

Digital Earth Pacific: Co-Designed EO Solutions for Island Resilience

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Panel Discussion 5: Digital Oceans, Resilient Cities: EO, GeoAI, and Digital Twins in Action

32nd IAF Workshop on “Resilient Coasts, Resilient Earth: Innovative Space Solutions for Coastal Resilience and Emergency Management”, 26 – 28 September 2025, Sydney, Australia

The Pacific Community (SPC)

27

Member Countries and Territories

800+ staff

6 Regional campuses

8 Technical divisions

USD 100 million+ annual budget



Fisheries, Aquaculture & Marine Ecosystems

Education Quality & Assessment

Human Rights and Social Development

Statistics

Public Health

Land Resources

Climate Change & Environmental Sustainability

Geoscience, Energy & Maritime

- Ocean Science, Governance & Maritime Transport
- Geology & Energy
- Water & Sanitation
- Disaster Risk Reduction
- **Earth & Oceans Observation**



Digital Earth PACIFIC

Digital Earth Pacific delivers a public-good **operational Earth and Ocean Observation System** that takes decades of satellite data and makes it easier to access and use, empowering decision-makers across the Pacific.

Response to Needs

Initiated at GEO (Group of Earth Observations) Ministerial Summit in 2019, where **Pacific Island countries and Territories** expressed a need for **better access and capacity for applying Earth observation data** to national development priorities and sustainable development and enable capabilities to **routinely monitor and track challenges from climate change, food insecurity or disaster risk** through robust decision-ready products.



2020 – 2021 saw Needs Assessment activities conducted across several countries, with priority needs—**coastlines change, land cover change, mangroves, vegetation health and hazards monitoring**.

Data Infrastructure and Insights

Regional scale coverage
(every Pacific island covered)

Open access and public good

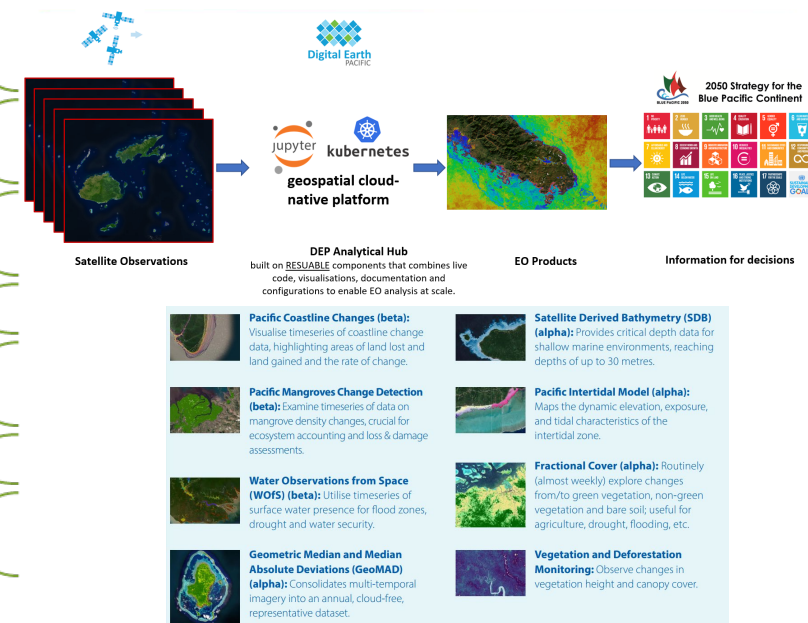
Long-term temporal scale

Decision-ready products

Operational and scalable infrastructure

Responsive to needs

Generation of own innovative Solutions



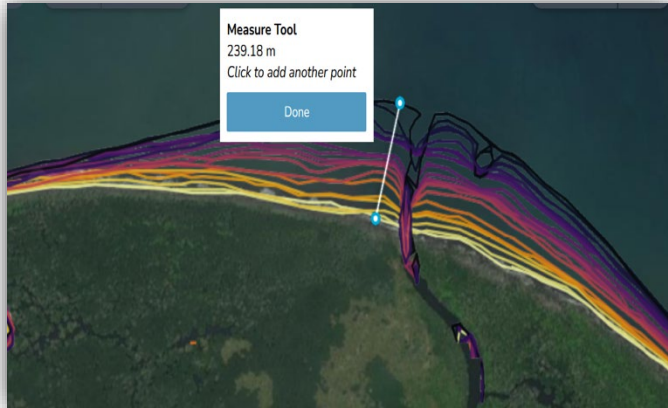
Pacific Led Governance



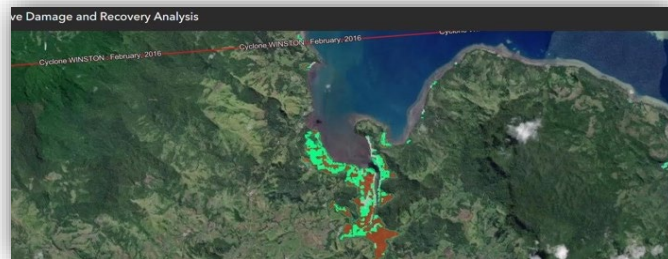
Co-creation and Capacity Building



Regional Products



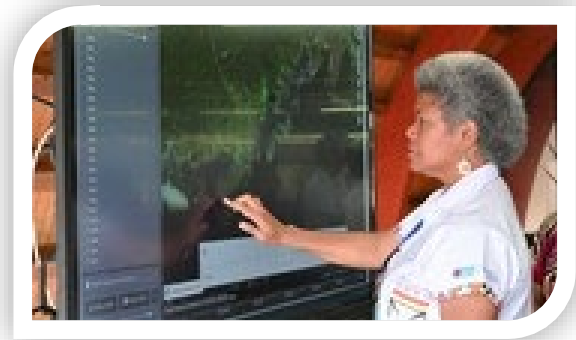
22 years of Pacific **Coastlines** change
~ 34k km of coastline for the Pacific (22 PICTS)
~ 10% of global coastlines
7th major releases since launch, initial product validation complete



