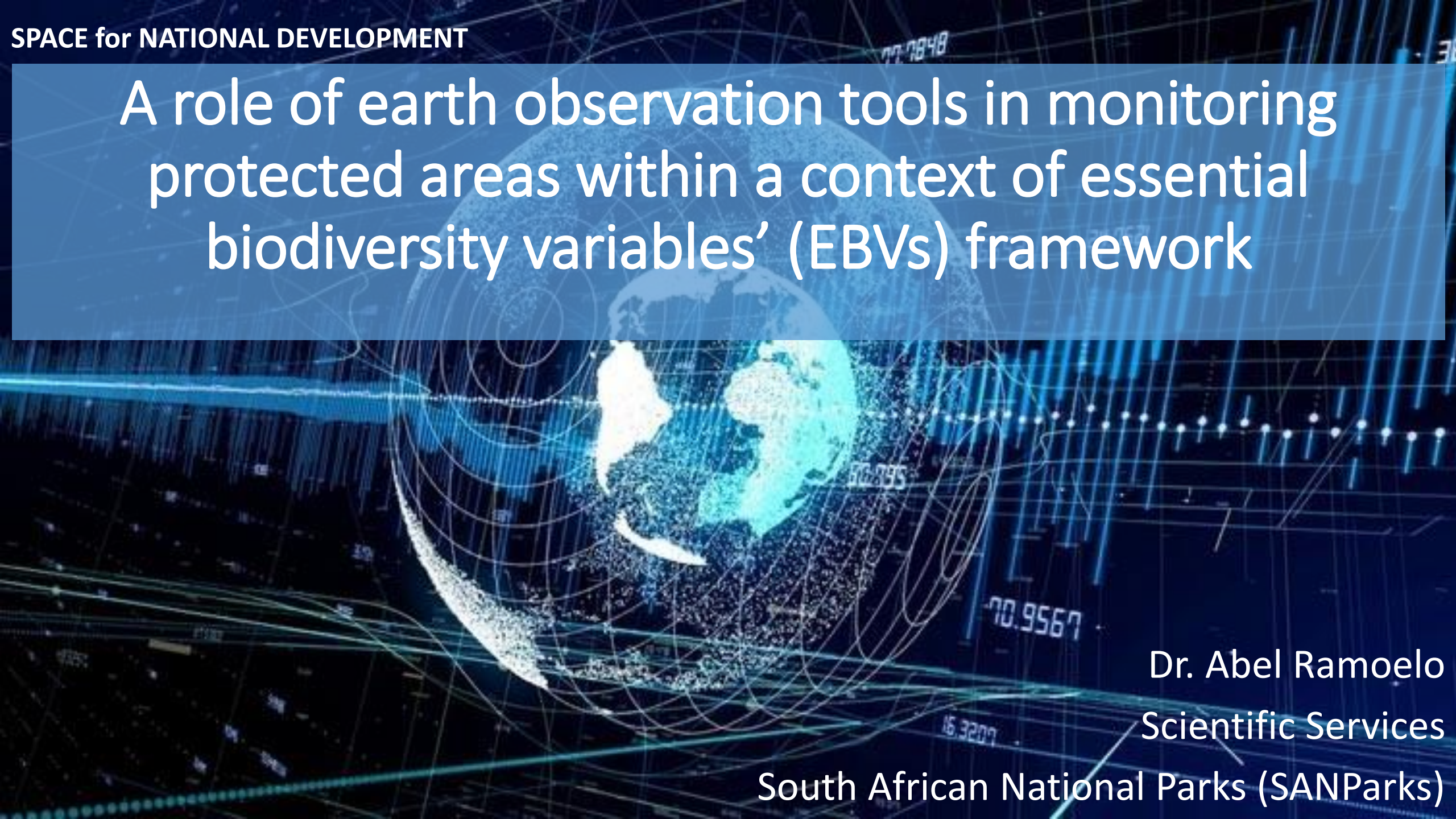
SPACE for NATIONAL DEVELOPMENT

A role of earth observation tools in monitoring protected areas within a context of essential biodiversity variables' (EBVs) framework



