2012 UR Forum Mapping Global Risk
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Pacific Catastrophe Risk Assessment and Financing Initiative

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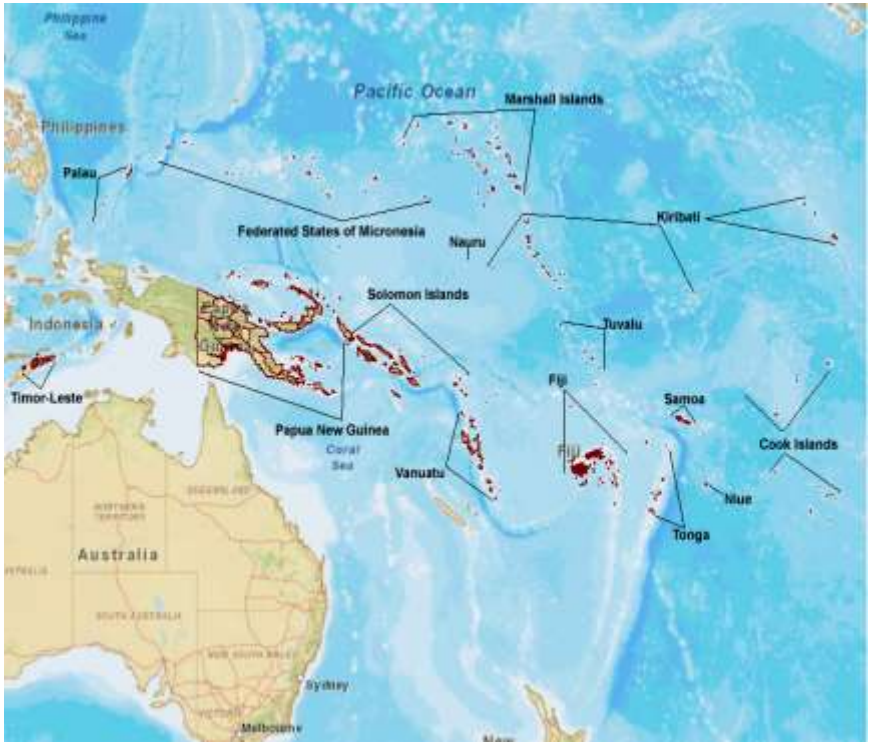
World Bank/ GFDRR

THE WORLD BANK
ASIAN DEVELOPMENT BANK
AIR
GFDRR
Global Facility for Disaster Reduction and Recovery

