ASTROFICA TECHNOLOGIES

IMOVE

INVASIVE ALIEN PLANT SPECIES (IAPS) BIOMASS MAPPING, AND ESTIMATION, THROUGH GEOSPATIAL ANALYTICS

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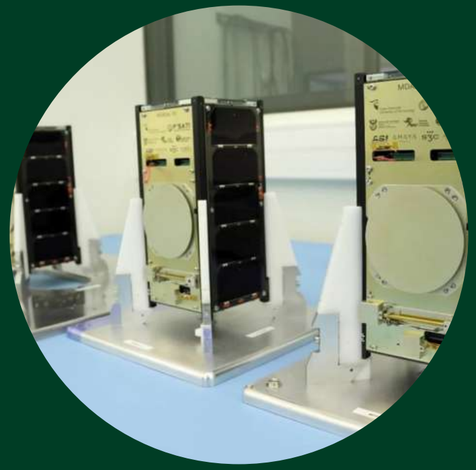
NEOSS
NATIONAL EARTH OBSERVATIONS AND SPACE SECRETARIAT

About us

Founded by Jessie Ndaba and Khalid Manjoo in 2018



Drives Africa's growth through space tech with numerous satellite projects locally and globally

Accolades:
2022 Presidential Award for Black Industrialists and Exporters.

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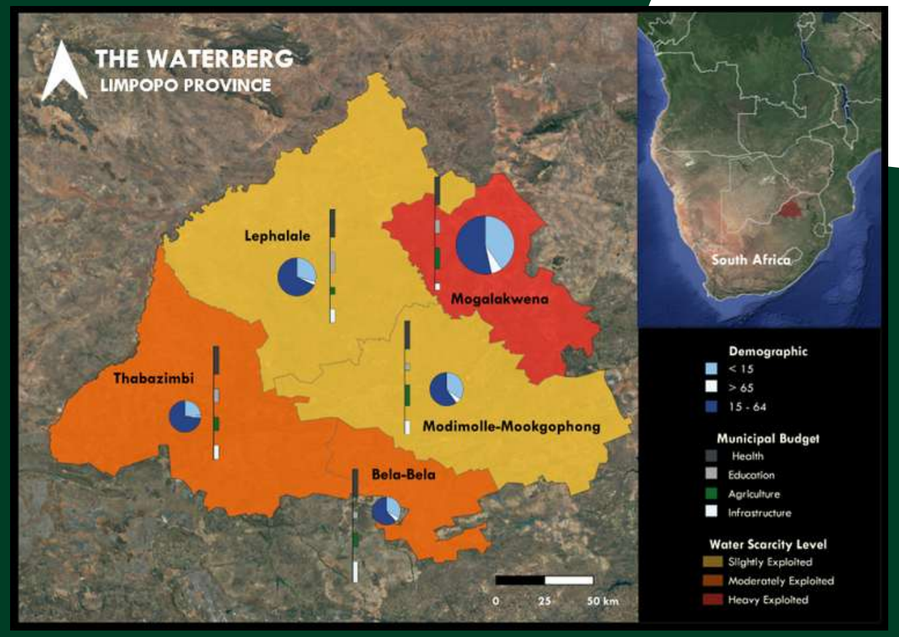
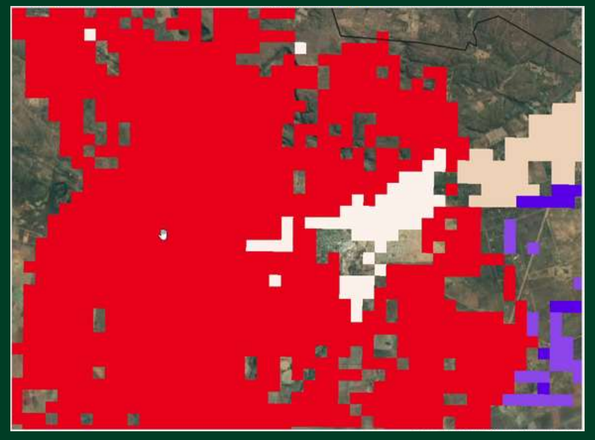
Our First Encounter

