

Pacific Risk Tool for Resilience

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Abstract

Juliana Ungaro 1, Herve Damlamian 2, Sachindra Singh 2, Shaun Williams 3, Ryan Paulik 1, Rebecca Welsh 1, Litea Biukoto 2, Doug Ramsay 4 1. NIWA Taihoro Nukurangi, Private Bag 14901, Wellington 6241, Aotearoa New Zealand 2. Geoscience, Energy and Maritime Division, the Pacific Community (SPC), 241 Mead Road, Nabua, Fiji. 3. NIWA Taihoro Nukurangi, PO Box 8602, Christchurch 8440, Aotearoa New Zealand 4. NIWA Taihoro Nukurangi, PO Box 11115, Hillcrest, Hamilton, New Zealand The Pacific region is one of the most vulnerable and disaster-prone areas in the world. This issue is exacerbated by climate change, which is causing the frequency and intensity of climate related hazards to increase. Furthermore, increased urbanisation, population and environmental damage are all contributing to worsening risk levels. Hazard risk modelling tools can enable decision makers to better prepare for and respond to disasters, and to make sound economic and land-use planning decisions. The Pacific Risk Tool for Resilience, Phase 2 (PARTneR-2) is a three-year project that aims to build off the pilot PARTneR project to help Pacific Island Countries (PICs) become more resilient to the impacts of climate change and natural hazards through the effective use of robust information in decision-making. Currently, a critical gap across PICs is the availability and use of low-cost and easily applied tools to assist countries to make their own risk-informed decisions. By developing national risk models and assessment tools, PARTneR-2 will assist six PICs (the Cook Islands, Republic of Marshall Islands, Tuvalu, Tonga, Samoa and Vanuatu) to have the technical and institutional capability to use and apply these to make informed and effective decision-making related to weather, climate, and coastal hazards.



PARTneR-2

Pacific Risk Tool for Resilience project, Phase 2

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Goal

PICs are more resilient to the impacts of climate change through risk-informed decision-making

Approach



- Integrate risk assessment tools into in-country processes
- Enhance collaboration and coordination throughout the decision-making process



- Formalise governance arrangements for data and analysis
- Develop fit-for-purpose information products



- Training on use of risk assessment software (RiskScape)
- Capacity building across all levels of decision-makers

Background

- The Pacific is one of the most vulnerable regions to natural hazards globally
 - lack of low-cost and easily applied tools available for risk-related decision-making in the region
- This need is in line with the FRDP
 - places a strong emphasis on managing disaster and climate change risks
- PARTneR-2 builds off the pilot PARTneR project (2016-2019)

Framework for Resilient Development in the Pacific

An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP)

2017 – 2030

11 September 2016



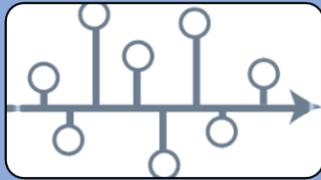
PARTneR-2 Project Overview



MFAT funded, \$5.9 million



Jointly implemented
(SPC and NIWA)

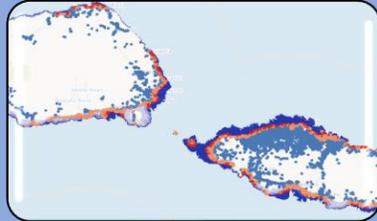


3 years (2021-2024)

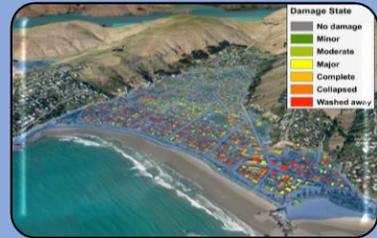


6 PICs (Samoa, Vanuatu, Tonga, Cook Islands, Tuvalu and RMI)

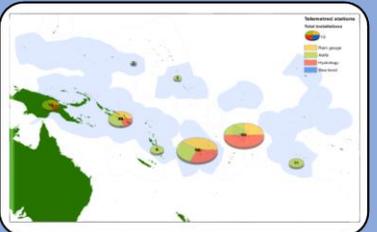
Success



Risk information is being produced to support effective decision-making and reporting in PICs