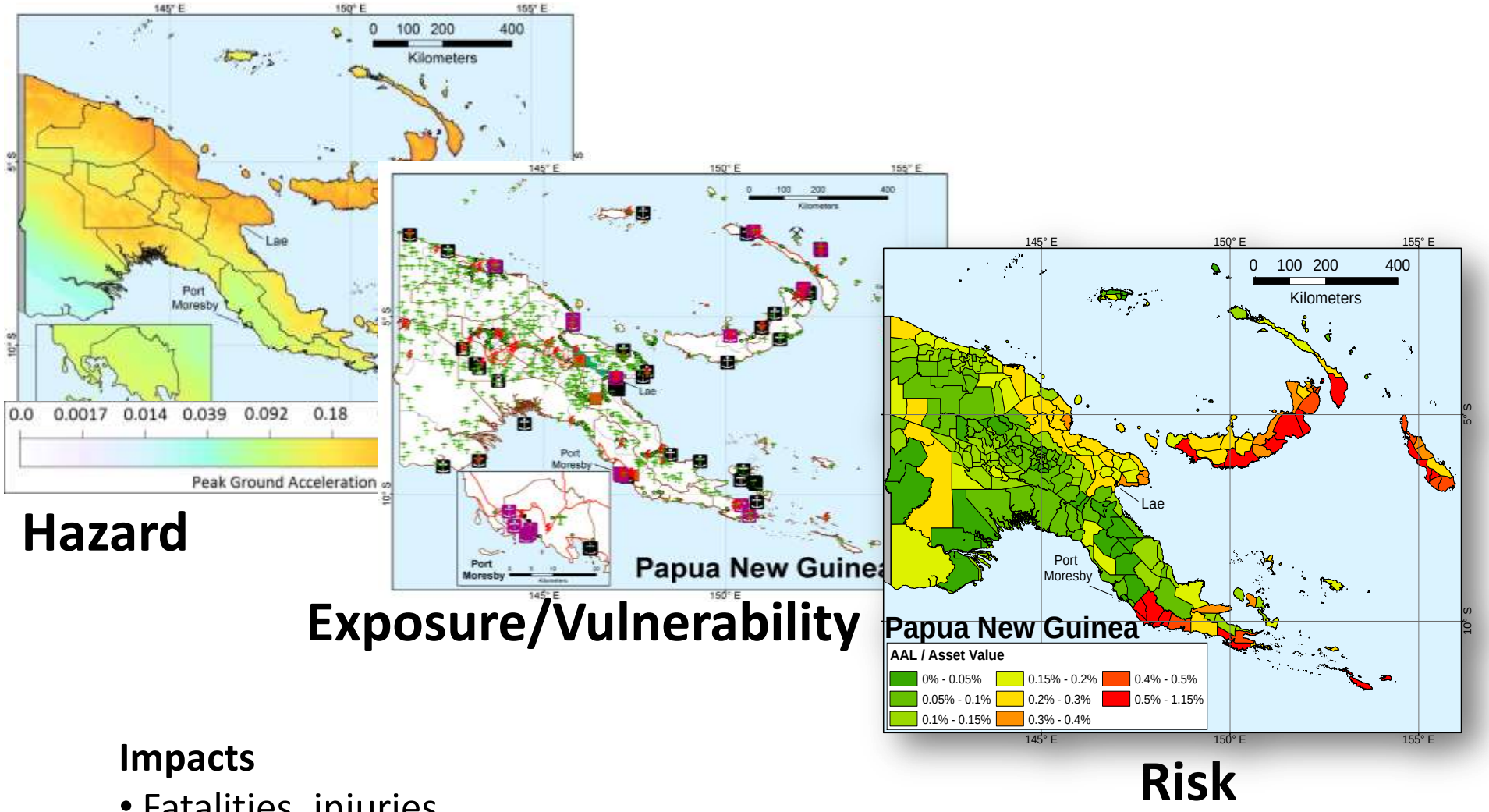
Highlights of PCRAFI

- First state-of-the-art quantitative and probabilistic assessment of major perils in the Pacific
- Covering entire landmass of 15 island countries
- Regional exposure database; – one of the largest and most comprehensive globally
- Analysis of fiscal risk exposure based on country risk profiles
- Disaster risk financing solutions
- Open access to risk information http://paris.sopac.org

Average Annual Loss = US$ 284 million
equal to 1.7% of Region's GDP



Creating Robust Risk Information for Planners & Decision Makers



Hazard

Exposure/Vulnerability

Risk

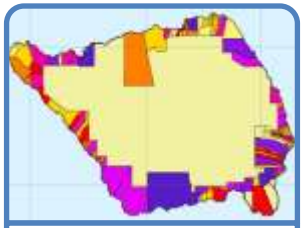
Impacts

- Fatalities, injuries
- Monetary ground-up and emergency losses

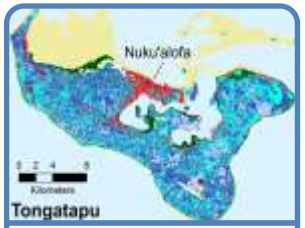
PacRIS – Pacific Risk Information System

Satellite imagery

Administrative Boundaries

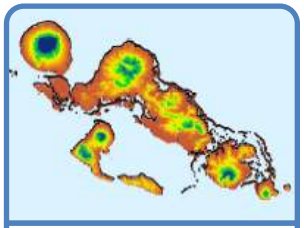


Population Census



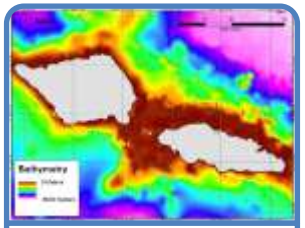
Agricultural Census

Surface Geology



Topographic maps

Surface soil

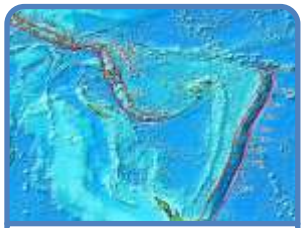


Bathymetry

Infrastructure

Buildings

Monumental effort in assembling, processing and organizing one of the largest collection of geo-referenced datasets in the region



Geodetic and Fault Data

References

Extensive inventory of buildings in 15 countries

Country	Region	Level 1	Level 2	Level 3	Level 4	Ancillary	Total
TL	SE Asia	-	96,539	-	300,791	1,355	398,685
FJ	Melanesia	18,622	79,545	8,214	158,436	1,323	266,140
PG		11,821	122,674	24,398	2,228,935	5,451	2,393,279
SB		12,268	23,150	381	131,574	1,739	169,112
VU		10,661	21,883	-	66,782	1,420	100,746
FM	Micronesia	1,008	15,802	-	15,158	20	31,988
KI		746	12,137	2,139	12,562	5	27,589
MH		-	7,684	151	5,031	28	12,894
NR		-	2,745	-	-	10	2,755
PW		1,283	4,206	-	84	146	5,719
CK	Polynesia	5,044	4,889	100	357	212	10,602
NU		-	1,105	-	-	3	1,108
TO		10,082	17,622	-	6,957	90	34,751
TV		956	1,258	-	804	-	3,018
WS		6,517	42,221	-	-	93	48,831
All	**All**	**79,008**	**453,460**	**35,383**	**2,927,471**	**11,895**	**3,507,217**

