MEDACC

Demonstration and validation of innovative methodology for regional climate change adaptation in the Mediterranean area

LIFE12 ENV/ES/000536

Start date of project: 1 July 2013

Duration of project: 5 years

Protocol with the platform technical information and user manual for data and metadata organization, entry and query for de platform

Due date of deliverable: 9-2015

Actual submission date: 10-2015

Organization name of lead contractor for this deliverable: Pyrenean Institute of Ecology (IPE – CSIC)

Dissemination level: Public

www.medacc-life.eu

Authors

Javier Zabalza Martínez, Sergio M. Vicente-Serrano, Xavier Blanch, Eduard Pla, Diana Pascual, Gabriel Borràs, Gemma Cantos, Robert Savé, Carmen Biel and Immaculada Funes.

Reference

Executive summary

This report shows how a platform, where information developed in actions B.1, B.2, C1 and E.3 will be charged, has been designed. Not only the technical information is included but also the metadata organization and the user manual. The platform is included in the design of the website of the Life MEDACC Project as a question of operability and efficiency. It is designed after some technical meetings with the rest of beneficiaries and all the technical aspects, the final design and its maintenance are driven by Season S.L. (the company in charge of the technical development). Although the coordination of this deliverable is a matter of the Pyrenean Institute of Ecology (IPE-CSIC), the rest of beneficiaries have actively contributed.

Contents

1. Introduction

This report shows the description of the design and maintenance of a platform for data harmonization, storage and service. As is explained in the technical description of the project, the data collected through Actions B1, B2, C1 and E3 will be integrated (plot information, monitoring data, forest structure data, spatial and alphanumeric data) in the server to be displayed and downloadable with different access levels. In addition, we will upload the information generated in actions C2 and D6 to explain how the project is perceived by the stakeholders.

The platform facilitates the accessibility of all data and results of the adaptation measures in a structured way. The platform will be frequently updated with the new information, which integrates alphanumeric, spatial and graphic data types.

Some access levels have been established depending on a grade of involvement in the project: i) Level A, for the beneficiaries; ii) Level B, for the stakeholders who are interested in the technical information; iii) Level C, for the rest of the stakeholders and iv) Level D, for the general public. The main reason for the creation of these levels is because there is some information (as meteorological or hydrological) that is affected by licenses of use and restrictions. In addition, there is some internal information in the project that is not useful for the general public. Apart from these access levels, we can provide some information for punctual scientific studies if it is required.

A data platform has to be accessible, easy and homogeneous with the standards of quality and homogeneity. For this reason, we have choose the INSPIRE Directive (Infrastructure for Spatial Information in Europe) as a framework for ensuring that all the spatial information meet with the ISO 19115, as is explained in this deliverable.
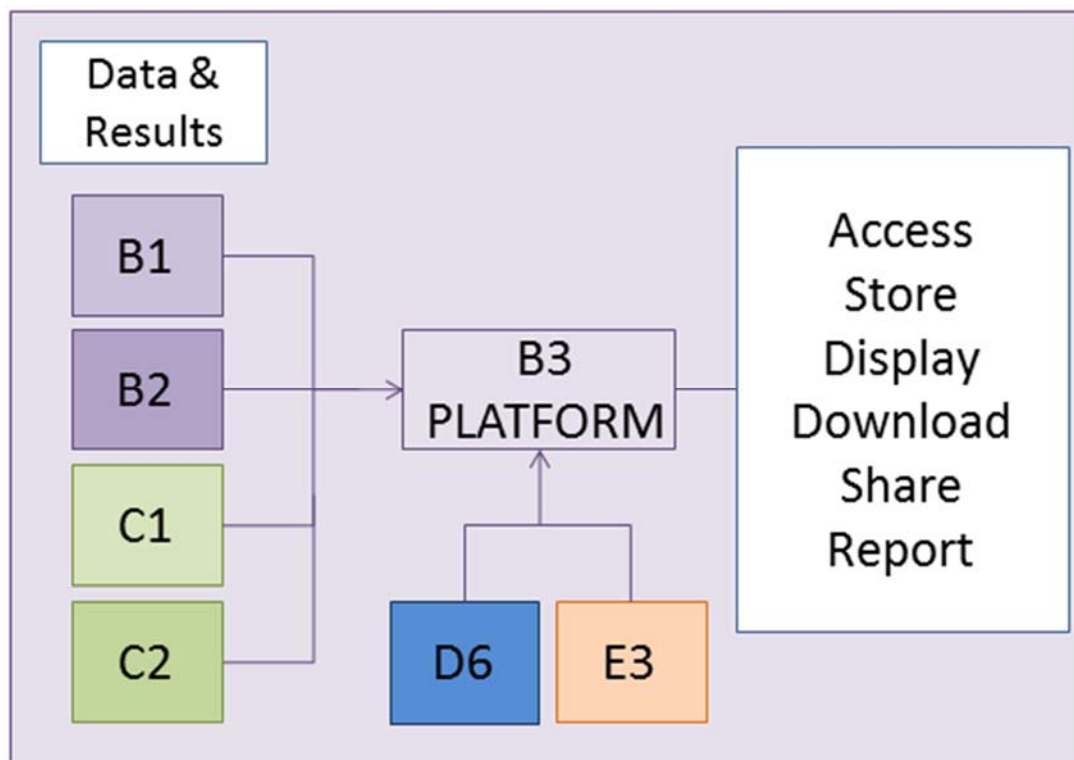