PICs have the skills and knowledge to utilise climate risk information in their decision-making and reporting processes



Regional and peer-to-peer support is available and coordinated across PICs

Country-led case study methodology



ALL

National climate risk models



Drought focus



Build upon pilot project case-studies



Introduce climate risk modelling/
RiskScape

Output 1: National risk models and training

- Design and implement national risk models for 6 PICs
 - Developing data access and input plugins for the models
 - Displaying risk model outputs through web portals and dashboards
 - Trainings on RiskScape for SPC and the countries



Output 2: Producing and applying risk data



- Set up in-country cross-government steering groups
- Develop risk models that contribute to decision-making:
 - National Tropical Cyclone related risk assessments for all 6 PICs
 - Climate risk case studies for 4 PICs
 - Drought risk case studies for 2 PICs



Output 3: Risk database and data collection

- Design and set-up a regional/ national risk database
- Update the building/ asset footprints for 6 PICs
- Collect damage data and information after a significant cyclone event



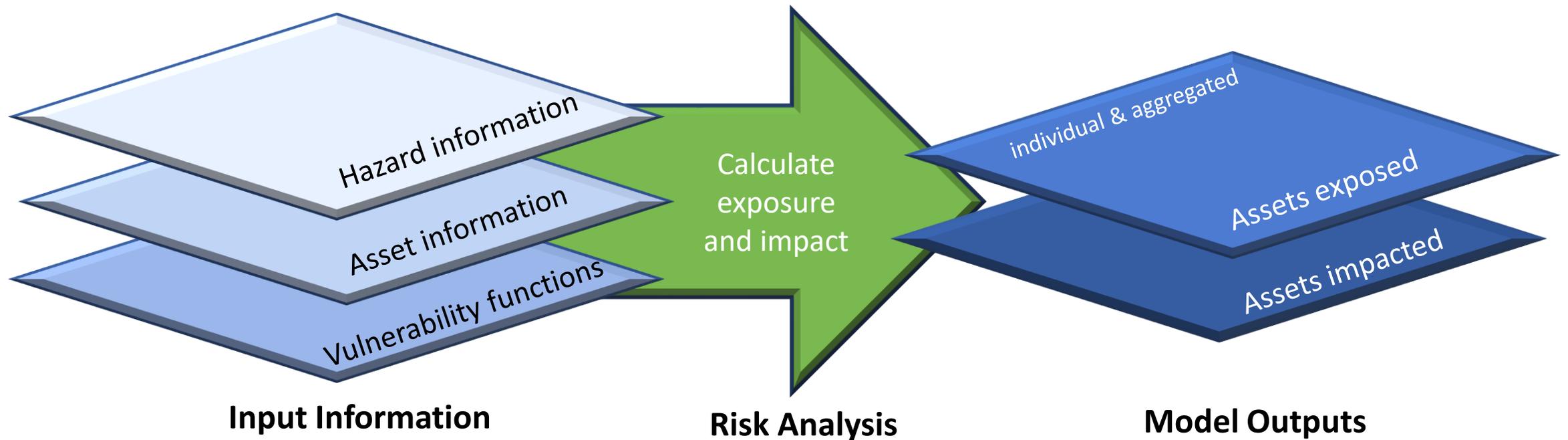
Output 4: Communities-of-practice and training

- Set-up peer-to-peer CoPs
 - At both the decision-maker and technical level
 - In collaboration with other projects: PREP, PCRAFI, Gov4Res
- Develop and deliver training:
 - On Risk Tools and Analysis for CoPs
 - Provide the *USP Certificate IV Disaster Risk Management training* for all 6 PICs (in collaboration with PREP)

