Internship Report

I, along with my two of my Copernicus Digital Earth fellows, worked at GeoVille gmbh Innsbruck from 7 April to 30 June 2022. GeoVille is a global leader in satellite-based land monitoring with a focus on Copernicus based services.

My field work was related to Copernicus Land Monitoring Service (CLC+). It has been further divided as

CLC+ Backbone (BB)

CLC+ Core

I worked on CLC+ Backbone which is producing and updating geospatial land cover datasets.

I have been assigned to Task, 'The Vector Product' with the goal to classify homogeneous landscape objects in Europe. We have to do it using Object Based Image Analysis in QGIS using an extension called GAFSEG.

GAFSEG is a QGIS plugin made by GAF company in Germany. GAF is one of the leading companies in the geo-spatial service market. We had meeting with GAF developers every Thursday to get to know and to give feedback to the developers of the plugin.

The aim was to come up with best object based image segmentation such that homogeneous landscapes are represented through an object. We have been assigned with Production Unit which is an area for which have to do the segmentation. First step was to check for the artifacts within the bands of satellite imagery and perform the selection of only those bands which donot contain artefacts. Second task was creation of Working Image which is a stacked image and then perform initial segmentation. Finally, making 50 rulesets based on spectral values in the form of merge cards to solve over and under segmentation within the initial segmentation.

In the end, the results were submitted which were evaluated by a Quality Control (QC) team. QC existed of expert workers that have been doing the task for much more time.

S-2 Time Features

Band	Description	Wavelength	Spatial resolution
Band 1	Coastal aerosol	442.7	60
Band 2	Blue	492.4	10
Band 3	Green	559.8	10
Band 4	Red	664.6	10
Band 5	Vegetation red edge	704.1	20
Band 6	Vegetation red edge	740.5	20
Band 7	Vegetation red edge	782.8	20
Band 8	NIR	832.8	10
Band 8A	Narrow NIR	864.7	20
Band 9	Water vapour	945.1	60
Band 10	SWIR – Cirrus	1373.5	60
Band 11	SWIR	1613.7	20
Band 12	SWIR	2202.4	20
NDVI	Normalized Difference Vegetation Index NDVI = (NIR – Red) / (NIR + Red)		
NDWI	Normalized Difference Water Index NDWI = (NIR – SWIR) / (NIR + SWIR)		

Time Features available in quantiles:

P10, P25, Mean, Median, P75, P90, Standard Deviation

Land Cover Classification

Class code	Class name
1	Sealed
2	Woody – needle leaved trees
3	Woody – Broadleaved deciduous trees
4	Woody – Broadleaved evergreen trees
5	Low-growing woody plants (bushes, shrubs)
6	Permanent herbaceous
7	Periodically herbaceous
8	Lichens and mosses
9	Non- and sparsely-vegetated
10	Water
11	Snow and ice

LC classes available in probabilities: 1 – 255

(1 … less probable · 255 … very probable)

GeoVille

The first 3 weeks were for training at a sample production unit to get to know about implementing the process. The training results were also submitted to the QC. Next, I was assigned with a production unit within Turkey. The part of work will be incorporated into Copernicus World Land Cover product 2021. A subsequent of 2020 product already released.