Invasive Alien Plant Species (IAPS) - In The Waterberg

A water scarce region plagued by IAPS, our task was to map where the IAPS were, estimate their biomass, and understand the impact they have on the region



DID YOU KNOW: IN 2018, *IAPS* CAUSED DAY-ZERO IN CAPE TOWN TO BE **60 DAYS EARLIER**



Data Deficiencies

- **Outdated datasets -** NIAPS 2010
- **Very Coarse datasets -** NIAPS 2010, SAPIA.
- **It would take approximately 90 years to survey South Africa using traditional methods -** NIAPS 2010

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NEOSS Partnership

Objectives

- Classification Maps
- BIOMSASS Economy
- Sampling
- IAPS Awareness

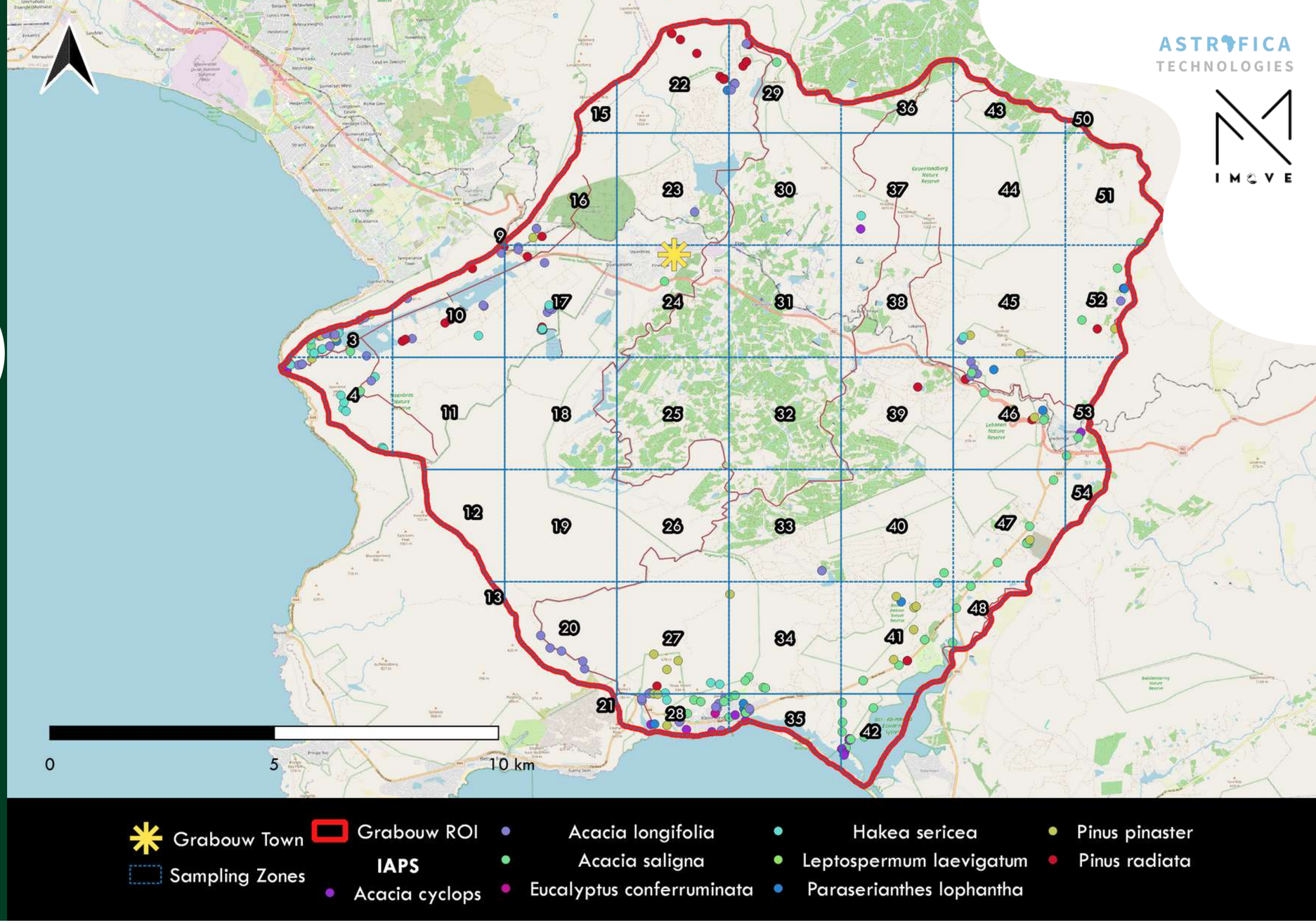
Our Area of Interest

Grabouw-Kleinmond-Botriveir

Western Cape

High levels of IAPS infestations
Proximity to the Steenbras dam
Its history with forestry plantations involving Pine Trees

Our IAPS of Interest Included subspecies of Pinus/Pine, Acacia, Hakea, and Eucalyptus



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Navigating the Thicket

