



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

Smart Spatial Solutions For Sustainable Development

Nosiseko Mashiyi
AfricaGIS 2019

20 November 2019
Kigali, Rwanda

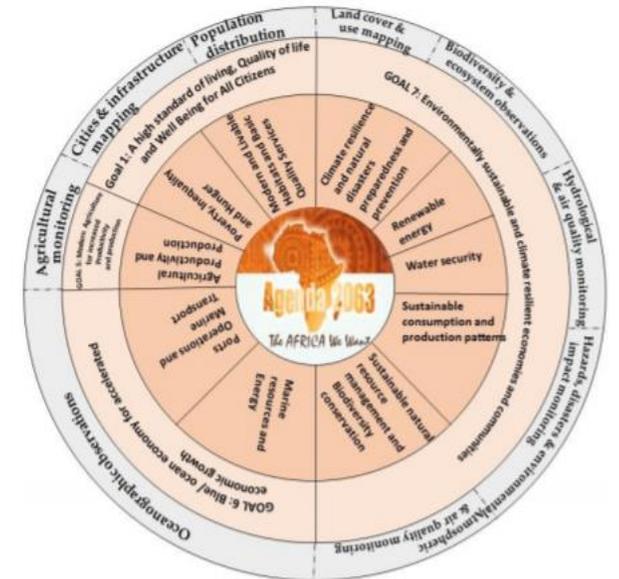
“I am guided each day by these three questions: ‘What are you fixing?’ ‘What are you making?’ and ‘Who are you helping?’ — ***Juliana Rotich, Ushahidi, Kenya***