Figure 1.Workflow of the platform data in website of MEDACC.

2. Technical information

We have enabled a new section in the existing medacc-life.eu Drupal installation called PLATFORM DATA, where MEDACC website administrators can upload the generated files containing project's data. By adding the platform data content type and the platform data view and creating both data type and data format new taxonomies, a user is able to find all the files with spatial, alphanumeric or graphic data from the three basins corresponding to the different actions by just browsing the view or using the filters.
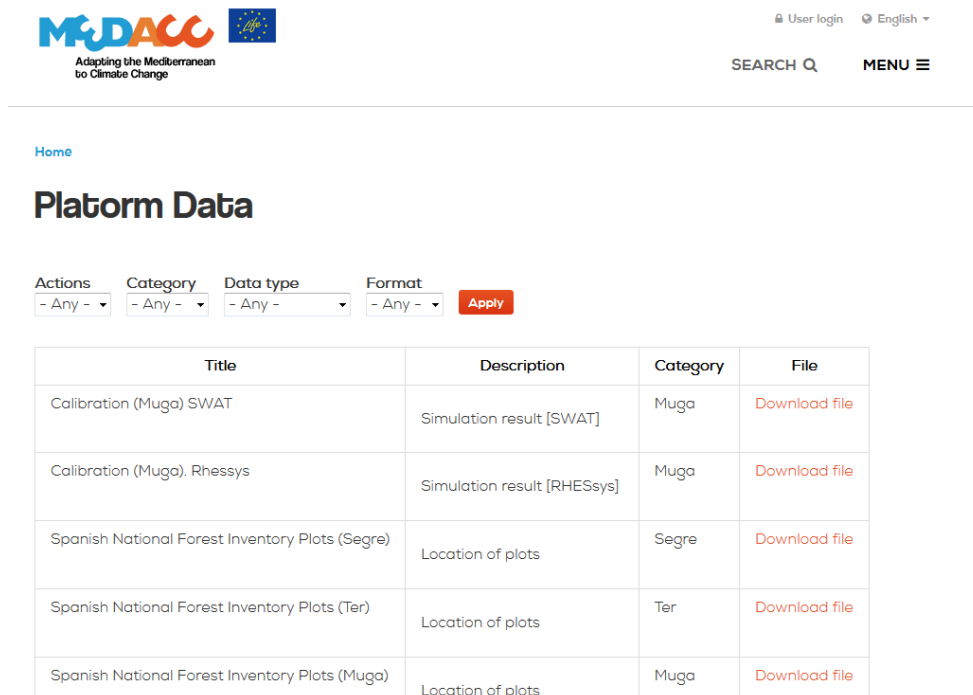
When a site administrator creates new platform data node, he can set:
- the language (does not affect the file uploaded, but description and taxonomy fields)
- the title
- a description
- the access level
- the file itself

And is also able to relate the content to the following taxonomies:
- Basin (Ter, Muga, Segre, all)
- Action and sub-action this file belongs to
- Data type (alphanumeric, spatial …)
- Data format (txt, pdf, ncdf, ascii)

The access level set in the content and the role of the site visitor determines which nodes are listed in the platform data page.