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The Kogelberg Biosphere Organisation

We were fortunate enough to collaborate with South Africa's oldest biosphere

A Field Day!

We got to meet with Corlie and her team while clearing dense IAPS infestations, and gained insight into their operations and management practices

Three Phases of Sampling

1. **Baseline data**
2. **AOI Scouting**
3. **Field Collection**

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A day of Plentiful insight

Goals of The Workshop

- IAPS **awareness**
- **Share** our project
- Engage with **locals**
- Gauge project interest

Who Attended

- DFFE, DOA, Cape Nature, CoCT - IU, The Nature Conservancy
- **local** conservation orgs.
- The Kogelberg Biosphere field team consisting of **local community members** from **underprivileged communities.**

Workshop Outcomes

- Garnered interest in the project
- Unique and Insightful feedback

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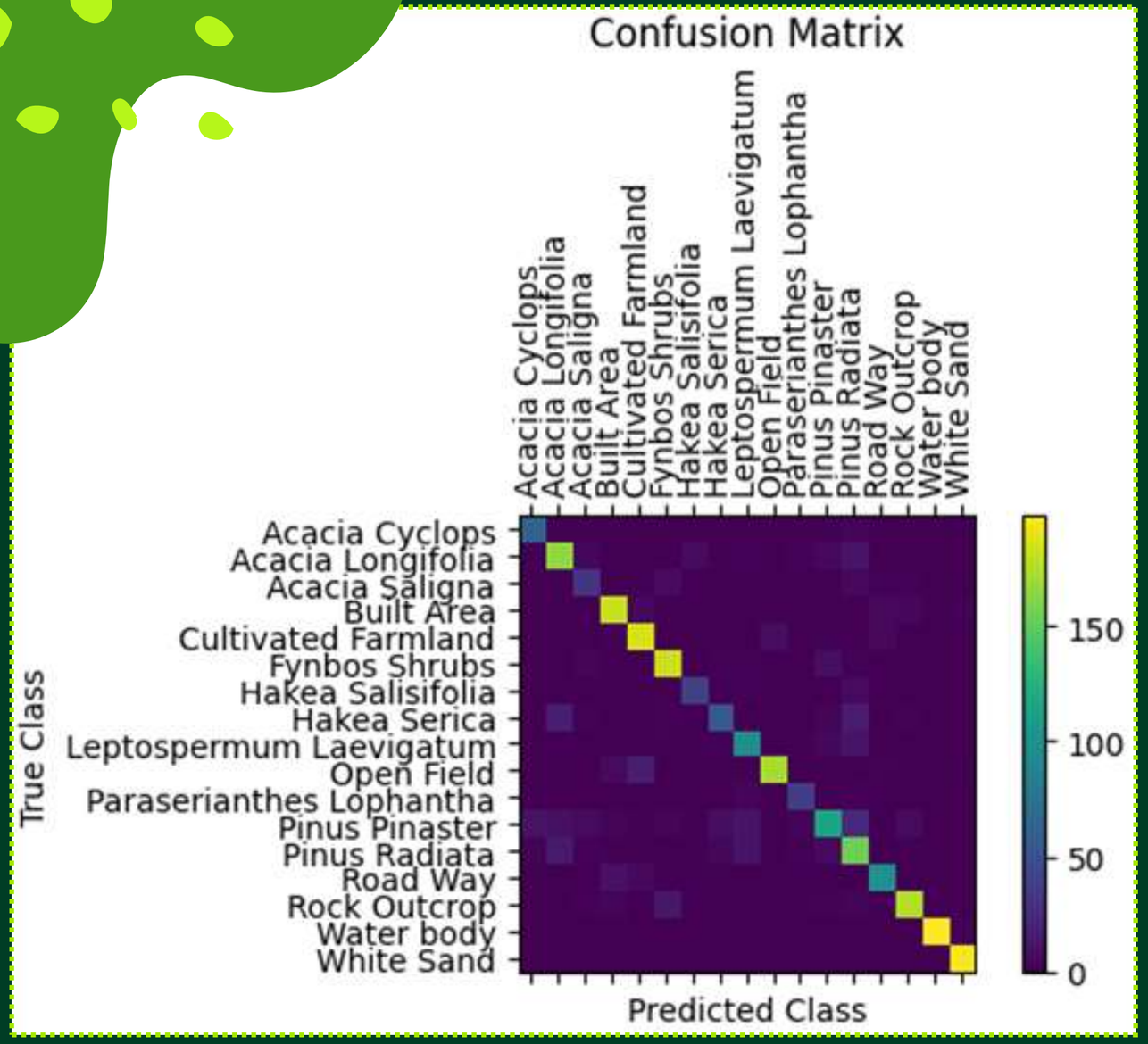


