

HARNESSING GEOSPATIAL KNOWLEDGE TO ADVANCE SUSTAINABILITY IN THE PACIFIC

SECRETARIAT OF THE PACIFIC REGIONAL
ENVIRONMENT PROGRAMME (SPREP)



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Environmental GIS Specialist

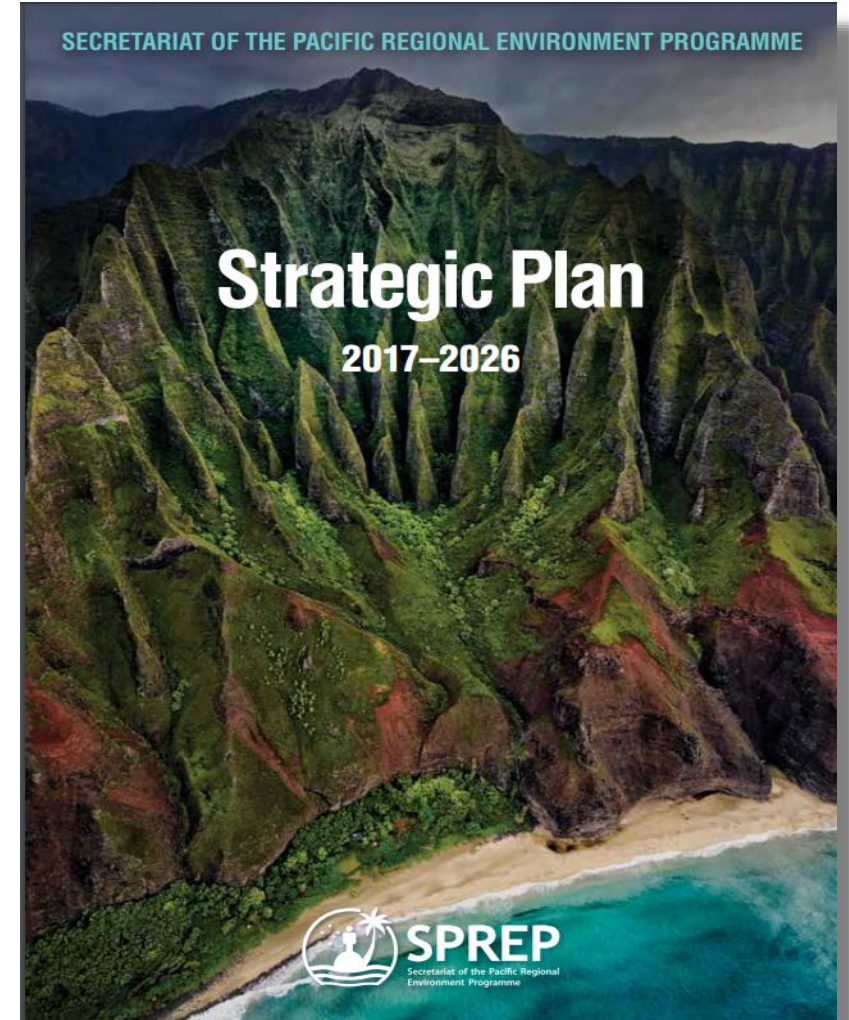
25th November 2024

Strategic Priorities

- **Vision:** A resilient Pacific environment sustaining our livelihoods and natural heritage in harmony with our cultures.
- **Principal Concern:** Climate Change
- **Cross-cutting Theme:** The Ocean

SPREP Strategic Priorities:

- ✓ Climate Change Resilience
- ✓ Islands and Ocean Ecosystem (Biodiversity Protection).
- ✓ Waste Management and Pollution Control
- ✓ Environmental Monitoring and Governance



The triple planetary crisis

The triple planetary crisis refers to the three main interlinked issues that humanity currently faces: climate change, pollution and biodiversity loss.



POLICY, PLANNING, MONITORING AND REPORTING

Multilateral Environmental Agreements (MEAs)