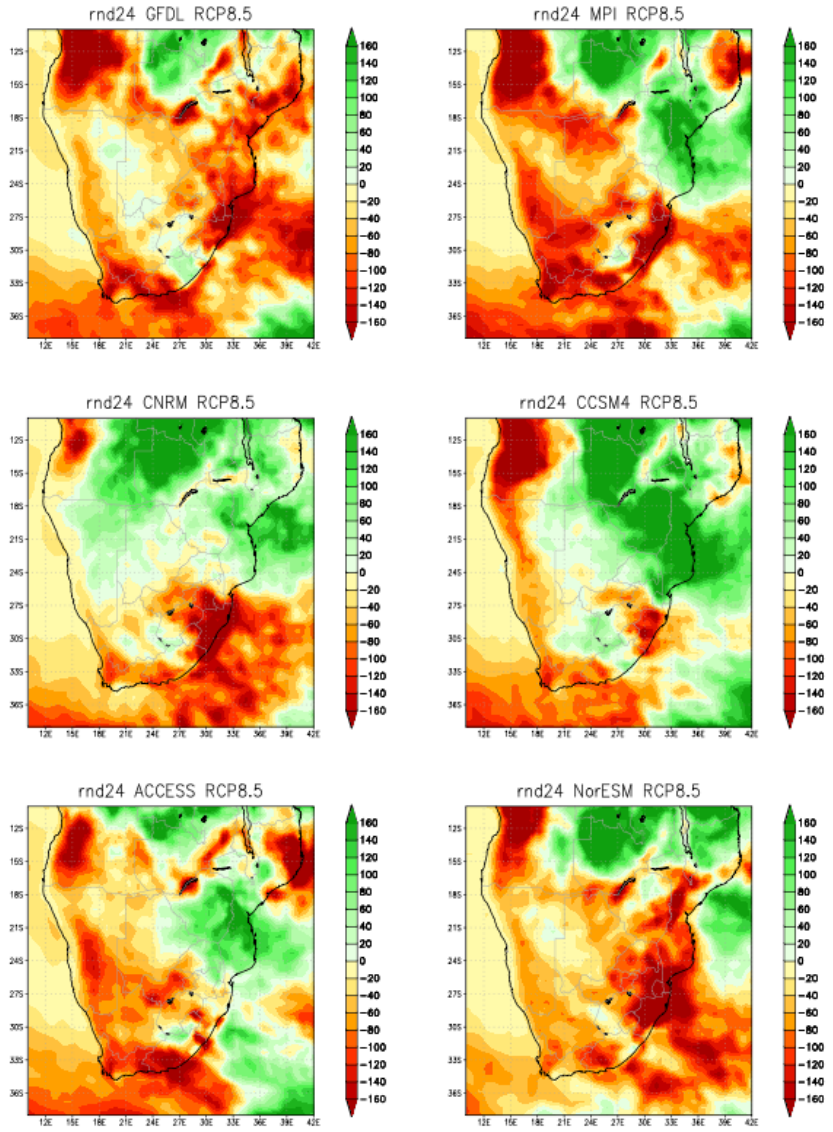
Dr. Abel Ramoelo

Scientific Services

South African National Parks (SANParks)

Introduction

- SANParks manage about **four** million ha of land.
- Smaller parks require intensive management, which entails;
  - Vegetation condition and animal numbers
  - Land degradation monitoring
    - Erosion, invasive species, fire, drought bush encroachment?
  - Climate Change- high frequency of drought, and erratic rainfalls



- **Projections of changing annual average temperature (degrees C) over southern Africa for the period 2070-2099 relative to 1961-1990**
- **Projections of changing annual rainfall over southern Africa for the period 2070-2099 relative to 1961-1990**

