Earth Observation applications in agriculture and food security : A policy perspective

AGBIZ GRAIN SYMPOSIUM
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FOOD SECURITY CHALLENGES

- Food security faced with limited availability of arable land, fresh water resources and issues of environmental change.
- Projected world population of 9.7 billion by 2050 (FAO,2009).
- Africa's contribution to total global agricultural exports declined from 8% in the 1970s to 2% in 2017 (Veras, 2017).
- South African National Policy on Food and Nutrition has identified the following :
  - inadequate safety nets and food emergency management systems.
  - inadequate utilization of productive land and,
  - inadequate, timely and relevant information on food security information for the country.
- StatsSA 2017 report stating the increase in number of people living in poverty which has negative impacts on access to food

Policy and decision makers must have access to comprehensive, systematic and accurate information on agricultural activities.

AGRICULTURE AND EO INFORMATION NEEDS

- Proper planning , development and management of agricultural practises.
- Monitoring of condition and health of agricultural production systems e.g. field crops and pastures.
- Yield estimations and yield gap analysis, commodity markets.
- Crop assessment index to compare crop growth and production rates.
- Climate risk assessments, rainfall and drought impacts on agriculture.
- Environmental and land degradation.
- Water quality and water use monitoring.
- Information on harvested area, damage assessment due to floods, pests and diseases.

FOOD SECURITY MONITORING INITIATIVES

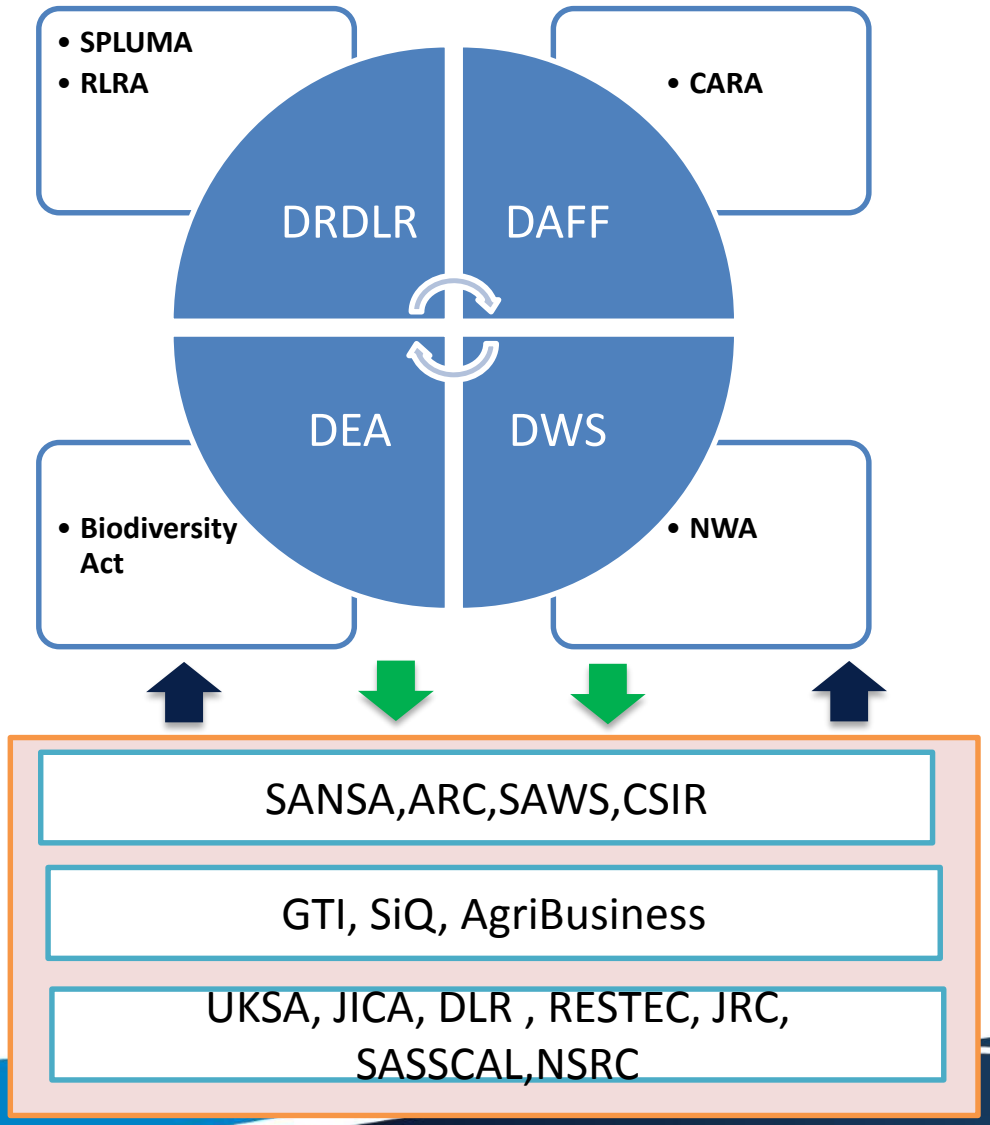
- Producer Independent Crop Estimate System (PICES) – ARC, SiQ and GTI
- Rain4Africa - ARC
- FEWSNET – Famine Early Warning Network
- GEOGLAM – AMIS, Crop monitor , RAPP map (http://map.geo-rapp.org/), Vegetation cover anomaly
- AfriCultuReS – Enhancing Food Security in African Agricultural Systems with the support of Remote Sensing

