



science  
& technology

Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA



# SANSA EO-VALUE ADDED PRODUCTS

## Current and Future Products

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2013 SPOT 5 Mosaic Launch

05/09/2013

Innovation Hub

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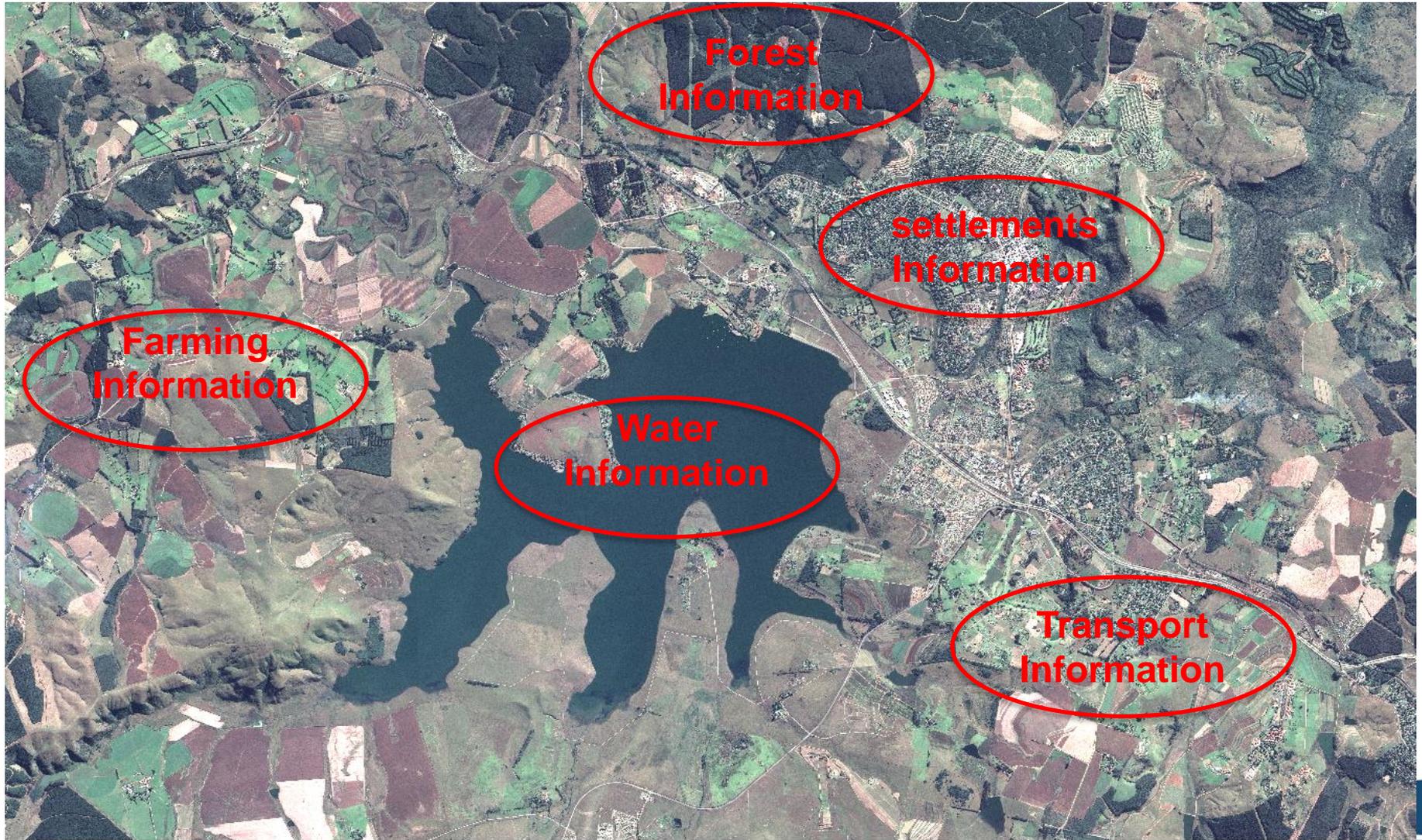
- Value of Satellite Imagery
- Challenges
- SANSA Value added products
- NDVI
- NDWI
- Water Bodies
- Future VAPs
- Conclusion

