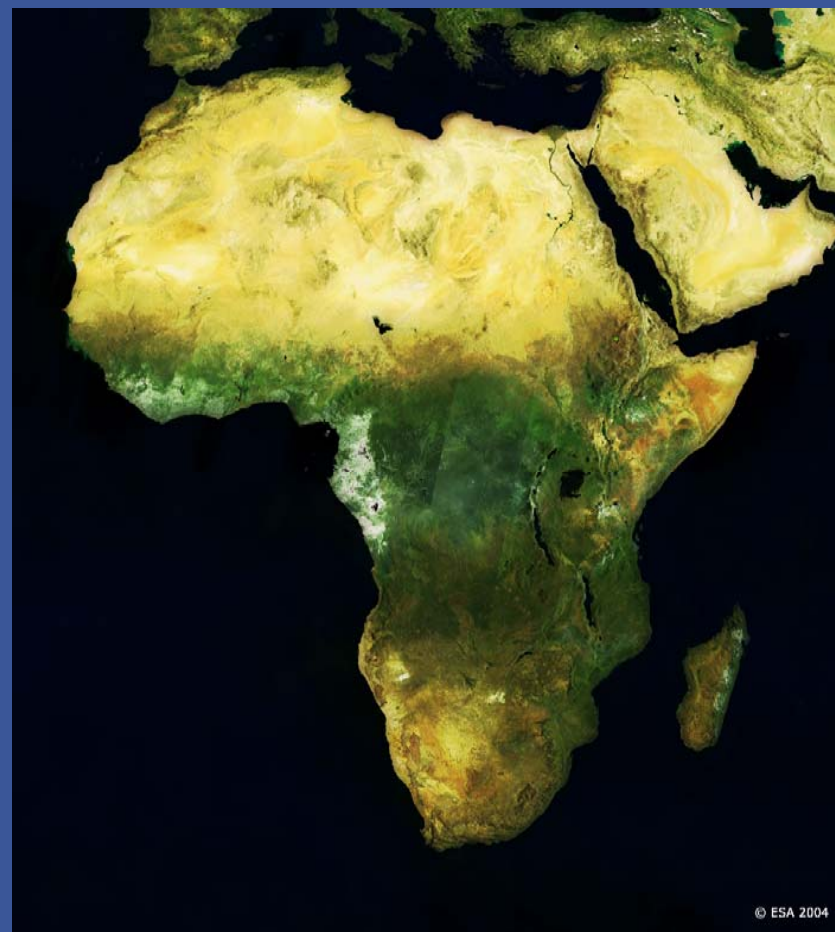


TIGER Initiative

***Towards an African
Water Observation
System?***

*Micheline Tabache
International Relations
European Space Agency*

- In 2002, ESA launched the **TIGER** as a CEOS contribution to implement the recommendations of the World Summit on Sustainable Development.
- The paucity and **poor quality of information on water & land resources** required for Integrated Water Resource Management is considered a key limitation to achieve the WSSD goals;
- TIGER goal is to ***“assist African countries to overcome problems faced in the collection, analysis and dissemination of water related geo-information by exploiting the advantages of Earth Observation technology”***.



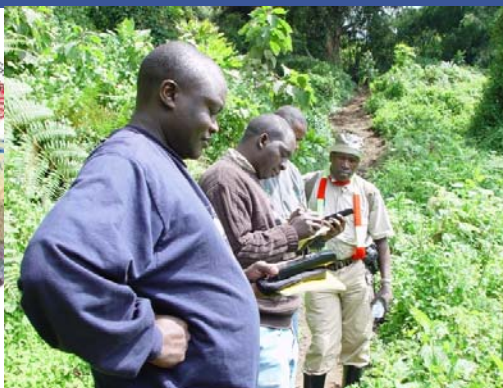
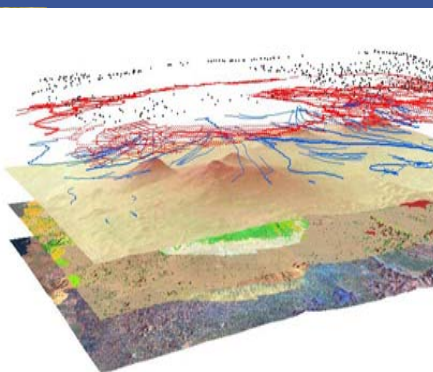
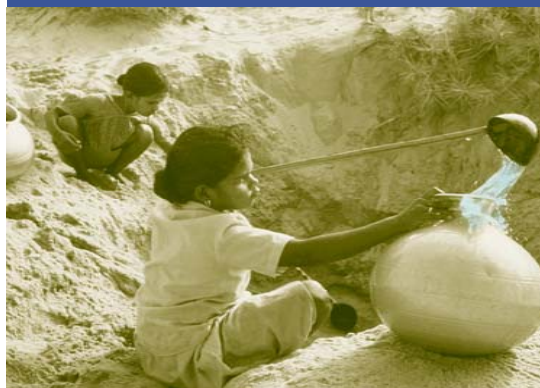