Legislation and Policy

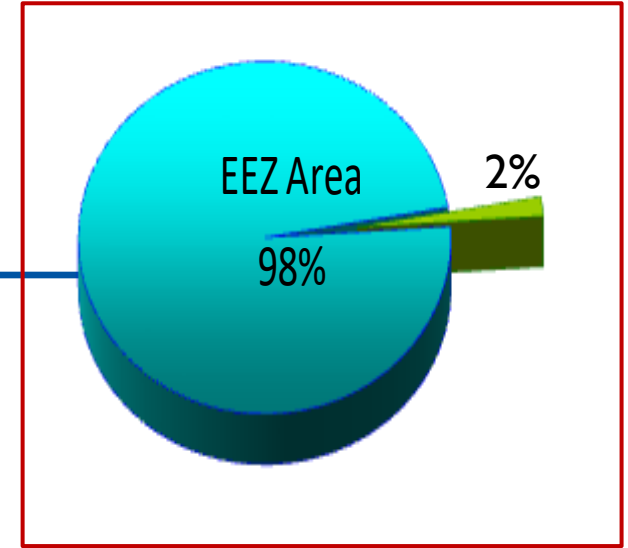
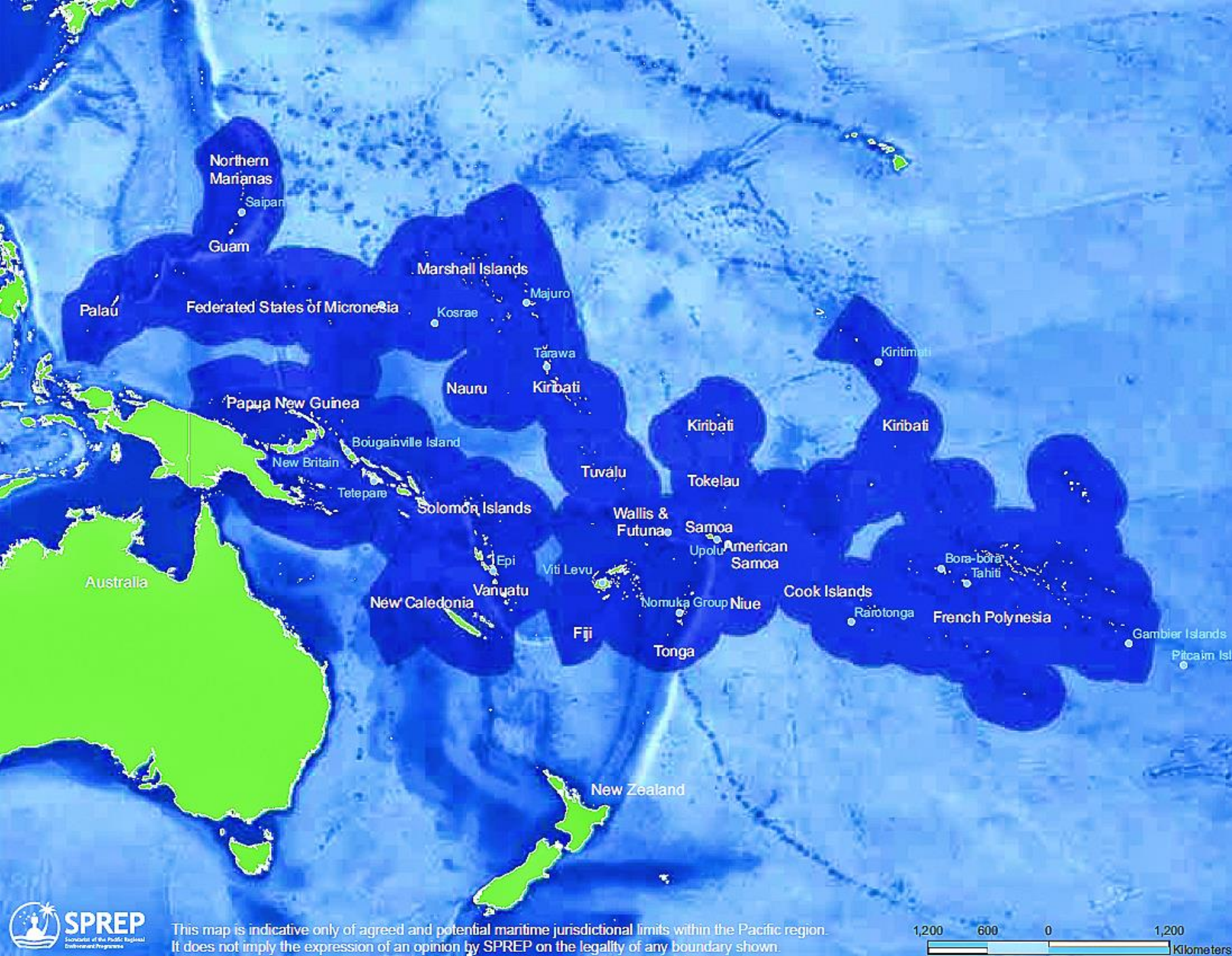
Environmental Planning Instruments

Environmental Assessment tools

State of Environment (SOE) Reporting

Data for Decision Making

21 Pacific Island Countries and Territories
Land Area: ~553,000 km² (~30,000 islands)
EEZ + Territorial seas area : 30,000,000 km² (~10% of the World's Oceans)



Key Areas of Work

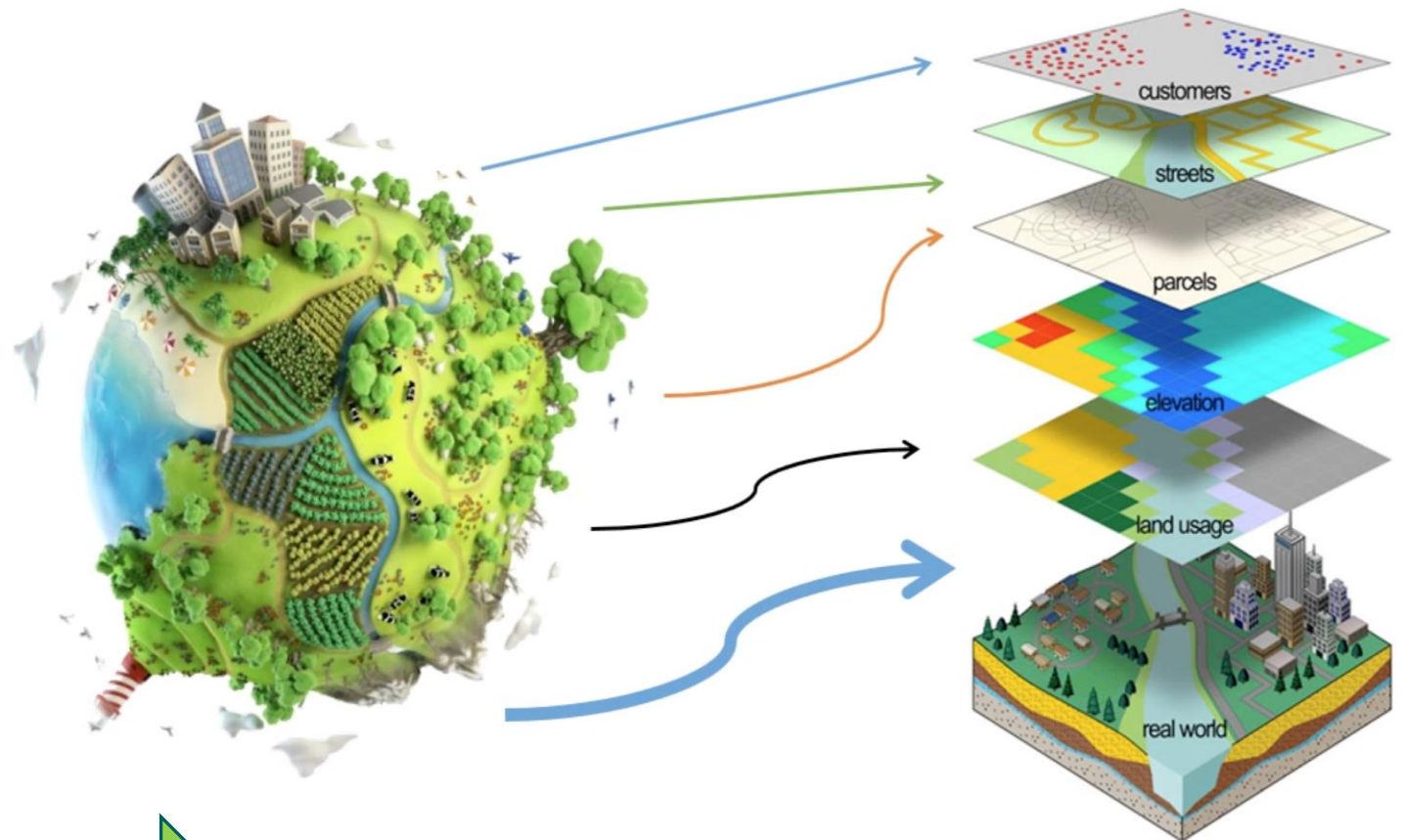
Technical support provided to PICTs include:

- Capacity building to fulfill commitments to international environmental conventions.
- Regional and national environmental policy development.
- Regional training.
- Strengthening of environmental management programmes for countries.
- Public awareness and communications.
- Implementation of environmental management demonstration projects.
- Support to international negotiations such as the Conference of Parties (COPs – Climate Change COP28 in Azerbaijan, Biodiversity CBD, Intergovernmental Negotiating Committee on plastic pollution – INC 5 currently underway in Korea)



Sustainable Environment Stewardship using GIS

1. **Monitoring and Management** - Efficient tracking of environmental changes.
2. **Informed Decision-Making** - GIS delivers spatial insights for informed conservation planning.
3. **Long-Term Sustainability** - Integrates ecological, social, and economic objectives.



GIS applications for environmental management and conservation.

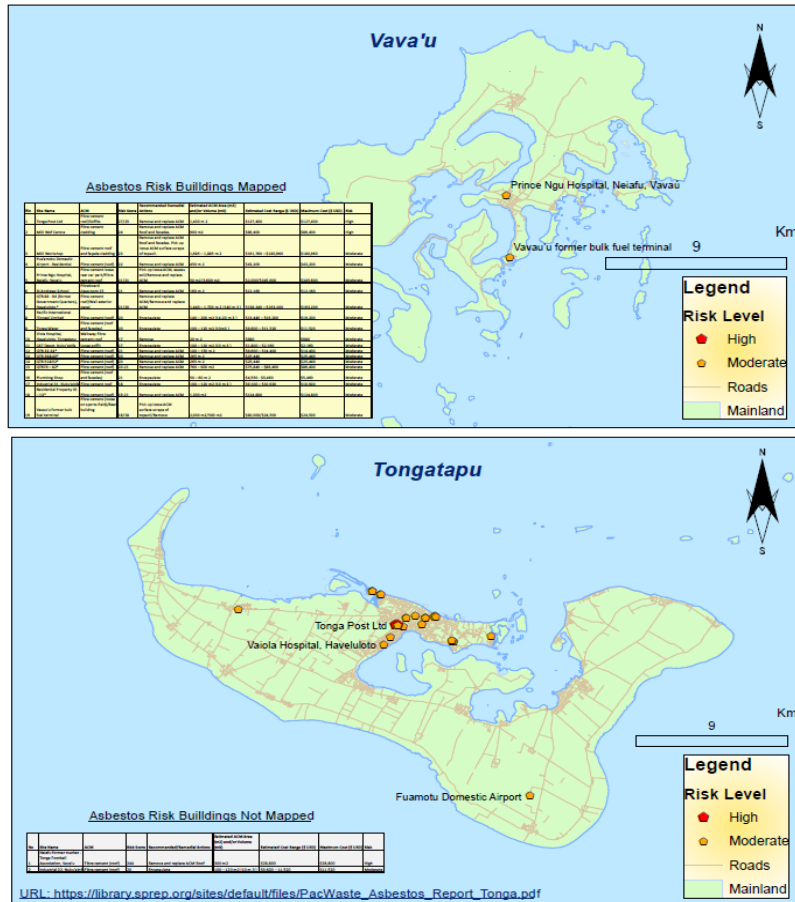
I. TECHNICAL GIS SUPPORT



- Waste mapping (disaster, asbestos, marine wrecks)
- Protected areas mapping
- Fisheries mapping
- Nature based solutions
- Loss and Damage