Tackling food security requires transdisciplinary and multi-sectoral interventions and applications that link environmental observations with social and economic data.

Agricultural remote sensing information is critical for assessing South Africa's food security imperatives

PARTNERSHIPS FOR TECHNOLOGY INNOVATION

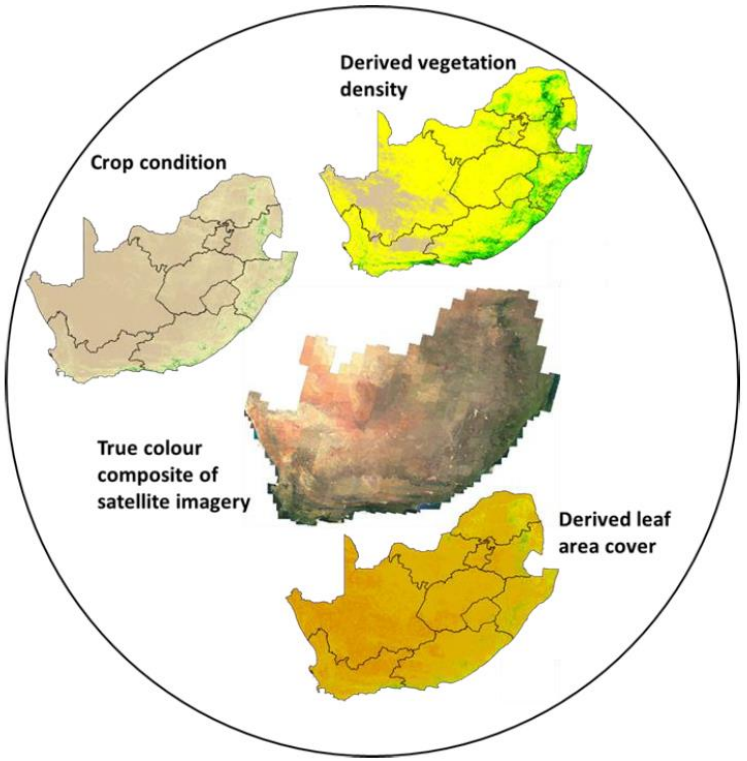
Public-Private-International Partnerships