Challenges

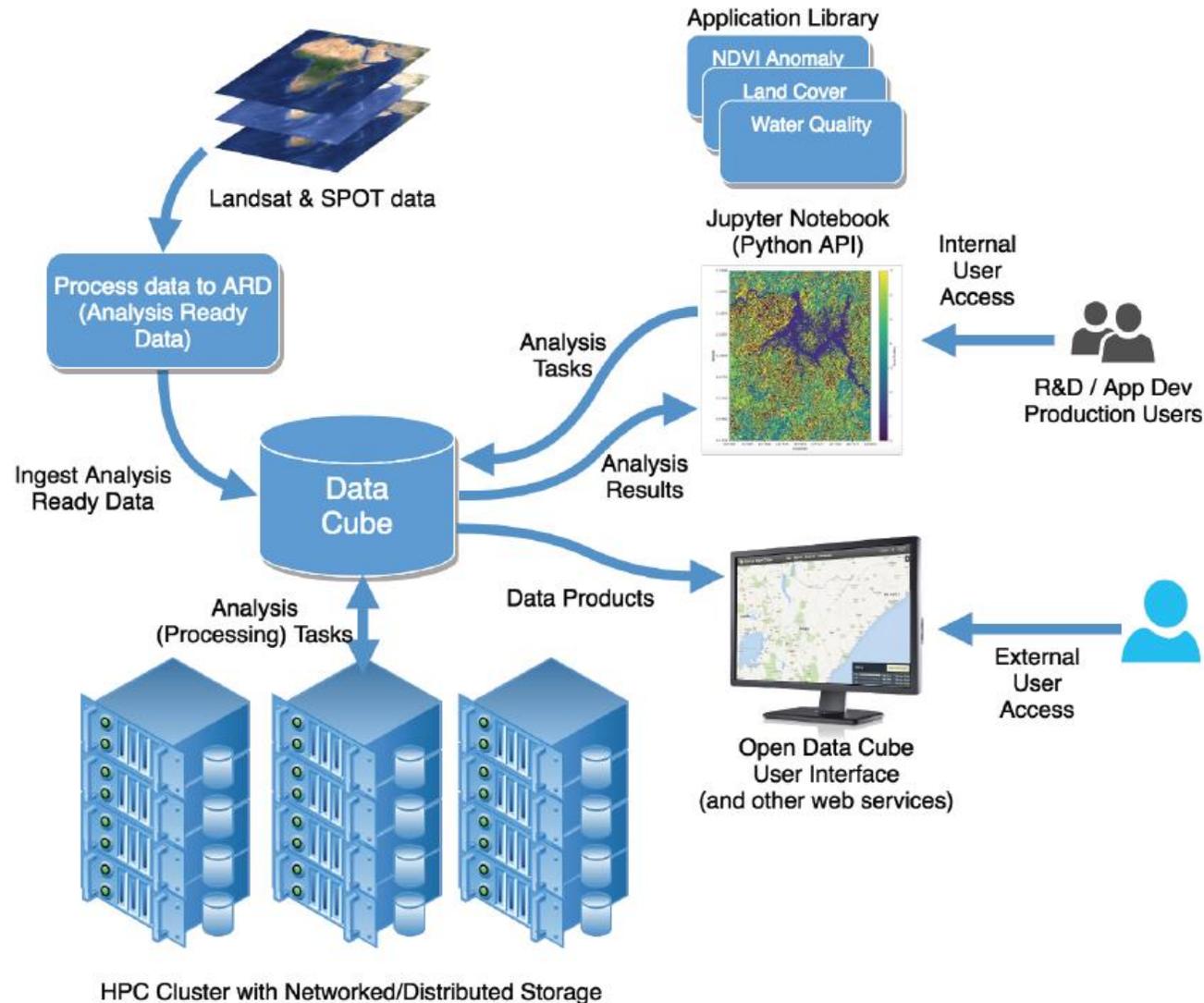


Solutions

- From download driven approaches to web based/cloud processing.
- Freely available data and software.
- Web based high performance computing for the provision of certain products such as ARD data.
- Storage and analysis of big data in Data Cubes.
- Use of Machine learning algorithms for product development.



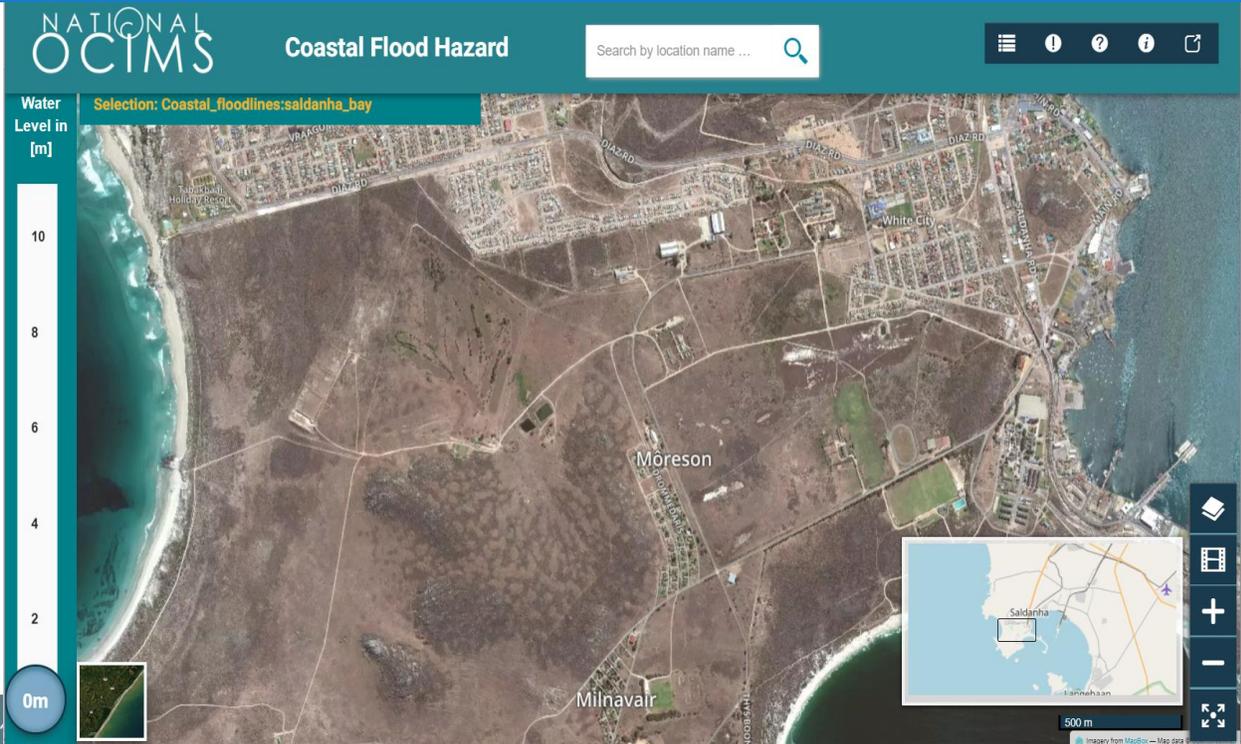
Digital Earth South Africa Architecture Overview



