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Current approaches to the integration of spatial data into the Biodiversity and Conservation Biology curriculum, at UWC

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The Biodiversity and Conservation Biology Department

- Teaching and research related to biodiversity - variety of forms of living organisms at various levels and Conservation Biology – preventing species and habitat lost while working towards maintaining sustainable human societies
- 1st year - Cell Biology and Genetics, Biodiversity and Ecology
- 2nd year - Plant and animal diversity, ecophysiology, evolution and population dynamics
- 3rd year – Ecophysiology, behavioural ecology, genetics, biogeography, and land use and conservation





- Long history of engagement with spatial data
 - Dr Richard Knight – 1999 to 2023
 - My Focus – 2023 - onward
 - Landscape ecology - examines landscape complexity & ecosystem processes in determining species distributions and survival
 - Social ecology – human interactions with and impacts on ecosystems across scales
 - Effective planning and management for biodiversity conservation





□ BDC332 Land-use and Conservation

- Introduction of QGIS (costs, licences..)
- Thank you, content creators!
 - (eg Ian Wilson AKA Q-tips - Spatial Modelling Solutions)
- Range of basic GIS functions - ecologists
- FRAGSCAPE – isolation and connectivity metrics
- CLUZ (Conservation Land-use Zoning)





□ Online tools

- EarthMap – portal to Google Earth Engine
- ARIES Explorer and SEEA explored

□ GPS

- Tracklia, OsmAnd, GPS essentials

□ iNaturalist

□ 3 Day conservation GIS exam





- Hons Level
- Biodiversity Information Management
 - Entrenching GIS skills
 - Through coursework – assessment of the CWCBR
 - and projects
 - Understanding Green and Loggerhead turtle movements
 - Land Cover Accounting in the exploration of shifts in WC plantations and conservation over 30 years





Hons suggested interventions CWCBR

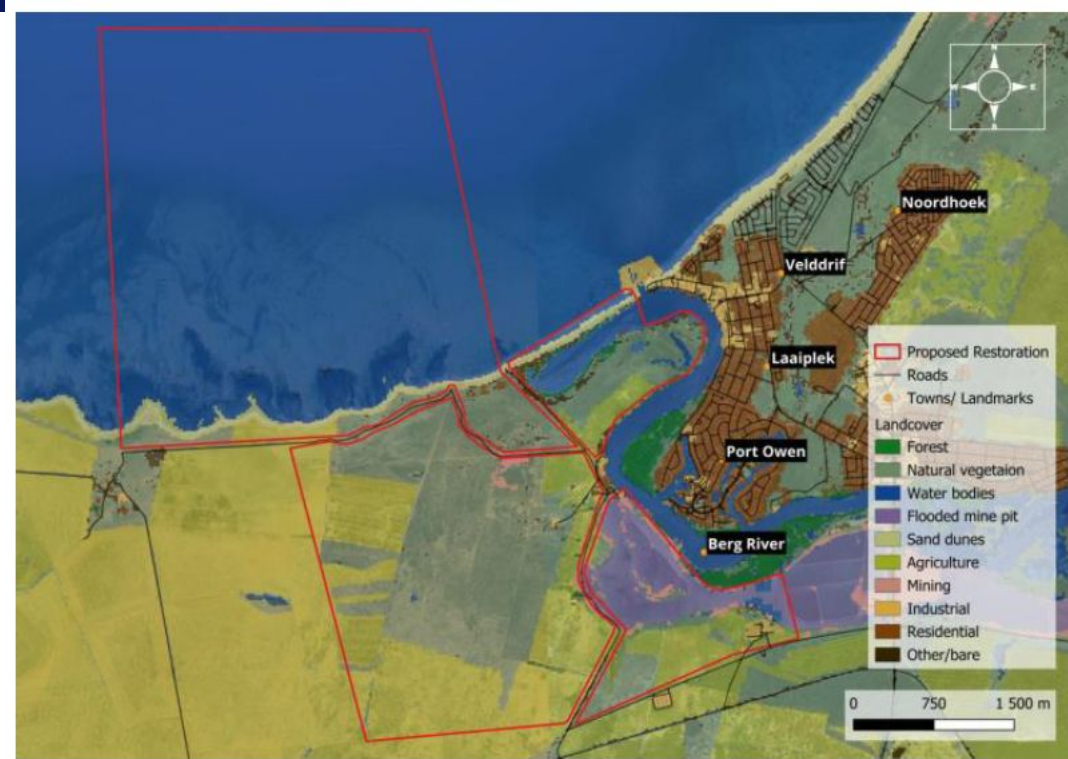


Figure 2: Landcover map showing the proposed restoration sites.

