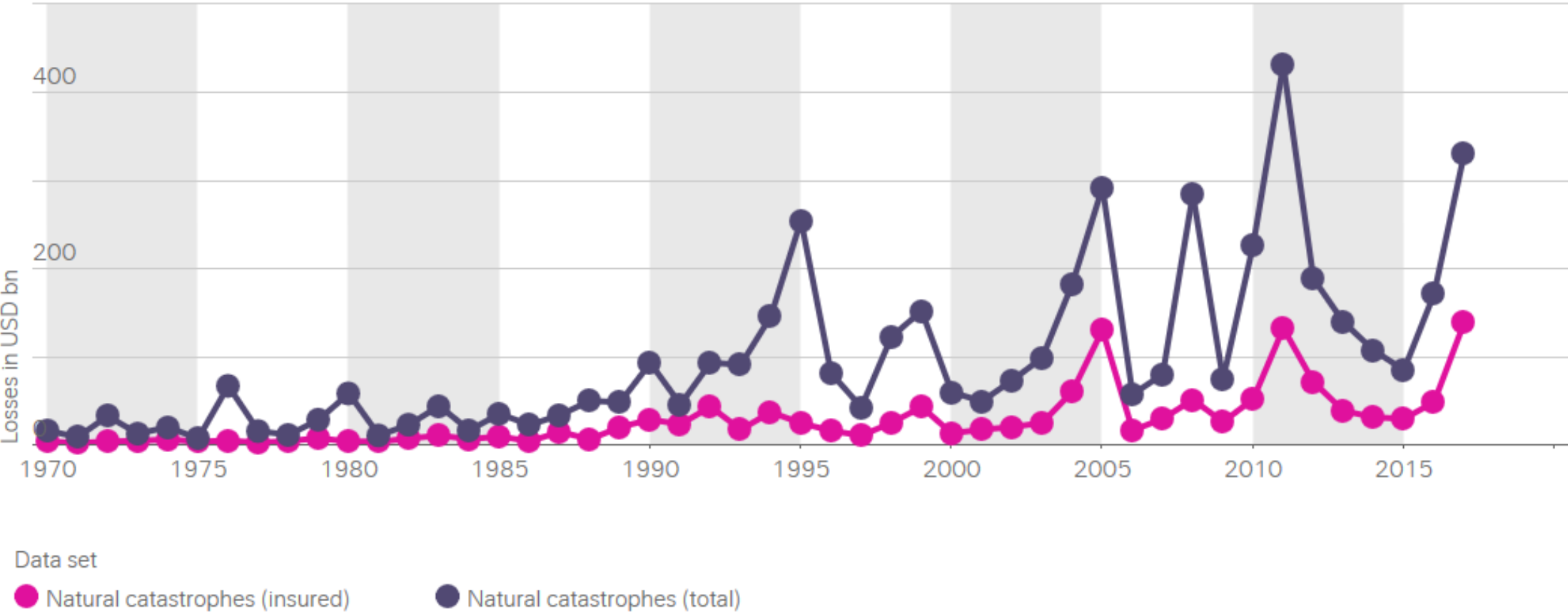




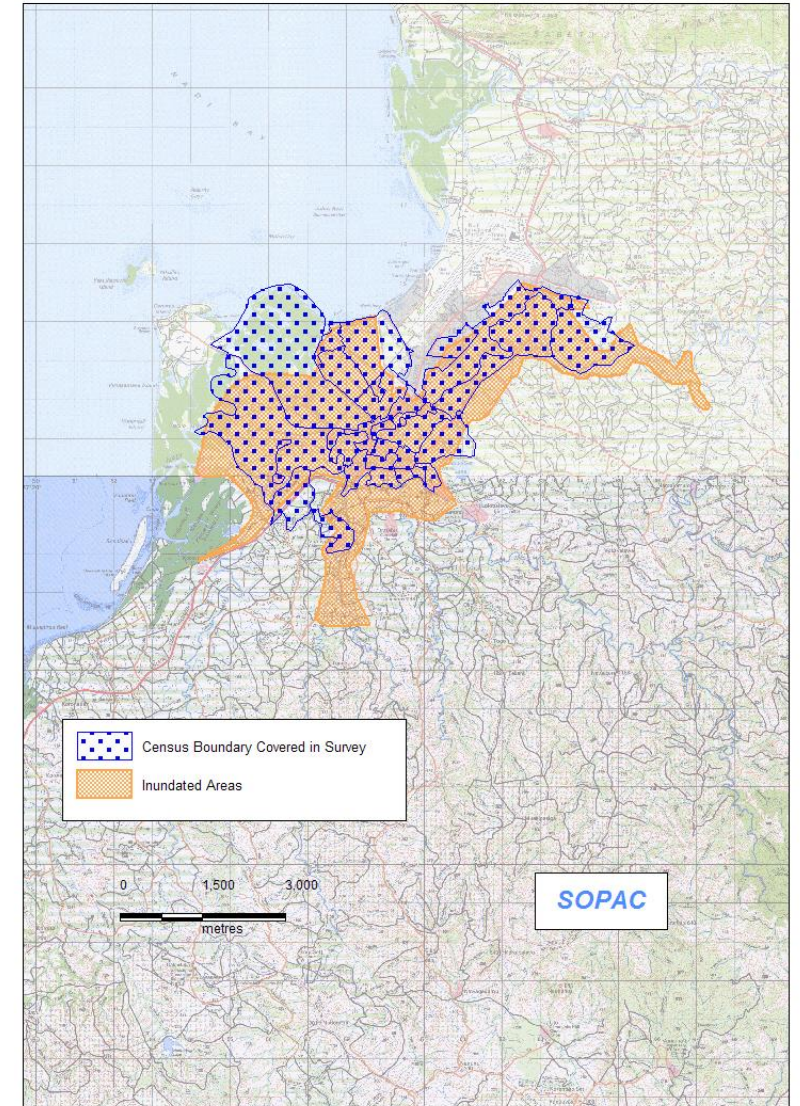
# The protection gap is significant and growing





