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# Session III: Disaster Risk Management

*5 November 2015*

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# Outline

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- Summary of disasters and damage and loss in the Pacific and some ICT opportunities
  - Use of online data to inform Government decision making – PDaLo.
  - GIS and Hazard mapping in Pacific
  - Making information accessible to general public, local Govt. and private sector to inform decision making and planning.
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# Pacific Disasters

Pacific is one of the most at risk regions in the world.

Between the years 1567 and 2013 (*but primarily from 1970*):

- 386 Tropical Cyclones
- 229 Tsunamis
- 119 Earthquakes
- 112 Floods

Which have resulted in over:

- US\$3.3 Billion economic cost (inflation not accounted for)
- 19,527 fatalities
- Approx. 11.8 million people affected
- Over 187,000 homes damaged or destroyed

(Source: Pacific Damage and Loss Database, 2013)



# ICT Opportunities & DRM

- Open database
- Data “cloud” backup
- Crowdsourcing
- ICT-based early warning systems
- Earth Observations
- Ground-based observation networks
- GIS (global, regional, national, local)
- Assistive devices and accessible information (including for persons with disabilities)

→ *Continuity planning (business, information, energy, ...)*

# Pacific Damage and Loss (PDaLo) Online Database

*DesInventar in the Pacific*



# Extensive Database

Time series 1567-2014

**1'167 Records**

**257 Education centres**

**22 states and territories affected**

**19'411 deaths**

**11'481'849 affected**

**103'533 Houses damaged**

**74'856 Houses destroyed**

**31 Hospitals affected 145 records referenced with GLIDE M**

**81 customized indicators**

**16 customized hazards**



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# 22 Countries and territories from the Pacific Region

