



FP7 PROGRAMME

**DORIS - Ground Deformations Risk Scenarios:
an Advanced Assessment Service**

GRANT AGREEMENT NO. 242212

COLLABORATIVE PROJECT

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**WP6 - Assessment maps delivery and design of
risk scenarios**

**DELIVERABLE No. D 6.1
Selected test sites and geo-database**



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Reference Documents (DR)

- [DR1] Annex I Description of Work (DoW) of DORIS – “Ground Deformations Risk Scenarios: an Advanced Assessment Service” project - GRANT AGREEMENT NO. 242212.
- [DR2] Annex II General Conditions, REA, Version 6, 02/02/2010
- [DR3] Consortium Agreement of DORIS project, signed on June 2010.
- [DR5] Project management plan and contacts database, D1.1 of WP1

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ABSTRACT

This deliverable is the result of task 6.1 *Test site selection* and task 6.2 *Data mining and information*. The purpose of both tasks is to perform the selection of the test sites for DORIS project, enrol end users and institutional services for demonstration and to collect and organize the existing geo-information on each of the sites into a geo-database format. The main achievements of these tasks are scheduled on the 6th month M 6.1 *Select sites and enroll end users for demonstration* and on the 12th month M 6.2 *Generate geo-database with previous information*. This deliverable is due to be delivered on the 18th month.

In particular, this deliverable contains information related to: a) the selected test sites; b) the enrolled end users; c) the geo-database description of every site; d) and a description of the related web services.

1. Test sites

1.1 Summary list

Test Site	Target	Responsible	Contact
Central Umbria	Landslides	CNR	Francesca Ardizzone
Messina Province	Landslides	UNIFI	Sandro Moretti
Hungarian test sites	1.Loess high river bank collapses 2. Landslides	ELGI	Balázs Füsi
Upper Silesian Coal Basin	Mining subsidence	PGI	Prof. Marek Graniczny
Zermatt and St. Moritz	Landslides	FOEN	Hugo Raetzo
Mallorca Tramuntana Range	Landslides	IGME	Rosa Mateos

Table 1. DORIS selected test sites.

1.2 Enrolled end users

Test Site	End user	Contact
Central Umbria	1.National Civil Protection Department	1. Angelo Corazza
North-East Sicily	1.National Civil Protection Department	1. Angelo Corazza
Hungarian test sites	1. Municipality of Kulcs 2. Municipality of Dunaszekcső 3. Municipality of Hollóháza 4. Hungarian Office for Mining and Geology	1. Csaba Kiss 2. János Faller 3. Sándor Koleszár 4. Tamás Oszvald
Upper Silesian Coal Basin	1. Town Office of Ruda Śląska 2. Town Office of Zabrze 3. Municipal Office of Gierałtowice 4. Town Office of Siemianowice 5. Subprefecture of Mikołów District 6. Town Office of Świętochłowice 7. Town Office of Chorzów 8. Town Office of Katowice 9. Town Office of Mysłowice 10. Town Office of Sosnowiec 11. Bureau of the Silesian Construction Engineers Chamber in Katowice 12. Mining company SA in Katowice	1. Adam Bartela 2. Janusz Famulicki 3. Dawid Góralski 4. Patrycja Zadrużna 5. Bogumiła Wasilewska 8. Joanna Lubosik 9. Jan Wajant 10. Przedpełski Tomasz, Wanda Orlińska 15. Jolanta Przybyła



	13. Mining Holding in Katowice 14. Silesian Marshal Office 15. Town Office of Dąbrowa-Górnica	
Zermatt	1. Canton of Valais, SFP 2. Canton of Valais, SFP 3. Gemeinde Zermatt 4. Gemeinde Täsch 5. Gemeinde Randa 6. Gemeinde St. Niklaus 7. Gemeinde Grächen	Charly Wuilloud Jean-Daniel Rouiller
Mallorca Tramuntana Range	1. Majorca Civil Protection 2. General Direction of Hidrologic resources of Majorca Government	1. Victor Bonnín Cortés 2. Alfredo Barón Périz

Table 2. DORIS enrolled end users.

2. Geo-database description

In this section it is explained how the geo-database information should be described for every test site. Basic metadata for every vector and raster map is required as well as the associated web-services if available. In the next sections the information available in month 18 for every test site is described. Following, is a summary of this information.

Table 1

DORIS Geo-databases summary		Central Umbria	North East Sicily	Hungary test sites	Zermatt	Silesian coal basin	Tramontana range
Active processes	Landslide inventory	Yes	Yes	Yes	Yes	Yes	Yes
	Landslide inventory updates	9 (1937-2005)	1(2007)	2 (1980; 2012)		No	2 (2005;2011)
	Mining activity map					Yes	
Geo-thematic input data	Geological map	Yes	Yes	Yes	Yes	Yes	Yes
	Hydrological map	No		Yes		Yes	
	Soils map (>10 m)			Yes			
	Geomorphological map	Yes	Yes			Yes	Yes
	Land use map	Yes	Yes	Yes		Yes	Yes
	Topography map DEM resolution	Yes 25	Yes 20	Yes 50	Yes 25	Yes 30	Yes 25
Remote sensing data	SAR data	Ers&Envisat (1992-2010) 2005-2006		2009	All	Alos	
	Ortho-imaginery			1998-1999		No	2005 2008
Output maps	LI susceptibility map	Yes					Yes
	LI hazard map	Yes					
	Permeability map			Yes		Yes	Yes
	Geotechnical map			Yes		Yes	Yes
	Web-services					Yes	Yes



Table 3. DORIS geodatabase summary list available the 18 month.

2.1 Vector information

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
MAP NAME	Scale	NAME 1	Description
	Reference system	NAME 2	Description
	Date	NAME 3	Description
	Format	NAME 4	Description
	Map description	.....	.....
	Source	.....	.....
	Summary of the elaboration process made for DORIS	.....	.....

2.2 Raster information

RASTER DATA		COMMON INFO	SPECIFIC INFO
SATELLITE IMAGES	Multispectral imaging	- DATE - SPATIAL RESOLUTION -FILE FORMAT - REFERENCE SYSTEM (GEODETIC SYSTEM - PROJECTION) Other: - number of rows and columns - pixel type/depth - extension XY (UL, LR...) - no data value	- satellite - sensor
	Panchromatic imaging		- radiometric resolution
SAR	SAR		- spectral resolution (bands)
			- scene
ORTHOPHOTO	Aerial photograph geometrically corrected		- acquisition mode
			- processing level/type of product
DEM	Digital Elevation Model		- ...
		- flight, camera	
THEMATIC MAPS	Qualitative and quantitative maps - Slope - Aspect - Hillshade - Classification - ...	- scale	
		- ...	
		- source of data	
		- interpolation, precision, accuracy	
		- ...	
		- source of data	
		- ...	

2.3 Geo-database web-services

These are the URL from the WMS 1.3.0 maps from this test site:

3. Central Umbria

This section describes the information available from the Central Umbria study area and in particular for the Collazzone area and the Assisi town. The data, both in vector and raster format, has been collected and organised in shape files. The available information is briefly described and for each thematic data, the web service is provided. Vector information accounts for 24 layers corresponding to the following maps: i) Collazzone area: multi-temporal landslide inventory maps, geo-lithological map, faults, structural domains, land use map, slope unit map, susceptibility map, hazard map; ii) Assisi town and surroundings: ground deformation map, and the geomorphologic landslide inventory map. Raster information contains a total of 24 files: regional topographic maps, ortho-photomaps and two DTMs at different resolution.

