



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



SANSA EO-VALUE ADDED PRODUCTS

Current and Future Products

Willard Mapurisa, Dr. P. Mhangara, Oupa Malahlela,
Bruno Meyer

2013 SPOT 5 Mosaic Launch
05/09/2013
Innovation Hub

Contents

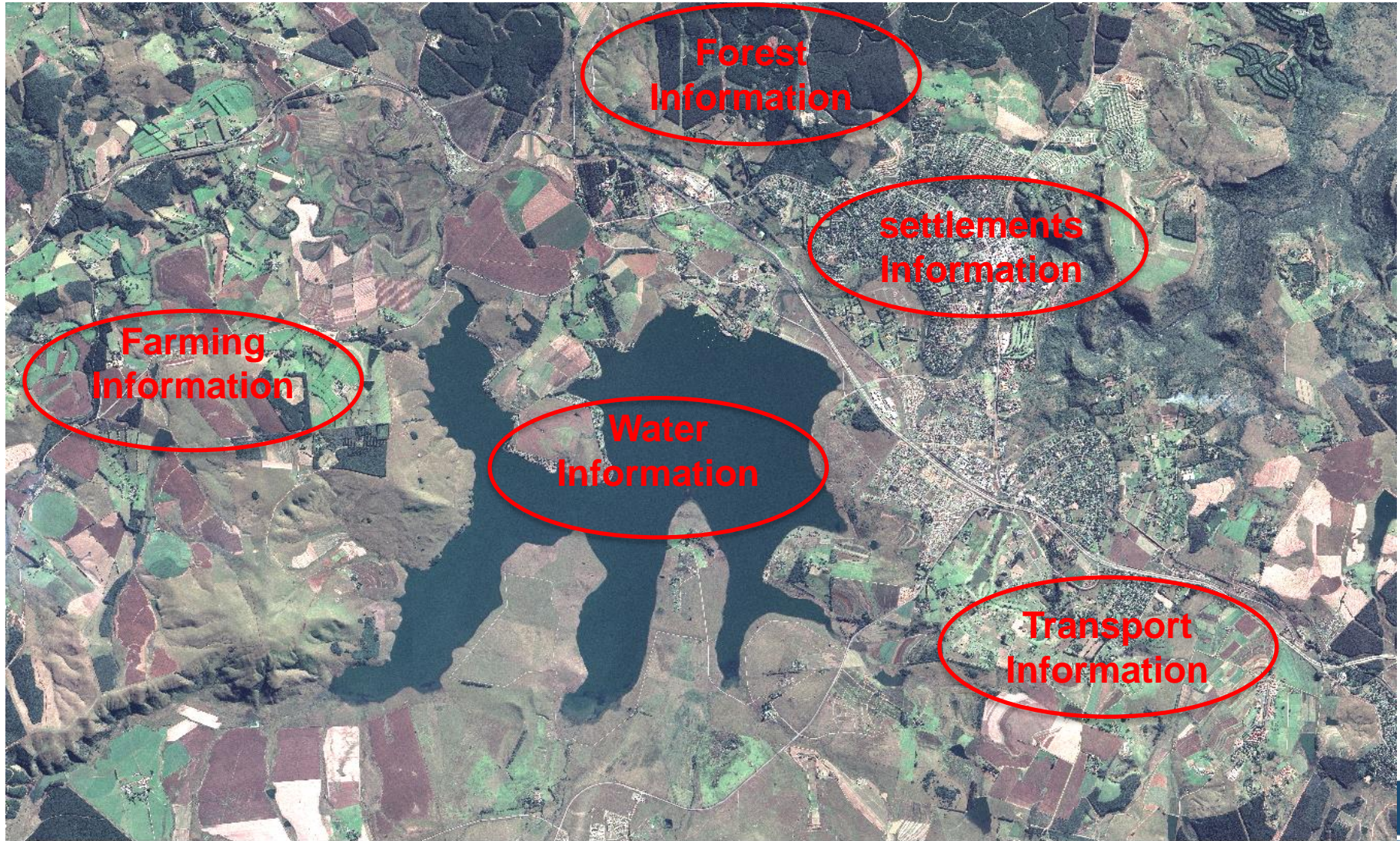
- Value of Satellite Imagery
- Challenges
- SANSA Value added products
- NDVI
- NDWI
- Water Bodies
- Future VAPs
- Conclusion

Value of Satellite Imagery

- Many Datasets available
 - SPOT
 - Landsat 8
 - Sentinel
 - CBERS
- Value not in Raw image data but in Value Added Products (VAPs)
- Users require derived information
 - Base Maps (Water, Vegetation etc..)
 - Risk Maps
 - Crop yield estimates
 - Thematic Maps
 - Plant health

Image Information

- SPOT




Challenges

- Challenges w.r.t information extraction (VAPs)
 - Limited Hardware and Software (Intensive processing)
 - Limited manpower
 - Insufficient knowledge transfer
 - Focus on local rather than national / global products
 - Funding
- As SANSA, the objective is to assist
 - User needs assessments
 - National VAPs that provide information to assist Government and general public
 - VAPs as input to decision making

