



NILE BASIN CAPACITY BUILDING NETWORK

Research Theme: Water Scarcity

Research Project (WS2)

INTEGRATING GIS, REMOTE SENSING, AND MODELLING FOR OVERCOMING WATER SHORTAGE IN IRRIGATION NETWORK

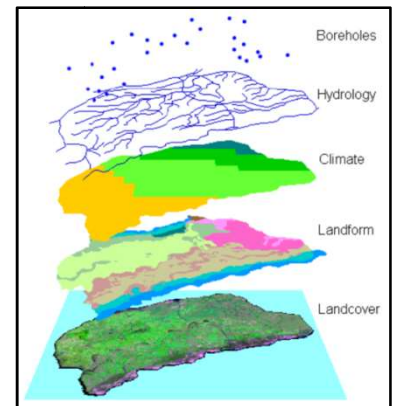
PROJECT SUMMARY

Because of water importance in one of the largest river basins in the world – the Nile river basin its regions are targeted for intensive agriculture, urbanization, industrialization, infrastructure construction, trade and tourism. In fact, the livelihood of many communities depends on a proper balance between the use and development of both water and environmental resources.

Integrating different computer technologies and tools, such as GIS and the fast growing technology of remote sensing gives an even more powerful and efficient management tool, especially when dealing with complicated irrigation and drainage network in river basin.

Not only does a GIS enable the user to collect, store, manipulate, analyse, and display spatially referenced data, it also provides an interactive environment to construct models and makes the models easier to use.

This project focuses on the use of different information management tools as well as mathematical models to overcome water shortage problems in water allocation for irrigation networks. The main aim of this research is to find a proper and efficient approach for wise use of water within irrigation networks.



OBJECTIVES

- The project will encourage long-term connectivity between team members at the river basin scale (Communities of Practice) and strengthen the link to the knowledge NBCBN network and partners.
- An indicator for more comprehensive water sharing could be used upon.



- Remote sensing information could be used to assess water resources and water use in the riparian countries.
- Increased number of application of the developed tools on more irrigation networks
- Less water allocation problems within the areas managed through the developed Application.

EXPECTED OUTPUTS

- Possible Water allocation problems within irrigation networks in the Nile basin countries will be identified and assessed.
- Integrated GIS, RS and modelling application for water management in irrigation networks will be developed and applied in case studies within the countries of the partner institutions.
- Guidelines for the use of the developed application will be developed.
- Report describing the research project activities and outputs will be developed.
- At least two research papers will be published.
- Significant contribution to the finalization of one PhD thesis is one of the project output.

EXPECTED OUTCOMES

- Using (GIS & RS) will provide a proper assessment of local water allocation problems due to any water shortage, water managers will be equipped by a technical tool that allow them to properly decide on how to quickly respond to any up normal water shortage scenarios.
- Water users will benefit from the water wise management through the minimization of any negative impacts on their water demand throughout the different water shortage scenarios. Therefore, the partner institutions will develop their capacity in the field of research through the joint implementation and exploration of different water shortage possible problems.
- Proper adaptation and readiness to deal with any future expected water shortage

GENDER ANDEQUITY

Water scarcity risks affect directly women, so they have to be given ability to fully participate in initiatives and decision-making at all levels. Within the project implementation, Gender balanced research team composition will be maintained.

LEAD ORGANIZATION

Hydraulics Research Institute, National Water Research Centre, Egypt

PROJECT PARTNERS

- HRI, National Water Research Centre, Ministry of Water Resources and Irrigation, Egypt.
- UNESCO chair in water resources, Sudan.
- South Sudan

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