# 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

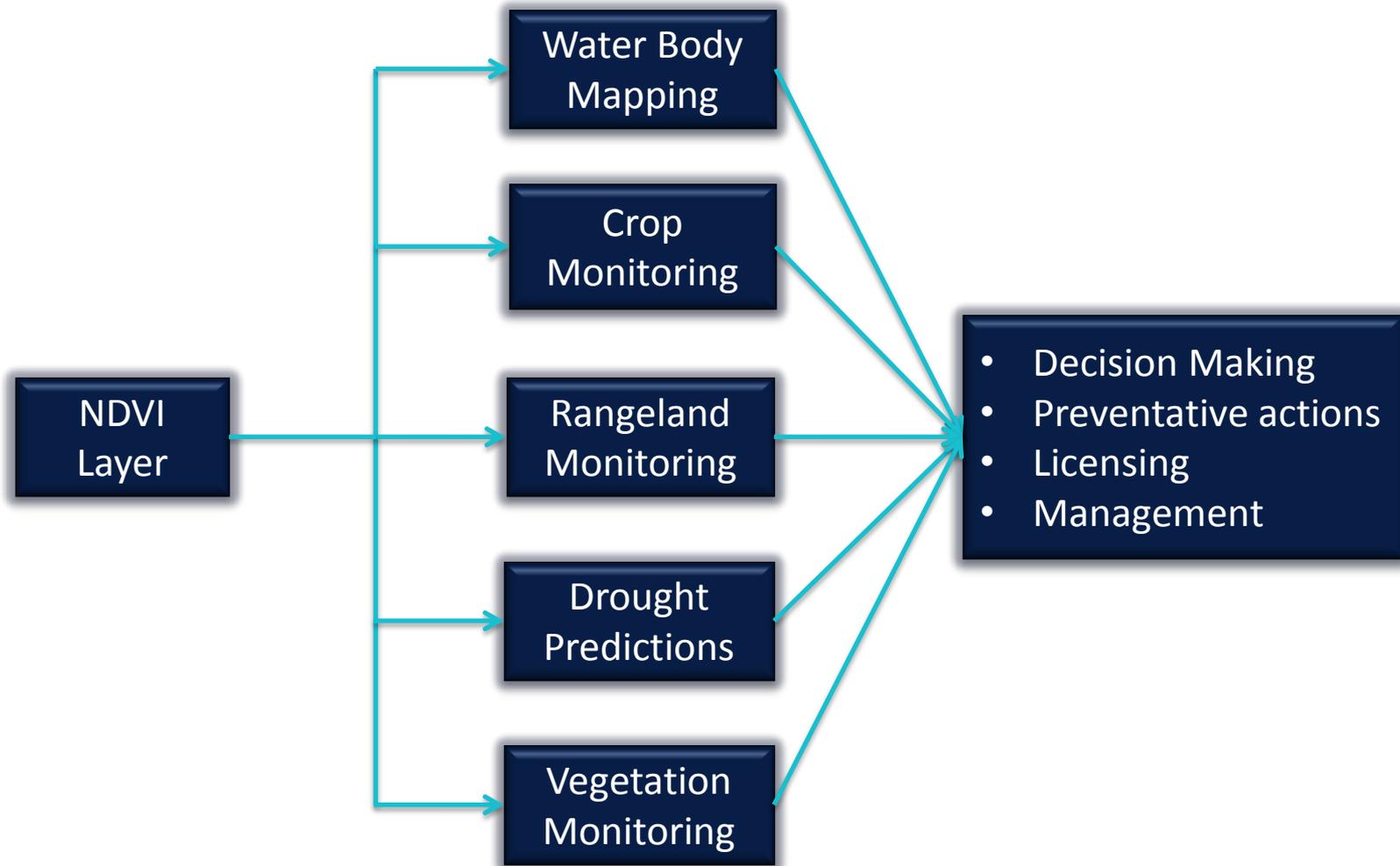
# Value Added Products

- 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

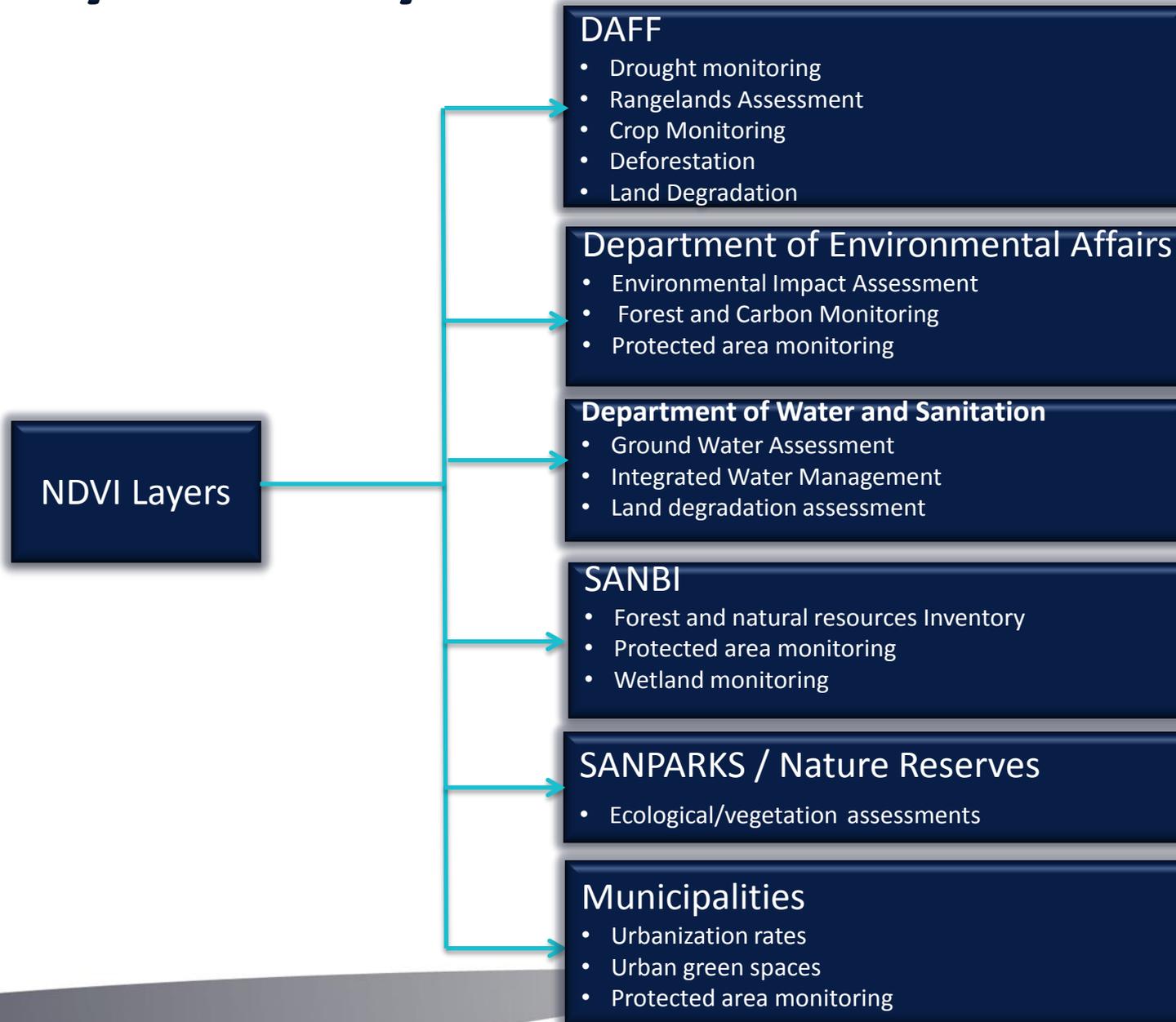
# CONSERVATION AND AGRICULTURAL RESOURCE ACT (Act 43 of 1983)

- 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

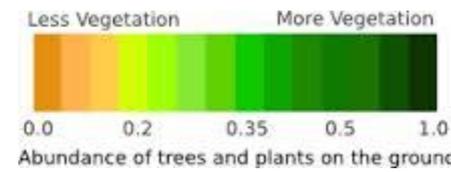
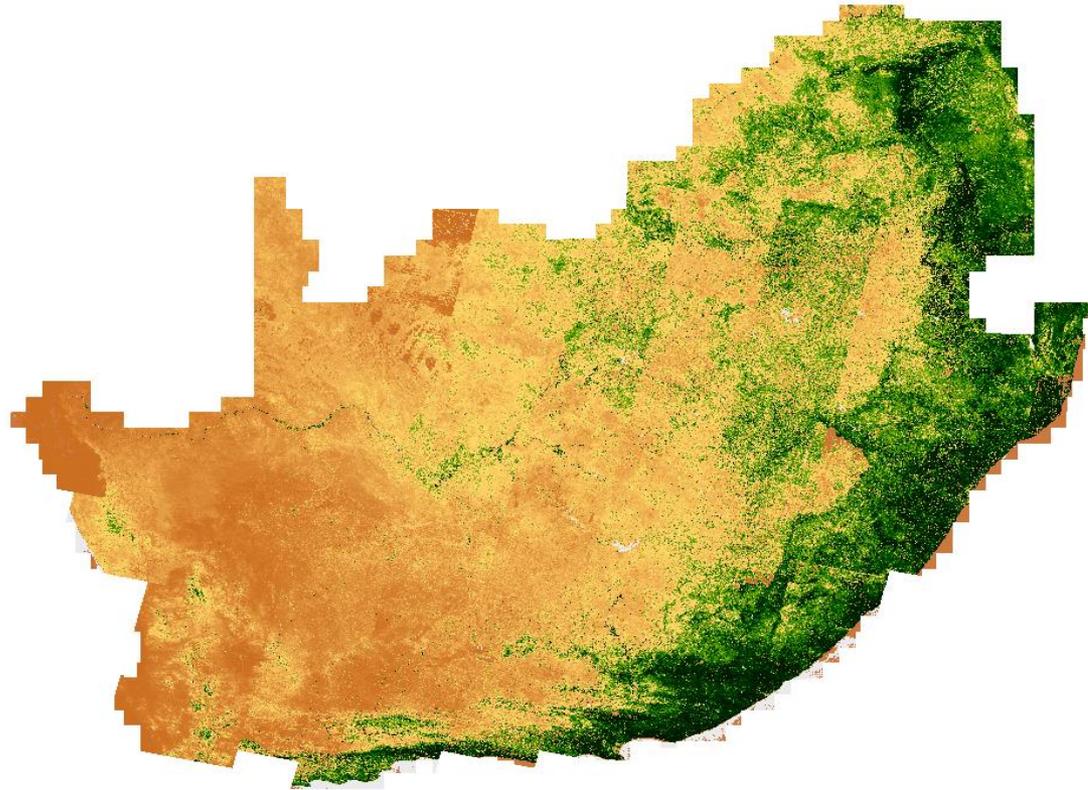
# Why NDVI Layer?