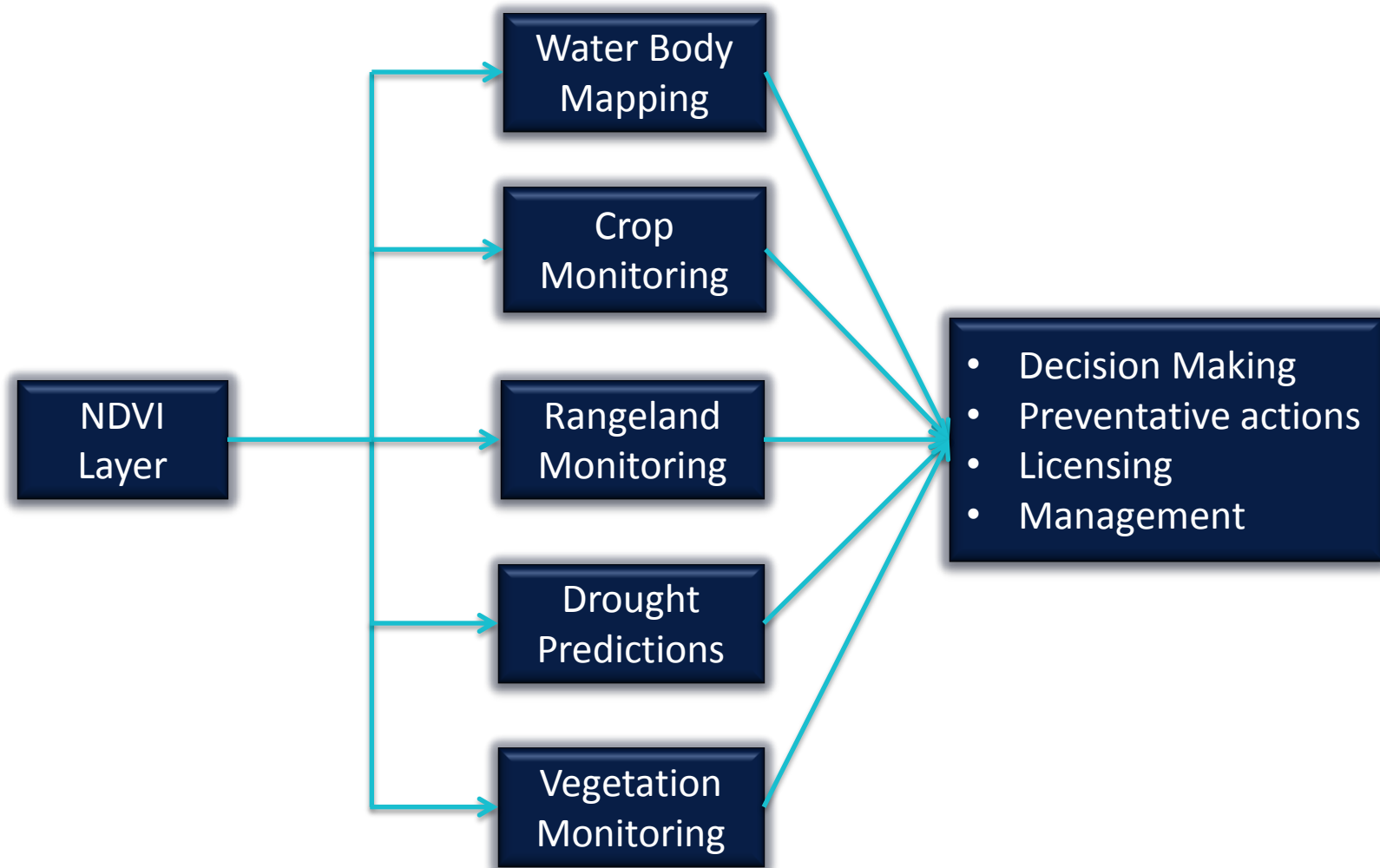
Value Added Products

- SPOT Mosaic
- TOA, Brightness and Temperature Products
- Radiometric Indices
 - 30 day Normalised Difference Vegetation Index (NDVI)
 - 30 day Normalised Difference Water Index (NDWI)
 - Other Radiometric Indices
- Base Maps (National)
 - 30 Day Water Bodies Layer (Medium resolution – 30m)
