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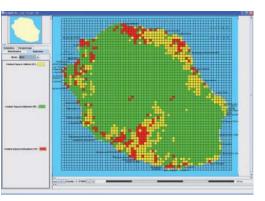
Expertise of the scientific community

Geoinformation and Earth Observation for environment and territories

DOMINO project: companion modelling to debate land allocation

Participatory territorial management involves interactions among different stakeholders with various views on social and ecological systems and their underlying processes. The DOMINO project was developed by UPR GREEN with the aim of enabling stakeholders to explain and share their views so as to facilitate the coordination of land allocation processes. The 'companion modelling' approach (as defined by the ComMod charter, www.commod.org) was tested in two different socio-institutional settings, in Réunion and in Senegal, thus providing an opportunity to assess its adaptability to different contexts.

In Réunion, the territorial planning documents of the Region, of the inter-communal bodies and of the municipalities were all under revision. The issue was to build a dynamic information system based on a consistent set of geographical data provided by different institutions. Development agents and researchers designed, hand-in-hand, an integrated simulation model that was used to illustrate the long-term impact on land-use patterns of the various prospective scenarios of the regional development scheme.



In Senegal, the emerging Guiers Lake management plan was on

hold. Information on land is scarce, there is no coordination among stakeholders, and the local institutions struggle in carrying out their assigned tasks. An *ad hoc* users' committee was therefore set up to work with the project, and trained on interpreting and producing cartographic data. Researchers developed dynamic tools ranging from role-playing games to economic models to address various land issues at different scales. Some tools were tested and validated by the user's committee.

The DOMINO project showed that a ComMod approach can take into account a range of management levels and essential data to facilitate management of land allocation processes. It led to their effective integration in the tools, and to the implication of stakeholders at different levels of territorial management, from the tool design stage to the implementation phase.

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For further information on the open modelling platforms developed by GREEN, see http://cormas.cirad.fr and http://sourceforge.net/projects/ mimosa and the ComMod companion modelling network website: www.commod.org.

Developing research and tools on the hydrology of cultivated environments

The Laboratoire d'étude des Interactions Sol - Agrosystème -Hydrosystème (UMR LISAH, INRA, IRD, Montpellier SupAgro) conducts research on the hydrology of cultivated environments, focused specifically on: ■ enhancing knowledge on erosion, water and material transfers and the fate of pollutants (pesticides and metals) in soils and rural catchments as a function of their spatial organization and temporal variation patterns ■ developing tools to assess and prevent risks induced by human activities (cultivated environments) and their impacts on hydrological systems and the evolution of water and soil resources

• contributing to the development of new sustainable management strategies for rural areas

■ training students on analysis and modelling concepts and tools for hydrology and cultivated environments.

LISAH's scientific approach is based on hydrological field studies and experiments, methodological research for the acquisition and processing of spatial data on soils and landscape and on the development of 'distributed hydrological modelling' approaches geared towards mapping the specific heterogenous features of rural landscapes. LISAH manages an environmental research observatory (Observatoire Méditerranéen de l'Environnement Rural et de l'Eau, OMERE, see p. 32), which was set up to analyse the impact of human activities on the physical and chemical erosion of Mediterranean soils and on water quality. In terms of geoinformation for environment and territories,

LISAH is currently focusing research on digital soil mapping, including the use of hyperspectral images, spatialization of linear elements in rural landscapes (see p. 11), spatialization of soil maintenance practices in vineyards in Languedoc region (France, see p. 39), digital mapping of agricultural landscapes for hydrological modelling (see p. 24), and spatialization of the water status of vine crops on the basis of thermal infrared images.

UMR LISAH is based at the Gaillarde agricultural research campus in Montpellier (France), and also in several Mediterranean countries (Morocco, Tunisia), within the framework of collaborations with agricultural research and higher educational institutions in these countries, including the *Institut agronomique et vétérinaire Hassan II* in Rabat (Morocco), the *Institut national de recherche du génie rural et des eaux et forêts* and the *Institut national agronomique* in Tunis (Tunisia).