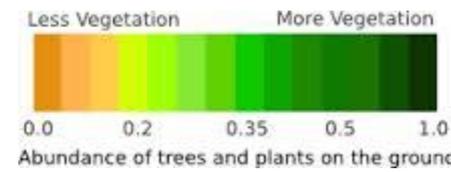
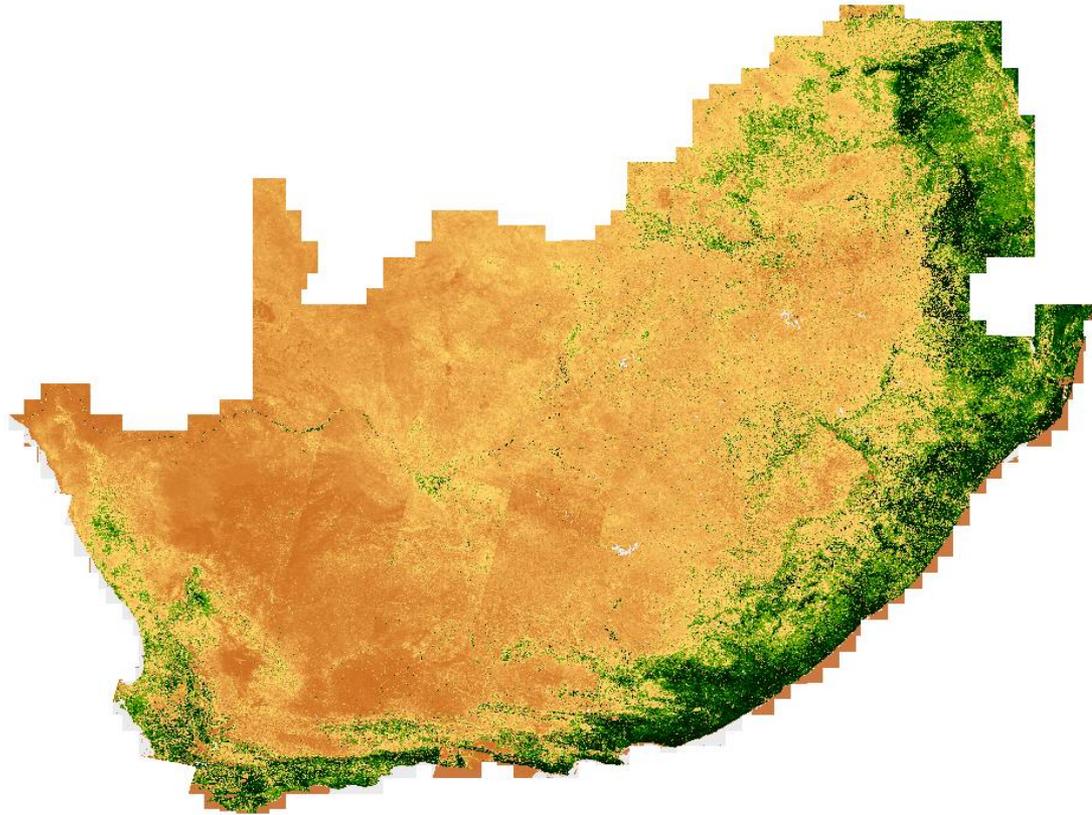
# Why NDVI Layers?



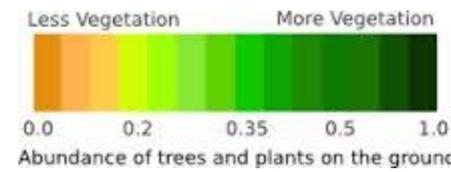
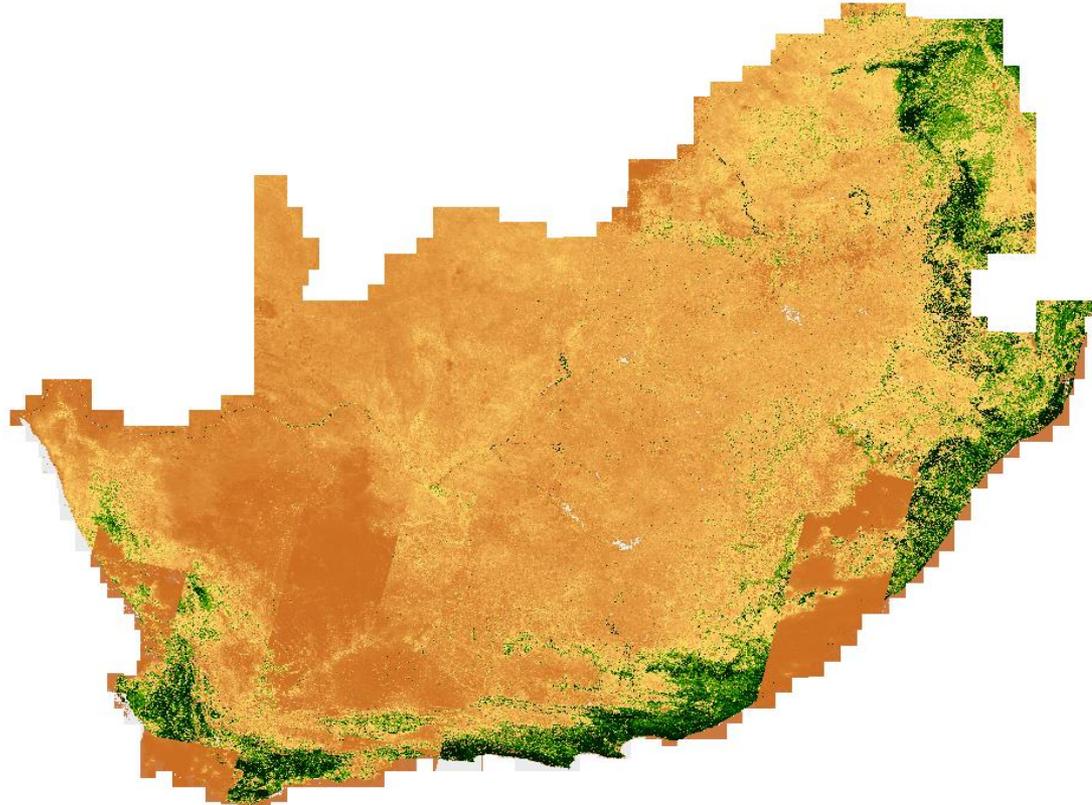
# NDVI – May 2013