Figure 2.Appearance of the platform.

3. Metadata

The geographic information and its management are involved in the decision-making process at different levels related with public or private institutions, politics, educational, scientific, etc. The most important companies have their own information systems where the geographic data are required.

The spatial data must be actualized and they can be downloaded according with a set of selection criteria. The public institutions involved in the storage and management of geographic information need to have a detailed and actualized inventory of all the data they have.

For this reason, in 1994 the Federal Geographic Data Committee created a standard to define the information described on the geographic data. Some other initiatives continued on this aim to establish the international normative ISO-19115.

The metadata are tools that are used commonly, much more than it is thought. The metadata are *the data of the data* and they describe the content, the quality, the type and other characteristics and they help to locate the spatial data available.
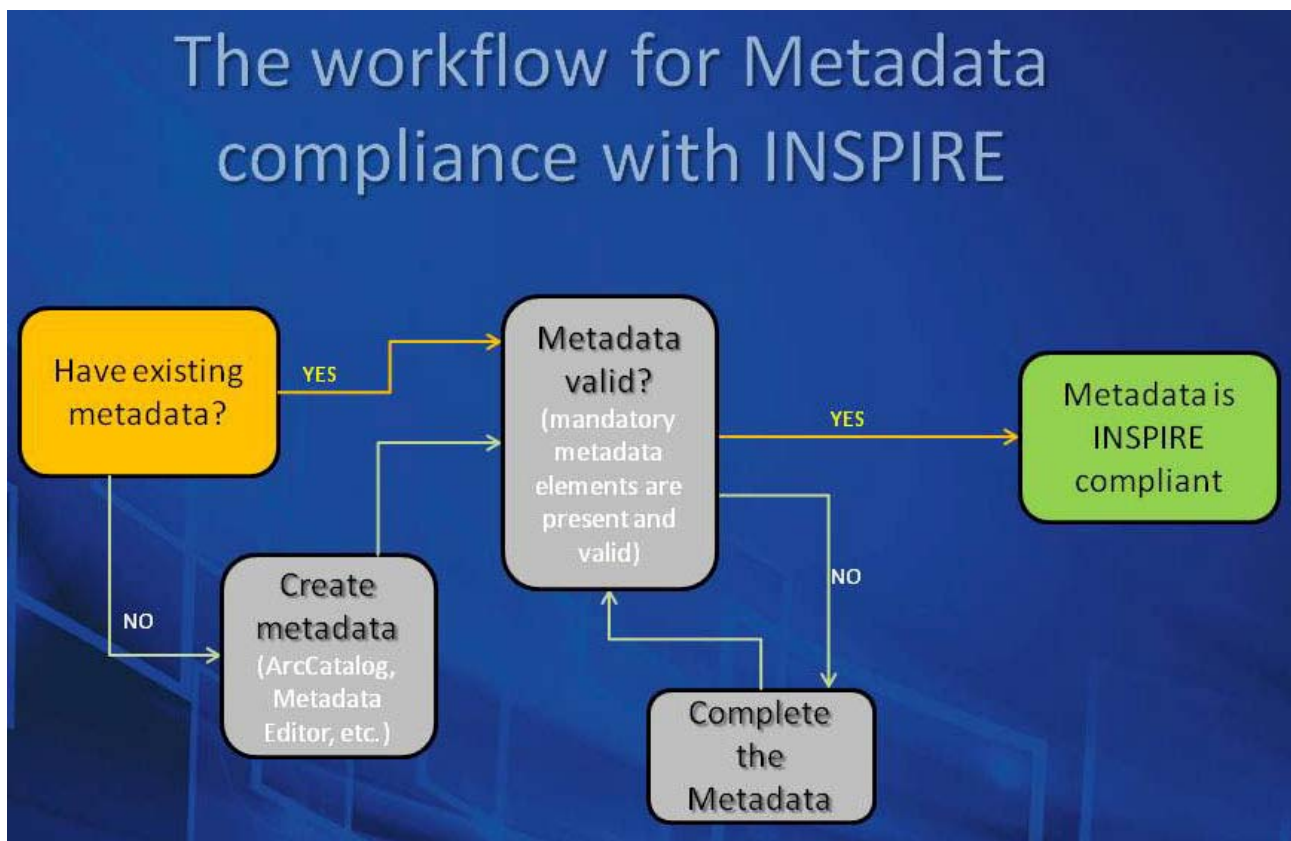
Figure 3.Workflow for metadata in Life MEDACC project.

