

THE MEDIAS DISTRIBUTED DATABASES FOR ENVIRONMENTAL INFORMATION. PLANNED APPLICATIONS TO CENTRAL ASIA ENVIRONMENTAL ISSUES.

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Analysing and assessing environmental issues at any scale request a large number of data and information, either for purely research objectives or management and decision-making purposes. These are most often quite heterogeneous in terms of nature, processing level, format, location, ownership rules, etc.... Nevertheless, having a friendly access to the whole set of requested information is quite mandatory to lead studies that take all relevant phenomena into proper account.

Examples of such information can be: information collected on ground about water, soils, vegetation; qualitative and quantitative socio-economic information; remotely sensed observations and derived parameters; climatic parameters. Such information can also be heterogeneous in terms of space and time scale and sampling. For instance, remote sensing allows a continuous monitoring with periodic revisit dates, ground truth information are collected at given times and places. Ground truth observations may be continuous in case of operational measuring stations, derived from periodic census or unique measurement experiments. Data may be easily available through dedicated and centralised organisations or poorly available and located in several widespread local centres. They may be free, commercial or even restricted.

In order to overcome such bottlenecks, MEDIAS-France developed sophisticated information management tools, making it available to the scientists of the MEDIAS network according to their needs. These tools are based upon metadata catalogues allowing to retrieve and access information in quite heterogeneous local databases according to internationally agreed standards. The management of the Aral Sea watershed environment information could be an excellent opportunity to take advantage of such tools.

The Aral Sea watershed is without contest a region facing one of the most severe anthropic environmental degradation in the world. Its main climate and ecosystems features evidence a fragile environment under water resource limitation pressure. Abundant water resources naturally flow from the Pamir mountains and associated watersheds to Aral Sea through Amou-Darya, Syr-Daria and tributary rivers. But the water availability significantly dropped in the past decade, imposing serious limitations on all water users (agriculture, industry, populated areas) and leading to the drying up of Aral Sea. The losses are determined by numerous factors, both natural (evaporation, filtration, etc.) and anthropogenic (culture of water use, quality of irrigation systems, etc).

Ambitious development decisions such as cotton intensive cultivation, implying major irrigation plans and use of chemical products (pesticides, fertilizers), undisputedly brought short term economic development, but undisputedly too brought ecological disasters such as soil and water salinisation and pollution, increased sensitivity to wind erosion, and Aral sea level dramatic decrease. This evidences a non-sustainable strategy on the long term (a time scale at which the global climate change has to be taken into account). Some disasters are certainly irreversible; others can be mitigated only through radical management practices changes

This is clearly a situation where a coupled approach between all relevant aspects of the natural and anthropogenic aspects of the situation has to be led. Taking note of that situation, some regional, European and international scientists and institutions decided to set up some initiatives to go forward and implement an integrated environmental approach at the whole watershed scale.

MEDIAS-France is in a position to offer to these scientists (i) its experience in networking and linking them to major scientific international initiatives (IGBP, IHDP, WCPR, DIVERSITAS, GWP, START, INTAS) and (ii) an adaptation of its data and metadata management tools to make information friendly available for such integrated environmental assessments and research within a regional sustainable development perspective.