 - 12 months Water Bodies Layer (High resolution – 6m)
 - Human Settlements Layer

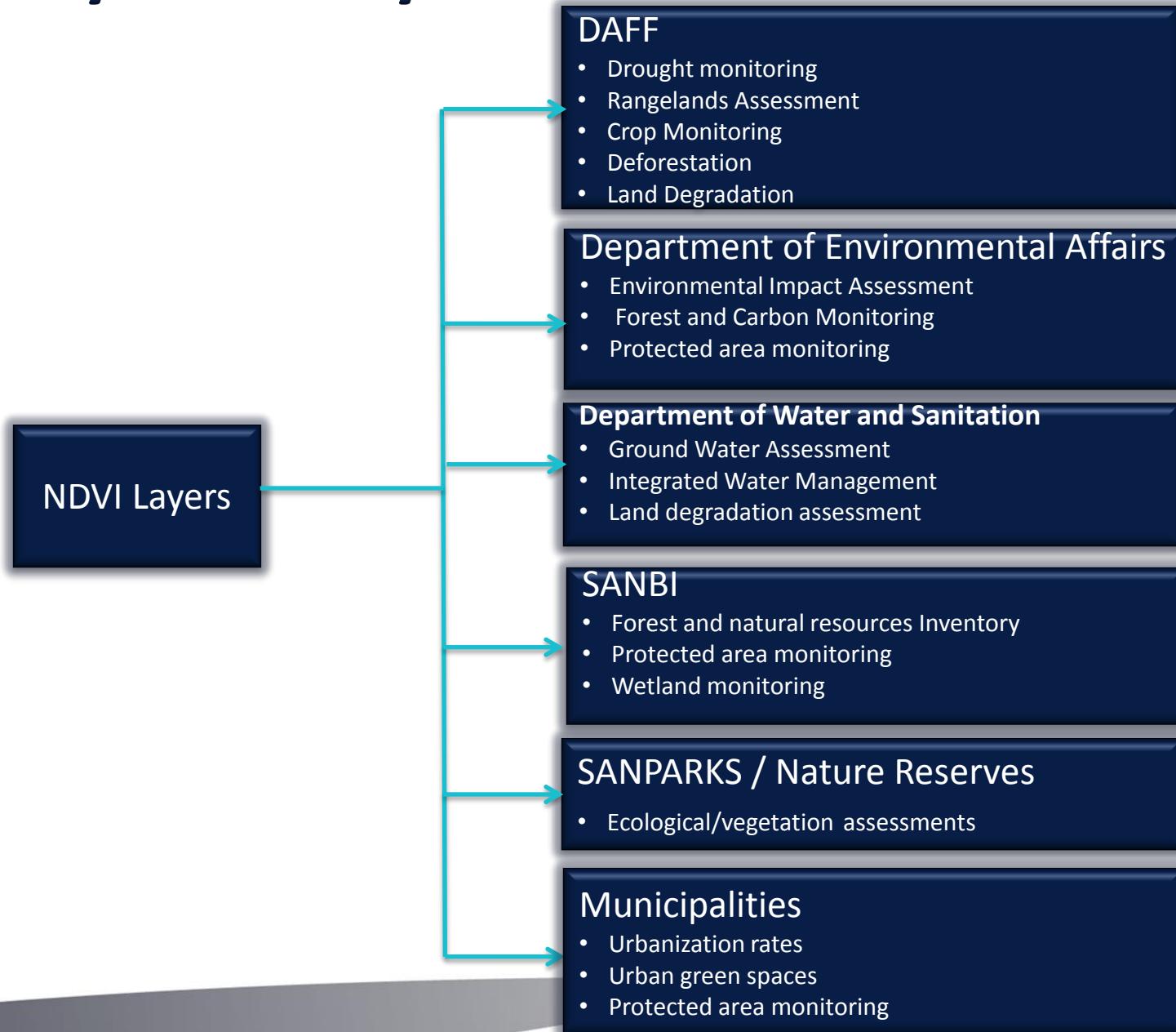
CONSERVATION AND AGRICULTURAL RESOURCE ACT (Act 43 of 1983)

- To provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith
- 

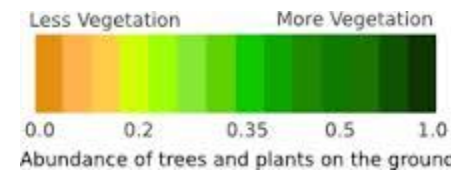
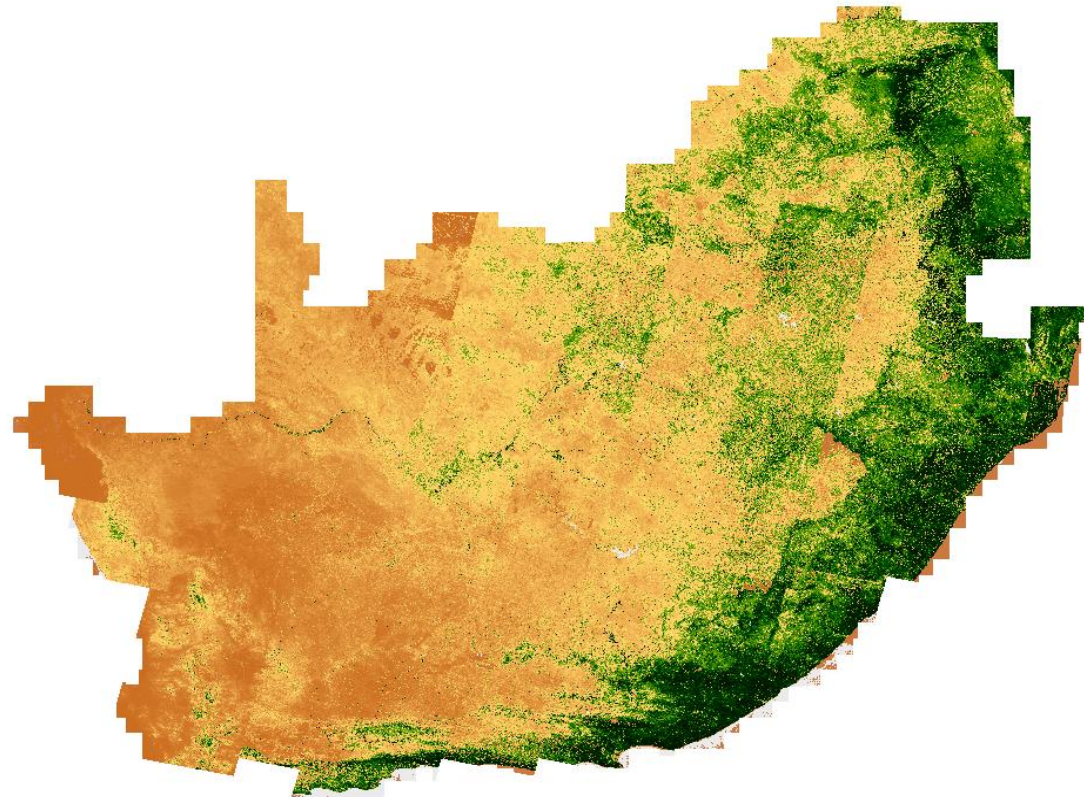
Why NDVI Layer?



