

Session: Advances and Applications in Earth Observation for SDGs. Accelerating Earth Intelligence in the context of GEO







# Cloud-Native Public Good EO Infrastructure for the Pacific

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Team Leader Earth and Oceans Observations Programme

# The Pacific Community (SPC)



2<sub>PAP</sub>

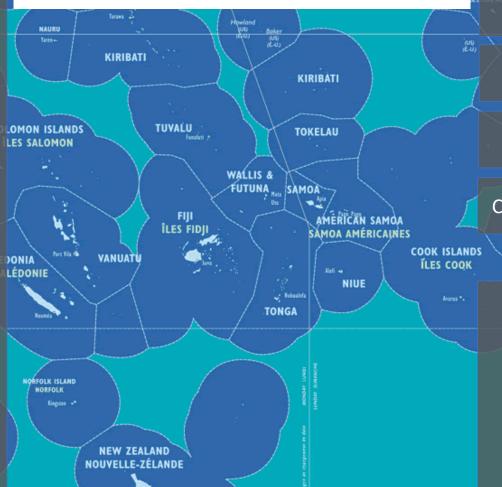
Member Countries and Territories

**900** + staff

- 6 Regional campuses
- E Technical divisions

USD 100 million+ annual budget

The Pacific Community (SPC) is the principal scientific and technical organisation in the Pacific region, proudly supporting development since 1947. We are an international development organisation owned and governed by our 27 member countries and territories.



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 Observations

## [2019] DE Pacific and GEO









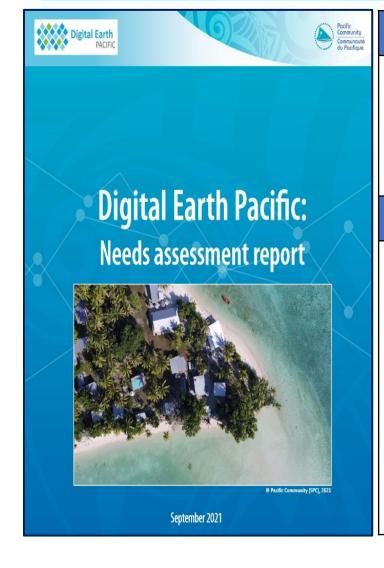
Digital Earth
Pacific to deliver
an operational
Earth and ocean
observation
system that takes
decades of satellite
data and makes it
easier to access
and use,
empowering
decision-makers
across the Pacific.

Pacific Countries and Territories expressed a need for better access and capacity for applying Earth observation data to national development priorities and sustainable development.

It should provide a fundamental digital infrastructure that will ensure every nation in the Pacific has access to tools, technologies and capacity to routinely monitor and track challenges from climate change, food insecurity or disaster risk through robust decision-ready products that are updated with every satellite overpass.

## [2020 – 2021] DEP Needs Assessment





#### Tier 1

- Land Cover Change Detection
- Coastline Change Detection
- Agricultural Census
- Vegetation Indexes Crop and Disease Detection

#### Tier 2

- Hazards Impact Mapping -Cyclones, Tsunami, Droughts
- Digital Elevation Models for Coastal Inundation
- Fishing Vessels Tracking -Unregulated
- Mapping Buildings and Population
- Mangroves Change Detection
- Near-Shore Bathymetry

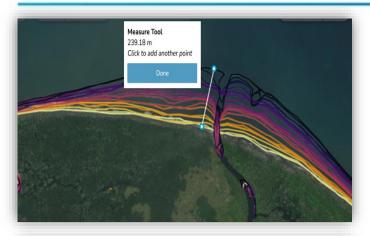






## [2023] Launched Regional Products



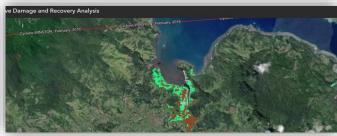


22 years of Pacific coastline change

- ~ 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 mangrove 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



#### **DATA & TECHNOLOGY**









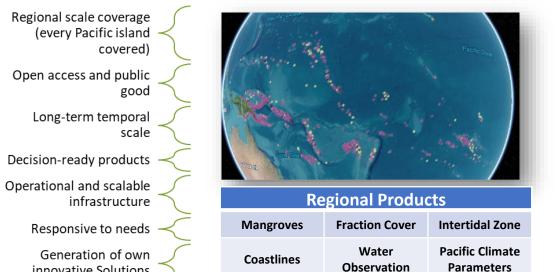
**Observations** 



DEP Analytical Hub built on RESUABLE components that combines live code, visualisations, documentation and configurations to enable EO analysis at scale.

**Products for Decisions** 

#### **SERVICES**



#### **CAPACITY BUILDING**

Countries	Dates	Participants (% female)	National institutions
Fiji	Mar 2024	17 (64%)	7
Tonga	Jul 2024	7 (42%)	1
RMI (with Palau and Tuvalu)	Aug 2024	20 (5%)	11
Cook Islands	Sep 2024	27 (18%)	11
Fiji	Nov 2024	15 (33%)	4
REG (10 countries)	Nov 2024	18 (44%)	5
Papua New Guinea	Mar 2025	32 (34%)	13

Delivery			
Framework	Indicators	2023	2024
Training & Education	Number of people reached	20	136 Î
	Number of countries reached	1	17 📬
	Number of females reached	9	43 🕇
	Number of national institutions		
	reached	6	52 î



#### **ENGAGEMENTS & UPTAKE**



innovative Solutions

DEP is part of GEO Work Programme since 2020.