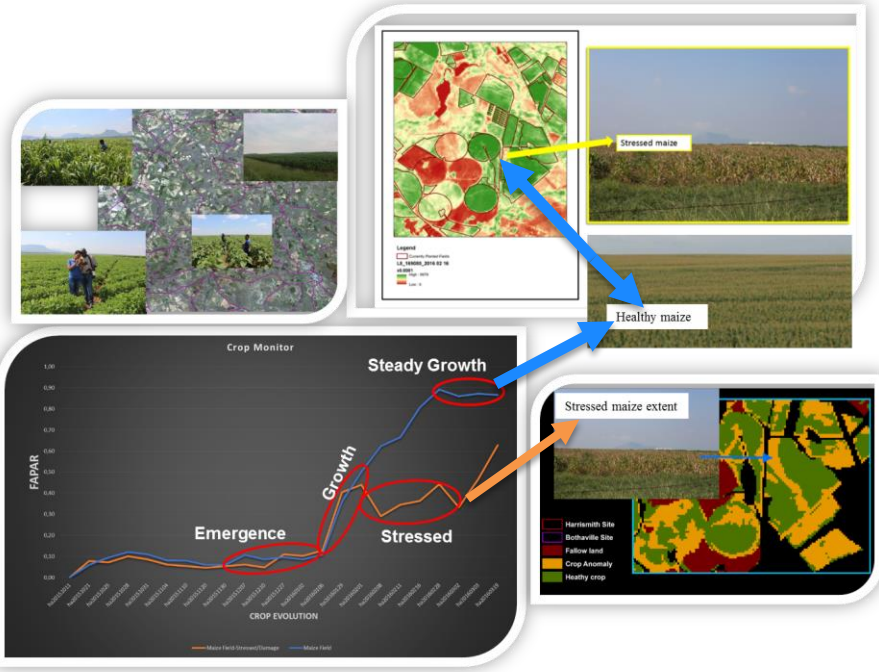


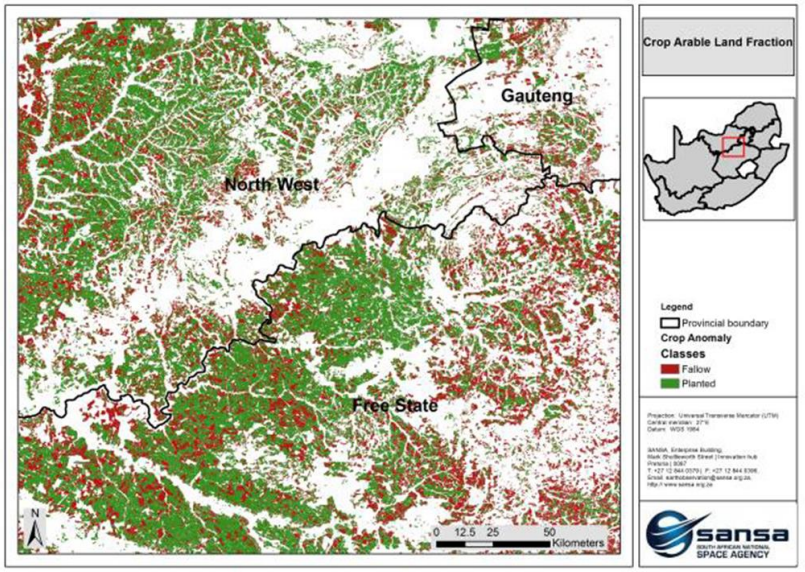
SANSA'S PRODUCTS AND SERVICES

- National mosaic of high-resolution satellite imagery;
- National base maps of vegetation density layers;
- Vegetation condition and stress monitoring capabilities;
- Assessment of crop and other vegetation phenometrics;
- Estimating cropped arable land fraction and production area statistics;
- Environment risk assessment and monitoring;
- Water resource assessment and monitoring;
- Aboveground biomass and yield estimation; and
- Agricultural drought assessment and monitoring.

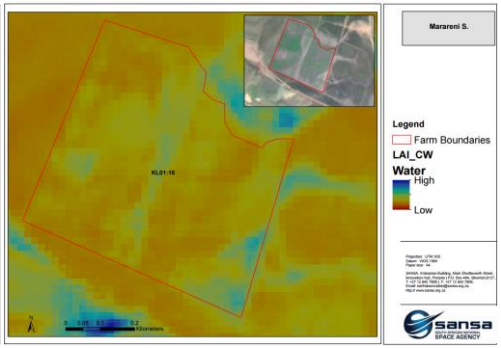
The South African National Development Plan (NDP: 2030) pinpoints the role that different sectors of society need to play to address the triple challenge of poverty, inequality and unemployment by 2030.