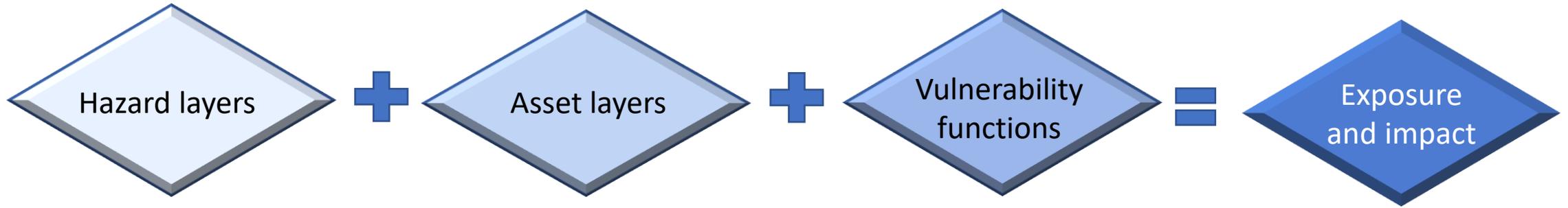


What is RiskScape?

- Multi-hazard assessment tool developed by NIWA and GNS Science that estimates the nature, severity and extent of hazard damage.



RiskScape in PARTneR-2



Tropical cyclone
(floods, wind, coastal
inundation + SLR);
drought



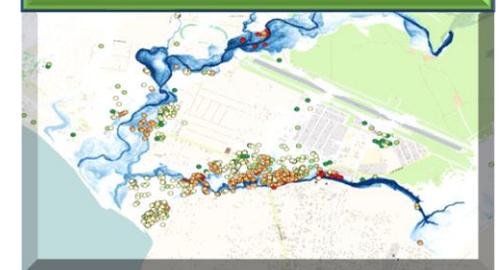
Buildings, people,
infrastructure,
socioeconomic data