Near-Shore Satellite Derived Bathymetry (Optical & SAR)

**Parameters** 



## DE Pacific Capacity Building



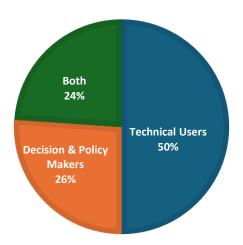




#### **DELIVERY FRAMEWORK**



#### STAKEHOLDER GROUP REACHED



<b>Delivery Framework</b>	Indicators	2023	2024	2025
Training & Education	Number of people reached with capacity building activities	20	104	97
	Number of countries reached	1	16	4
	Number of females reached	9	32	39
	Number of national institutions reached	6	39	31
	Number of workshops	1	7	4

Custom-designed workshops with abstration libraries and tools to enable co-creation, development and validation of ML-driven Land Cover Change Detection and Analysis, Invasives Species Detection, Mangroves Blue Carbon Stock Assessment, Agro-census et.al





**12** Capacity building workshops held

**16** countries reached (returns to some countries)

**36%** females reached

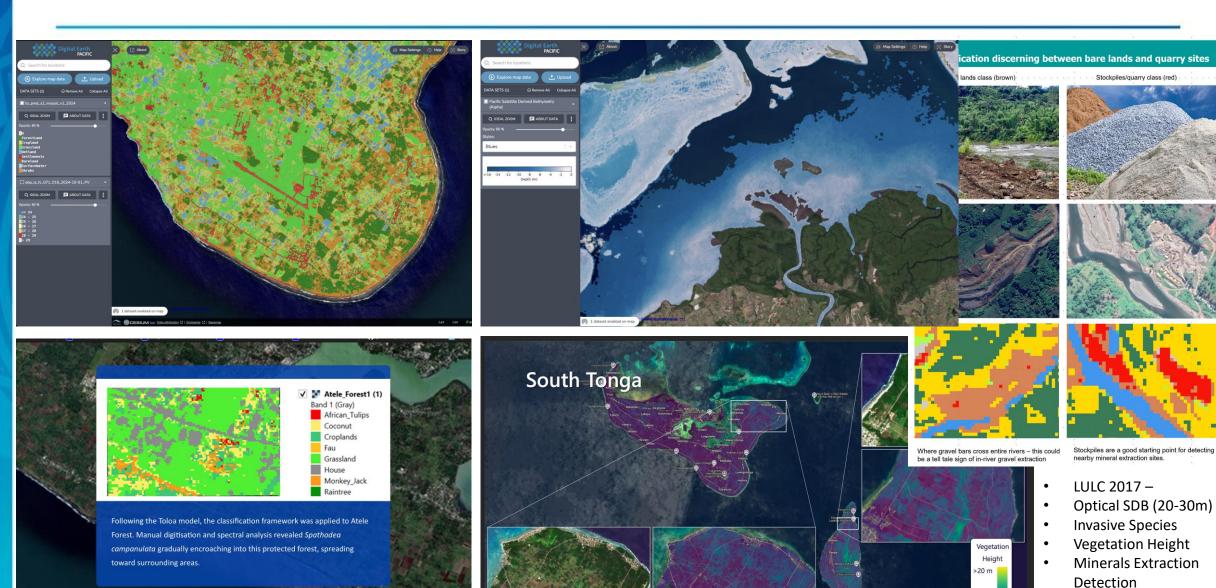






# DE Pacific and AI [ML/DL]





### DE Pacific and GEO





#### **GEO LDN**

2.033 followers 1w · Edited · ③

The Sharing some impressions from the #PSIDS Regional Dialogue Forum — taking place this week, 21–25 July, in #Fiji!







Challenge

Pacific Island nations face significant challenges from climate change and natural disasters, including rising sea levels, coastal erosion, and extreme weather events. These challenges threaten livelihoods, infrastructure, and ecosystems, necessitating timely and accurate data for effective decision-making.

Open Data, Open Knowledge and Infrastructure

Open data, Knowledge and Infrastructure is central to GEO's mission, with its Open Data Sharing Principles and Open Knowledge framework supporting the vision of "Earth Intelligence for All". Ensuring open access to data, tools, and applications is a cross-cutting priority across the GEO Work Programme.



Digital Earth Approaches for GEO →

GEO-DECOP • Enablina Mechanism

through the Earth Observation (EO) Data Cubes efforts, with a focus on implementing global principles in local contexts

Digital Earth Pacific →

DE PACIFIC . Enabling Mechanism

Provides tailored Earth observation solutions for Pacific Island



#### **Pacific Community-SPC**

69,564 followers 2mo · 🕥

We're proud to share that SPC Director General, Dr Stuart Minchin, has received the 2025 GEO Lifetime Achievement Award, a global recognition for a



A global recognition for a leader who transforms raw satellite pixels into informed decisions.



### Thank You















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