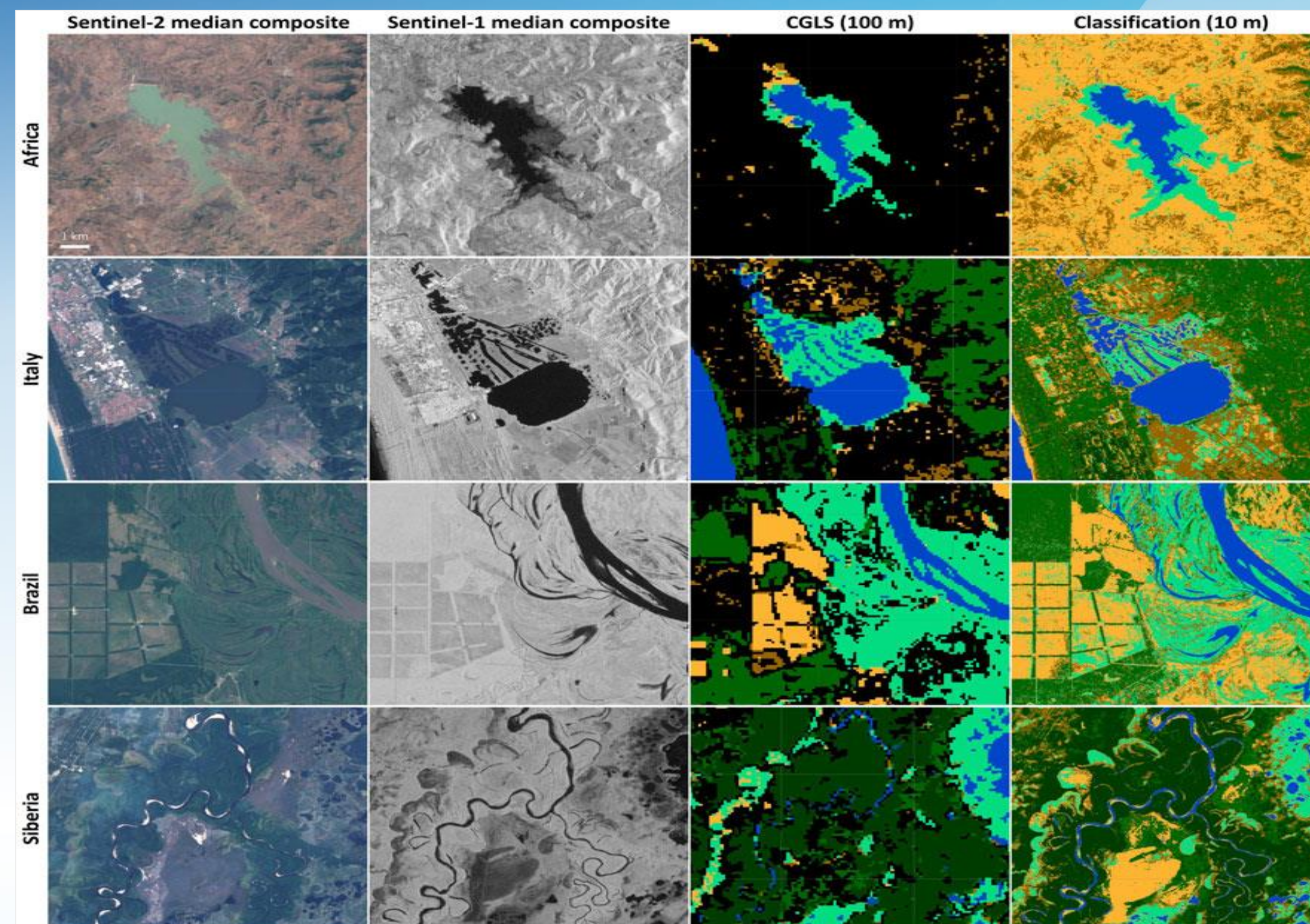




REMOTE SENSING FOR PACIFIC ENVIRONMENTS

Presenter: Vani Koroisamanunu

Key Earth Observation Platforms

EO DATA SOURCES

Sentinel-2 (ESA)

OPEN ACCESS

Spatial Resolution **10m, 20m, 60m**

Temporal Resolution **5 Days (Constellation)**

Spectral Bands **13 Bands (Multispectral)**

Perfect for high-cadence environmental monitoring, water quality indexing, and vegetation tracking across sprawling Pacific island groups.