*Of the \$8.84 billion of economic losses caused by the 2010 Haiti Earthquake, only 1.2% were insured.*

# Fiji 2009 floods e.g., Nadi





??????





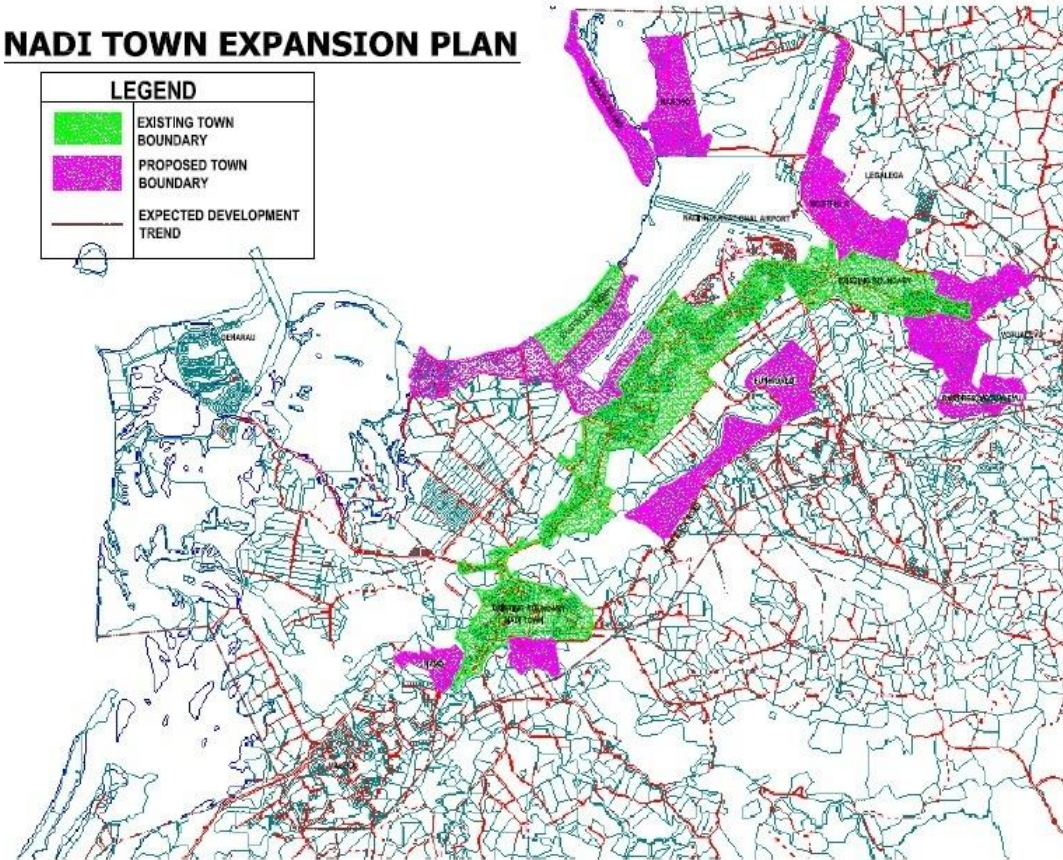
Roof cladding

Ground floor height

Foundation type and materials

### NADI TOWN EXPANSION PLAN

LEGEND	
	EXISTING TOWN BOUNDARY
	PROPOSED TOWN BOUNDARY