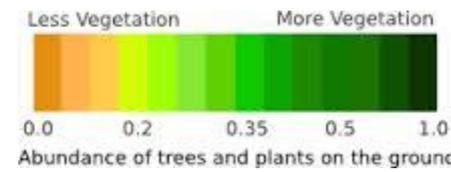
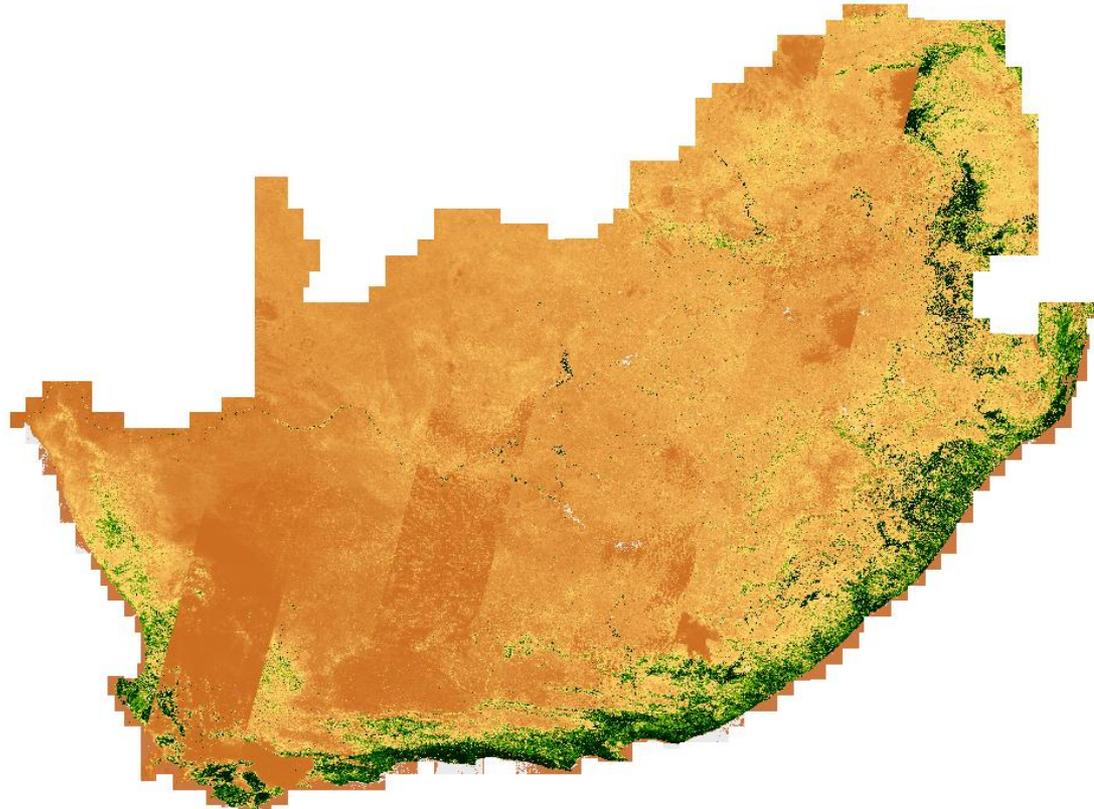
# NDVI – June 2013



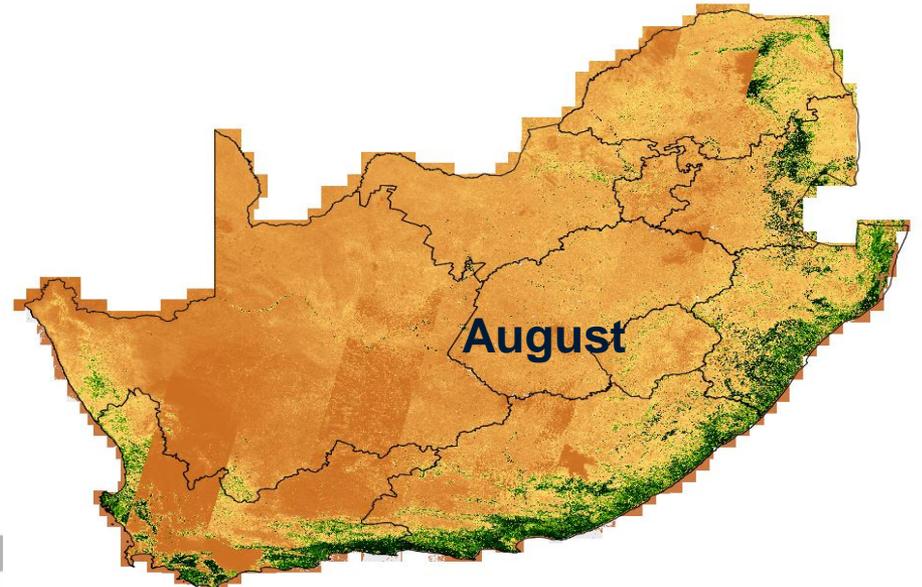
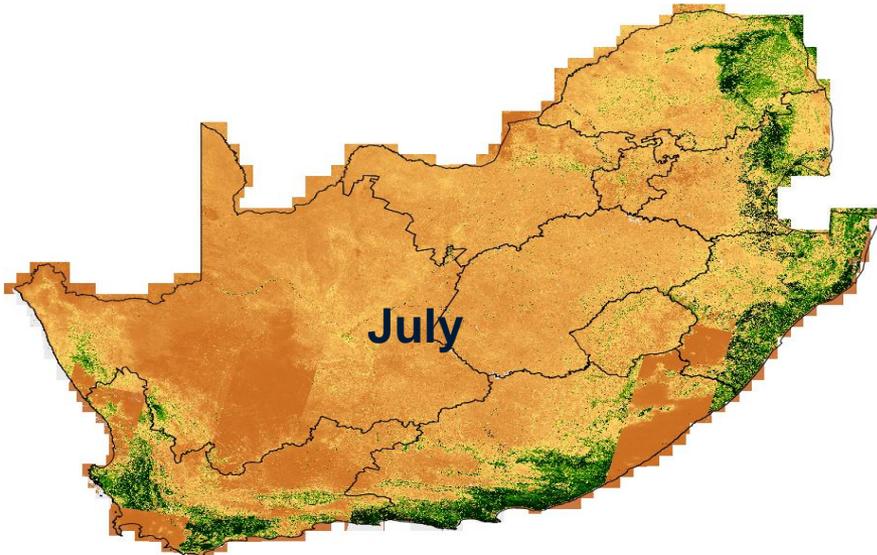
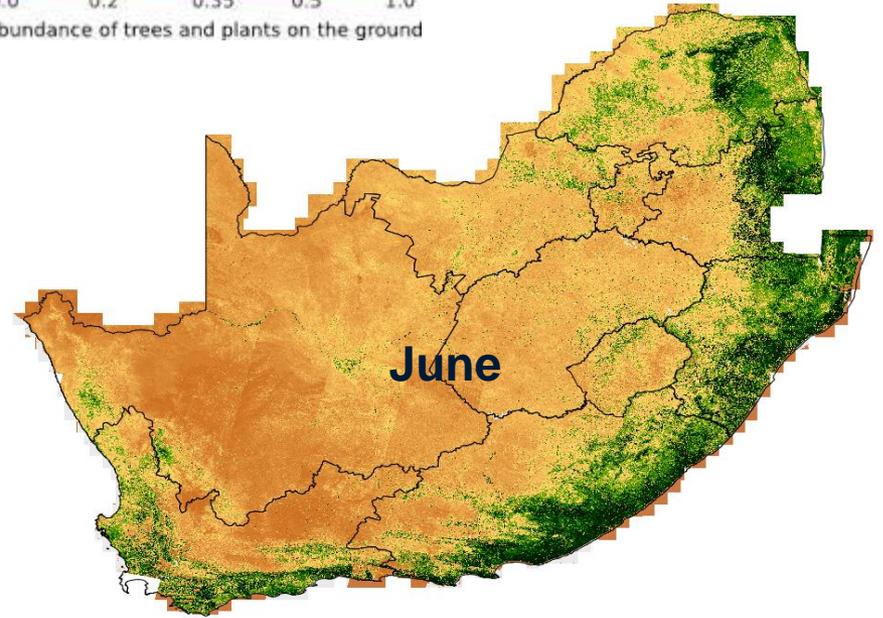
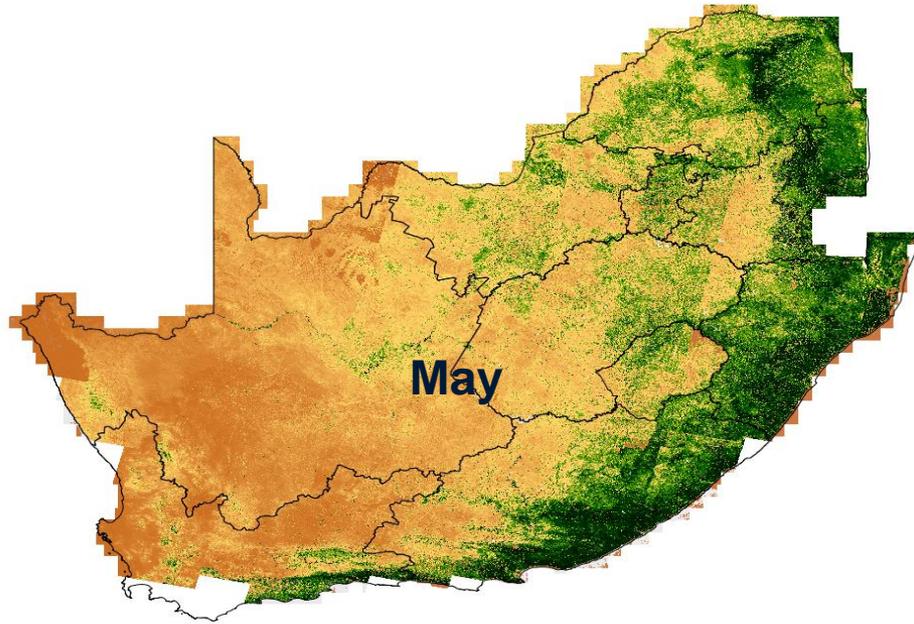
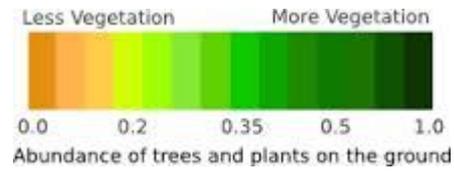
# NDVI – July 2013