TIGER Objectives

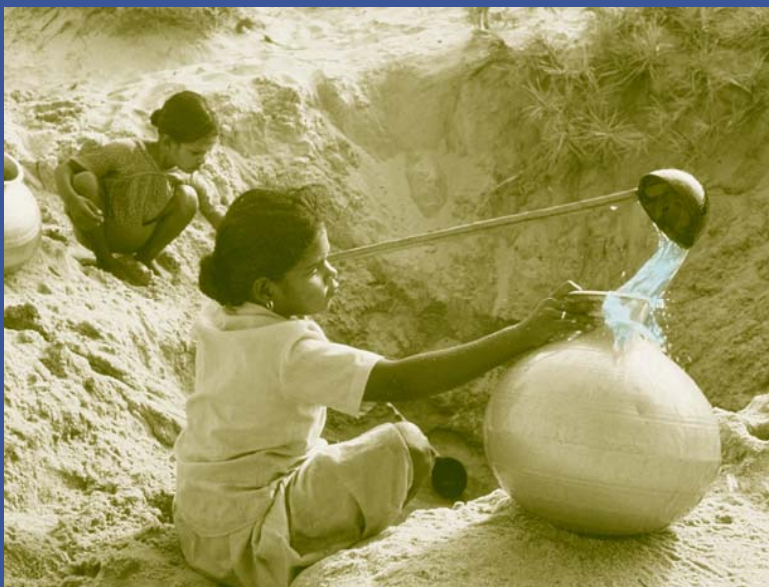
Support improved water governance and decision-making: (at regional, national and local scales) by using space-based information to provide accurate and timely geo-information for the IWRM process.

Contributing to enhance institutional, human and technical capacity: support the consolidation of a critical mass of technical centres in Africa with the skills and capabilities to exploit the advantages of EO technology in order to improve water research and knowledge in Africa as well as to derive water-relevant geo-information.

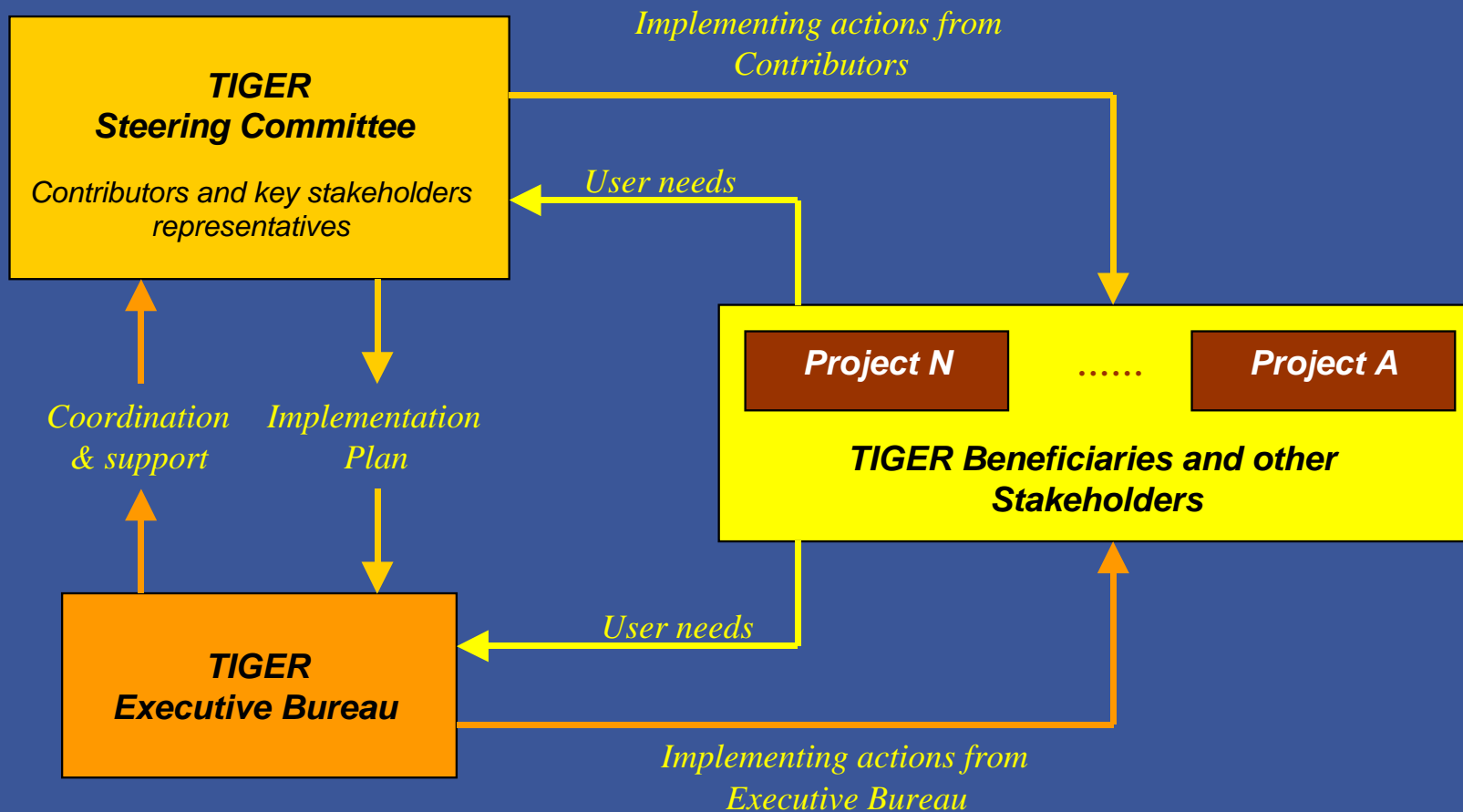
Fostering sustainability: Development of strategy for strengthening and sustaining EO-supported IWRM information and decision-support systems in the long term.