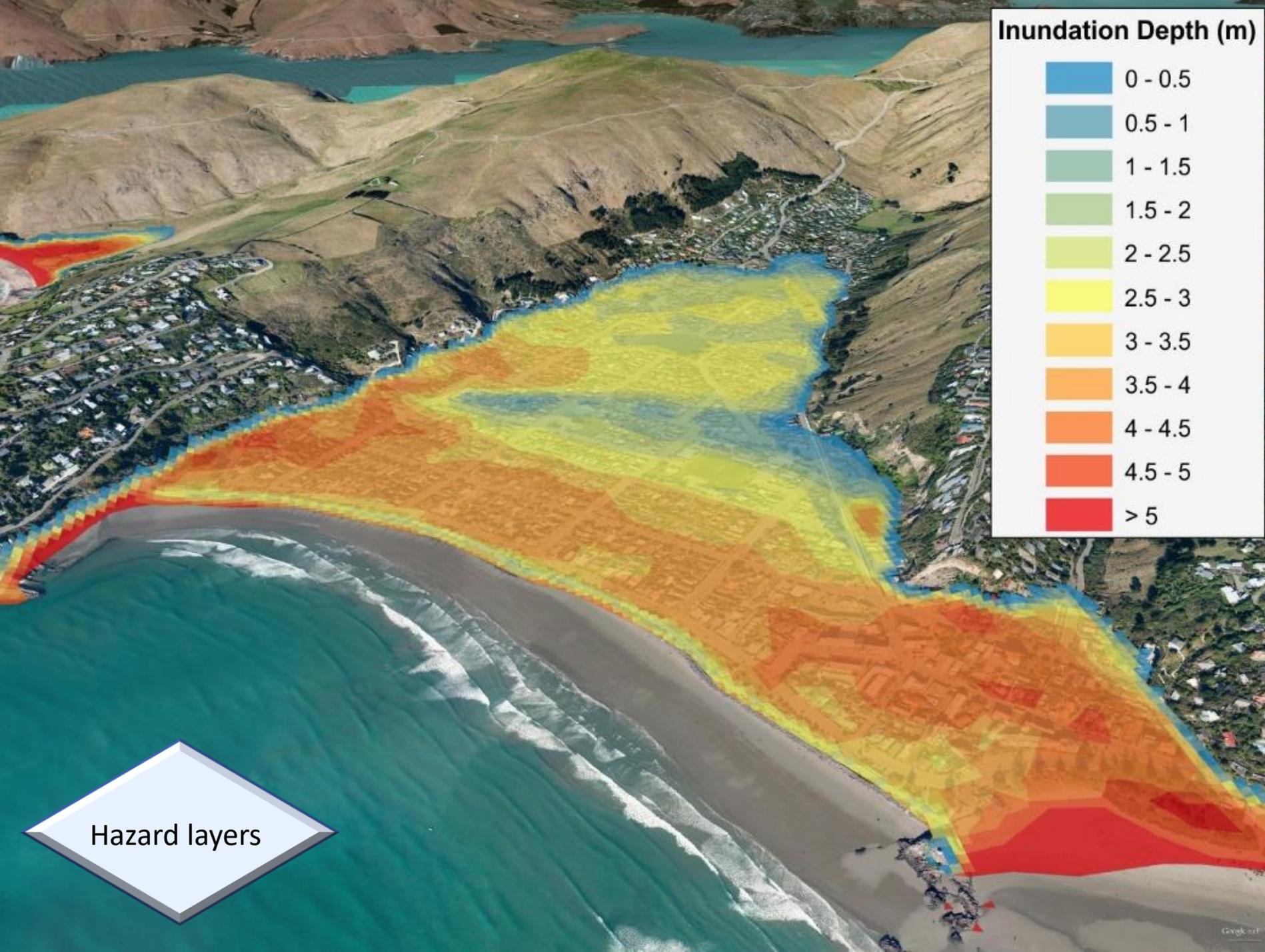


Calculations on
how the hazards
affect the assets



Tailored maps,
tables, reports,
dashboards

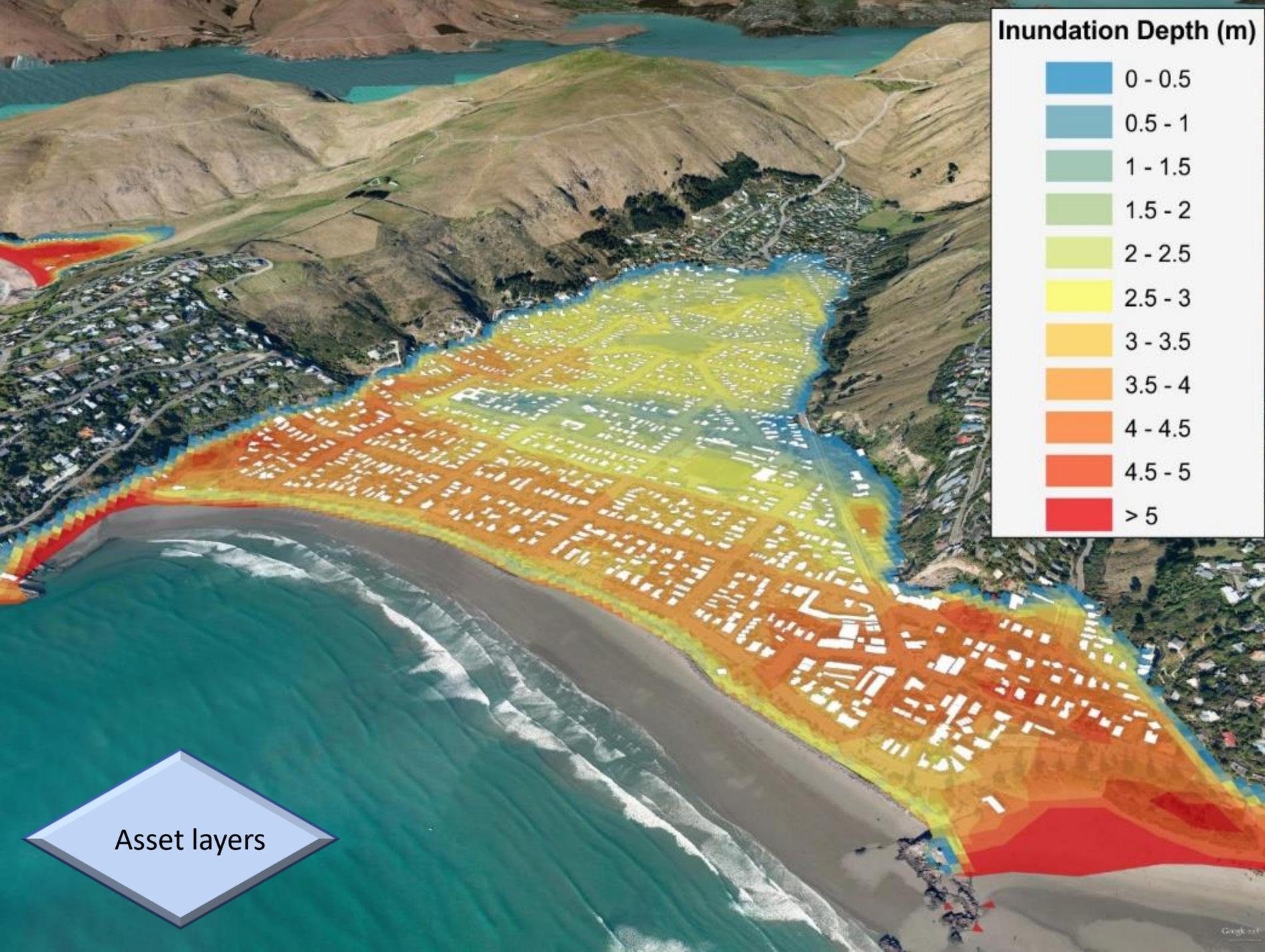




Hazards

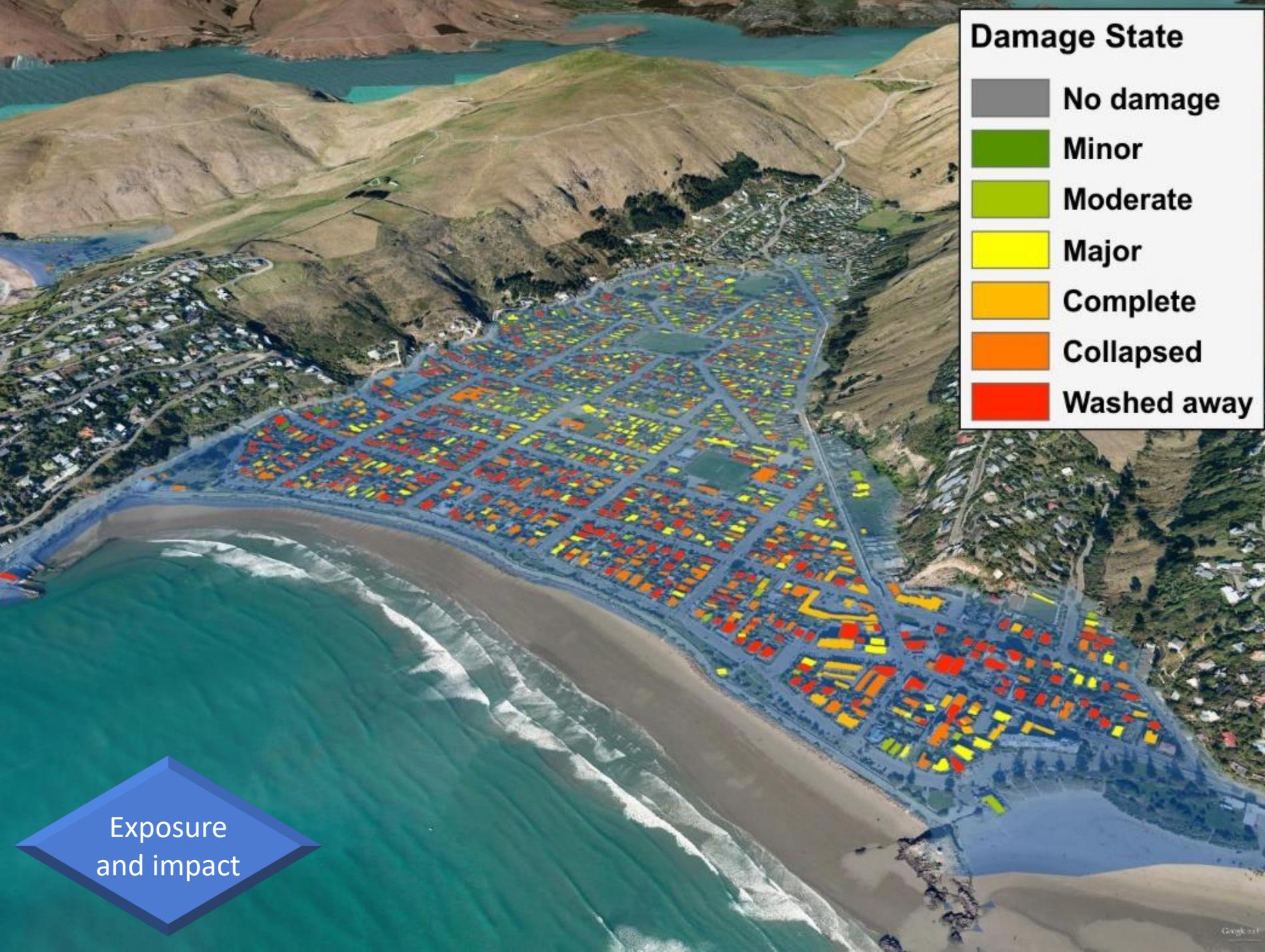
- **Up-to-date weather and climate information- may be imported from climate databases (ClIDE/ ClIDEsc)**
 - For example for TCs
 - forecasted rainfall and wind data can be imported into RiskScape

Hazard layers

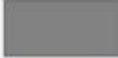


Assets

- Will be derived from existing Pacific databases:
 - Geospatial datasets (PCRAFI/PacRIS/Nexus)
 - Census databases (PopGIS)
 - Lidar and satellite imagery (for building footprints and attributes)