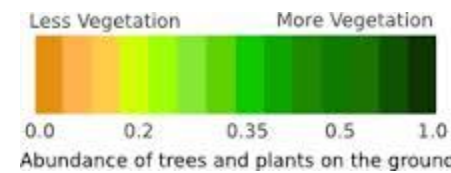
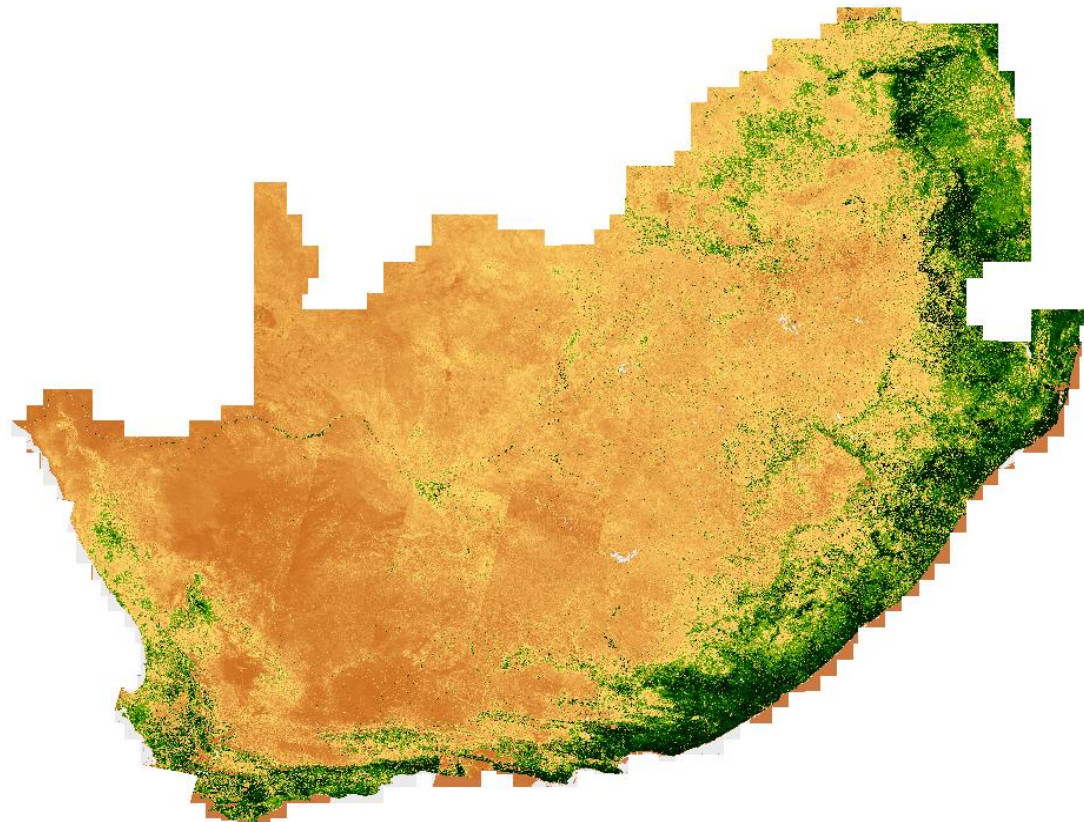
Why NDVI Layers?



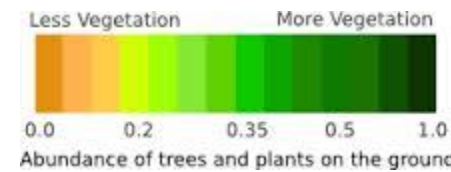
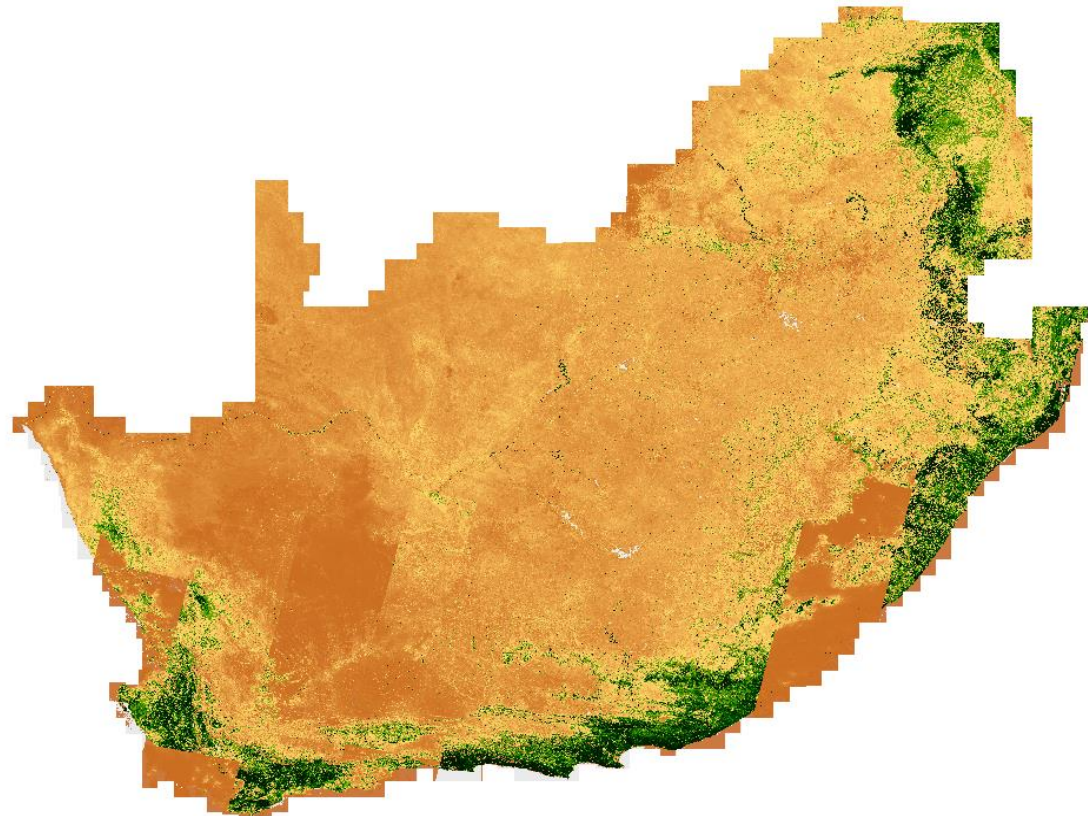
NDVI – May 2013



