Second Series Technical Consultation of the Regional Scientific and Technical Committee for the GEF Pacific Ridge to Reef Programme

Radisson Blu Resort, Denarau, Fiji,
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Session 4 – Research and Information Management

PACIFIC R2R INFORMATION MANAGEMENT SYSTEMS

Summary

The paper presents the latest update of deployment and launch of the R2R State of Coast Platform noting key features in the database is about enabling geospatial data sharing between users, groups, and the general public. More broadly, the primary and secondary data relevant to advancing the ridge to reef concept would include spatial data and related documents to do with the environment, governance, socio-economic and traditional ecological knowledge. Equally, the broader application of EGS & DPSIR approaches[1] provide an opportunity for better coordination and population of the Spatial Data Infrastructure and information management systems for the Pacific R2R Programme. The science portal and spatial data infrastructure officially launched at the 6th RSC meeting, October 2020.

Recommendations:

The Committee is invited to: -

(i)   Review the latest updates of development and deployment of the GEF Regional R2R Spatial Data Infrastructure and its feature-sets including uploaded data, maps, documents, and map analytics features

(ii) Discuss and support training workshop for project GIS practitioners and data managers in order to utilise and finalise population of R2R <u>Environmental Data Register</u> which enables management and analysis of environmental, socio-economic, habitat, natural resources and other data sets collated by Pacific Ridge to Reef Programme and STAR IW Projects in a **standardised** manner.

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[1] Ecosystem goods and services (EGS); Drivers-Pressures-State-Impact-Response (DPSIR)

Pacific R2R Information Management Systems
R2R State of Coast Platform
Spatial Data Infrastructure for GEF Pacific Ridge to Reef Programme
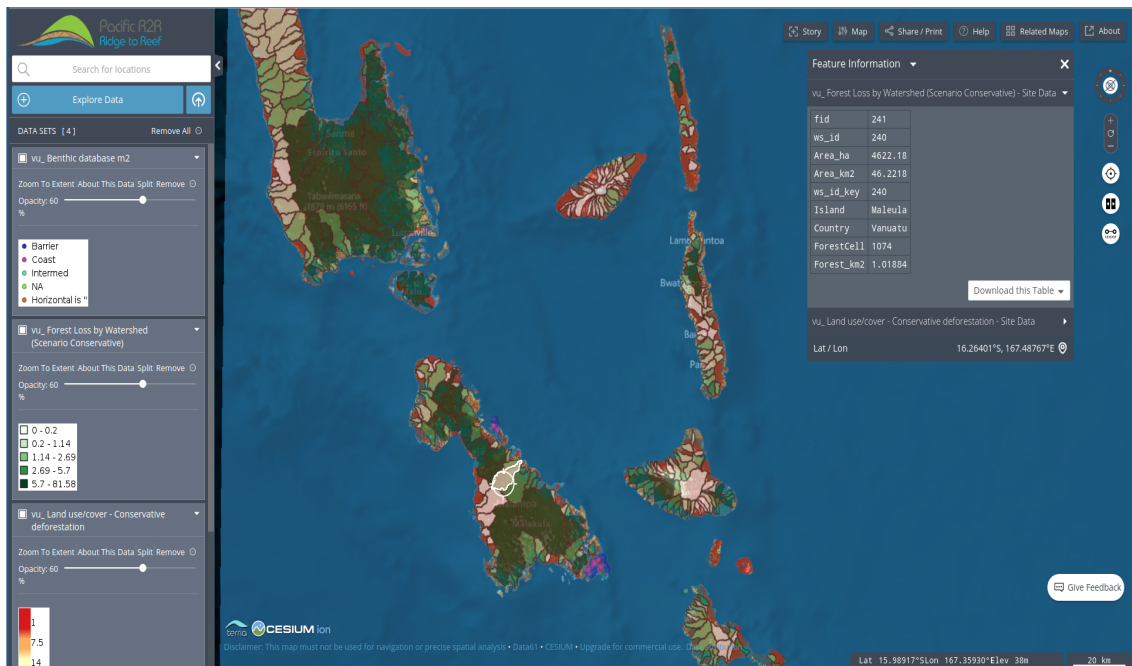
Introduction

1.   The Pacific State of Coast Spatial Data Infrastructure for the Pacific Ridge to Reef Programme is now accessible online, http://r2r.spc.int/. The plaftorm was approved and launched at the 6th Regional Technical and Scientific Committee Meeting in October 2020.