 - Open source information (Open Street Map)



Damage State

-  No damage
-  Minor
-  Moderate
-  Major
-  Complete
-  Collapsed
-  Washed away

Impacts

Impacts from TCs may include:

- # buildings exposed/ impacted
- # people of injured/ mortality
- Monetary loss/ rebuilding cost
- Roads and infrastructure damaged
 - escape routes blocked
- Adaptation planning- where to:
 - raise floor heights
 - strengthen buildings
 - rebuild for CC scenarios

Exposure and impact

Pilot
Project
2016-2019

PARTneR

Pacific Risk Tool for Resilience



Outputs



Pacific risk mapping and decision support tool developed



Data collation and management system developed

Risk tool training developed and applied



Sustainable partnership model developed and rolled-out

Risk mapping was framed around 7 case studies



Tsunami-Samoa



Ashfall-Vanuatu



Landslide-Samoa



Drought- Vanuatu, RMI, Tuvalu



Flood-Vanuatu, Samoa

PARTneR-2 had incorporated the pilot project lessons learned

The need to:

- Link **climate information (CLiDE/CLiDEsc)** with **risk/impact information (RiskScape)**
- Embed knowledge and ownership in both **regional (SPC) and national agencies (MoF and CC)**
- Include both **high-level decision-makers and technical staff** in communities-of-practice
 - Project staff to be coordinators across both
- **Collaborate with related projects/programmes** from the beginning for all outputs



Thank you, vinaka vakalevu
Any questions?