3.1. Metadata in Life MEDACC Project

We have decided to use the Metadata Editor of INSPIRE Directive to edit the metadata developed in Life MEDACC Project. This editor allows to create xml archives with all the needed information established in the INSPIRE Directive. In Europe a major recent development has been the entering in force of the INSPIRE Directive in May 2007, establishing an infrastructure for spatial information in Europe to support Community environmental policies, and policies or activities which may have an impact on the environment.
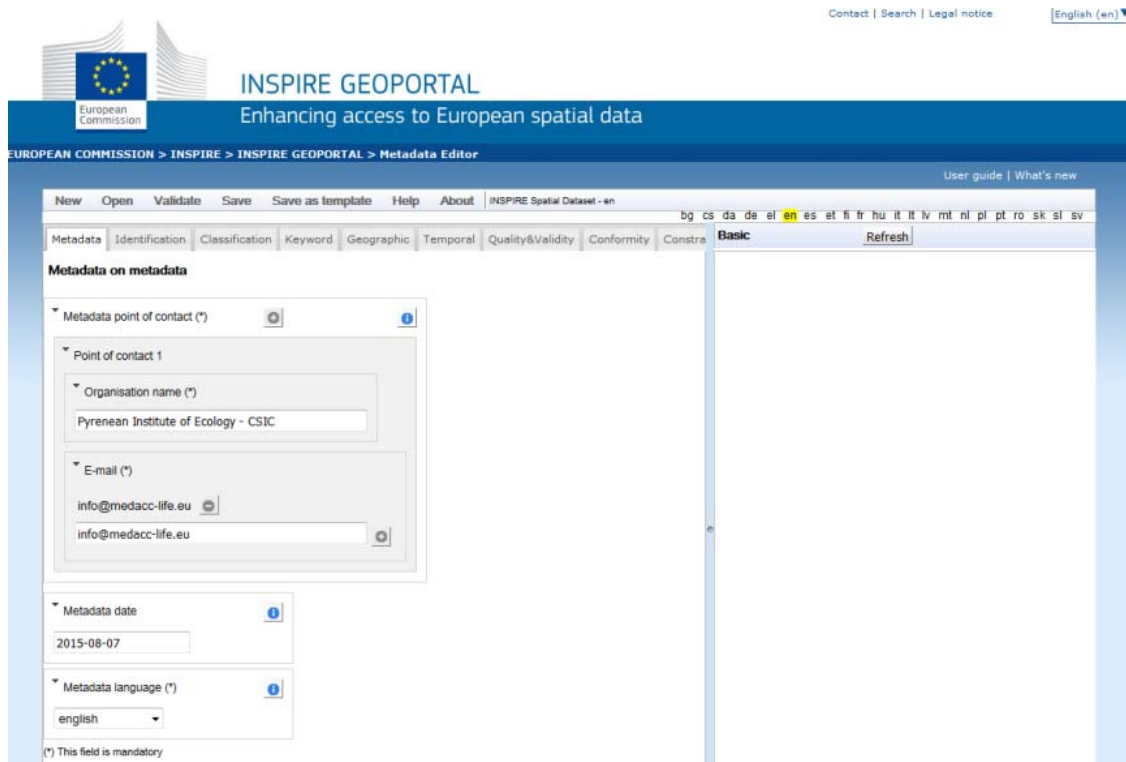
Figure 4.INSPIRE Metadata Editor (Interface).

The INSPIRE Directive is based on the infrastructures for spatial information established and operated by the 28 Member States of the European Union. The Directive addresses 34 spatial data themes needed for environmental applications, with key components specified through technical implementing rules. This makes INSPIRE a unique example of a legislative "regional"approach.

Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was published in the official Journal on the 25th April 2007. The INSPIRE Directive entered into force on the 15th May 2007.

To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context, the Directive requires that common Implementing Rules (IR) are adopted in a number of specific areas (Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting). These IRs are adopted as Commission Decisions or Regulations, and are binding in their entirety. The Commission is assisted in the process of adopting such rules by a regulatory committee composed of representatives of the Member States and chaired by a representative of the Commission (this is known as the Comitology procedure).