- Shared infrastructure
- Timely access to data
- Expansion of user community
- Innovation and product development



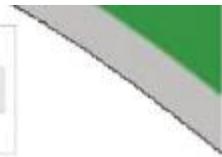
National Oceans and Coastal Management Solutions





GMES AND AFRICA

Wetland Assessment and Monitoring Platform for Transboundary River Basins in Southern Africa (WeMAST)



ZAMBEZI (1.383.498 Mio km², 9 countries):

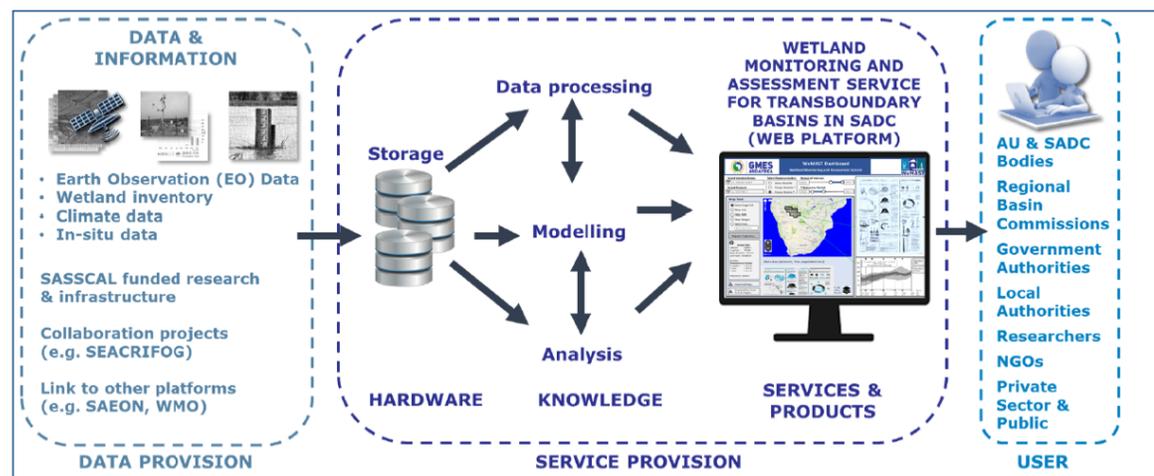
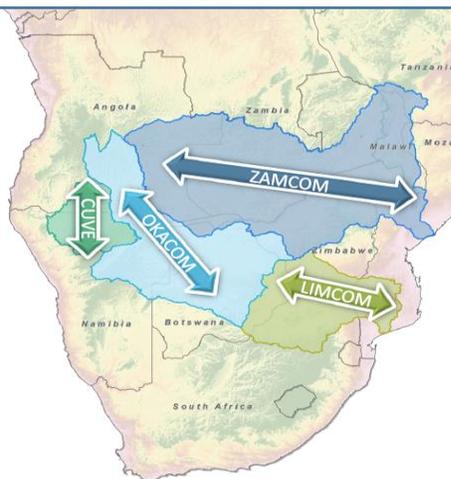
ZAMCOM – Zambezi River Commission

OKAVANGO (704.275 km², 3 countries):

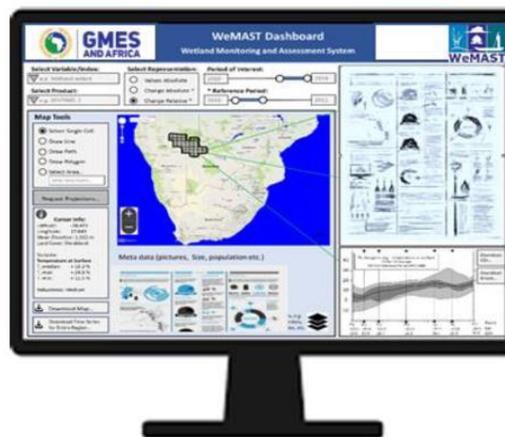
OKACOM - Okavango River Basin Permanent Commission