Photographed and/or digitized

Extracted from satellite imagery

Extracted from existing datasets

Perils Modeled

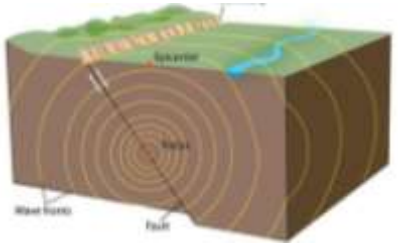
Tropical Cyclone

Wind

Flood from Precipitation

Flood from Storm Surge

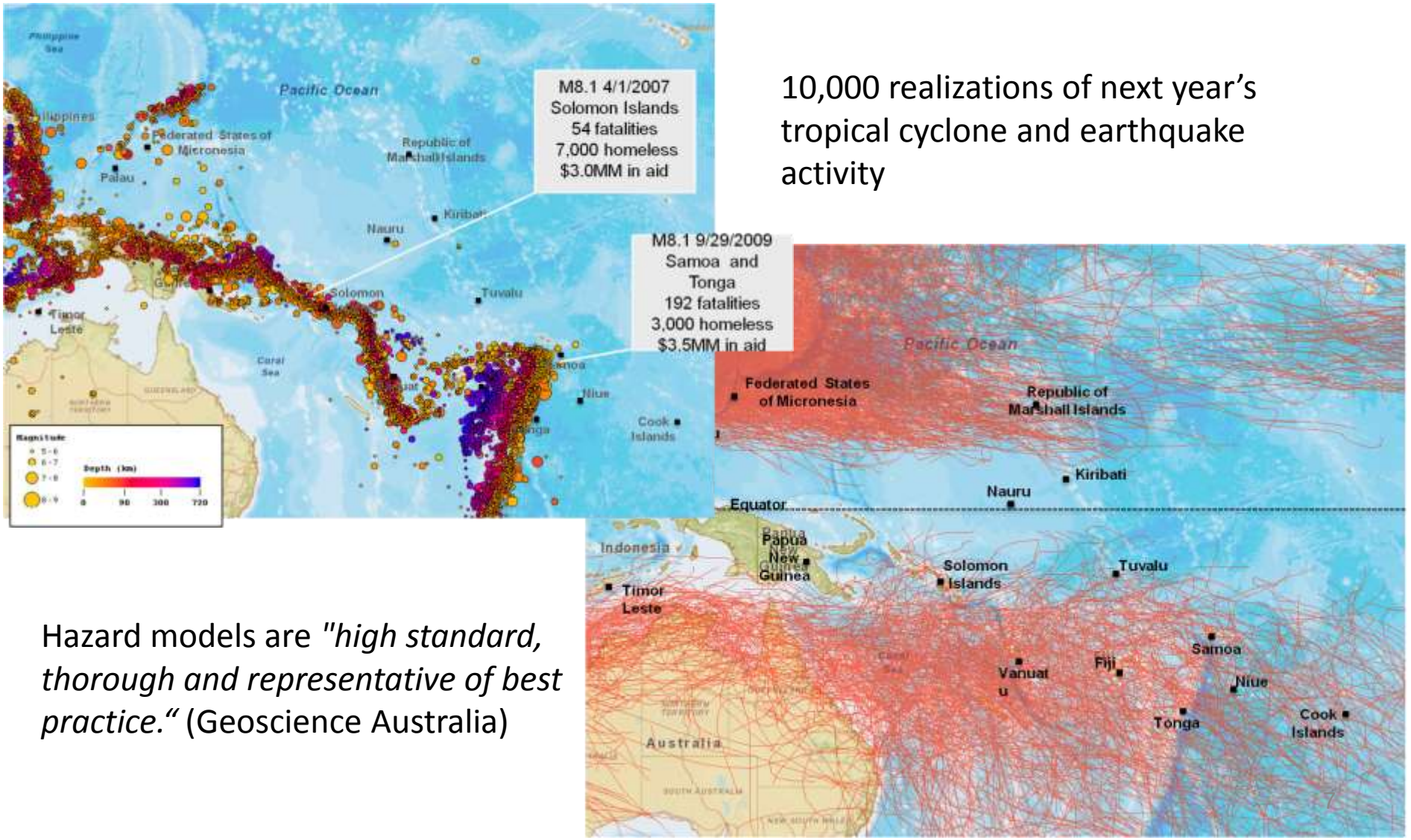
Earthquake



Ground Shaking

Tsunami Wave

Simulating earthquake risks and tropical cyclone risk from regional historical hazard database