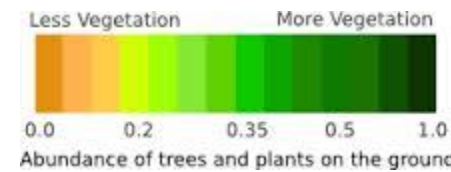
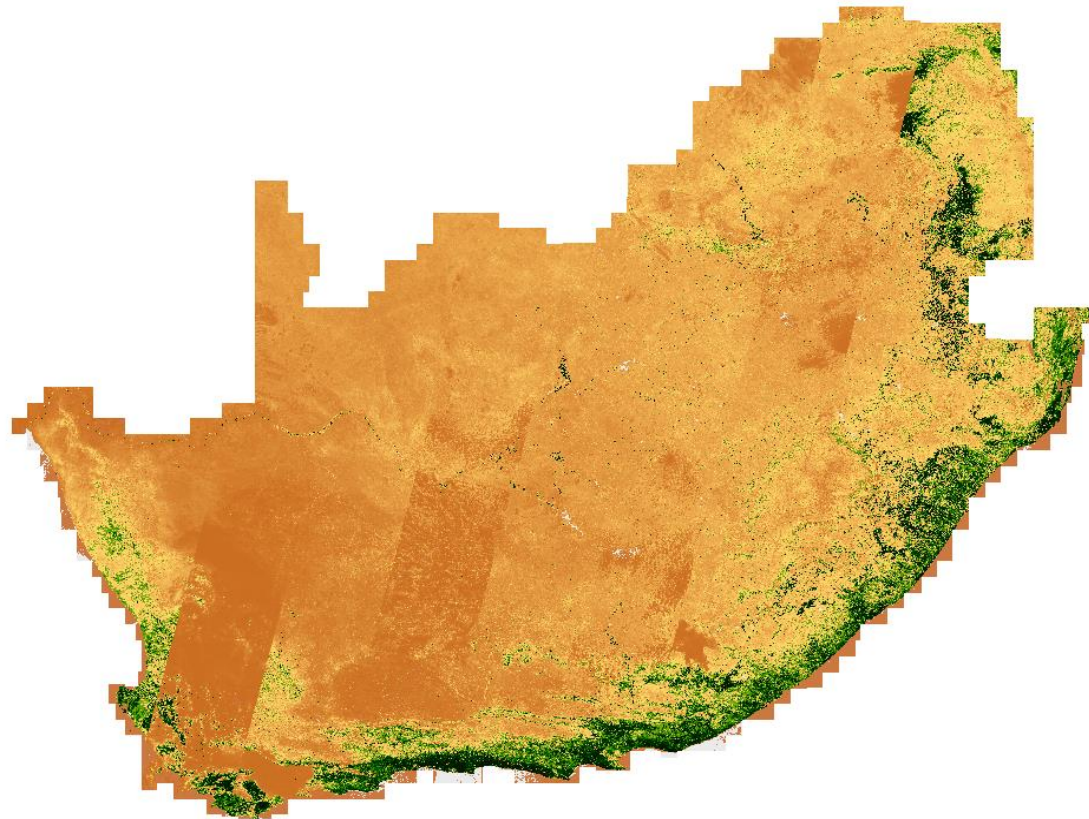
NDVI – June 2013



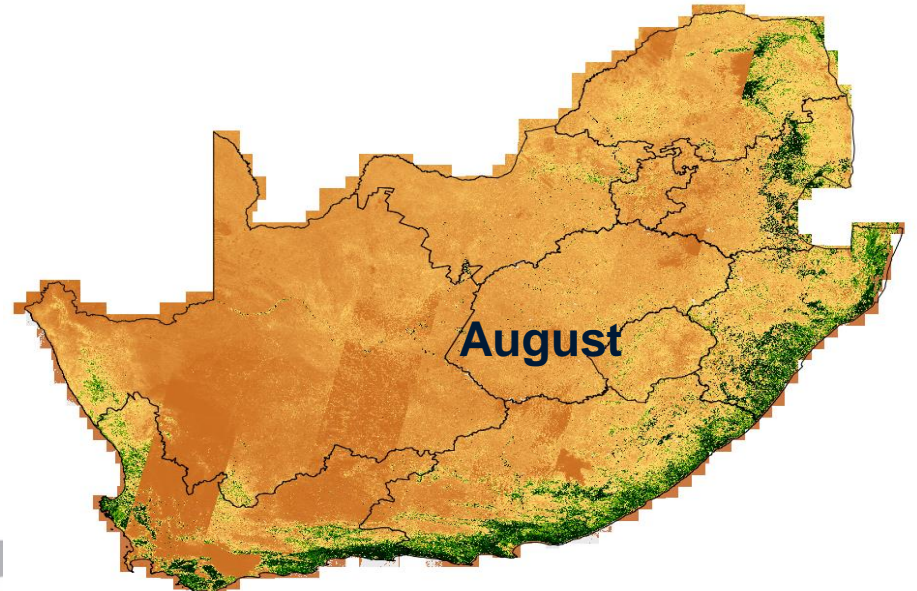
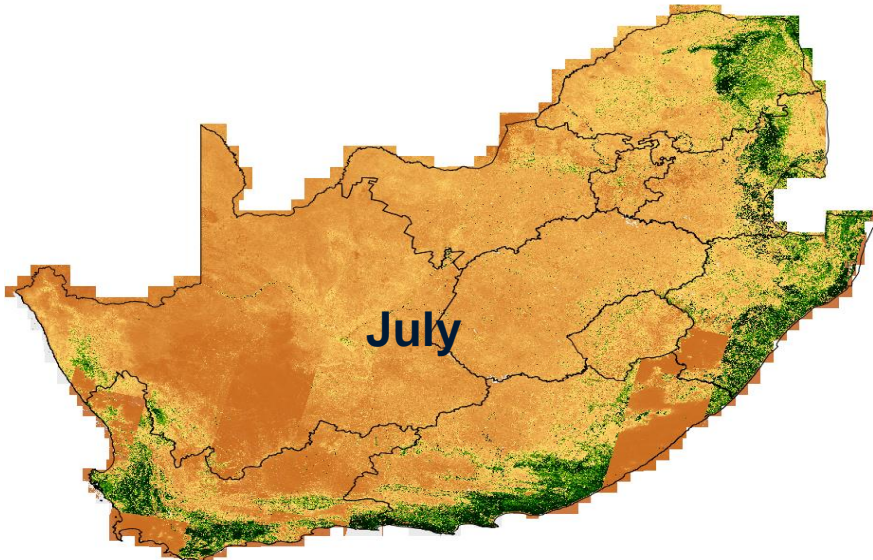
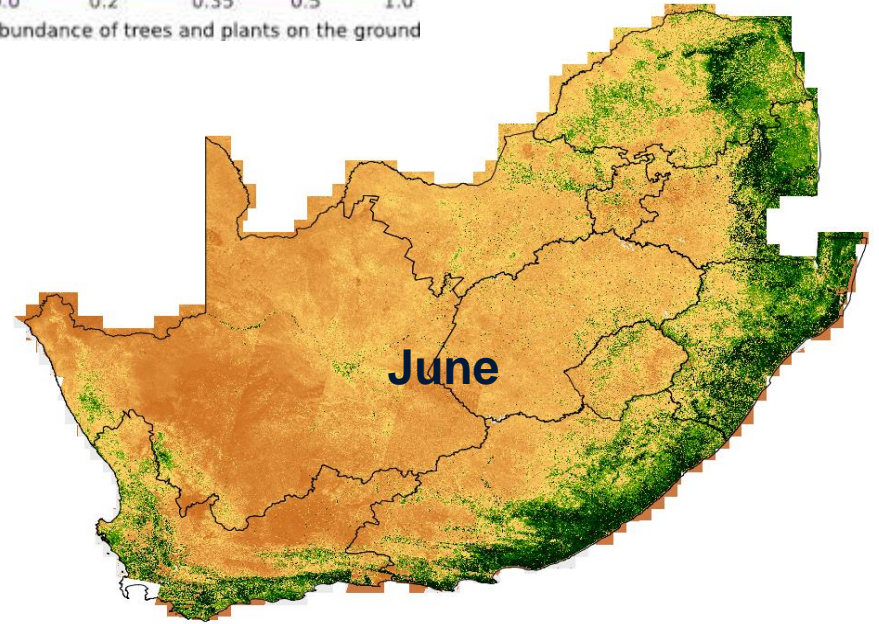
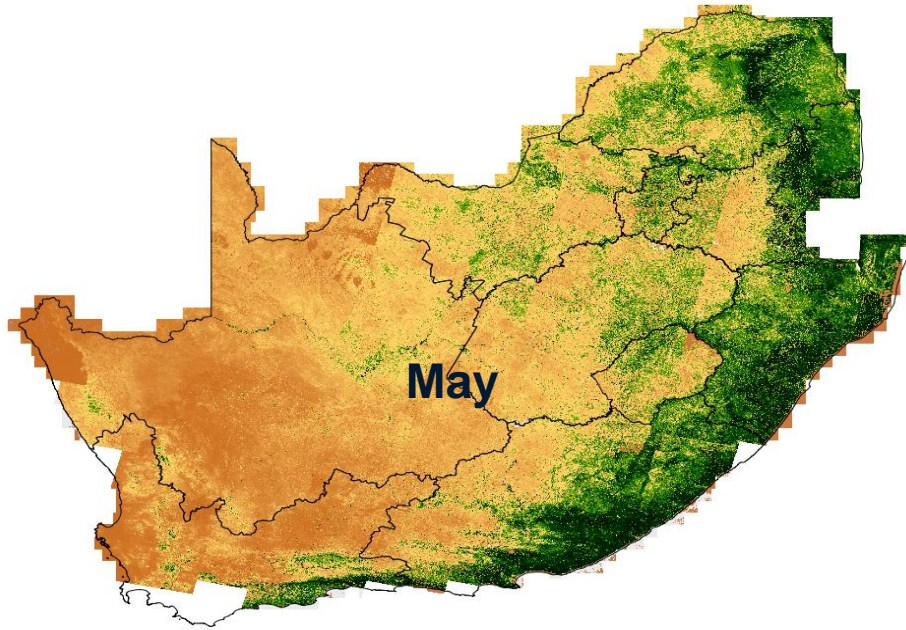
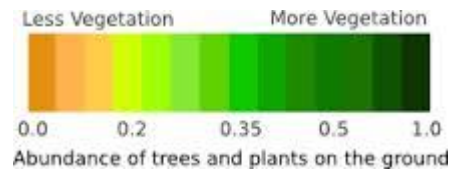
NDVI – July 2013



