HRVIR)
		Spot5 (HRG)
		IRS-P6 (LISS-III)
	Spatial Resolution	resampled to 25m
	Map Projection	ETRS89 Lambert Azimuthal Equal Area (ETRS-LAEA)
	Acquisition years	2005-2007
	Ancillary data	CORINE Land Cover 2000
	Coverage	EU27 plus CH, BA, HR, MK, LI, RS, ME, AL, *NO, TR, IS*

Validation of JRC Forest Layer

JRC Goal in grey: **more than 50%** of the forest layer area validated with NFI Data

1990   2006

Validation of JRC Forest Layer

1990: Criteria for suitable NFI points

Year of Acquisition: 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1004, 1995

	Appropriate NFI points	
	IDEAL	*ACCEPTABLE*
YEAR DIFF	± 3	± 7
Exact SAMPLE location known by	± 5m	± 10m
REFERENCE Unit	> 500m2	
NFI Points labeled as FOREST		
CROWN COVER	>10%	>50% in some countries (e.g. DE/AT)
HEIGHT	>5m	>2m
NFI Points labeled as NON-FOREST		
CROWN COVER	<10%	<50% in some countries (e.g. DE/AT)
HEIGHT	<5m	
UNSTOCKED	labeled as non-forest	
ROADS etc	labeled as non-forest	

Validation of JRC Forest Layer

2006: Criteria for suitable NFI points

	Appropriate NFI points	
	IDEAL	*ACCEPTABLE*
YEAR DIFF	± 1	± 3
Exact SAMPLE location known by	± 5m	± 10m
REFERENCE Unit	> 500m2	
NFI Points labeled as FOREST		
CROWN COVER	>10%	>50% in some countries (e.g. DE/AT)
HEIGHT	>5m	>2m
NFI Points labeled as NON-FOREST		
CROWN COVER	<10%	<50% in some countries (e.g. DE/AT)
HEIGHT	<5m	
UNSTOCKED	labeled as non-forest	
ROADS etc	labeled as non-forest	

Validation of JRC Forest Layer

HEADING		EXPLANATION
ID		Sample Number of the validation protocol [running number], allows link to the NFI plot
JRC Forest map Label		
	centre	Pixel value of the exact sample location
	a11 – a55	Pixel values from the 5x5 neighborhood of the centre pixel, see Fig2
Country		**Country** of the NFI point
NUTS 3		NUTS3 region code
Elevation		**Elevation [m]** of the NFI plot
Year of non–forest plot		**Year** of the survey of the non–forest sample plot
Year of forest plot		**Year** of the survey of the forest sample plot
NFI label (Forest/Non-Forest)		**F:** Classification of the NFI sample point into Forest **N:** Classification of the NFI sample point into Non–Forest according to FAO /COST E43 reference definition

Validation of JRC Forest Layer

A11	A12	A13	A14	A15
A21	A22	A23	A24	A25
A31	A32	centre	A34	A35
A41	A42	A43	A44	A45
A51	A52	A53	A54	A55

The JRC request

Forest Types			
%Broadleaved	Percentage of broadleaved species (upper storey)		Is-it available ?
%Conifers	Percentage of coniferous species (upper storey)		
Uncertainty	Percentage of uncertainty of estimation		Is-it available ?
Crown Cover			
%Crown Cover	Percentage of crown cover of the sample point		
%Uncertainty	Percentage of uncertainty of estimation		Is-it available ?
Estimation method	**Field direct:** **Photo Int:** **Map**: **Field indirect**	Field plot measurement of crown cover Measurement by photo-Interpretation Map of crown cover Calculation from other parameters within the field plot	
Reference unit	Reference area for the estimation of crown cover [m^2]		

The JRC request

Is it an average ?

Is it available ?

Is it available ?

Tree Height

	Tree height [m]	Tree height of dominating trees	
	Uncertainty [m]	Uncertainty of tree height in meters	
	Estimation method	**Field direct:** **Photo Int:** **Map**: **Field indirect**	Field plot measurement of crown cover Measurement by photo–Interpretation Map of crown cover Calculation from other parameters within the field plot
	Reference unit [m2]	Reference area for the estimation of tree height [m²]	
Partition plot		Proportion of forest area within the plot	
Distance to forest boundary [m]		Distance in meters from the sample location to the forest boundary [optional]	

Validation of JRC Forest Layer 1990 & 2006
Consortium proposal

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The consortium proposal

Launching a pre study for the qualification

The Deliverable:

Approved detailed implementation protocol of the validation strategy for 2006 and 1990

Way of working:

- A meeting with all the permanent members
- A meeting with all the all NFIs involved in the consortium
- Evaluation of the methodology using a unique tool
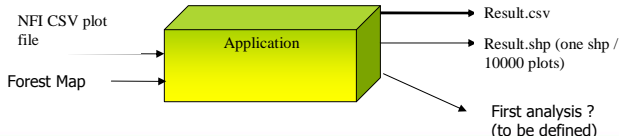- Meeting with JRC to prepare the specific contract SC6

Tool for qualifying the Forest map

We proposed to develop a specific tool for different reasons:

1. The tool can be use to produce the result **or** to cross check the result obtained by your own GIS tools.

2. This tool can be extended to produce a first analysis on the national qualification (to be defined)

3. The tool can guaranty the methodology used for overlaying NFI plots and JRC forest layers

4. The tool can minimize the cost (grid densification, memory problem due to huge geotiff 1000kmx1000km with pixel size =25m)

NFI CSV plot file → Application → Result.csv

Forest Map → Application → Result.shp (one shp / 10000 plots)

First analysis ? (to be defined)

Tour de table

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Tour de table

First feedback ….?

Do you want to participate to this project ?

What are your constraints:

- – Reference year 2006 +/- 3 year?
- – Reference year 1990 ?
- – Data available
  - Forest type: upper storey ?
  - Crown Cover ?
  - Tree Height ?
  - *Uncertainty* of these variables ?
  - Partition plot ?