I. TECHNICAL GIS SUPPORT

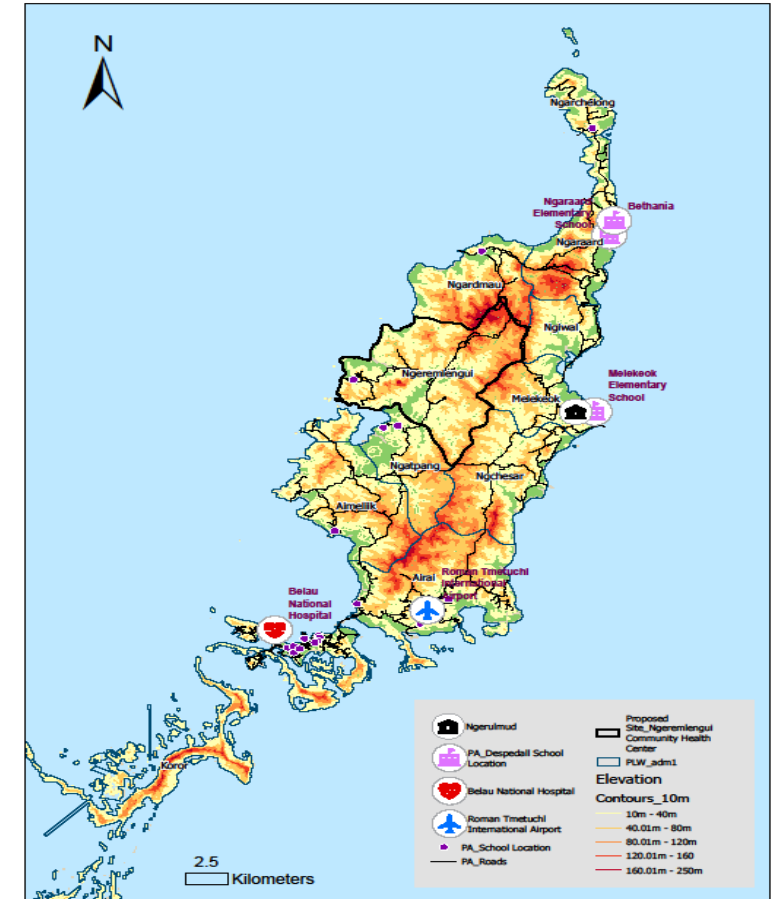
Asbestos Risk Buildings - Tonga



- Asbestos Risk Building – Tonga Asbestos mapping

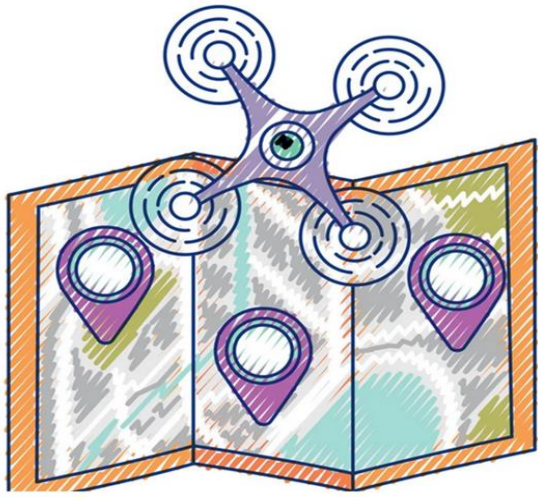


- State of the Environment report – Nauru Land Use

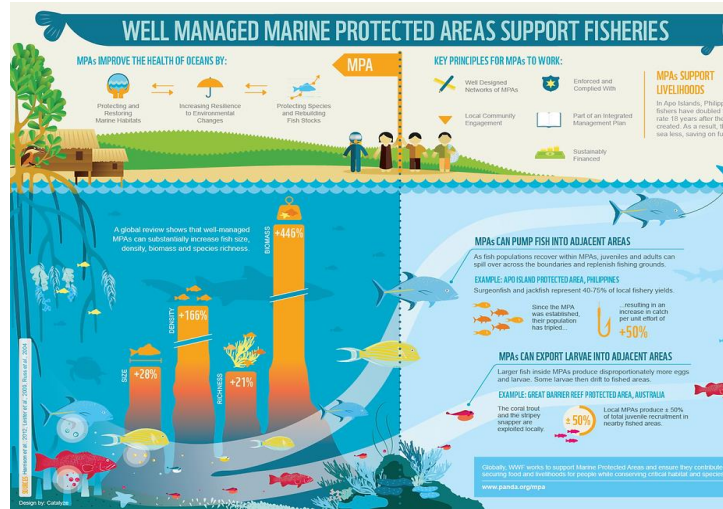


- Palau Coastal Infrastructure - National Adaptation Plan

2. CAPACITY BUILDING



- Drone mapping for topographic surveys, environmental monitoring, and natural resources management.



- Strengthening Fisheries Management in Samoa through Geographic Information Systems (GIS)



- To equip the Solomon Islands Environment and Conservation Department (ECD) professionals with the necessary skills to effectively utilize Geographic Information Systems (GIS) for data capture, analysis, and reporting.
- Enhance the capacity of environmental practitioners to use EIA, GIS, and data management tools for sustainable management and ecosystem-based adaptation.

TRAINING CONDUCTED BY COUNTRIES



▶ SAMOA

- Drone Training (Multistakeholder)
- GIS Training (Multistakeholder)
- GPS Training and data management
- Fisheries GIS Training for community-based fish reserve management.



▶ SOLOMON ISLANDS

- GIS Training (Multistakeholder)
- KoBo Toolbox Training
- GIS application for EIA processes.



▶ NAURU

- GIS Training (Environment Department)
- Protected Areas management (virtual)



▶ VANUATU

- GIS Training (Multistakeholder)
- KoBo Toolbox Training
- GIS application for EIA processes.



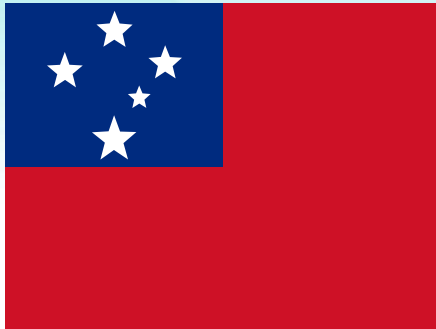
▶ FIJI

- GIS Training (Multistakeholder)
- MapsMe Mobile Data Collection Tool
- GIS application for integrated environmental management.



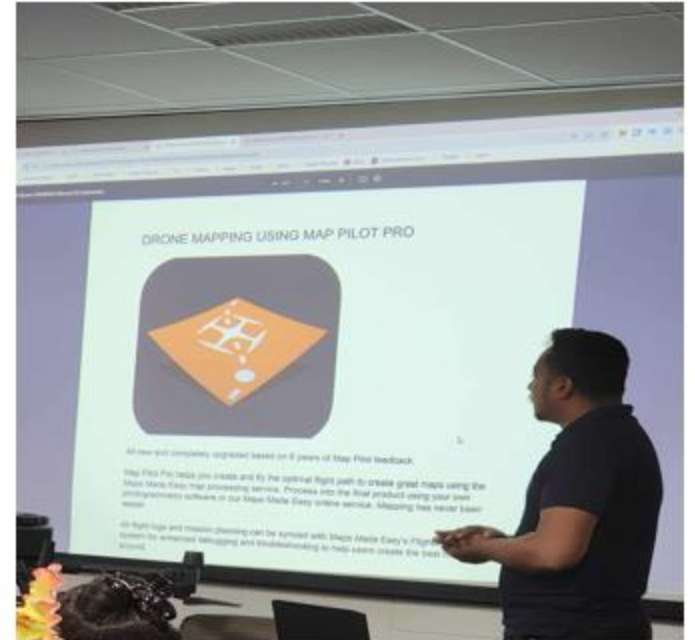
▶ KIRIBATI

- GIS Training (Multistakeholder)
- KoBo Toolbox Training
- GIS application for integrated environmental management.



