



OtinTaai

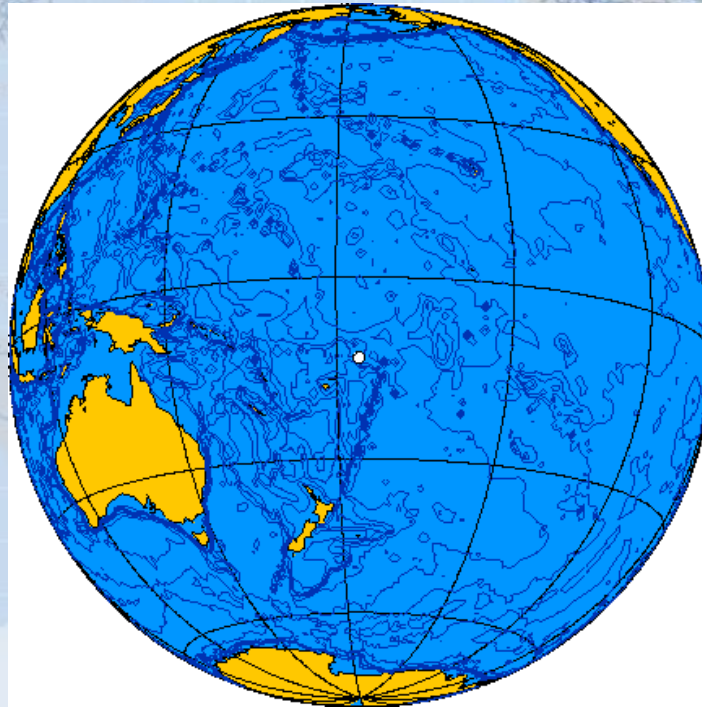
Planning for Change in Oceania

Liz Fischer
USDOT-FHWA-HI
Tumon, GU
2 June 2011

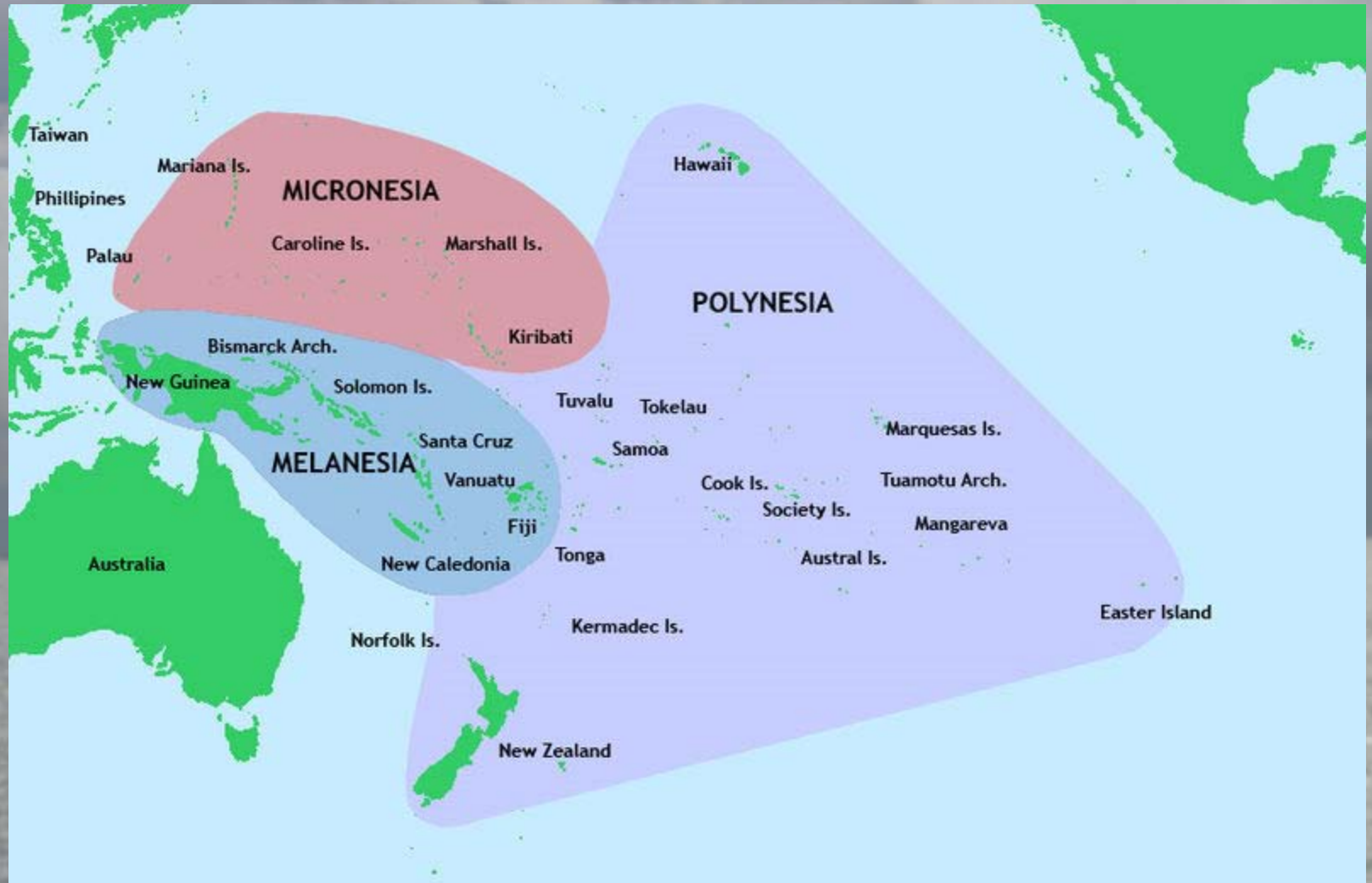
*We are like islands in the sea, separate on the
surface but connected in the deep.*

