

## → TOWARDS SATELLITE-BASED WATER BALANCE MONITORING

Sustainable  
DEVELOPMENT

Food SECURITY  
GOVERNANCE and  
REGULATION

water WATER  
ACCOUNTING

### IN COLLABORATION WITH:

Department of Water Affairs  
Pretoria, South Africa



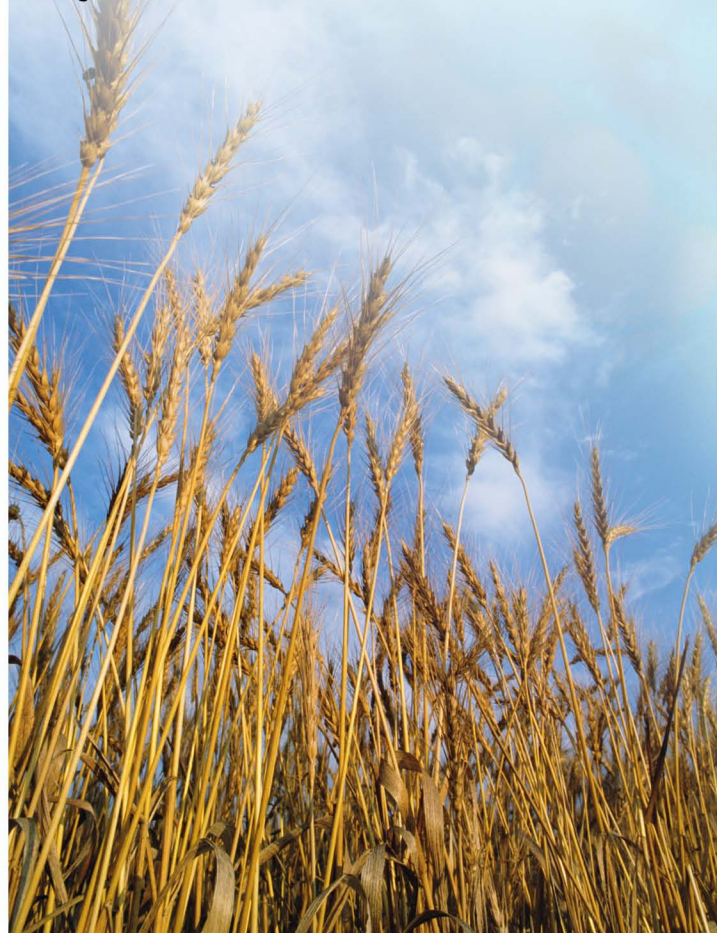
### AREAS OF INTEREST



Accurate and up to date information about water resources, their status and consumption for agricultural or industrial use is necessary to achieve and maintain a balanced and sustainable development and for Integrated Water Resources Management. In the case of agricultural practices, irrigation requirements can be estimated on the basis of several different inputs, including space observations.

