
DeSurvey-IP



A Surveillance System for Assessing and Monitoring Desertification

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European Commission
6th Framework Programme:
Global Change & Ecosystems.
Integrated Project Contract N^o. 003950

EXECUTIVE SUMMARY

Project duration: 5 years. Project start date: March 11th, 2005

Reporting date: March 10th, 2007

Scope and objectives

Desertification surveillance is required for making one-off and periodic assessments of desertification status, for forecasting possible trajectories (early warning), and for evaluating the performance of management programmes. However, assessment procedures have so far been largely empirical and focused on the symptoms of desertification (land degradation) rather than on the underlying human-environment interactions and processes. As a consequence most of the available approaches are impractical to use at regional or global scales for reasons of cost; cannot address critical human-environment driver and process synergies and dynamics, and; only provide limited possibilities for quantifying uncertainty.

DeSurvey will fill these gaps by developing a prototype of a low cost and flexible surveillance system (the DeSurvey system) to facilitate:

- Understanding of desertification in a systemic and dynamic way.
- Assessing desertification and land degradation status, including diagnosis of driving forces, taking into account the role of socio-economic and institutional drivers as well as off-site and time lagged effects, discrimination between *current*¹ and

*inherited*² desertification, and identification of desertification *hot spots*³.

- Forecasting of desertification under selected climatic and socio-economic scenarios.
- Monitoring of desertification and land degradation status over large areas using objective and reproducible methods.
- Bridging the gap between the knowledge generated by the project on the processes underlying desertification and the practice of formulating policy to detect, prevent and resolve desertification risks.

The system will be tailored to the information needs of international, national and regional organisations involved in desertification policy and management, such as the European Union (EU), UN Food and Agriculture Organisation (FAO), the United Nations Convention to Combat Desertification (UNCCD) and local consortia of stakeholders in risk-affected districts.

By this way, DeSurvey adopts an international dimension, from the EU member-states affected by desertification to other threatened areas around the world, like Maghrebian countries, Senegal, NE China and Chile which are also involved in the project.

¹ Areas where desertification drivers are currently at work.

² Areas affected by land degradation but where desertification drivers have ceased.

³ Areas affected by current desertification and where land degradation processes are particularly active.

Work performed during the second year

Making sure that the first 18 months objectives have been accomplished.

This involves a substantial progress in consolidating and pre-processing data sets that are required by the project (i.e. climatic, remote sensing products, socio-economic variables etc).

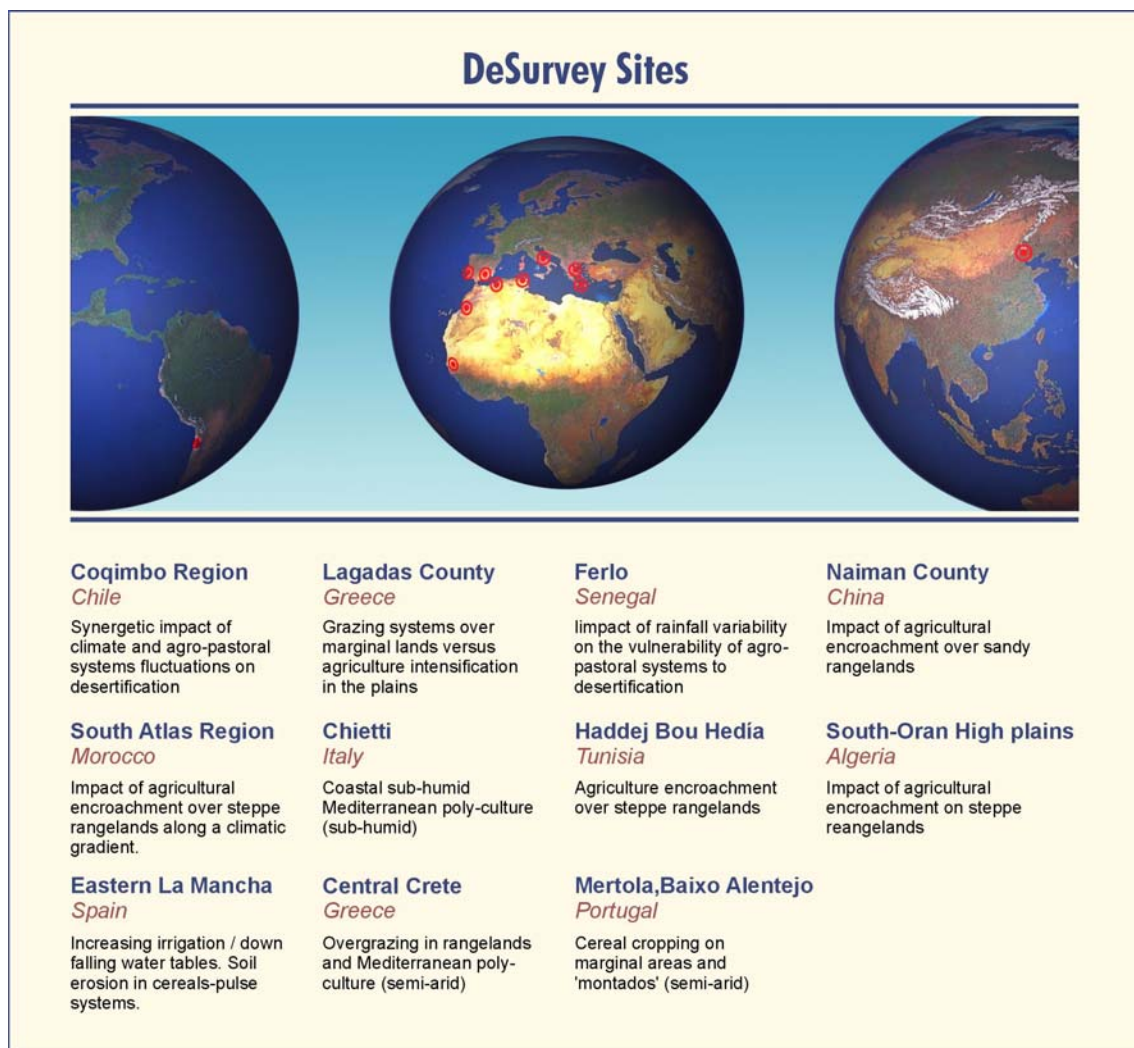
Developing preliminary versions of models that integrate the Surveillance System.

