

Assessing changes in the hydrological regime of lacustrine wetlands in the Maputaland Coastal Plain, South Africa

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National Space Conference 28-30 August 2024



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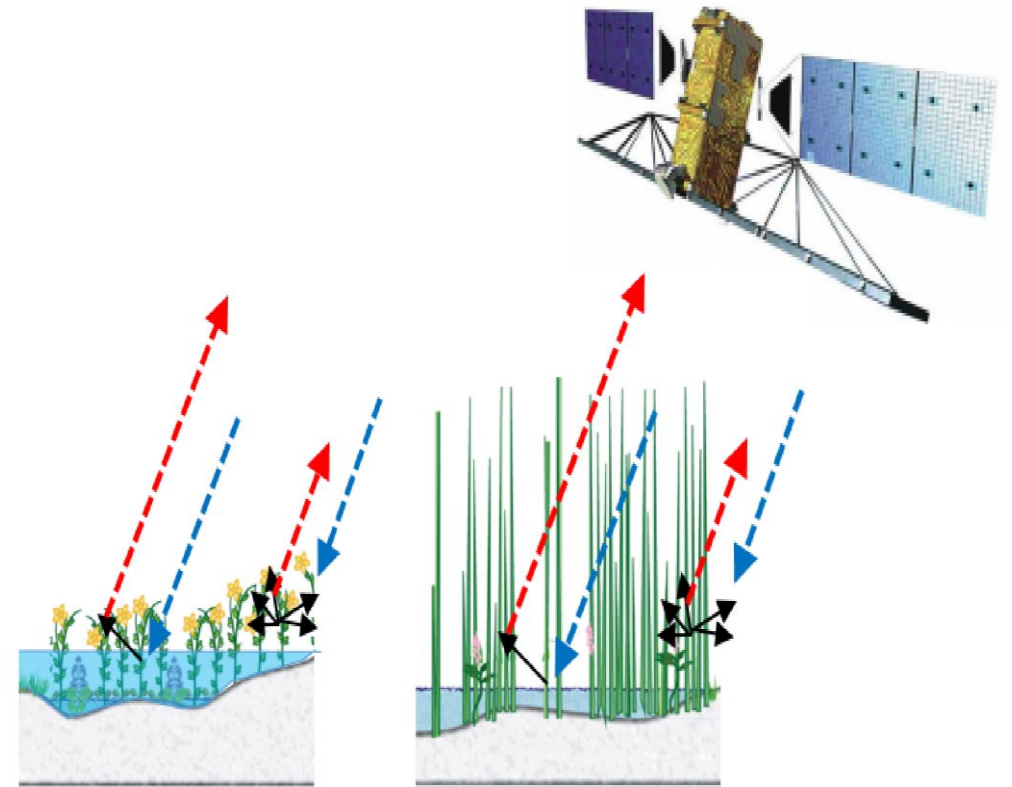


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Remote Sensing in monitoring wetlands

- Long term dynamics and change detection
- High spatial resolution; surface water monitoring
- Spatial coverage



Why are Lacustrine systems important?

- Lacustrine Systems refer to open water bodies;
 - IUCN inland water biome
 - Sustainable Development Goal 6 indicator 6.6.1
- Global Biodiversity Framework(GBF) Target 1; by 2030, prevent and significantly reduce the degradation of natural habitats, halt the loss of biodiversity, and protect and prevent the extinction of threatened species.