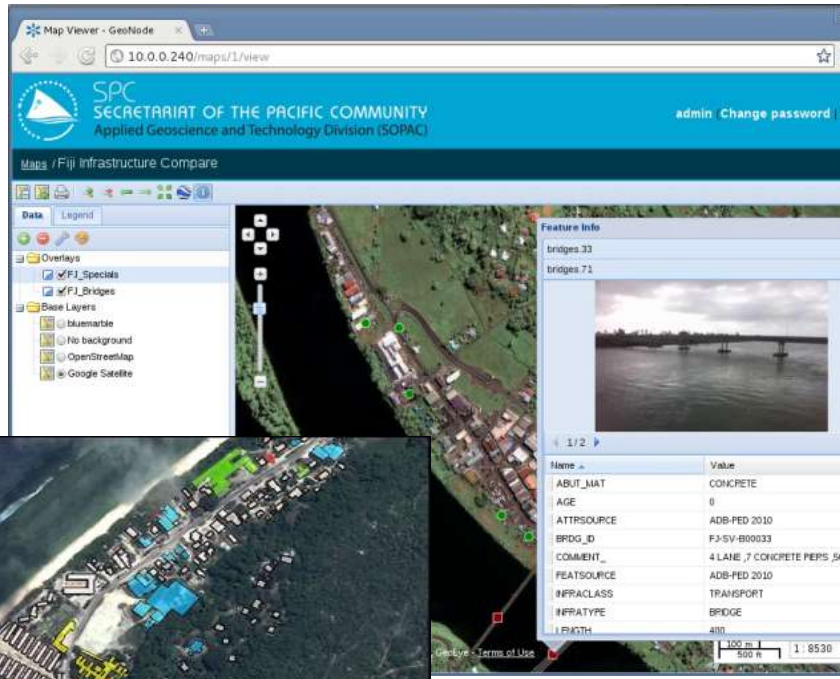


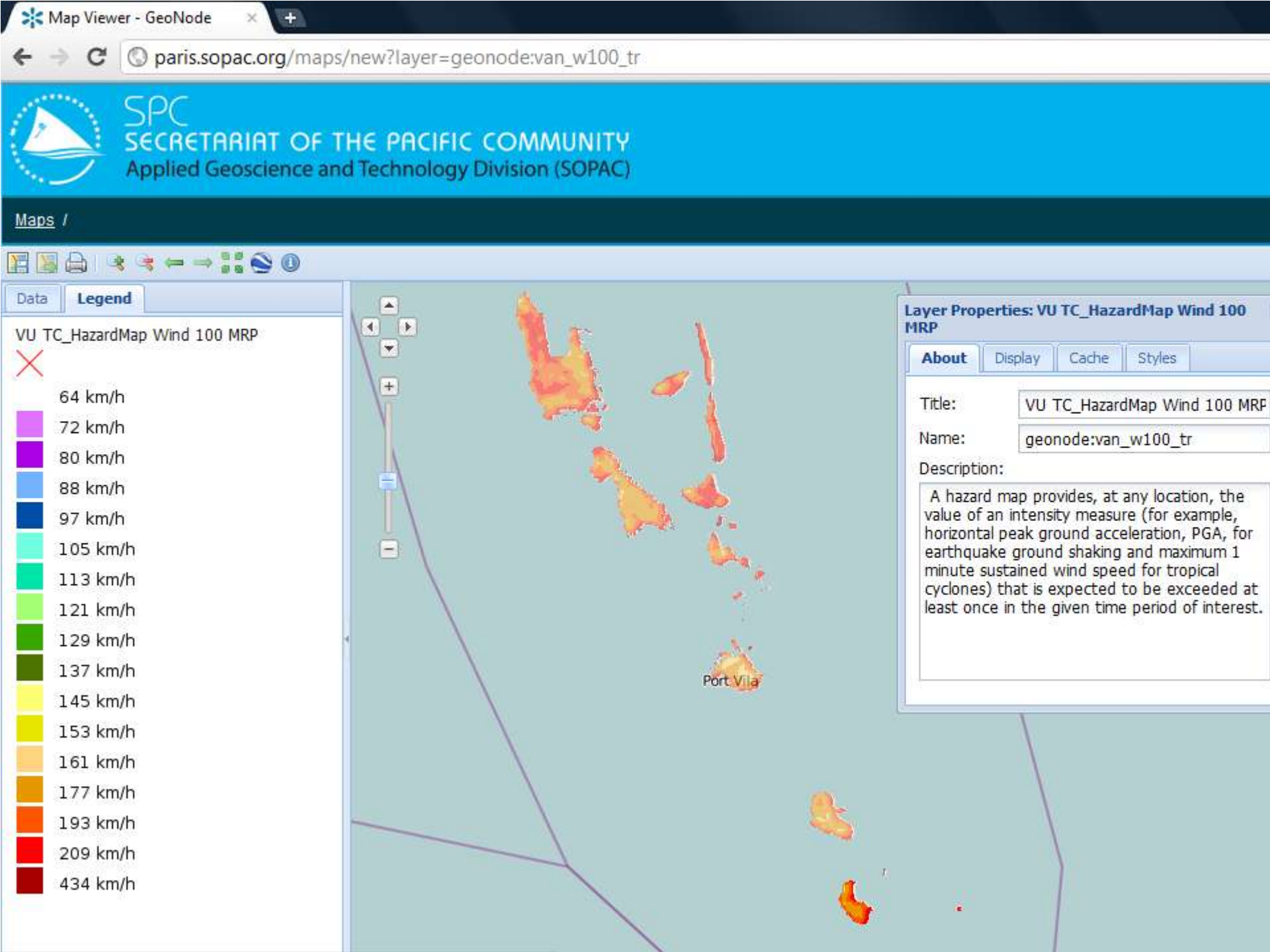
10,000 realizations of next year's tropical cyclone and earthquake activity

Hazard models are *"high standard, thorough and representative of best practice."* (Geoscience Australia)

Using local knowledge – creating capacity & ownership

- Partnerships with regional and national actors in data collection, processing and serving




Map Viewer - GeoNode
paris.sopac.org/maps/new?layer=geonode:van_w100_tr
SPC
SECRETARIAT OF THE PACIFIC COMMUNITY
Applied Geoscience and Technology Division (SOPAC)
Maps /
Data
Legend
VU TC_HazardMap Wind 100 MRP
64 km/h
72 km/h
80 km/h
88 km/h
97 km/h
105 km/h
113 km/h
121 km/h
129 km/h
137 km/h
145 km/h
153 km/h
161 km/h
177 km/h
193 km/h
209 km/h
434 km/h
Port Vila
Layer Properties: VU TC_HazardMap Wind 100 MRP
About
Display
Cache
Styles
Title:
VU TC_HazardMap Wind 100 MRP
Name:
geonode:van_w100_tr
Description:
A hazard map provides, at any location, the value of an intensity measure (for example, horizontal peak ground acceleration, PGA, for earthquake ground shaking and maximum 1 minute sustained wind speed for tropical cyclones) that is expected to be exceeded at least once in the given time period of interest.