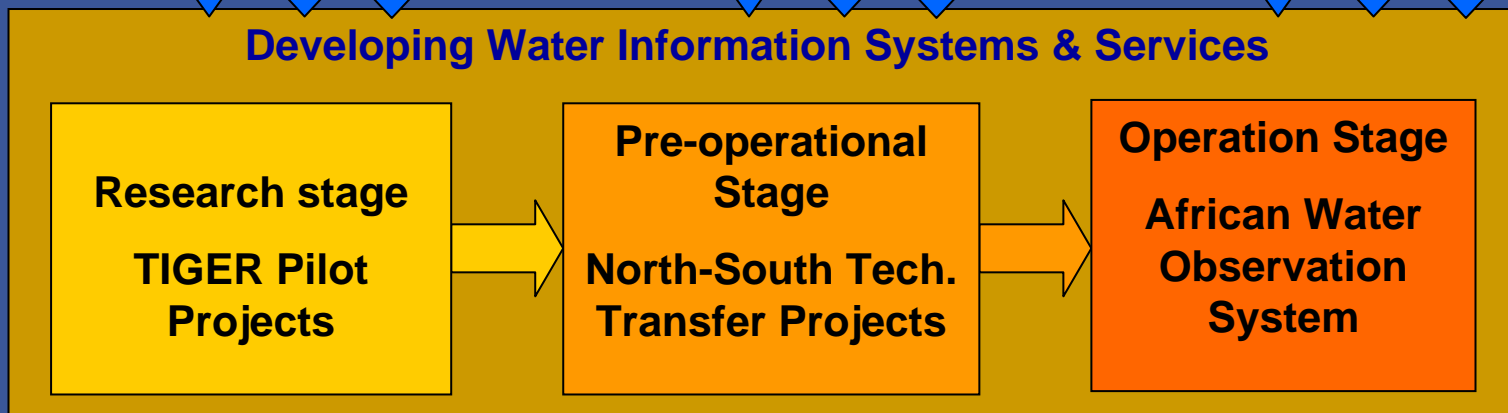
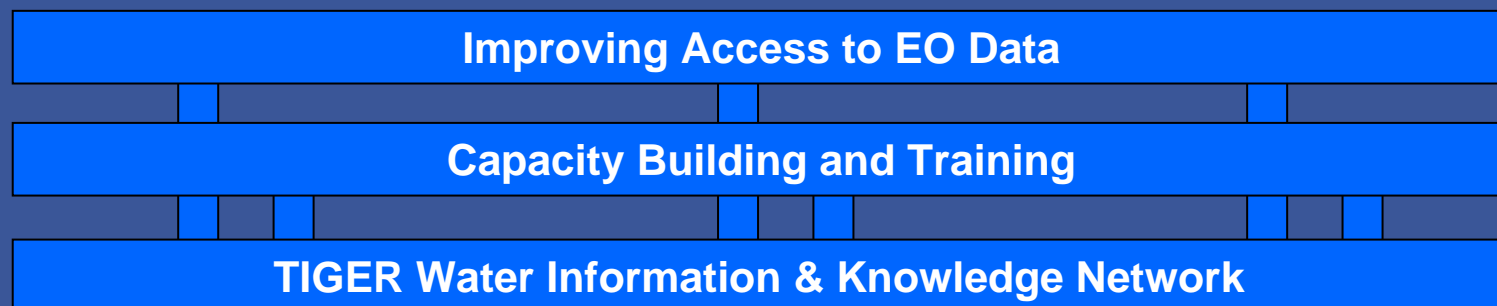


- TIGER is an International initiative;
- The African component of TIGER involves more than **200 African experts** (from water authorities, technical centres and universities) who actively participate in TIGER research and technology transfer projects;



- The **CEOS partners** (e.g., ESA & CSA have funded the initial set of TIGER projects);
- **UNESCO** provides access to the hydrology community through its **IHP networks**.
- **Other African and Int. Organisations:** AMCOW, AfDB, UNOOSA, FAO, UN-ECA, DWAF-SA;





Capacity Building

Develop the technical, human and institutional capacity of African partners to collect, elaborate and disseminate water information.

Networking

Develop partnerships, networks and mechanisms for water information and knowledge sharing, common research programs and best practices

Access to EO data

Develop effective mechanisms to ensure the sustainable access to EO data in Africa

Pilot Projects

Develop Water Information Systems and services at trans-boundary and national level to support IWRM



Towards an African Water Observation System

- **Provide TIGER projects with easy and free access to EO data:**

- *ESA data: more than 2000 scenes;*
- *Radarsat images (CSA): 150;*
- *ESA third party missions: SPOT 1-4, ALOS...;*
- *CSIR provided access to Landsat over the SADC area;*
- **Facilitate access to low-resolution data through the *Data Dissemination System (telecom);***
- **Make available *dedicated data-sets over Africa (in preparation):***
 - *MERIS Mosaic;*
 - *Vegetation data (NDVI series);*
 - *Radarsat Mosaic;*