Maputaland Coastal Plain

- 7% of the total area

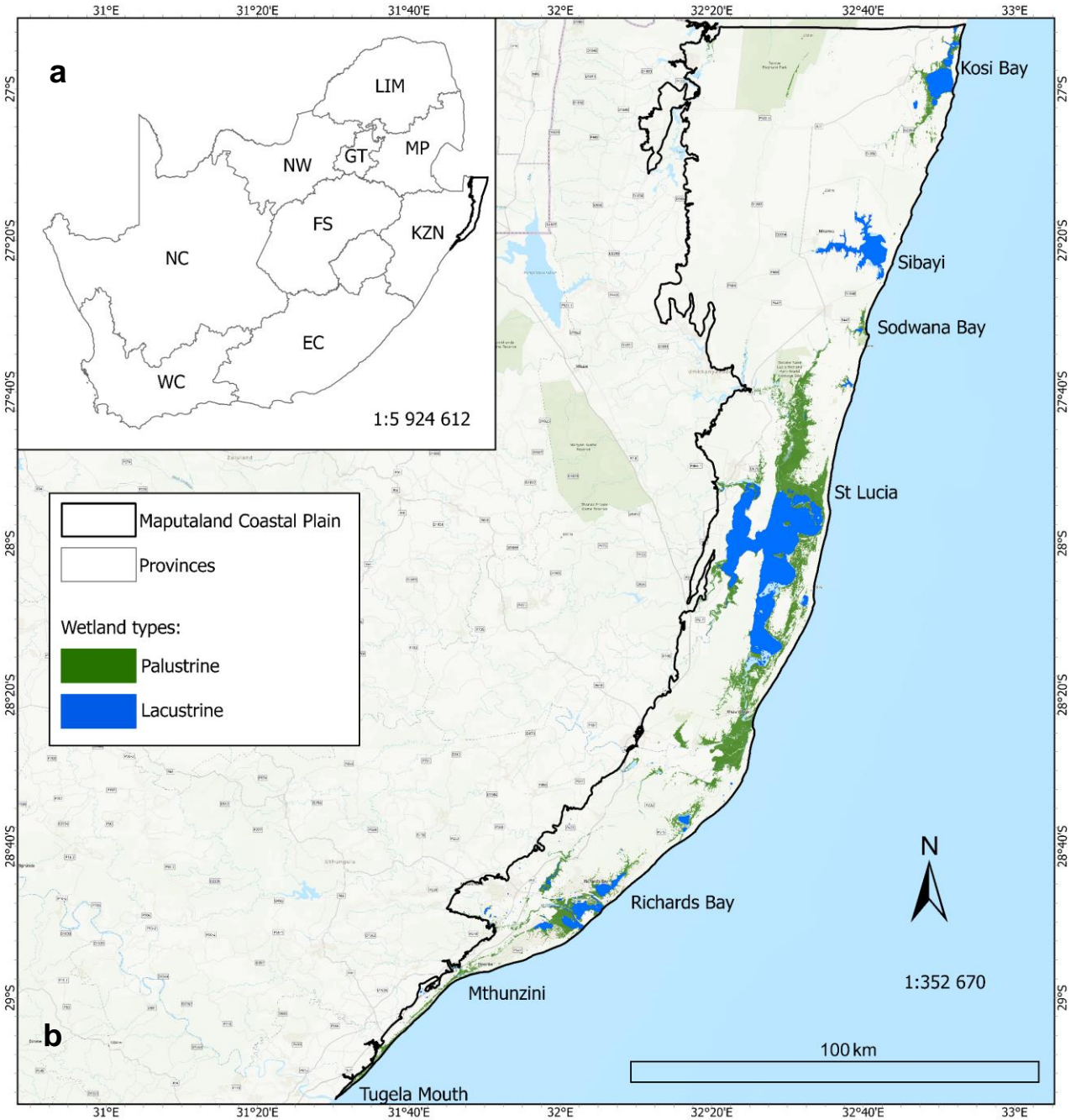


Figure 1: Spatial distribution of open water bodies and palustrine wetlands within the MCP

Assessing changes in the hydrological regime of lacustrine wetlands in the MCP

- Research Aim : The main aim of this study is to assess the changes in the hydrological regime of lacustrine wetlands in the Maputaland Coastal Plain from 1984 to 2023.
- Research Objectives:
 - i. Correspondence between wetland extent and rainfall trends
 - ii. Changes in hydrological regimes over time
 - iii. Relationship between extreme rainfall events and wetland extremes
 - iv. Extent changes between wettest and driest months