	EXPECTED DEVELOPMENT TREND





**Property**

**Injury**

**Life**

**Home**

**Health**

**INSURANCE**

**Car**

**Vehicle**

**Travel**

**Accident**





**Increasing risk  
awareness**



**Transferring burden  
away from society**



**Allocating capital  
effectively**

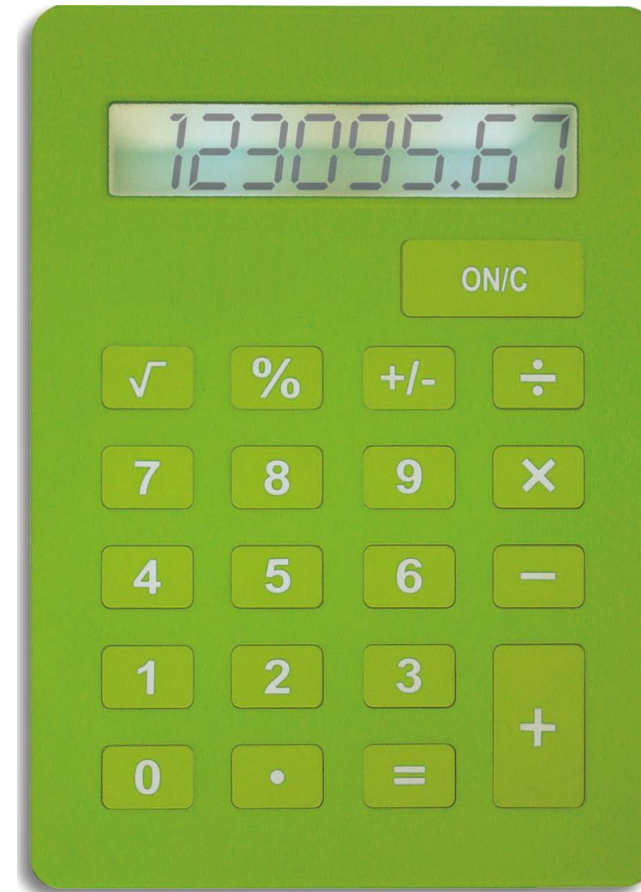
# Risk modelling



© Dave Allen



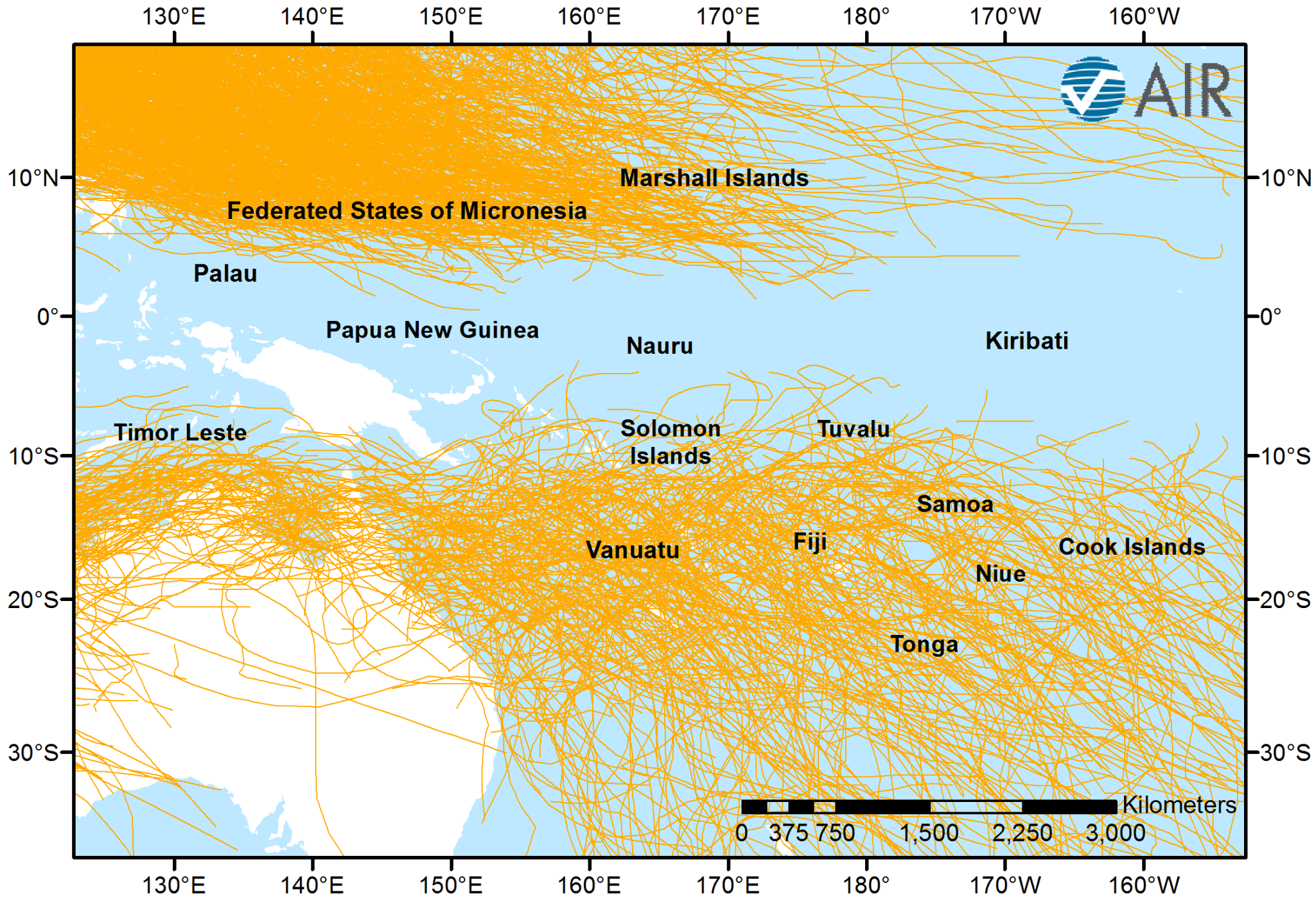