2.   At that technical consultation, there was opportunity to explore the GEF R2R Spatial Data Infrastructure deployment and its feature-sets, and provide advocacy for the platform at a national project-level to encourage relevant stakeholders to start sharing their spatial data, related assets, visualisations and models via the platform, in order to enable decision making on a national/regional scale.

3.   The paper presents the latest update of the R2R State of Coast Platform noting key features in the database is about data sharing between users, groups, and the general-public. The science portal and spatial data infrastructure will be launched at the RSC meeting.

Background

4.   Beginning of 2019, GEF Ridge to Reef Programme engaged Geo-informatics Section within Geo-science, Energy and Maritime Division, SPC to design and develop a data repository for the State of Coast platform. The section started implementing the project using the parallel approach of:-

(i) Collating regional baseline spatial data for national projects, and facilitating access to available spatial data, derived from several SPC-hosted, regional and international platforms; and

(ii) Developing an extensible mapping platform to enable sharing of data products from the programme.

(iii) Implementing an Environment Data Register in order to collate and standard disparate scientific data collected across the R2R and STAW/IW projects

5.   After 2 of years of development and data population, which was mostly dependent on availability of relevant data-sets and templates, the section stood up an Spatial Data Infrastructure, built upon industry standards, which the section envisages will cater for the data exposure and analytical needs of the projects, and will be well supported by the GEM Division beyond lifespan of the GEF R2R programme.

6.   Currently the platform hosts baseline and project data for approximately 6 pilot sites, along with some regional open data deemed relevant to the national projects. The datasets have relevant metadata tied to them. The GEF R2R Programme Unit has engaged interns who would continue to populate the SDI platform on behalf of national projects.

7.   The platform is deployed on Amazon Web Services, Sydney, and being built on proven open source standards and components, can be deployed at national-levels with minimal costs and on commodity hardware (e.g: no licencing costs). GEM Division has been supporting similar SDI platforms in the region, at a country-level or ministry-level for the past 12 years.

8. The R2R State of Coast SDI is interoperable (able to seamlessly share and consume datasets) with other CROP regional data platform initiatives, such as SPREP INFORM national data portals and SPC's Pacific Data Hub initiatives.

What is a Spatial Data Infrastructure (SDI)?

8.   A Spatial Data Infrastructure, commonly referred to as SDI, enables the efficient use and management of spatial information. Although the manifestation of an SDI is ultimately a technology platform of loosely coupled servers and services, at its heart there is a core set of four guiding principles: people, standards, policy, and data.

9.   People are an integral part of any SDI, as they will use it to deliver services and analysis to stakeholders. Within a corporate environment, one can categorize people into three broad types: -

(i) Data Producers - who use powerful GIS/RS tools to create, manipulate, and maintain spatial information, derived from remote sensing techniques or field surveys.

(ii) Data Users - concerned with the analysis and interrogation of spatial information to provide answers. They use a combination of web-based and desktop-based tools.

(iii) Data Consumers – primarily non-technical, concerned with the consumption of data products, analytics and models (usually from data users) to inform decision making and/or business planning.

10.   A guiding principle for an SDI is interoperability, which is to say that a policy around the use of spatial tools should not necessarily dictate or advocate the use of any one specific tool. In other words, standardization should not be achieved at the software or tool level but rather at the service level, through the adoption of industry-recognized standards, such as those of the OGC. This ensures long-term sustainability and data reuse beyond project/ funding life cycles.

The Application and the Benefits of the R2R Spatial Data Platform

11.   The R2R spatial data infrastructure is all open source and systems that can be deployed into any of the national projects with zero licence needed, thereby making it cost-effective. The platform is user-friendly for non-technical people and allows multiple users updating one map without the restriction of expensive GIS software or power computers.

12.   The R2R regional database will be regularly populated with all the necessary R2R datasets and provide easy extraction of data for analyses. The data can also be constantly updated as information becomes available and uploaded. The regional database will be launched along with the re-development of the R2R website at the upcoming RSC meeting.

13.   Accordingly, the R2R spatial data is used to develop maps depicting resources, hot-spots, habitats and other related specific "essential life support areas". This was done for the spatial prioritization modelling and trialling work in Vanuatu, where globally available spatial datasets were used to identify coral reef and forest areas in order to develop maps of priority areas for management and conservation actions (national), and forecast outcomes of existing management plans particularly in localized areas (local).

