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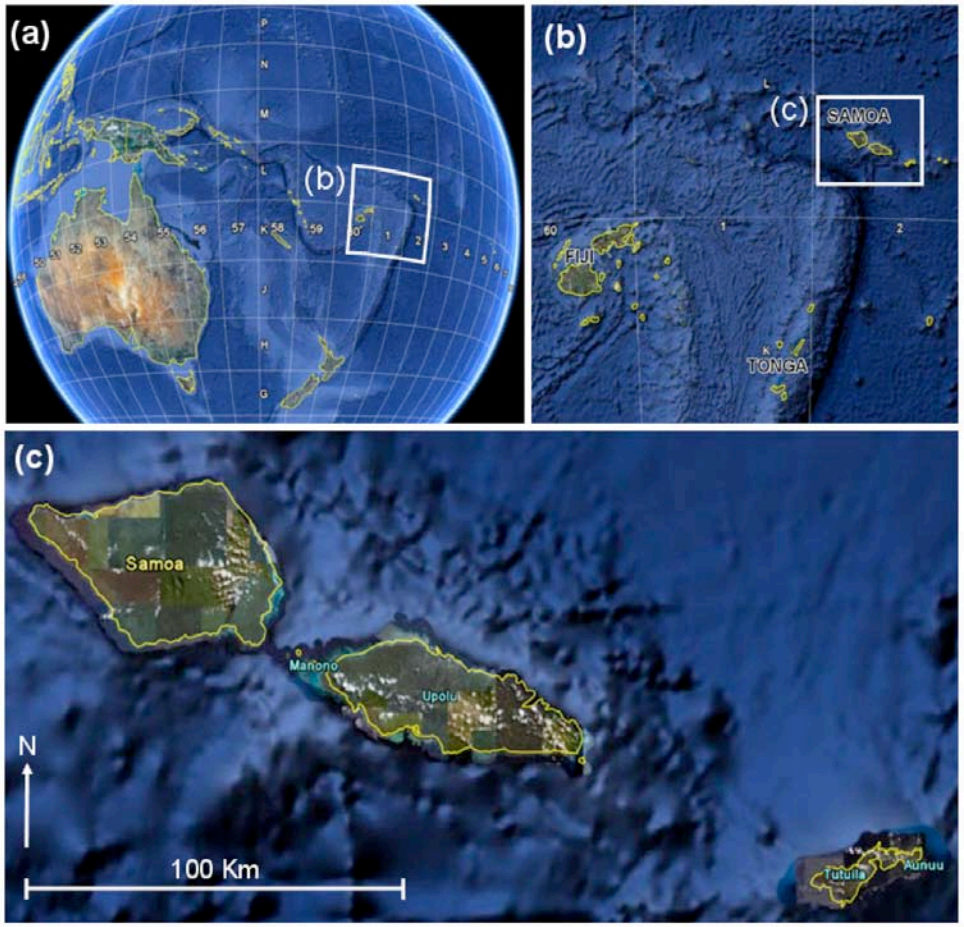
The 2009 UNESCO-IOC ITST Samoa Survey – an outline



United Nations
Educational, Scientific and
Cultural Organization

Dale Dominey-Howes, Randy Thaman, Ausetalia Titimaea, Litea Biukoto, Bruce Richmond, Stefan Reese, Gegar Prasetya, Kate Wilson, Eberhard Weber, Laura Kong, Jan Steffen, Brian McAdoo, Ruby Vaa & James Goff

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Australian Tsunami Research Centre
Central Research Institute of Electric Power Industry, Japan
Disaster Management Office, Government of Samoa
Earth Science and Geography, Vassar College, USA
Earthquake Research Institute, Tokyo University, Japan
Engineering Consultants, Samoa
GNS Science, New Zealand
Instituto Nazionale di Geofisica e Vulcanologia, Italy
Japan Society of Civil Engineers
Ministry of Agriculture, Forests and Fisheries, Government of Samoa
Ministry of Education, Sports and Culture (Avele College), Samoa
Ministry of Health, Government of Samoa
Ministry of Natural Resources and Environment, Government of Samoa
Ministry of Women, Community and Social Development, Government of Samoa
Ministry of Works, Transport and Infrastructure, Government of Samoa
National Defence Academy, Japan
National Institute of Water & Atmospheric Research, New Zealand
National University of Samoa
Paradigm Documentaries, Samoa
Port and Airport Research Institute, Japan
Samoa Red Cross Society
Scientific Research Organisation of Samoa
South Pacific Applied Geoscience Commission, Fiji
United States Geological Survey
University of Bologna, Italy
University of French Polynesia, Tahiti
University of Hawaii at Hilo, Hawaii, USA
University of the South Pacific, Fiji and Samoa
West Coast/Alaska Tsunami Warning Centre, USA