NDVI – August 2013



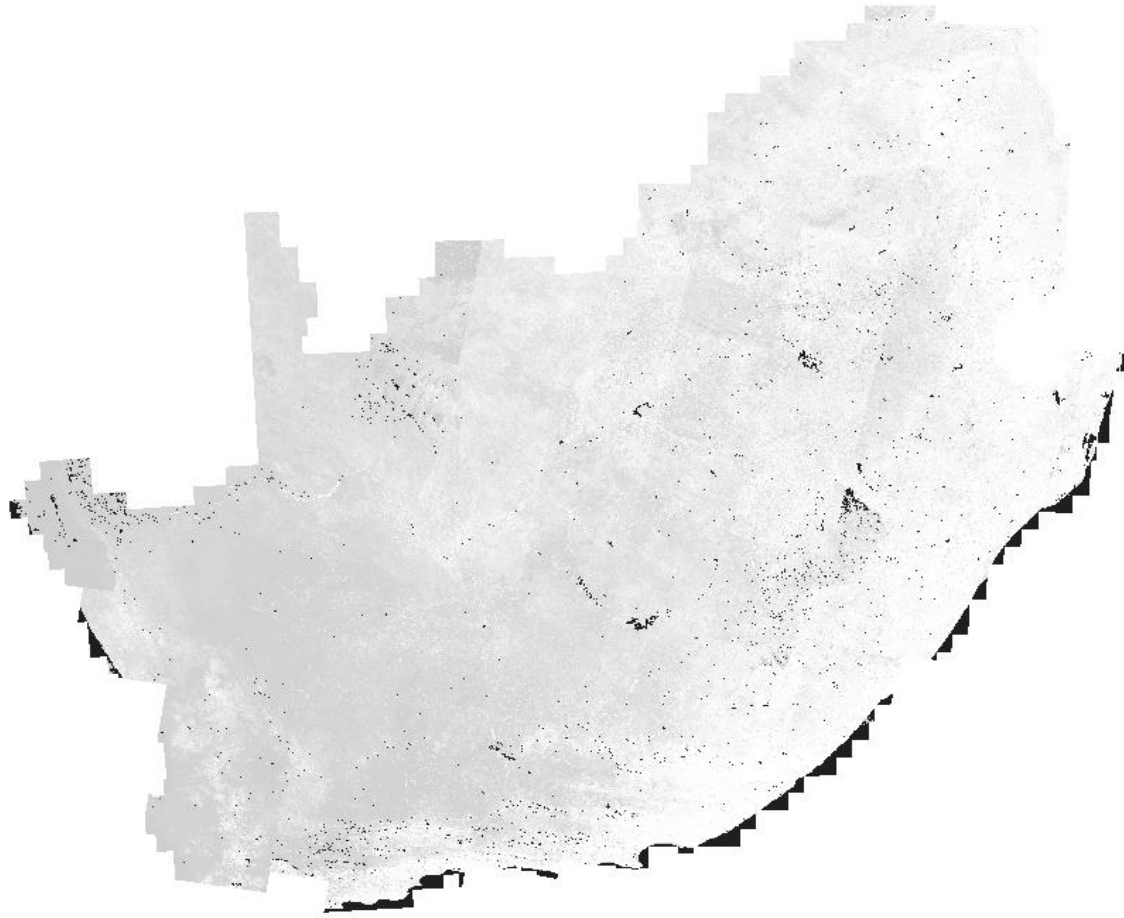
NDVI: May – August 2013



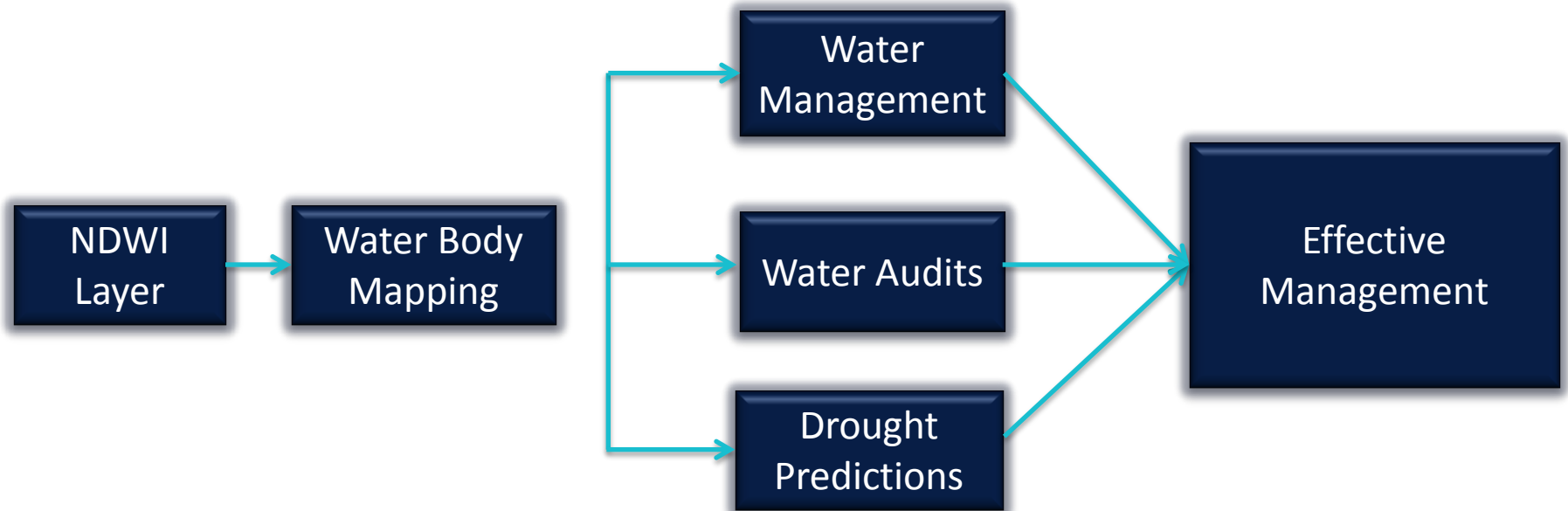
NATIONAL WATER ACT (ACT 36 OF 1998)

- **Chapter 14 – Monitoring, Assessment and Information**
 - Requires that the National Monitoring Systems and National Information systems be established.
- **Establishment of national information systems (Section 139)**
 1. The Minister must, as soon as reasonably practicable, establish national information systems regarding water resources.
 2. The information systems may include, among others -
 - a hydrological information system
 - a water resource quality information system
 - a groundwater information system
 - a register of water use authorisations

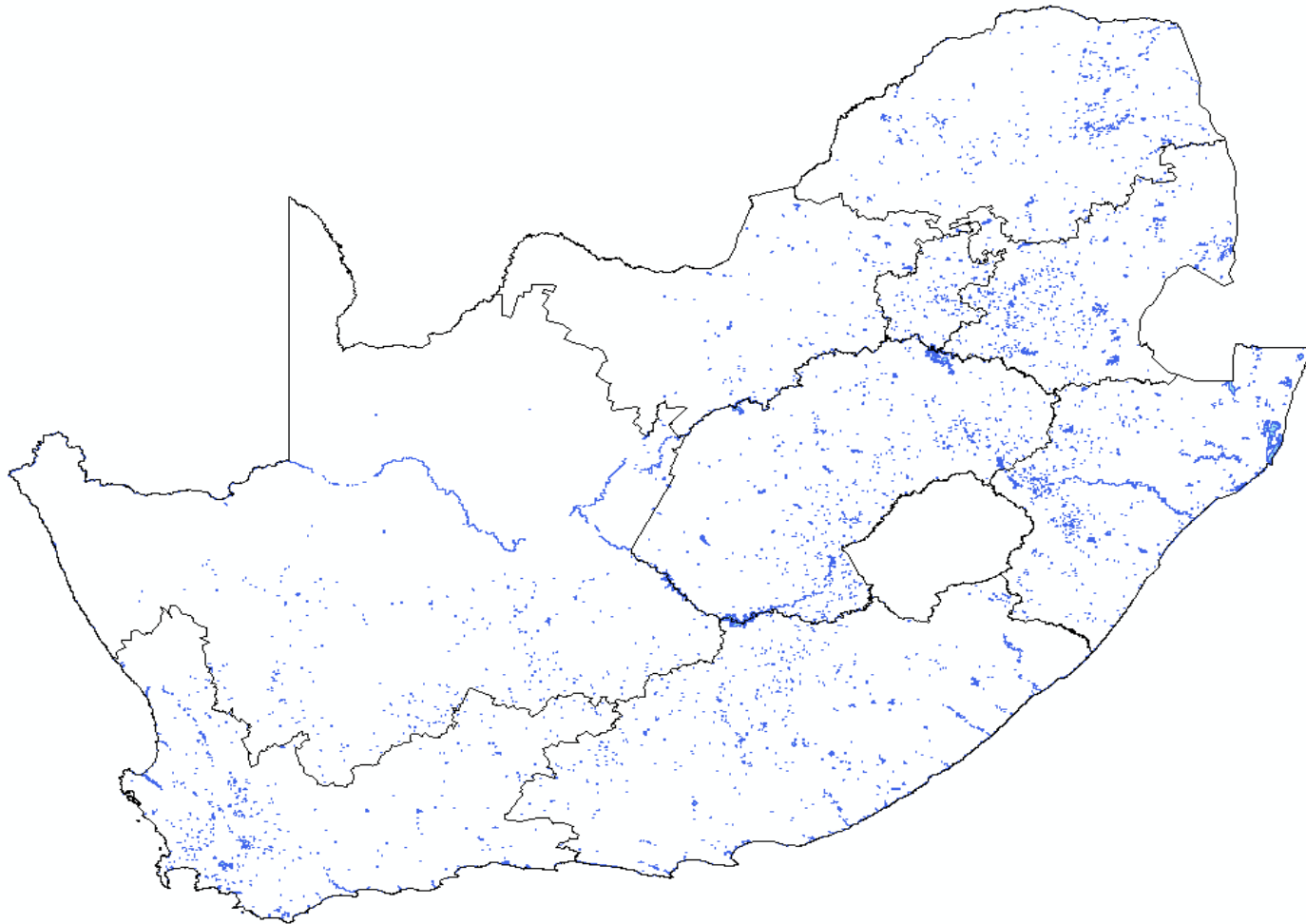
NDWI National Layer




WHY NDWI LAYER?