SAMOA GIS TRAINING HIGHLIGHTS

DRONE TRAINING AND GIS MAPPING

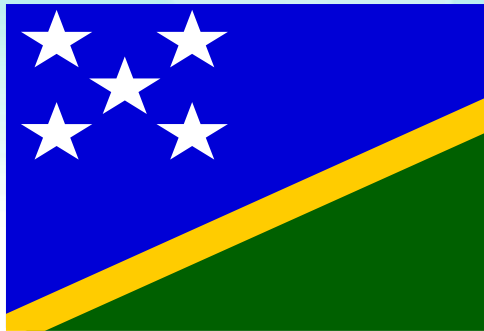




Moataa (GPS Data)



Enhancing Fisheries Management in Samoa through Geographic Information Systems (GIS)



SOLOMON ISLANDS GIS TRAINING HIGHLIGHTS



Solomon Islands GIS and Data Management Training

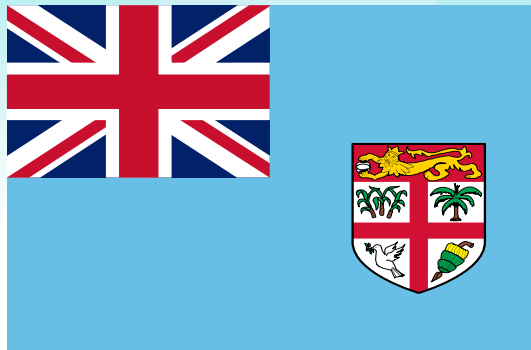




VANUATU GIS TRAINING HIGHLIGHTS



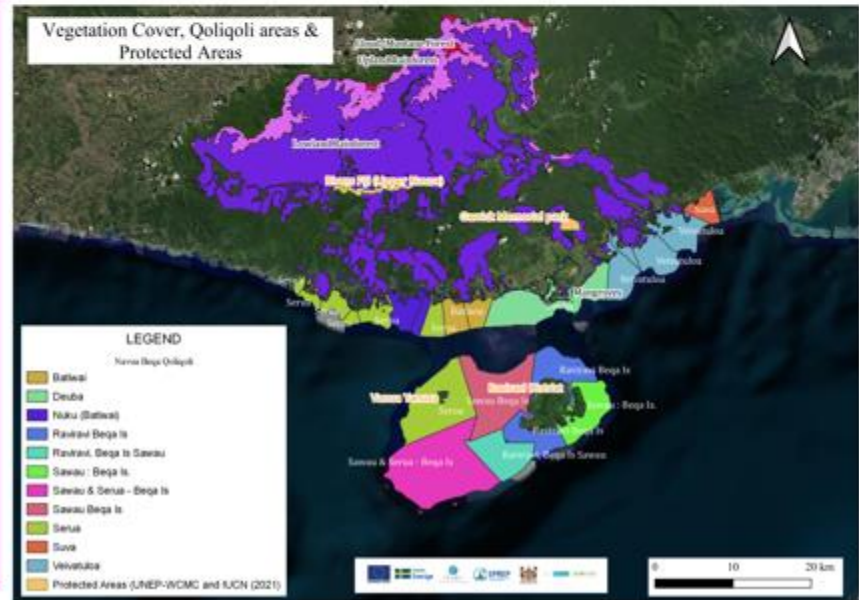
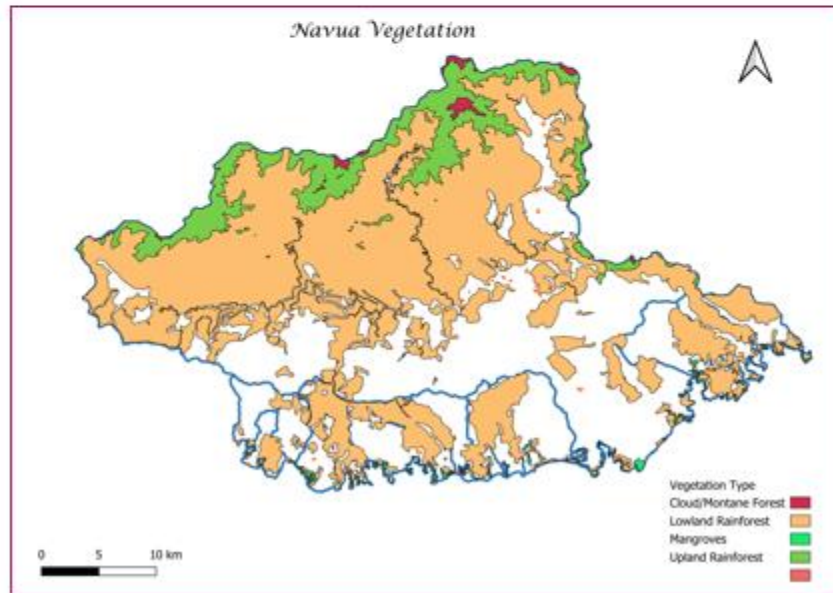
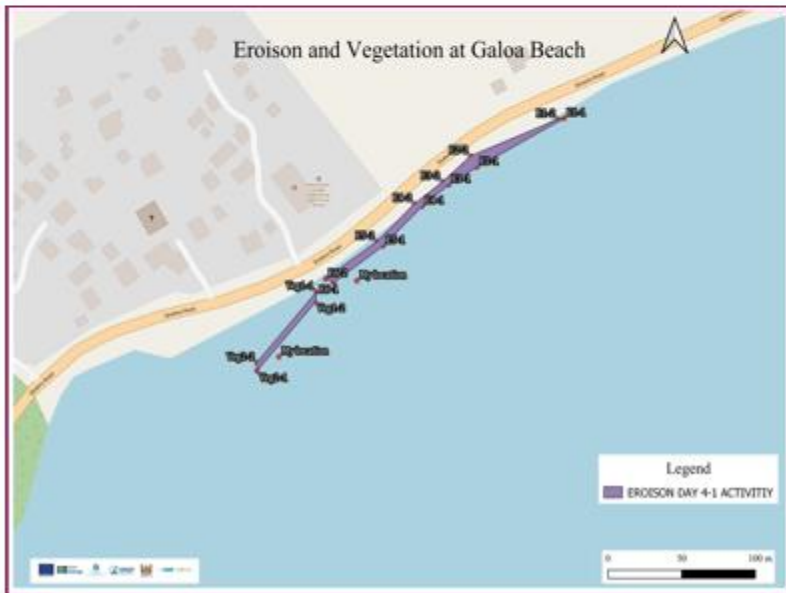
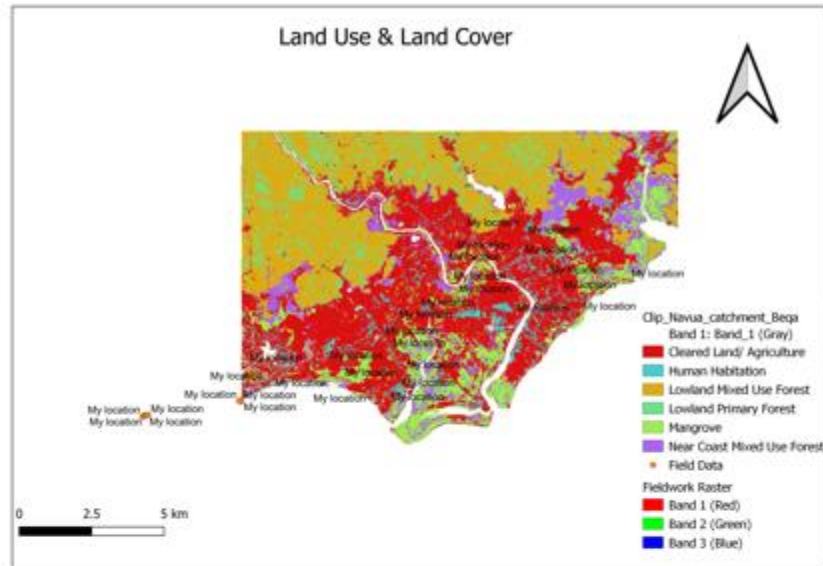
Strengthening Environmental Management Tools for Effective Decision-Making in Vanuatu Training.