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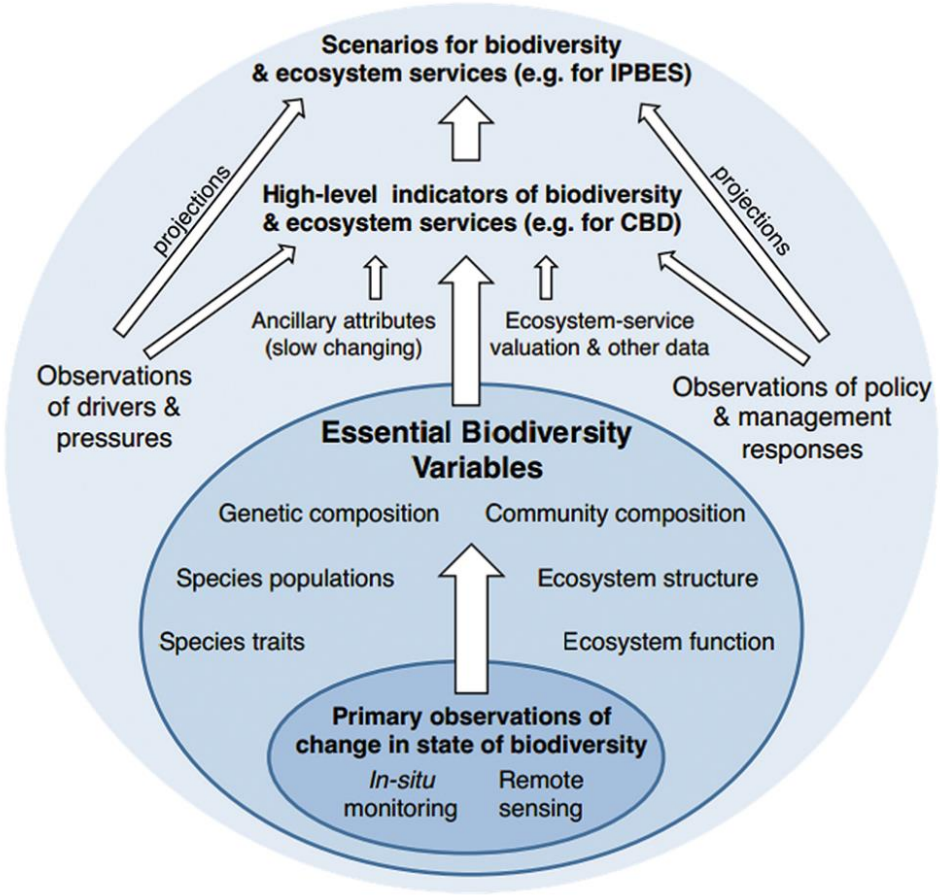
Source: CSIR-CHPC

Essential Biodiversity Variables (EBVs)



Source: GEOBON

Criteria of EBVs

- capture critical scales and dimensions of biodiversity
- biological
- a state variable (in general)
- sensitive to change
- ecosystem agnostic (to the degree possible)
- technically feasible, economically viable and sustainable in time

Rationale

- Local, and regional policies, PA monitoring needs
- **Limited harmonized observation system for delivering regular, timely data on biodiversity change.**

Satellite Remote Sensing – EBVs

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Remote Sensing in Ecology and Conservation
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POLICY FORUM

Framing the concept of satellite remote sensing essential biodiversity variables: challenges and future directions