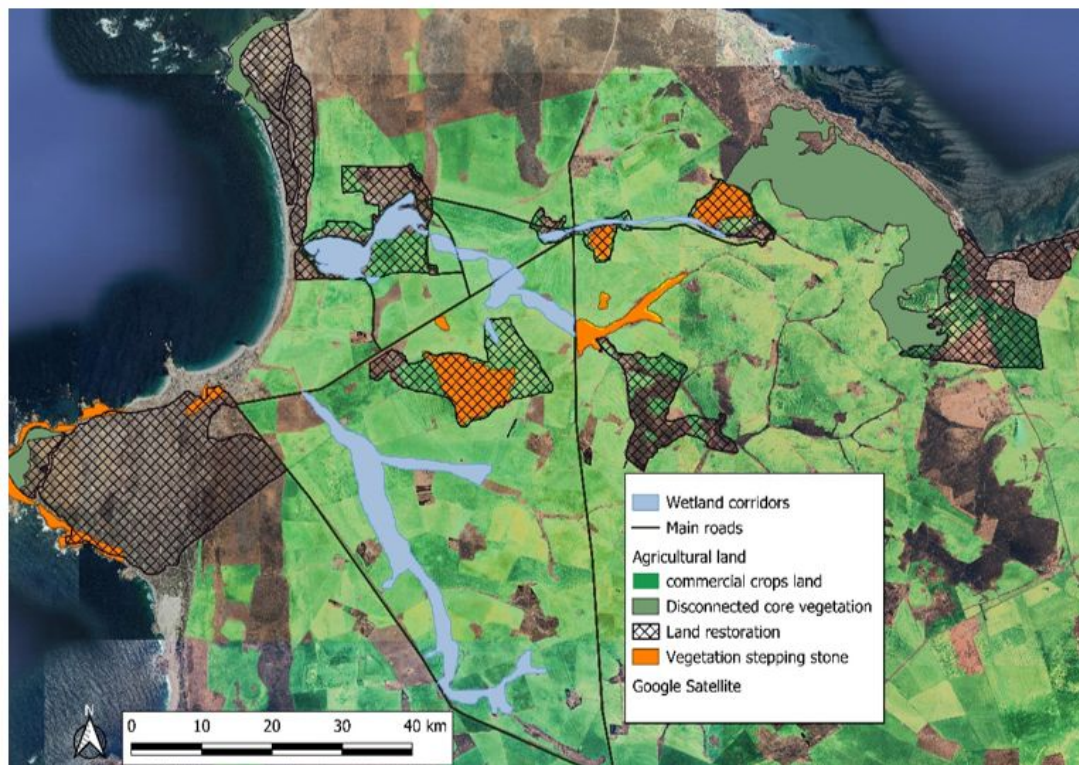


Figure 8: A map representing three disconnected core vegetation with restoration sites, corridors as wetlands and stepping stone vegetation by crop

