



Deliverable 3.2

DWH use report



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DWH use report
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Short Description:
Deliverable 3.2 provides details on the VHR data that were accessed from the DWH and the use of the data. Moreover, it gives a short explanation why some of the requested data from the DWH request 2019 was not used at all and the reason why it was not requested.
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Abbreviations

AOI	Area of interest
CDS	Coordinated Data Access system
DWH	Data Warehouse
EC	European Commission
EO	Earth Observation
ESA	European Space Agency
EV	Essential variable
HR	High resolution
VHR	Very high resolution



1 Introduction

Work package 3 is concerned with the provision of datasets that will be used as input into the development, validation and demonstration activities of enviroLENS. To guarantee the availability of the needed datasets an important task of WP3 are apart from the Data management plan (Task 3.1, deliverable 3.1), the Data Warehouse planning (Task 3.2) as well as the reporting (Task 3.3).

Deliverable 3.2 is summarizing the use of EO very high resolution (VHR) data requested from the ESA Data Warehouse (DWH) within the first year of the enviroLENS project. In more detail, the document specifies:

- Details on the VHR data that were accessed from the DWH
- The use of the VHR data within the project
- Gives a short explanation why some of the requested data from the DWH request 2019 was not used
- Explanation of the reason why data was not requested.

While this report details the use for the year 2019, D3.4 will provide information for the year 2020 and will be submitted in September 2020.



2 Use of ESA DWH data

The first DWH request form for the year 2019 for the VHR was delivered on 7th of September 2018. It presented a rough estimate of the required VHR data needed for the development of the use cases due to the very early stage of the project. In fact, at this time the use cases were not developed and the respective areas of interest (AOI) were not defined. Consequently, the requested data did not align with the data needed for the defined use cases leading to the fact that the CDS (Coordinated Data Access system) team had to restructure the data sets to cover certain areas.

In the first prototype phase of the enviroLENS project, VHR data was not used for any of the use cases (see D7.2 for details on the use cases). At this stage VHR data was only requested and obtained by mid-September 2019 from the DWH for the use case “Illegal infrastructure development on the Albanian coast” as a mapping input. This use case focuses on unsustainable tourism activities resulting in the degradation of the Buna River Velipoje Protected Landscape in Albania. Thus, the most suitable environmental variable (EV) algorithm to quantify changes in the surrounding areas due to illegal constructions is the computation of the Essential Urban Variable of “Built-up area”. In addition, an optional EV, the vegetation canopy cover, can be also utilized for computing the deforestation of the surrounding forest area of Lake Skadar (Figure 1).



Figure 1: Overview of the AOI for the Albanian Use Case

It was intended to use the VHR datasets for the calculation of the EVs as well as to apply a change detection for urban changes by applying the same algorithms as for high resolution (HR) data coming from Landsat and Sentinel-2. In particular, the detection of change between 2007 and 2018 are of interest and data have been requested from the DWH for two time steps (see Table 1).

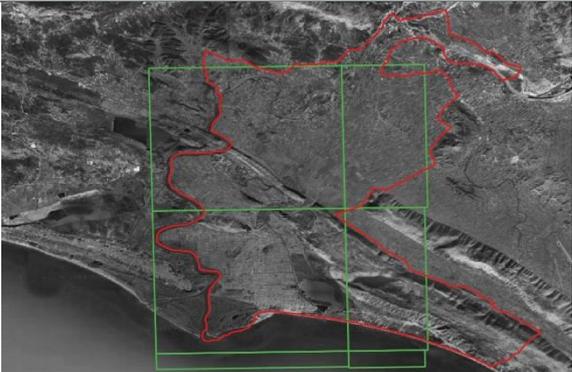
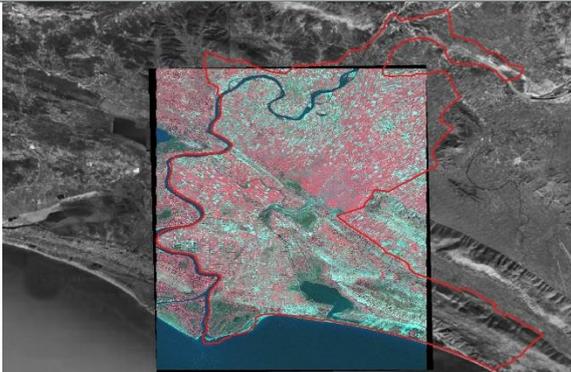
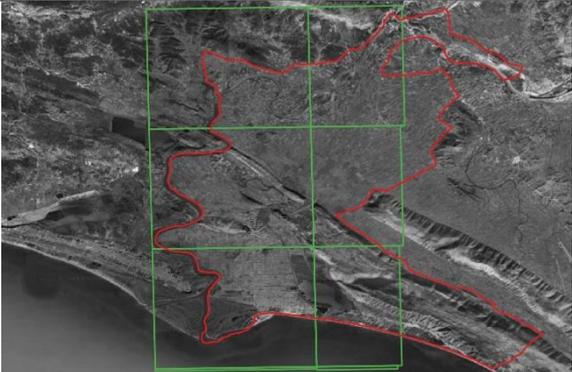
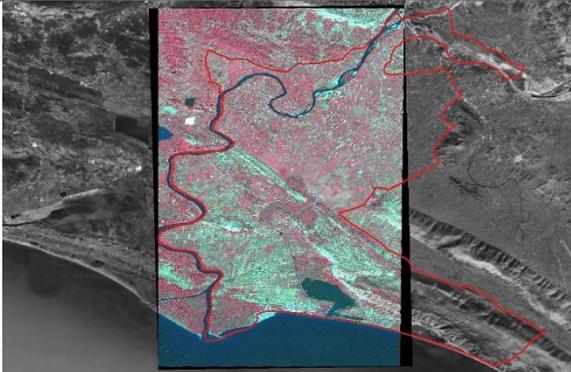


Table 1: VHR data Velipoje area – Use Case “Illegal infrastructure development on the Albanian coast”

Order no. OF#D2_MG2b_ENLE_011a#0002		
Sensor	Scene ID	Acquisition Date
Quickbird	QB02 101001000592FE00	2007-04-14
	QB02 1010010005A06000	
	QB02 101001000836FC00	
	QB02 1010010008642700	
Order no. OF#D2_MG2b_ENLE_011a#0003		
WorldView-2	Scene ID	Acquisition Date
Quickbird	WV02 103005007AF99F00	2018-11-18
	WV02 103005007CF94500	
GeoEye	GE01 105005001CDD7300	

The 2007 mosaic refers to Quickbird imagery according to CDS. The 2018 mosaic is part of the standard optical VHR1 collection, a cloud-free mosaic using multiple datasets, consisting in the current case of WV-2 and GeoEye.

Table 2: Overview of requested VHR data for Velipoje area

Year	TILES	Overview Imagery
2007		
2018		



3 Conclusion and outlook

While in the first phase of the project, the main concern was on the design of the use cases, we will now concentrate on the development of the prototypes. In the upcoming phase it is planned to use the VHR data for infrastructure monitoring on regular bases (e.g. monthly) for the Albania case. Furthermore, VHR datasets are needed for analysing the development of the Lamu port in the Manda Bay, Kenya. Like the Albanian case, this case is also focusing on infrastructure and transport system monitoring and development. Additional VHR datasets might be needed for the validation of the obtained results for all use case areas, as the availability of in situ data is in general very poor.