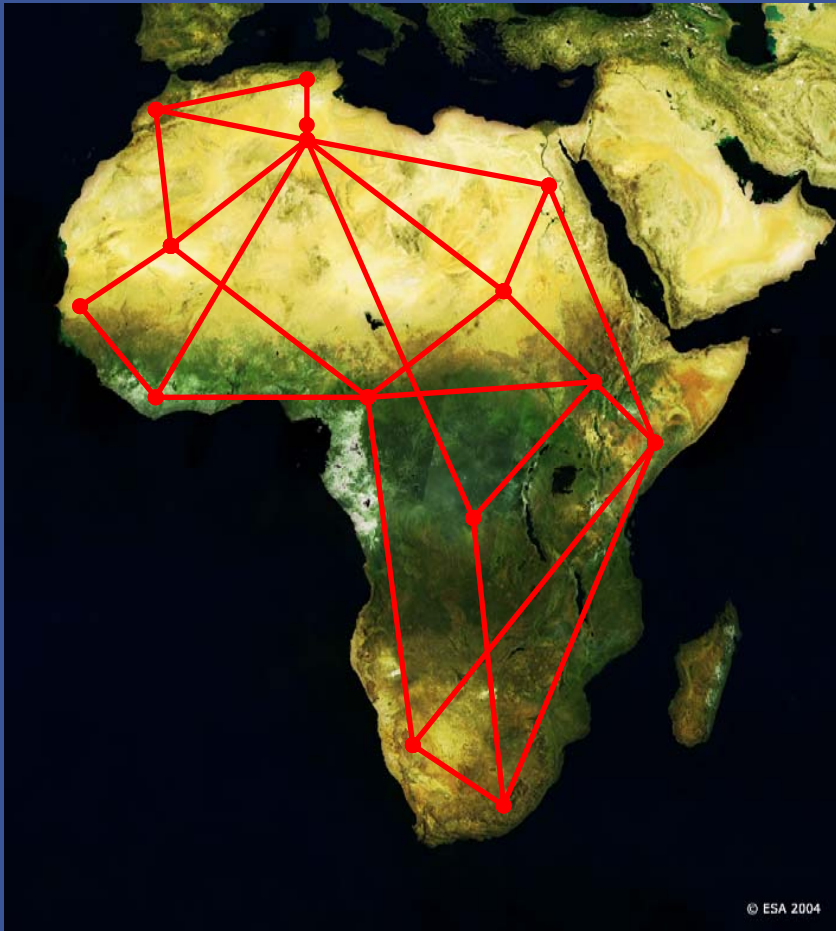
Next African centres to Install DDS

esa Capacity Building

- **More than 20 Training Sessions:**
 - **Oriented to users (e.g., water authorities):** Organised by different TIGER projects (e.g., AQUIFER, GlobWetlands, etc...);
 - **Oriented to research and technical centers:** Organised directly by ESA, UNESCO on specific remote-sensing aspects for water resources.
- **Dedicated Training Tool Kits:** including general courses on remote-sensing, SAR, EO applications and free Software tools to support PIs.
- **TIGER Capacity Building Facility** (lead by ITC) was launched in September 2006:
 - *Training sessions;*
 - *Tailored support and capacity building activities for 15 research projects.*



Date	Organiser	Topic	Location
Nov-06	GAF, in the framework of the AQUIFER project	Evapotranspiration and water balance	Niger
Nov-06	GAF, in the framework of the AQUIFER project	Open Water Mapping and Monitoring	Niger
Nov-06	ESA & UNESCO	Optical Remote Sensing for water resources	South Africa
Sep-06	GAF, in the framework of the AQUIFER project	Open Water mapping and monitoring	Nigeria
Jul-06	Viasat Geo-Technologies, in the framework of the StereoSat Africa project.	Training on visualization and data acquisition using stereoscopy	Burkina Faso
Jul-06	ESA	Microwave Remote Sensing for water resources	Italy
Jun-06	Vexcel Canada, in the framework of the ARBRE project	Training on basic radar remote sensing and EO tools	Burkina Faso
May 06	IES Canada, in the framework of the Morocco IDAS	Training on the IDAS.	Canada
Apr-06	Wetlands International and Vexcel, in the framework of the GLOBWETLAND project	Wetland managers training course	Kenya
April-06	Hatfield, in the framework of the Nile RAK project	Training-of-the-Trainers course on the Nile RAK Environmental and EO material	Egypt, Kenya, Ethiopia, Uganda
April-06	Hatfield, in the framework of the Nile RAK project	Remote Sensing for Flood Mapping	Ethiopia
April-06	Hatfield, in the framework of the Nile RAK project	Nile RAK Map Production	Sudan
Jan-06	Noetix in the framework of the Mosquito habitats project	Basic remote sensing followed by use in health applications	South Africa
Jul-05	Jena Optronik in the framework of the EPIDEMIO project	Exploitation of EPIDEMIO products	France
Sep-05	Jena Optronik in the framework of the EPIDEMIO project	Exploitation of EPIDEMIO products	Switzerland
Oct-05	Jena Optronik in the framework of the EPIDEMIO project	Exploitation of EPIDEMIO products	Madagascar
Oct-05	ESA	Introduction to optical and microwave Remote Sensing	Italy
Oct-05	UNESCO	Basic Remote Sensing for water resources	South Africa
Nov-05	Jena Optronik in the framework of the EPIDEMIO project	Exploitation of EPIDEMIO products	Niger

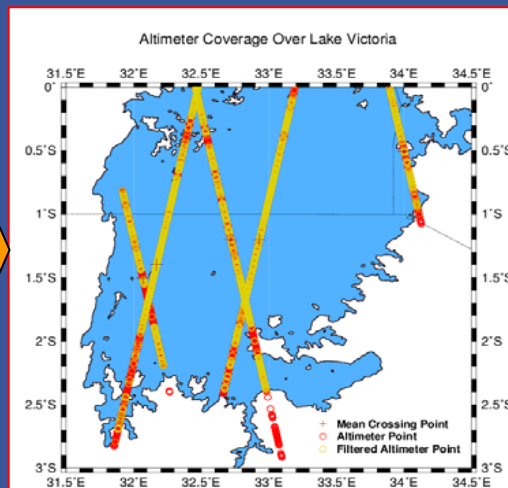


- TIGER involves more than 200 African experts (universities, technical centers, water authorities): **Need to exploit synergies and fostering networking;**
- **Actions dedicated to:**
 - Facilitate **sharing of water knowledge, information and data;**
 - Support the development of **common water research programmes;**
 - Identify and promote **best practices;**

