

JOINT RESEARCH CENTRE - Work Programme 2011

Action n° 22004 - SOIL - Soil Data and Information Systems

Institute for environment and sustainability (Ispra)

Thematic Area:

- TA3 Sustainable management of natural resources

Policy Theme: 2 - Solidarity and the responsible management of resources

Agenda No & Title: 2.2 - Natural resources

Web site address (URL): <http://eusoils.jrc.ec.europa.eu/>

Type: Action

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External Customer and Stakeholder:

- European Environment Agency
- European Food Safety Agency
- THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO)
- The Group on Earth Observations
- United Nations Environment Programme (UNEP)
- World Data Centre for Soils

Customer DGs (inside the European Commission):

- AGRI - Agriculture and Rural Development
- DEV - Development
- ENTR - Enterprise and Industry
- ENV - Environment
- AIDCO - EuropeAid
- ESTAT - Eurostat
- JRC - Joint Research Centre
- REGIO - Regional Policy

Keywords:

Soil Data Centre, Soil Thematic Strategy, Soil Framework Directive, Desertification, Land Use and Land Use Change

Rationale:

Soil data and information are relevant for a number of EU policy areas: agriculture, soil protection, bio energy, water protection, nature protection, development policy, health and sustainable development. The EU Thematic Strategy for Soil Protection addresses these different policy areas in a coherent manner and proposes the way forward towards effective soil protection in Europe. Policy relevant soil data and information will therefore play a crucial role in the policy development and implementation process. In addition, a number of global multilateral agreements also ratified by the European Community (United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD), United Nations Convention to Combat Desertification (UNCCD)) demand an increasing amount of soil data and information: climate change, biodiversity and desertification are global issues that are strongly related to soil degradation phenomena at the global scale. Through the establishment of the European Soil Data Centre (ESDAC), the SOIL Action will provide a single focal point for soil data and information for the Commission. It will therefore support the other Commission services in the implementation of the Thematic Strategy for Soil Protection as adopted by the European Commission and in the negotiations towards the adoption of the proposed Soil Framework Directive by the EU Institutions and their subsequent implementation in the Member States. The Action will also facilitate the reporting and assessment obligations of Member States.

This Action supports a large number of other JRC Actions by providing updated soil data and information via the ESDAC and the EU Soil Portal.

Summary of the project:

EU policy-relevant soil information, from initial data collection right through to final reporting, will be managed by this Action. This will be achieved by using the European Soil Data Centre (ESDAC) as the single soil information focal point for the EU. It will serve the Commission's needs in implementing the Thematic Strategy for Soil Protection (COM(2006) 231) and in the negotiation of the Soil Framework Directive (COM(2006) 232) as well as its subsequent implementation in Member States. Advanced modelling techniques and scenario analyses will be used to provide soil information to end users in relation to the major threats to soil identified in the Thematic Strategy for Soil Protection (erosion, decline of organic matter, compaction, salinisation, landslides, sealing, contamination and loss of soil biodiversity). Strong scientific and technical support to the UNFCCC, the CBD and the UNCCD will be provided by the development of an operational Global Soil Information System (GLOSI) for the regular assessment of global soil degradation processes in the framework of the GEO (Group of Earth Observation) initiative and the Global Soil Partnership coordinated by the FAO.

International Activities

European Dimension:

More than 40 European countries and regional authorities collaborate in a well established network, the European Soil Bureau Network, which is managed by this Action. A full list of members is available at http://eussoils.jrc.it/esbn/esbn_members.html

As a new development within FP7, the SOIL Action has established the European Soil Data Centre (ESDAC), as an INSPIRE compliant fully nested system on soil data and information operated by a network of national and regional data centers.

Outside Europe:

This Action is one of the major global players in the development and operation of soil data and information systems. Within FP7 the following global and regional initiatives have been established:

Global activities

* A global network of soil science institutions and data providers has been established through a formal Consortium Agreement: GlobalSoilMap.net is a network including partners from all continents that aims to produce a new digital soil map of the world using established and emerging state-of-the-art technologies for soil mapping and for predicting soil properties at high spatial resolution. Within the Group of Earth Observations (GEO) Work Plan 2009-2011 it co-leads the sub-task US-09-03c "Global Soil Data" with ISRIC. The Action is one of the key partners for the implementation of the Global Soil Partnership coordinated by the FAO.

Regional and Bilateral activities

* Soil Atlas of Latin America - In the framework of the EUROCLIMA project financed by DG AIDCO a Soil Atlas of Latin America will be compiled during 2011 for final publication by 2012.

