

# TIGER CAPACITY BUILDING - SUPPORTING WATER RESEARCH IN AFRICA

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## ABSTRACT

In response to the World Summit on Sustainable Development (WSSD), which took place in September 2002 in Johannesburg, South Africa, ESA has launched the Tiger Initiative. TIGER aimed at contributing to a better use of water resources in Africa. One of the main activities carried out within the TIGER initiative is the support to water research in Africa. This is carried out through dedicated capacity building and training activities. In this context, ESA has funded projects for North-South knowledge and technology transfer and it has offered software and provided free access to space data (from ERS, ENVISAT, PROBA and SPOT) to a set of scientific research projects. Other partners such as UNESCO or CSA are also actively contributing by providing training, data and funding additional projects. In order to consolidate these projects, ESA has also set up a capacity building facility (TCBF) that is currently hosted at ITC. In order to be efficient, the TCBF required taking into account the current situation in African countries concerning the human, technical and institutional capacity. This is why it incorporates experts from different relevant areas such as water managers, hydrologists, SAR and Optical data processing specialists, GIS experts, etc... It also makes use of existing African expertise promoting not only north-south but also south-south cooperation by developing synergies with existing capacity building activities on the continent and by exploiting existing training and capacity building centres and infrastructures in Africa.

## 1. ABOUT TIGER

ESA has launched the Tiger Initiative in response to the World Summit on Sustainable Development (WSSD), which took place in September 2002 in Johannesburg, South Africa. TIGER aimed at: "assisting African countries to overcome problems faced in the collection, analysis and dissemination of water related geo-information by exploiting the advantages of Earth Observation (EO) technology".

The TIGER initiative is implemented through four main action lines supported by a crosscutting coordination activity as shown in the graphic below:

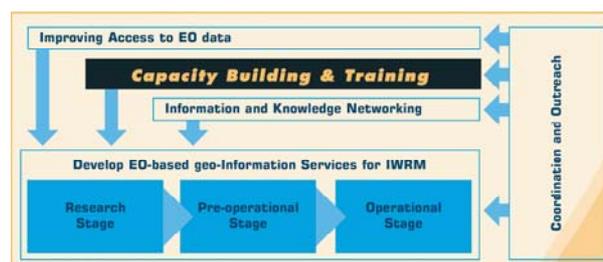


Figure 1. TIGER main action lines

## 2. TIGER TRAINING SESSIONS ORGANISED SINCE 2005

One of the main activities carried out within the TIGER Initiative is the support to water research in Africa. This is carried out through dedicated capacity building and training activities. In this context, ESA has funded projects for North-South knowledge and technology transfer and, jointly with other TIGER partners, has organised several dedicated training sessions (see table below).

More information about these courses can be found at: [http://www.tiger.esa.int/training\\_main.asp](http://www.tiger.esa.int/training_main.asp)

Date	Place	Description
10-16 Mar 2007	Lusaka, Zambia	7-day training session organised in the context of the TIGER IWAREMA Zambia project.
18-20 Jan 2007	Gaborone, Botswana	3-day training session training session organised in the context of the TIGER IWAREMA Zambia project.

Date	Place	Description
Nov-06	Agrhymet - Niamey, Niger	Meteosat derived Evapotranspiration and water balance training session organised in the context of the TIGER Aquifer project.
Nov-06	Agrhymet - Niamey, Niger	Open Water Mapping and Monitoring training session organised in the context of the TIGER Aquifer project.
Nov-06	Cape Town, South Africa	Training session organised by UNESCO Windhoek and Harare Offices, ESA and the University of Western Cape. This training session makes part of the TIGER capacity building actions.
Sep-06	Abuja, Nigeria	Open Water Mapping and Monitoring training session organised in the context of the TIGER Aquifer project.
24-28 July 2006	ESA ESRIN, Frascati, Italy	Dedicated (A)SAR Training course.
24-28 April 2006	Kenya	Five-day training seminar, developed jointly by Wetlands International and Vexcel.
Jul 7, 2005	Université de Marne La Vallée, France	Training dedicated to the EPIDEMIO project users.
Sept 13, 2005	WHO, Switzerland	Training dedicated to the EPIDEMIO project users.
Sept/Oct, 2005	Institute Pasteur, Madagascar	Training dedicated to the EPIDEMIO project users.
Oct 5-7, 2005	ESA ESRIN, Frascati, Italy	A 3 day Training session dedicated to the ESA TIGER principal investigators.
Oct 22-28, 2005	University of the Western Cape, Bellville, South Africa	The training course gives basic knowledge on remote sensing, basic digital image processing techniques and its application for water resource and ecosystems studies.
Oct/Nov, 2005	Centre de Recherche Médicale et Sanitaire, Niger	Training dedicated to the EPIDEMIO project users.