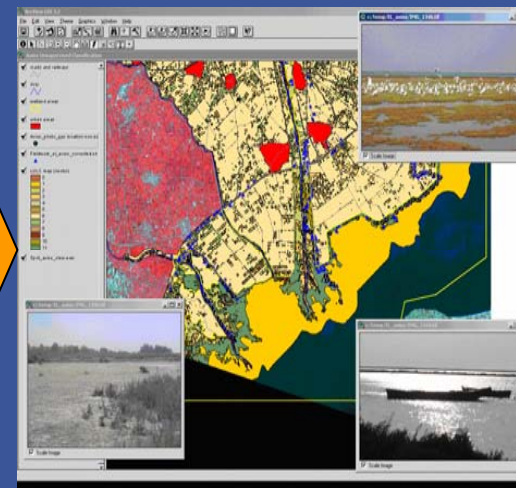
Research Stage



Pre-operational Stage



Operational Stage



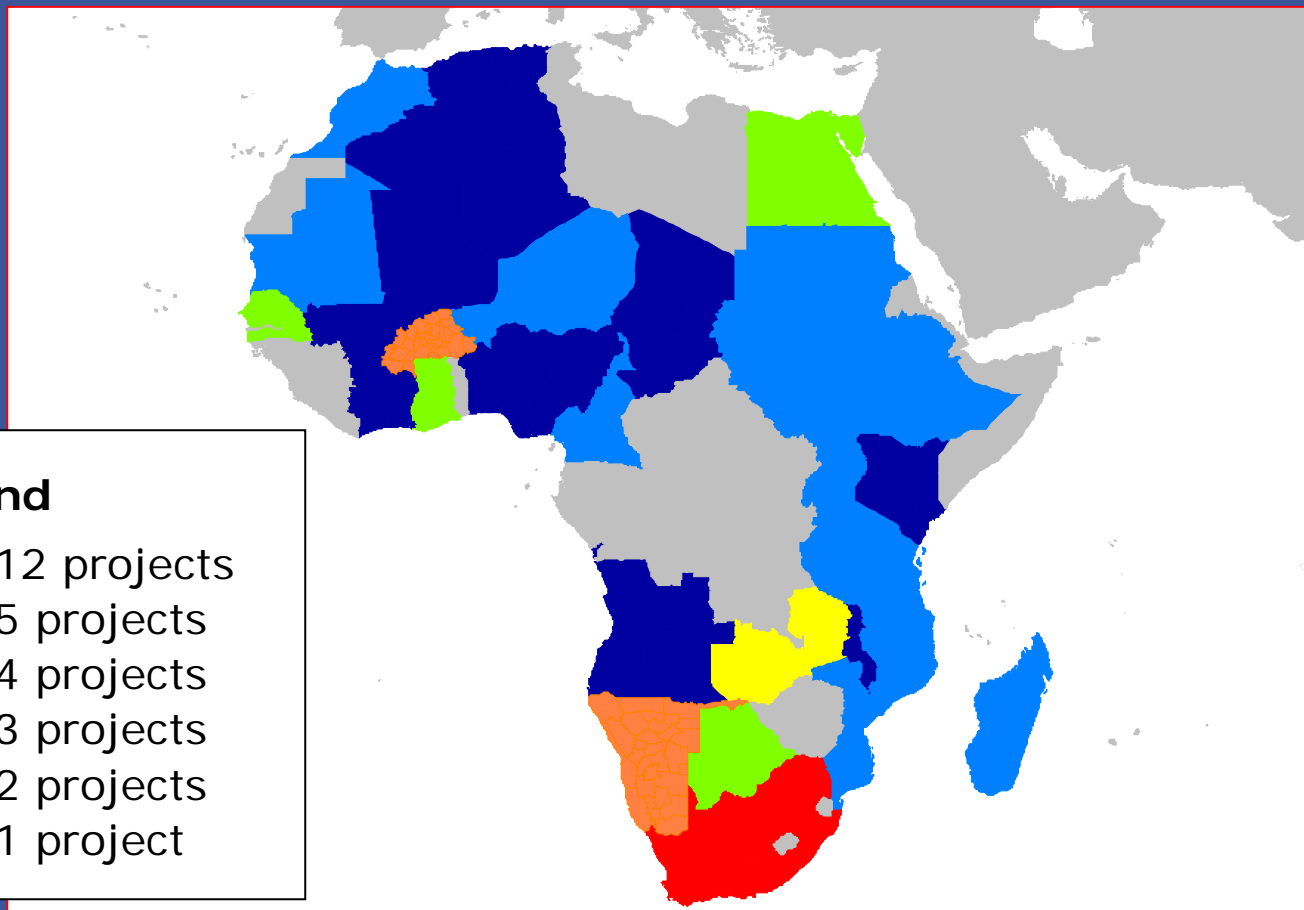
esa TIGER Water Research Component

- **Water Research Component:** Set of research projects and studies (involving water authorities, universities and technical centres) aimed at advancing the use of EO technology for IWRM;
- **50 projects** have been selected in 2004 from more than 90 proposals submitted by African and North-South research teams;



- Thematic areas includes:
 - Surface water mapping;
 - Groundwater;
 - Water pollution and quality;
 - Hydrology;
 - Environmental monitoring (e.g., erosion);
- The **teams** are supported by TIGER with:
 - **Free EO data (>2000 MERIS & ASAR, Radarsat, SPOT);**
 - **Capacity building and training;**