Moana

- 58M square miles
- 30,000 islands
- 37 M people
 - 14M AU
 - 1.2M HI

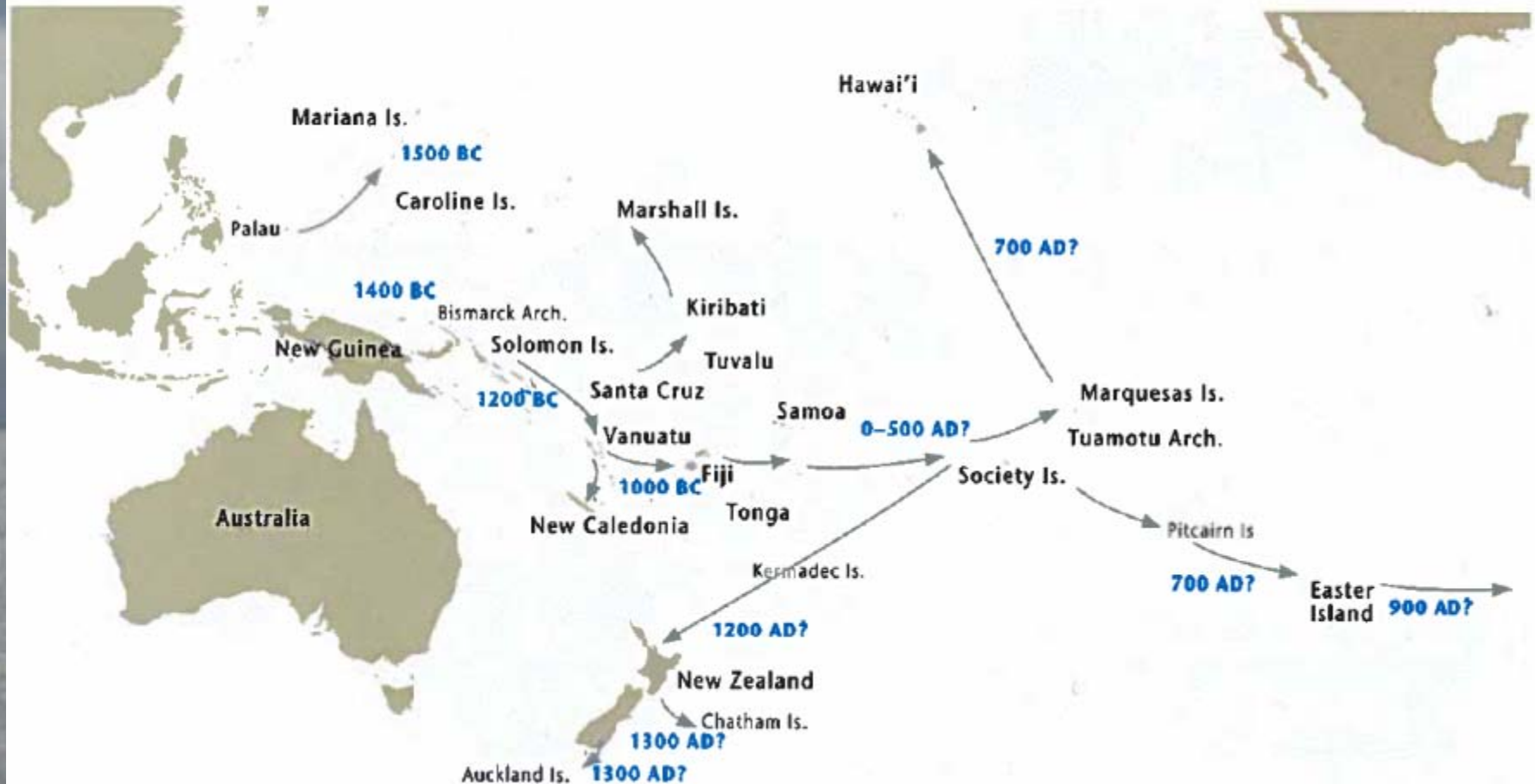


Water was not a Barrier



Lapita Diaspora

LIKELY PATTERN OF EARLY HUMAN SETTLEMENT IN THE PACIFIC
THE LAPITA DISPERSAL FROM THE BISMARCK ARCHIPELAGO TO WEST POLYNESIA IS QUITE CLOSELY DATED TO THE PERIOD 3400 BP TO 2900 BP. HOWEVER, THE CHRONOLOGY OF POLYNESIAN SETTLEMENT REMAINS UNCERTAIN AND CONTENTIOUS.



Traditional Knowledge