3.1 Vector information

3.1.1 Multi-temporal landslide inventory map

TYPE OF INFO	LAYER INFO	SPECIFIC INFO	
MULTI-TEMPORAL LANDSLIDE MAP	1:10.000	Landslide_old	Very old landslides
	ED50 - UTM 33N	Landslide_pre	Pre-existing landslides
	Updated until 2005	Landslide_3741a	Active landslides at 1937_41
		Landslide_1954	Landslides pre-1954
		Landslide_1954a	Active landslides at 1954
		Landslide_1977	Landslides pre-1977
		Landslide_1977a	Active landslides at 1977
		Landslide_1985	Landslides pre-1985
		Landslide_1985a	Active landslides at 1985
		Landslide_1996	Landslides pre-1997
		Landslide_snowmelt_1997	Landslides triggered by the snowmelt event
		Landslide_1999	Landslides triggered by the 1999-2000 rainfall events
	Landslide_may2004	Landslides triggered by the May 2004 rainfall events	
	Landslide_dec2004	Landslides triggered by the December 2004 rainfall events	
	Landslide_dec2005	Landslides triggered by the December 2005 rainfall events	
Esri Shapefile			
Collazzone study area			
Realized by the CNR-IRPI through interpretation of 5 sets of stereo aerial photographs and traditional field surveys			

3.1.2 Geological map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
GEOLOGICAL MAP	1:10.000	Collazzone_geology	Geo-lithological units
	ED50 - UTM 33N	Collazzone_faults	Geological faults and contacts
	2000-2003	Collazzone_structural_Domain	Structural domains
	Esri Shapefile		
	Collazzone study area		
	Realized by the CNR-IRPI		

3.1.3 Land use map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
LAND USE MAP	1:10.000	Collazzone_landuse	Land use type, including Built-up areas and roads.
	ED50 - UTM 33N		
	1997-1999		
	Esri Shapefile		
	Collazzone study area		
	Modified from 1:10,000 regional map by the CNR-IRPI		

3.1.4 Slope unit map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
SLOPE UNITS MAP	ED50 - UTM 33N	Collazzone_bac220_shal low	Slope unit map (mapping units)
	Esri Shapefile		
	Collazzone study area		
	Produced from DTM 10m x 10m by the CNR-IRPI		

3.1.5 Susceptibility map

TYPE OF INFO	LAYER INFO		SPECIFIC INFO
SUSCEPTIBILITY MAP	ED50 - UTM 33N	Susceptibility_1985	Susceptibility map
	Esri Shapefile		
	Collazzone study area		

3.1.6 Hazard map

TYPE OF INFO	LAYER INFO		SPECIFIC INFO
HAZARD MAP	ED50 - UTM 33N	hazard_1985	Hazard probability
	Esri Shapefile		
	Collazzone study area		

3.1.7 Ground deformation map

TYPE OF INFO	LAYER INFO		SPECIFIC INFO
GROUND DEFORMATION MAP	WGS84 - UTM 33N	assisi_desc_HR	Ground deformation map and associated time series, from 21 April 1992 to 3 September 2010 at full resolution
	Esri Shapefile		
	1992-2010		
	5m x 20m		
	Assisi town and surroundings		

3.1.8 Geomorphologic landslide inventory map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
GROUND DEFORMATION MAP	ED50 - UTM 33N	Inve_all_utm	Landslide polygons, arcs and points
	ArcInfo coverage		
	1:10,000		
	Geomorphologic landslide inventory map of the Umbria region, realized by the CNR-IRPI through interpretation of aerial photographs		

3.2 Raster information

3.2.1 Topographic map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO	
TOPOGRAPHIC MAP	1:10.000	323060		
	ED50 - UTM 33N	323070		
	1997	323090		
	File tiff and tfw		323100	
			323110	
			323130	
			323140	
			323150	
			335010	
			335020	
		335030		
	Collazzone study area			
Provided by the Cartographic office of the Umbria Regional Government				

3.2.2 Ortophotomap

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO	
TOPOGRAPHICAL MAP	1:10.000	323060		
	ED50 - UTM 33N	323070		
	2005-2006	323090		
	File tiff and tfw		323100	
			323110	
			323130	
			323140	
			323150	
			335010	
			335020	
		335030		
Collazzone study area				
Provided by the Cartographic office of the Umbria Regional Government				

3.2.1 Digital Terrain Model

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
DIGITAL TERRAIN MODEL	Cell size: 10m x 10m	dtm10	
	ED50 - UTM 33N		
	1997		
	File grid		
	Collazzone study area		
	Prepared by the CNR-IRPI using contour lines and elevation points of the topographic map at 1:10,000 scale (CTR)		

3.2.2 Umbria Digital Terrain Model

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
DIGITAL TERRAIN MODEL	Cell size: 25m x 25m	dem25_fill	
	ED50 - UTM 33N		
	1998		
	File grid		
	Umbria region		
	Prepared by the CNR-IRPI using contour lines derived by the topographic map at 1:25,000 scale (Geographic Military Institute of Italy)		

3.3 Geo-database web-services

4. North East Sicily

This sub-section describes the available digital geo-information data from North east Sicily study area, which has been collected, stored and integrated into a homogenised GIS (Geographic Information System) database. GIS database involves Vector and Raster data, collected by Earth Science Department UNIFI. Vector information consists of **3 maps** (landslide inventory, geomorphology, land cover) that are described below. Raster information contains a total of **9 files** (geology, topography, DEM generated products and orthophoto products).

4.1 Vector information

4.1.1 Landslide Inventory map (IFFI)

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
LANDSLIDE INVENTORY MAP (IFFI)	1:50000-1:25000	Iffi_sicilia_UTMwgs84	Landslide inventory
	WGS_1984_UTM_Zone_33N		
	2007		
	Esri Shapefile		
	IFFI updated map was created in the frame of a common procedure applied where a distribution of landslides within the Italian Republic territory is reported.	.....	.....
	Free product available at: http://www.mais.sinanet.apat.it/cartanetiffi/default_nosso.asp website.	.....	.....
	The uploaded format from the website and transform to Esri File layers	.....	.....

4.1.2 Geomorphological Map

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
GEOMORPHOLOGICAL MAP	1:25 000	geomorfologia	Landslide type description – polygons
	WGS_1984_UTM_Zone_33N	geomorfologia_linee	Linear elements of the geomorphological structures
	2009	geomorfologia_punti	Wellspring - points
	Esri Shapefile		
	Geomorphological map, produced by CNR-IRPI and UNIFI, is available for the river basins located in the Peloritani mountains	.....	.....
	CNR-IRPI, UNIFI	.....	.....
	Esri Shapefiles	.....	.....

