



The role of CRTS in promoting sustainable EO Science, programs and services at national and regional level

Amal Layachi
layachi@crts.gov.ma



ROYAL CENTRE FOR REMOTE SENSING, Morocco, Rabat



SUMMARY

- CRTS in Morocco: our goals and missions
- Case studies of projects at different decisional level
- Lessons learned and perspectives



Royal Center for Remote Sensing, MOROCCO

The Royal Center For Remote Sensing (CRTS), Rabat, was established in August 1988, and fully operational in January 1990, to promote remote sensing technology and develop applications for use in operational agencies and ministerial departments for more effective management of agriculture production, natural resources, environment, disaster, and territorial development of the country.



CRTS MISSIONS

- ❑ Promotion and integration of Earth Observation technologies to enable Morocco to effectively use and exploit satellites data and applications **to meet needs of users and decision makers** involved in Socio-economic and development projects at the national level
- ❑ **Centralize and Coordinate satellite data acquisition and management** to facilitate to all users an *easy* and *rapid access* to space and satellite data adapted to their *needs* and *requirements*.
- ❑ **Capacity Building and Human Capital development** to maximize the use of Remote Sensing in the country by providing *of training and education* opportunities in Earth Observations Science and Technologies and Carrying *out R&D actions and programs*
- ❑ Remote sensing technologies **promotion** to raise awareness, the understanding and the interest of remote sensing technologies among decision makers, students and general public



CRTS Value added services

Services adapted to users demands and capacities

- Satellite imagery products for advanced users who have developed in-house capabilities and able to process and use the satellite images
- Added Value product ready to use for awareness users but not wishing to develop internal capacity

Different kinds of geo information adapted to users

- **Satellite imagery furniture: Low to very high resolution**
- **Thematic maps** : urban, water resources, agriculture... at different scale and details
- **Change detection maps and evolution analysis**
- **Indicators** at local and regional and national : drought indicator, evapo-transpiration, vegetation index, Surface temperature, upwelling indicators...



National and regional Capacity development

Human capacities development

- CRTS Training sessions for beginners and advanced (since 1993, 2500 participants, 180 sessions)
 - 3 types of training: annual Calendar, Training on demands, Project training
 - CRTS dedicated infrastructure for training



- Collaboration with university (R&D project, exchange expertise)



National and regional Capacity development

International cooperation to strengthen capacity building

- Set up of International Conferences for Africa and Middle East
- Set up of training workshops to national and regional levels
- participation at the regional and national projects (ex: RAMSES, CAMELEO, LIFE, SCHEMA, TIGER...) with technical and financial support (PNUD, UE, FAO, ESA, BM...)
- Providing of experts in training activities of the CRTS

International/Regional cooperation in human capacity development : Examples

TRAINING IN RS AND GIS FOR AGRICULTURE

- . Partners: OADA
- . Participants Number : 20
- . 10 african countries



REGIONAL WORKSHOP FOR AFRICAN OCEANOGRAPHERS OCEAN REMOTE SENSING: A TOOL FOR OCEAN SCIENCE AND OPERATIONAL OCEANOGRAPHY

- . Partners: COSPAR
- . Participants number: 25
- . 11 Africans countries

SATELLITE IMAGERY AT LOW RESOLUTION FOR ENVIRONMENT MONITORING IN THE MEDITERRANEAN REGION

- Partners: UNESCO, FSR
- Participants number: 20
- 100 demands of participation, 20 registered
- Moroccan researchers





Example of Case studies depending on the final user (1)

Decision makers from ministeriel departments for Sectorial strategic orientation

➤ Agriculture département :

- Strategic agricultural plan : Plan Maroc Vert
- National Farm Register used for Morrocan agricultural socio – economic development.
- THR Satellite images from Pleiades and Spot 6,7
- Area: 80.000 km²



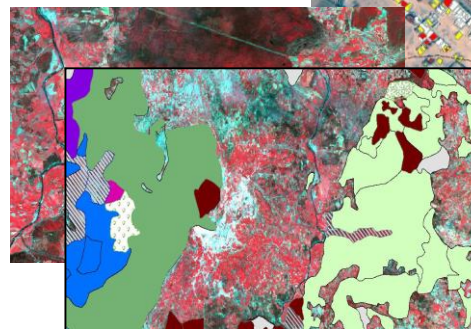
➤ Territorial and land planning department :

- Monitor and analyse the development of illegal housing in suburban areas
- 35 cities in Morocco
- From 2007 à 2012 with a 3 months periodicity
- THR Imagery



➤ Forest département:

- National Forest Resources Inventory
- 75 % of Morrocan territory
- Satellite Imagery HR and THR





Exemple of Case studies depending on the final user (2)

Operational level/ regional and local agencies



➤ Water Agencies :

➤ Establishment of base maps of the action area that will be used as a reference for the control and re-balancing of the ground water level (contrat de nappe). Scale 1/10.000, satellite imagery SPOT 6,7

➤ Daily Evapotranspiration indicator for optimizing the irrigation and participate to implementing the national strategy based on water saving.