“Ancient wisdom in Pacific cultures hold that all things are connected and related... the people of Oceania see the universe as living kin and patterned their cultures to fit that view.”

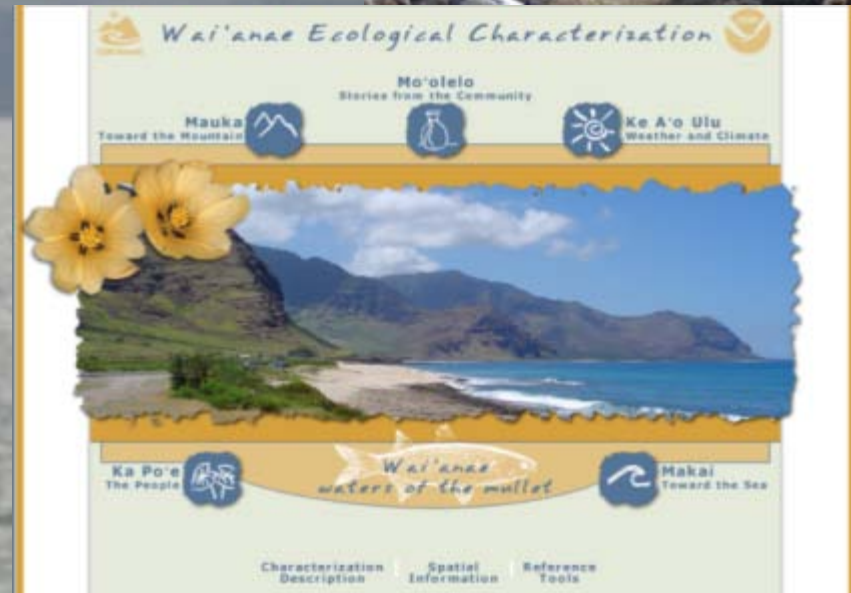
Papali'i Dr. Failautusi Avegalio

- *“When the chickens come down from the trees to roost on the ground, we know that a big storm is coming.”* Traditional disaster preparedness knowledge, Micronesia.
- *“When the dogs are in the trees, we know there has been a tsunami.”* Joke, Micronesia.