4.1.3.CORINE land cover


	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
CORINE LAND COVER MAP	1:50 000		CLC2000
	WGS_1984_UTM_Zone_33N		
	2000		
	Esri Shapefile		
	The CORINE Land Cover map (1:50 000) is a public product, produced by the European Environment Agency using a method for land data collection based on an hardcopy inventory from satellite image printouts.		
	http://www.eea.europa.eu/themes/landuse/interactive/clc-download		
	The uploaded format from the website		

4.1.4. Topography from LIDAR


	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
TOPOGRAPHY FROM LIDAR	1:2 000	curve_all	Contour line
	WGS_1984_UTM_Zone_33N		
	2009		
	Esri Shapefile		
	Topographic map derived from LIDAR		
	UNIFI		
	Esri Shapefile		

4.2 Raster information

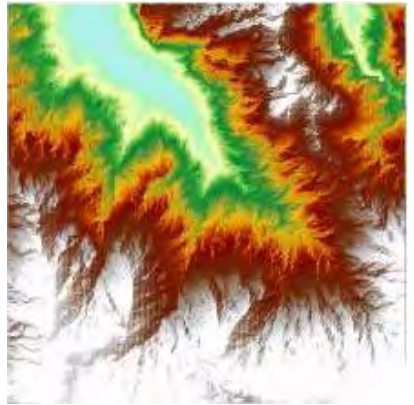
4.2.1 Geological map

Scan of analog data			
GEOLOGICAL MAP	File name	Geological map of Messina Province	
	Date	1999	
	Scale	1:50 000	
	File Format	TIFF	
	Reference System	WGS_1984_UTM_Zone_33N	
	Source	ESD UNIFI digital database	
			
<p>Description: The available 1:50 000 geological map (Carta Geologica della Provincia di Messina), founded and produced by the Provincia di Messina, cover the whole study area. The geological survey was performed using the 1:10 000 CTR (Carta Tecnica Regionale) as topographic background. This map covers an area of 3300 km².</p>			

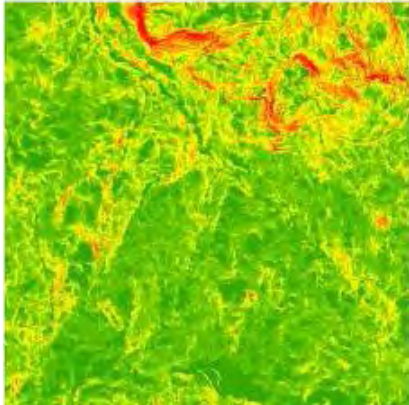
4.2.2. Topographical Map

Scan of analog data			
TOPOGRAPHICAL MAP	File name	[Mappe] Sicilia IGM 25000 by BIKO	
	Date	Various years	
	Scale	1:2 000 to 1:25 000	
	File Format	ECW	
	Reference System	WGS_1984_UTM_Zone_3 3N	
	Source	Istituto Geografico Militare	
<p>Description: This cartographic product covers all territory of Italian Republic and comes from the study works of Istituto Geografico Militare of Italy from 1954 to 1965. The map is prepared in 3-colored scale: white, brown and blue showing regular topographic information. Data available for all test area.</p>			

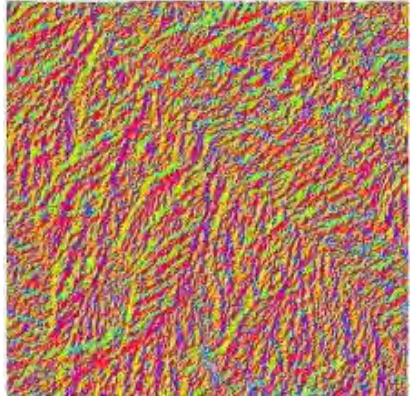
4.2.3 DEM

Digital Elevation Model			
DIGITAL ELEVATION MODEL	File name	DTM_20_UTM33Ed50	
	Date	2006	
	Spatial Resolution	20 m	
	File Format	GRID Esri	
	Reference System	WGS_1984_UTM_ Zone_33N	
	Source	Istituto Geografico Militare	
<p>Description: This cartographic product covers all territory of Italian Republic and comes from Istituto Geografico Militare Digital Terrain Model - grid cell of 20 m. Data available for all test area.</p>			

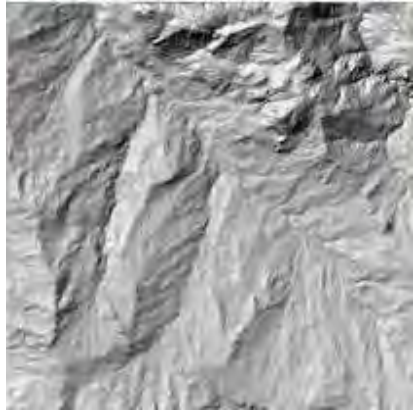
4.2.4 Slope

DEM product			
SLOPE MAP	File name	Slope	
	Date	2006	
	Spatial Resolution	20 m	
	File Format	GRID Esri	
	Reference System	WGS_1984_UTM_Zone_33 N	
	Source	Working data generated from DEM.	
<p>Description: Slope Map describes the range of vertical changes in z-vector (in each cell). Legend in grades. Data available for all test area.</p>			

4.2.5 Aspect map

DEM product			
ASPECT MAP	File name	Aspect	
	Date	2006	
	Spatial Resolution	20 m	
	File Format	GRID Esri	
	Reference System	WGS_1984_UTM_Zone_33 N	
	Source	Working data generated from DEM.	
<p>Description: Aspect Map describes the downslope direction of the maximum rate of change in values from each cell to its neighbours. Aspect can be thought of as the slope direction. The values of the output raster are the compass direction of the aspect. Data available for all test area.</p>			

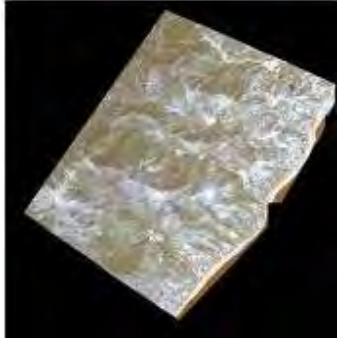
4.2.6 Hillshade map

DEM product			
HILLSHADE MAP	File name	slope	
	Date	2006	
	Spatial Resolution	20 m	
	File Format	GRID Esri	
	Reference System	WGS_1984_UTM_Zone_ 33N	
	Source	Working data generated from DEM.	

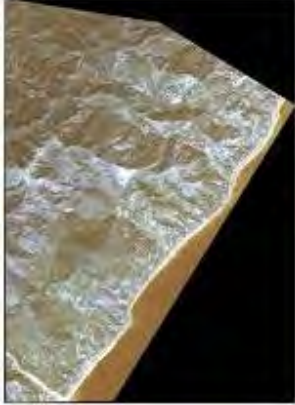
Description: Hillshade Map shows hillshade values for a raster surface by considering the illumination angle and shadows (azimuth=350°, elevation=45°, and z factor=1). Data available for all test area.

4.2.7 QuickBird satellite imagery


Multispectral ortho imagery product

QUICKBIRD	File name	06SEP_Mul_ortho	
	Date	06 September 2009	
	Spatial Resolution	2,4 m	
	File Format	TIF	
	Reference System	WGS_1984_UTM_Zone_33N	
	Source	Digital Globe(r) product with user license agreement	


Description: Data available for Giampilieri area about 50 sq km.

Multispectral ortho imagery product			
QUICKBIRD	File name	09OCT_MuI_ortho	
	Date	09 October 2009	
	Spatial Resolution	2,4 m	
	File Format	TIF	
	Reference System	WGS_1984_UTM_Zone_33N	
	Source	Digital Globe(r) product with user license agreement	
<p>Description: Data available for Giampilieri area about 72sq km.</p>			

4.2.8 Ortophoto maps

Colour ortophotomap			
ORTOPHOTO MAPS	File name	Sicilia	
	Date	1998-1999	
	Spatial resolution	1,1	
	File Format	ECW	
	Reference System	WGS_1984_UTM_Zone_33N	
	Source	Department of Civil Protection	
<p>Description: Continuous mosaics of colour ortophoto data for Sicily.</p>			

4.2.9 Orthophoto maps from helicopter

Colour ortophotomap			
ORTOPHOTO MAPS FROM HELICOPTER	File name	6011001	
	Date	2009	
	Spatial resolution	15cm	
	File Format	ECW	
	Reference System	WGS_1984_UTM_ Zone_33N	
	Source	Department of Civil Protection	
<p>Description: Continuous mosaics of colour orthophoto data for Messina Province.</p>			