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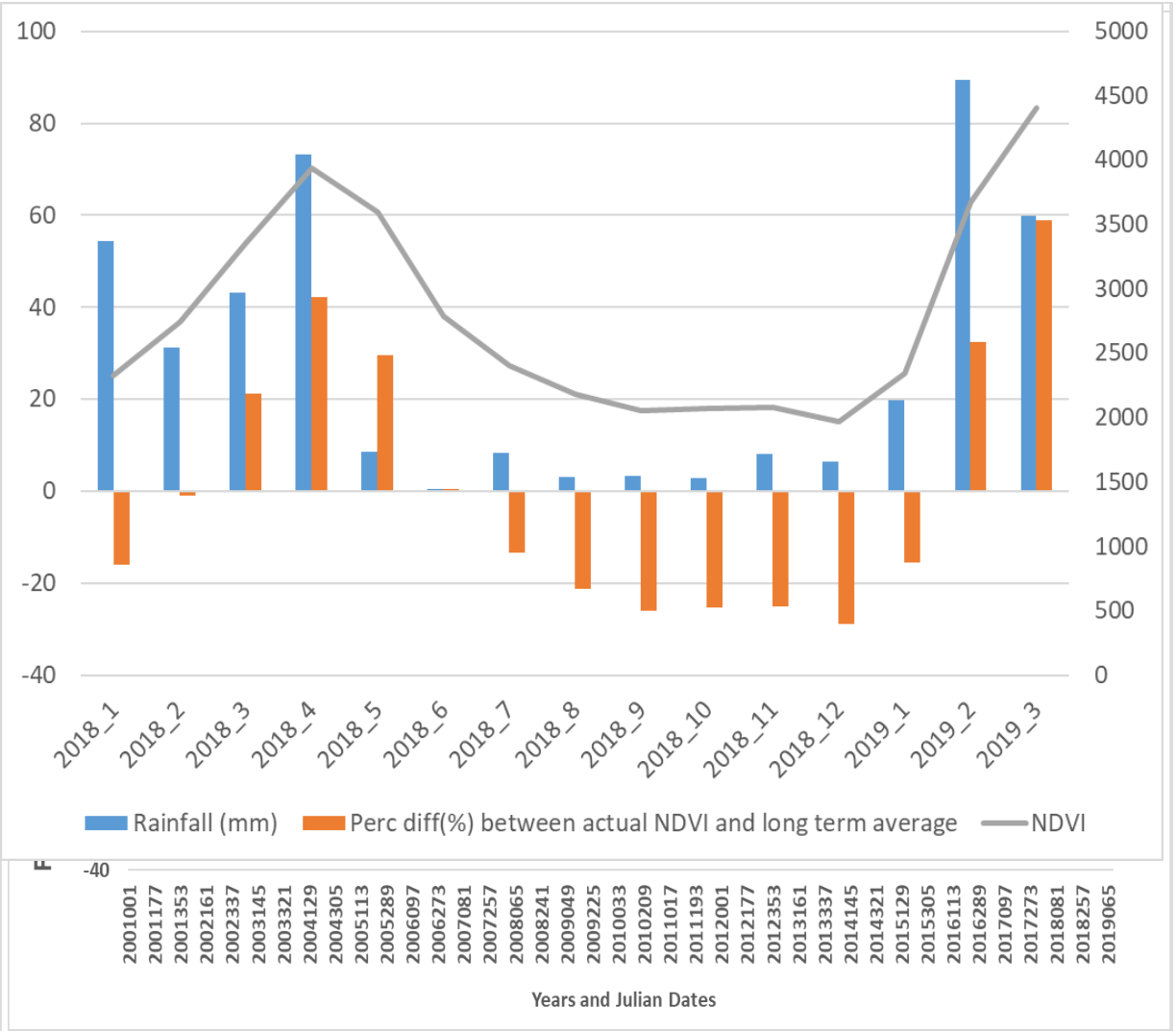
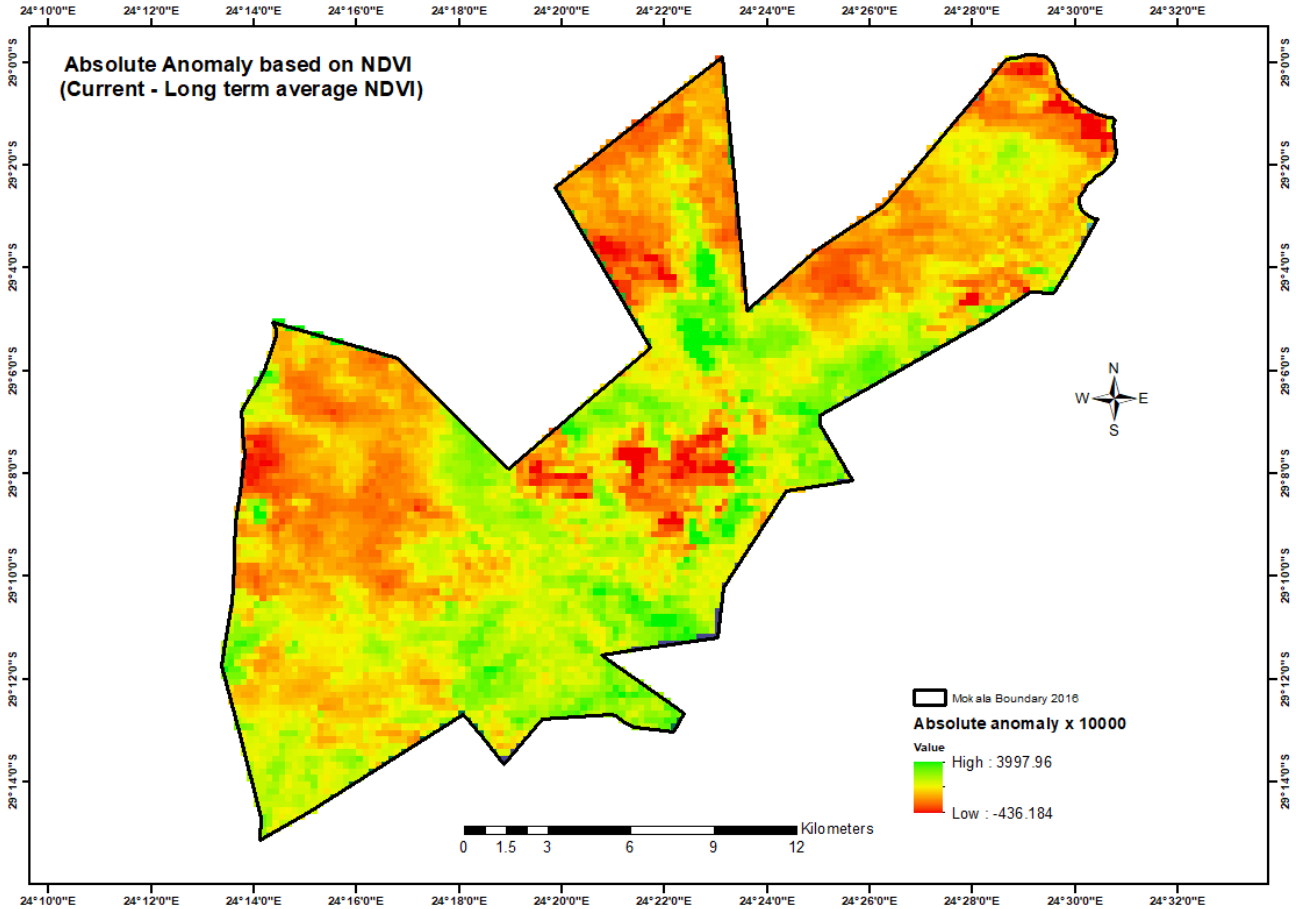
Examples of some indicators that could be translated into EBVs (e.g. Mokala National Park)