Data collection and processing

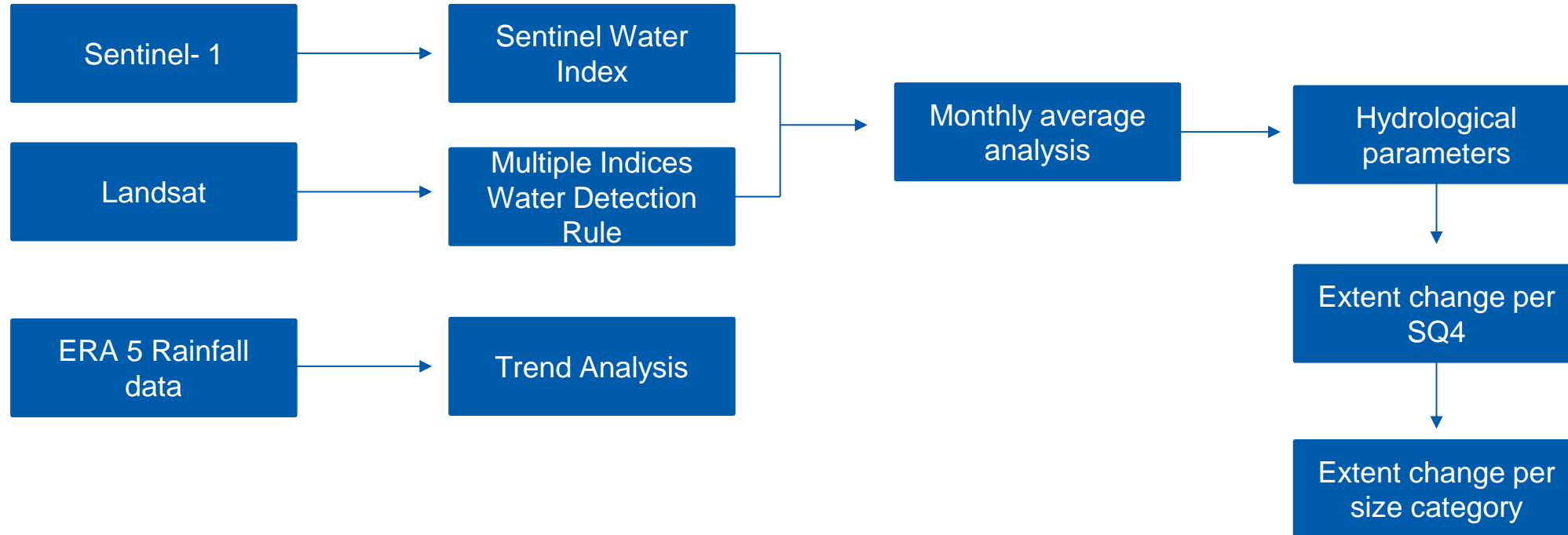


Figure 2: Methodology framework