FIJI GIS TRAINING HIGHLIGHTS



Fiji GIS and Integrated Environmental Management Training



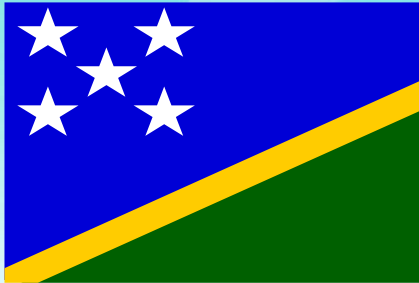


KIRIBATI GIS TRAINING HIGHLIGHTS



Charting Sustainable Development Pathways in Kiribati Through Strategic Assessment and Spatial Technologies Training.





TRAINING ON GIS APPLICATION FOR EIA PROCESS

Application of GIS for Environmental Impact Assessment

Environmental Impact Assessment

- EIA principles, processes, and best practices
- Screening, scoping, and impact analysis in EIA
- GIS application in Environmental assessments

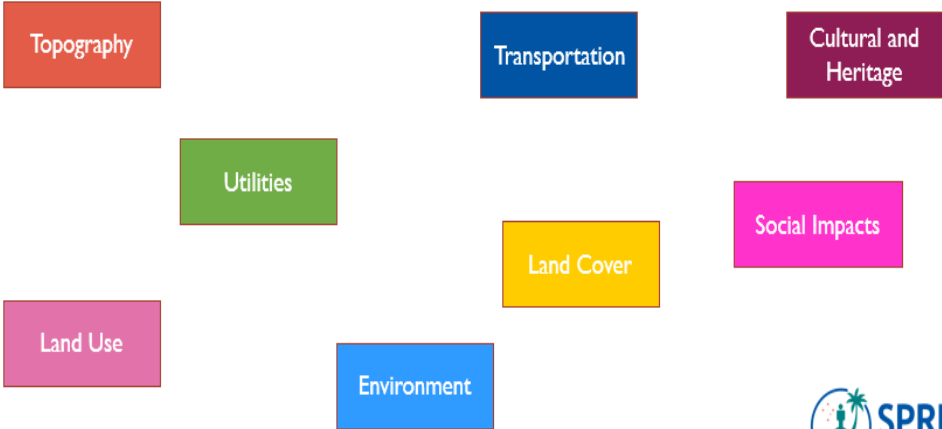
EIA Scoping

EIA Screening

GIS for EIA Screening Process

GIS application in the Screening Process

GIS as a tool, allows project proponents and regulating authorities to determine whether an Environment Impact Assessment is necessary using maps derived from spatial data analysis using existing datasets.



Scenario 1 - Analyzing Socioeconomic Factors

- **Context:** A proposed **development project** in a densely populated area on Efate Island.
- **GIS Application:** Integrating **demographic data, infrastructure, and community services** to evaluate the potential social impacts.
- **Outcome:** Identification of areas that may require additional social infrastructure or services, ensuring community needs are addressed early in the planning process.



Scenario 2 - Identifying Sensitive Ecosystems

- **Context:** A proposed **industrial project** near a coastal area.
- **GIS Application:** Using GIS to overlay the project location with maps of sensitive ecosystems such as **residential, mangroves, coral reefs, and wetlands**.
- **Outcome:** Identifying potential ecological impacts leads to early consideration of alternative sites or mitigation measures.