Landsat 8/9 (USGS)

OPEN ACCESS

Spatial Resolution **30m (Thermal 100m)**

Temporal Resolution **8 Days (Constellation)**

Spectral Bands **11 Bands (with Thermal)**

Provides the longest continuous historical archive (since 1972) to track long-term shoreline erosion, land cover shifts, and climate impacts.

PlanetScope

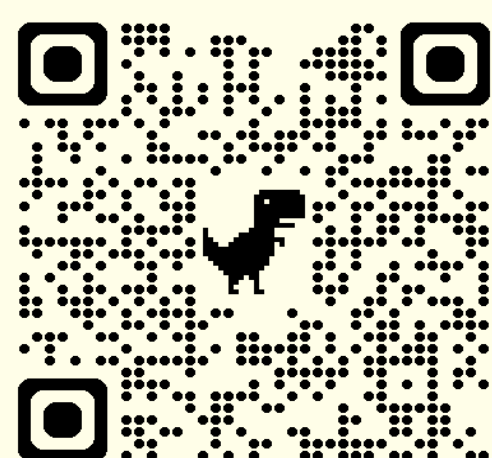
COMMERCIAL

Spatial Resolution **3m (Super high res)**

Temporal Resolution **Daily Revisit (Global)**

Spectral Bands **4 to 8 Bands (RGB, NIR, RE)**

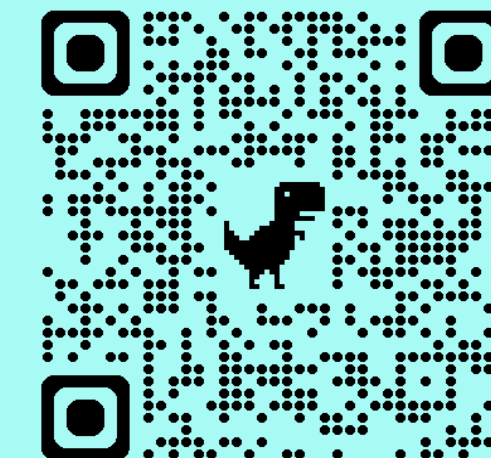
Constellation of hundreds of CubeSats offering daily, high-resolution insights—critical for disaster response and localized ecosystem audits.



Scan QR Code to Register



Scan QR Code to Register



Scan QR Code to Register

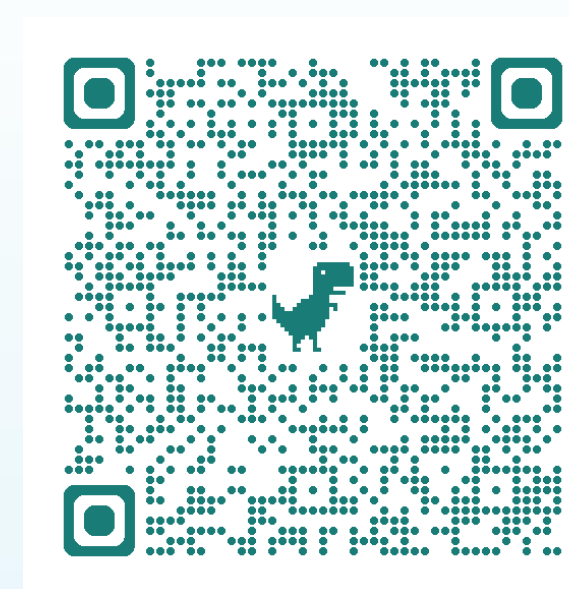
ESRI | Sentinel-2 Land Cover Explorer

EO DATA SOURCES



Overview

- **High-Resolution LULC Data:** Detailed, accurate, and timely 10m Land Use/Land Cover global maps.
- **Offline Accessibility:** Supports data download for local, offline use.
- Developed by **Esri** and **Impact Observatory** to inform policy and land management decisions.