UNESCO
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Educational, Scientific and
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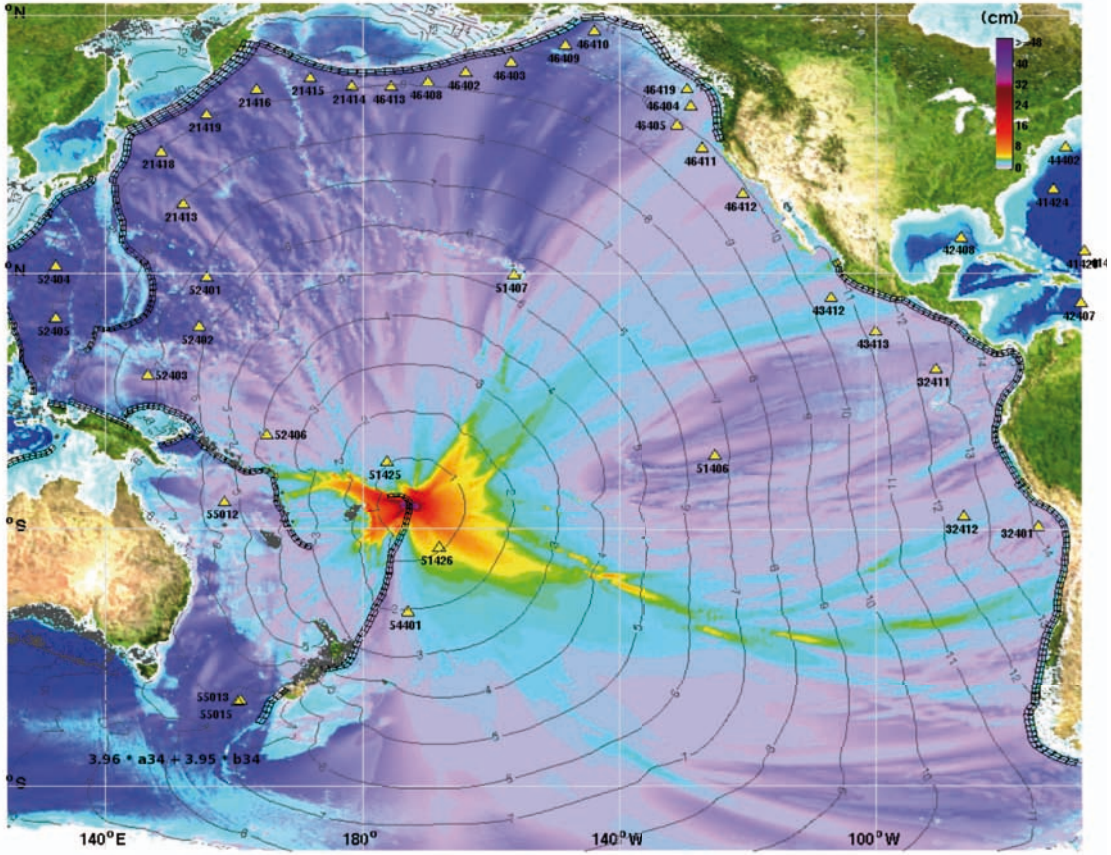
64 individuals

29 organisations

10 countries

Outline of presentation

- Note our ‘Terms of Reference’
- Outline structure of collaboration
- Theoretical framework used
- ~~Key findings (by sub-group team)~~
- Note key recommendations
- Next steps
- Summary and thanks