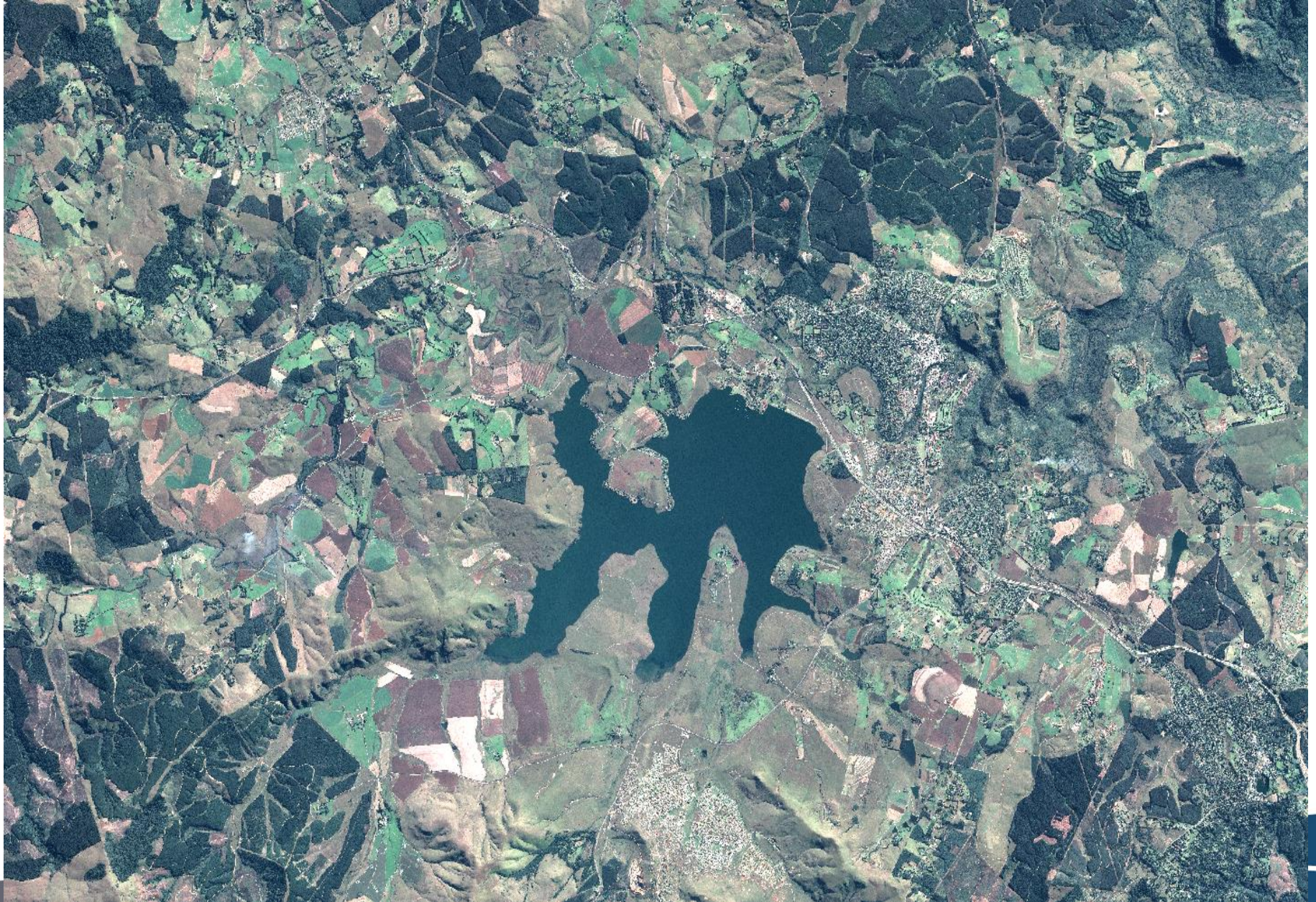
WATER BODIES (NATIONAL LAYER)



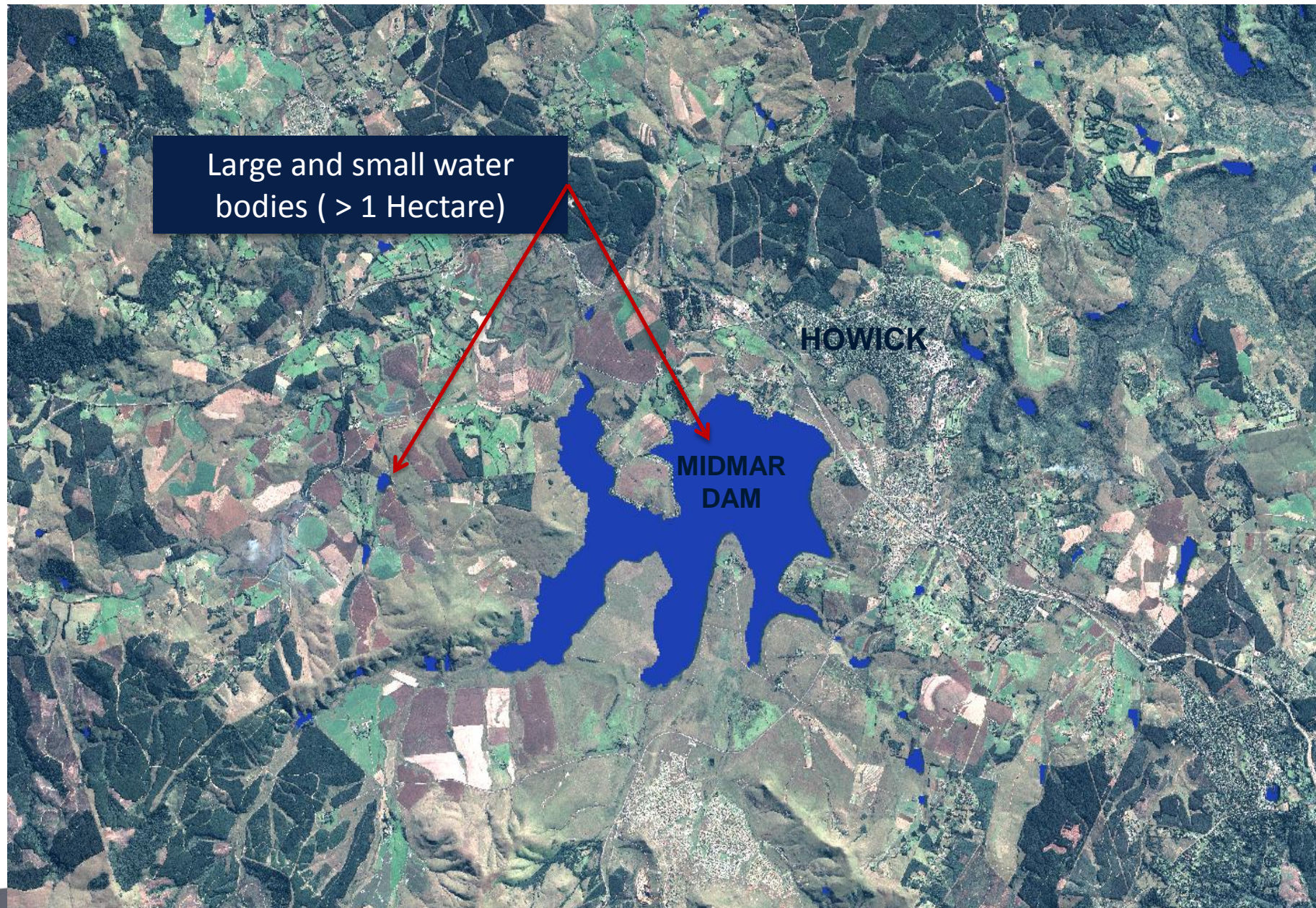
WHY WATER BODIES LAYER?

- In South Africa, water is a scarce commodity with an average annual rainfall of approximately 464 mm compared with a world average of 860mm.
 - It also has one of the lowest Mean Annual Precipitation to Run-off conversion ratios in the world.
 - Water in South Africa is also unevenly distributed geographically and socio- politically which further exacerbates its scarcity.
 - Of the available water sources, pollution further reduces the usable water
- 