Regional Distribution of projects

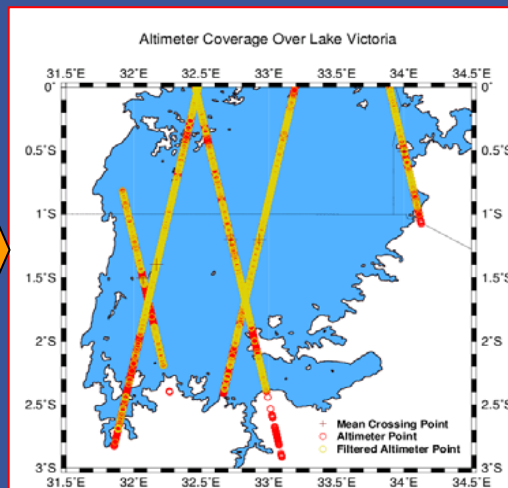


Projects should be completed by the end of 2007

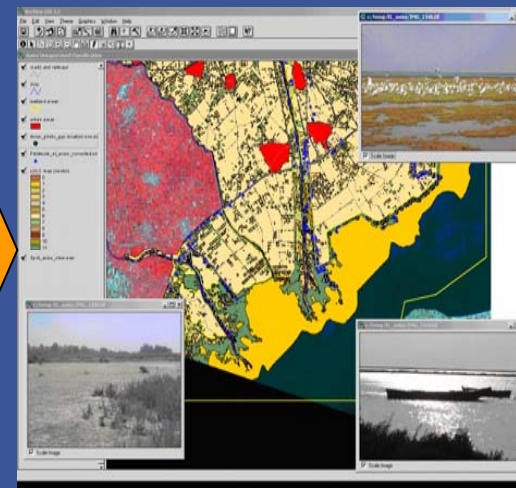
Research Stage



Pre-operational Stage



Operational Stage



- Set of development and demonstration projects aimed at developing Information services and systems for IWRM based on EO technology;
- During 2003-2005, ESA and CSA launched a total of 16 **North-South Technology Transfer Projects** funded with more than 6 MEuro overall.

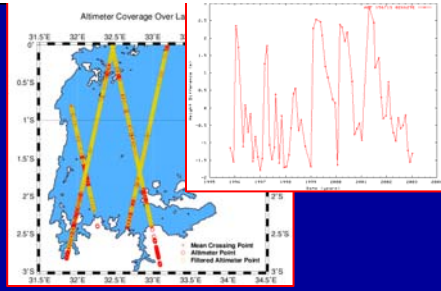


European Space Agency
Agence spatiale européenne

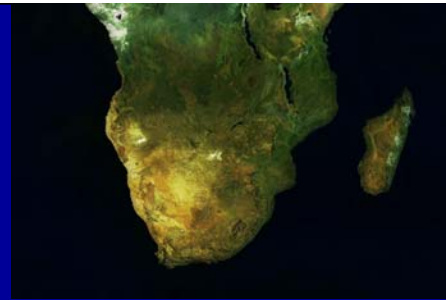
- All these projects are carried out in close collaboration with almost **30 African Institutions in partnership with European and Canadian** companies and technical institutions.
- Projects follow a **Develop-Demonstrate-Transfer (DDT)** approach aimed at transferring technical capabilities to local service providers;



Wetlands Mapping



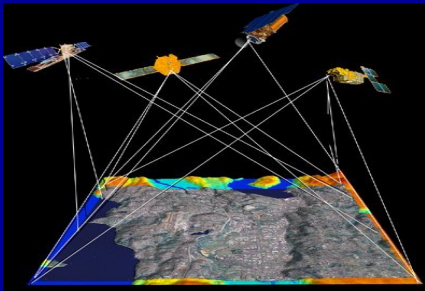
Rivers-Lakes-Water levels



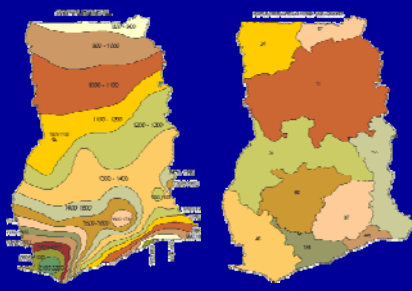
Soil Moisture-SADC



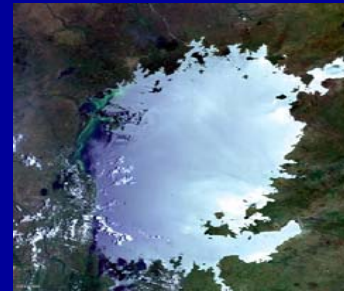
Nile Awareness Kit



Land and Topo. -Ghana.



Hydrogeo. Model-Ghana



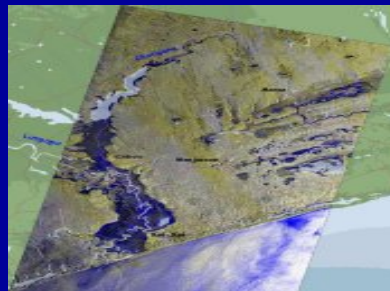
Lake Quality-Victoria



Lake Quality-Egypt



IS for IWRM-Morocco



IS for IWRM- Mozambique



IS for IWRM-Zambia



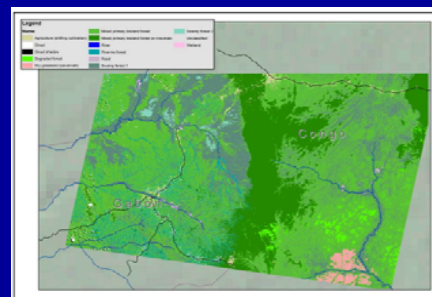
IS for WRM-Burkina Faso



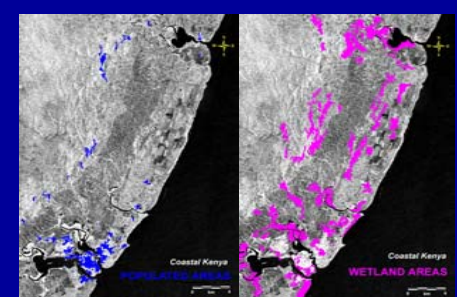
AQUIFER



Water & Ground str.-Niger



EPIDEMIO



Malaria-mapping

2004

2005

2006

2007



GlobWetlands-pan African (1MEuro)

AQUIFER-SASS & Iullemeden (1MEuro)

River & Lake water levels – pan African (250KEuro)

WADE-Niger (100KEuro)

SHARE-SADC (100KEuro)

Water Quality – Egypt (100KEuro)

Lake Victoria (100KEuro)

IWAREMA-Zambia (100KEuro)

Nile Awareness Kit (500KCDN\$)