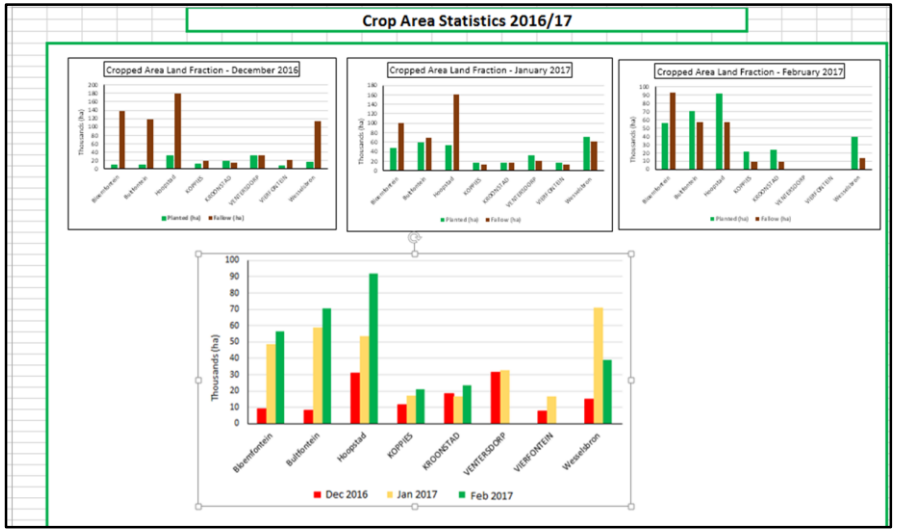




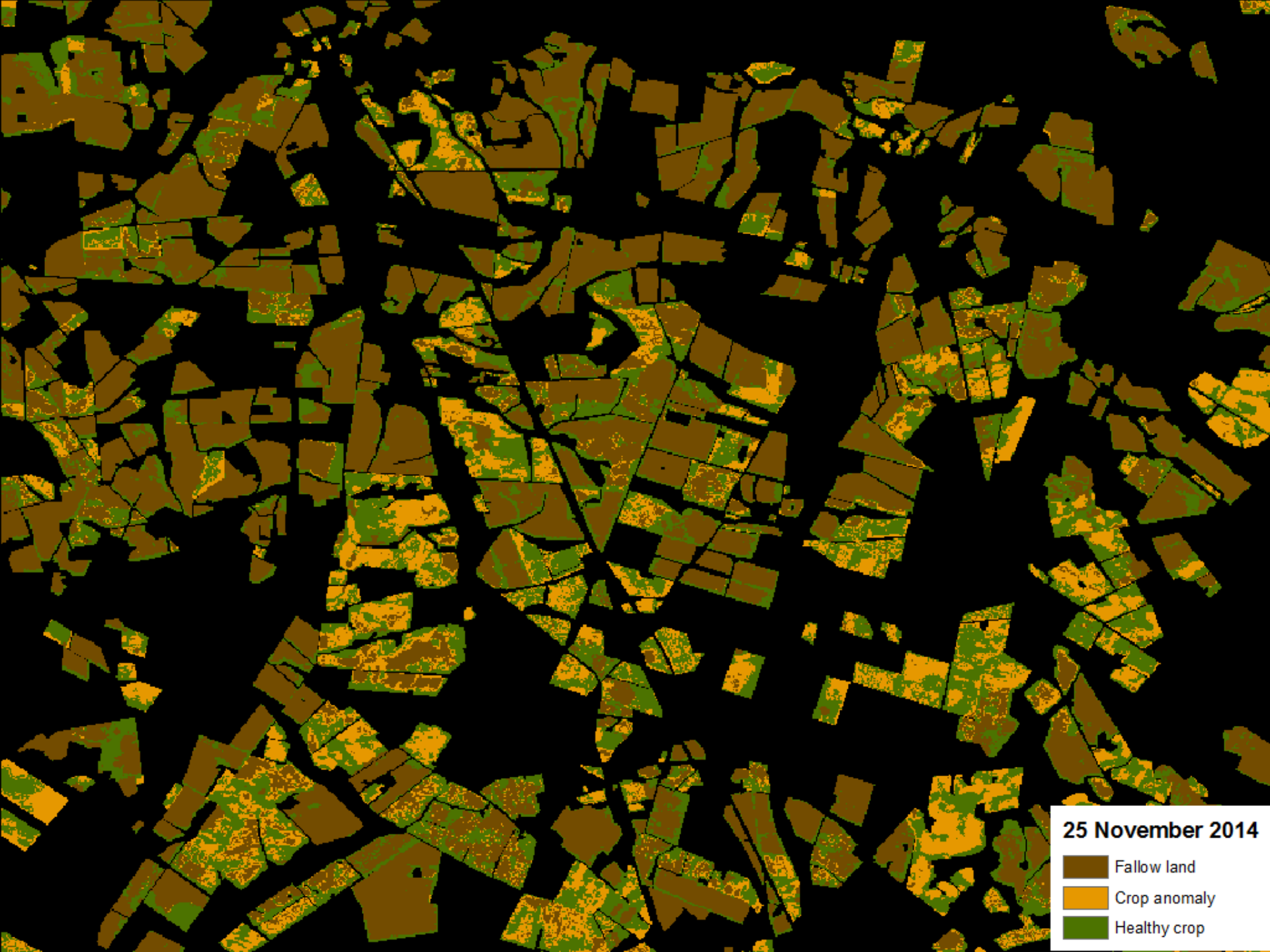