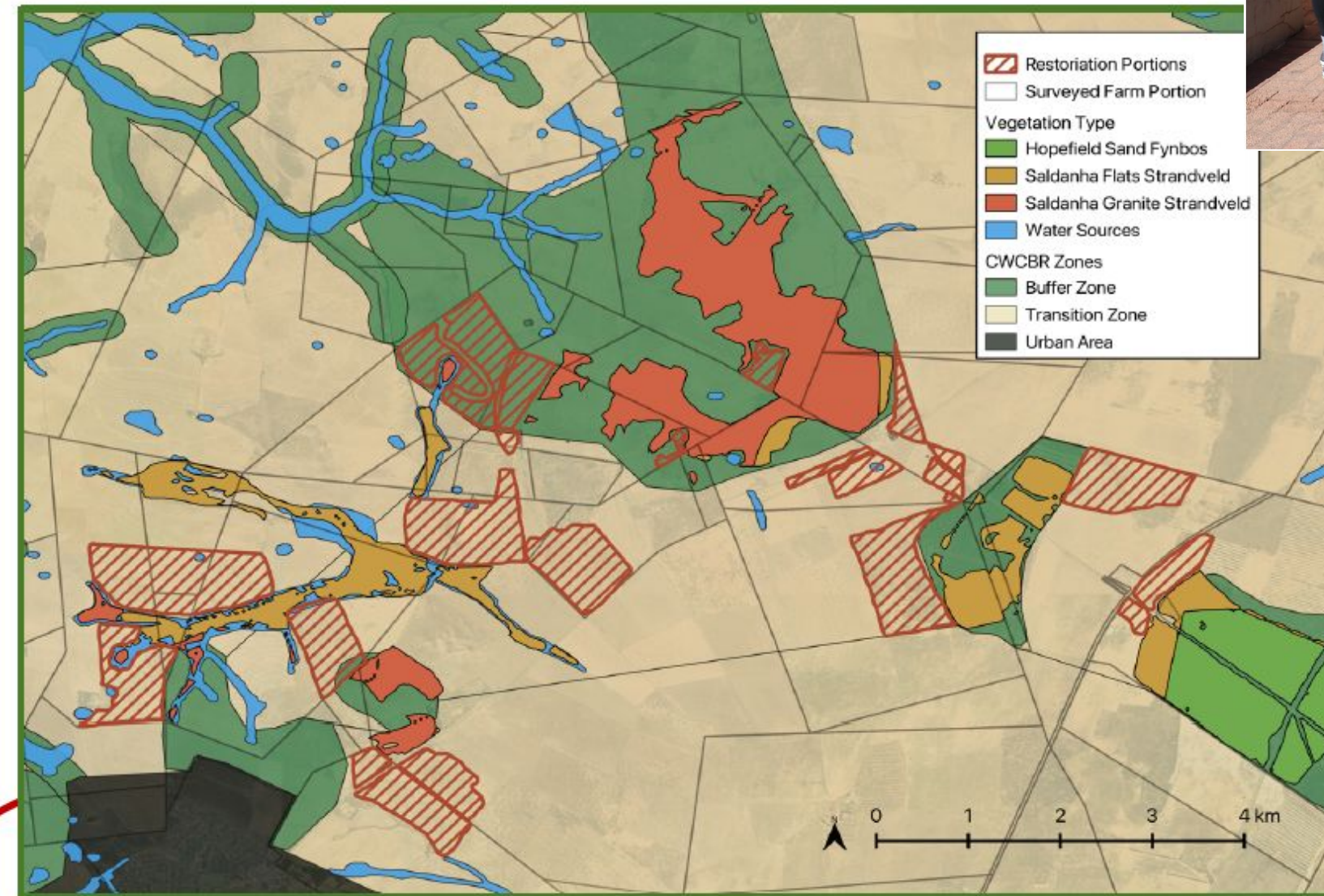
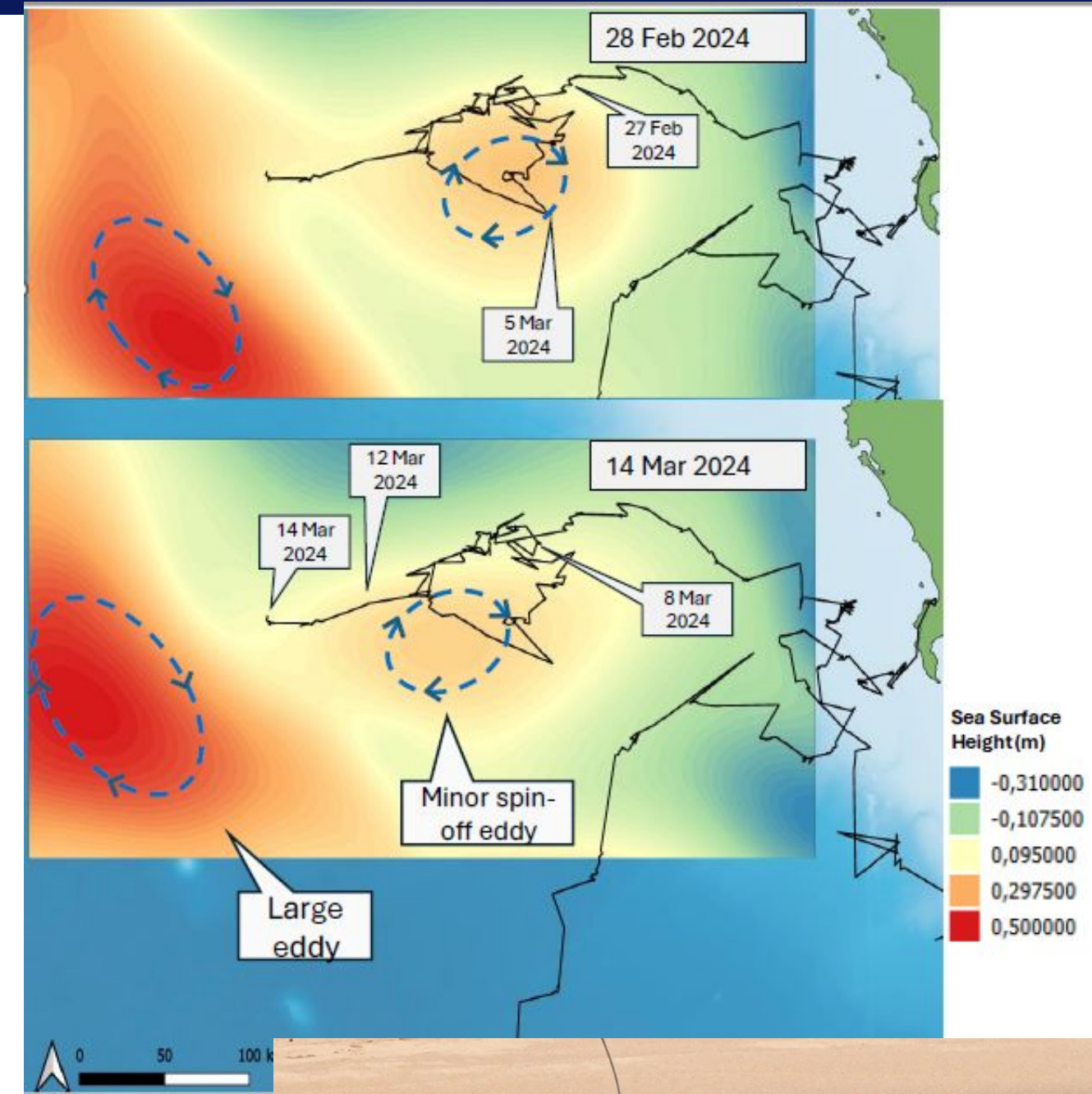