IWRM in Africa – Ghana & Burkina Faso (500KCND\$)

ARBRE – Burkina Faso (500KCND\$)

Satellite Hydrogeology – Ghana (500KCND\$)

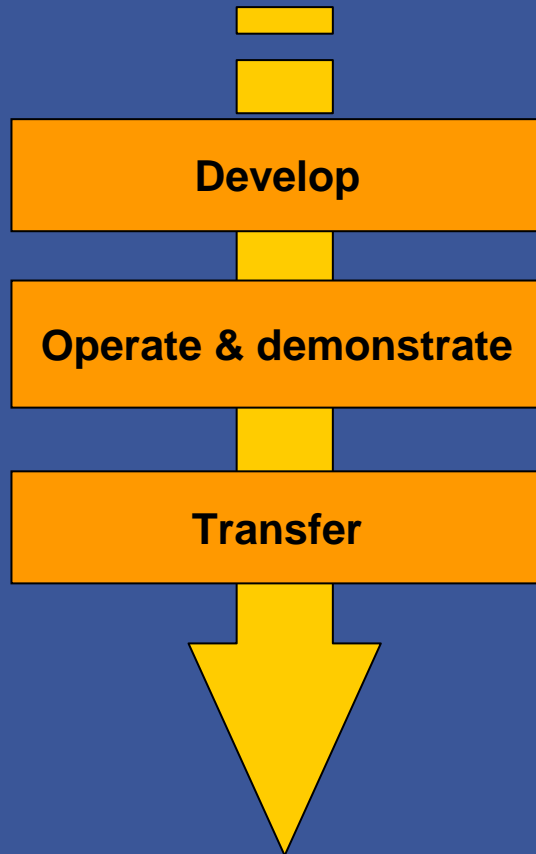
Integrated aid system for IWRM – Morocco (500KCND\$)

RS & GIS for River Basin Manag. – Mozambique (500KCND\$)

Mosquito & malaria – Kenya (500KCND\$)



User Requirements



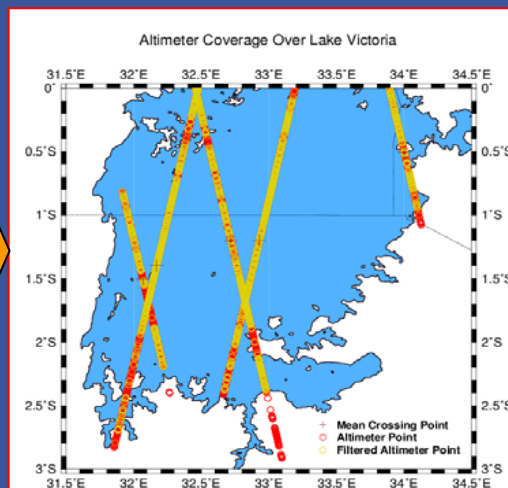
North-South technology transfer Model: DDT

- The consortium **develops** the System on the basis of the **User requirements**;
- The consortium **operates and demonstrates** the System (produces a number of final products);
- The system (and the database) is **transferred** to the user (Host Institution);
- The user (Host institution) operates the system;

Research Stage



Pre-operational Stage



Operational Stage

A screenshot of a GIS software interface. The main window displays a map of Lake Victoria with various data layers, including a red-shaded area and yellow lines. The interface includes a legend, a toolbar with various icons, and several smaller inset windows showing different views or data layers.

esa Transition to Operational Phase

On the basis of demonstrated services and systems:

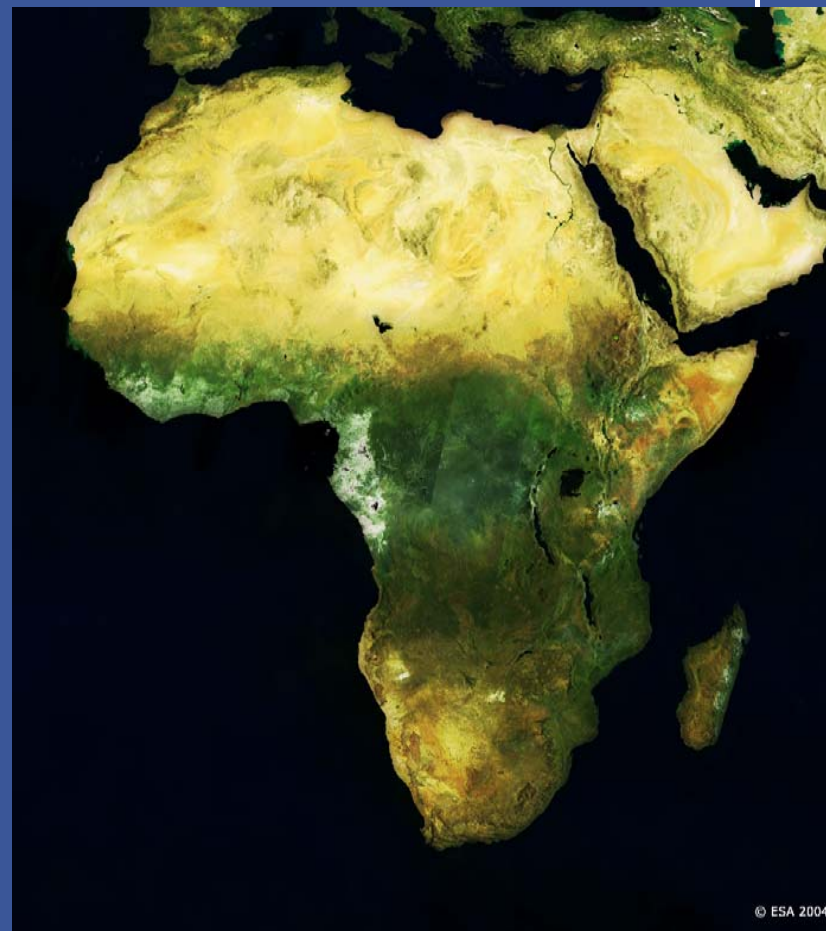
- African partners will be supported to launch projects in collaboration with development partners and donors (e.g., African Development Bank) in order to support the transition from pre-operational to operational information systems;
- A initial portfolio of projects is under development in collaboration with the AfDB and water authorities:
 - *In Jan 2007 the AfDB has approved funding for the first project (GEO-Aquifer, follow-up of ESA AQUIFER project);*