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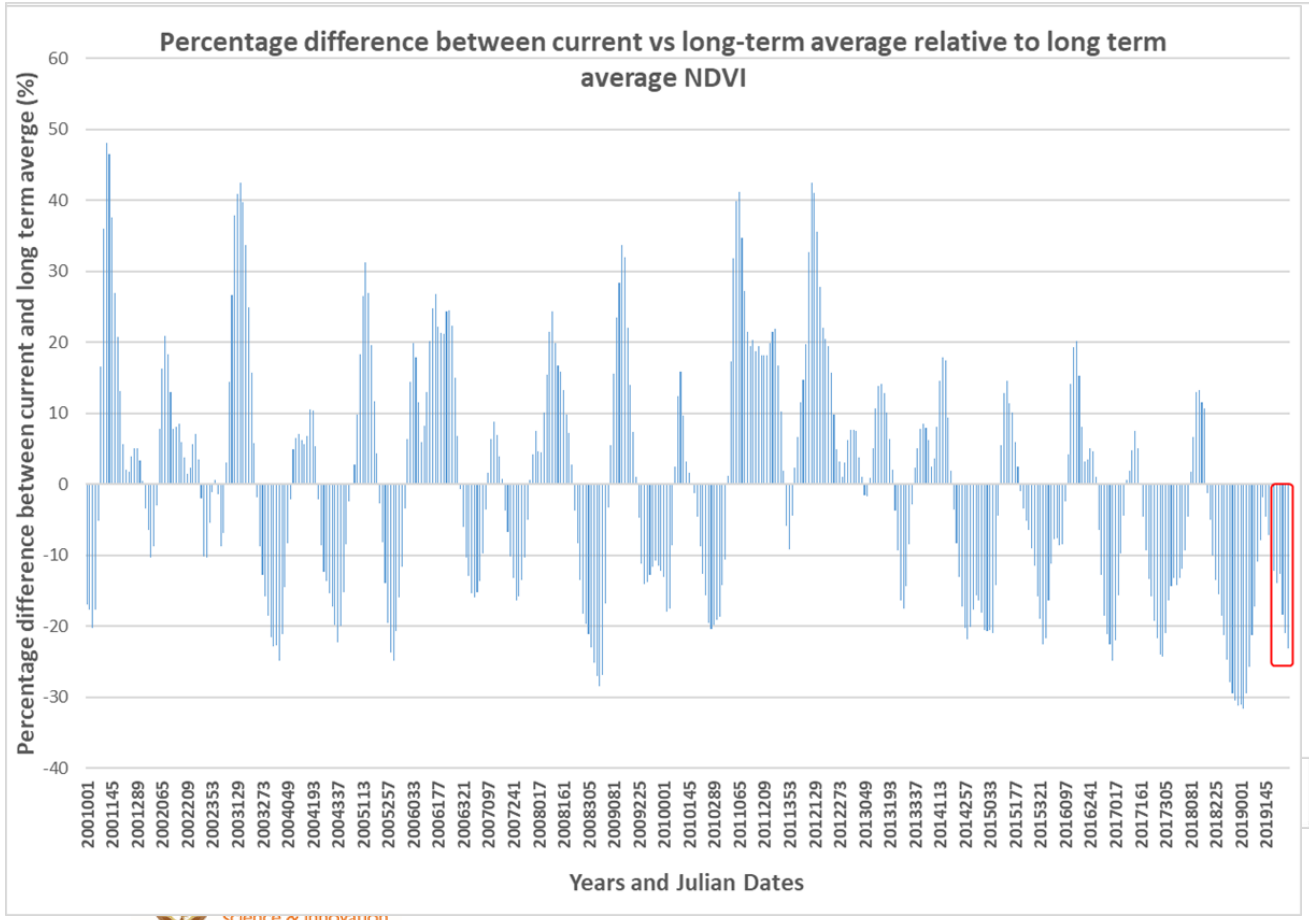
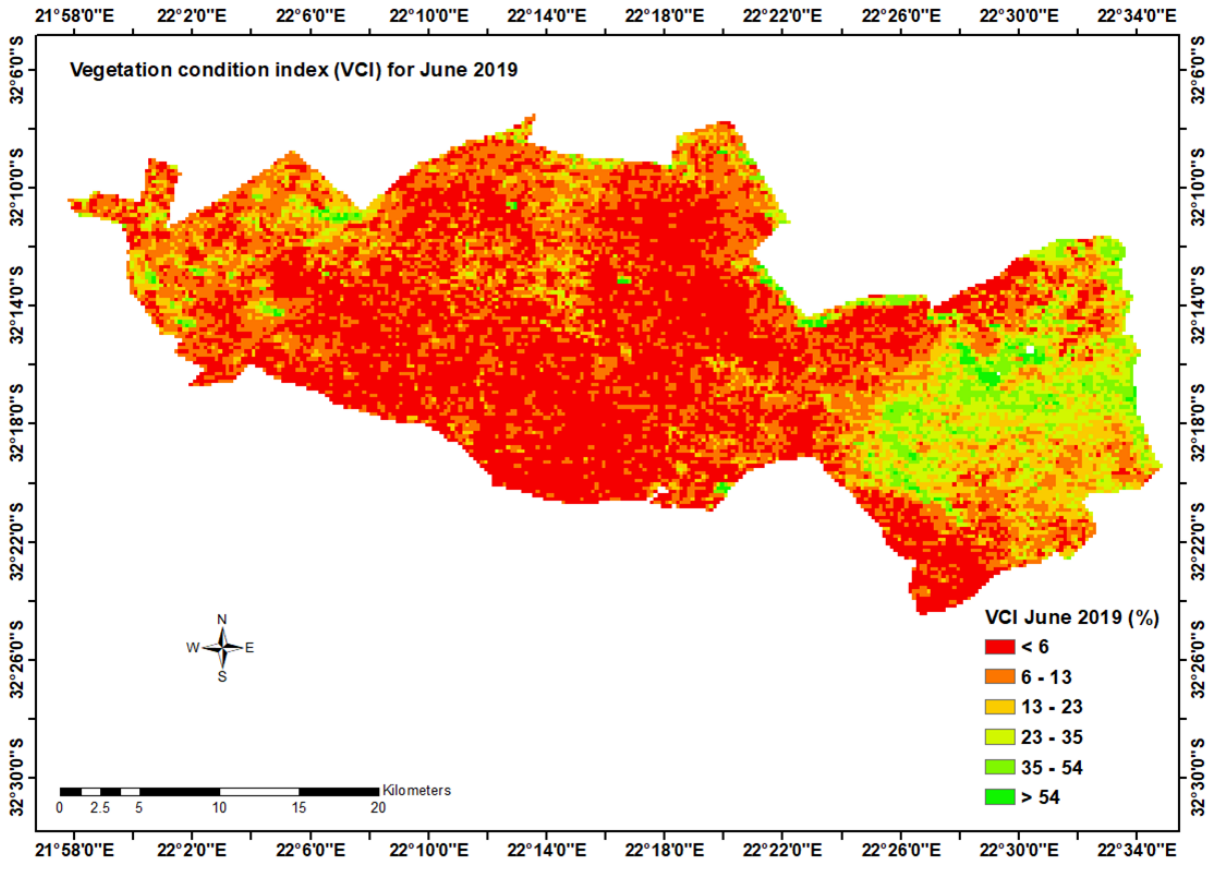
Examples of some indicators that could be translated into EBVs (cont.) (e.g. Karoo National Park)





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EBVs provide potential for monitoring, but there are few questions.

- What are key environmental issues (e.g. land degradation) beyond each PAs?
- Uniqueness and representativeness of the PAs according to the EBVs?
- Who is working towards developing such variables, local, regional and international? Synergies?
- How can institutions be mobilized to contribute those EBVs for the management of the protected areas?
- Co-development or co-production among institutions and stakeholders?
- How can these data be collated, stored and further analysed for trends, etc? GEE? ODC?
- **Monitoring, assessment and early warning tools or DASHBOARD**
- At what scale, temporal, spectral and spatial?
- Inform decisions pertaining to multiple societal benefit areas

Acknowledgement

South African National Parks
GEOBON
CSIR
USGS

Thank you