Scenario 3 - Infrastructure and Accessibility Analysis

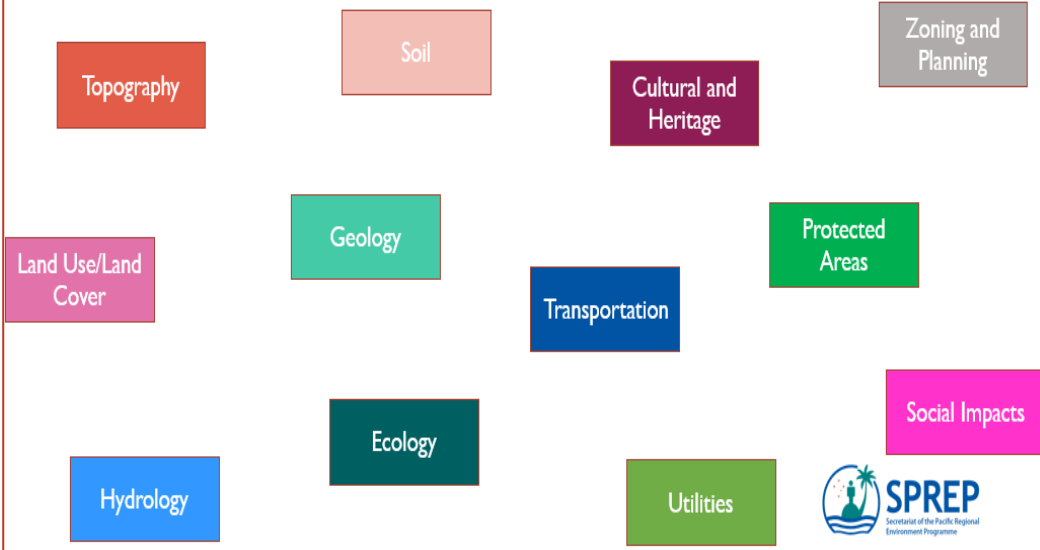
- **Context:** A proposed **healthcare facility** on Ambae Island.
- **GIS Application:** Mapping existing **transportation networks, accessibility to key services, and population distribution**.
- **Outcome:** Identification of optimal locations that maximize accessibility and service reach while minimizing environmental impact.



GIS for EIA Scoping Process

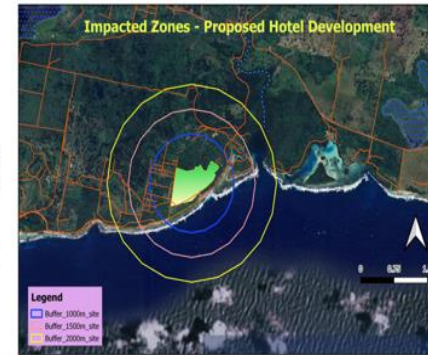
Using GIS in the Scoping Process

GIS as a tool assists enforcing authorities to decide of the boundaries of the EIA based on the maps and data collected in the screening stage, including the project area. Using maps, authorities can establish what the EIA will include in accordance with the terms of reference (TOR).



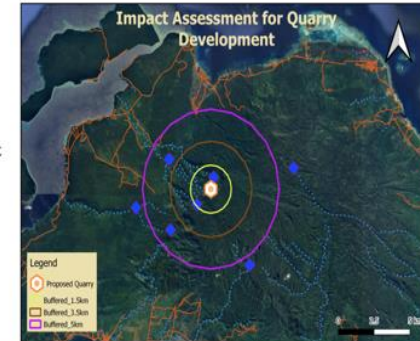
Scenario 1: Air Quality and Noise Impact Zones

Example: GIS can model air quality and noise dispersion by creating buffer zones around project sites. This helps in identifying the extent of pollution impacts and informing mitigation strategies. Spatial data layers such as land use and population density can be overlaid to assess these impacts.



Scenario 2: Hydrological Impact Assessment

Example: Hydrological GIS analysis involves mapping watershed boundaries, analyzing flow patterns, and identifying potential contamination paths. This is crucial for assessing the impact of projects on water resources. GIS can help visualize and quantify land-use changes and their effects on hydrology.

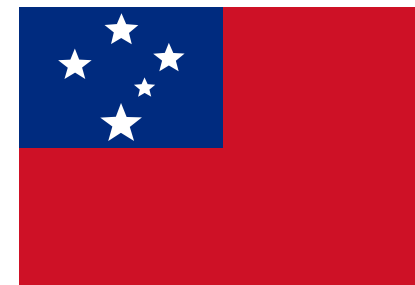


Scenario 3: Socio-Economic Impact Assessment

Example: Socio-economic GIS analysis includes mapping population distribution, land use, and infrastructure to identify communities potentially affected by development projects. This helps in planning stakeholder engagement and assessing social impacts.



SUPPORT TO INTERNATIONAL NEGOTIATIONS - COP28



CLIMATE COP28 SIDE EVENT, DUBAI



Geospatial Solutions for Climate Challenges: A Focus on Loss, Damage, and Adaptation



CHALLENGES

Challenges identified by the team for GIS training in the Pacific include :

- Funding Constraints
- Capacity Gaps
- Limited Technical Infrastructure
- Data Availability and Accessibility
- Sustainability of Skills
- Geographic Dispersion
- Rapid Technological Change