4.3 Geo-database web-services

5. Hungarian test sites

5.1 Vector information

5.1.1 Surface geological map of Hungary

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
SURFACE GEOLOGICAL MAP OF HUNGARY	1:100.000	Geological boundaries	Surface formations have been classified on lithostratigraphic basis
	EPSG:23700 (HD 72 / EOVS)	Tectonic line-work	
	2005	Attributes (unit name, constituent rocks, facies, age: relation to the lithostratigraphic database)	
	Esri SHP		
	Geological map of Hungary		
	MAFI (Geological Institute of Hungary)		
	Upload from archives, selection of appropriate sheets		

5.1.2 Topographical map

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
TOPOGRAPHICAL MAPS	1:100.000	settlements	
	EPSG:23700 (HD 72 / EOVS)	engineering and other structures	
	2001	public transport	
	Esri SHP	hydrography	
	National GIS Database	nomography	
	InfoGraph Ltd.		
	Upload from archives, selection of appropriate sheets		

5.1.3 Hydrogeological map of Hungary (1:100.000)

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
HYDRO- GEOLOGICAL MAP OF HUNGARY	1:100.000	Groundwater levels	<ul style="list-style-type: none"> • 0 - no groundwater • 1 - 0-1 m • 2 - 1-2 m • 4 - 2-4 m • 8 - 4-8 m • 8< - deeper than 8 m • x - Rivers, lakes
	EPSG:23700 (HD 72 / EOVS)		
	2008		
	Esri SHP		
	Independent, national groundwater elevation map. Shows the groundwater levels in depth intervals (1, 2, 4, 8 m).		
	MAFI (Geological Institute of Hungary)		
	Upload from archives, selection of appropriate sheets		

5.1.4 Hydrogeological map of Hungary (1:500.000)

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
HYDRO- GEOLOGICAL MAP OF HUNGARY	1:500.000		
	EPSG:23700 (HD 72 / EOVS)		
	2006		
	Esri SHP		
	Hydrogeologic interpretation of the 1:100.000 surface geological map. Hydrogeostratigraphic versions: aquifer type, lithology-geochemistry, formation environment.	Aquifer type	Extensive and highly productive aquifers
			Local or discontinuous productive aquifers, or extensive but only moderately productive aquifers
			Extensive and highly productive aquifers
Local or discontinuous productive aquifers, or extensive but only moderately productive			

			aquifers
			Minor aquifers with local and limited groundwater resources
			Areas with essentially no groundwater resources
			Extensive aquifer immediately underlying a thin cover
	MAFI (Geological Institute of Hungary)	Lithology. Geochemistry	Conglomerate Gravel Sandstone Sand Siltstone Silt Claystone Clay Limestone Dolostone Marl Evaporite Metamorphic Volcanic acid Volcanic basic Plutonic acid Plutonic basic
	Upload from archives, selection of appropriate sheets	Formation environment	Undefined Fluvial Lacustrine Aeolian Marine Glacial Gravitational

5.1.5 Strata type map of Hungary 1-10m

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
STRATA TYPE MAP OF HUNGARY 0-10M	1:100000	Strata type classes	- gravel - gravel + 1 other - gravel + 2 other - sand - sand + 1 other - sand + 2 other - etc..
	EPSG:23700 (HD 72 / EOVS)		
	2006		

SURFACE GEOLOGICAL MAP OF HUNGARY – DERIVED VERSION: SENSITIVITY MAP	Esri SHP		
	Independent, national map created from the shallow drilling database. It shows the formation ratios of 10 m deep subsurface (gravel, sand, clay, flour rock). Each area has a unique identifier which links it to a strata type.		
	MAFI (Geological Institute of Hungary)		
	Upload from archives, selection of appropriate sheets		

5.1.6 Surface geological map of Hungary – derived version: sensitivity map

TYPE OF INFO	LAYER INFO	SPECIFIC INFO	
SURFACE GEOLOGICAL MAP OF HUNGARY – DERIVED VERSION: SENSITIVITY MAP	1:100.000		
	EPSG:23700 (HD 72 / EOV)		
	2005<		
	Esri SHP		
	The map is derived from the surface geological map. The formations occurring on the geological map are listed into 4 sensitivity categories according to their hydraulic conductivity.	Sensitivity categories according to their hydraulic conductivity	Estimated_K_cm_sec <ul style="list-style-type: none"> >10 (-4) 10 (-4) - 10 (-5) 10 (-5) - 10 (-6) >10 (6)
	MAFI (Geological Institute of Hungary)		
	Upload from archives, selection of appropriate sheets		

5.1.7 Surface geological map of Hungary – derived version: engineer geological map

TYPE OF INFO	LAYER INFO	SPECIFIC INFO
SURFACE GEOLOGICAL MAPS OF HUNGARY – DERIVED VERSION: ENGINEER- GEOLOGICAL MAP	1:100.000	
	EPSG:23700 (HD 72 / EOV)	
	2005<	
	Esri SHP	
	The map is derived from the surface geological map. The formations	Compressive stress value	Above 50 Mpa Between 50-1,5 Mpa

SHALLOW DRILLING DATABASE	occurring on the geological map are listed into 8 categories according to their bearing capacity (compressive stress value).		<ul style="list-style-type: none"> • Above 500 kPa • Between 500-300 kPa • Between 300-200 kPa • Between 200-100 kPa • Below 100 kPa • Variable
	MAFI (Geological Institute of Hungary)		
	Upload from archives, selection of appropriate sheets		

5.1.8 Shallow drilling database

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
SHALLOW DRILLING DATABASE	1:100.000		
	EPSG:23700 (HD 72 / EOVS)		
	2005		
	Esri SHP	Database (Point SHP)	name, year, depth, thickness, formation, age, water level, etc.
	The shallow drillings were made for mapping needs. According to query needs interpretation of the data can be prepared for specific questions. The database contains water level data. Digital database.		
	MAFI (Geological Institute of Hungary)		
	Upload from archives, selection of appropriate sheets		

5.1.9 Unified drilling database

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
UNIFIED DRILLING DATABASE	1:100.000		
	EPSG:23700 (HD 72 / EOVS)		
	2005		
	Esri SHP	Database (Point SHP)	name, year, depth, thickness, formation, age, water level, etc.
	Deep drilling database: Contains two data types - master and stratigraphic data (raw or interpreted).		
	MAFI (Geological Institute of Hungary)		
	Upload from archives, selection of appropriate sheets		

5.1.9 Landslide inventory

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
LANDSLIDE INVENTORY	1:25.000 (if relevant)		
	Esri SHP, xml		
	The landslide inventory contains the spatial (1:25.000) and descriptive (type, dimensions, geological and hydrogeological setting, reports, etc.) data of the landslides in Hungary. The database is under construction, it contains mostly the digitized results of a survey closed in 1980. We continuously update it with the recent events (especially on the test sites).	Landslide events (point and polygon)	Events with the basic information and a link to the detailed XML data file.
	ELGI-MBFH		
	Upload from archives, selection of appropriate sheets		

5.1.10 Land use map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
LAND USE MAP	1:100.000		- artificial surfaces - agricultural areas - forests and other natural areas - water and aqueous areas
	EPSG:23700 (HD 72 / EOVS)		
	2000		
	ESRI SHP		
	Corine Land Cover		
	FÖMI		
	Upload from archives, selection of appropriate sheets		

5.2 Raster information

RASTER DATA		COMMON INFO	SPECIFIC INFO
DEM	Digital Elevation Model		50x50m, ESRI GRID
GEOLOGICAL HAZARD MAPS		1:100.000	GeoTIFF Hazard maps are assembled by MÁFI and MBFH (Hungarian Office for Mining and Geology). Landslide inventory and landslide risk categories are represented on the maps
GEOPHYSICAL PROPERTIES MAPS AND DATABASES		1:100.000 – 1:10.000	ESRI GRID Different geophysical property maps (electric conductivity, gravity, magnetic, etc.)