© Nigel Dowdeswell



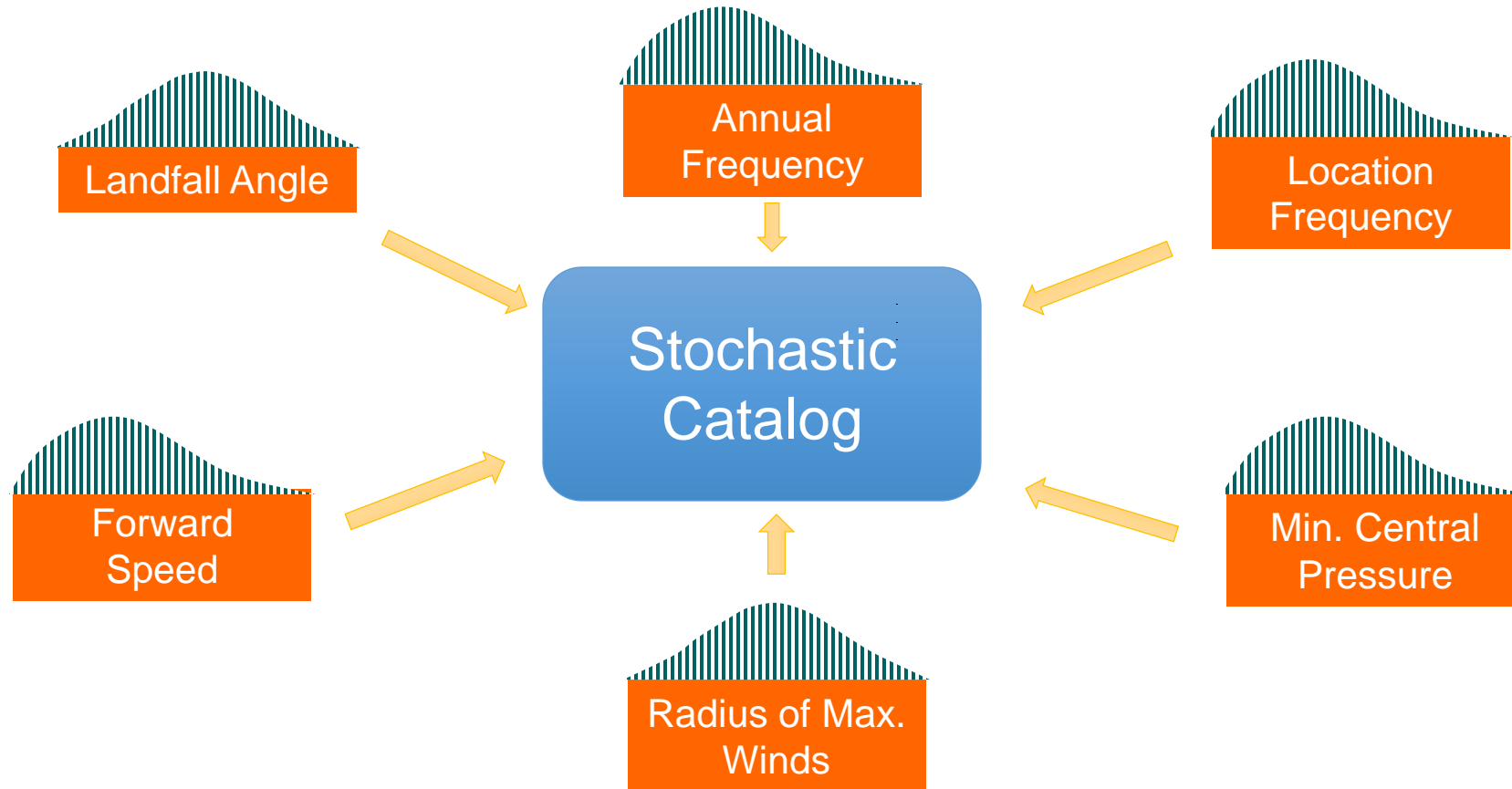
## PARTneR

Pacific Risk Tool for Resilience





We look at the distributions of a variety of variables...



# What questions can models help to answer?



What is the probability of a given level of loss for a range of catastrophe scenarios?

How intense are they likely to be?