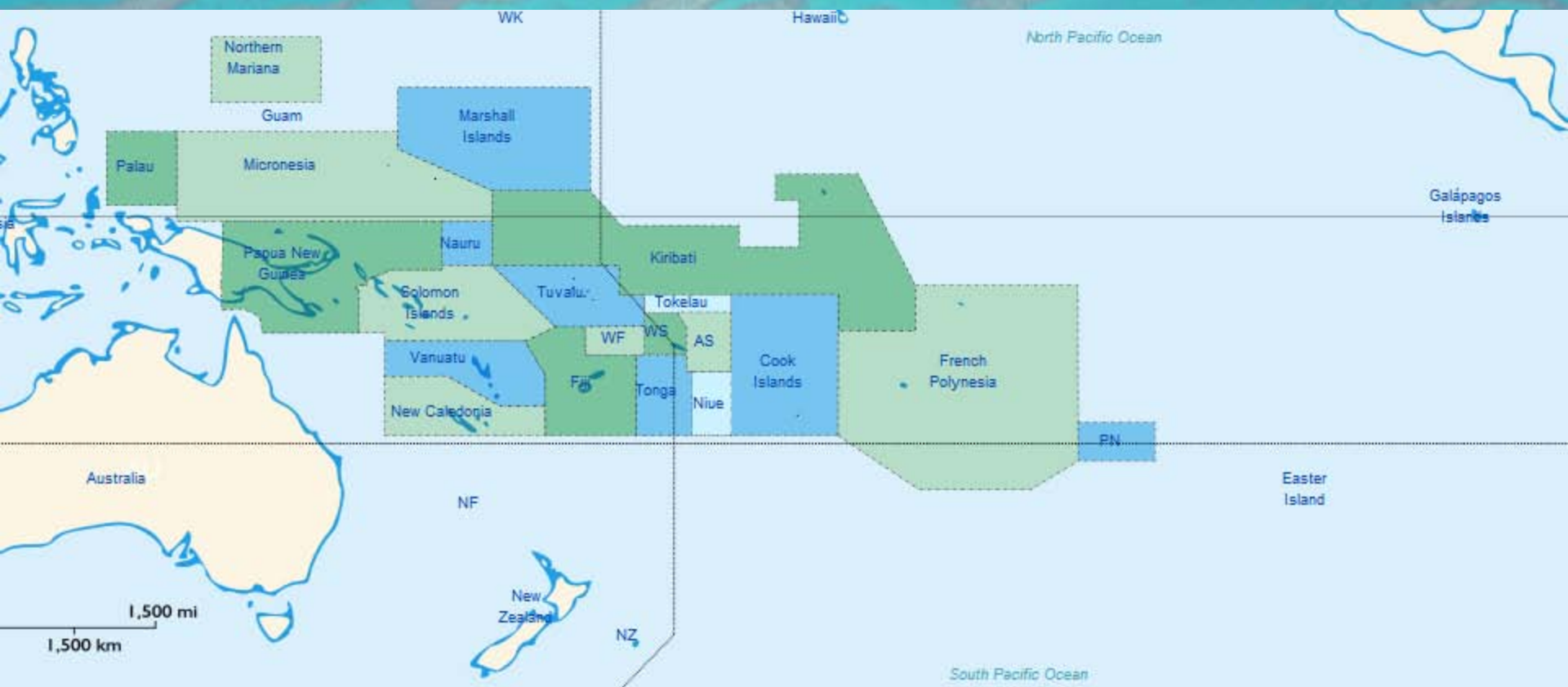


Connecting Past to Present

Albert Einstein reaffirmed the ancient wisdom of connections when he ushered in the era of particle quantum physics, which emphasized the innate connectedness of all things.