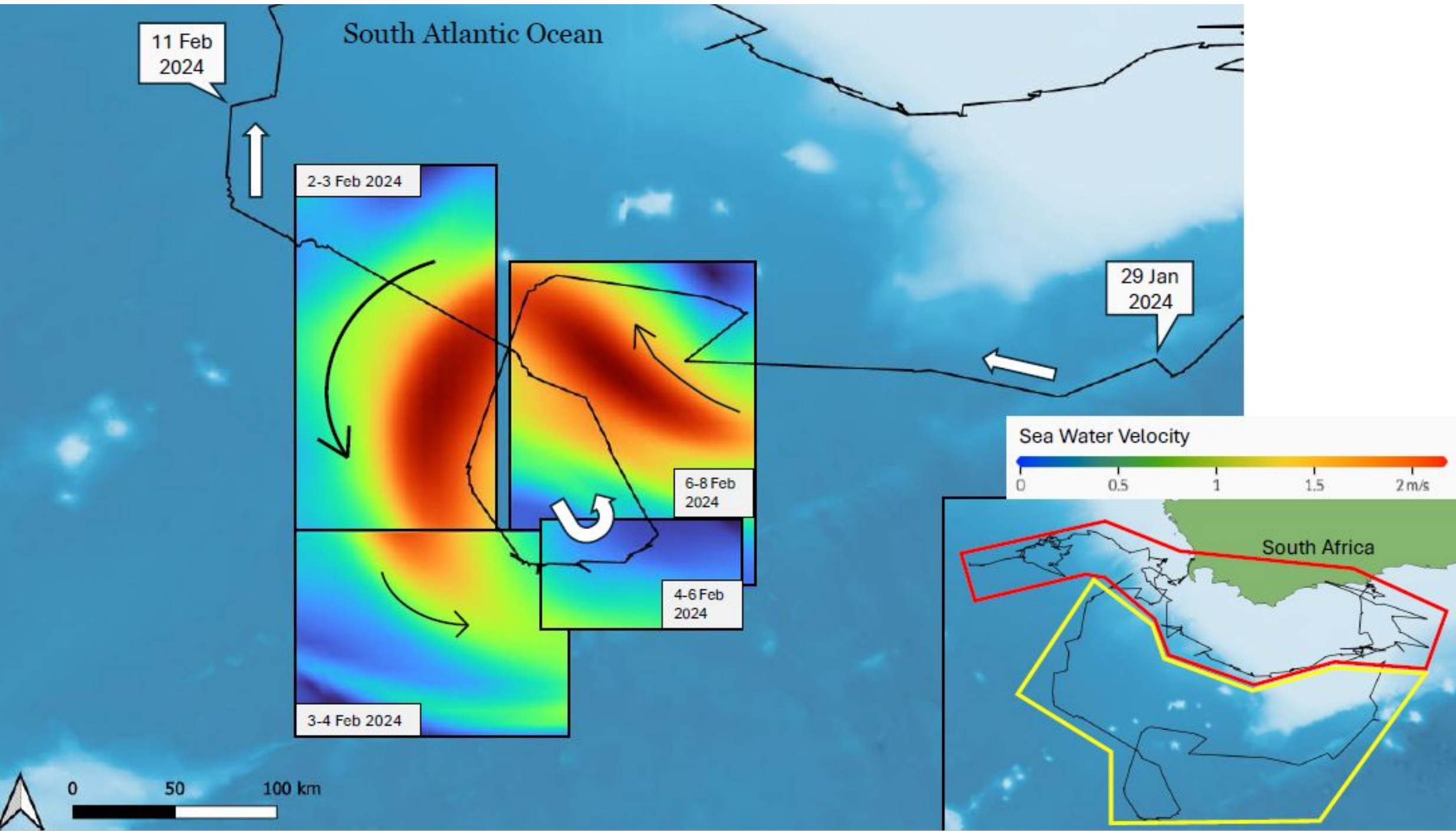