5.3 Geo-database web-services

6. Zermatt

Several shapes are in construction according to the satellite radar interferometry and the use of Terrasar-X, Cosmo-Sky-Med, ERS1, ERS2, ENVISAT, JERS, ALOS.

6.1 Vector information

6.1.1 Geological map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
GEOLOGICAL MAP		Geol Unit	
	2000		
	SHP	Tektonics	Tectonics
	Generalized geological map		
	Upload GIS	Geo Legend	Geological units

6.1.2 Detailed geological map

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
DETAILED GEOLOGICAL MAP OF POLAND	1:25.000	Geol Unit	
	various		
	SHP		
	Detailed geological map		
	Upload	Geology	Geological units

6.1.3 Ground deformation

Ground deformation	
File name	INSAR
Date	2011
Spatial Resolution	25m
File Format	
Reference System (Geodetic System -Projection)	WGS1984_UTM_Zone_34N
Satellite - Sensors	all
Description:	Landslide areas. Polygons with attributes.

6.2 Raster information

6.2.1 DEM

Digital Elevation Model	
File name	DTM
Date	2006
Spatial Resolution	25 m,
File Format	
Reference System (Geodetic System -Projection)	WGS_84
Source:	Swisstopo
Description:	DTM based on maps 25'000 Better resolution below 2000 masl

6.2.2 Topographic map

Topographic map	
File name	PK
Date	various
Spatial Resolution	Scale 1:25.000
File Format	Geotiff
Reference System (Geodetic System -Projection)	WGS_84
Source:	Swisstopo
Description:	The map is in 6 colours and shaded.



6.2.3 Ground deformation

Ground deformation	
File name	INSAR
Date	2011
Spatial Resolution	25m
File Format	
Reference System (Geodetic System -Projection)	WGS1984_UTM_Zone_34N
- satellite - sensors	
Description:	Landslide areas

7. Upper Silesian Coal Basin

7.1 Vector information

7.1.1 Geological Map of Poland:

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
GEOLOGICAL MAP OF POLAND	1:500.000	Granice administracyjne	Administrative boundaries
	PUWG1942 or PUWG1992	Skorowidz arkuszy	Sheet index
	2001	Hydrografia	Superficial water
	Esri SHP	Tektonika	Tectonics
	Generalized geological map of the country	Drobne formy rzeźby terenu	Small forms of relief
	PGI-NRI	Granice geologiczne	Geological boundaries
	Upload from archives, selection of appropriate sheets	Wydzielenia geologiczne	Geological units

7.1.2 Geological Map of Poland: DRS_USR_PR_TM1_TS-POL

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
GEOLOGICAL MAP OF POLAND	1:200.000	Granice administracyjne	Administrative boundaries
	PUWG1942 or PUWG1992	Skorowidz arkuszy	Sheet index
	2001	Hydrografia	Superficial water
	Esri SHP	Tektonika	Tectonics
	Generalized geological map of the country	Drobne formy rzeźby terenu	Small forms of terrain relief
	PGI-NRI	Granice geologiczne	Geological boundaries
	Upload from archives, selection of appropriate sheets	Wydzielenia geologiczne	Geological units

7.1.3 Detailed Geological Map of Poland

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
DETAILED GEOLOGICAL MAP OF POLAND		Granice administracyjne	Administrative boundaries
	PUWG1942 or PUWG1992	Skorowidz arkuszy	Sheet index
	2001	Rzeki	Rivers
	Esri SHP	Tektonika	Tectonics
	Detailed geological map	Ciągi drobnych form rzeźby	Strings of small forms of relief
	PGI-NRI	Granice geologiczne	Geological boundaries
	Upload from archives, selection of appropriate sheets	Wydzielenia geologiczne	Geological units

7.1.4 Hydro-geological Map of Poland: DRS_USR_PR_TM2_TS-POL

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
HYDRO- GEOLOGICAL MAP OF POLAND	1:50.000	Wodonośność	Range and depth, as well as thickness and conductivity
	PUWG1942 or PUWG1992	Jakość wód podziemnych	Quality of groundwater as a source of consumption water for people
	1997	Stopień zagrożenia zanieczyszczeniami	Degree to which Groundwater is exposed to the risk of surface contaminants
	Intergraph Geomedia PRO	Regionalizacja hydrogeologiczna	Discharge possibilities of a typical drilled well
	Information on normal levels of groundwater and interpretation of the main floor / aquifer	Hydrodynamika i kierunki przepływu wód podziemnych	Current level of groundwater tables and the direction of their flow
	PGI-NRI (PHS)	Główne zbiorniki wód podziemnych (GZWP)	Major groundwater basin (GZWP)
	Upload from archives, selection of appropriate sheets		

7.1.5 Geo-environmental map of Poland: DRS_USR_PR_TM3_TS-POL

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
GEO-ENVIRONMENTAL MAP OF POLAND	1:50.000	Obiekty dziedzictwa kultury	Objects of cultural heritage
	PUWG1942 or PUWG1992	Wody powierzchniowe i podziemne	Superficial water and groundwater
	2002	Zasoby, wydobycie i przetwórstwo	Resources, mining and exploitation
	Intergraph Geomedia PRO	Obszary chronione	Protected areas
	Containing the protected areas, hydrographic features, cultural heritage objects and elements of mining and processing of geological resources	Użytkowanie terenu	Land use
	PGI-NRI	Skorowidz arkuszy	Sheet index
	Upload from archives, selection of appropriate sheets	Elementy pozostałe	Other elements

7.1.6 Landslide Counteracting Systems: DRS_USR_PR_AR1_TS-POL

	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
LANDSLIDE COUNTERACTING SYSTEM (SOPO)	1:10.000	Geometria i granica osuwiska	Geometry and boundary of the landslide
	PUWG1992	Numer ewidencyjny osuwiska	The registration number of the landslide
	2012	Elementy rzeźby wewnątrz osuwiskowej	Elements of relief inside landslide
	Esri SHP	Litologia	Lithology
	Landslides and areas potentially at risk of mass movements inventory map	Typ osuwiska	Type of landslide
	PGI-NRI	Stopień aktywności osuwiska	The degree of landslide activity
	Upload from archives, convert to appropriate file	Przejawy występowania wód podziemnych I powierzchniowych	Occurrences of groundwater and superficial water

7.1.7 Land use map: DRS_USR_PR_TM5_TS-POL


	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
LAND USE MAP	1:10.000	111;112;121;122;123;124;131;132;133;141;142	Artificial surfaces
	ETRS_1989_LAEA_52N_10E	211;212;213;221;222;223;231;241;242;243;244	Agricultural areas
	2006	311;312;313;321;322;323;324;331;332;333;334;335	Forest and semi natural areas
	Esri SHP	411;412;421;422;423	Wetlands
	Corine Land Cover 2006 layer	511;512;521;522;523	Water bodies
	EEA		
	Upload from web page, clip and convert to national coordinate system		

7.1.8 Mining data: DRS_USR_PR_TM4_TS-POL

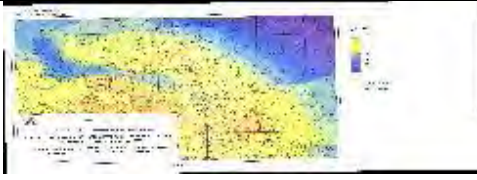
	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
VECTOR (GIS) DATA CONTAINING INFORMATION ABOUT THE MINING AREAS IN UPPER SILESIA	1:50.000	Active mines	Borders of present active mines
	PUWG1942	Abandoned mines	Borders of present abandoned mines
	2003	Predicted subsidence [m]	Contour lines of predicted subsidence in 2020
	Esri SHP	Categories of influence	Borders of areas at influence under mining exploration grouped in categories
	Information about mining present and future activity	Shallow exploitation	Areas of planned shallow (to 100m) exploitation
	Mining companies mining maps	Influence areas	Borders of areas at influence under mining exploration
	Digitization of scanned maps and creating shp files template	Depression funnel	Ranges of depressive funnels

