# South Africa Ecological Conservation

Identifying and Mapping Riparian Areas in South Africa with Earth Observations

# **Project Synopsis**

Riparian zones are thin strips of land that occur along the edges of rivers, lakes, and other water bodies. The South African National Biodiversity Institute (SANBI) and the Biodiversity Survey of the Cape (BioSCape) consider these zones to be extremely important areas to preserve and protect as they offer numerous ecosystem services. Prior national land classification attempts had not produced accurate riparian zone mapping. This approach aimed to improve riparian land cover classification through imagery from Landsat 9 Operational Land Imager 2 (OLI-2), Sentinel-2 Multispecral Instrument (MSI), and a derived digital elevation model (DEM) from the Shuttle Radar Topography Mission (SRTM). We calculated these zones by mapping potential areas where they might occur, and areas where riparian zones are known to be present. Localities where the two overlapped were identified as actual riparian zones. We anticipate this method will be used by conservationists and practitioners interested in riparian monitoring and

# Methodology





management.

# **Objectives**

- Investigate transitional nature between stream bodies and riparian zones
- Establish methodology that can applied to other areas in South Africa
- Identify riparian areas that are not highlighted in prior map products



### **Study Area**

#### Earth Observations





Landsat 9 OLI-2

Sentinel-2 MSI

### **Team Members**







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**SRTM** 

# **Project Partners**

- South African National Biodiversity Institute
- Biodiversity Survey of the Cape

# Conclusions

- Riparian zones in South Africa can be accurately mapped using NASA Earth observations, as this GIS methodology has an overall land classification accuracy of above 96%
- Nearly 141,000 hectares of riparian vegetation were identified based on our land classification, and the associated map products will help ecologists and conservationists promote science-based decision making to monitor and protect these zones
- Based to our study, the approach needs to be improved for longer processing periods in order to scale up riparian vegetation mapping for the entirety of South Africa.

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