Map Viewer - GeoNode

paris.sopac.org/maps/new?layer=geonode:van_00_100t

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Maps /

Data | Legend

VU TC_HazardMap Wind 100 MRP

- 64 km/h
- 72 km/h
- 80 km/h
- 88 km/h
- 97 km/h
- 105 km/h
- 113 km/h
- 121 km/h
- 129 km/h
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- 145 km/h
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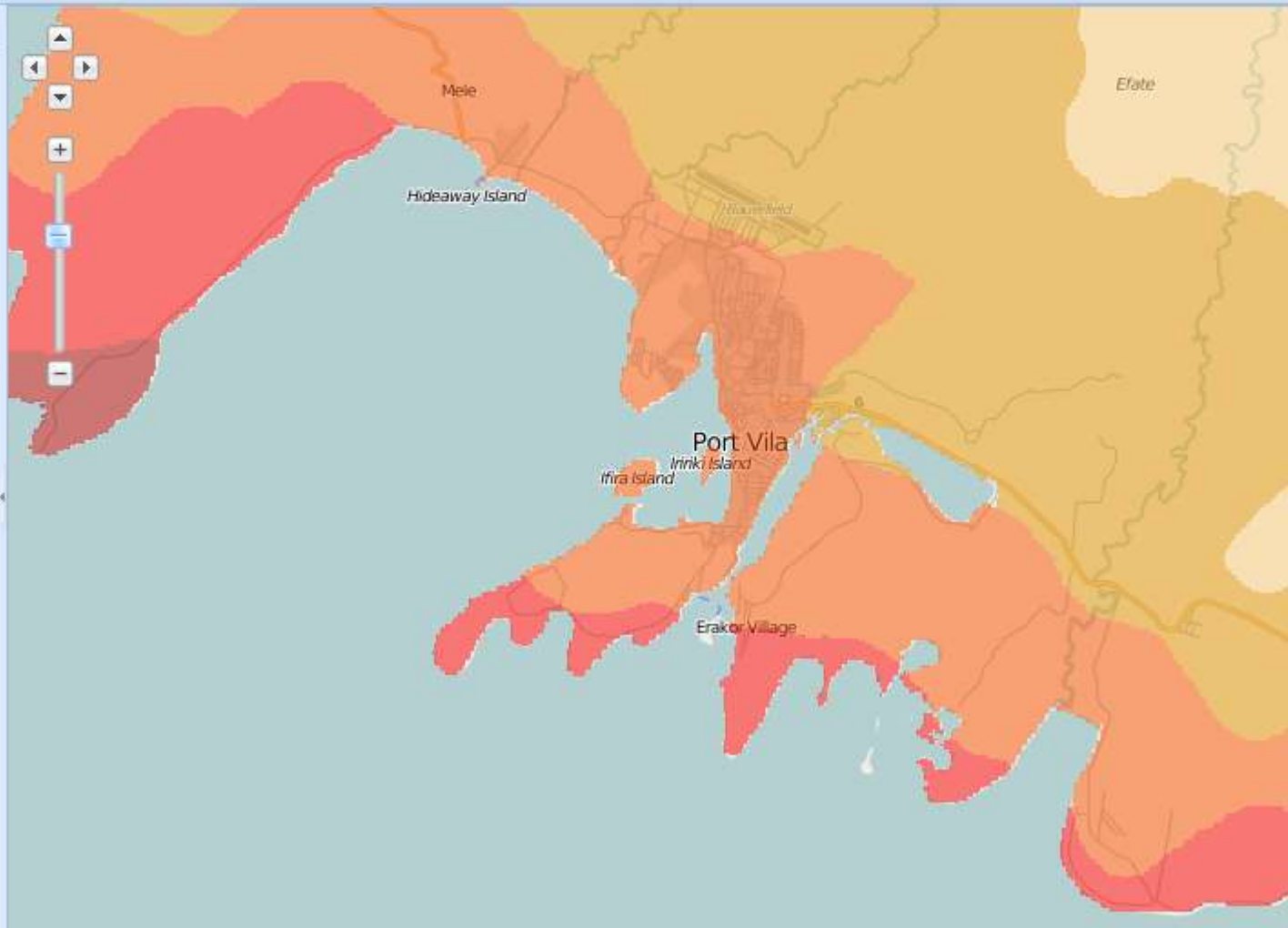
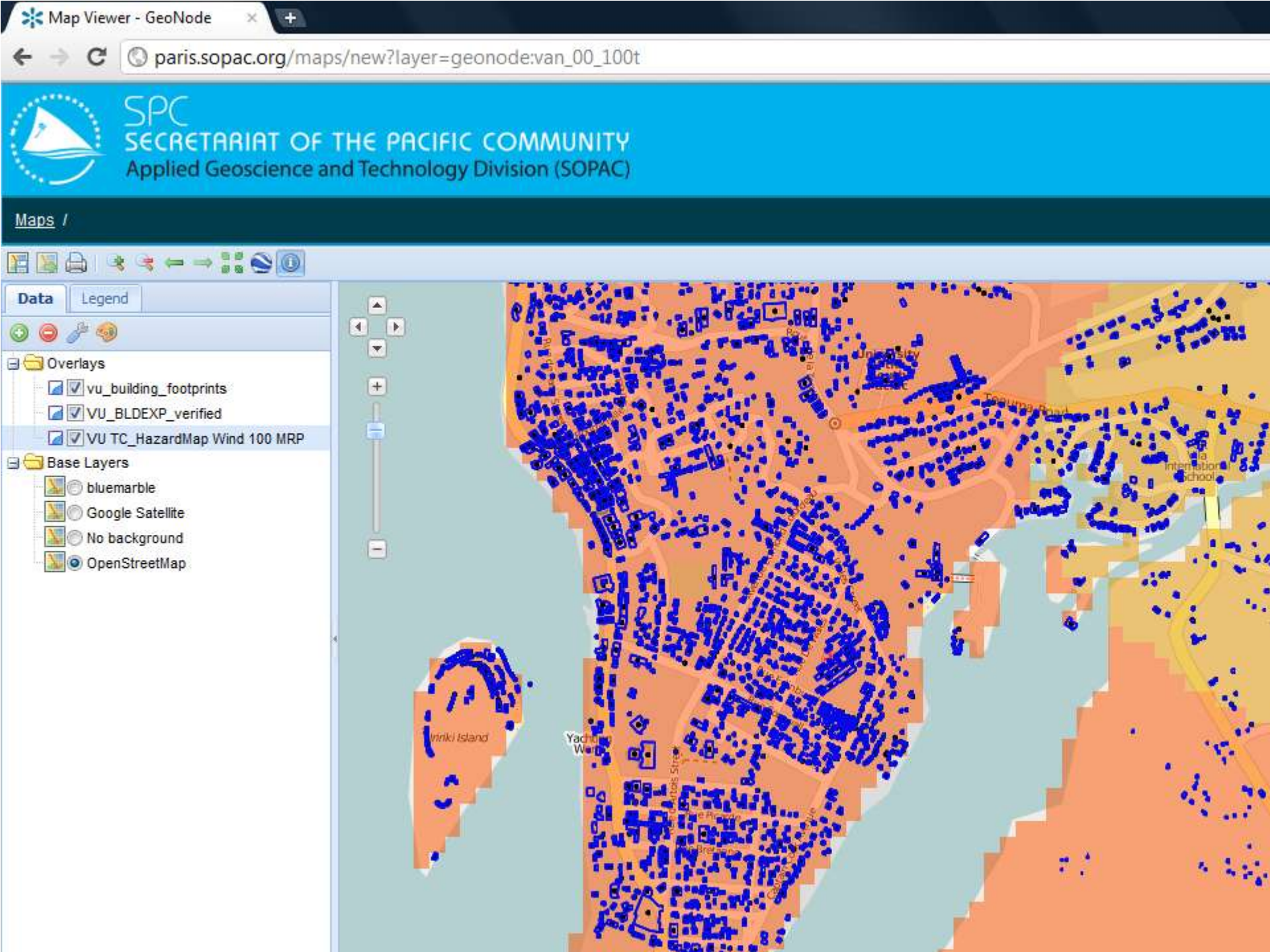
- 161 km/h
- 177 km/h
- 193 km/h
- 209 km/h
- 434 km/h