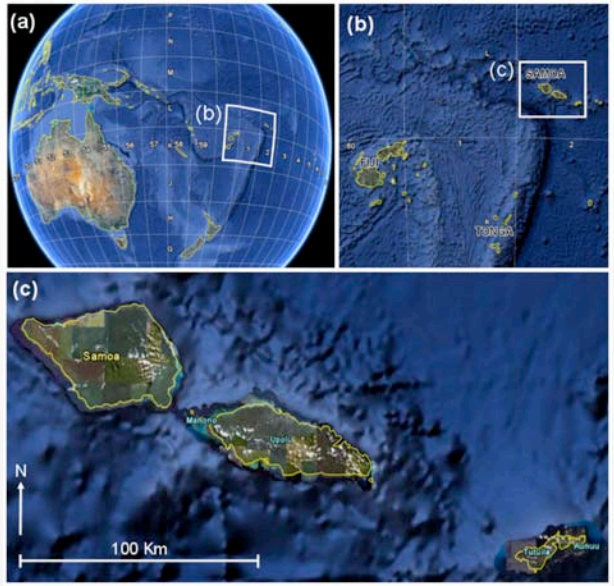
Source: PMEL, NOAA

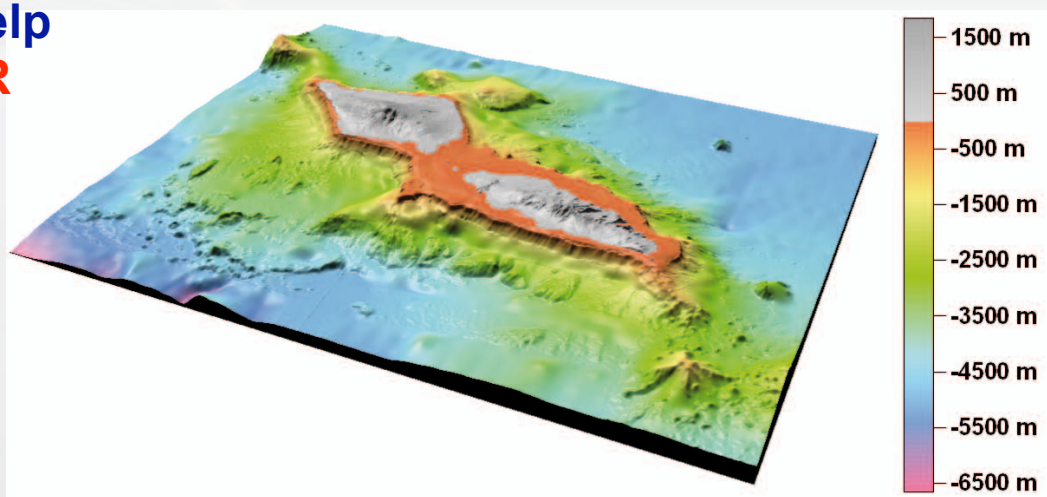
Purpose of the UNESCO-IOC ITST?

"Add value to work of the GoS"

"To explore the nature of the tsunami & its impacts in Samoa "

"To examine how the interdisciplinary & multisectoral approach taken by our team provides insights that would help the GoS improve future tsunami DRR practice"





Terms of Reference

- Measure inundation & run-up
- Collect geological samples
- Measure type & severity of building damage & identify damage controls
- Collect & measure information about biophysical system impacts
- Collect survivor experiences and stories
- Collect information about human & community vulnerability + resilience factors at work