The metadata in the data platform presented in this deliverable and launched from the web-site of the project (life-medacc.eu) can be downloaded in two formats, XML and PDF. The eXtensible Macro Language is a standard language for the information interchange between programs in a safely, reliably and freely manner, because is open source. Other interesting possibility is that a XML document can be converted in a PDF file, what makes more visual and easier the way to present the information.

A special code has been created to organize the metadata obtained for each spatial information in Life MEDACC Project. The xml files will be stored in the platform and parsed into pdf format to make easier its visualization.
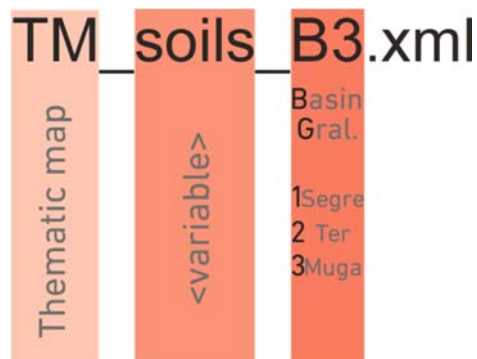
Figure 5. MEDACC code for xml files.

4. User manual
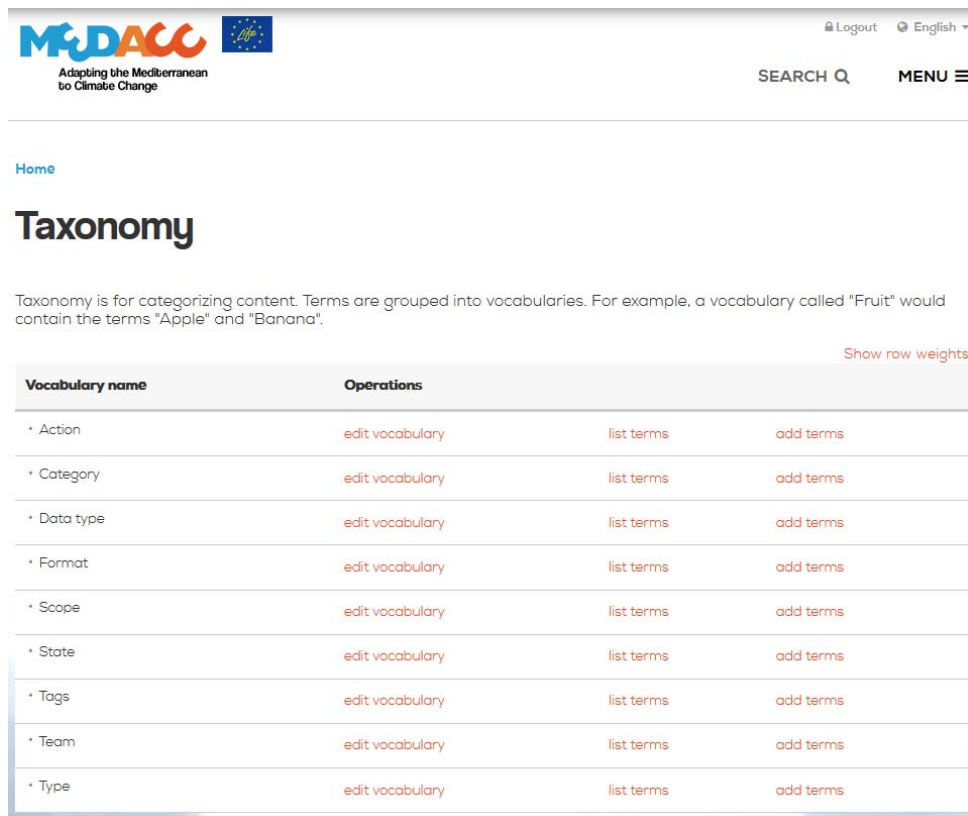
To add Data into the *platform data* section, a site administrator should first:

- Check if the action / sub action already exists in the action taxonomy. If not, create it.

- Check if the data type exists in the data type taxonomy. If not, create it.

- Check if the format exists in the format taxonomy. If not, create it.

Notice that all terms could also be added at once, even if they still have no content related.