Vanua-Fonua-Enua-Aina



Natural Systems

- Marine & Terrestrial Protected Areas
- Soils & Geologic Base
- Water: Surface & Ground
- Estuaries & Wetlands
- Mangroves & Coastal Forests
- Coral Reefs, Sea Grass Beds, & Sandbars

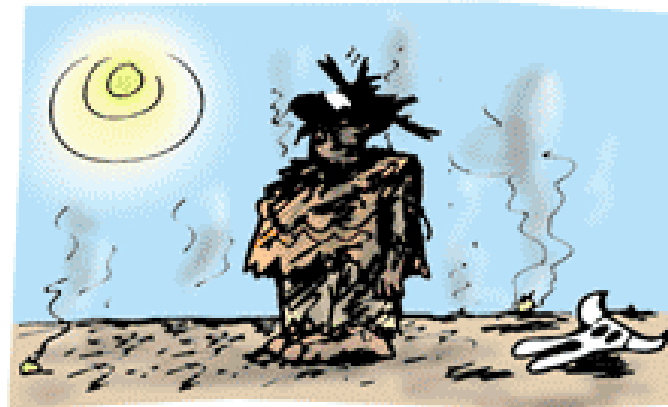


Natural Systems Patterns

THE LA NINA AND EL NINO WEATHER PATTERNS...



IN THE PAST



TODAY

INKCINCT

Water: Too Little



Water: Too Much



Fig.7: Gauging erosion as losing land



Fig. 8: Sea water that floods the land that threatens food security-pandanus trees.



Fig.9: Ghost ture in pits affected by sea water intrusion



Land: Limited, Created, Lost



Land & Community



Transport - Land



Transport – Sea & Air



Food



Community



Landless Nations?

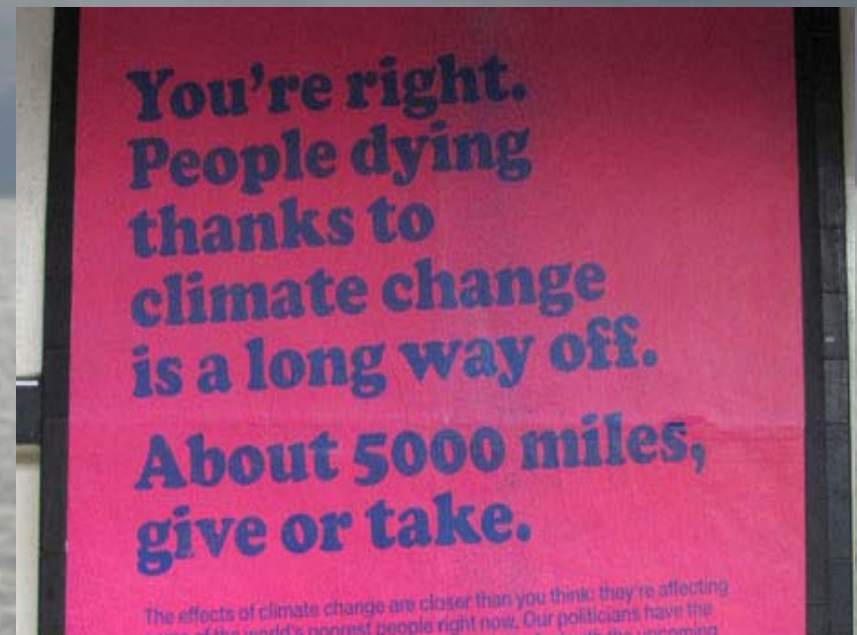


Socio-Economic Considerations

Small island development states (SIDS)

- Small land masses amidst vast ocean
- Large populations for land area – high densities and growth rates
- Dependence on ocean
- Poor infrastructure
- Limited national & human resources

Adaptive capacity is low.



Wanga-Waka-Va'a: Journey & Navigation



THE CAIRO PRINCIPLES

Overarching Principle:

Reduce the vulnerability of coastal communities to natural hazards by establishing a regional early warning system and applying construction set-backs, green belts, and other no-build areas.