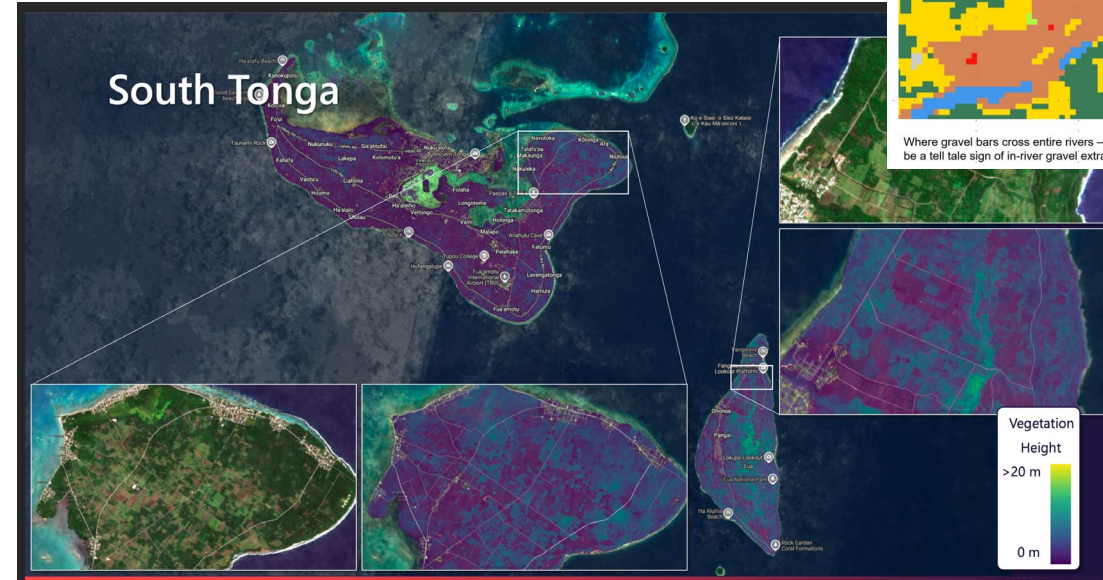
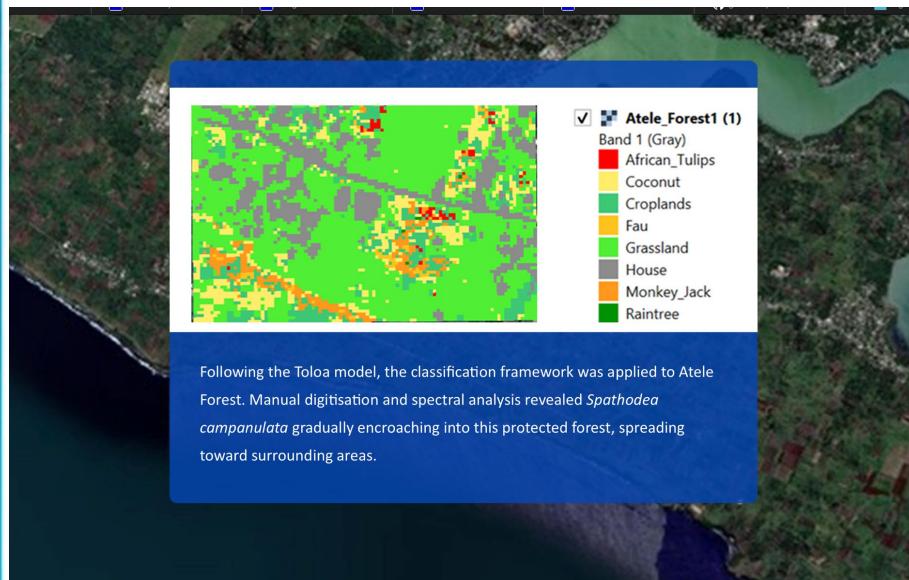
7 years of Pacific **Mangroves** data
Illustrates loss and recovery
2nd version using Deep Learning approach in development



10 years of **Water Observations** from Space (WOfS)
Useful for understanding flood zones and water security
2 major releases since launch



DE Pacific and AI [ML/DL]



- LULC 2017 –
- Optical SDB (20-30m)
- Invasive Species
- Vegetation Height
- Minerals Extraction Detection
- Fractional Cover

A photograph of two women standing on a beach with the ocean in the background. The woman on the left is wearing a white long-sleeved shirt, light blue jeans, and a straw hat decorated with pink flowers. She is smiling and making a peace sign with her right hand, while her left arm is extended holding a small gold-colored phone. The woman on the right is wearing a blue denim jacket over a patterned shirt and has sunglasses on her head. She is also smiling and making a peace sign with her right hand, while her left hand holds a small wooden object. The background is a vast, slightly hazy ocean under a clear sky.

***Tonga field training, ministry
representatives - LCAST 2023***

Thank you!

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