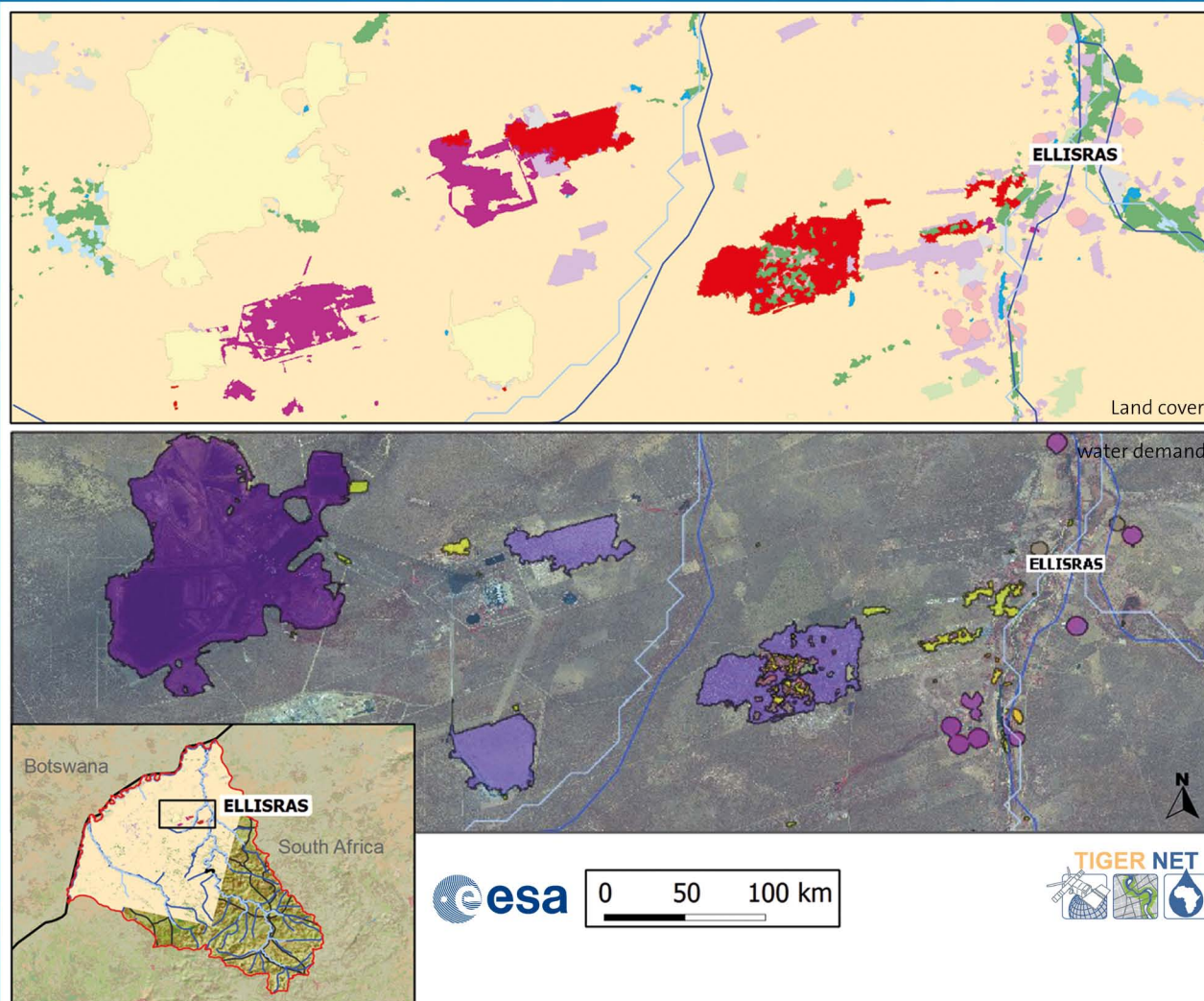
The Department of Water Affairs of South Africa strives to ensure that all South Africans gain access to clean water and safe sanitation and promotes effective and **efficient water resources management to ensure sustainable economic and social development.**

The WOIS provides an **EO based approach for water balance monitoring**, consisting of water discharge forecasting, land cover based water demand mapping and water management related land cover change mapping. Thus, water balance monitoring is a key tool for decision support in IWRM. **The provided products fill former information gaps in data** (prior mainly in-situ data) and map coverage.



# → TOWARDS SATELLITE-BASED WATER BALANCE MONITORING

## WATER DEMAND – MOKOLO, SOUTH AFRICA



*“The Department, working in collaboration with the Water Research Commission and the South African National Space Agency are working towards the uptake and implementation of the WOIS and associated applications in various functional areas. It is envisaged that this functionality can be applied and can positively contribute to existing and new programmes in the department both nationally and at catchment management levels. The results derived from the WOIS can be used to complement, improve and fill gaps in information needed in critical programmes such as integrated planning, the National Integrated Water Information System and water use authorisation, monitoring and regulation.”*

Carey Rajah, Director of Spatial and Land Information Management at Department of Water Affairs

↑ High resolution land cover characterization and associated annual water demands, highlighting major water demand areas. The datasets represent an essential input for the water balance monitoring as key tool for decision support within integrated water resource management

Legend	Description
AOI Mokolo, South Africa	This map shows the water demand for the classes irrigated cultivated areas, settlements and quarries and mines based on the high resolution basin characterisation of the Mokolo catchment in South Africa for the Department of Water Affairs. The product provides a monitoring service for high-resolution basin characterization at sub-basin level, including a recent land cover inventory as well as land cover change, providing information on long-term land change processes, such as effects of climate change or overexploitation (e.g. disappearance of vegetation, change of cropland area). In the Mokolo catchment it serves as basis for an assessment of the seasonal water demand by water management related land cover classes.
AOI Testsite Water Demand	
HR Landcover 2011	
Forest	
Water bodies	
Wetlands	
Shrub and Bushland	
Grassland	
Bare soil, sand rocks	
Non-irrigated cultivated	
Irrigated cultivated	
Urban residential	
Urban commercial	
Mines and Quarries	
Water Demand	
1 - 500 m <sup>3</sup> /a	
501 - 1000 m <sup>3</sup> /a	
1001 - 3000 m <sup>3</sup> /a	
3001 - 5000 m <sup>3</sup> /a	
5001 - 11100 m <sup>3</sup> /a	
Railroad	
Road	
Water Course	
Rivers	
Built-up area	
Hillshade	
GlobCover 2009	
Cartographic references: Projection: GCS_WGS_1984 Datum: WGS 1984	