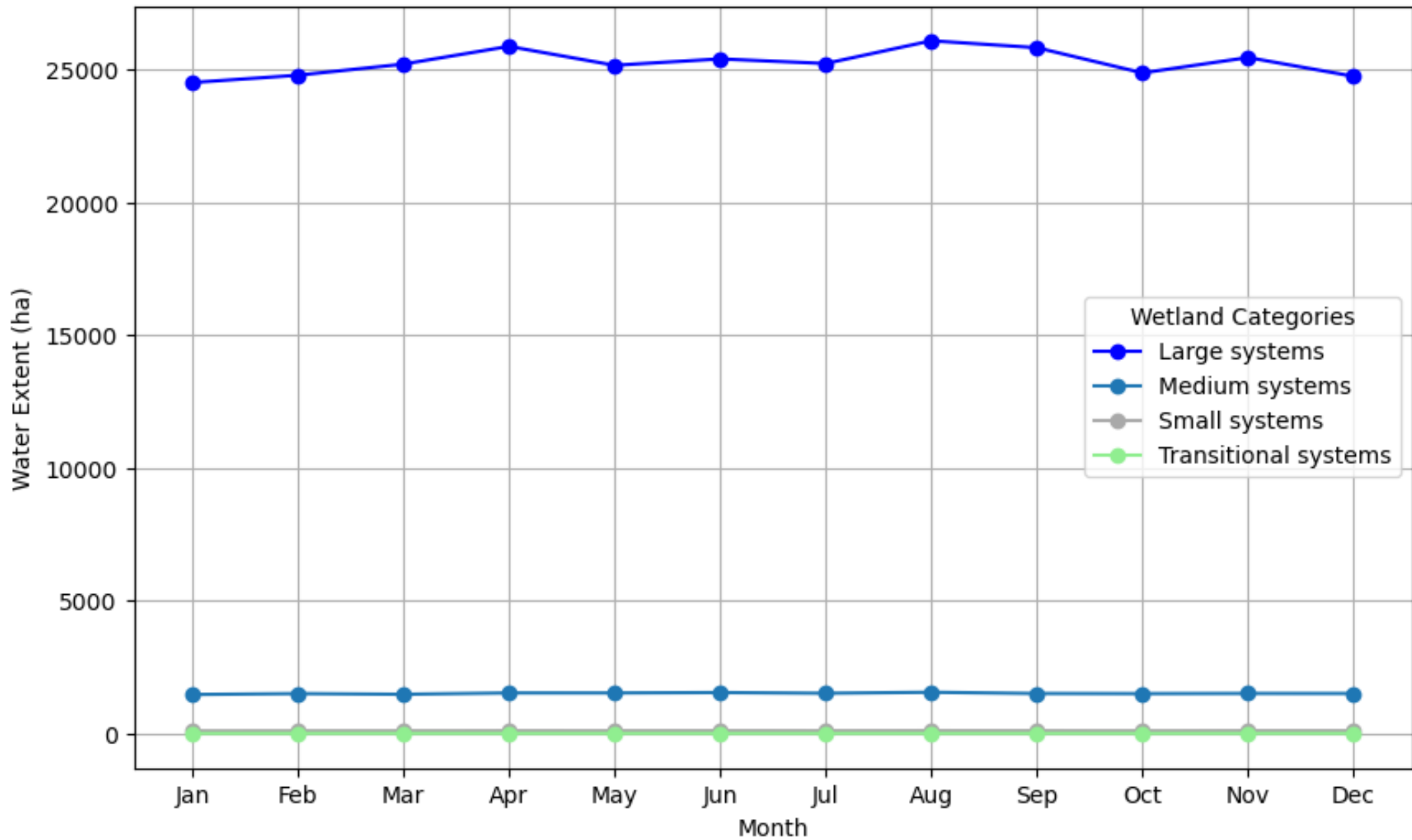
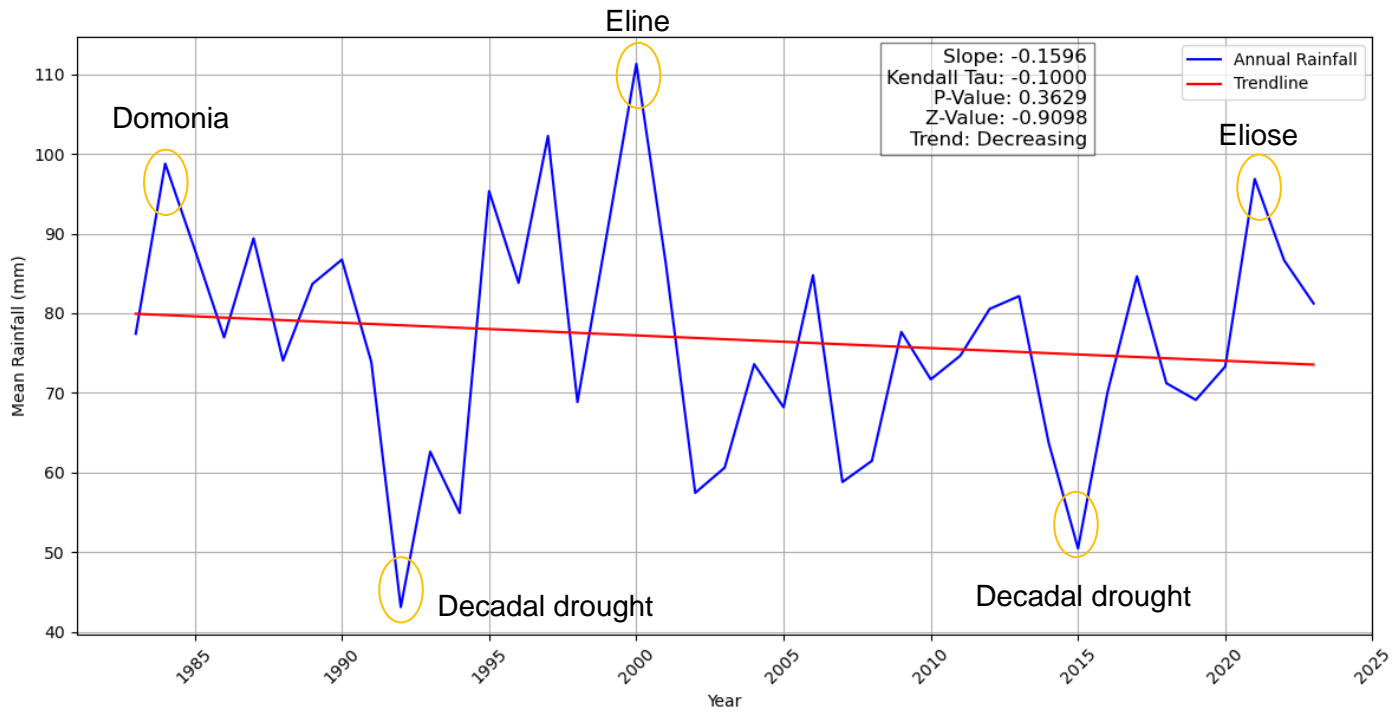