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Base Layers
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Google Satellite
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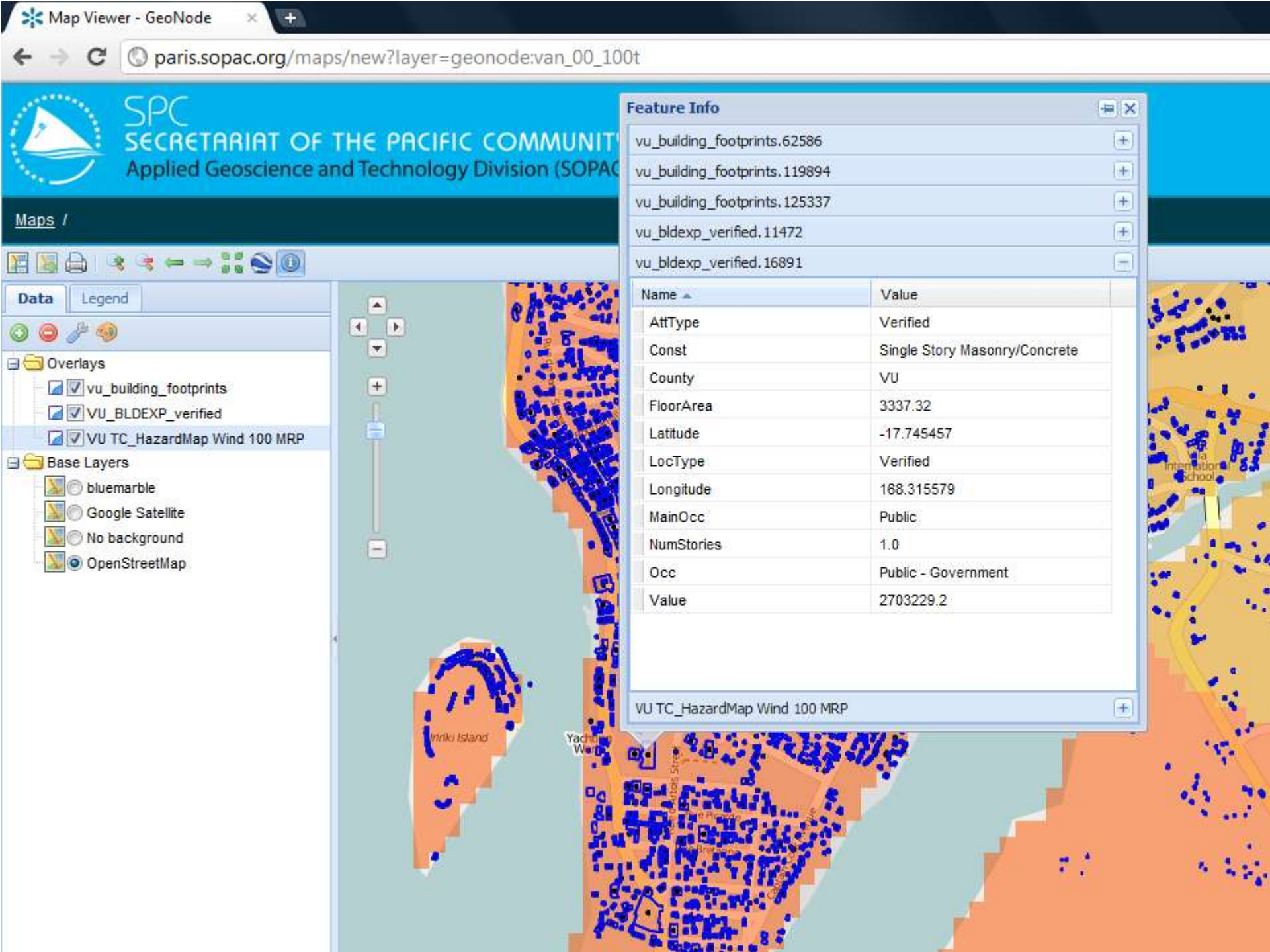
OpenStreetMap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Longitude