By accessing the page "add platform data"a site administrator will reach the interface to create the new content.

Once the new content is created, the site administrator will be able to translate it, so it will be available in the rest of languages of the platform.

Figure 6. Taxonomy interface to edit the information to be upload.

5. Annex

5.1. Information to be uploaded

Action	Sub-action	Data	Upload [1][30.10.15]
B.1	*B.1.1.*	Description of climatic data	X
B.1	*B.1.1.*	Daily Maximum Temperature	X
B.1	*B.1.1.*	Daily Minimum Temperature	X
B.1	*B.1.1.*	Daily Precipitation	X
B.1	*B.1.1.*	Daily Relative Humidity	X
B.1	*B.1.1.*	Daily Radiation	X
B.1	*B.1.1.*	Daily Wind	X
B.1	*B.1.1.*	Description of gauge stations	X
B.1	*B.1.1.*	Daily Streamflow (Muga)	X
B.1	*B.1.1.*	Daily Streamflow (Ter)	X
B.1	*B.1.1.*	Daily Streamflow (Segre)	X
B.1	*B.1.1.*	Derivations & Water Use	X
B.1	*B.1.1.*	Daily/Monthly Dams	X
B.1	*B.1.1.*	Monthly Maximum Temperature	X
B.1	*B.1.1.*	Monthly Minimum Temperature	X
B.1	*B.1.1.*	Monthly Precipitation	X
B.1	*B.1.1.*	Land Use 2005	
B.1	*B.1.1.*	Land Use 1970	
B.1	*B.1.1.*	Description of Soils Maps	X
B.1	*B.1.1.*	Soils Maps	X
B.1	*B.1.1.*	Soils characterization	X
B.1	*B.1.1.*	Soils variables	X
B.1	*B.1.1.*	Rivers	X
B.1	*B.1.1.*	Dams	X
B.1	*B.1.1.*	Basins limits	X
B.1	*B.1.1.*	Gauge stations	X
B.1	*B.1.1.*	Meteorological stations	X
B.1	*B.1.1.*	Land Use Changes 1970-2005	
B.1	*B.1.1.*	Model Calibration	Ter/Muga
B.1	*B.1.1.*	Model Validation	
B.1	*B.1.1.*	Climatic projections	
B.1	*B.1.1.*	Agriculture land use distribution	X
B.1	*B.1.1.*	Forest distribution	X
B.1	*B.1.1.*	Location of plots of the IFN	X

---

[1] The rest of the information will be uploaded as the actions progress.

Deliverable 9: Protocol with the platform technical information and user manual

B.1	B.1.2.	Executed measures	
B.1	B.1.2.	Indicators list	X
B.1	B.1.2.	Evaluation of the executed measures	
B.1	B.1.3.	List of main adaptation measures	
B.1	B.1.3.	Action plan for the implementation of the measures	
B.2	B.2.1.	Location of pilot experiences	X
B.2	B.2.2.	Description of the measures	
C.1		Statistics analysis results of monitoring	
C.1		Opinion polls about the Platform Data	
C.2		Questionnaire for assessing the impacts of the project and recruitment of research personal	
D.6		Reports of the Focus Group Meetings	
E.3		List of Network activities	

5.2.   Spatial Data

The spatial data is uploaded in ascii for raster data (soils, land use, land use changes, etc) and in shapefile if the information is vectorial (rivers, dams, basin limits, etc.)

5.2.1. Ascii format

```
ncols          491
nrows          334
xllcorner      463949,67518624
yllcorner      4671062,6178999
cellsize       96,458333333333
NODATA_value  -9999
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -99
```

5.2.2. Shapefile format

5.3. Alphanumeric data

5.4. Image Data

Soil Map (Ter basin)

1, 2, 3 — Soils having high infiltration rates even when thoroughly wetted, consisting chiefly of sands or gravel that are deep and well to excessively drained. These soils have a high rate of water transmission (low runoff potential).

4, 5, 6, 7, 8 — Soils having moderate infiltration rates when thoroughly wetted, chiefly moderately deep to deep, moderately well to well drained, with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

9, 10, 11, 12 — Soils having slow infiltration rates when thoroughly wetted, chiefly with a layer that impedes the downward movement of water or of moderately fine to fine texture and a slow infiltration rate. These soils have a slow rate of water transmission (high runoff potential).

