CSIR Satellite Applications Centre: Earth Observation Service Centre

Towards a RSO in South Africa

Presented by: Bruno Meyer
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For: UN-SPIDER
The Satellite Applications Centre Farm (SAC), Hartebeeshoek
OBJECTIVES

- SAC’s PLANS FOR EXTENDED PORTFOLIO
  Need of Base sets and data access
  An African initiative (ARM)
  Partnerships and Data democracy
- SAC/SANSA ROLE?
- INTERFACE TO NDMC STRUCTURE
- RSO PLANS OFFER
  Infrastructure
  Operational
  Gearing for UN-SPIDER functions (Awareness/Outreach/Capacity Building)
- SADC NETWORKING CHALLENGES
- INTERNATIONAL PARTICIPATION (FP7s)
  Garnet-E / AMESD / GeonetCab
- GEO /GEOSS ALIGNMENT(Standards e.g. AIPs)
- CAPACITY BUILDING AND TRAINING
SAC’s PLANS FOR EXTENDED PORTFOLIO

NEEDS

Base sets and data access
African Initiatives (ARM)
Data Democracy and Partnerships
BASE SETS CREATION & RELIANCE ON PROVIDERS

Examples in medium to high resolution like Spot 4/5 offer possibilities of master base sets built on strong provider support.

Trade off on spatial vs temporal vs costs etc. will dictate the selection of different sensors or their combinations to achieve similar results.

Zambia

Namibia

Mozambique
Populating a dynamic master set

One single layer (Infrared band) is extracted in preparation for integration.

The images which pass the qualification criteria are selected and assembled.

The reference master set is regionally substituted with the more accurate images.
Sensor Portfolio – SAC Archive

- Landsat TM: 1989 to 2008
- Landsat ETM+: 2001 to 2003
- Spot: 1989 to 2008
- EROS: 2001 to 2006
- ERS: 1994 to 2008
- NOAA: 1984 to 2008
- MODIS: 2004 to 2008
- Landsat MSS: 1980 to 1993

NEVER ENOUGH FOR DISASTER MANAGEMENT & MONITORING

NEEDS
- MORE AND THE LATEST
- MORE FREQUENT
- MORE ADEQUATE
AND “FOR FREE PLEASE”

SAC plans to extend the conventional portfolio with RapidEye / ResourceSAT/ CartoSAT /etc.

AND SUPPORTS FULLY THE AFRICAN INITIATIVES

SumbandilaSat / NigeriaSat /AlgeriaSat / etc.
through constellations like ARM

Where small Satellite Remote Sensing Programs fulfill the need to establish local capacity (technology & Applications) but suffer from critical mass for wide spread use of the satellites and their data management (best practice / quality / access and dissemination).
PARTNERSHIPS & DATA DEMOCRACY ???

CBERS2 / SacC / Sumbandilasat / etc..

+ Exploring avenues of data exchange (USGS)
Access to archive data for more coverages.

ALL BECOME MAJOR ASSETS IN
DISASTER MANAGEMENT
AND MONITORING
MONITORING CHALLENGES
Resolution vs Frequency vs useful information?

Example of eutrophication at the Hartebeespoort DAM

SPOT5 070411  MODIS 070729
Inadequate versus needed data

Spot in archive but of little help for Timely assessment

Envisat available but inaccessible
Sumbandilasat 27 May 2010

Useful data for Eutrophication monitoring
Keeping watch and plenty of luck

Blessed with excessive rain + clouds

Despite optical sensors limitations

Spot5 acquisitions on Sunday 31st January 2010
1) Christiana region after the water gate opening

31/01/2010
Between clouds
Central pivot damage

Before image
Spot5 2009 master set
2) Windsorton region after the water gate opening

31/01/2010
Affected mining activities

Before image
Spot5 2009 master set
3) Affected Region near Barclay West

31/01/2010

Affected agriculture activities

Before image

Spot5 2009 master set
SAC /SANSA ROLE

SAC's role in DISASTER MANAGEMENT

• Quick turnaround time = Stand-by capability 24/7
• Brokering in data access & active in extending sensors portfolio
• Active on planned monitoring capabilities and programmes

+ Some additional roles once migrated to SANSA

• Space Agency seeks answers to needs via future satellites
• Ease of additional data access (Charter adherence, special agreements, International bilaterals, etc.)
• Alignment to world standards but still tailor made for the local requirements e.g. relevance (UN-SPIDER)
• Training and Capacity Building
INTERFACE TO NDMC STRUCTURE