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NumStories
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Occ
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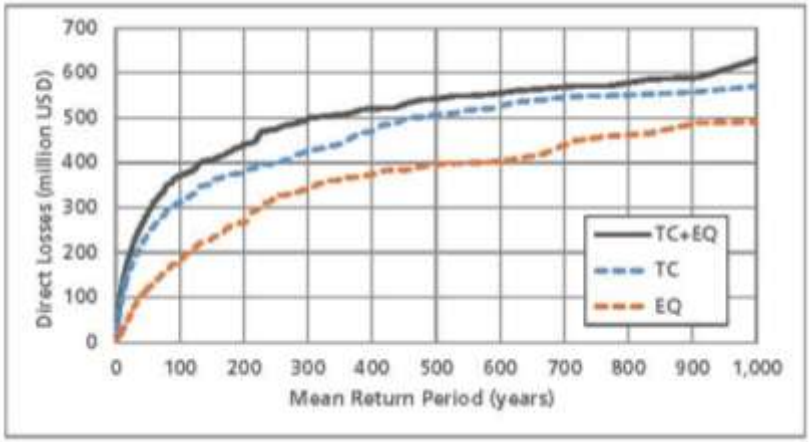
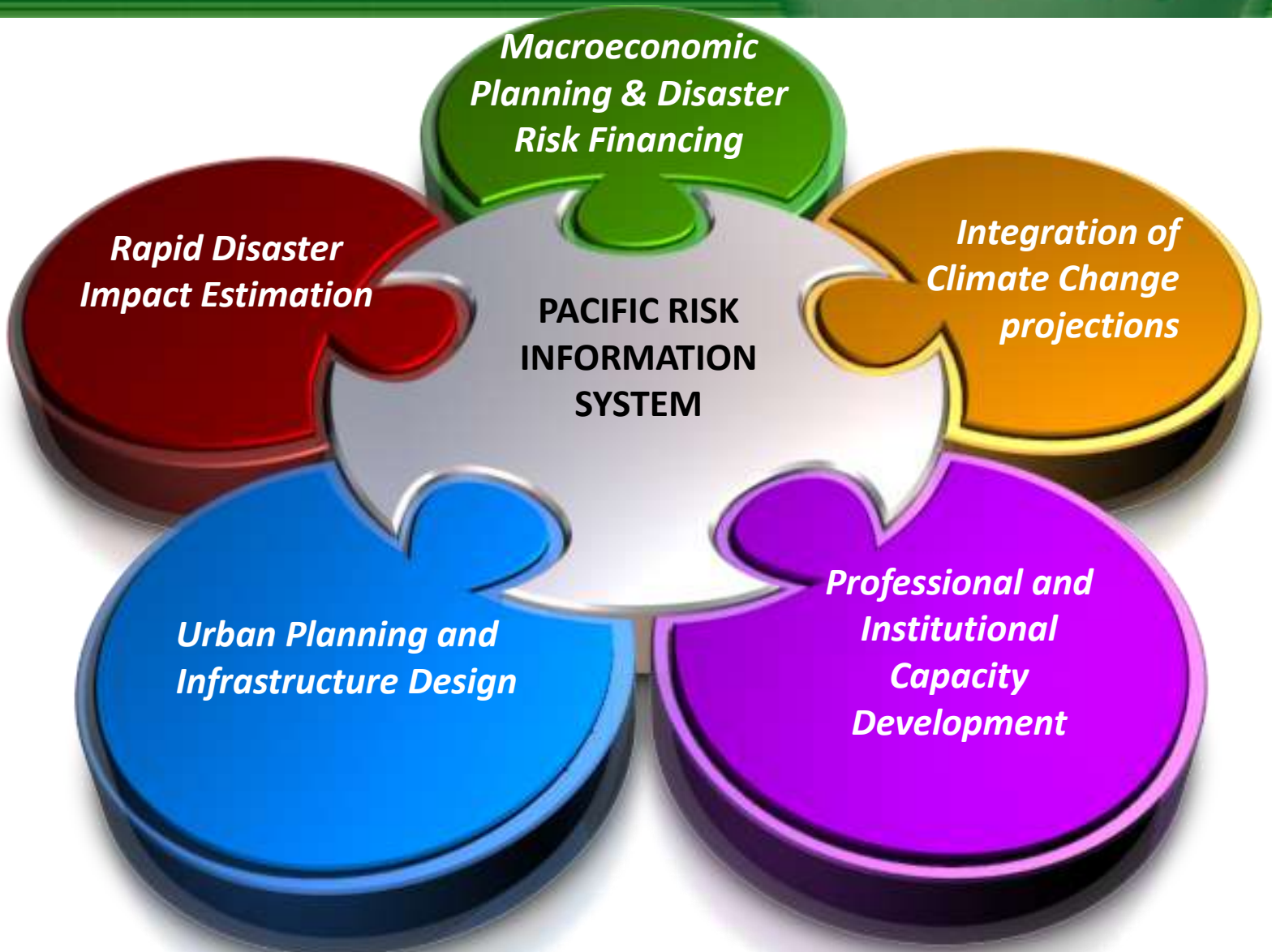
Country Risk Profiles