Google Earth Engine (GEE)

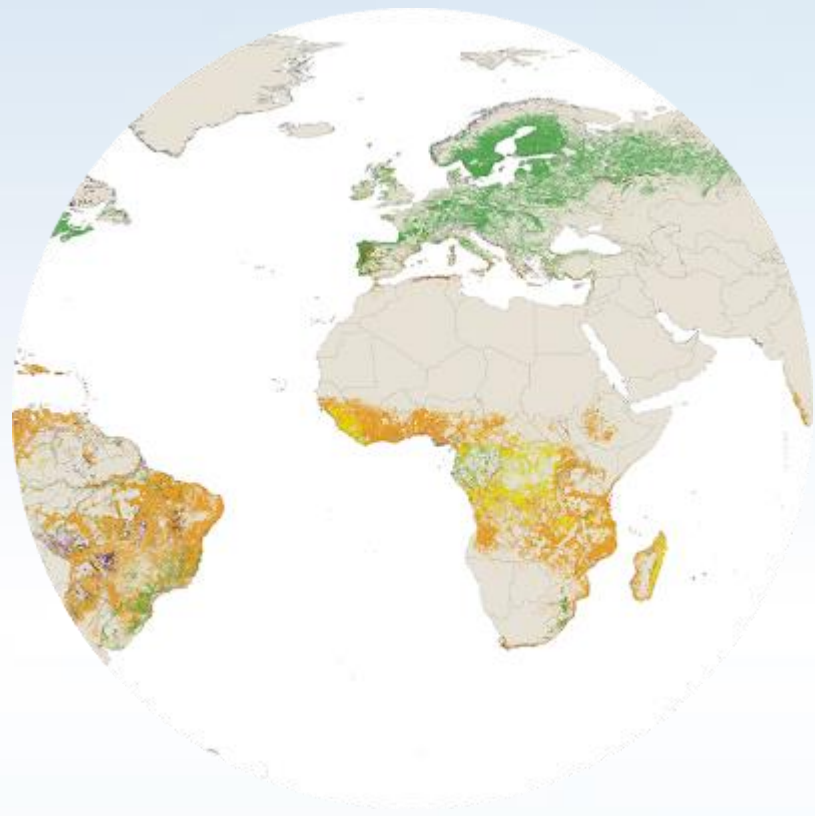


EO DATA SOURCES

Overview

- A **planetary-scale platform** for Earth science data and analysis, revolutionizing global remote sensing for researchers and developers.

MONITORING DEFORESTATION



- **Global Forest Watch (GFW)** uses Earth Engine to detect tree cover change at high resolution. It was the first platform to process thousands of Landsat scenes rapidly to identify where and when forest loss occurs.

MONITORING OUR CHANGING PLANET



- **Agriculture:** Mapping cropland extent and watering sources for food security.



- **Urban Expansion:** Tracking built-up surface growth and urban heat islands globally.



- **Economic Indicators:** Analyzing night-time lights to proxy population density and energy use.