LIMPOPO (411.553 km², 4 countries): LIMCOM – Limpopo River Basin Commission

CUVELAI (173.686 km², 2 countries): CUVECOM - Cuvelai River Basin Watercourse Commission

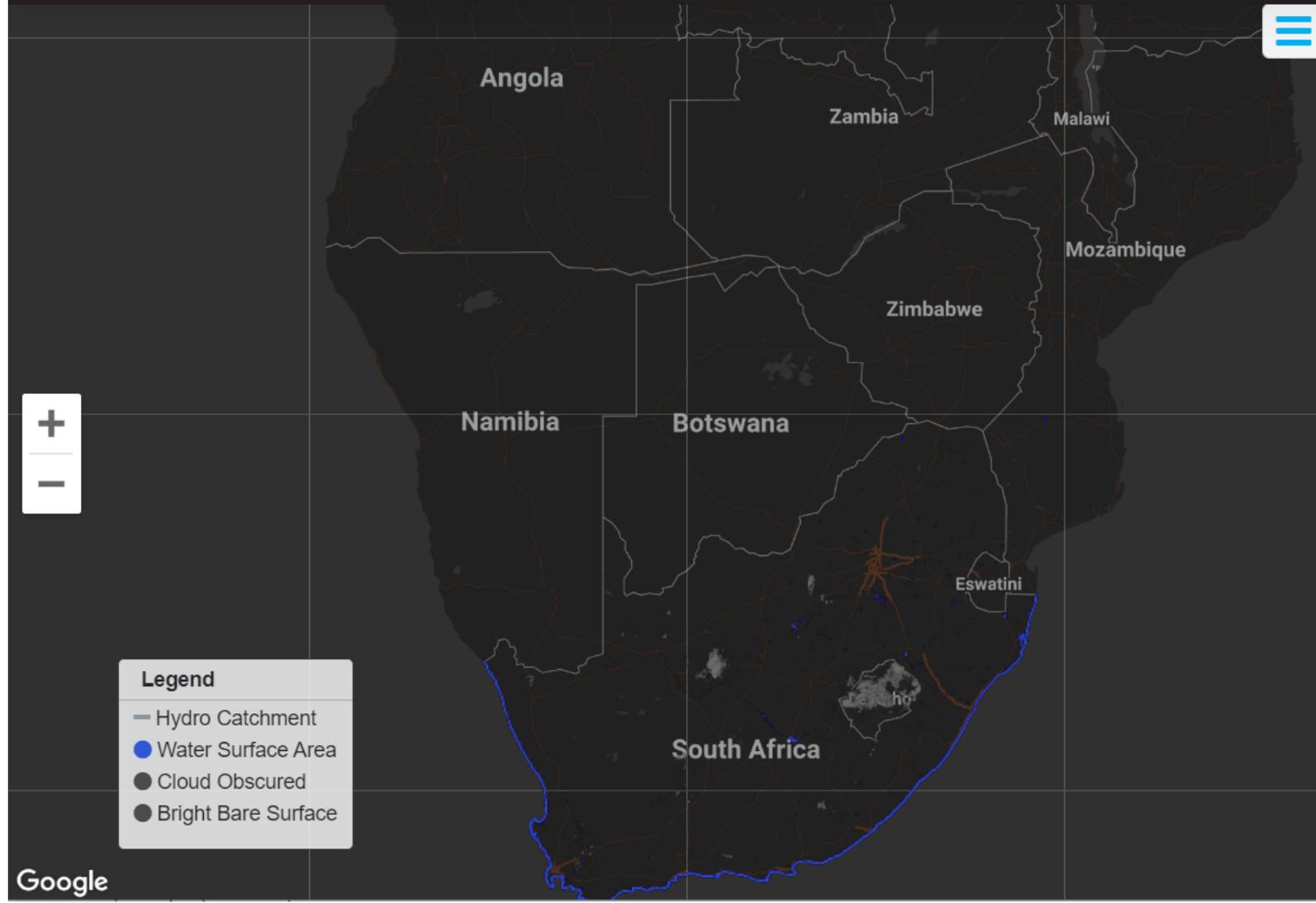


- **Wetland inventory**
 - Wetland extent, type, status
- **Flood mapping**
 - Flood dynamics
- **Vegetation Phenometrics**
 - LAI & NDVI
- **Inland water quality**
 - Algal blooms & total suspended matter
- **Land use and changes**
 - Land use & changes within the basin



- Data
- Information
- Maps
- Statistics
- Trends





About This Webpage

Reset View

DAM ▾

Select an Option ▾

Search for a place, town, ,city...