East Timor

Marshall Islands

French Polynesia

Papua New Guinea

Vanuatu

Niue

Northern

Mariana Islands

Nauru

Wallis and Futuna

Federated States  
of Micronesia



Samoa

Tuvalu

Palau

Tokelau

New Caledonia

American Samoa

Kiribati

Tonga

Solomon Islands

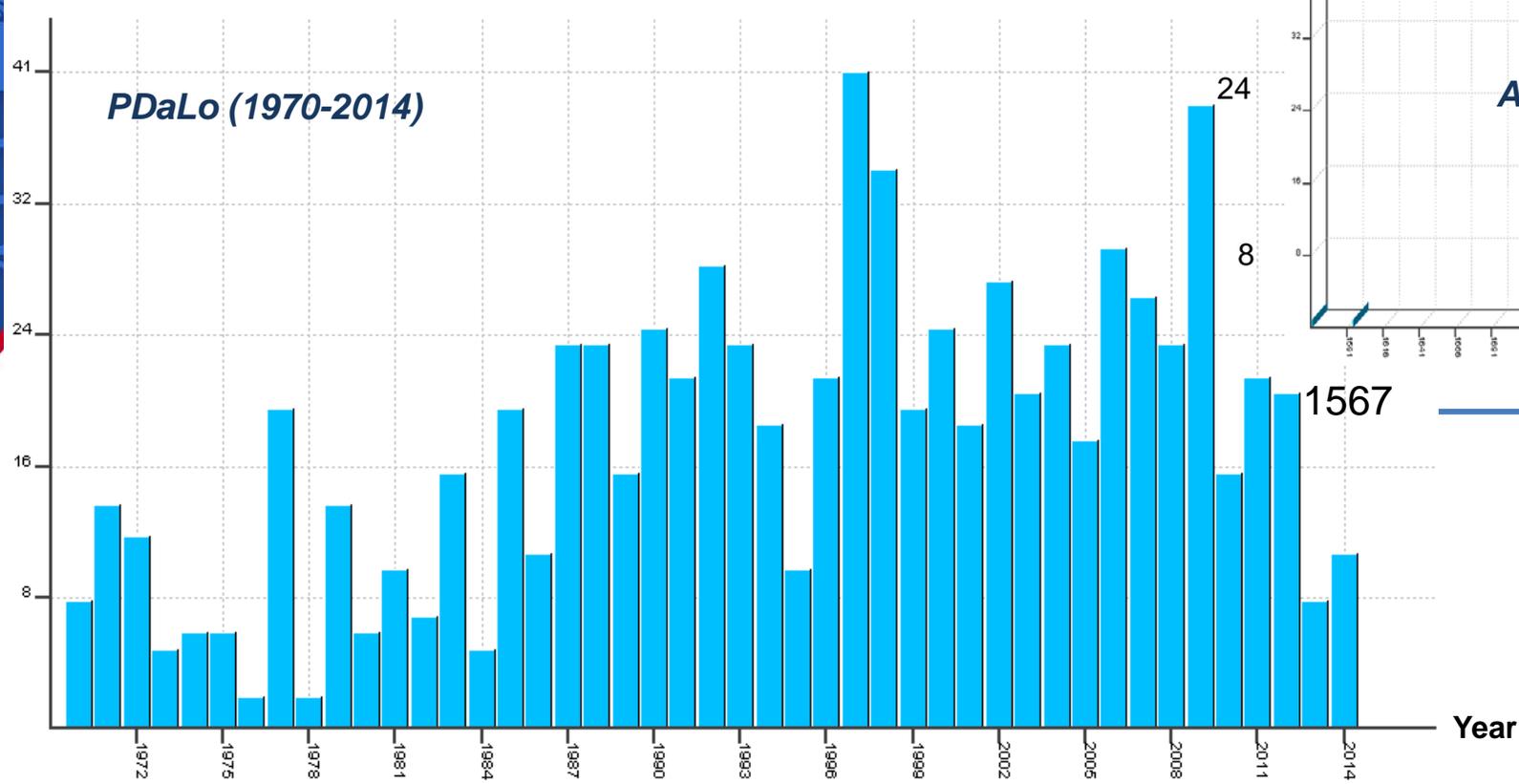
Guam

Fiji

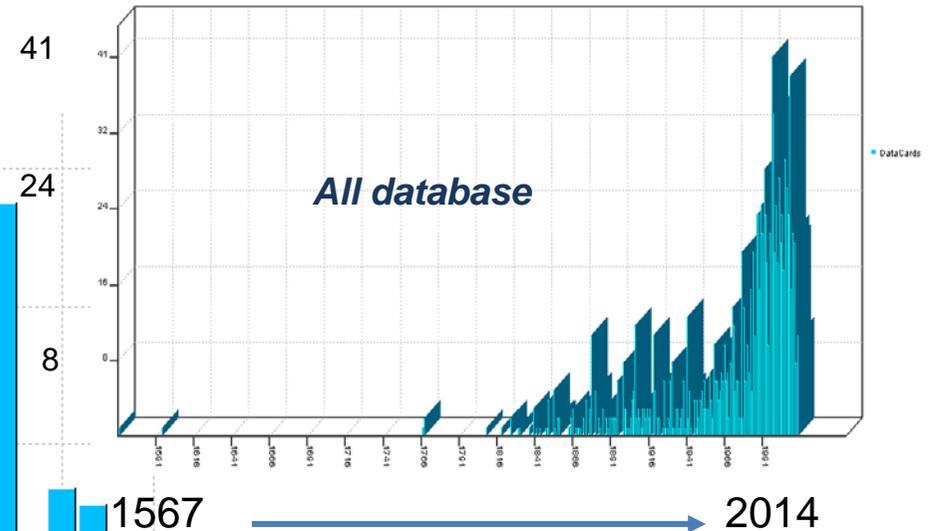
Cook Islands

# Temporal Distribution

No. of records



No. of records



1567 → 2014

Records going back to the XVI Century. Since 1970, excellent coverage.

1'167 Records



# Next steps for PDaLo

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- Excellent database with good coverage and well-discussed standards.
  - Synergies with Government bodies, UN Agencies as well as NGOs should continue, so data is shared and entered in a rigorous way.
  - Looking for partners to cover information on disasters in agriculture (damages in crops ha.).
  - More work to be carried out regarding small-scale/slow-onset disasters.
  - Next Workshop in late November – Suva, Fiji.
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# Geographical Information Systems (GIS) in all 4 phases of DRM