*Developed in response to the
26 December 2005 Indian Ocean Tsunami.*

Core to Implement

“4-Ps”:

- **Political Will**
- **Public Participation**
- **Planning:** environment, infrastructure, community, economic
- **Public Awareness:** best practices & education



“PEOPLES” Framework*

P - Population and Demographics

E - Environmental/Ecosystem

O - Organized Governmental Services

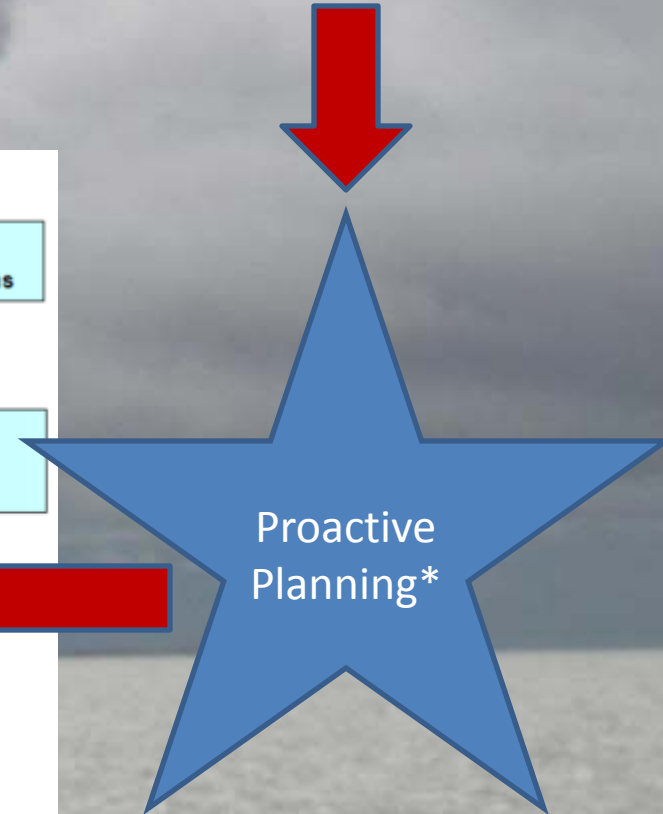
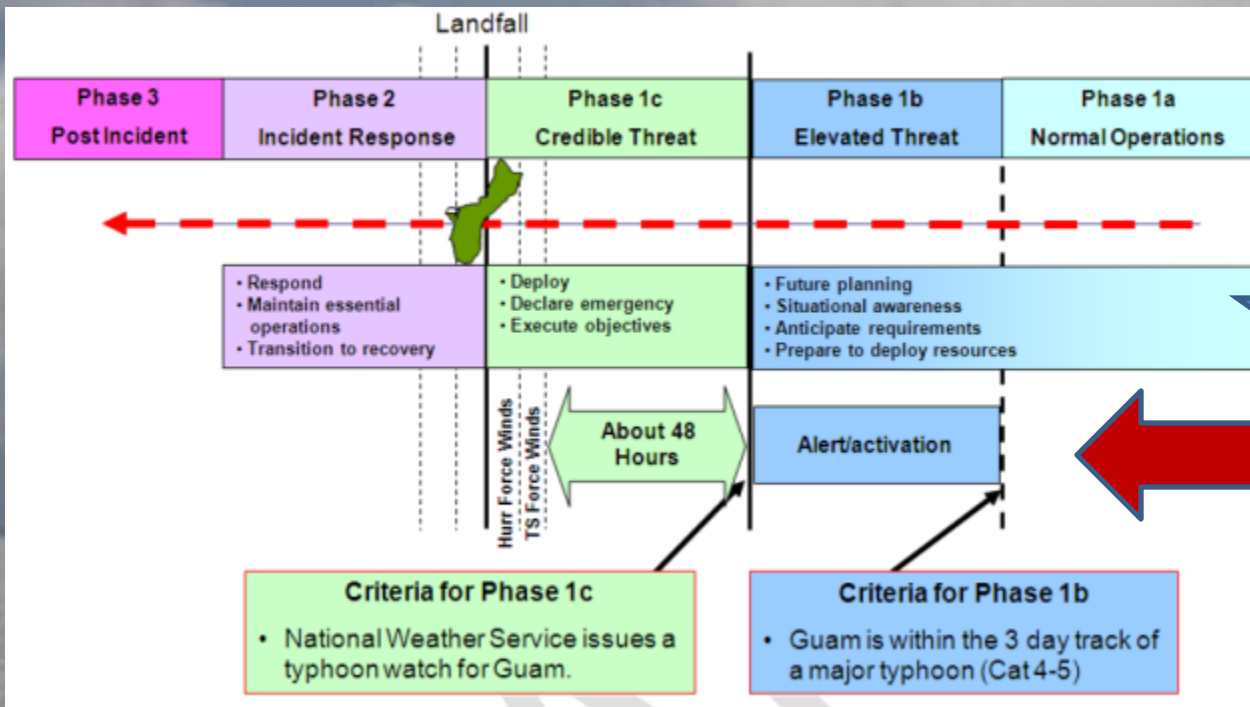
P - Physical Infrastructure