7.2 Raster information

7.2.1 Structural-geological map of the carboniferous coal-bearing deposits

Structural-geological map of the carboniferous coal-bearing deposits	
File name	m_geol-struk.tif
Date	2005
Spatial Resolution	16 m, map scale 1:200 000
File Format	TIFF
Reference System (Geodetic System -Projection)	PUWG1992
	
Source:	JURECZKA J., DOPITA M., GAŁKA M., KRIEGER W., KWARCZYŃSKI J., MARTINEC P., 2005 – Geological atlas of coal deposits of the Polish and Czech part of the Upper Silesian Coal Basin. PGI-NRI and Ministry of Environment
Description:	The map contains information about carboniferous coal-bearing deposits, outcrops, faults and over thrusts along Upper Silesia region. The map (original paper form) was scanned and geocoded to the reference system “PUWG 1992”.

7.2.2 Structural map

Geological Atlas of the Paleozoic without the Permian in the Border Zone of the Upper Silesian and Malopolska Blocks	
File name	Atlas_IA.tif Atlas_IB.tif Atlas_II.tif
Date	2002
Spatial Resolution	Scale 1:200 000, 300dpi
File Format	TIFF
Reference System (Geodetic System -Projection)	GCS_WGS_84
	
Source:	BUŁA Z., HABRYN R., KUREK S., KRIEGER W., MARKOWIAK M., WOŹNIAK P., 2002, Geological Atlas of the Paleozoic without the Permian in the Border Zone of the Upper Silesian and Malopolska Blocks, Warsaw
Description:	The atlas consists of three maps: IA, IB, II. I Structural geological map of the top surface of Palaeozoic without the Permian - A. Relief of the top surface of Palaeozoic without the Permian, B. Occurrence of deposits overlying the top surface of the Palaeozoic, II. Geological map of the Palaeozoic without the Permian formations. They contain the information about: hypsometry of the top surface of Palaeozoic, faults, tectonic zones, thrusts, significant boreholes, occurrence of deposits overlying the top surface of Palaeozoic, Carboniferous coal-bearing deposits. Maps (original paper form) were scanned and geocoded to the reference system GCS_WGS_84.


7.2.3 DTM (DTED)

Digital Elevation Model	
File name	DTED_Level2.dt2
Date	2000
Spatial Resolution	30 m, scale 1:50.000
File Format	DT2
Reference System (Geodetic System -Projection)	GCS_WGS_84
Source:	Military Geography Center (Polish Armed Forces)
Description:	DTED Level 2 (30m). DTED2 is the basic high resolution elevation data source for all military activities and systems that require landform, slope, elevation, and/or terrain roughness in a digital format. DTED 2 is a uniform gridded matrix of terrain elevation values with post spacing of one arc second (approximately 30 meters). Due to extremely sparse area coverage there is no catalog listing for DTED2. The information content is equivalent to the contour information represented on a 1: 50,000 scale map.

7.2.4 Topographic map: DRS_USR_PR_TM6_TS-POL

Topographic map	
File name	syt.tif hyd.tif izo.tif
Date	1995
Spatial Resolution	Scale 1:50.000
File Format	Geotiff (1 bit)
Reference System (Geodetic System -Projection)	GCS_WGS_84
Source:	Military Geography Center (Polish Armed Forces)
Description:	The map consists of three map layers: syt: topographical map; hyd: superficial water; izo: relief map.

7.2.5 Ground-deformation ALOS-PALSAR (DInSAR) map

Ground-deformation ALOS-PALSAR (DInSAR) map	
File name	UTM20.20080225_20080527.vdispf.tif; UTM20.20071125_20080225.vdispf.tif; TM20.20070710_20070825.vdispf.tif; UTM20.20070825_20071125.vdispf.tif; TM20.20070222_20070710.vdispf.tif
Date	2008
Spatial Resolution	20m
File Format	TIFF
Reference System (Geodetic System -Projection)	WGS1984_UTM_Zone_34N
	
- satellite - sensor - radiometric resolution - spectral resolution (bands) - scene - acquisition mode - processing level/type of product	ALOS-PALSAR 20m L-band 1270MHz width: 4910 nlines: 7625 pixel center coordinates are indicated. NW-corner: corner_north: 5641150.000 corner_east: 281850.000 NE-corner: corner_north: 5641150.000 corner_east: 380030.000 SW-corner: corner_north: 5488670.000 corner_east: 281850.000 SE-corner: corner_north: 5488670.000 corner_east: 380030.000 Acquisition mode: ScanSAR 5-beam SAR and differential interferometric processing Gamma Remote Sensing AG
Description:	5 interferograms processed by Gamma Remote Sensing within the Terrafirma project (sets: 22.02.2007-10.07.2007; 10.07.2007-25.08.2007; 25.08.2007-25.11.2007; 25.11.2007-25.02.2008 i 25.02.2008-27.05.2008) with fringe in a scale 0-30m showing subsidence in mining area between towns Rybnik (Poland) and Ostrava (Czech Republic).



7.3 Geo-database web-services

These are the URL from the WMS 1.3.0 maps from Polish test sites:

Geological Map of Poland 1:500.000

http://ikar2.pgi.gov.pl/mvs_viewer/mapviewermvs.jsf?width=627&height=403&firstpageload=true

http://ikar2.pgi.gov.pl/services/MGP_500/MapServer/WMSServer

Landslide Counteracting Systems (SOPO)

http://ikar3.pgi.gov.pl/arcgis/services/cbdg_geostanowiska/MapServer/WMSServer

8. Mallorca

This section describes the available previous information from Mallorca study area, which has been collected, organised and migrated into a common single geo-database. This information is organised in Vector and Raster information, followed by a description of the available geo-database web services where this information is published. Vector information accounts for 7 maps (geology, topography, geomorphology, geotechnics, permeability, susceptibility and landslide inventory) that are described below. Raster information contains a total of 6 files (orthophotos, spot 5 images and DEM generated products).

8.1 Vector information

8.1.1 Geological map: DRS_USR_PR_TM2_TS-SPA

TYPE OF INFO		LAYER INFO	SPECIFIC INFO
GEOLOGICAL MAP	1:50.000	V_Z2210MRGEO	Geological units.
	ERTS89 - UTM 31N	V_Z2210MLCON	Geological faults and contacts
	2010	V_Z2210MLEJE	Axes of folding structures.
	Esri Shapefile	V_Z2210MLGEO	Label auxiliary lines
	Continuous geological map of Mallorca	V_Z2210MLCUA	Quaternary auxiliary lines
	GEODE project from the Spanish Geological Survey	V_Z2210MPBUZ:	Structural measures
	The unloading format from the web side is kept	V_Z2210MPGEO	Geological units labels
FORMAT OF DELIVERY TO DORIS	V		
DISSEMINATION LEVEL	PP		