Mean Return Period (years)	AAL	50	100	250
Risk Profile: Tropical Cyclone, Earthquake, and Tsunami				
Direct Losses				
(Million USD)	48.0	285.0	370.0	475.0
(% GDP)	6.6%	39.1%	50.8%	65.2%
Emergency Losses				
(Million USD)	10.3	61.4	77.9	96.9
(% of total government expenditures)	5.7%	34.3%	43.6%	54.2%
Casualties	87	578	913	1,703

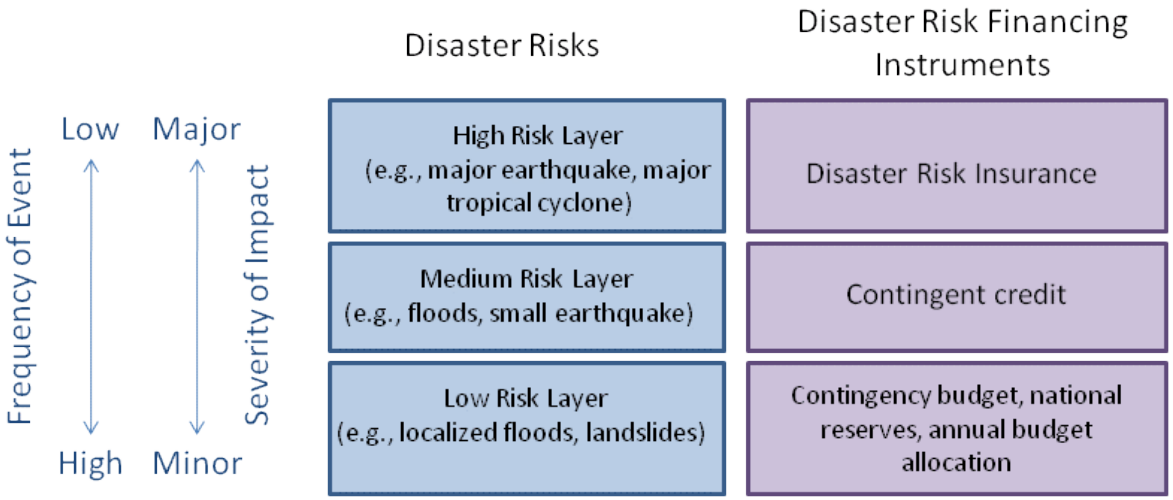


Moving towards applications



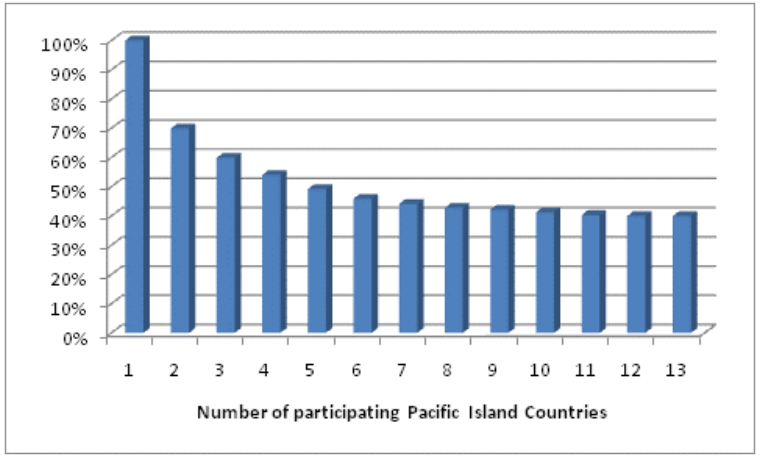
Pacific Disaster Risk Financing and Insurance

Increasing the financial resilience of the PICs against natural disasters



Integrated disaster risk financing strategy

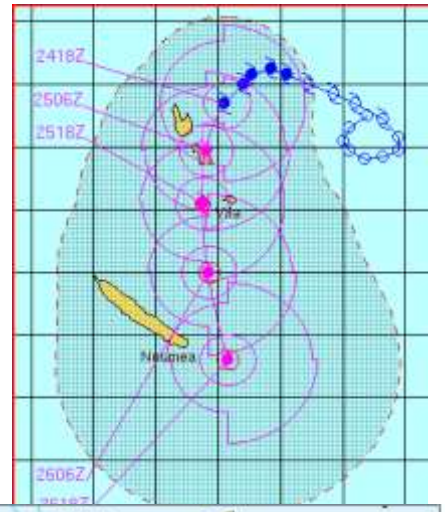
(i) Capacity building on macro-economic planning of natural disasters and integrated disaster risk financing and insurance;
(ii) Development of private disaster risk insurance markets;
(iii) Piloting of Pacific disaster risk insurance program for governments.

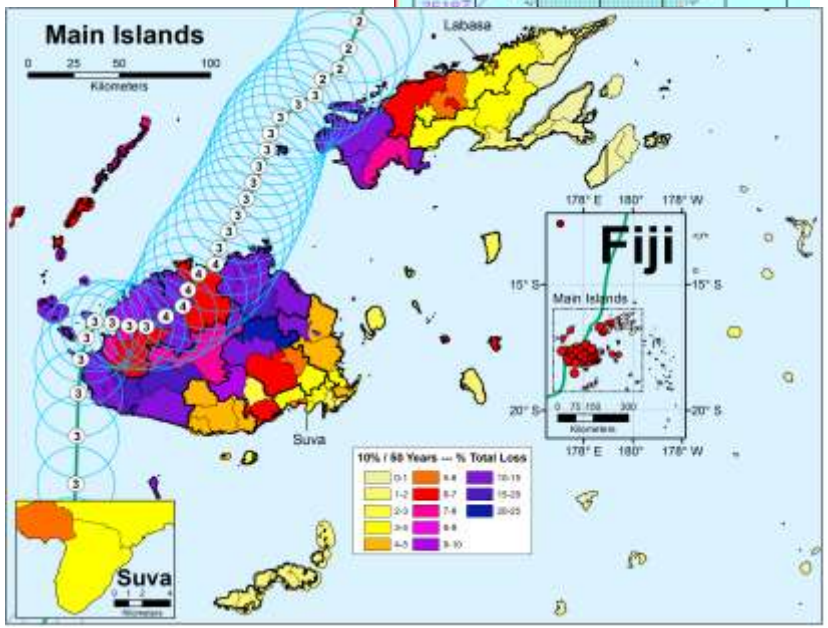


Pacific Disaster Impact Assessment

Decision support tools for timely and effective response and recovery

- Development Objective
  - Benchmarking Before Events
  - Predict Potential Damage and Areas Affected as Cyclones Approach
  - Rapid Post Disaster Impact Estimation– 72 hours rather than weeks
  - Improve Model Calibration
- Project Components
  - Training for SOPAC and countries
  - Developing Real-time and Post-Disaster Reporting Protocols
  - Testing During Real Events





Climate Change Impact Analysis

- Development Objective
  - Pilot loss estimation applications for Climate Change
  - Develop visualization tools
- Project Components
  - Working with the Pacific Australian Climate Change Science Program to
    - pilot impact analysis of tropical cyclone projections
    - case studies on climate and disaster resilient infrastructure development/planning