# NDVI – August 2013



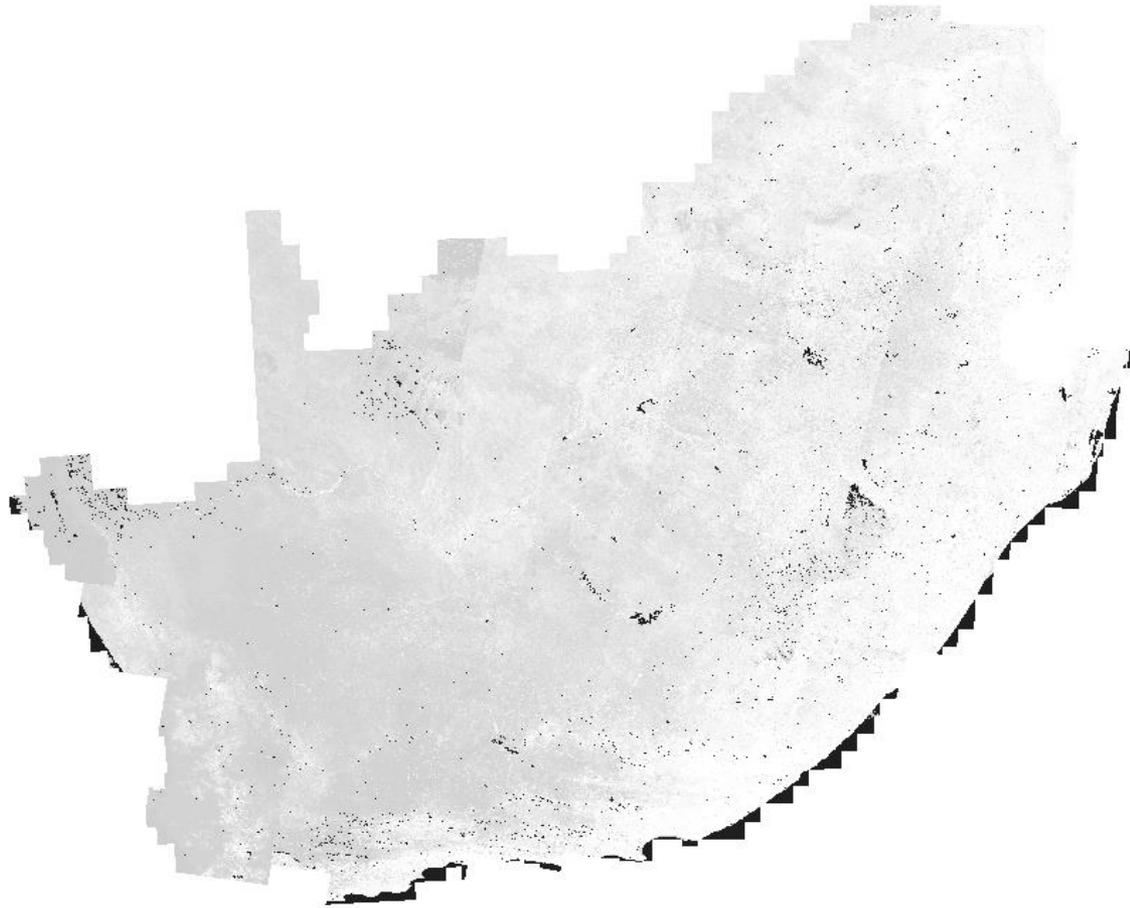
# NDVI: May – August 2013



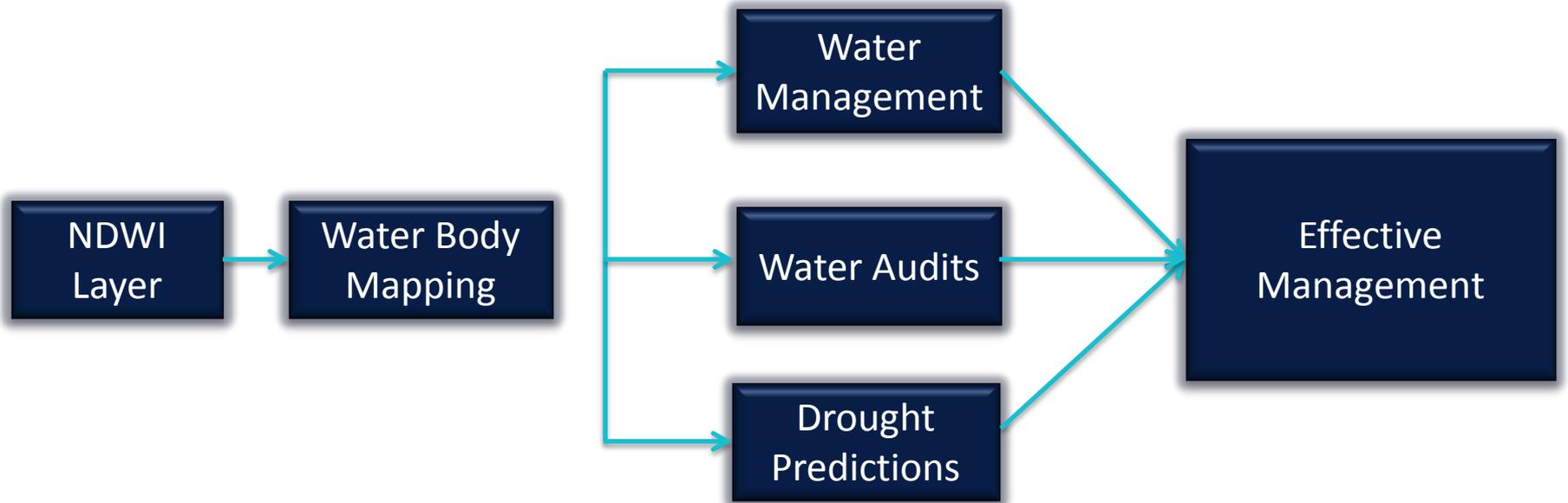
# NATIONAL WATER ACT (ACT 36 OF 1998)