8.1.2 Topographical map: DRS_USR_PR_TM3_TS-SPA

TYPE OF INFO	LAYER INFO	SPECIFIC INFO	
TOPOGRAPHICAL MAP	1:50.000	GECO_V_TBPBAL	Toponymy
	ERTS89 - UTM 31N	GECO_V_TBLBAL	contours, roads, hydrography, administrative boundaries and other linear structures
	2005	GECO_V_TBRBAL	Buildings
	Esri File Geodatabase Feature Class		
	Subset of the topography prepared for the GEODE project		
	The topography consists of morphological and hydrographic elements. Also includes the primary road network and the more relevant place names.		
	Removing the Oracle database and transformation into a Esri File geodatabase		
FORMAT OF DELIVERY TO DORIS	V		
DISSEMINATION LEVEL	PP		

8.1.3 Geomorphological map: DRS_USR_PR_TM4_TS-SPA

TYPE OF INFO	LAYER INFO	SPECIFIC INFO	
GEOMORPHOLOGICAL MAP	1:25.000	Geomorfologico _25_point	Landslide inventory
	ERTS89 - UTM 31N	Geomorfologico _25_line	Linear elements of the geomorphological structures
	2000	Geomorfologico _25_line	Poligonal elements of the geomorphological structures
	Esri File Geodatabase Feature Class		
	Mateos, 2005		
	The topography consists of morphological and hydrographic elements. Also includes the primary road network and the more relevant place names.		
Georeferencing of CAD files and adaptation to geomorphological data model of the Spanish Geological Survey (IGME)			
FORMAT OF DELIVERY TO DORIS	V		
DISSEMINATION LEVEL	PP		

8.1.4 Geotechnical map: DRS_USR_PR_TM5_TS-SPA

TYPE OF INFO	LAYER INFO	SPECIFIC INFO	
GEOTECHNICAL MAP	1:50.000	Geotecnico50 (polygon)	Geotechnical classification
	ERTS89 - UTM 31N		
	2011		
	Esri File Geodatabase Feature Class		
	GEODE project from The Spanish Geological Survey (IGME)		
	Geotechnical classification		
	Reclassification of the geological units according to the geotechnical properties.		
FORMAT OF DELIVERY TO DORIS	V		
DISSEMINATION LEVEL	PP		

8.1.5 Permeability map: DRS_USR_PR_TM6_TS-SPA

TYPE OF INFO	LAYER INFO	SPECIFIC INFO	
PERMEABILITY MAP	1:50.000	permeabilidad_50 (polygon)	Permeability classification
	ERTS89 - UTM 31N		
	2011		
	Esri File Geodatabase Feature Class		
	GEODE project from The Spanish Geological Survey (IGME)		
	Permeability classification		

	Reclassification of geologic units based on the characteristics in terms of permeability		
FORMAT OF DELIVERY TO DORIS	V		
DISSEMINATION LEVEL	PP		

8.1.6 Susceptibility map: DRS_USR_PR_LS1_TS-SPA


	TYPE OF INFO	LAYER INFO	SPECIFIC INFO
SUSCEPTIBILITY MAP	1:25.000	susceptibilidad_25 (polygon)	Susceptibility classification
	ERTS89 - UTM 31N		
	2000		
	Esri File Geodatabase Feature Class		
	Mateos, 2005		
	Susceptibility map which classifies the land according to the type of landslide, the material where it occurs and the degree of susceptibility. It covers three areas of the Tramuntana (Estellencs-Banyalbufar, Esporles-Deia,Sóller)		
	Georeferencing of CAD files and transformation into a Esri Feature Class		
FORMAT OF DELIVERY TO DORIS	V		
DISSEMINATION LEVEL	PP		

8.1.7 Landslide inventory: DRS_USR_PR_LI1_TS-SPA

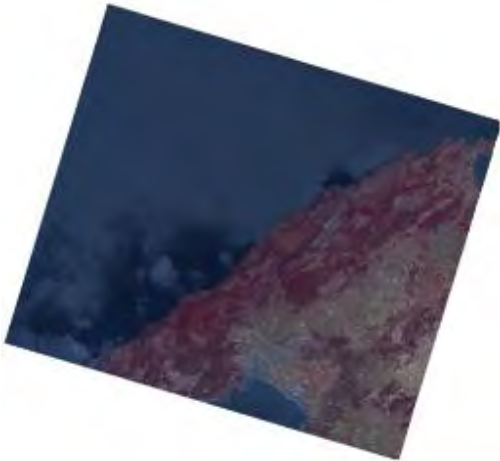
TYPE OF INFO	LAYER INFO	SPECIFIC INFO
LANDSLIDE INVENTORY	1:25.000	Inventario (point)
	ERTS89 - UTM 31N	
	2011	
	Esri File Geodatabase Feature Class	
	Different sources: 1. (Mateos, 2005) 2. Field work 3. Photo- interpretation	
	Points that mark both historical and current landslides	
	Transformation of CAD files and photointerpretation	
FORMAT OF DELIVERY TO DORIS	V	
DISSEMINATION LEVEL	CO	

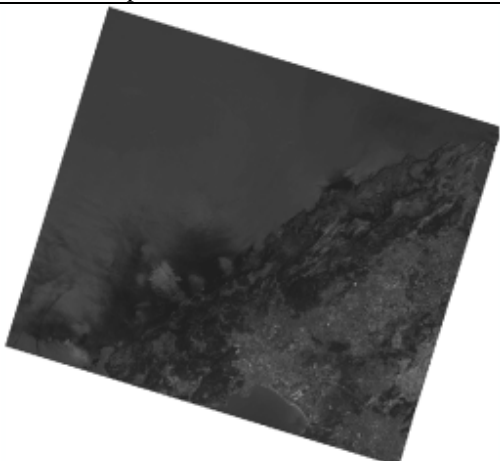
8.2 Raster information

8.2.1 Orthophotos

17 images from PNOA	
File name	PNOA_MA_OF_ETRS89_HU31_h50_0643.ecw PNOA_MA_OF_ETRS89_HU31_h50_0644.ecw PNOA_MA_OF_ETRS89_HU31_h50_0645.ecw PNOA_MA_OF_ETRS89_HU31_h50_0670.ecw PNOA_MA_OF_ETRS89_HU31_h50_0671.ecw PNOA_MA_OF_ETRS89_HU31_h50_0672.ecw PNOA_MA_OF_ETRS89_HU31_h50_0697.ecw PNOA_MA_OF_ETRS89_HU31_h50_0698.ecw PNOA_MA_OF_ETRS89_HU31_h50_0699.ecw PNOA_MA_OF_ETRS89_HU31_h50_0700.ecw PNOA_MA_OF_ETRS89_HU31_h50_0722B.ecw PNOA_MA_OF_ETRS89_HU31_h50_0723.ecw PNOA_MA_OF_ETRS89_HU31_h50_0724.ecw PNOA_MA_OF_ETRS89_HU31_h50_0725.ecw PNOA_MA_OF_ETRS89_HU31_h50_0748.ecw PNOA_MA_OF_ETRS89_HU31_h50_0749.ecw PNOA_MA_OF_ETRS89_HU31_h50_0774.ecw
Date	June 2008
Spatial Resolution	0,5 m
File Format	ECW
Reference System (Geodetic System -Projection)	ERTS89 - UTM 31 N
	
Source:	IGN (Instituto Geográfico Nacional) http://www.02.ign.es/ign/main/index.do
Description:	Mosaics of PNOA orthophotos (PNOA = Plan Nacional de Ortofotografía Aérea). Its extension depends on MTN50 limits (MTN50 = Mapa Topográfico Nacional 1:50.000). Each mosaic goes with its xml metadata file.
FORMAT OF DELIVERY TO DORIS	R
DISSEMINATION LEVEL	PU