Nutrient Deficiency



Water Logging

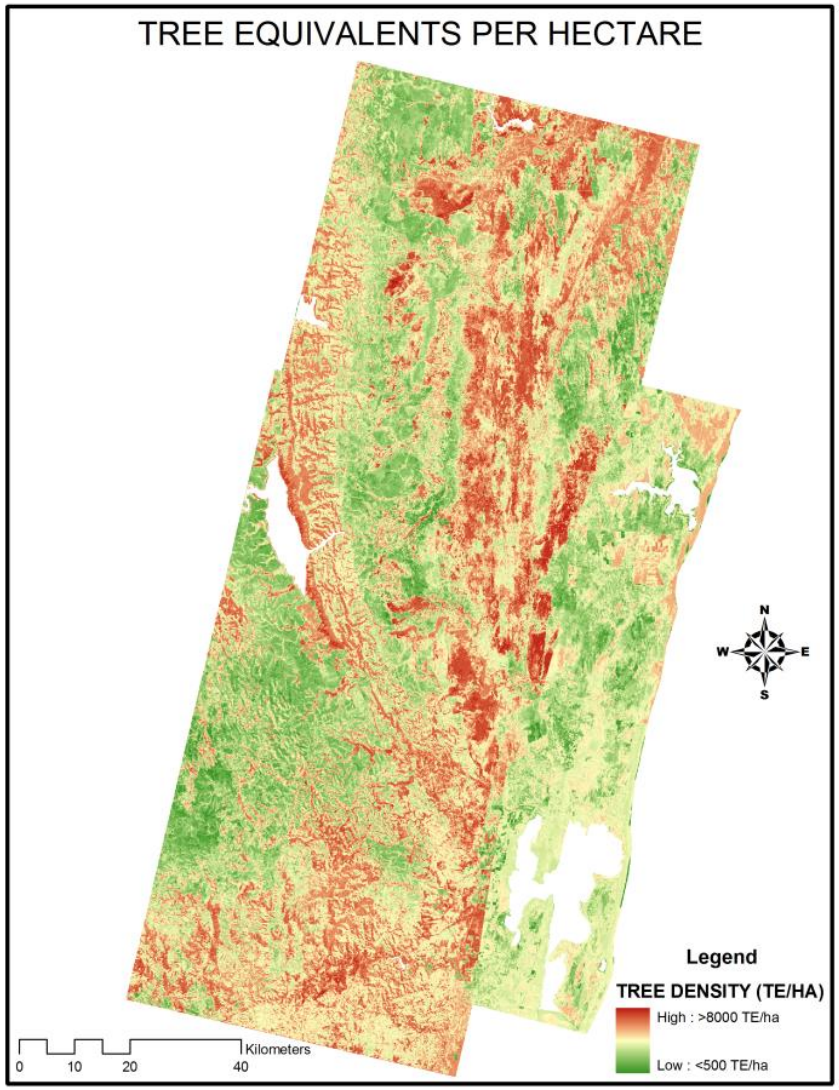