- **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

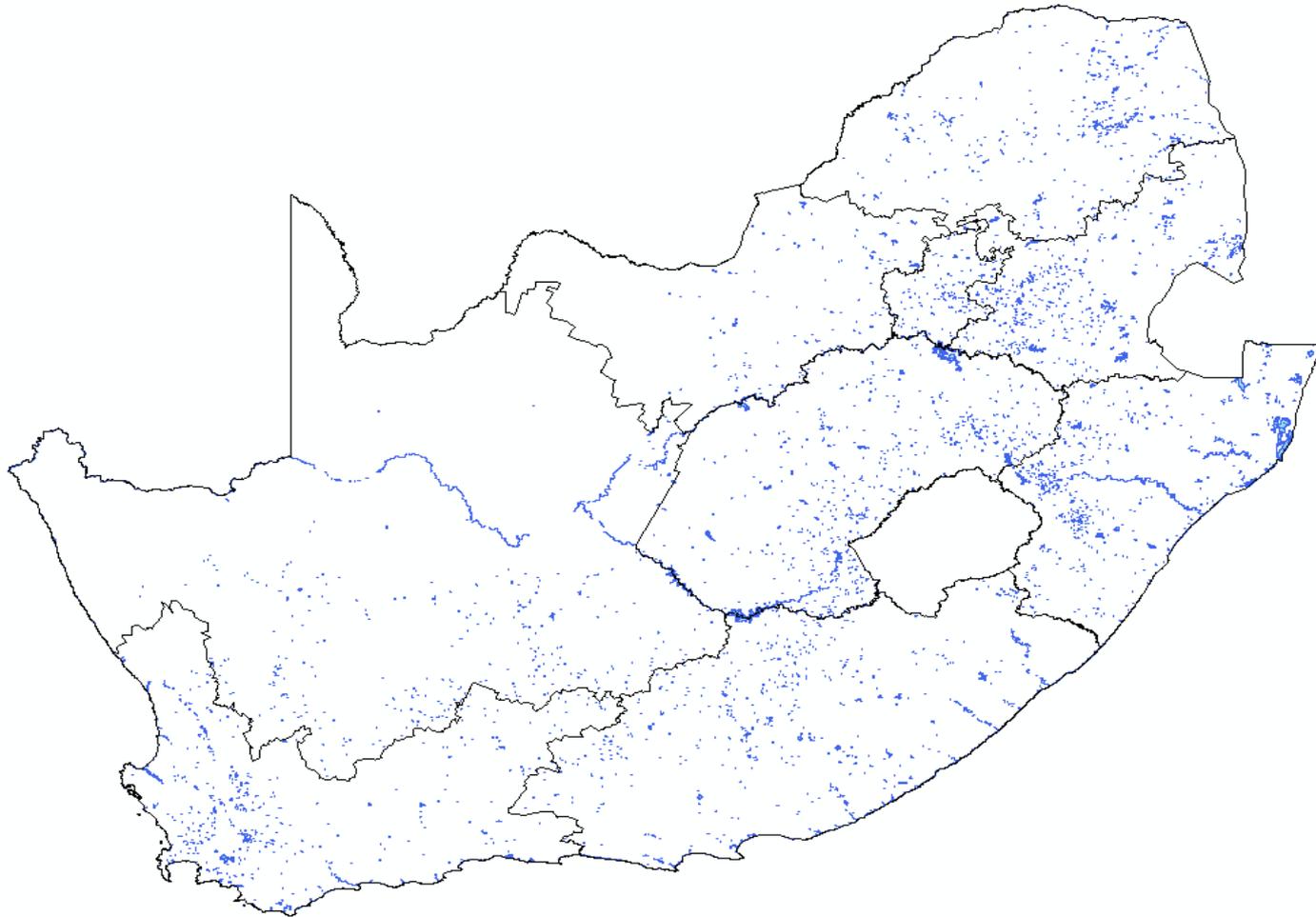
# NDWI National Layer



# WHY NDWI LAYER?



