



## **UTILISING GIS TO MEET THE EXPECTATIONS OF THE LOCAL COMMUNITY**

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In many environmental research projects, an important challenge is to produce a GIS that leads to a series of maps that are not only accurate and informative but also that are user friendly and prove to be a planning tool to local stakeholders. Colasu (<sup>1</sup>), an EU sponsored 3 year research project, focusing on two lagoon environments in North Africa presented such a challenge.

The project's objectives target the study of the present state of the El Meleh (Tunisia) and Nador (Morocco) lagoons. A comprehensive collection of field and desk data on the physical and human environment, was followed by systematic laboratory and GIS analyses. The focus was on the linkage between anthropogenic activities and the occurrence of selected heavy metals and their harmful effects on the ecosystems. The resultant interpretation led to the formulation of sustainable management recommendations targeting both the local specific scale and the catchment scale. The process of data collection and analysis in a GIS environment proved very similar to the steps advocated by the INSPIRE team.

As scientific coordinators, the authors' first concern was to ensure that existing datasets were collected in a standard format. This resulted in the design of a standard scientific matrix that enabled the consortium partners to report on existing base maps for both study areas in a harmonized manner. The next task was to transform the Lambert projection maps to UTM coordinates. To assist the partners in their systematic field data collection, the construction of a digital database template followed. This allowed both in-situ measurements and the results of different laboratory analyses (on water, soil, sediment and parent rock samples) to be uploaded directly in the GIS. This process was accompanied by rigorous checks on sampling labels and their geo-referenced location as well as on analytical results received from the participating laboratories in Spain, Portugal, France, Morocco and Tunisia.

In this phase of the project, interpretation and digitisation of aerial photographs led to a geomorphology base map for El Meleh; and the digitisation of elevation contours and drainage pattern (oueds) from six topographic sheets for Nador lagoon led to the construction of a Digital Elevation Model (DEM) and other ancillary maps. Landsat images for both lagoons provided a large regional scale scenario.

In the second year of the project, with three sampling campaigns carried out in both lagoons and the GIS database slowly taking shape, the authors met with various stakeholders, from the local mayor of a small seaside town, to the Ministries responsible for the Environment, the Management of the Coastal Zone and others. This exercise proved of great interest as it gave direction to what type of information these stakeholders required from the project.

In this phase of the project, more maps were added to the GIS, including a gps location map of all major industries and a landuse/landcover map for El Meleh from the digitising of four topographic maps. This map was then transformed into the landcover-landuse legend used in the Corine classification (European reference standard).

In the last phase of the project, equipped with a substantial catalogue of maps in the GIS together with all the laboratory results of by now four campaigns, it was possible to draw conclusions both at the site specific and the catchment scale. In addition to pollution zoning, the final output includes maps showing the possible evolution scenarios of both lagoons.

(<sup>1</sup>) COLASU: Sustainability of Mediterranean coastal lagoon ecosystems under semi-arid climate, INCO-Med Project ICA3-CT-2002-10012 (2002-2005)

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