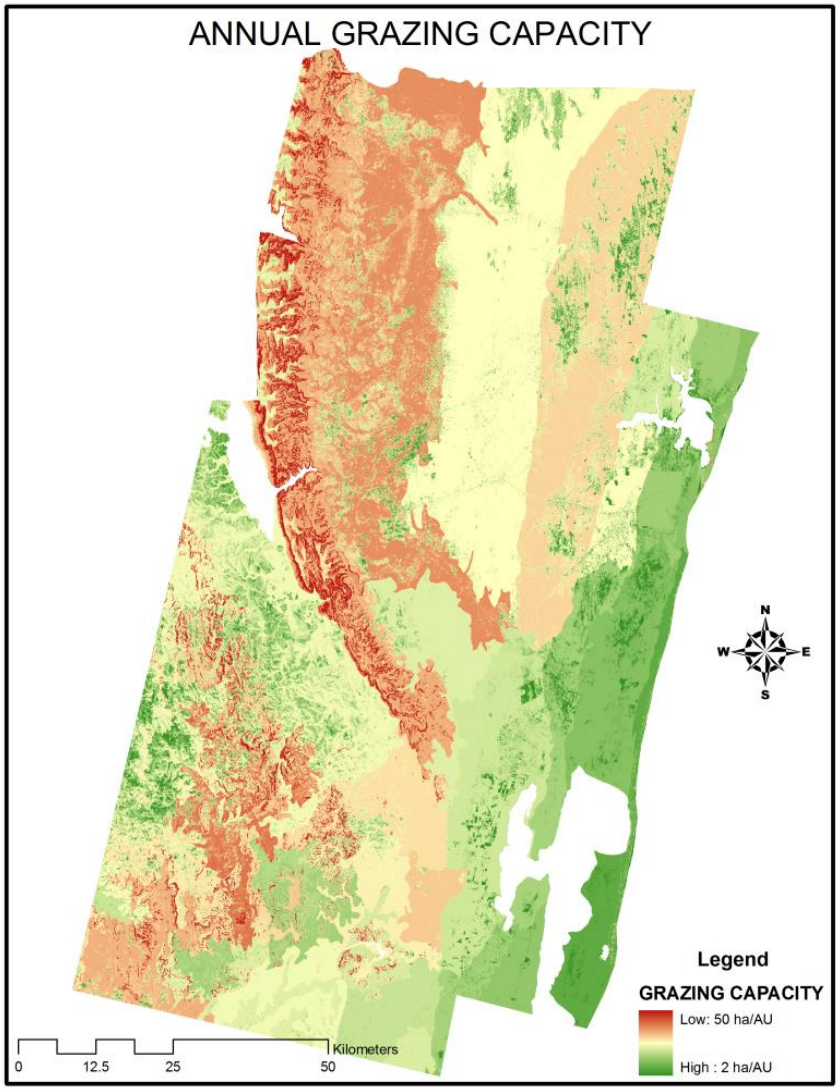
Actionable information for decision making