* Soil Atlas of Africa - As a contribution of the JRC to the Africa, Caribbean and Pacific (ACP) Observatory, the Soil Atlas of Africa will be the reference for soil information in Africa. The project allows for full involvement of the local stakeholders in the design, data collection and final publication of this atlas, which is scheduled for 2010. Further reading is available at http://eussoils.jrc.it/library/maps/africa_atlas/index.html.

* EU-China cooperation agreement in soil science: Following an exploratory mission coordinated by this Action, an extensive collaboration agreement has been signed with the Chinese Academy of Sciences and the Institute of Soil Science. This agreement includes exchange of staff and joint activities geared towards the development of joint soil information systems and soil degradation

assessments.

* Collaboration agreements established with the University of Milan, University of Turin, the International Soil Reference and Information Centre (ISRIC), the Swiss Federal Council and the Soil Conservation Service of Iceland. Further collaboration will follow, including new agreements with other institutions worldwide, thereby expanding the Actions's international collaboration with the ultimate goal of completing the new Global Soil Information System by the end of the FP7.

This Action will provide a coherent approach to soil data collection and distribution for different policy areas and initiatives relevant to the EU, while assuring high scientific quality, policy relevance and technical support as needed. The Action will focus on the following overarching objectives:

1. The establishment of the European Soil Data Centre (ESDAC) as a single focal point for all soil data and information in Europe, and the operation of the European Soil Archive Facility for long-term storage of soil samples.
2. The development of procedures and methods for data collection, quality assessment and control, data management and storage, and data distribution to Commission and external users, which fully comply with INSPIRE principles for spatial data infrastructures.
3. Research and development of advanced modelling techniques, indicators and scenario analyses in relation to the major threats to soil (erosion, decline of organic matter, compaction, salinisation, landslides, sealing, contamination, and loss of soil biodiversity), as identified in the Thematic Strategy for Soil Protection.
4. Supporting the other Commission's services with soil information and scientific as well as technical assistance in negotiating the Thematic Strategy for Soil Protection and the proposal for a Soil Framework Directive within the EU Institutions, and their subsequent implementation at Community and Member State level.
5. Extension of the coverage of the European Soil Information System (EUSIS) towards a fully operational Global Soil Information System (GLOSIS), which will provide relevant soil information for the implementation of multilateral environmental agreements such as the UNFCCC, the CBD and the UNCCD, and contribute to the ground segment of the Global Monitoring for Environment and Security (GMES) as well as to the AU-EU Strategic Partnership via the JRC's "ACP Observatory" Task Force.

Specific Objectives for 2011:

- **Objective 1:**

To operate and maintain the European Soil Data Centre (ESDAC).

- Deliverable 1.1: 2011-12-31. Operational ESDAC and EU Soil Portal.
[CAT5 - Other policy support products and services]
- Deliverable 1.2: 2011-06-30. Contribution to the IES Reference data and Services Initiative, providing relevant information about workflows related to reference data.
[CAT2 - Policy support documents]
- Deliverable 1.3: 2011-12-31. Metadata records, in the form of single metadata files or through an INSPIRE discovery service, for the reference datasets relevant to the IES Reference data and Services Initiative, in collaboration with the ENABLE Action.
[CAT4 - Technical systems]
- Deliverable 1.5: 2011-12-31. Educational and awareness raising materials in support of the implementation of the EU Thematic Strategy for Soil Protection and of the implementation of the Biodiversity Action Programme.
[CAT5 - Other policy support products and services]
- Deliverable 1.6: 2011-06-30. Contribution to the "State of Europe's Forests 2011", report of the Ministerial Conference for the Protection of Forests in Europe, Soil Condition Indicator (in collaboration with the FOREST Action).
[CAT2 - Policy support documents]

- **Objective 2:**

Development of new procedures and methods for data collection, quality assessment and control, data management, data storage and data distribution.

- Deliverable 2.1: 2011-10-15. Evaluation of the DIGISOIL mapping tools according to end user needs and the operational DIGISOIL website.
[CAT5 - Other policy support products and services]
- Deliverable 2.2: 2011-10-15. Full implementation of the iSOIL results in the ESDAC data infrastructure.
[CAT5 - Other policy support products and services]
- Deliverable 2.3: 2011-06-30. Database and report on soil borne diseases (ECOFINDER project)
[CAT5 - Other policy support products and services]
- Deliverable 2.4: 2011-12-31. Scientific article on monthly soil erosion monitoring based on remotely sensed biophysical parameters: A case study in the Strymonas

river basin towards a functional pan-European service.
Support to GMES (GEOLAND2 project).