Figure 3: Monthly average extent per wetland size category from 1984 to 2023

Rainfall Trend from 1984 to 2023



- Decline by 5%

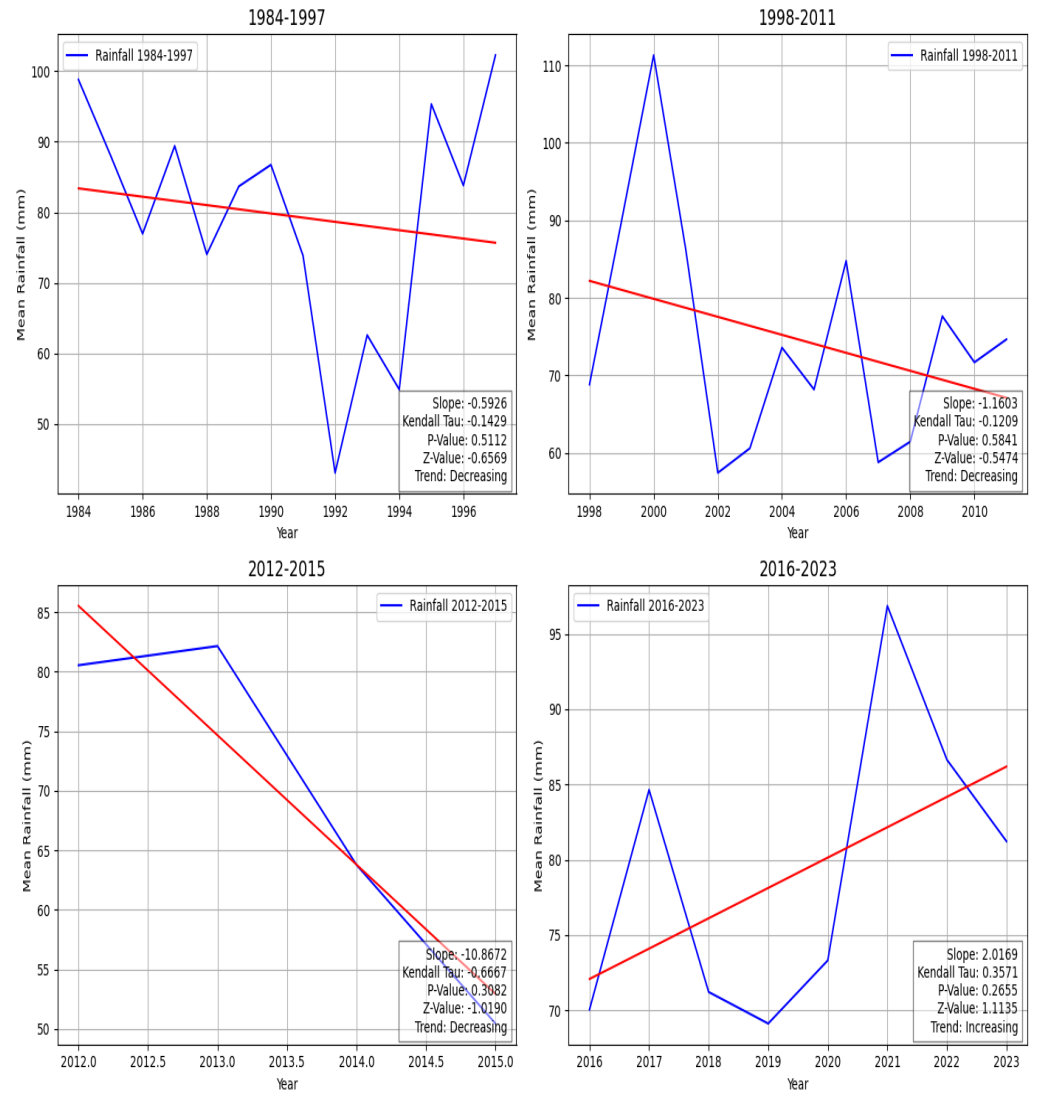