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- Mitigation: mitigation planning, such as land use zoning, based on risk assessment
  - Preparedness: establishing (multi-hazard) early warning systems & identifying demographic needs (e.g. population).
  - Response: pre- and post-disaster images to identify damages
  - Recovery: high-resolution satellite images for identifying changes for recovery
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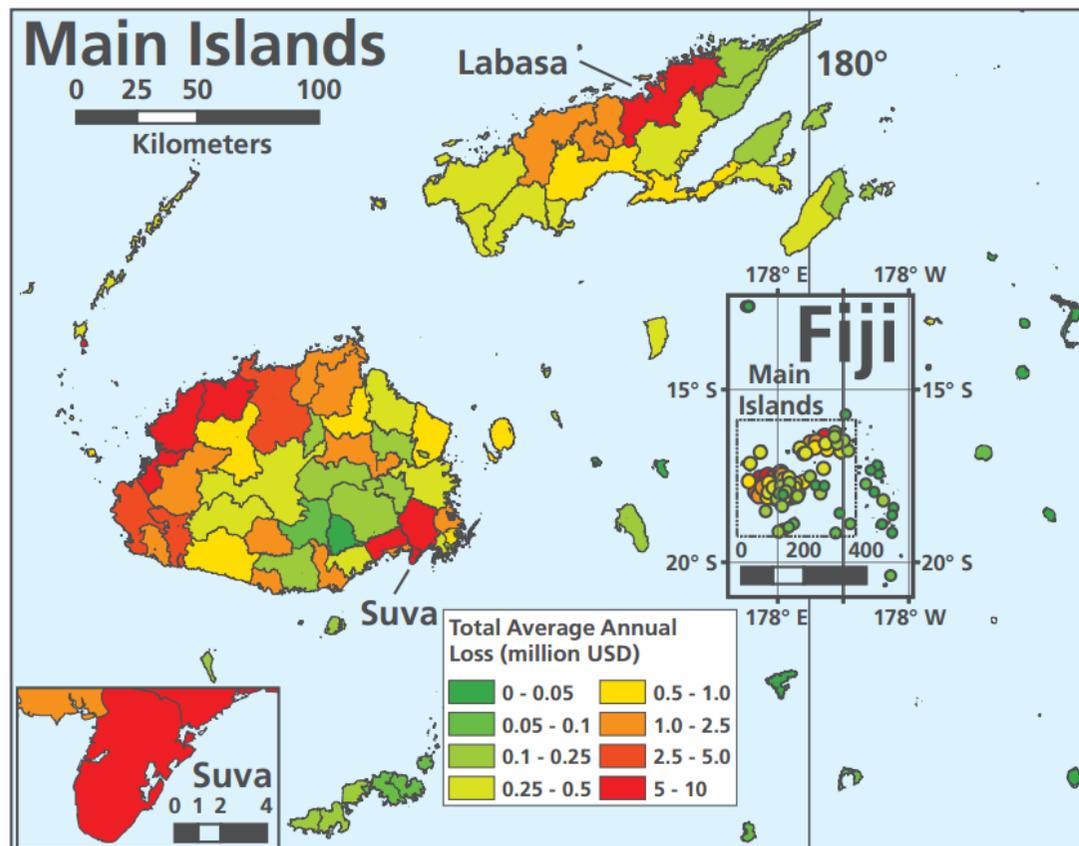
# PCRAFI

- Good use of GIS data publically available
- Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) aims to provide the Pacific Island Countries (PICs) with disaster risk modeling and assessment tools.
- The *Pacific Disaster Risk Assessment* project provides 15 countries with disaster risk assessment tools to better understand, model, and assess exposure to natural hazards.

- <http://pcrafi.sopac.org/>

# PCRAFI Example: Average Annual Loss in Fiji

In the next 50 years Fiji has 50% chance of experiencing loss over US\$806 million



Source: PCRAFI 2011



# Vanuatu Example

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## Use of ICT in Early Warning Systems

- Monitoring Stations *send data* to Meteorological service *send message* to Public
- Messages sent through social media (e.g. Face book), SMS, Email, and Government Websites.
- Oceania Regional Seismic Network for earthquake and tsunami warning (South-West Pacific area) – Vanuatu lead but PICs share data, expertise and resources.

# Brisbane Example:

The screenshot shows the Brisbane City Council website interface for the FloodWise Property Report. At the top left is the Brisbane City Council logo. To its right are navigation links: "Planning & building", "Do I need approval", "Applying and post approval", and "Buying, selling and search". A "Language" dropdown menu is visible in the top right corner. Below the navigation is a breadcrumb trail: "Home > Planning and building > FloodWise Property Report". The main heading is "FloodWise Property Report". The text explains that Brisbane has a sub-tropical climate with high annual rainfall and is built on a floodplain. It describes the FloodWise Property Report as a tool to show flood risk and type at a property, used for planning new habitable floor levels. It notes that the report is based on Council's flood studies and the latest flood computer modelling. A date update is provided: "On 18 September 2015 Council updated the FloodWise Property Report and the Flood Overlay Map in Brisbane City Plan 2014 with new flood data for 12 creek catchments." A link to "Conditions of use - Floodwise Property Reports" is provided. Below the text is a search interface with two tabs: "By Address" (selected) and "By Lot Number". There are three input fields: "Suburb", "Street Name", and "Unit/Street Number". A "Search" button is below the fields. At the bottom of the search section are two radio buttons: "View as PDF" (selected) and "View as HTML", and a "Download" button.

(Source: <http://www.brisbane.qld.gov.au/planning-building/planning-guidelines-tools/online-tools/floodwise-property-report> )

# Sample Report Info

## FLOOD LEVEL INFORMATION

(Source: <http://www.brisbane.qld.gov.au/planning-building/planning-guidelines-tools/online-tools/floodwise-property-report> )



# Summary

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- Pacific is a high risk area and *more development = more risk*
  - The use of online data and tools are an effective way of enhancing work in all phases of Disaster Risk Management in the Pacific (*especially informing land use planning*)
  - Data must be kept up to date.
  - Data must be made publically available and useable in a friendly format.
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