How we generated the maps

IAPS Model

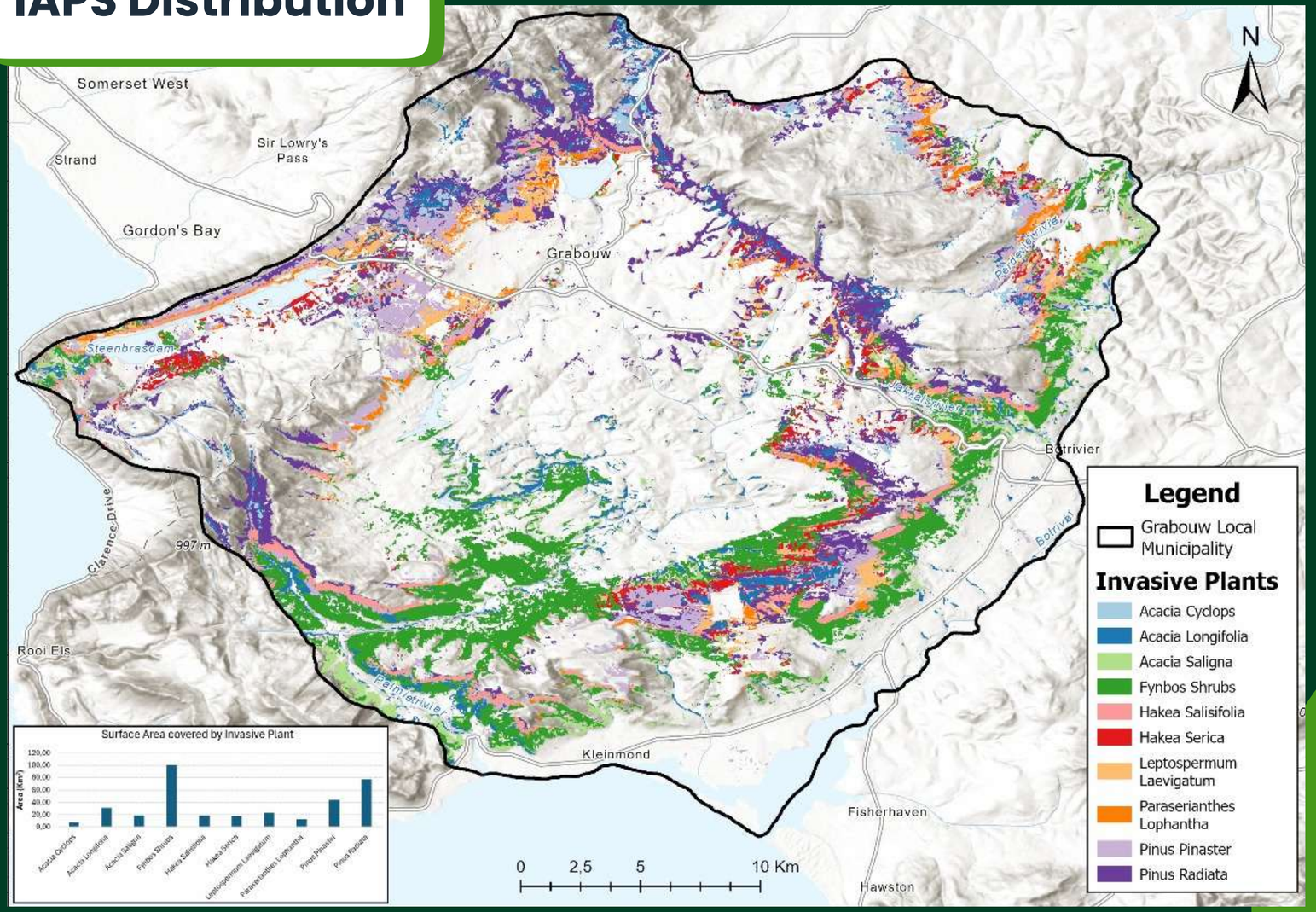
- **MLP** model
- Vegetation and topographic data
- 64/16/20 split
- **84%** over all accuracy (**Sentinel-2**)