Figure 5: A map illustrating the proposed restoration areas to help improve overall connectivity between fragmented vegetation patches.





Understanding turtle movements





Understanding turtle movements

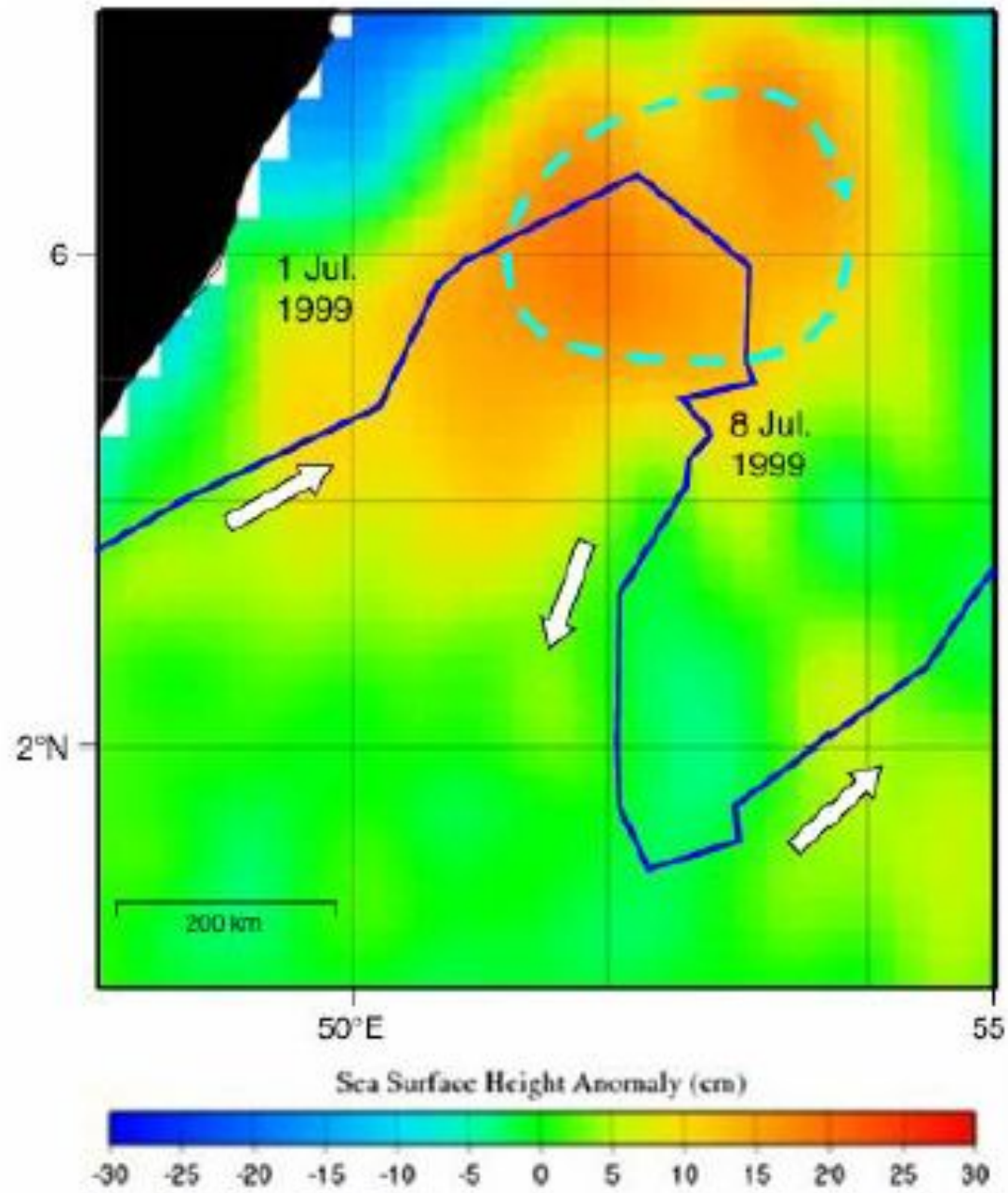
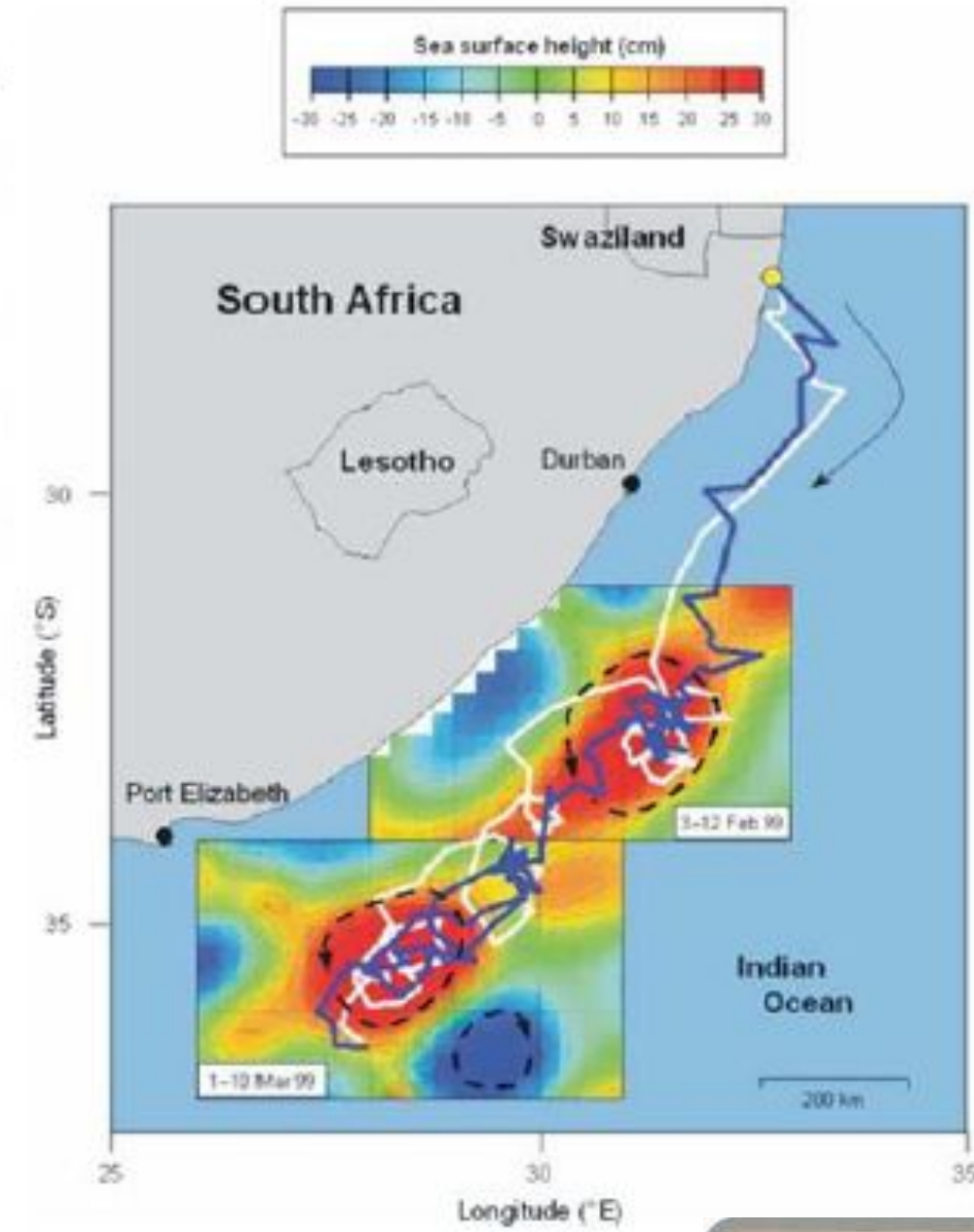
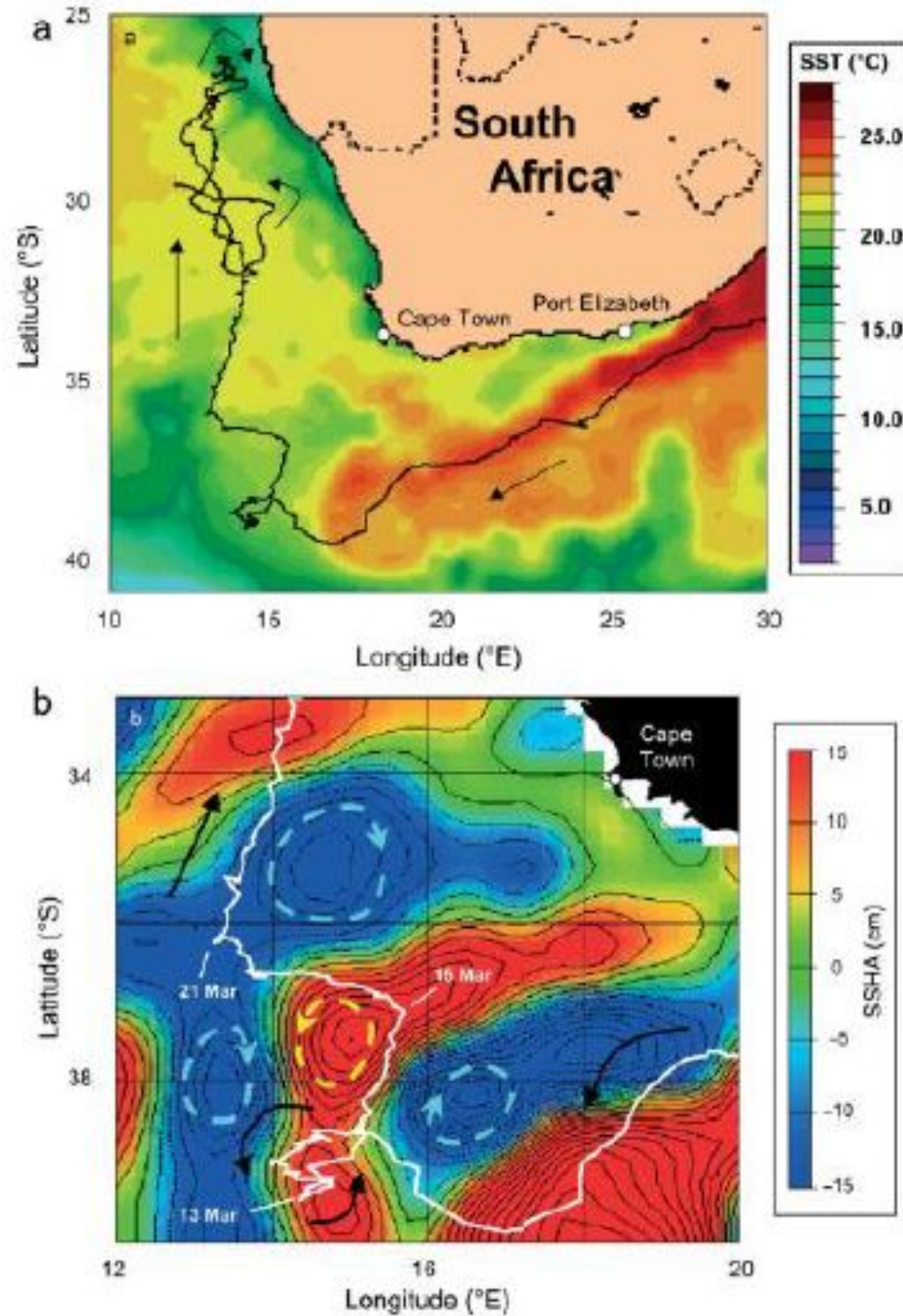