• National Disaster Management Centre (NDMC) is the legal entity and recognised as the national focus point and committed to a UN-SPIDER Regional Support office (RSO)

CHALLENGES

• Infrastructure interconnectivity and access to data
  For data dissemination from national to provincial to district (Connectivity and data hosting)

• Soft capacity (people) a global challenge

The intent for central data modelling capability and due to lack of local capacity NDMC welcomes products like Vulnerability mapping and risk assessments and monitoring programmes like AFIS
Connectivity Challenges and plans to facilitate access and dissemination of SAC / SAWS and SITA data
RSO PLAN OFFER

Infrastructure:
Seminar Room & catering facility at the Minitrack
RSO PLAN OFFER

Organisational: SAEOS and state of the art remote sensing supply chain D.I.M.S system

Plus:
- Access to ESA data via DDS
- Links to major providers for data and services
- International Charter
Gearing for UN-SPIDER functions
Where Disaster Management becomes an additional operational service amongst others like AFIS

Plus:
Cross cutting regional activities currently running whereby avoiding duplication in
-Awareness
-Outreach
-Capacity Building
SADC NETWORKING CHALLENGES

SAC has a role to play on the regional as well as on an international level.

It therefore established an Impact group to explore and address this role not only on a national, regional but at wider scale.

With the help of the Earth Observation community and our stakeholders like DST, DIRCO, DTI, etc., these first steps must bear fruits soon.
INTERNATIONAL PARTICIPATION

CSIR Satellite Applications Centre

To become
The South African Space Agency (SANSA)
in 2011

Supporting satellite operators
world-wide; receiving and
distributed earth observation data
[more]
Current participation in SADC
Theme of the AMESD Project

- Data provision to Ministries of Agriculture and Environment & Universities
- CBERS-2B SADC country mosaics
- SAC-C data per SADC country
Current participation in GEONetCab

Total cost: €1,207,860
EC Contribution: €999,988
Duration: 36 months - started: 1 Nov 2009
Consortium: 8 partners from 6 Countries

SAC’s role in SADC:
- Inventory of current capacity-building activities
- ID bottlenecks
- Connecting & building
- Awareness & dissemination
Current participation in Garnet-E

Total cost: € 1,190,063
EC Contribution: € 999,470
Duration: 24 months - started: 31 May 2010
Consortium: 17 partners from 15 Countries
1. SAC’s role = EO Engagement in South Africa and SADC
Establishment of:
• Data Dissemination System (DDS)
• Regional Tiger Office
• Training facility infrastructure
• Regional Water Information System (RWIS)
• Regional Workshops etc.
AND PERHAPS SOON

Participation in UN-SPIDER

- Establishment of the UN-SPIDER Regional Support Office in South Africa for SADC

- Awareness raising
- Outreach
- Capacity Building
- Community of Practice
- Cooperation
- Etc.
GEO/GEOSS ALIGNMENT

SAC as SANSA will participate and is expected to contribute at different forums from GMES-Africa to GEO & GEOSS via Geo South Africa

From GEOSS Common Infrastructure to Data Management and Capacity Building the task on user engagement and community of practice should offer the platform for extended networking. The DI-06-09: Use of satellites for Risk Management is particularly followed as indicator of best practice.

CAPACITY BUILDING AND TRAINING

- University of Cape Town (UCT), Disaster Mitigation for Sustainable Livelihoods Programme (DiMP), South Africa - http://www.egs.uct.ac.za/dimp/
- University of the Free State, Disaster Risk Management Training and Education Centre for Africa (DiMTEC), Bloemfontein, South Africa - http://www.uovs.ac.za/
- North West University, African Centre for Disaster Studies (ACDS), Potchesfroom, South Africa - http://www.acds.co.za/
- University of South Africa (UNISA), Centre for Public Administration and Management (CePAM), Florida, South Africa – www.dms-online.co.za
- Disaster Management Institute of Southern Africa (DMISA), Johannesburg, South Africa - http://disaster.co.za/training.htm
- University of Witwatersrand, Johannesburg, South Africa – http://www.wits.ac.za/
- Southern Business School, Helderkruin, South Africa – http://www.sbsonline.co.za/

- SAQA (South African Qualification Authority) Offers Professional recognition.
THANK YOU!!!