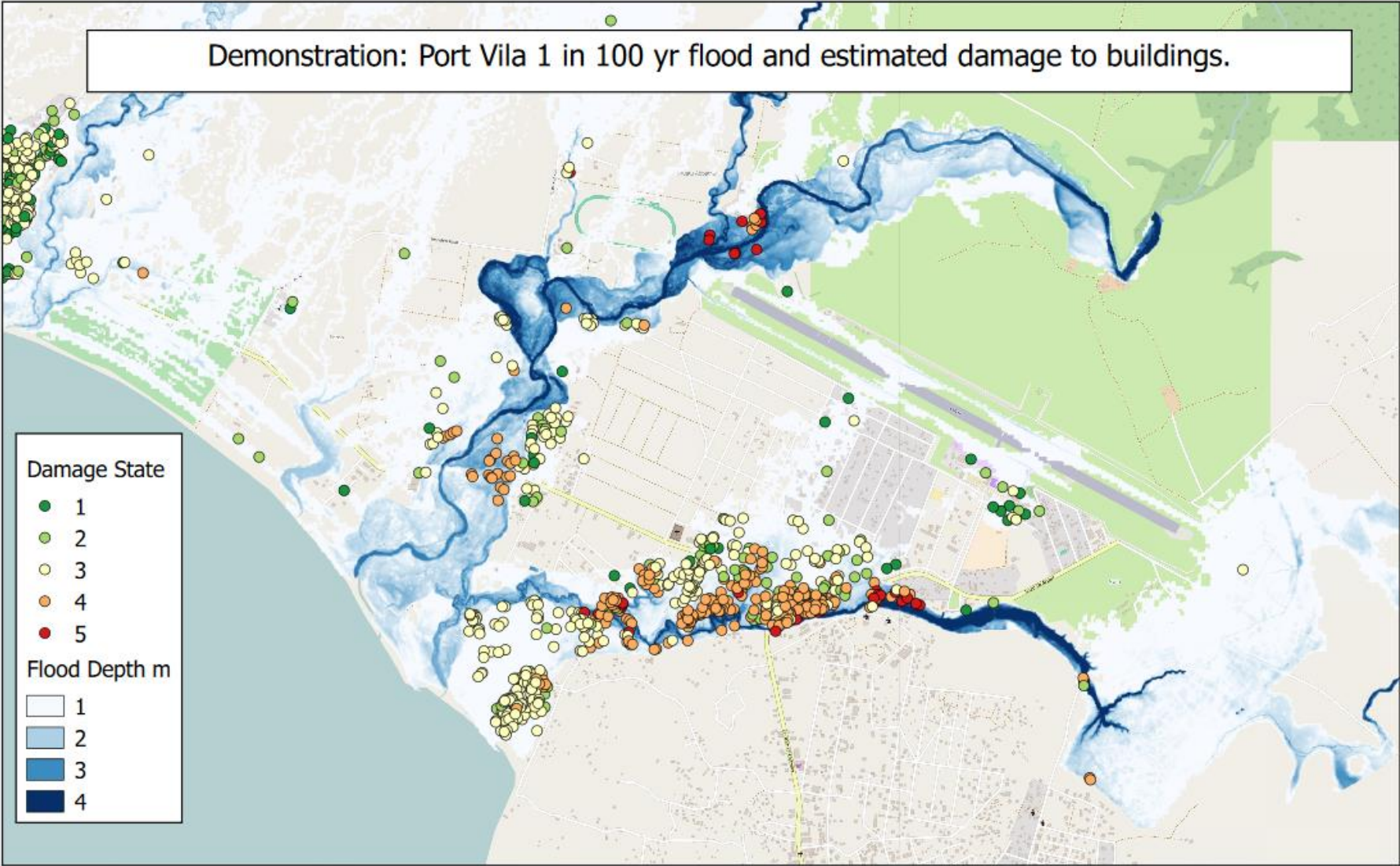
Where are future events likely to occur?

How frequently are they likely to occur?

What is the estimated range of damage and loss?

Who is likely to be impacted?