Project	Executing Agency	Status proposal
GEO-AQUIFER	OSS	Funded with 500,000 Euros
Lake Chad	Lake Chad Basin Co.	Under evaluation
Lake Victoria	Lake Victoria Basin Co.	Concept definition
Zambezi River	Zambia Water Auth.	Concept definition



esa TIGER Next Steps for 2007

- Setting up the TIGER Executive Bureau in Africa (UNESCO premises in Nairobi);
- Complete the existing TIGER projects: **1) Research component and 2) Development and demonstration component;**
- Complete the Capacity Building and Training Plan (**Capacity Building Facility**) in coordination with existing efforts and programs;
- Launching an initial set of projects funded by donors and led by African water authorities to move **from a pre-operational stage to an operational level;**
- TIGER Workshop 2007/08 to present the next **implementation plan (2008-2010);**
- Enlarge the TIGER partnerships to new contributors (e.g., NASA, NOAA, national and international donors);



© ESA 2004

Achievements:

- Setting up of a TIGER development model;
- Consolidation of an African user & research network;
- Recognised progress (from Research, Development and Operation component);
- Consolidation of the TIGER Structure (Steering Committee, Office);
- Political support from AMCOW;
- Good links with a key donor: AfDB;
- Interest and expectations in the international community!

Problem areas:

- Underestimation of resources required;
- Underestimating of African complexity;
- Partnership set up with EC and CEOS requires support at high level;
- Need of means to ensure the use of EO-based products by users and impact in the field;
- Need of suitable internal mechanisms: e.g., long-term data policy, funding for capacity building (focus on users);
- Need of medium-term strategy;



TIGER *workshop 2006*

Objectives:

- 1. Review the status of the initiative;**
- 2. Consultation with stakeholders;**
- 3. Prepare the basis for the next implementation plan;**

20th -21st November 2006
Cape Town (Bellville), South Africa



**TIGER
AFRICA**

Earth Observation Market Development - Netscape

http://schoolserv1.esrin.esa.it/eomd/index.asp

Earth Observation Market Development

esa **TIGER Initiative**
Looking after water in Africa

ESA

Tiger Home

- About Tiger
- Partners
- News & Events
- Projects
- Capacity building
- Other links

TIGER AFRICA

Water, the blue gold of the 21st century, can be monitored from space at several stages of the hydrological cycle, using Earth observing satellites.

Following the 2002 Johannesburg World Summit on Sustainable Development, the Space Agency has launched the TIGER Initiative - focusing on the use of space for water resource management in Africa and providing concrete actions to UN Resolutions.

Click on the map to retrieve Projects by study-areas (in orange) or search Projects by:

COUNTRY

KEY WORDS

PI

INSTITUTE

LATEST NEWS AND KEY-EVENTS

- Free LANDSAT Data for Southern Africa until 2006
- 2004 Workshop Presentations and Follow up
- EU Water Facility grants: Call closes 31 January 2005

© ESA 2005

Document: Done (0.364 secs)

esa

TIGER AFRICA

the TIGER newsletter

TIGER newsletter n. 1 - May 2005

If you wish to be added to the distribution list for this newsletter or for more information on TIGER, visit the web site <http://earth.esa.int/tiger>

editorial

It is a pleasure for me to present the first newsletter of the TIGER initiative.

Availability of accurate, timely and synoptic geo-information for Integrated Water Resource Management (IWRM) is a key element towards sustainable development in Africa.

Recognizing the utility of satellite data for water resource management and the urgent need for action in Africa expressed at the World Summit for Sustainable Development (WSSD), the European Space Agency launched in 2002 the TIGER initiative aimed at assisting African countries to improve deficiencies in the collection, analysis and dissemination of water related geo-information by exploiting the advantages of Earth Observation (EO) from space.

Since its initiation in 2002, TIGER has evolved thanks to the support of many African water authorities, UNESCO, space agencies worldwide and many other African and International institutions. Several projects have been initiated to better understand and demonstrate the uses of EO technology to match the information needs of African water authorities. Some 50 pilot projects have been approved by ESA to receive EO data, as a first step to facilitate the access to this key information source in the African continent.

In November 2004, the 2nd TIGER Workshop held in Pretoria, drew up a 10-year Strategic Plan, which sets a long-term framework to engage the African user community and donor agencies in a long-term process to make this initiative a concrete step forward towards the aims of the WSSD.

This newsletter is the first in a series, which will provide the TIGER community with timely information about the progress, opportunities and planned events within TIGER and will foster communication within the partnership and with the external world.

A new period for TIGER is starting. A meeting of the Steering Committee will be organised in mid June to prepare a joint action plan for the coming years and ensure the successful achievement of the objectives set up in the 10-year Strategic Plan.

Dr. Stephen Briggs
Head, EO Science and Applications Department
European Space Agency

content
With the contribution of

- TIGER: what has been done so far? 2
- The CSA TIGER projects 4
- The ESA TIGER Service Demonstration Projects 6
- TIGER Innovators: a new ESA opportunity for Collaboration 8
- Wetlands satellite mapping scheme yielding first results 9
- Short News 11

CEOS

UNESCO

CSIR

European Space Agency
Agence spatiale européenne

the Living Planet