Digital Earth Pacific
2020-2022 GEO Work Programme

1. Executive Summary

Full title and acronym: Digital Earth Pacific (DE-PACIFIC)
Category: Community Activity

The Blue Pacific continent is made up of 98% ocean with only 2% land. These large ocean states face unique challenges in managing natural resources and biodiversity, securing economies and livelihoods, and ensuring sustainable food systems. Better data and information are needed to ensure effective decision making to drive policy actions across these areas, especially against the existential threat that climate change poses to the region.

The Pacific Talanoa during GEO week 2019 in Canberra stressed the sovereignty of Pacific Island governments as paramount to guide all conversations and interventions for Earth Observation in the Pacific. In line with this declaration, SPC and partners have proposed the concept of DE Pacific. DE Pacific will be a regional public good, offering an operational data infrastructure that makes current and historical, analysis-ready satellite data freely available and openly accessible for the Blue Pacific continent. It will use Open Data Cube technology to turn raw data into decision-ready products to inform policy and drive action at community, national and regional levels.

DE Pacific will initially focus on national government stakeholders across a broad spectrum of sectoral ministries, specifically targeting policy gaps and opportunities for which EO decision ready products will add significant value. It will also empower the Pacific research community, specifically through links with the University of the South Pacific, by providing a common regional platform through which students and technicians can apply EO data to local challenges.

The first phase of DE Pacific (2021) will commence with a thorough outreach campaign to understand needs and priorities of Pacific Island Countries and Territories (PICTs) on the use of EO data to address national development priorities and sustainable development. This will primarily be achieved through a series of national workshops within Phase 1 pilot countries (Fiji, Republic of the Marshall Islands (RMI), Tonga, Vanuatu). In parallel, prototype open data cube infrastructure with relevant time-series EO data to support decision-making will be developed, and a series of 'early win' outputs across the pilot countries will be produced. These pilot products will leverage the experience and learnings from DE Australia and DE Africa. Based on the needs assessment and pilot products, Phase I will culminate in the development of a business case for the sustainable operations of DE Pacific.

Phase II of DE Pacific (commencing 2022) will focus on building the ongoing sustainable infrastructure for the Open Data Cube, while also establishing the institutional governance to properly host the program. The details of Phase II will be determined by the Business Case that will be developed as a key output of Phase I.

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2. Purpose

The Blue Pacific continent is made up of 98% ocean with only 2% land. These large ocean states face unique challenges in managing natural resources and biodiversity, securing economies and livelihoods, and ensuring sustainable food systems. Better data and information are needed to ensure effective decision making to drive policy actions across these areas, especially against the existential threat that climate change poses to the region.

In 2018 and 2019, Pacific Island Country and Territory (PICT) representatives participated in a series of consultative dialogues on improving the use of earth and marine observation technology for national and regional sustainable development. These dialogues included the EO Consultations on a Platform for the Pacific (Brisbane, 2018), a subsequent Pacific Regional EO Coordination meeting (Suva, 2019) and the Pacific Island Programme of conversations during 2019 GEO week in Canberra.

The Pacific Talanoa during GEO Week stressed the sovereignty of Pacific Island governments as paramount to guide all conversations and interventions for Earth Observation in the Pacific. It also emphasizes that ongoing and future EO interventions in the Pacific ensure that the vision and principles of regionalism are embedded as their key guiding consideration. The Talanoa further stated that Pacific ownership be the most critical component of any EO initiative and that coordination and genuine partnerships with Pacific Island governments and Pacific regional CROP agencies as key partners to ensure and enhance sustainability.

During the GEO Week meeting and the subsequent 2020 meeting of the Pacific Geospatial and Surveying Council (PGSC), the Pacific Community (SPC) and partners proposed the concept of DE Pacific, a regional data infrastructure serving routine, reliable and operational earth observation data, products and services to the Pacific. This proposal was widely accepted by PICT representatives and so a national and regional consultation process has commenced to ensure any scaling up of this EO technology is informed by PICTs in line with existing work and initiatives already occurring at national and regional levels.

DE Pacific will be a regional public good, offering an operational data infrastructure that makes current and historical, analysis-ready satellite data freely available and openly accessible for the Blue Pacific continent. It will use Open Data Cube technology to turn raw data into decision-ready products to inform policy and drive action at community, national and regional levels.

DE Pacific will initially focus on national government stakeholders across a broad spectrum of sectoral ministries, specifically targeting policy gaps and opportunities for which EO decision ready products will add significant value. It will also empower the Pacific research community, specifically through links with the University of the South Pacific, by providing a common regional platform through which students and technicians can apply EO data to local challenges.

3. Background and Previous Achievements

DE Pacific will leverage the achievements and learnings from Digital Earth Africa, an existing GEO Work Programme Initiative. DE Pacific will also leverage core technology, methods and expertise from the Australian Government's Digital Earth Australia, which was the first continental scale, operational data cube.