# RiskScape for sudden onset events

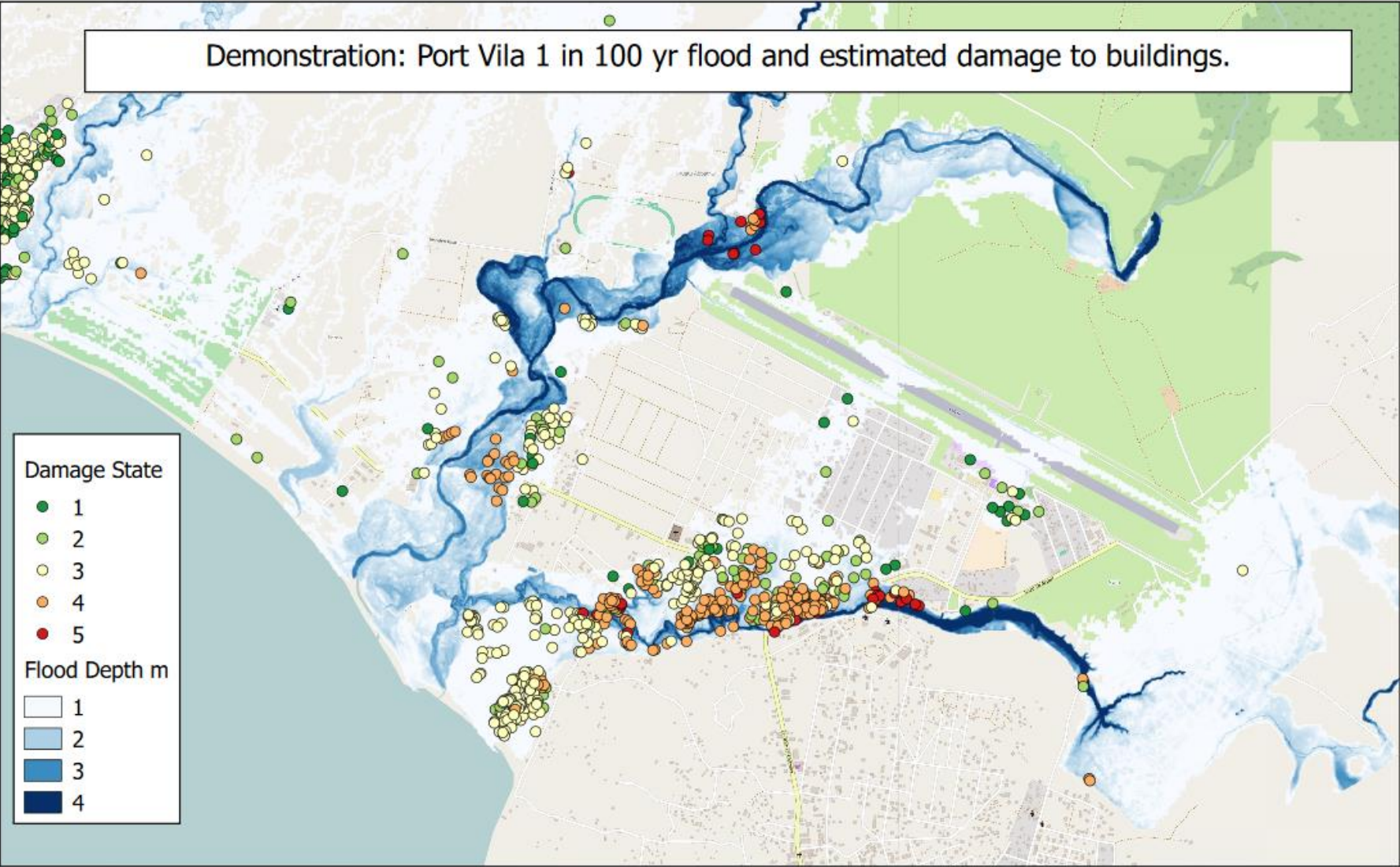


0 500 1000 m



Produced by NIWA using RiskScape on behalf of the PARTner: Pacific Risk Tools for Resilience project. Demonstration purposes only.