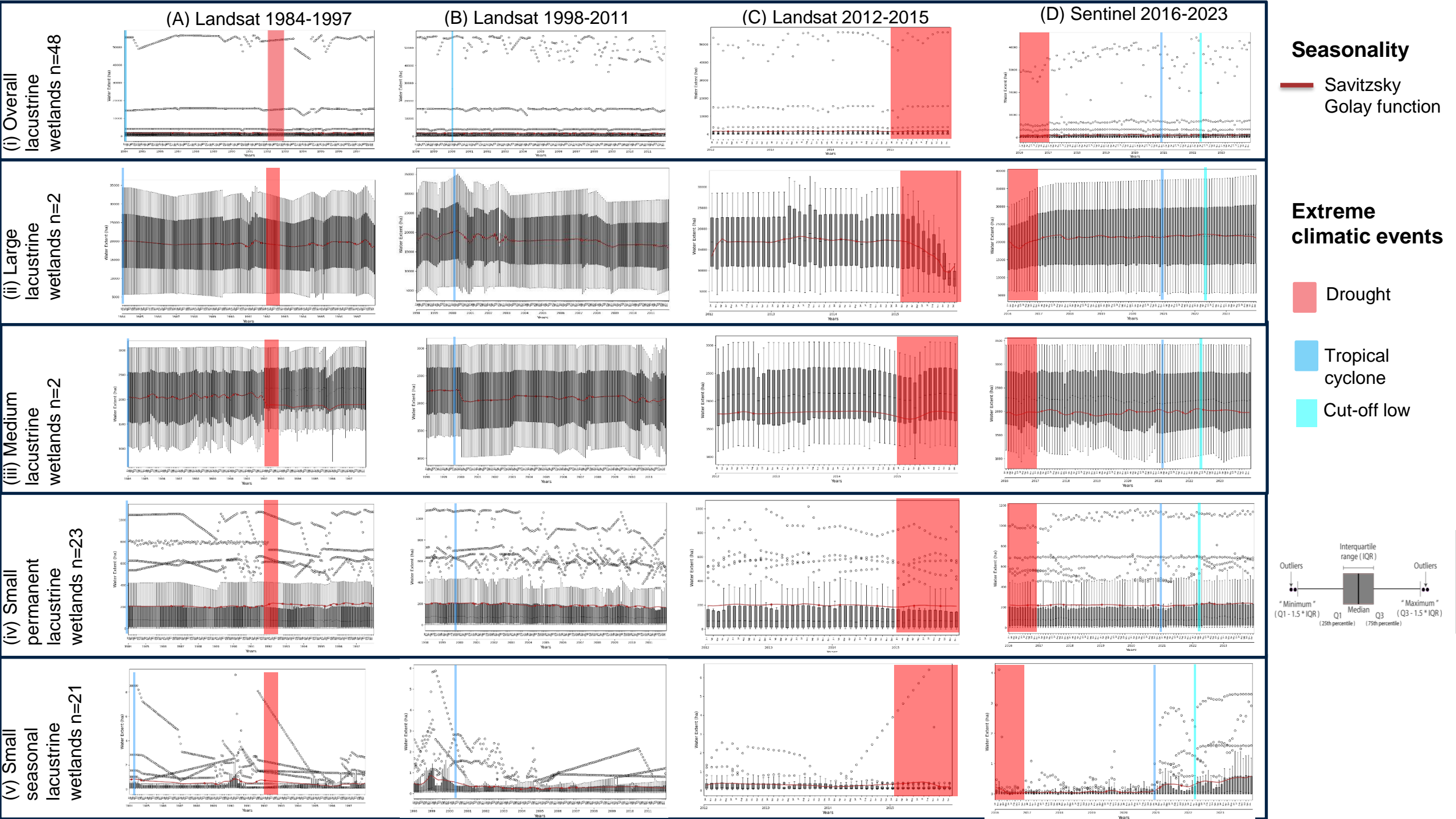
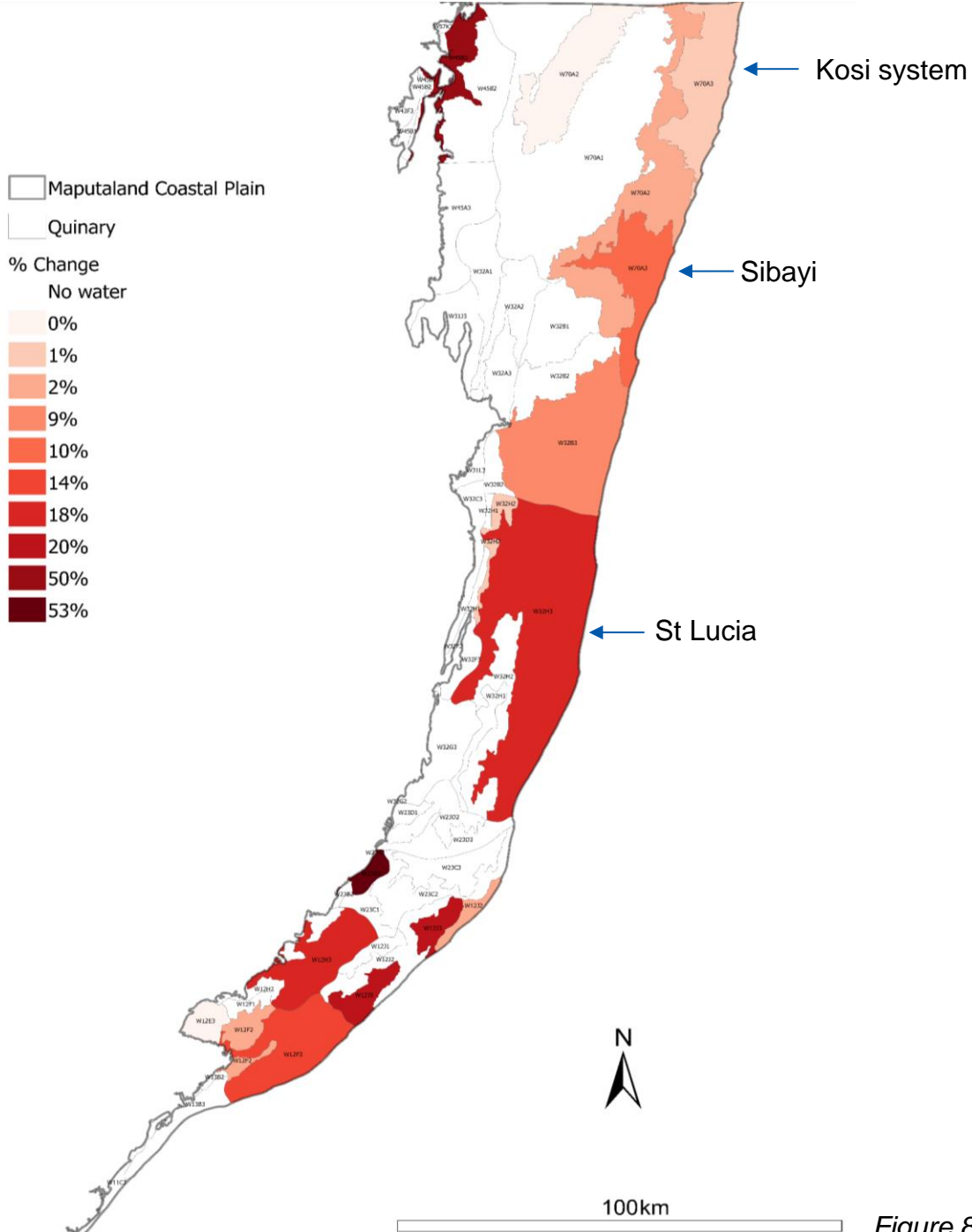