4. Key Activities

Phase I (2021)

- Needs Assessment: The first phase of DE Pacific will focus on a thorough outreach campaign to understand needs and priorities of PICTs on the use of EO data to address national development priorities and sustainable development. This will primarily be achieved through a series of national workshops to bring key institutions across national governments together to discuss policy and technical issues related to the use of EO data for decision-making. Workshops will be undertaken within Phase 1 pilot countries (Fiji, RMI, Tonga, Vanuatu) as representative of the three Pacific sub-regions (Melanesia, Micronesia and Polynesia).
- Pilot products: Prototype open data cube infrastructure with relevant time-series EO data to support decision-making will be developed, and a series of 'early win' outputs across the pilot countries will be produced. These pilot products will leverage the experience and learnings from DE Australia and DE Africa, particularly approaches to storing and pre-processing data, and the infrastructure applied in a developing country context.
- Business case: The final component of Phase 1 will be the development of a business case for the sustainable operations of DE Pacific, which will include a roadmap for:
    - Institutional Hosting;
    - Political Engagement;
    - Governance;
    - Technical Infrastructure;
    - Budget and Financial Model;
    - Early Actions; and,
    - Risks.

Phase II (2022)

Phase II of DE Pacific will be focused on building the ongoing sustainable infrastructure for the Open Data Cube, while also establishing the institutional governance to properly host the program. The governance is anticipated to include a Governing Board that is jointly chaired by the Pacific Community and a representative from the PICTs, a Technical Steering Committee and Stakeholder Community Group.

The details of Phase II will be determined by the Business Case that will be developed as a key output of Phase I.

5. Relationship to GEO Engagement Priorities and to other Work Programme Activities

The thematic outputs from DE Pacific will be determined by the needs expressed by PICTs through Phase 1, but it is anticipated that DE Pacific will provide value toward a broad range of development frameworks including:

- UN SDGs: Goal 2 (e.g. proportion of agriculture area); Goal 6 (e.g. proportion of good quality water bodies); Goal 14 (e.g. coverage of marine protected areas); Goal 15 (e.g. proportion of forest area).
- Paris Agreement: Providing a better understanding of, for example, Loss and Damage, National Reporting and Mitigation.
- Sendai Framework: Increasing the availability, for example, of disaster risk information and assessments.

Additionally, we strongly believe that DE Pacific will align with, benefit from, and support numerous elements of the GEO Work Programme and GEO community. These will include but are not limited to:

- The Blue Planet Initiative;
- The Open Earth Alliance Community Activity;
- The Asia-Oceania Group on Earth Observations; and,
- The Pacific Islands Advisory Group.

6. Governance

For Phase I of DE Pacific an Interim Steering Group (ISG) has been established as an advisory body tasked with:

- Providing overall advice and guidance towards the successful completion of Phase I - needs assessment, early wins and business case;
- Providing recommendations and introductions to key stakeholders;
- Supporting buy-in from key institutions and politically with countries across the Pacific;
- Providing technical expertise, alignment with key institutions and policy guidance;
- Supporting the development of a permanent governance structure;
- Supporting broader outreach and communications needs; and
- Supporting funding efforts as needed.

The ISG is multi-stakeholder inclusive of representative government institutions across the Pacific, and other key organizations within the broader Earth observations community. The Pacific Community (SPC) and a PICT representative (Tonga) are the founding Co-Chairs.
Founding members for the ISG include:

1. Pacific Community (Co-Chair)
2. Ministry of Lands and Natural Resources, Tonga (Co-Chair)
3. Lands and Survey Department, Fiji
4. Office of the Chief Secretary, Republic of Marshall Islands
5. Ministry of Lands and Natural Resources, Vanuatu
6. University of the South Pacific
7. Committee on Earth Observation Satellites (CEOS)
8. Geoscience Australia
9. Group on Earth Observations Secretariat
10. National Oceanic and Atmospheric Administration (NOAA), United States

7. Data Policy

DE Pacific will leverage open data and technology to provide open solutions for its stakeholders. It is anticipated that it will primarily focus on Committee on Earth Observation Satellite (CEOS) Analysis Ready Data and leverage open source geospatial data management technology like the Open Data Cube (opendatacube.org).

DE Pacific will seek to fully adhere to the GEOSS Data Sharing Principles and GEOSS Data Management Principles, however, the extent to which some data or products are free and open, in some cases, may be an internal decision made by a PICT government. In these cases, DE Pacific will make every effort to encourage that the data be made free and open, such that the system will be an exemplar of open data principles within a Pacific context.

DE Pacific outputs and products, to the extent possible, will be freely available via web URLs. The ultimate delivery mechanism is yet to be determined but will include being centrally linked to the Pacific Data Hub (pacificdata.org).

Annex A: Project Leader CV

Andrew Jones, Ph.D.

Dr Andrew Jones is a geologist by training, with 20 years experience in developing a credible, scientific evidence base for government and private sector decision making, and he is passionate about applying this evidence based decision making to transformational development outcomes.

He is currently a Divisional Director within the Pacific Community (SPC), the principal scientific and technical organization in the Pacific region. Andrew shapes the strategic direction of SPC's Geoscience, Energy and Maritime (GEM) Division by overseeing and ensuring provision of high quality scientific, technical and policy support for activities across a range of sectors including Resources, Energy, Oceans, Maritime, Water and Sanitation, Disaster Reduction and Climate Change.

Andrew spent 15 years working at Geoscience Australia in a variety of roles, including as a research scientist applying satellite remote sensing to better understand Australian's offshore jurisdiction.