

Capacity needs and capacity building to support a water observation system for Africa

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Water security has become one of the most important challenges in the sustainable development of Africa. Water managers, policy makers and water users in Africa urgently need reliable information on the use and availability of water in order to adequately plan, manage and predict the changes in water resources. On the one hand, this information is frequently incomplete or not available due to failing measurement and communication networks and lack of material and human capacity. On the other hand, data acquired from space can contribute to meet information need. But to satisfy the demand, a good synchronization based on a shared knowledge is required between water managers, who must indicate their specific information needs, developers of the data gathering-monitoring satellite systems who must what information is needed, and the knowledge institutes that must transfer their knowledge on collection and dissemination to users. In other words, a capacity is needed to utilize Earth Observation (EO) technology.

In the context of the Committee of Earth Observation Satellites (CEOS), ESA launched the TIGER Initiative in 2002 as a concrete action to match the resolutions of the World Summit on Sustainable Development held in Johannesburg. The initiative aims at assisting African countries to overcome problems faced in the collection, analysis and dissemination of water related geo-information by exploiting the advantages of EO technology.

Today the TIGER Initiative it involves a scientific network of more than 150 institutions from various Universities, Water Authorities and Technical Centres across the African continent. The initiative has supported African partners with free access to space-borne data and products; offered specific capacity building on EO applications for water management and funded pre-operational projects aimed at developing tailored EO-based water information systems in anticipation for the eventual technology transfer and operationalization of demonstrated systems to African water authorities.

As part of these efforts, the TIGER Capacity Building Facility was launched, which focused on closing the technological gap between the users and the earth observation community within the TIGER programme. Thirteen projects participated in different aspects of the capacity building facility:

1. - Basic education, provided via distance learning.
2. - Tailored short courses, selected according to the research interest and technical background of the participants.
3. - Research topic oriented supervision, provided by specialists of the research fields of the participants.
4. - Advanced short courses focusing on selected earth observation techniques.

Distance education turned to be efficient and cost effective in the programme - but only for those, who followed the courses completely. There was a relatively large percentage that could not complete the studies. The second and the third type of education were carried out in the International Institute for Geo-information Science and Earth Observation (ITC), in the Netherlands. The participants evaluated the courses and the supervision very effective and adequate. Nevertheless, the follow-up was not always possible. Two advanced short courses were held in Africa (Cape Town and Nairobi). One of them addressed the 'scientific elite' of the EO community, whilst the second focused on the users of this technology.

The first phase of the TIGER Capacity Building Facility is closed, and we can conclude that it successfully achieved its goals. Due to practical reasons, this phase had to be limited; it could focus on the support of selected TIGER research projects. The personnel of these projects are located basically in the key academic and research institutions of Africa, and will play an important role in spreading the 'gospel', teaching and training of the upcoming generations of EO specialists and water managers.

There is a new phase planned for the TIGER Capacity Building Facility. The experience gained in phase one shows that it will have to focus on two major aspects: broadening the EO literacy among the information users, i.e. the water practitioners, and providing higher academic qualifications to the key players in EO research and education, to enable them to teach new generations of EO specialists and users in Africa.