25 November 2014
Fallow land
Crop anomaly
Healthy crop

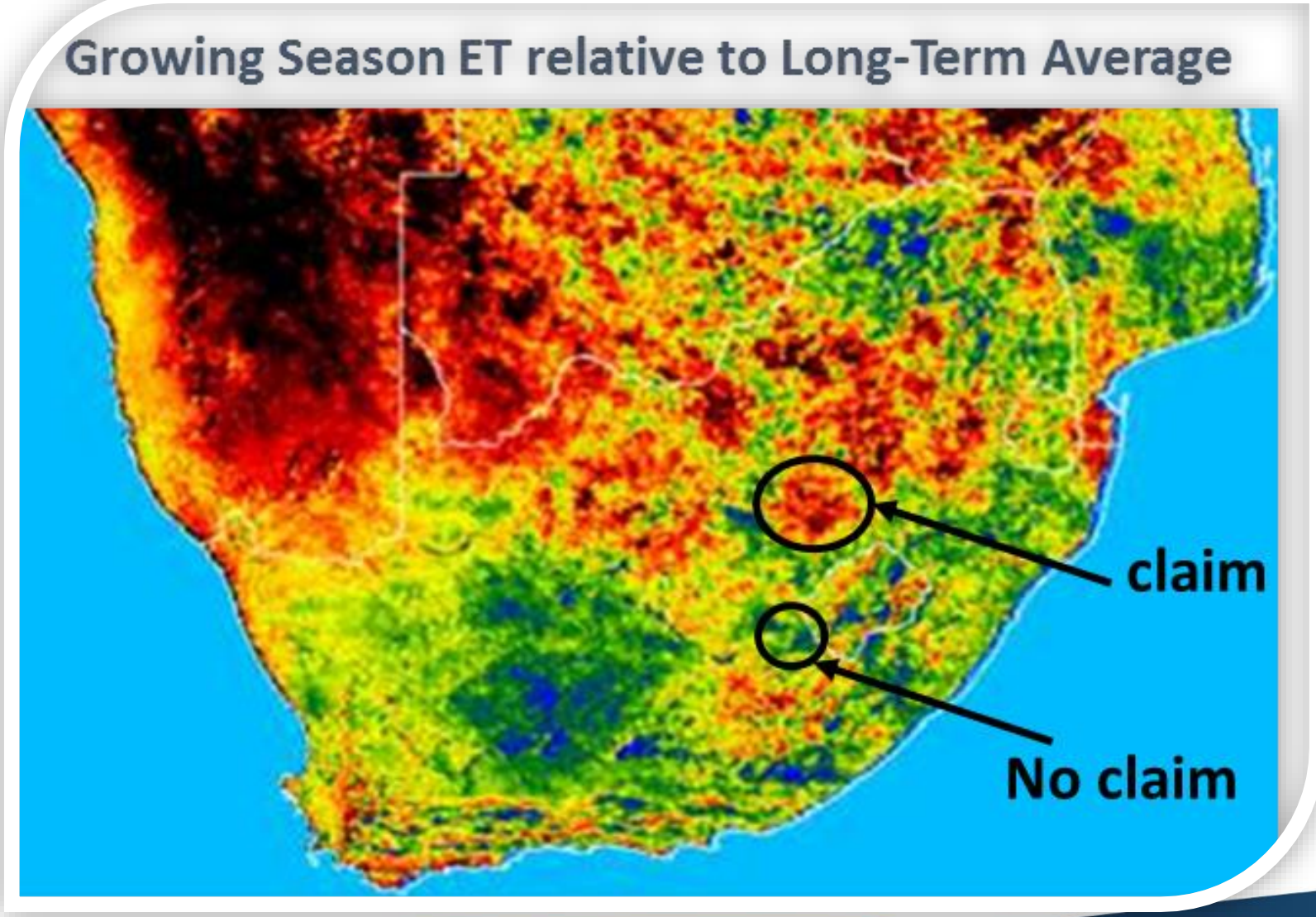
RANGELANDS MONITORING

- Develop tree density (TE/ha) spatial layer;
- Tree density corrected grazing capacity model