14.   For other participating countries including PNG, Samoa and Tonga, spatial data is also used for mapping or performing GIS based watershed analysis. This was processed using Quantum GIS to model watershed features and produce maps depicting the current state of watersheds and predictive impact of existing land over and development pressures on the land. The model should be able to identify critical watersheds for conservation because of their role in protecting terrestrial soil and freshwater resources and downstream coastal and marine resources and habitats.

15.   For instance, in Samoa land cover mapping used high resolution aerial photography or satellite imagery. This data is available from Forestry Agency or can be collected at lower resolution by WRD using Google Earth Imagery or drones. Ground-truthing and field observations incl. GPS positions can help verify or improve the above data by transferring and overlaying onto a satellite imagery.

16.   The following list of global datasets are freely available and accessible online on the following links.

Type	Source
Watersheds	databasi.org
Land Cover	maps.elie.ucl.ac.be/CCI, www.globallandcover.com
Rainfall	worldclim.org
Soils	isric.org
Streams/Rivers	hydro.iis.u-tokyo.ac.jp/~yamadai/MERIT_Hydro/
Coral Reefs (1)	data.unep-wcmc.org/datasets/1
Seagrass	data.unep-wcmc.org/datasets/7
Mangroves	data.unep-wcmc.org/datasets/4
Coral Reefs (2)	allencoralatlas.org
Population Grids	SPC Statistics for Development, UN Humanitarian Data Exchange

17. As of February, 2021, 221 Data Layers are registered and publicly accessible from the State of Coast Platform. The breakdown by country and broad thematic areas are as follows:

State of Coast
Data Layers By Country

State of Coast
Data Layers By Thematic Areas
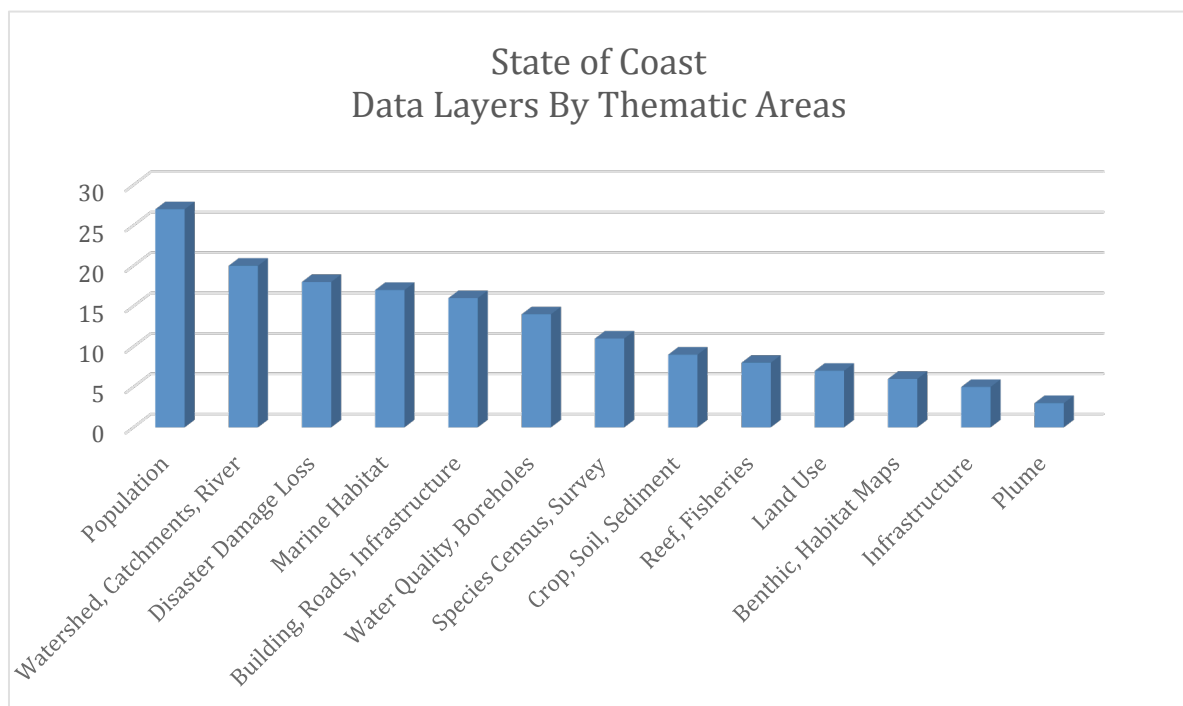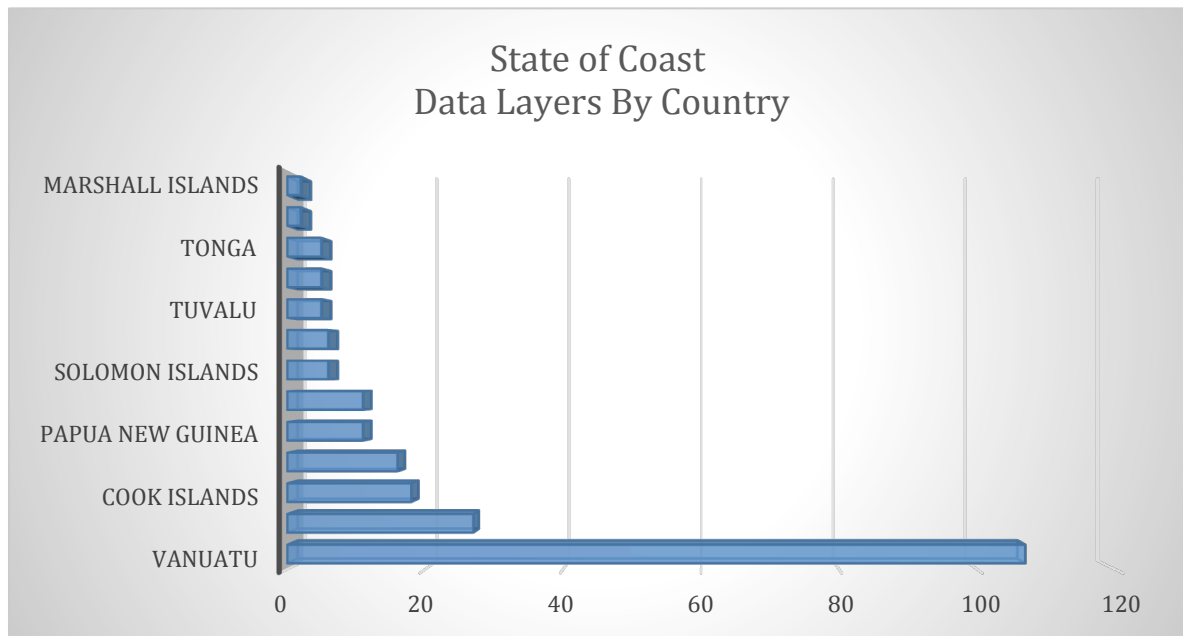
Outlook and Next Steps

13.   Since the RSTC/RSC meeting in October 2020, the database development and deployment has continued along with the collection and input of primary data from baselines and RapCA fieldworks and observations. There were also ongoing efforts on the extraction of secondary spatial data from reports and publications, derived from several SPC-hosted, regional and international platforms. The departure of Geospatial Technical Officer (Carrol Chan) would impact a little on project work but looking to getting support from relevant staffs in GEM.

14.   Discuss and support training pending workshop for project GIS practitioners and data managers in order to utilise and finalise population of R2R Environmental Data Register which enables management and analysis of environmental, socio-economic, habitat, natural resources and other data sets collated by Pacific Ridge to Reef Programme and STAR IW Projects in a standardised manner.

Data Register

The Data Register forms an integral part of the State of the Coast Information Management System, which as a whole is envisioned as a decision-making tool for supporting national ICM/IWRM reforms and investment plans, and socio-economic and environmental improvements including poverty reduction, sustainable livelihoods and disaster and climate resilience.

The current version of the data register enables the management and analysis of environmental and socio-economic data that has been captured on the ground and mined through secondary data sources by the Pacific Ridge to Reef Programme and STAR IW Project. These datasets include forestry surveys, water quality assessments, creel surveys and so forth. To compliment the Pacific Ridge to Reef Science-Policy Approach, stakeholders are encouraged to take ownership to maximise existing data through contribution of data and assets.

Data Types

Avifauna | Biological | Country | Fishing Benthic | Fishing Creel | Socio Economic | Terrestrial | Water Quality |

Data Actions

Export Templates   Import Data Templates   Analytics

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