Above Ground Biomass Model

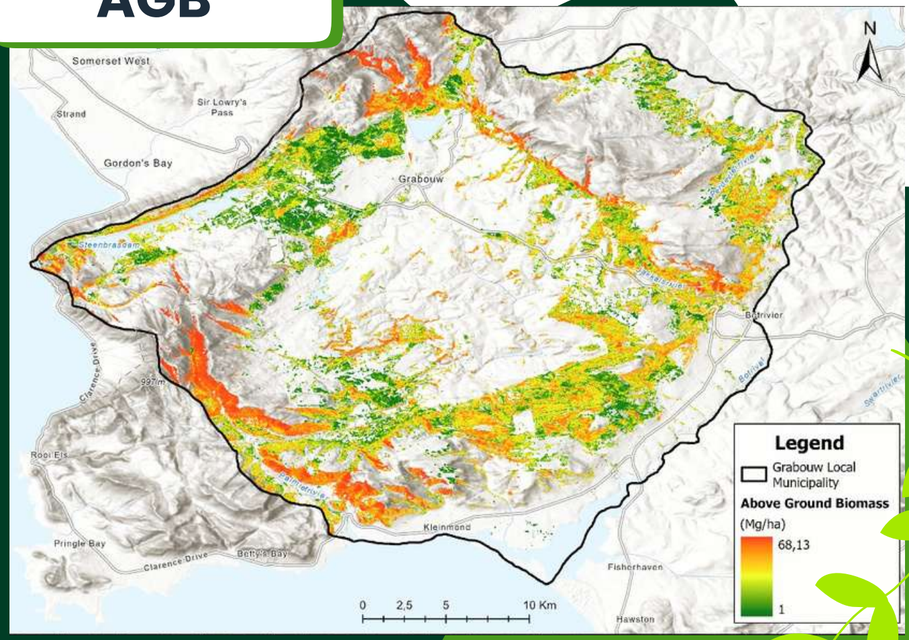
- GEDI Gridded Biomass model
- Refined using Sentinel-1 and ESA Land Cover