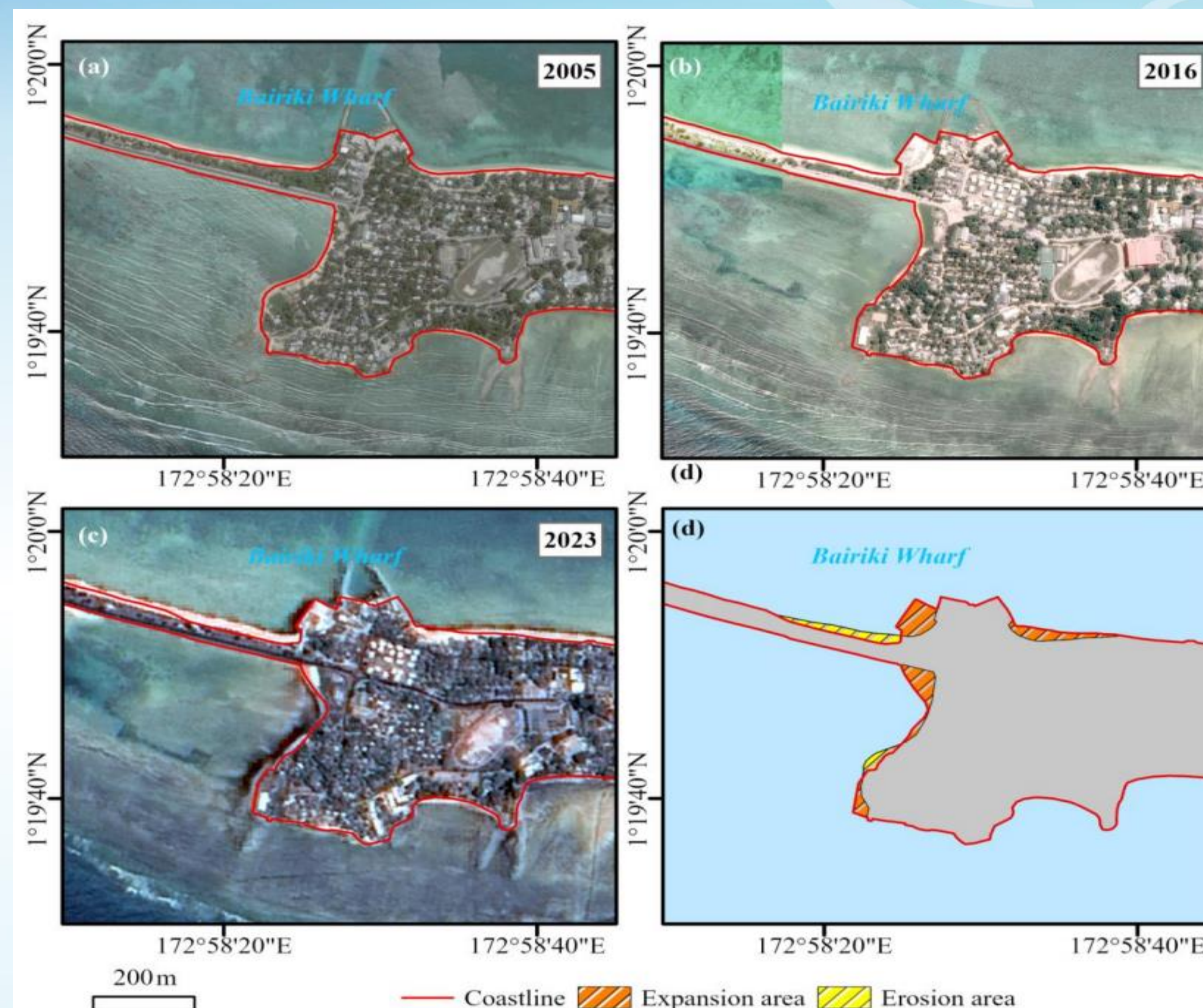
1. Coastline & Sea Level Rise Tracking

Leverage Landsat multi-decadal imagery archives alongside Sentinel-2 to map coastal dynamics, detect shoreline erosion hot spots, and monitor sea-level rise inundation risks.

Cases of Coastal Changes

- Working with EO data providers to monitor and conserve coastal ecosystems and supporting human activities
- Based on the **coastlines of 2005, 2016, and 2023**, the Bairiki Island in Kiribati is a case experiencing coastal expansion due to the construction of the port.