Photo credits: UNESCO-IOC ITST Samoa

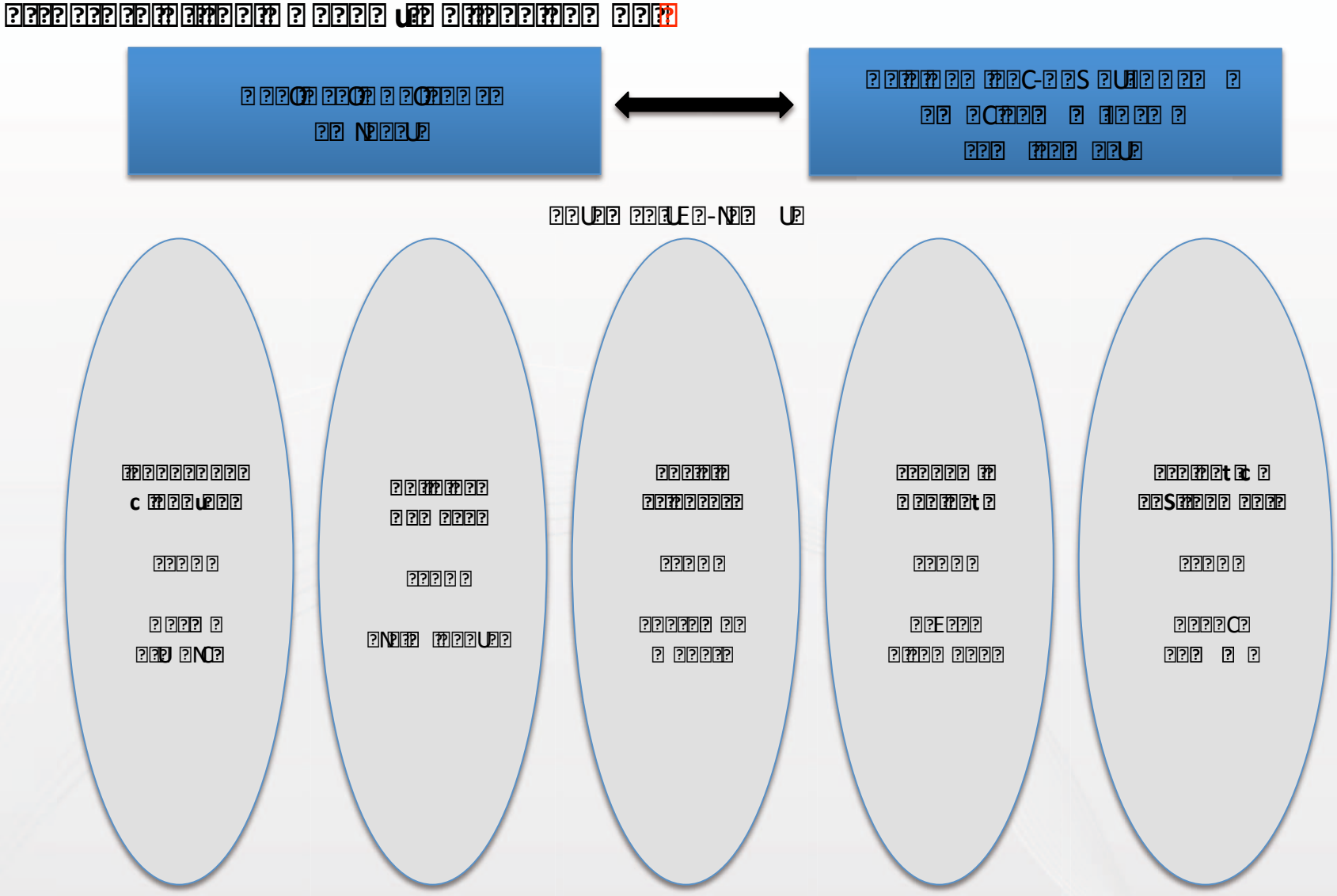
Structure of collaboration

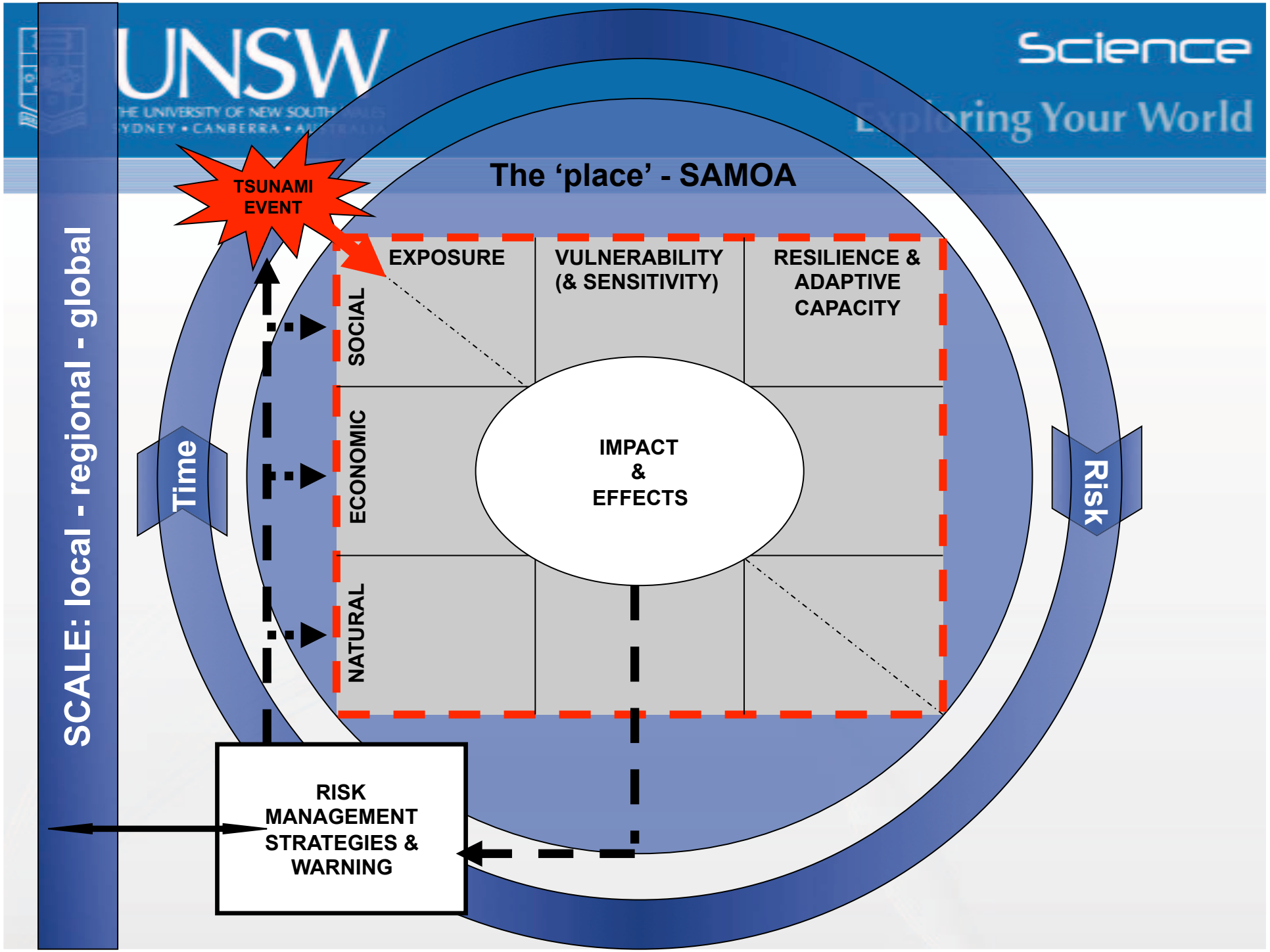
Guiding principals - ***consultative, collaborative, culturally sensitive, human dignity, horizontal skills transfer***

Binding agreement:

- **MUST have GoS ministry staff onboard**
- **Each team must have a Samoan scientist**
- **No work on Sunday**
- **All data MUST be shared**
- **Daily Briefing Reports provided to GoS**
- **End survey presentation by Dominey-Howes to the GoS**
- **ITST MUST provide Interim Report**
- **As detailed publications arise later, copies to be provided to the GoS**

Photo credits: UNESCO-IOC ITST Samoa

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SCALE: local - regional - global
TSUNAMI EVENT
The 'place' - SAMOA
EXPOSURE
VULNERABILITY (& SENSITIVITY)
RESILIENCE & ADAPTIVE CAPACITY
SOCIAL
ECONOMIC
NATURAL
IMPACT & EFFECTS
Time
Risk
RISK MANAGEMENT STRATEGIES & WARNING

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BEFORE THE TSUNAMI

Sub-group	Vulnerability factors	Resilience factors
Building Damage	• Poor building standards • Poor construction materials • Poor quality workmanship • Lack of knowledge about tsunami effects on buildings	• Good building codes when enforced

DURING THE TSUNAMI

Sub-group	Vulnerability factors	Resilience factors
Building Damage	• Large flow depth and high velocity increased vulnerability • Debris in water caused 'impact' damage to buildings • Poor construction style and material and workmanship	• Good construction design, workmanship and materials • Buildings raised even just 1 metre above surrounding land surface reduced damage levels • Vegetation (e.g., trees and mangroves) between the shore and the buildings, on average, increased resilience of buildings

AFTER THE TSUNAMI

Sub-group	Vulnerability factors	Resilience factors
Building Damage	• Buildings are being quickly rebuilt in same areas to same standards as before the tsunami • No chance to implement new design codes/standards	• Many people have capacity to rebuild further inland at higher elevations – outside of likely inundation zone