➤ Agriculture Agencies:

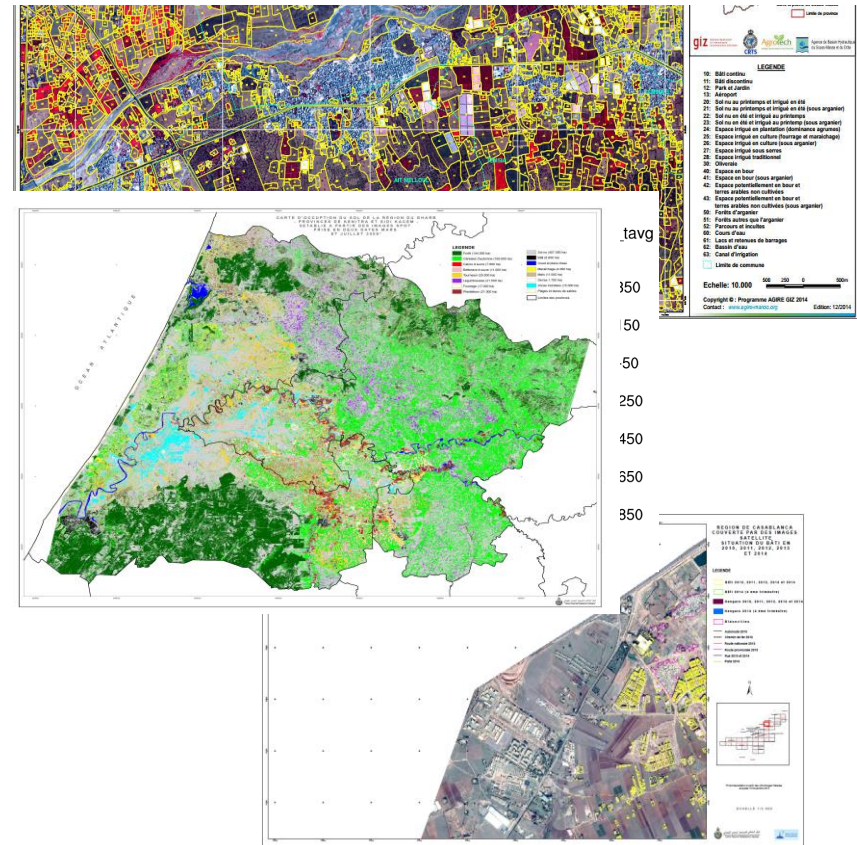
➤ Detailed land use map, Scale 1/10.000, used for annually agricultural statistics on the region

➤ Map of crops irrigated by pumping used for estimating quantities of pumped water

➤ Urban Agencies:

➤ Monitoring the built quaterly, since 2010 to today.

➤ THR satellite imagery



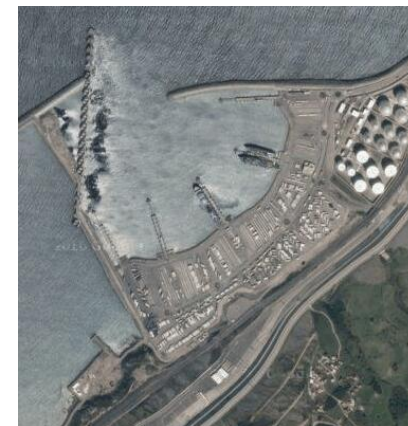


Example of Case studies depending on the final user (3)

Private Sector

➤ TANGER MED: port infrastructure

- Monitoring and evaluation the impact on the environnement (agricultural, forest, littoral... Impacts)
- THR Satellite Imagery, pleiade, annually

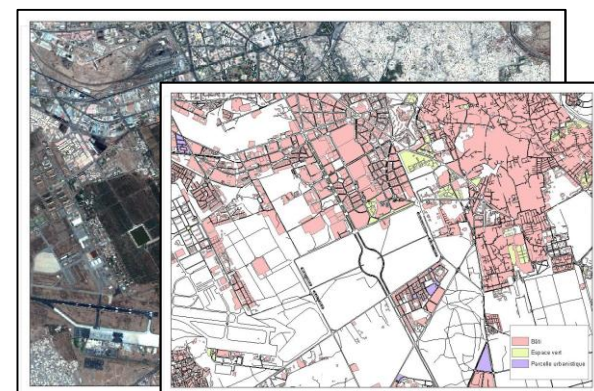


➤ AL OMRANE: urban infrastructure (new cities)

- monitoring and evaluation of the projet evolution compared to the initial implementation schedule

➤ RADEEMA : water and electricity distribution agency, marrakech

- updating of building plans for the optimization of distribution networks





Lessons learned

- **The needs today are more and more important and can be identified at the national and regional strategies and at the users level.**
- **The evolution of user needs and the progress of space technology requires to strengthen national and regional systems of monitoring and financial and technical support**
- **the Operational products from satellite imagery can be rapidly generalized and adapted to national and regional levels but institutions requires financial support.**
- **The development of new EO services require significant R&D at the initial step before the operationalization phase.**
- **R & D programs that allow the development of new services adapted to the needs of users is limited access**
- **The lack of human skills in institutions is a limited factor to the development and management of EO projects in the institutions**



Recommendations/way forward

➤ **Value chain added to the local / regional scale can be improved by :**

- A good understanding of needs at national and regional level
- A better adaptation of the products to user needs
- Greater ownership of processing methods and techniques
- Better sharing of good practices and experiences

➤ **The more enhanced services development of Earth observation requires :**

- Further develop education and human capacity
- Support R & D in partnership with the private productive sectors and the university
- To increase the cooperation programs and projects for the knowledge transfer from NORTH - SOUTH and SOUTH-SOUTH

FOSTERING OPEN
EARTH OBSERVATION
FOR EUROPE



10TH GEO EUROPEAN PROJECTS WORKSHOP | 31 MAY - 2 JUNE 2016, BERLIN

Regional dimension for GEO and capacity building priorities



THANKS YOU FOR YOUR ATTENTION