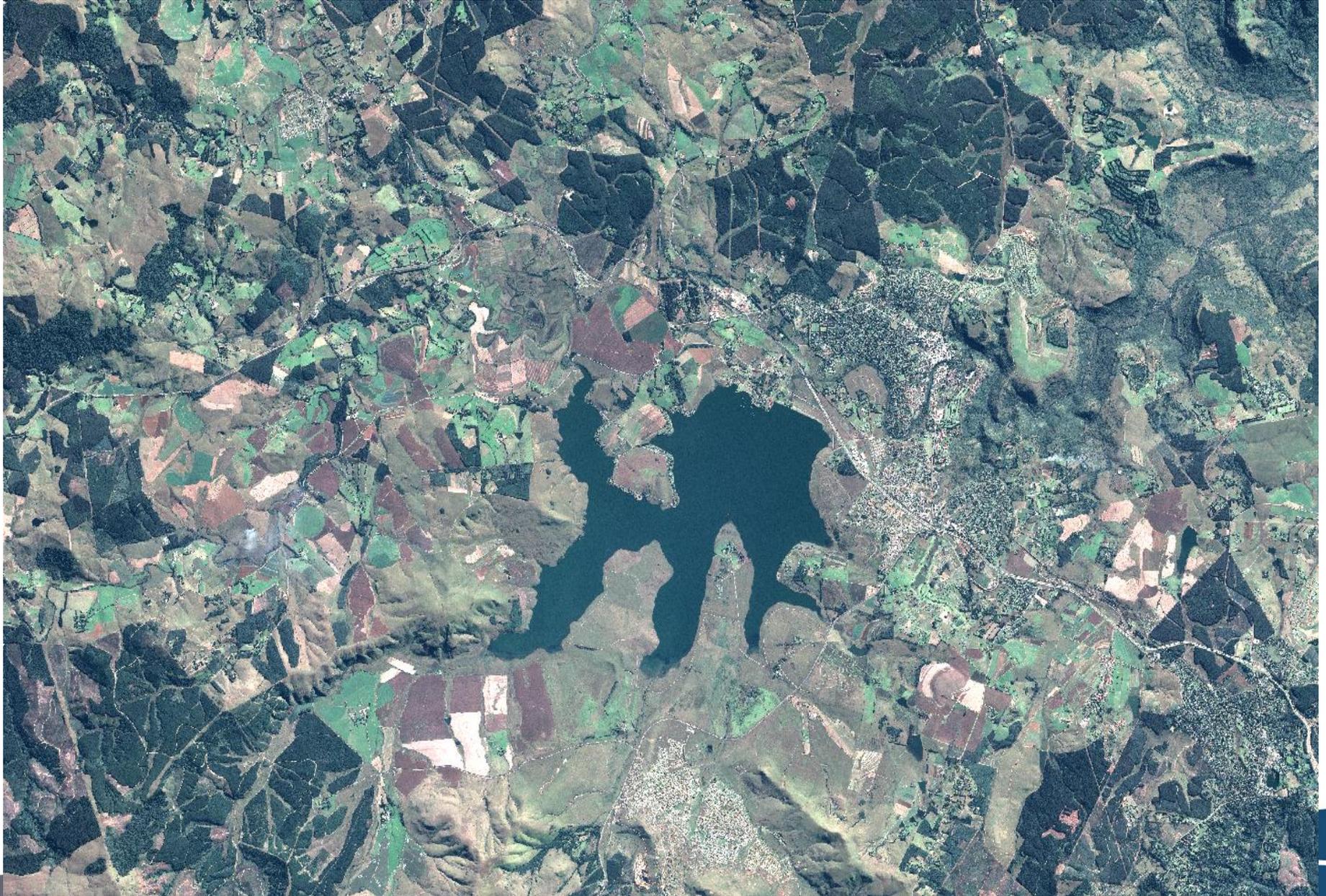
# WATER BODIES (NATIONAL LAYER)



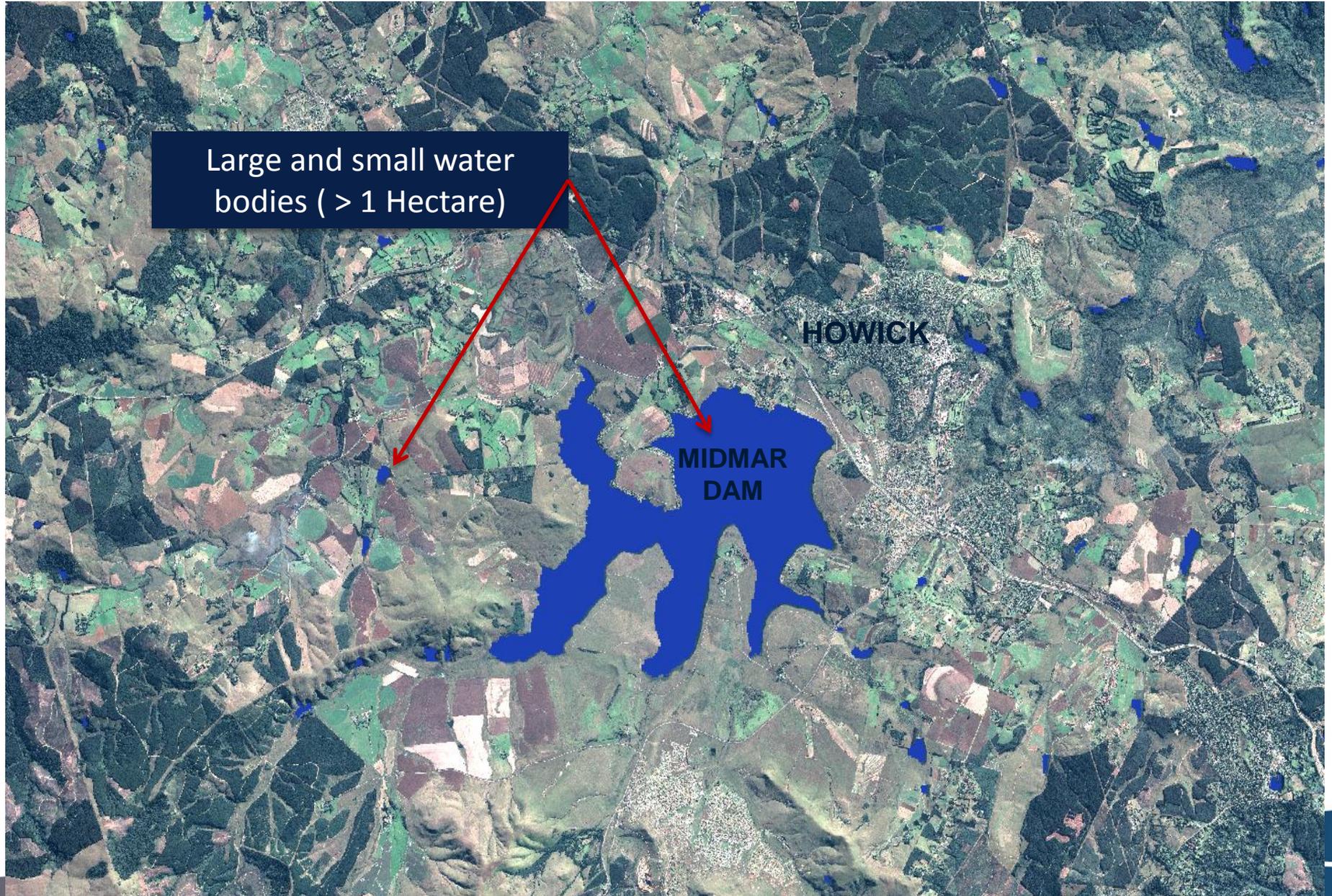
# WHY WATER BODIES LAYER?