13, 14 — Soils having very slow infiltration rates when thoroughly wetted, chiefly clay soils with a high swelling potential; soils with a high permanent water table; soils with a clay pan or clay layer at or near the surface; and shallow soils over nearly impervious materials. These soils have a very slow rate of water transmission

Elaboration: Interfase Research Group of the Geography Department (Autonomous University of Barcelona)

Projection: ETRS89 UTM – Zone 31

0   10   20   40 km

LIFE12 ENV/ES/536

5.5. Metadata

The metadata information will be uploaded, as explained in the text above, in two formats that make easier the visualization and the downloading

5.5.1. XML. eXtensible Markup Language

```
TM_soil_B3_b.xml
  1  <?xml version="1.0" encoding="UTF-8"?><gmd:MD_Metadata xsi:schemaLocation="http://www.isotc211.org/2005/gmd http://schemas.opengis.net/is
  2  <gmd:fileIdentifier>
  3    <gco:CharacterString>TM_soil_B3</gco:CharacterString>
  4  </gmd:fileIdentifier>
  5  <gmd:language>
  6    <gmd:LanguageCode codeList="./resources/codeList.xml#LanguageCode" codeListValue="eng">eng</gmd:LanguageCode>
  7  </gmd:language>
  8  <gmd:characterSet>
  9    <gmd:MD_CharacterSetCode codeSpace="ISOTC211/19115" codeListValue="MD_CharacterSetCode_utf8" codeList="./resources/codeList.xml#MD_Charac
 10  </gmd:characterSet>
 11  <gmd:hierarchyLevel>
 12    <gmd:MD_ScopeCode codeList="./resources/codeList.xml#MD_ScopeCode" codeListValue="dataset">dataset</gmd:MD_ScopeCode>
 13  </gmd:hierarchyLevel>
 14  <gmd:contact>
 15  <gmd:CI_ResponsibleParty>
 16  <gmd:organisationName>
 17    <gco:CharacterString>Pyrenean Institute of Ecology - CSIC</gco:CharacterString>
 18  </gmd:organisationName>
 19  <gmd:contactInfo>
 20  <gmd:CI_Contact>
 21  <gmd:address>
 22  <gmd:CI_Address>
 23  <gmd:electronicMailAddress>
 24    <gco:CharacterString>info@medacc-life.eu</gco:CharacterString>
 25  </gmd:electronicMailAddress>
 26  </gmd:CI_Address>
 27  </gmd:address>
 28  </gmd:CI_Contact>
 29  </gmd:contactInfo>
 30  <gmd:role>
 31    <gmd:CI_RoleCode codeList="./resources/codeList.xml#CI_RoleCode" codeListValue="Punto de contacto">Punto de contacto</gmd:CI_RoleCode>
 32  </gmd:role>
 33  </gmd:CI_ResponsibleParty>
 34  </gmd:contact>
 35  <gmd:dateStamp>
 36    <gco:Date>2015-08-07</gco:Date>
 37  </gmd:dateStamp>
 38  <gmd:metadataStandardName>
 39    <gco:CharacterString>ISO19115</gco:CharacterString>
```

5.5.2. PDF. Portable DocumentFormat

File name
TM_soil_B3

Contact name
Pyrenean Institute of Ecology - CSIC

Contact email
info@medacc-life.eu

Metadata Standard Name
ISO19115

Metadata Standard Version
2003/Cor.1:2006

Title
Soils Map of Muga basin (Catalonia - Spain)

Citation Identifier Code
TM_soil_B3

Identifier Code
Tematic Map: Soils. Basin: 3 (Muga)

Description
A soil map has been generated for the three basins. This information has been generated specifically for the project since previously it was not available for the three basins. The previous information about soils within the three basins is very fragmented and specific for agricultural areas. In order to improve the quality of the results, some sources of soil information have been consulted: - Soils Map of Catalonia. - European Soils Map (scale 1:1000000) - Data from soil profiles from specific studies and the European Soils Database - Geologic Map of Catalonia - Digital Elevation Map - C Content Map in forestal soils (Spain) The technology changes, the computational capacity and the new available geostatistical techniques allowed to face the progress in soils maps from a new point of view. A Digital Soil Map has been developed, based on the spatial correlation