ECO-HYDROLOGICAL MODELLING
NILE BASIN

Project
Hydrological and environmental aspects of wetlands in the Nile Basin (analytical tools for wetlands management)

Project Progress
The major objective of the project is to better understand the different wetland systems in the Nile Basin, and to develop tools for management and conservation of wetlands by applying EO data, analysis and modelling.

We are in the process of developing a geo-database of wetlands in the Nile Basin on regional, national and pilot wetlands levels. This includes the mapping of different types of wetlands (delineation of water bodies, vegetation mapping, fisheries), identification of major changes affecting the selected pilot wetlands, applying remote sensing techniques for developing evapotranspiration time series (application on Edko case study), developing an applicable monitoring system for wetlands based on the use of EO data, ground truth and remote sensing analysis techniques including water quality, fisheries, and vegetation (application on Edko/Burullus case studies), publishing research results via an online mapping system to be accessible by a broader community of professionals.

Several project staff members participated in training courses in Africa, on short courses in Europe and also followed distance education courses. Two PhD research projects are directly linked to the project (one has been successfully completed in 2012).

Results and Further Steps
Two major pilot areas have been selected: Lake Edko and Lake Burullus in the Nile Delta, Egypt and the Mara Wetland at the lower reach of the Mara River in Tanzania. Basic EO data were downloaded.

A water quality model was developed for Lake Edko using EO data for the quantification of forcing factors as well as for the calibration and validation of the model.

Further plans contain: mapping of all pilot selected wetlands; preparing and processing the MERIS datasets for the time series analysis (2003-2010); water quality (TSM and CHL-a) time series analysis for coastal wetlands; evapotranspiration time series analysis for Lake Edko; completion of the prototype of the wetland geo-database; developing guidelines for wetland monitoring based on pilot case studies using EO data and remote sensing tools.