- 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

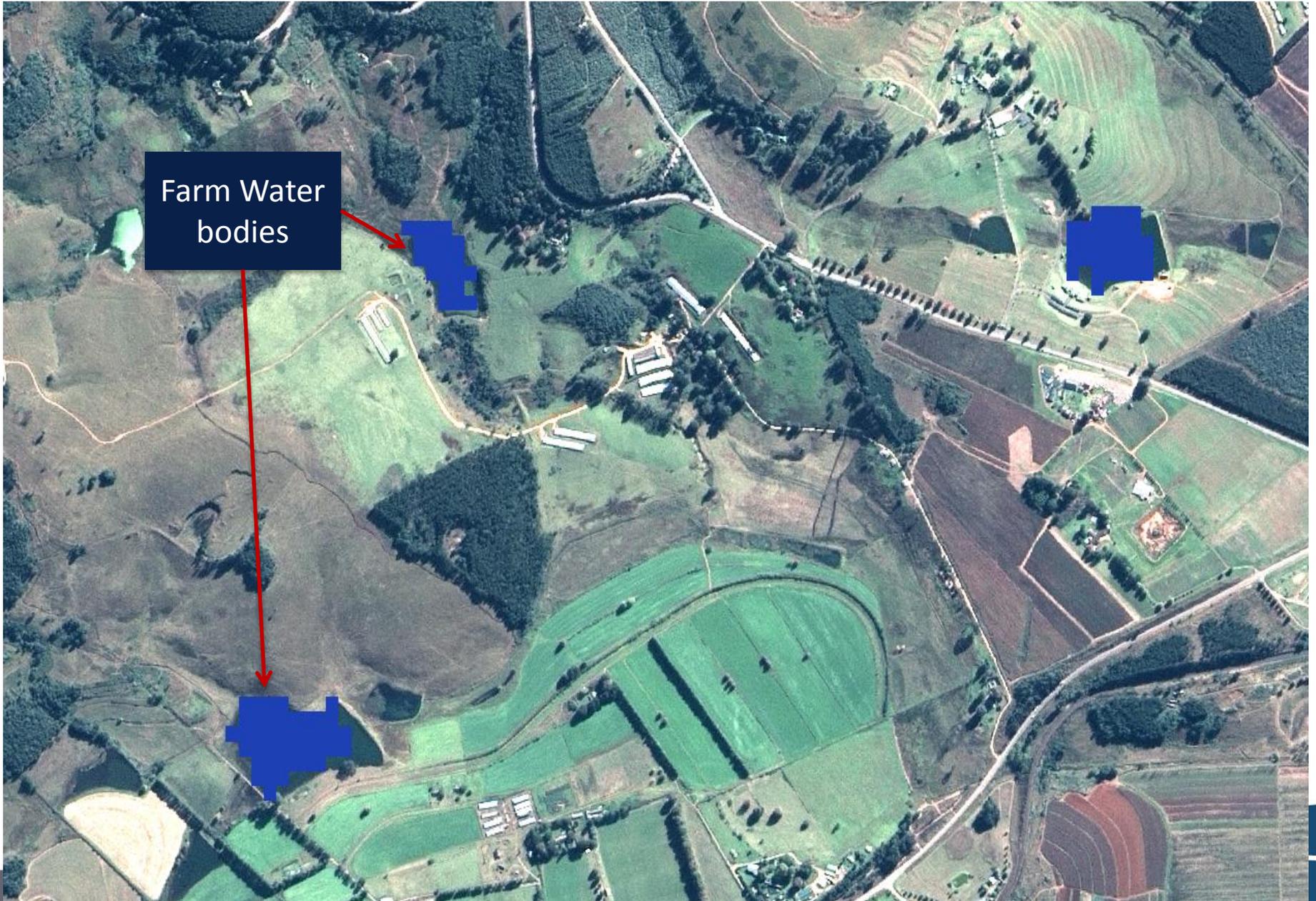


Large and small water  
bodies (> 1 Hectare)

HOWICK

MIDMAR  
DAM

# WATER BODIES MAP



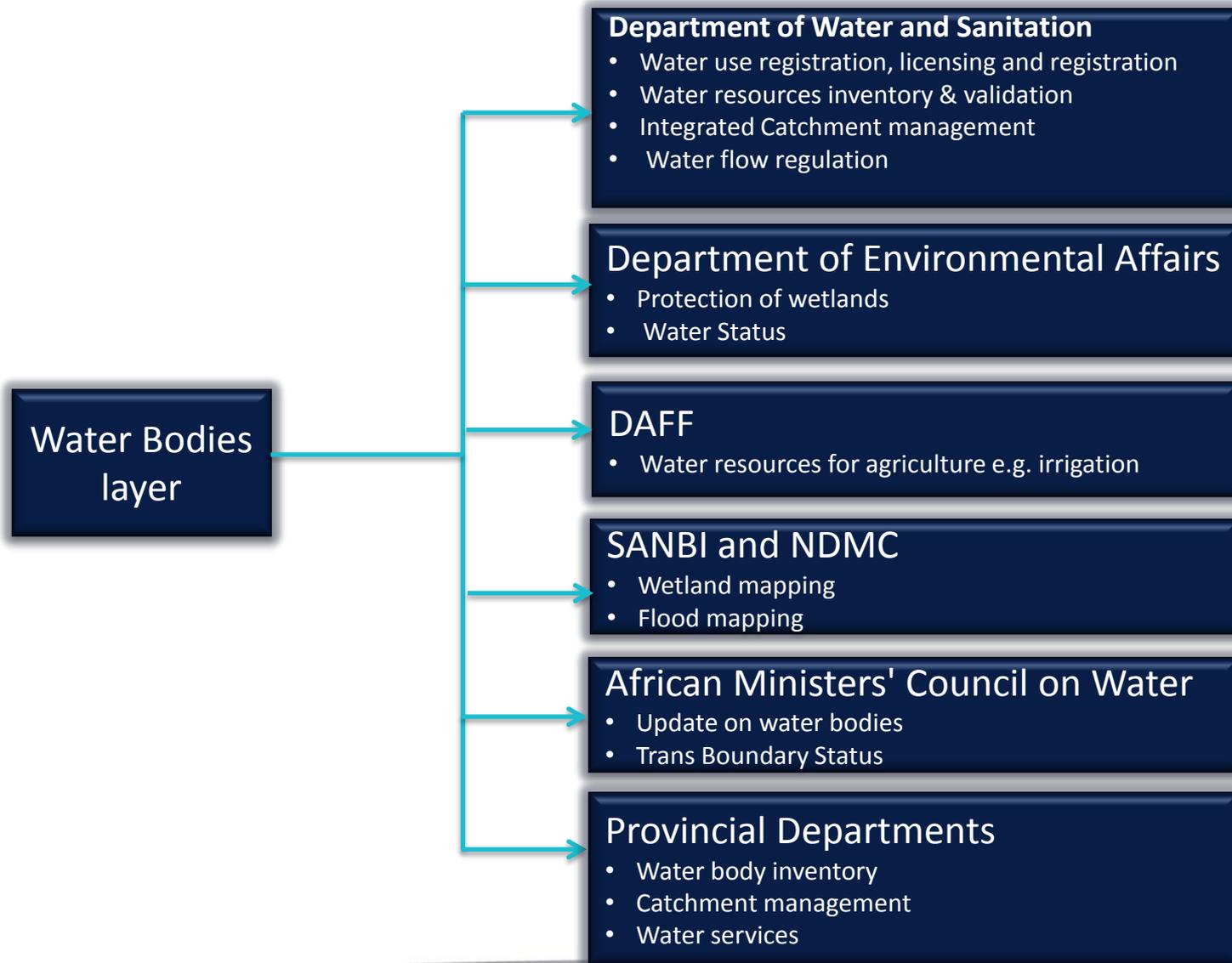
Farm Water  
bodies

# 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