Figure 5: Rainfall trends over time. (a) overall trend from 1984 to 2023, (b) trends for the four time periods





SQ4 extent change % between wettest and driest months

Figure 8: Distribution of lacustrine wetland extent changes between wettest and driest month

Wettest vs driest months extent changes maps

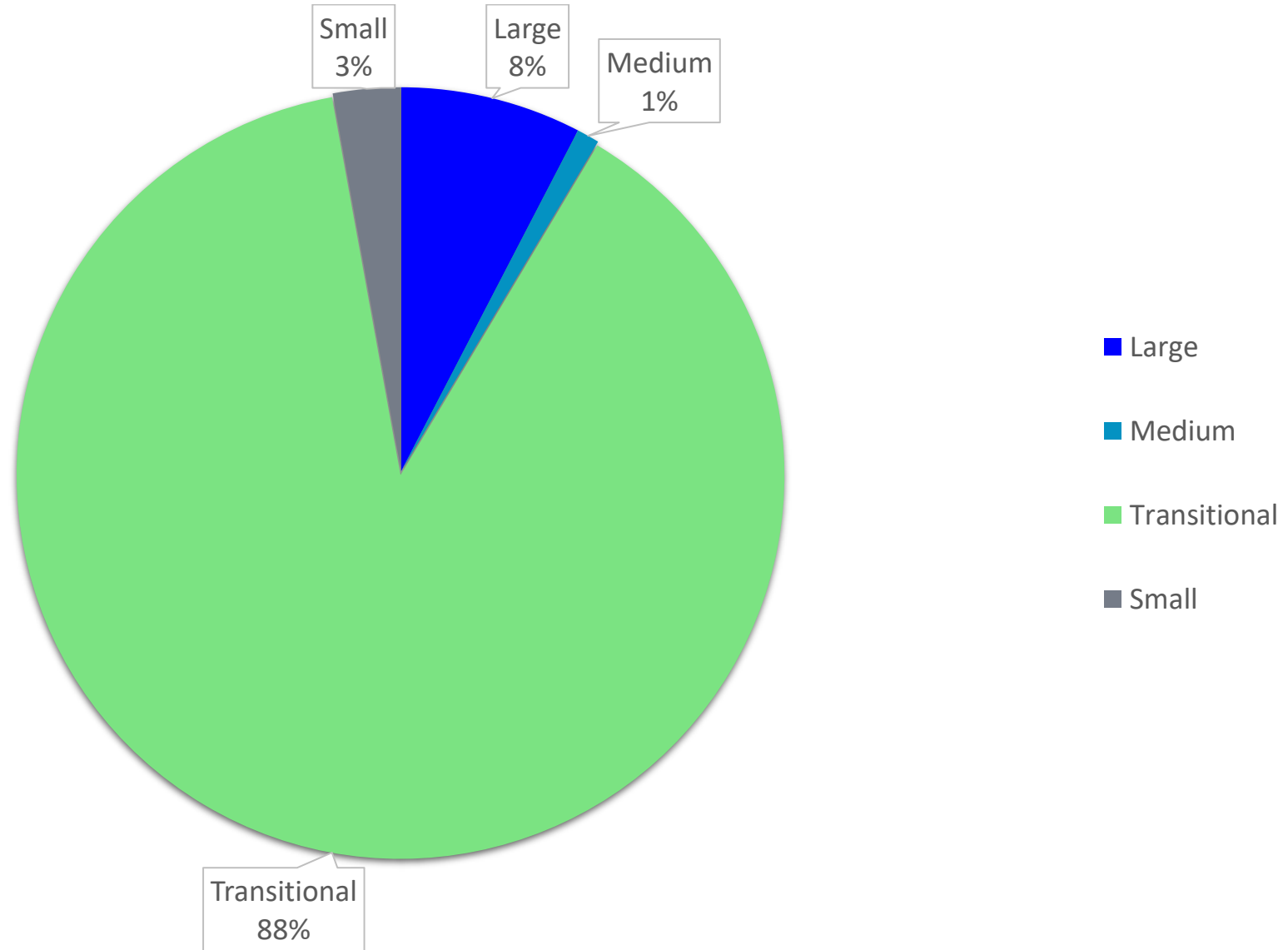


Figure 9: percentage of extent change per size category systems

Key message

- Synthetic Aperture Radar (SAR) is optimal for long-term response monitoring
 - All weather capability
 - Day and night monitoring
- Complexity of the region
 - Dynamic hydrological regime
 - Frequent cloud cover
- Reporting to GBF
 - Meeting commitments to biodiversity conservation
 - Ecosystem protection

Thank you



Acknowledgements

- South African National Space Agency (SANSA)
- Water Research Commission (WRC)
- University of Pretoria (UP)
- Council for Scientific and Industrial Research (CSIR)