Toggle Monthly Water Data

Toggle Transparency

October 2019 ?



September 2019 ?



August 2019 ?



Long Term Extent ?



Long Term Occurrence ?



Toggle Catchment Boundaries

- Quaternary Catchment
- Tertiary Catchment
- None



Human Settlements Monitoring Tool (HUSET)

**Earth Observation
for
Sustainable Human Settlements**

Human Settlements Monitoring Tool (HUSET)

HUSET provides data and information human settlements growth patterns, informal settlements, green and open spaces, flood risk areas, infrastructure and services to promote integrated planning and monitoring of development agendas including the National Development Plan, Agenda 2063 and Sustainable Development Goals.

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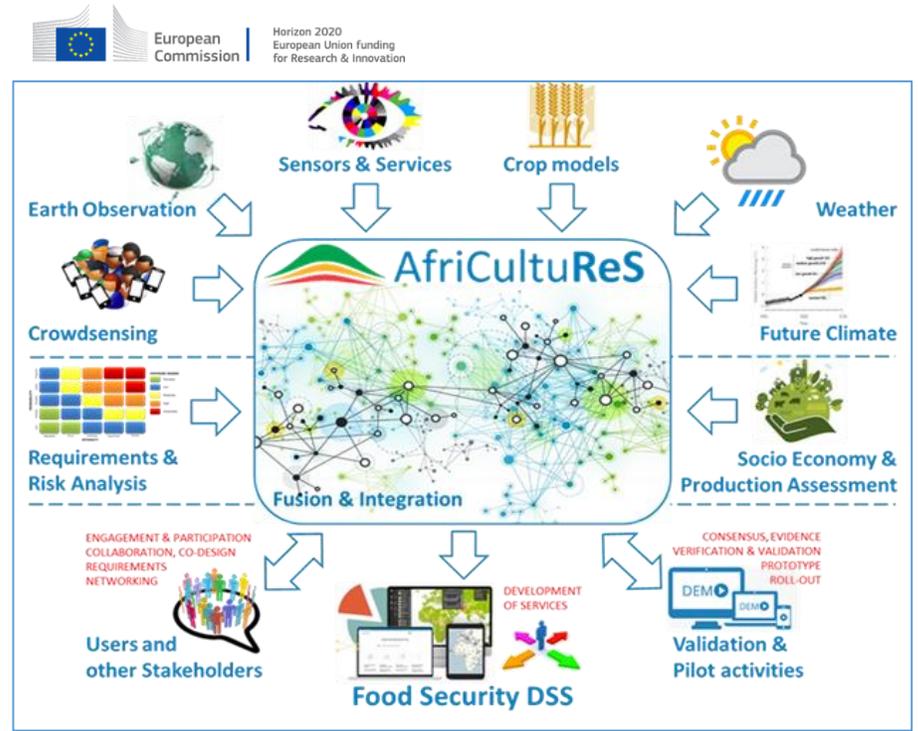
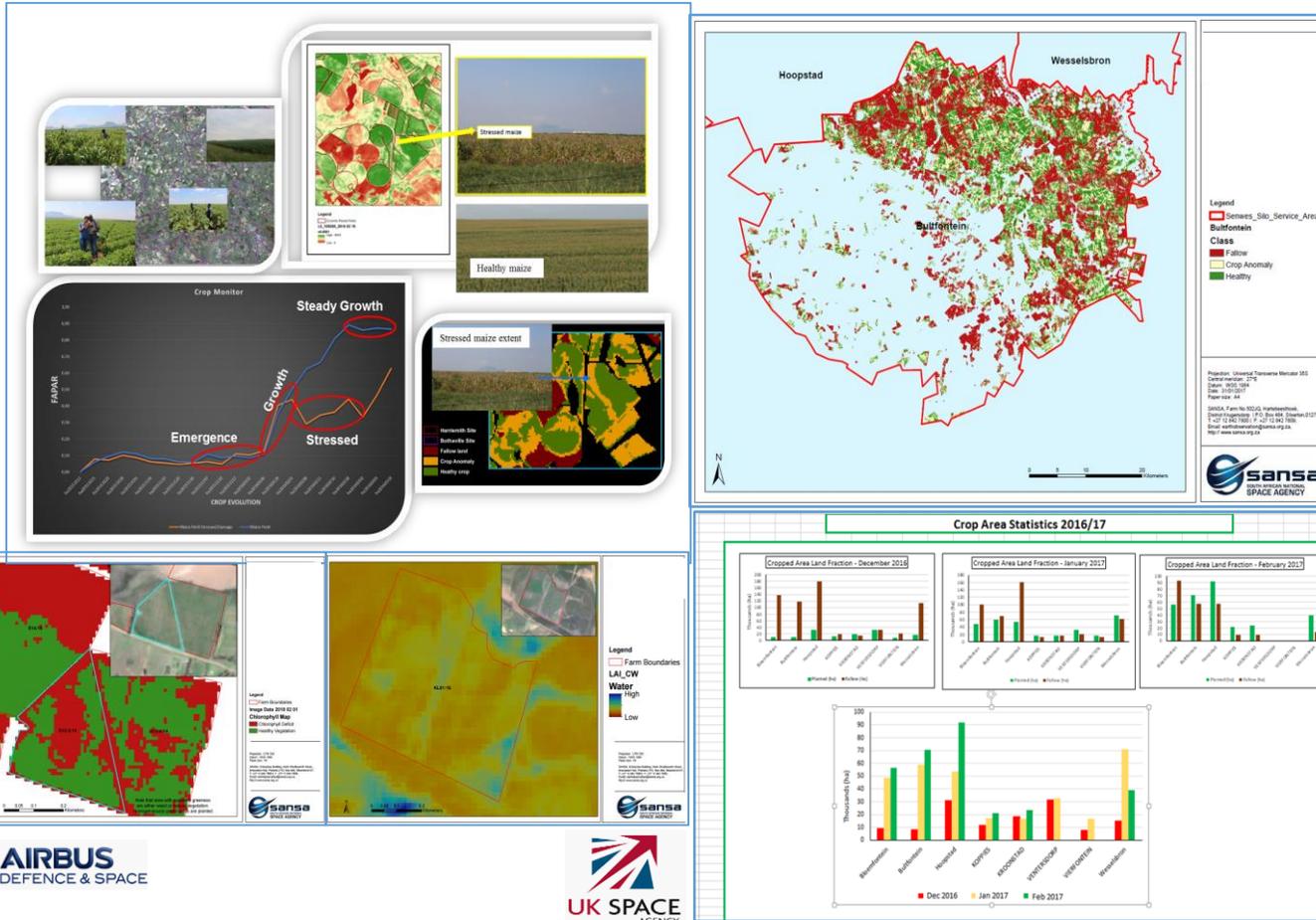
Human Settlements Monitoring Tool

Rapid urbanisation poses a challenge to government authorities in developing economies as the demand for habitable land and municipal services increases. If, poorly managed, rapid urbanisation can result in poverty and the proliferation of informal settlements and urban sprawl. High spatial resolution satellite imagery provides data required to create and manage databases of urban growth and related infrastructure at high scale. The increased temporal resolution enables more efficient monitoring of land uses. Human Settlement Monitoring Tool (HUSET) provides fundamental datasets and information on urban growth and human settlements to support integrated planning and sustainable human settlement development.

<http://products.sansa.org.za/mapApp/index.html>

- Human settlements growth patterns
- Informal settlements mapping
- Flood risk area mapping
- Infrastructure and services development

Food Security Decision Support Systems



- Crop condition monitoring
- Yield Forecasting
- Rangelands condition monitoring
- Crop stress Mapping
- Cropped area statistics



Benefits of smart solutions

- Key drivers for economic growth
- Enable timely decision making.
- Upscaling is easy.
- Provide meaningful trend analysis
- Reduction in overheads.



Take home....

- The involvement of relevant stakeholders is key.
- The public-private partnerships and collaborations are crucial .

Remember the three questions: why, how and for whom/what?

“Smart solutions for the right problems/challenges”