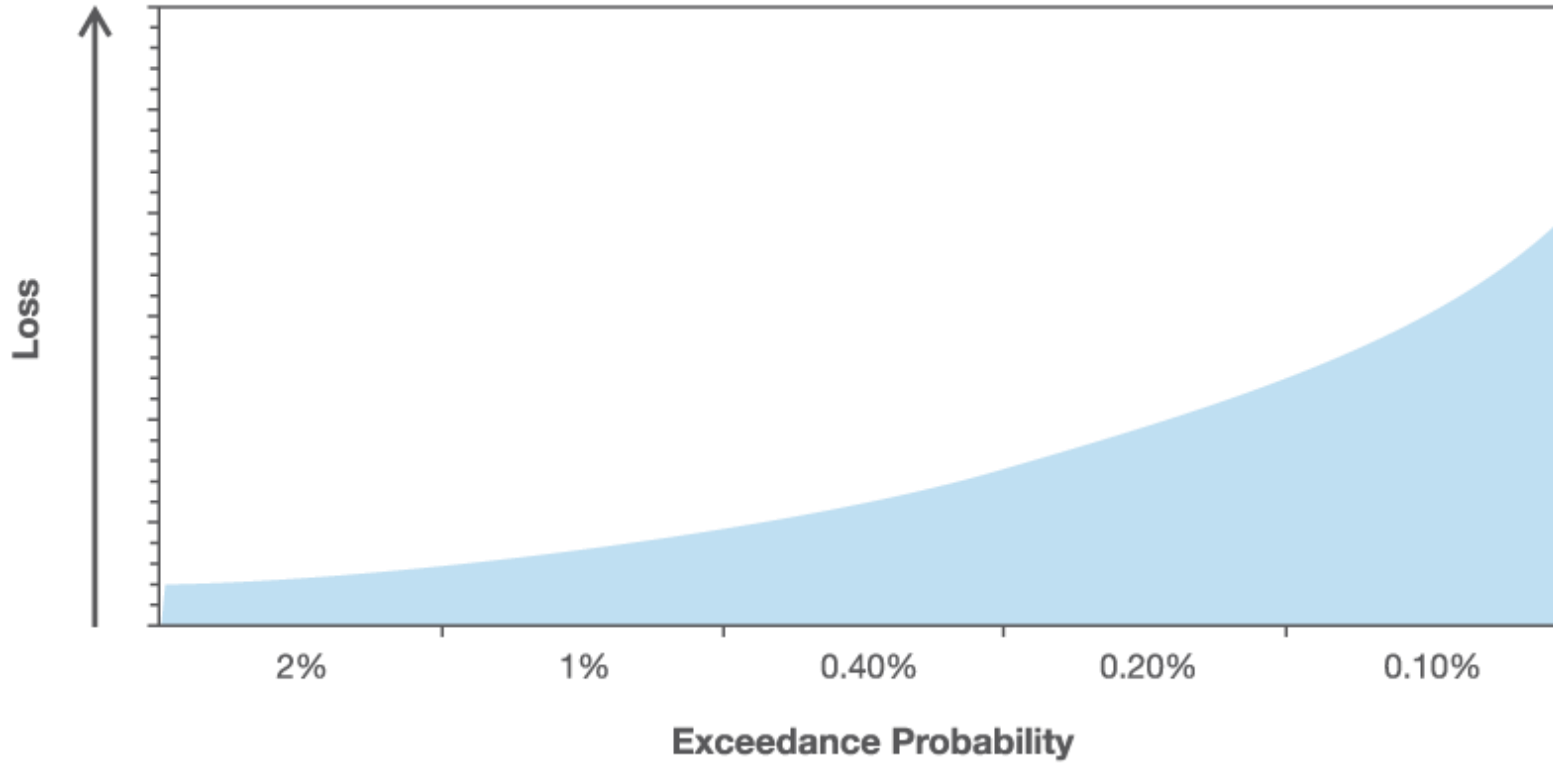
# RiskScape for sudden onset events



0 500 1000 m



Produced by NIWA using RiskScape on behalf of the PARTner: Pacific Risk Tools for Resilience project. Demonstration purposes only.



Return Period	Exceedance Probability	Cyclone Losses
AAL	AAL	269,011,421
20	5%	1,188,855,750
50	2%	1,987,479,928
100	1%	2,562,187,548
250	0.4%	3,740,506,094
500	0.2%	4,943,231,174
1,000	0.1%	6,147,211,334
5,000	0.02%	9,844,831,769
10,000	0.01%	12,348,324,497





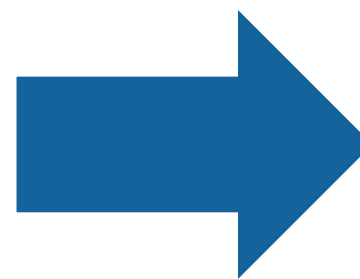
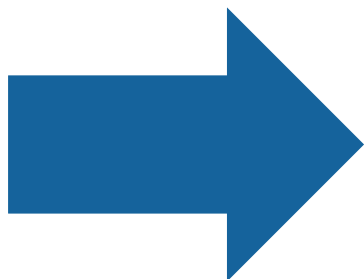
Hazard



Engineering



Financial



**Pacific Catastrophe Risk Insurance Company – PCRIC**

Bermuda House, Tutakimoa Road  
Avarua, Rarotonga, Cook Islands

For immediate release

**PRESS RELEASE**

**Tonga Receives Record Insurance Payout Following Cyclone Gita**

**COOK ISLANDS, February 20, 2018** – In the wake of Cyclone Gita, the government of Tonga received a US\$3.5 million payout from the Pacific Catastrophe Risk Insurance Company (PCRIC) based on its insurance cover against tropical cyclones. Funds were transferred after seven days of the cyclone event, providing the government with rapid-response financing to support disaster-relief efforts and effective service delivery to the affected areas.

Tonga is one of five Pacific Island countries that purchased catastrophe risk insurance from PCRIC – a regional catastrophe insurance platform that offers governments insurance cover against climate and seismic hazards, currently tropical cyclones and earthquake/tsunamis. PCRIC policies are designed to payout within 10 days of a triggered event to provide immediate access to liquidity for disaster response.

Cyclone Gita reached its peak intensity as a Category 4 cyclone before making landfall on Tonga, which caused wide spread damage largely due to destructive wind strength.