Results

IAPS Distribution

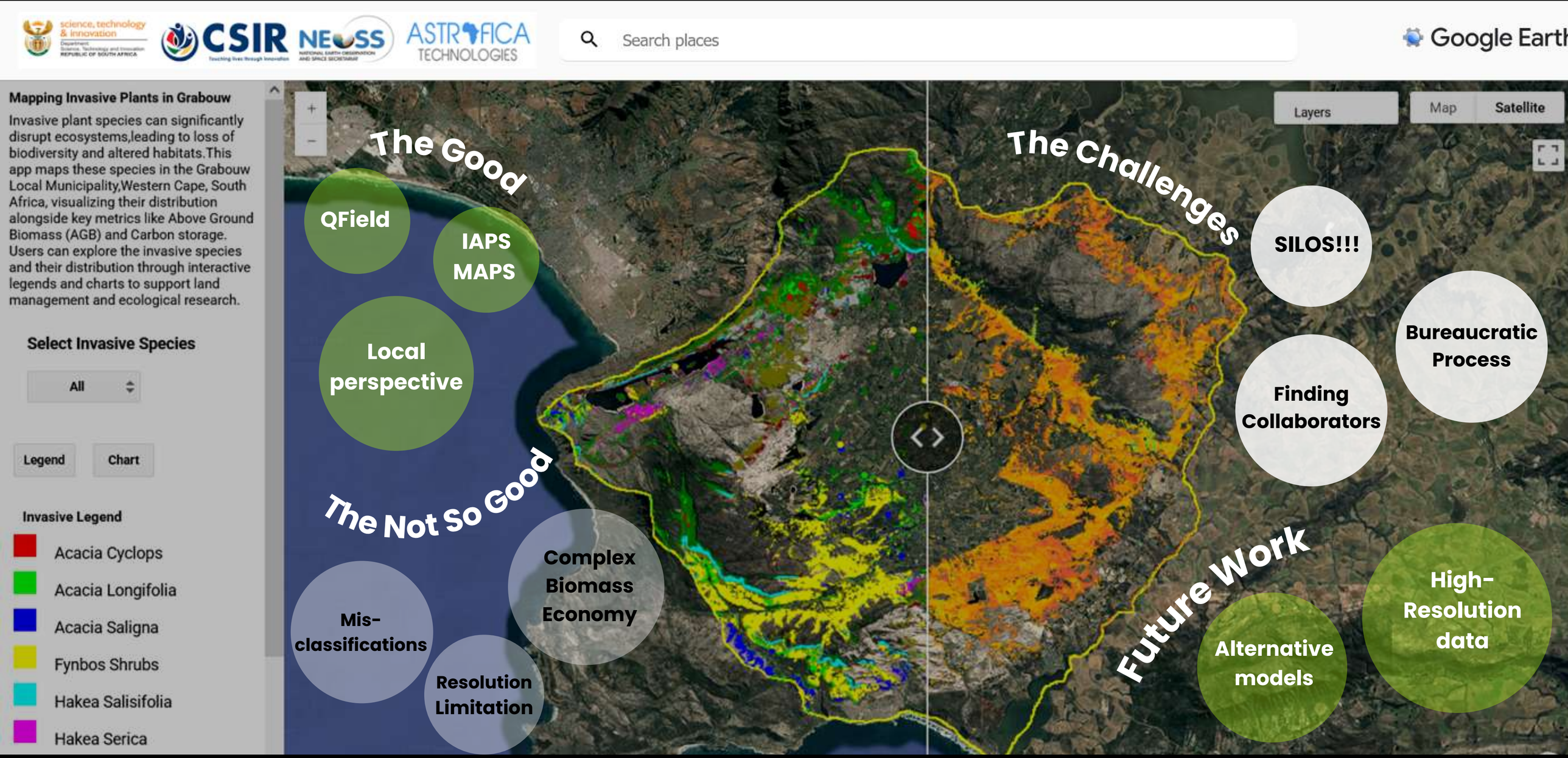


AGB



Live Web Map

https://ee-invasive-species.projects.earthengine.app/view/grabouw-invasives



Project Summary

A SPECIAL THANK YOU TO OUR TEAM AND PARTNERS

Department of Science, Technology and Innovation

National Earth Observations and Space Secretariat

The Council for Scientific and Industrial Research

The Kogelberg Biosphere

Charlotte Mannya-Maxeke Institute