There are a number of models that are required by the DeSurvey Surveillance System: Downscaling climate change and economic scenarios, land use change, agronomical management impacts on land condition, etc. All these models have been developed in a preliminary stage that can be

already applied, as a first stage to its further final refining.

Interfacing with users. An effort has been made to set up a board of highly motivated users from several decisions levels (from international to sub-national) as to involve them in refining definition of objectives and formats of the Surveillance System for enable its application. This task includes distribution of questionnaires, setting up discussion floors, preparation of leaflets, web site maintenance, etc.

Starting working in Field sites. Some of the models that integrate the DeSurvey Surveillance System started to be adpted and applied at the DeSurvey Sites, namely in Portugal (Alentejo) Spain (Castilla La Mancha), Itly (Abruzzos) Greece (Lagadas and Central Crete, Tunisia (Haddej Bu Hedia) Senegal (Ferlo) and China (Nayman county).



Results achieved so far

The most relevant results achieved during the reporting period are twofold:

- The models for the three main products that integrate the DeSurvey Surveillance System (monitoring, forecasting and vulnerability assessment) have been defined and coded in a preliminary but applicable way. This allows experimenting with them and upgrading as demanded by user needs.
- The effort to set up a discussion floor with highly motivated users culminated with the organization of the DeSurvey User Requirements Workshop that was held in Maastricht in February 15-16 2007 with the participation of 19 users from International and National Organizations. The workshop was very successful in terms of interactivity with participants in parallel sessions, and as the exchange of view points about the user needs that the DeSurvey outputs could meet.

Activities

The DESURVEY project is composed of 10 Modules each containing a number of Workpackages:

- Climate forcing.
- Socio-economic forcing.
- Land-use systems vulnerability.
- Ground-based land condition assessment and forecasting.
- Integrated remote sensing and geomatics approaches for the assessment and monitoring of land surface conditions.
- Water resources condition assessment.
- Data and information systems.
- Integration and validation.
- Innovation related activities.
- Project monitoring, evaluation, contingency planning and management.

In addition DESURVEY will provide a range of training and demonstration activities.

Outputs

A desertification monitoring tool to provide early warning of disturbance and performance evaluation of mitigation programmes. The procedure is designed for low cost, replicable, multi-scale applications from local to national scales. It is based on landscape functions that are associated with land degradation status, such as efficiency of water or energy use. The tool is based on satellite imagery with additional data like climate and topography.

A desertification forecasting tool that enables forecasting of spatially distributed land degradation status under several hypothesis and future scenarios. Analysis of the impacts of economic and climatic drivers on land use changes and associated desertification risks are also included. The tool is based on socio-economic and biophysical models dynamically linked through a feedback loop. This design enables application to different spatial and temporal scales including months, years, decades, and local, national and supra-national levels.

A vulnerability assessment tool that allows the identification of stability conditions for targeted desertification syndromes, and the direction of change from their actual or hypothetical states under different future scenarios. The procedure is based on System Dynamics and Stability Analysis to model resource-consumer systems of household populations. Outputs can be mapped as maps of desertification syndromes become available.

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Institute for Environmental Research and Sustainable Development, National Observatory of Athens	IERSD-NOA	Greece
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