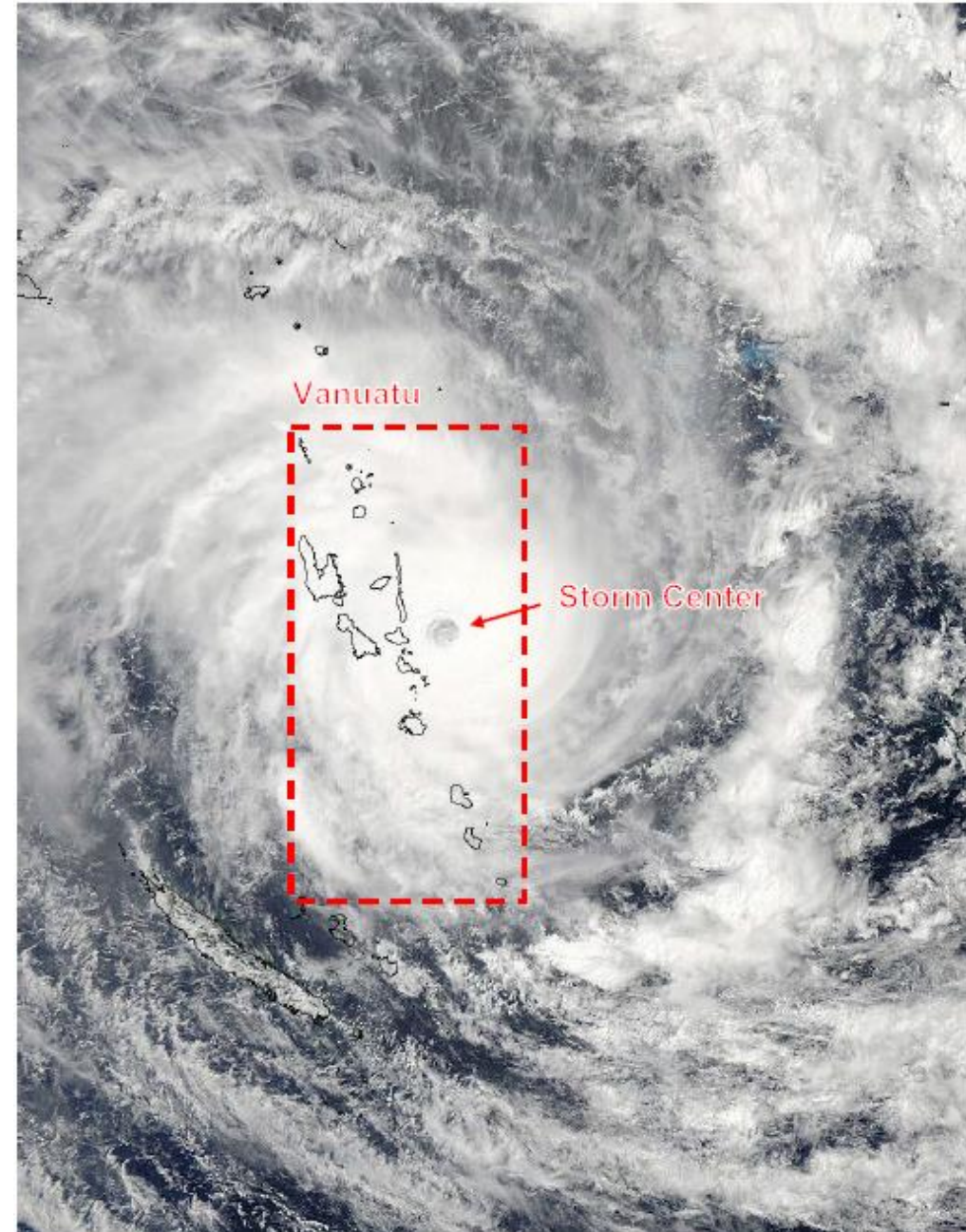
*"Our thoughts and prayers go out to the affected communities across the Pacific, said PCRIC Chief Executive, David Traill. "Despite the tragic circumstances, we are proud to have been able to provide rapid funding to the Tongan government seven days after Gita making landfall which will provide immediate support to help meet the needs of local communities.*

*"Cyclone Gita has reinforced the importance of a coordinated disaster management capability across the Pacific, and PCRIC stands as a critical support in ensuring governments can act quickly following disasters.*

Ian (2014): Tonga received  
\$1.3 million payout

Pam (2015): Vanuatu received  
\$1.9 million payout

Gita (2018): Tonga received  
\$3.5 million payout



Satellite image of Tropical Cyclone Pam on 0220 UTC March 13, 2015 (Source: NASA Goddard MODIS Rapid Response Team)

\$

£

€



# Quantifying risk: leveraging models to build resilience

Wednesday 17 October

Session 3

16:45 – 18:00



Climate, Freshwater & Ocean Science

**Paula Holland**

Environmental Economist



**Daniel Raizman**

Senior Risk Consultant  
Global Resilience

## Panellists:

- **'Ana Fakaola** Ministry of Finance and National Planning, Tonga
- **Esline Garaebiti Bule**, Geo-hazards Department, Vanuatu
- **Lavea Iulai Lavea**, Ministry of Finance, Samoa
- **Stephanie Zoll**, IFRC and Red Crescent Societies