FUTURE GOALS AND OPPORTUNITIES FOR ENHANCING GIS CAPACITY



Expand Regional
Training
Programs and
Workshop



Invest in GIS
infrastructure



Encourage
Sustainable
Geospatial
Practices



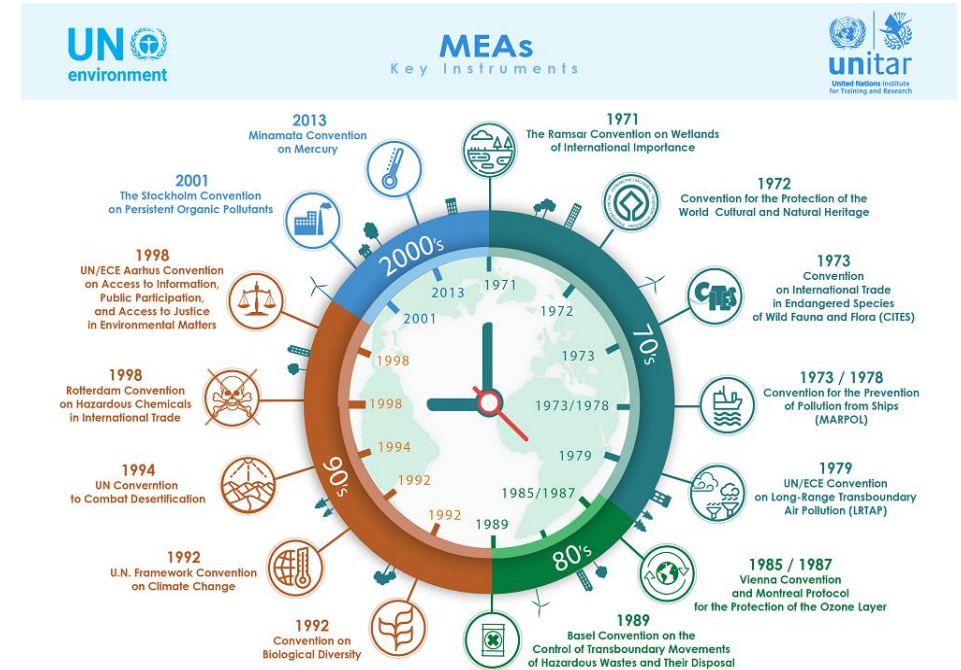
Data sharing and
partnerships



Pacific GIS
success stories

CONCLUSION

- SPREP empowers Pacific Island countries to address environmental and climate challenges.
- Partnerships in GIS and Earth Observation (EO) provide updated national datasets.
- Geospatial resources enhance information management and MEA reporting.
- GIS supports evidence-based decisions for sustainable development in the Pacific.



Participants Testimonials

"The tools in this workshop show that we can visit sites, collect data and return to the office and map things out. This will help us tell a story around climate in Vanuatu."

- Kalsuak Garden
Climatologist
Vanuatu Meteorology and Geo-hazards Department



Geographic Information Systems (GIS) and Data Management
24 - 28 June 2024 | Vanuatu



"Through this training I can better understand the integration of GIS as a tool to undertake environment impact assessment."

- Catherine Lessa
Environmental Impact Assessment Consultant



Geographic Information Systems (GIS) and Data Management
24 - 28 June 2024 | Vanuatu



"The GIS training has equipped me with foundational skills on data collection using tools such as GPS and its interaction with GIS mapping applications in various professional contexts."

- Catherine Sinclair-Woo Ching
Fisheries Assistant, Advisory



Enhancing Fisheries Management in Samoa through Geographic Information Systems (GIS)
10 - 15 June 2024 | Apia, Samoa



The SPREP GIS training was a new experience for me to fill our knowledge gaps and teach us skills for our work. I did not know about QGIS or Kobo tools before, but I have learned a great deal with the help of the SPREP team. The training has expanded my abilities, especially for our EREPA projects. Learning about Kobo's mobile data collection and its use with GIS was interesting. I am eager to practice more and be proficient in using these tools effectively through continuous learning.

Mr. George Tauika
Solomon Islands



"This training gave me the tools and skills to map out specific areas before going out into the field and conducting research. This helps to give us information on biodiversity, biomass, and species abundance."

-Betgy Boedovo
Intern, Research Aquaculture Division
Vanuatu Fisheries Department



Geographic Information Systems (GIS) and Data Management
24 - 28 June 2024 | Vanuatu



"My role is to overlook environmental issues in three different provinces. This GIS training will give me new tools and skills to capture real time data and put together a system to support the work we do."

- Anaclet Philippe
Environment Officer, SANMA, PENAMA and TORBA Province Department of Environmental Protection and Conservation

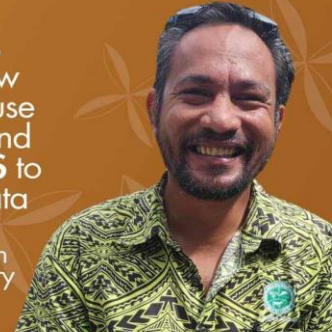


Geographic Information Systems (GIS) and Data Management
24 - 28 June 2024 | Vanuatu



"The training has exposed me to new knowledge on the use of mapping tools and devices such as GPS to ensure accurate data collection."

- Bismarck Patrick Fruean
Fisheries Officer, Advisory



Enhancing Fisheries Management in Samoa through Geographic Information Systems (GIS)
10 - 15 June 2024 | Apia, Samoa



"Accessing the Solomon Islands Environment Data Portal for the first time exposed me to the diverse information available. Additionally, the GIS tool has proven instrumental in pinpointing and mapping waste generation sites, especially in my line of work."

Lovinta Marite
Solomon Islands



"By attending the training, I built on my existing knowledge and capacity on GIS. I learnt a lot of new things and how to use the appropriate tools."

- Nano Bule
Student
Bachelor of Environmental Science
Vanuatu National University



Geographic Information Systems (GIS) and Data Management
24 - 28 June 2024 | Vanuatu



"This training has been very interesting, and plays a crucial role towards my master's thesis. I will be able to map out and locate point source pollutants and show their impacts on seagrass."

- Ceceilia Louis
Masters Student,
University of the South Pacific



Geographic Information Systems (GIS) and Data Management
24 - 28 June 2024 | Vanuatu



"The training was crucial for data management and decision-making. I'm eager to apply these skills in my role as a Fisheries Assistant and continue expanding my knowledge."

- Christina Mosile
Fisheries Assistant, Inshore



Enhancing Fisheries Management in Samoa through Geographic Information Systems (GIS)
10 - 15 June 2024 | Apia, Samoa



Integrating GIS for analysis and mapping further enhances the toolbox's power, especially for potential protected areas simplifies field data collection for conservation efforts, aiding in baseline data collection for biodiversity reports. The experience of creating questions on Kobo helped me understand the required field information and how GIS can improve data analysis and mapping.

Ms. Cathy Unga
Solomon Islands



Vinaka