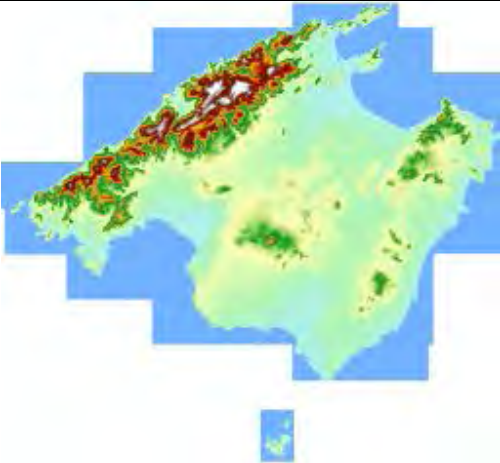
8.2.2 Spot 5

Multispectral	
File name	PNT_2005_SPOT5_HRG_Sur_GEO_xsnn_270-47_hu31_GSD10.tif
Date	2005
Spatial Resolution	10 m
File Format	TIFF, TFW
Reference System (Geodetic System -Projection)	ERTS89 - UTM 31 N
	
Source:	IGN (Instituto Geográfico Nacional) http://www.02.ign.es/ign/main/index.do
Description:	Multispectral Spot5 scene of PNT (PNT = Plan Nacional de Teledetección). Path-row: 270-47 Geometrically corrected. Nearest neighbour resampling.
FORMAT OF DELIVERY TO DORIS	R
DISSEMINATION LEVEL	PU

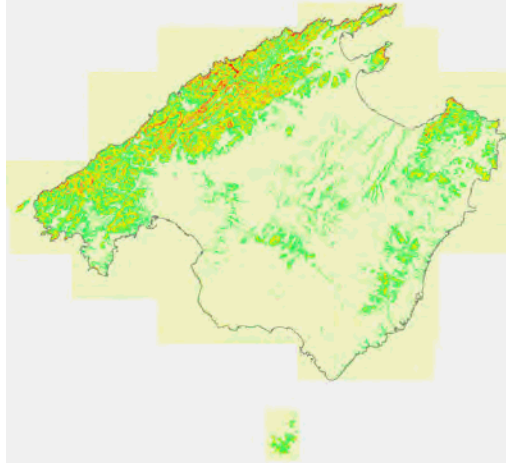
Panchromatic	
File name	PNT_2005_SPOT5_HRG_Sur_GEO_pan_270-47_hu31_GSD2_5.tif
Date	2005
Spatial Resolution	2,5 m
File Format	TIFF
Reference System (Geodetic System -Projection)	ERTS89 - UTM 31 N
	
Source:	IGN (Instituto Geográfico Nacional) http://www.02.ign.es/ign/main/index.do
Description:	Panchromatic Spot5 scene of PNT (PNT = Plan Nacional de Teledetección). Path-row: 270-47

	Geometrically corrected. Bicubic resampling.
FORMAT OF DELIVERY TO DORIS	R
DISSEMINATION LEVEL	PU

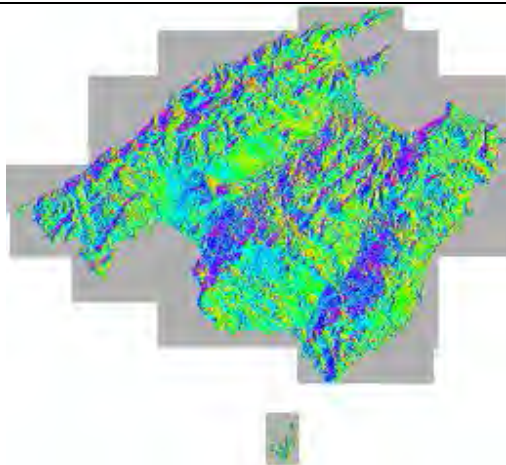
8.2.3 Digital Elevation Model DRS_USR_PR_TM1_TS-SPA

Digital Elevation Model	
File name	Mde
Date	2006
Spatial Resolution	25 m
File Format	GRID Esri
Reference System (Geodetic System -Projection)	ERTS89 - UTM 31 N
	
Source:	Working data generated from MDT25 data distributed by IGN (Instituto Geográfico Nacional).
Description:	Mosaic of MDT25 data (45 grid files). MDT25 is the DTM (Digital Terrain Model) with grid cell of 25 m, and the same distribution as MTN25 (Mapa Topográfico Nacional 1:25.000). MDT25 is the result of the interpolation 4x4 of 5m DTM which was extracted from PNOA (PNOA = Plan Nacional de Ortofotografía Aérea). Elevation value in meters.
FORMAT OF DELIVERY TO DORIS	R
DISSEMINATION LEVEL	PU

8.2.4 Slope

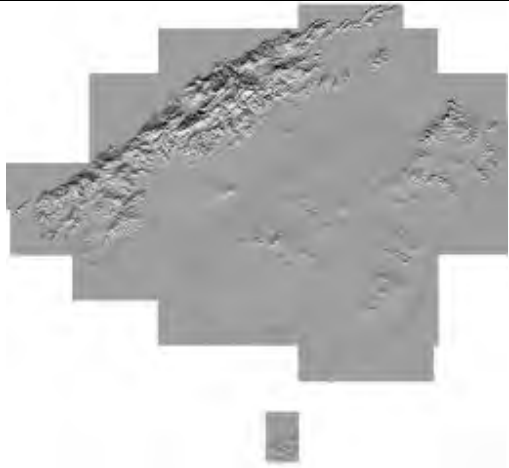
Slope	
File name	pendientes
Date	2006
Spatial Resolution	25 m
File Format	GRID Esri
Reference System (Geodetic System -Projection)	ERTS89 - UTM 31 N
	
Source:	Working data generated from DEM.
Description:	Slope Map. Identifies the rate of maximum change in z-value from each cell). Value in grades.
FORMAT OF DELIVERY TO DORIS	R
DISSEMINATION LEVEL	PU

8.2.5 Aspect

Aspect	
File name	orientaciones
Date	2006
Spatial Resolution	25 m
File Format	GRID Esri
Reference System (Geodetic System -Projection)	ERTS89 - UTM 31 N
	
Source:	Working data generated from DEM.
Description:	Aspect Map. Identifies the downslope direction of the maximum rate of change in values from each cell to its neighbours. Aspect can be thought of as the slope

	direction. The values of the output raster are the compass direction of the aspect.
FORMAT OF DELIVERY TO DORIS	R
DISSEMINATION LEVEL	PU

8.2.6 Hillshade

Hillshade	
File name	sombras
Date	2006
Spatial Resolution	25 m
File Format	GRID Esri
Reference System (Geodetic System -Projection)	ERTS89 - UTM 31 N
	
Source:	Working data generated from DEM.
Description:	Hillshade Map. Computes hillshade values for a raster surface by considering the illumination angle and shadows (azimuth=180°, elevation=45°, and z factor=1).
FORMAT OF DELIVERY TO DORIS	R
DISSEMINATION LEVEL	PU



8.3 Geo-database web services

These are the URL from the WMS 1.3.0 maps from Mallorca test sites:

http://mapas.igme.es/gis/services/doris/DORIS_IGME_INVENTORYMAP_MALLORCA_50/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_PERMEABILITYMAP_MALLORCA_50/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_GEOMORPHOLOGICALMAP_MALLORCA_25/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_GEOLOGICALMAP_MALLORCA_50/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_SUCEPTIBILITYMAP_MALLORCA_25/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_TOPOGRAPHICMAP_MALLORCA_50/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_ASPECT_MALLORCA_25/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_DEM_MALLORCA_25/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_SLOPE_MALLORCA_25/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0

http://mapas.igme.es/gis/services/doris/DORIS_IGME_SHADOWS_MALLORCA_25/MapServer/WMServer?request=GetCapabilities&services=WMS&version=1.3.0