Fig. 7 Part of the track of turtle B2 superimposed onto an SSHA image showing an intense anomaly on 12 July 1999 (range 3–12 July). White arrows show the turtle's direction of movement





Plantations extent changes

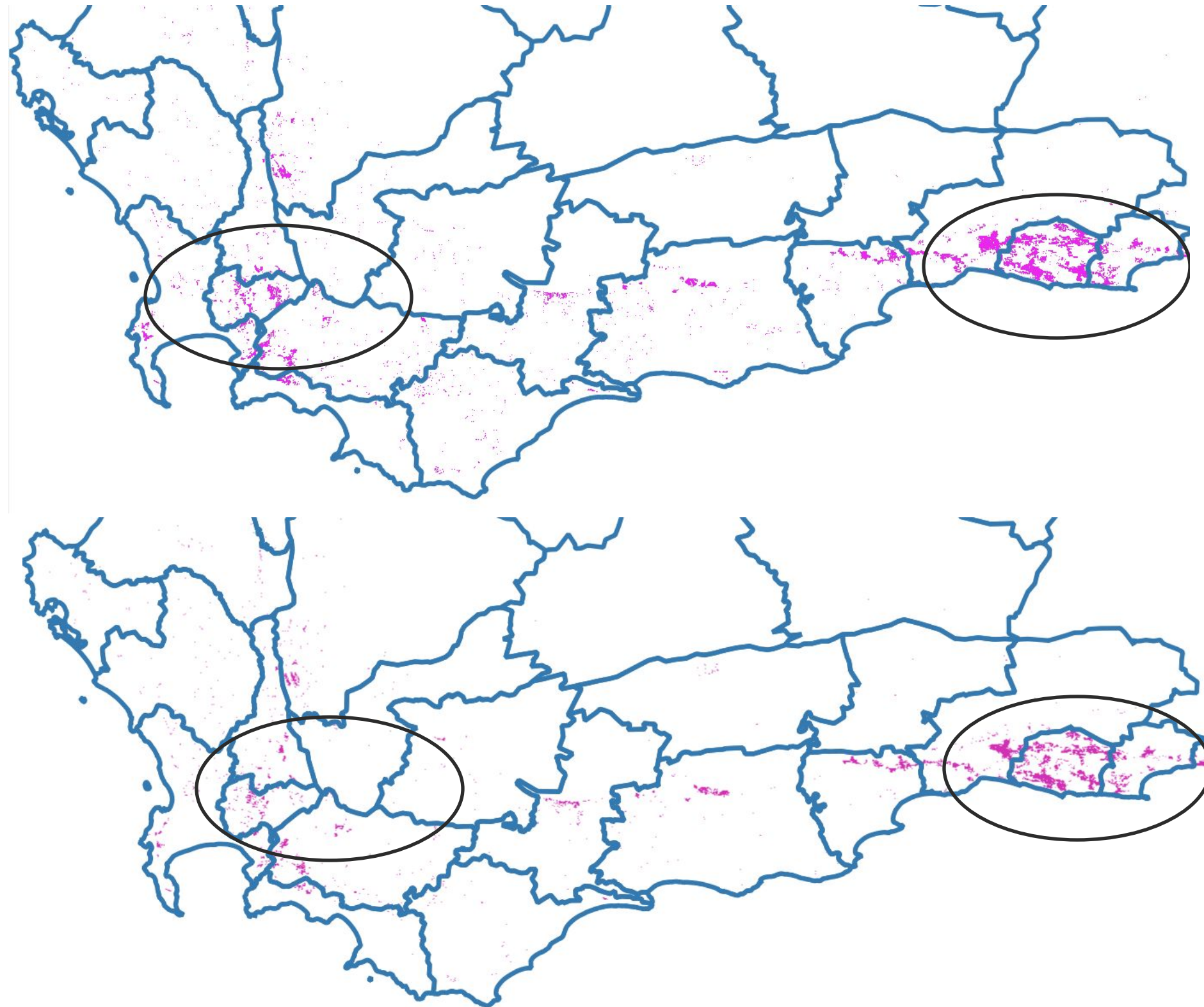
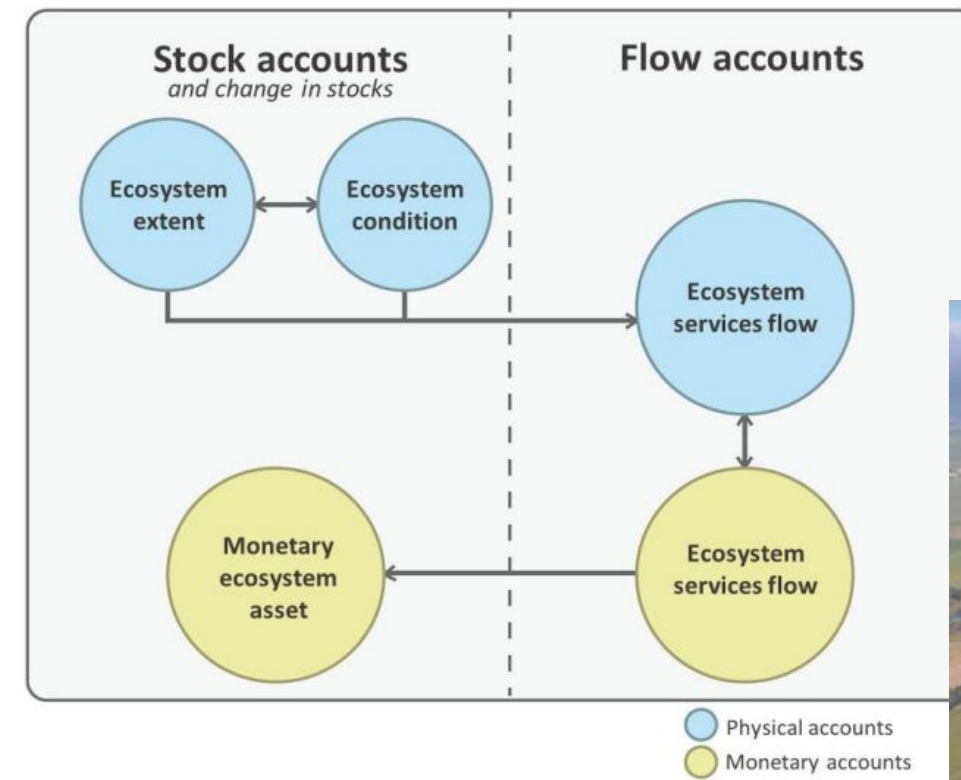


Figure 2.2: Connections between the ecosystem accounts



System of Environmental-Economic Accounting
Ecosystem Accounting

NATURAL CAPITAL 1
Land and Terrestrial Ecosystem Accounts, 1990 to 2014

IMPROVING LIVES THROUGH DATA ECOSYSTEMS

SCATS SA
environment, forestry & fisheries
SANBI
South African National Biodiversity Institute
NDP



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Thank You.

Questions?