Table 1. Summary of the provided training courses

### 3. TIGER TRAINING MATERIAL MADE AVAILABLE

To reinforce the capacity building actions dedicated to support the TIGER research teams, dedicated training and education tools have been produced and distributed to all the TIGER research teams. In particular, a TIGER Training Kit was produced in 2005 to provide African partners with a common baseline in terms of training, education and software tools to advance in the use of EO technology to support their water research projects and studies.

Such tools are also available on the TIGER Website at the address: <http://www.tiger.esa.int/training.asp>

The aim of this material is to introduce African scientists and users to the Earth Observation data and techniques. Currently, it contains a general introduction to remote sensing, advanced modules dedicated to radar remote sensing, free image processing software packages, training datasets, exercises and handouts. In addition, links to free resources on the web are also provided.



Figure 2. The available material

### 4. TIGER CAPACITY BUILDING FACILITY (TCBF): OBJECTIVES

The TCBF is responsible for setting up a capacity building and training plan for the TIGER research projects.

The main objectives of the TCBF are:

- to support TIGER research projects to achieve their objectives, while developing their human, technical and institutional capacity to use EO technology within the water management process;

- to contribute to developed sustainable information services and systems to improve Integrated Water Resource Management ;
- to support the consolidation of a critical mass of EO literate technical centres, water authorities and universities in Africa;
- to contribute to improve water research results in Africa by exploiting the advantages of EO technology.



Figure . Photos from training sessions

## 5. TIGER CAPACITY BUILDING CURRENT ACTIVITIES

In 2006-2007, two advanced training courses were planned focusing on the main needs of the projects. The first course was held at the University of Western Cape, in Cape Town, South Africa at the end of November 2006.

A second course is due to take place mid 2007.

Complementary to the advanced training courses a tailor-made training programme is implemented that consist of three components:

### A- Core training

The objectives are to provide basic knowledge in the core fields of GIS and Remote Sensing and to identify the key issues of interest for the projects.

Two six-week distance education courses are provided:

- Principles of Geographic Information Systems: 15 TCBF-supported participants enrolled in this course, which started in January 2007. 10 additional candidates are on the waiting list for the course that will start in September 2007.

- Principles of Remote Sensing: 23 TCBF applicants are listed for the next run which will start in April 2007. Projects use this phase for broadening their basic capacity: training colleagues with different backgrounds to the “A-B-C” of Earth Observation and geo-information technology.

### B - Applied short courses

For this phase, PIs selected short courses from the list of training modules offered by ITC. Selected staff members of each project will spend 3-6 weeks at ITC in the Netherlands to follow these courses.

### C - Project research

This is the most task-oriented part of the programme. Each participant in the applied short courses gets a personal advisor for the period of their stay, who helps in processing the project's data. This advisor will provide scientific support to the participants even after they return to their home countries by distance supervision techniques.

More information regarding the TCBF activities can be found at the following address: <http://www.itc.nl/tiger>

All other information on the TIGER Initiative are to be found at: <http://www.tiger.esa.int> and any enquiry can be made through the following email: [tiger@esa.int](mailto:tiger@esa.int)



Figure 4. Photo from a training session in South Africa