[Source: SIO, [https://resoc.sio.org.cn system](https://resoc.sio.org.cn/system)]

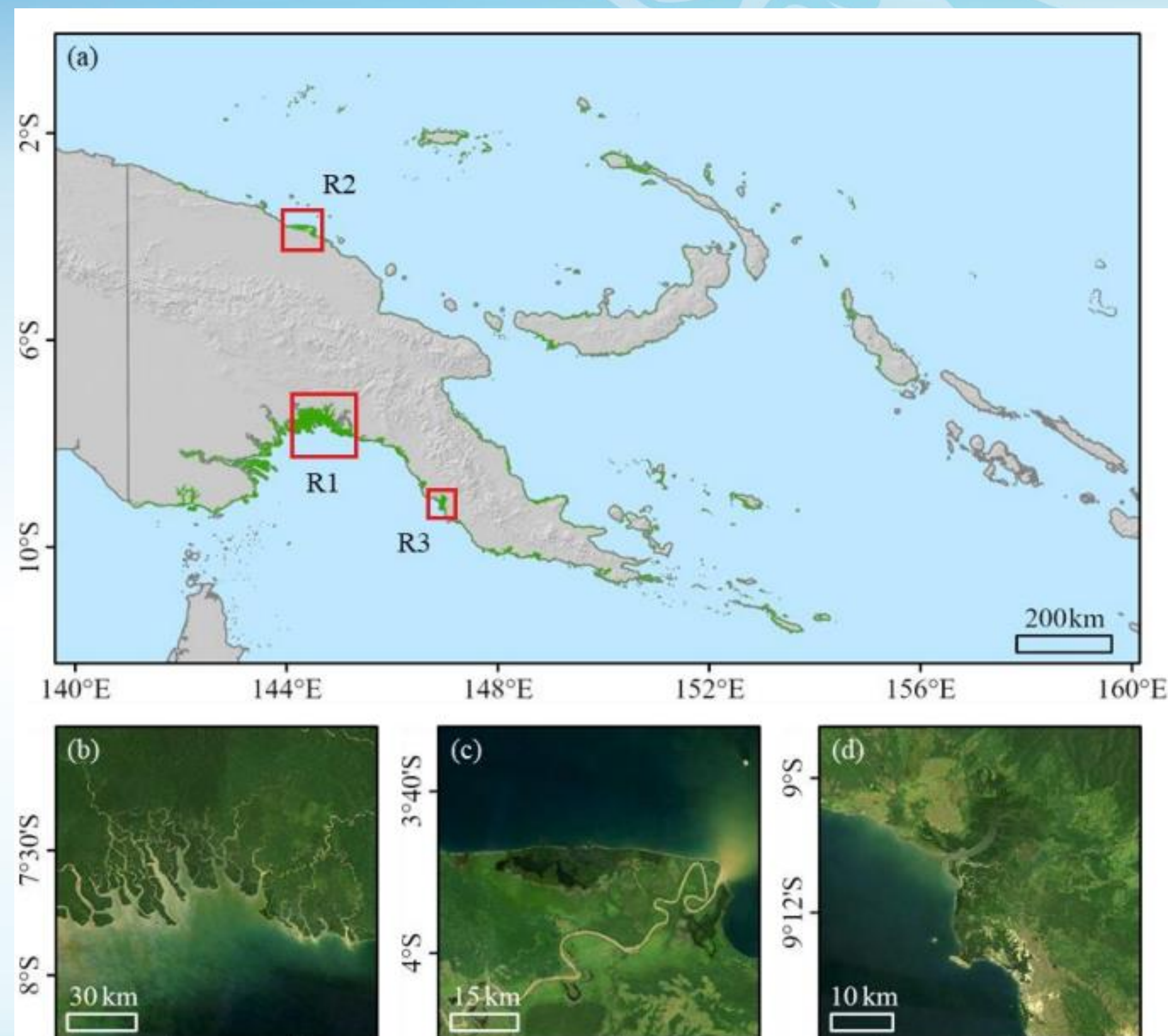
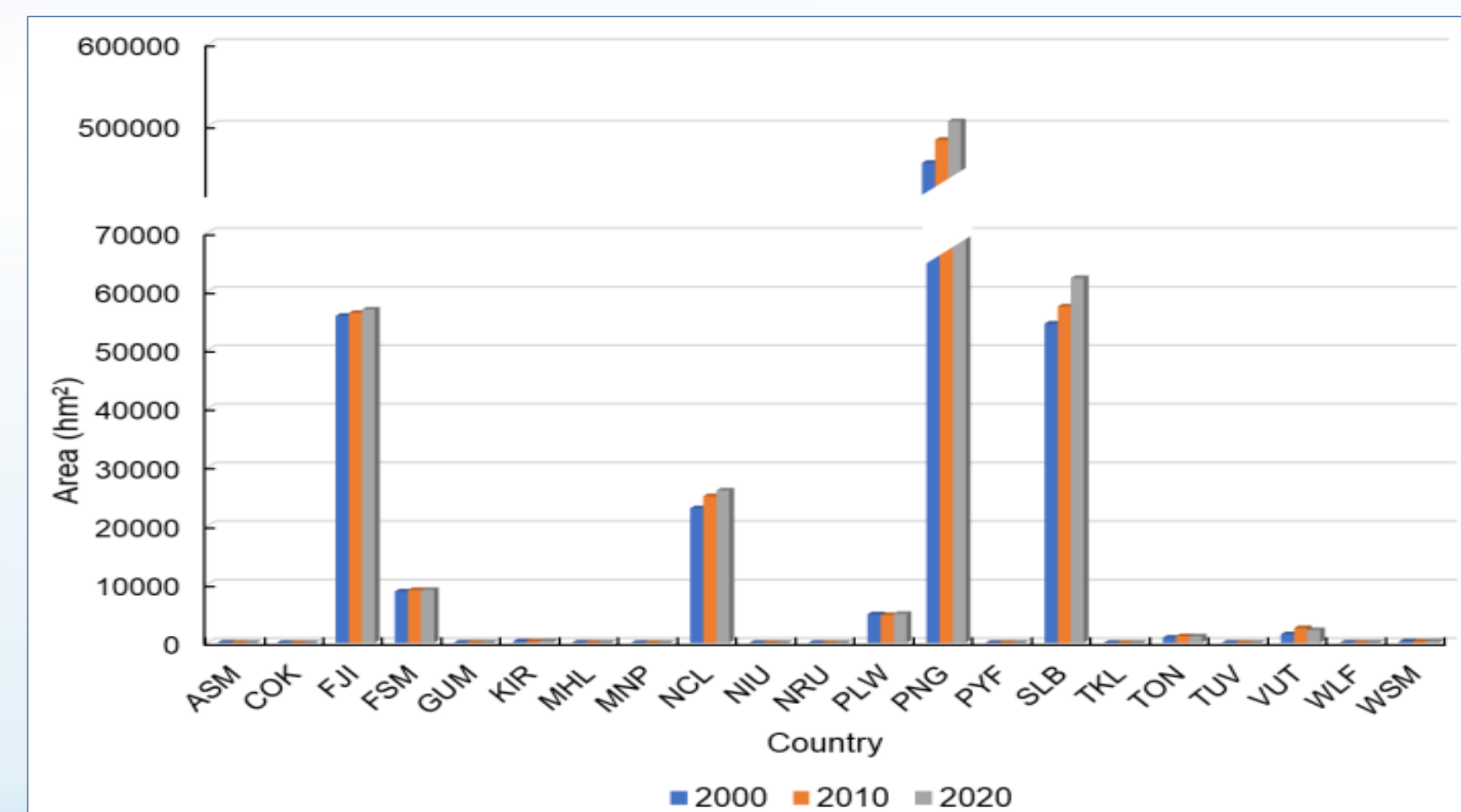