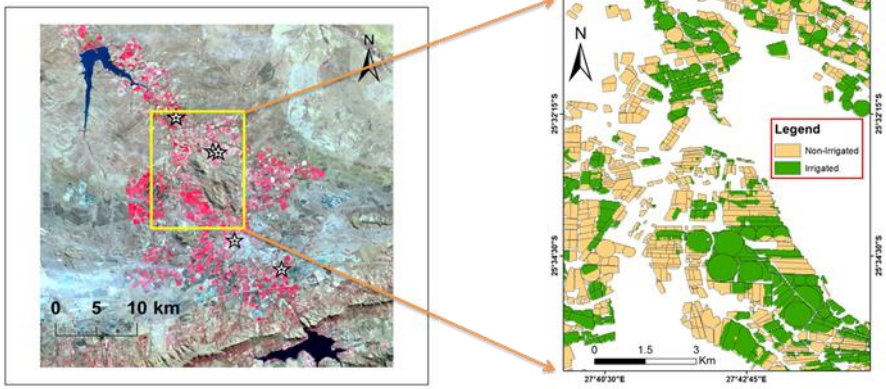




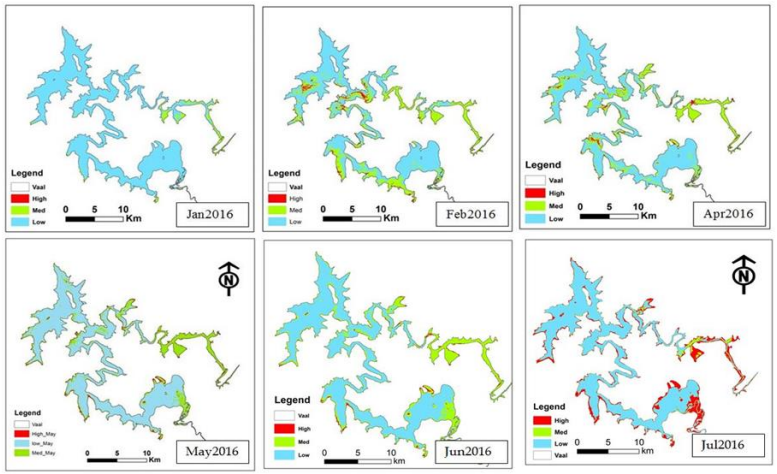
Application examples

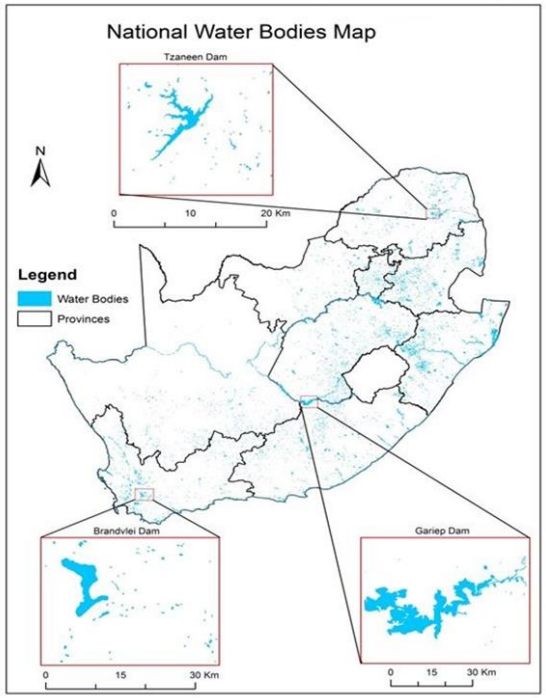


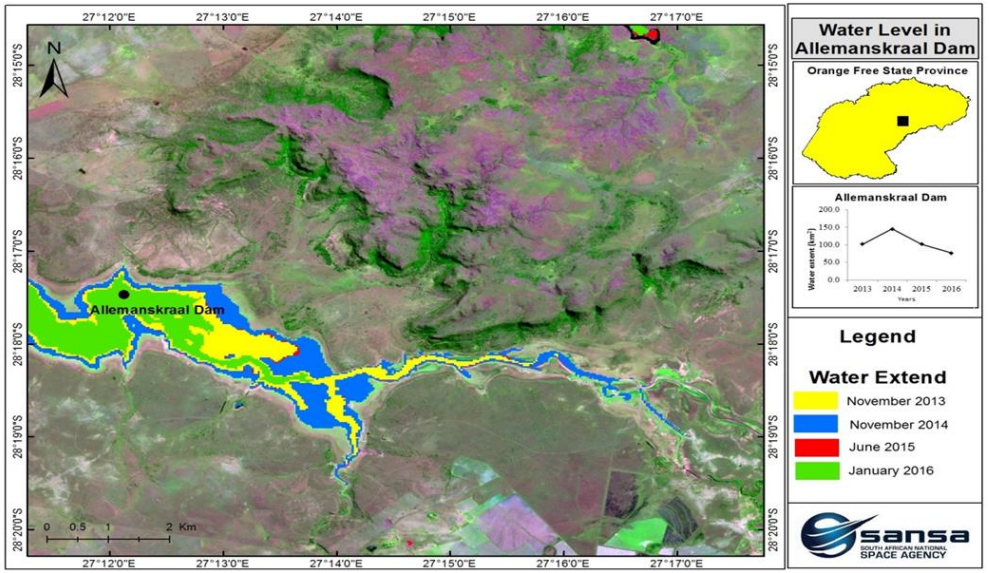
Irrigation monitoring



Water Quality Mapping in Vaal Dam







EO data provides actionable information on water quality, water use and water levels in dams and other water bodies.

Water Level Mapping in Allemanskraal Dam

Thank you!

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