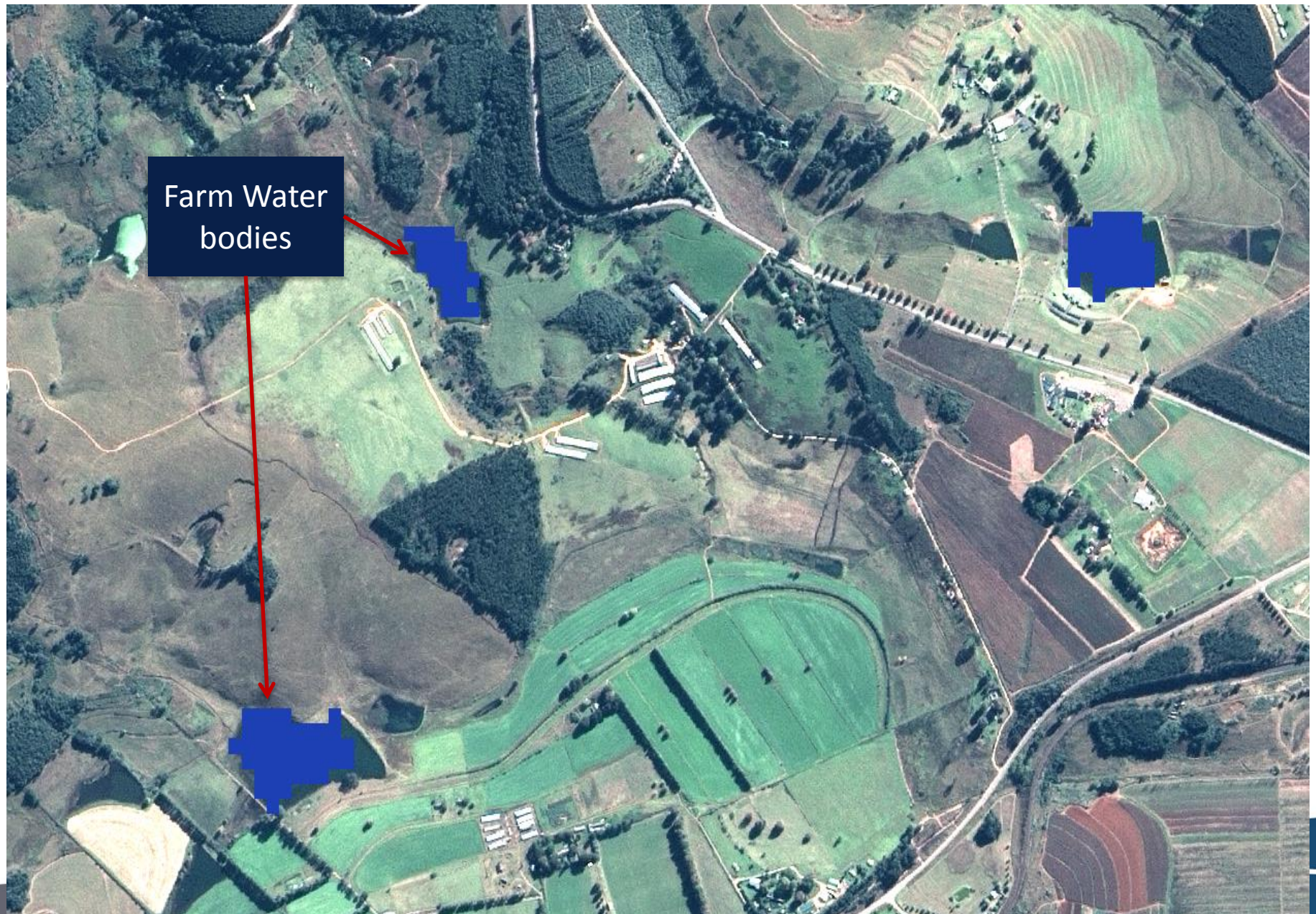
WATER BODIES ON SPOT 6



WATER BODIES MAP



WATER BODIES MAP

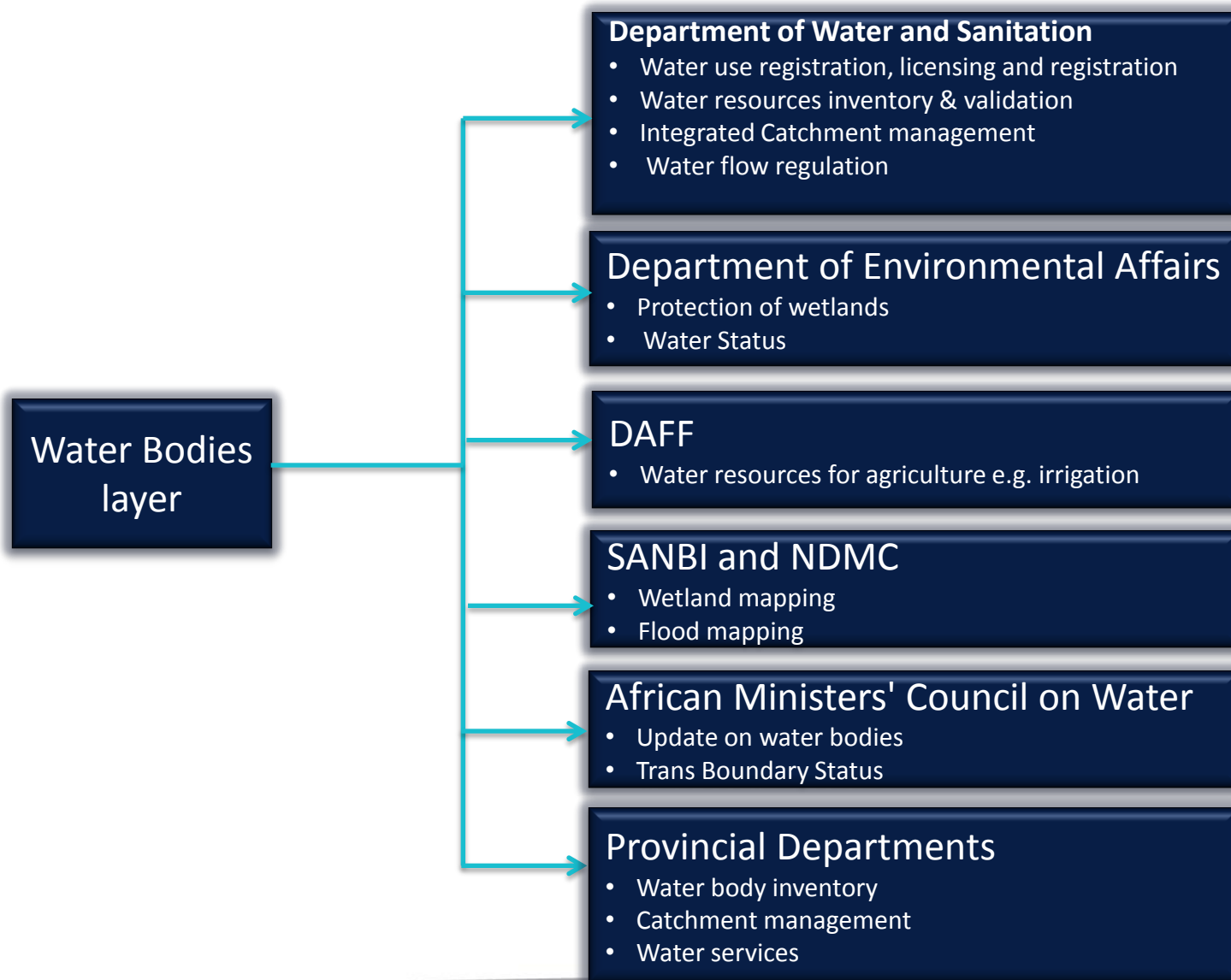


WATER BODIES MAP


- Easier Water Audits
- Unlicensed Dams (Registration)
- Improve livelihoods (Settlements)
- Water use management



WATER BODIES LAYER USERS



Other Products

- **In addition products to reduce processing requirements on the users exist**
 - TOA products
 - Brightness and Temperature Products
 - Landsat Quality assessment bands (cloud, water, snow)
 - **Future Products**
 - Vegetation Indices
 - Fire and Soil Indices
 - Water and Snow Indices
 - Land use and Land cover layers
 - **Product dissemination**
 - Automated web based dissemination
 - OGC standards compliant
 - Automated Web processing services
 - **Contribution to GEO** (Integrated Global Water Cycle Observations)
- 

Thank you