2. Mangrove & Forest Canopy Degradation

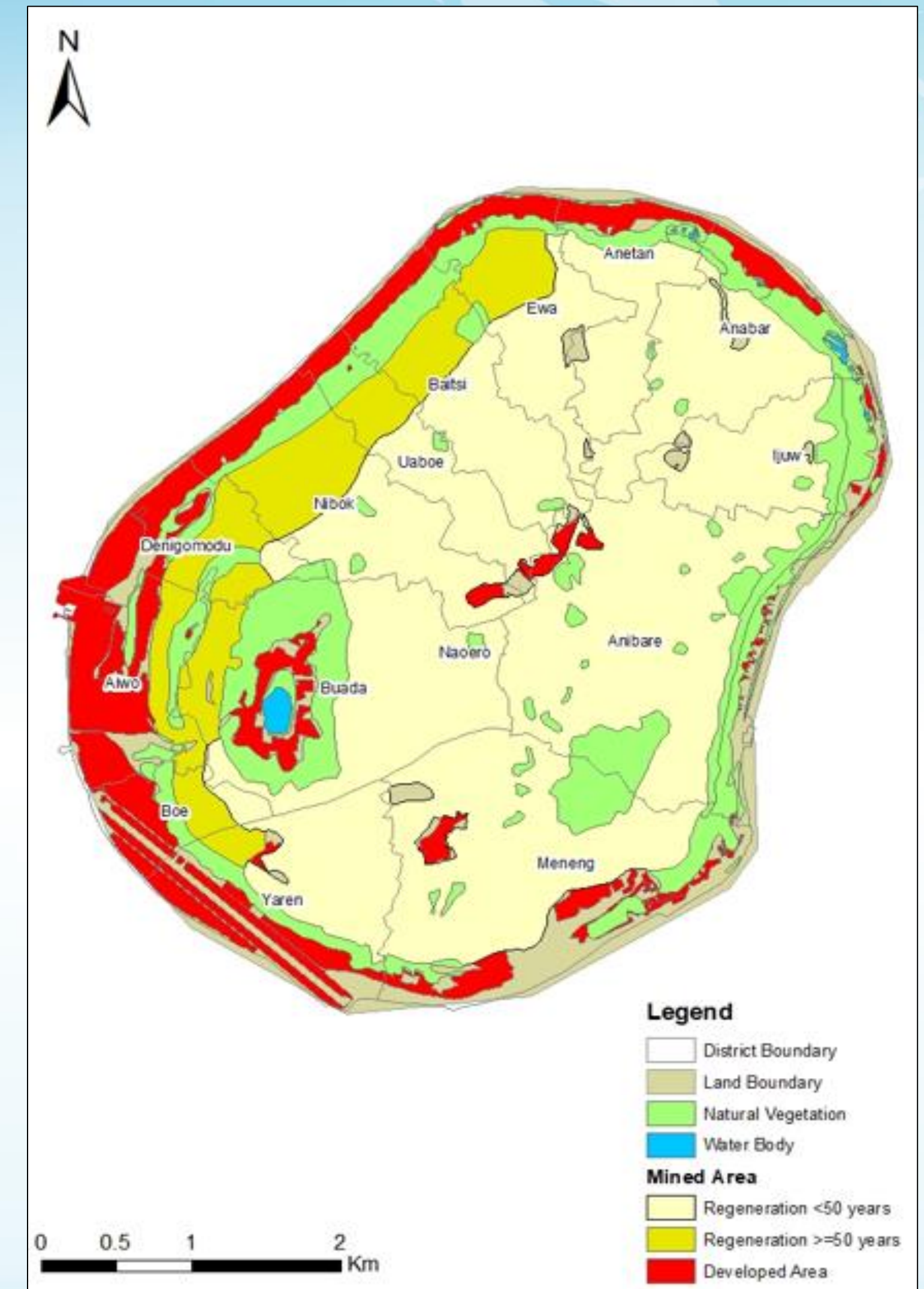
Track regional carbon sinks, identify illegal logging or infrastructure stress, and compute NDVI (Normalized Difference Vegetation Index) to evaluate mangrove restoration success.

Working with EO data providers to monitor and conserve coastal ecosystems and supporting human activities.

[Source: SIO, <https://resoc.sio.org.cn> system]



Land Use Land Cover Change (Sentinel-2 Land Cover Explorer)



- Nauru Mined and Regenerative- Area Mapping
- For Nauru State of the Environment reporting (SOE)



SPREP

Secretariat of the Pacific Regional
Environment Programme



**How would you use satellite
imagery in your organisation?**



SPREP

Secretariat of the Pacific Regional
Environment Programme

Thank You