Key Recommendations

RECOMMENDATION 1: "Retain and *enhance* community-based tsunami education activities" – these saved lives on 29th September 2009

RECOMMENDATION 2: Collection and compilation of a detailed near shore bathymetric and coastal topographic datasets to help with future tsunami modelling for risk assessment

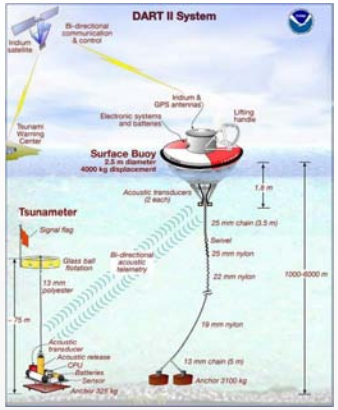
RECOMMENDATION 3: New buildings should be built on raised 'platform's approximately 1 metre higher than the surrounding landscape and on solid foundations with reinforced concrete columns

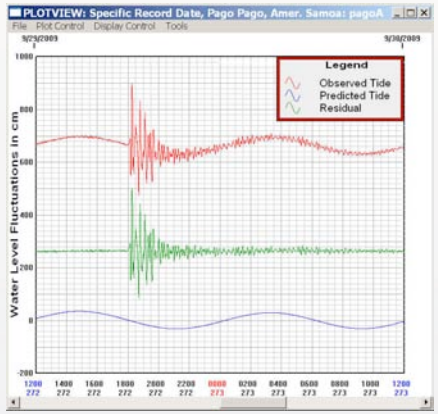
RECOMMENDATION 4: Complete a national palaeotsunami study to identify long-term frequency-magnitudes of tsunamis

RECOMMENDATION 5: Replant damaged coastal areas and protect pristine coastal areas (in partnership with local communities in order to raise understanding) with species shown to increase resilience to tsunami (and extreme wave) inundation

RECOMMENDATION 6: Train Samoan experts to continue to collect survivor stories. This helps with the healing process and provides valuable material to help with future awareness raising activities

Next steps?





Preliminary dataset to be made available

Post-process and correct data

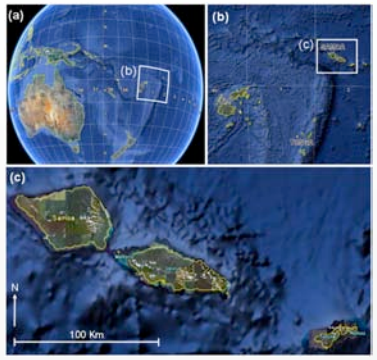
Integrative paper for submission to high impact international journal

Sub-groups to write up post processed data in relevant journals

All published papers to be made available to GoS and UNESCO

Workshop to examine successes/limitations and lessons learned from this first UNESCO-IOC ITST – possibly hosted by the GoS

Team Leader Observations



Political negotiations

Sacrifice – don't lead a large team if you want to go in to the field!

Nothing you do will feel good enough or will meet everyone's needs

It's a 24/7 job

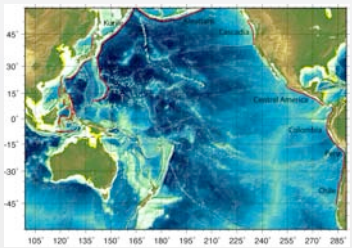
Expectations (your own and everyone else's) are/will be unrealistic

There's no training for the role

Constant feelings of inadequacy

Think hard about motivations for leading a team

Summary



The tsunami was physically extreme and provided important lessons for the South Pacific region

The good work of the DMO "SAVED" lives here - their work should be retained and enhanced

The impacts of the tsunami were complex but understandable

We can identify factors that influenced vulnerability and resilience

We have provided a framework to enable GoS to continue detailed assessment at its own pace

We have made summative and detailed recommendations

We commit this Interim Report to the Government and People of Samoa

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With thanks……

Government of Samoa for permission to work and its staff and officers - Ausetalia Titimaea & Filomena Nelson

UNESCO Regional Scientific Advisor Jan Steffen and Suzanne Paisley & Laura Kong

Staff of SOPAC – especially Litea Biukoto

The University of the South Pacific

All volunteers and international scientists

UNSW and the Australian Research Council

Finally, and most importantly, the people of Samoa who shared their experiences and knowledge with us