[CAT7 - Scientific publications]

- Deliverable 2.5: 2011-05-31. Report giving an overview of European landslides databases and recommendations for interoperability and harmonisation of such databases (SafeLand project).

[CAT2 - Policy support documents]

- Deliverable 2.6: 2011-12-31. New soil and land cover maps of the Souss-Massa region and the Khnifiss Lagoon. (eSOTER project).

[CAT5 - Other policy support products and services]

- Deliverable 2.7: 2011-12-15. Progress report of the SoilTrec project

[CAT7 - Scientific publications]

- Deliverable 2.8: 2011-12-15. Assessment of Soil Functions Across an International Network of Critical Zone Observatories

[CAT7 - Scientific publications]

- **Objective 3:**

Application of the integrated Land Use Modelling Platform (LUMP) for policy impact assessment and integration with thematic models.

- Deliverable 3.1: 2011-12-31. Factsheets and metadata on the new Agri-Environmental Soil Quality indicator (AEI 26). Implementation of the MoU between ESTAT, AGRI, ENV, EEA, JRC.

[CAT2 - Policy support documents]

- Deliverable 3.2: 2011-12-31. Factsheets and metadata on the new Agri-Environmental Soil Erosion indicator (AEI 21). Implementation of the MoU between ESTAT, AGRI, ENV, EEA, JRC.

[CAT2 - Policy support documents]

- Deliverable 3.3: 2011-12-31. Scientific article on the effects of biochar application to soil on the crop productivity function: A meta-analysis.

[CAT7 - Scientific publications]

- Deliverable 3.4: 2011-12-31. Report on the carbon sequestration in Soils by Biochar application - The Biochar Loading Capacity concept.

[CAT7 - Scientific publications]

- Deliverable 3.5: 2011-05-31. Report assessing soil erosion and mass movements in the Alps by using newly developed models and monitoring techniques. Collaboration agreement nr. 31576.
[CAT2 - Policy support documents]
- Deliverable 3.6: 2011-05-31. Report on options for climate change mitigation in agricultural soils and impact on crop and grassland production.
[CAT2 - Policy support documents]
- Deliverable 3.7: 2011-05-31. Report on a methodology based on multi-criteria approaches to evaluate the long-term effects of restoring the natural capital of degraded ecosystems (collaboration agreement nr. 31059 with the Icelandic Soil Conservation Service).
[CAT2 - Policy support documents]
- Deliverable 3.8: 2011-12-16. Technical report describing the combined LUC model and GHG calculation module with sensitivity analysis and examples of results from different agro-economic models. (in collaboration with IE Action BF-TP)
[CAT2 - Policy support documents]

- **Objective 4:**

- **Direct support to Commission services and agencies.**

- Deliverable 4.1: 2011-04-30. Final evaluation of the results of the LUCAS Soil survey reported to EUROSTAT and DG ENV. (AA LUCAS Soil)
[CAT2 - Policy support documents]
- Deliverable 4.2: 2011-12-31. Report with the analysis of the data on soil contamination and the management of contaminated sites collected in 2010 through EIONET building up on previous work carried out by the EEA (support to EEA).
[CAT2 - Policy support documents]
- Deliverable 4.3: 2011-12-31. First results of the analysis of collected soil samples of the LUCAS Soil survey for heavy metals content in collaboration with action MAPLE. (AA LUCAS Heavy Metals)
[CAT5 - Other policy support products and services]
- Deliverable 4.4: 2011-12-31. First draft of the Soil Atlas of Latin America. AA AIDCO's EUROCLIMA project.
[CAT2 - Policy support documents]

- Deliverable 4.5: 2011-12-31. Completion of the analyses for those soil samples collected with LUCAS and not covered by the 2009+2010 AA budget with DG ENV. [CAT5 - Other policy support products and services]

- **Objective 5:**

Development of the Global Soil information System (GLOSIS).

- Deliverable 5.1: 2011-12-31. Final version of the Soil Atlas of Africa; Support to the JRC's "ACP Observatory" Task Force. [CAT2 - Policy support documents]
- Deliverable 5.2: 2011-12-31. Scientific and Technical Report on the establishment and first activities of the Sino-European Panel on Land and Soil (SEPLS). Collaboration agreement nr. 382684. [CAT2 - Policy support documents]
- Deliverable 5.3: 2011-12-31. First version of the new soil database of Eurasia at 90m resolution (contribution to the GlobalSoilmap.net consortium) within the Global Soil Partnership coordinated by the FAO. [CAT5 - Other policy support products and services]

Last Updated 01/12/2010 13:45:39