L - Lifestyle and Community Competence

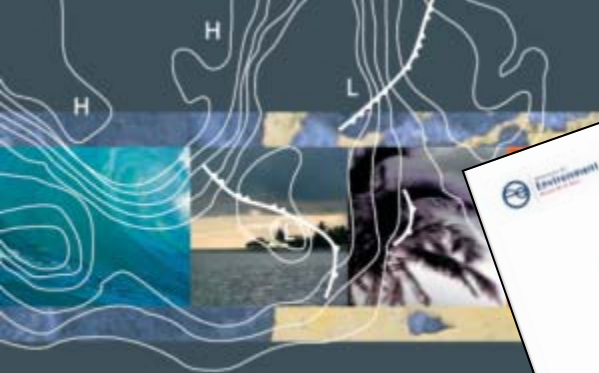
E - Economic Development

S - Social-Cultural Capital

We Need to Start Here



* and Implementation; follow principles espoused by McHarg & Steinitz + Cairo



Not if but *when*

Adapting to natural hazards
in the Pacific Islands Region

A policy note
2006

Sofie Bettencourt | Richard Croad | Paul Freeman | John Hay | Roger Jones
Peter King | Padma Lal | Alan Mearns | Geoff Miller | Idah Pawaray-Riddhough
All Simpson | Nukunoe Teuatake | Ulric Trotz | Maarten Van Aalst



The World Bank
Pacific Islands and Pacific Region
Pacific Islands Country Management 2006



Climate change effects and impacts assessment A Guidance Manual for Local Governments in New Zealand – 2nd Edition



May 2008

New Zealand Government

Mainstreaming Climate Change – Guidance Manual for the Pacific Islands Countries and Territories



Peter K. King
(Draft) May 2010

Technical Report
Implementation of the
Pacific Adaptation to Climate Change (PACC) Project:
Process, Status and Assessment



Prepared by
John E. Hay
For
Pacific Regional Environment Programme (SPREP)

December, 2008



A Climate for Change in East Asia and the Pacific

JOINT NATIONAL ACTION PLAN ON CLIMATE CHANGE ADAPTATION AND DISASTER RISK MANAGEMENT 2010-2015



July 2010



Key policy advice from
World Development Report 2010
Development and Climate Change

Act Now, Act Together, Act Differently

Developing a national coastal adaptation agenda



ADDENDUM to November 2009



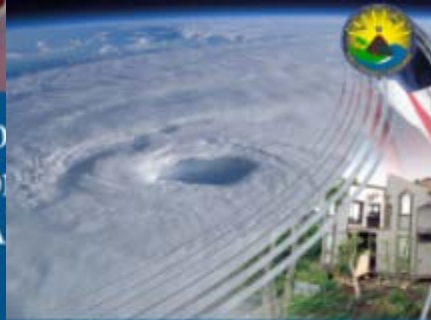
Hawai'i



Hawaii Catastrophic All-Hazards Com Plan (CONPLAN)

July 16, 2009

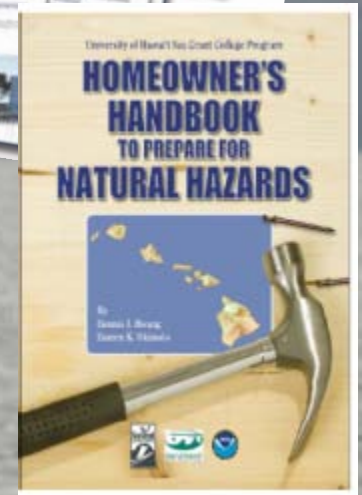
Version 2.0



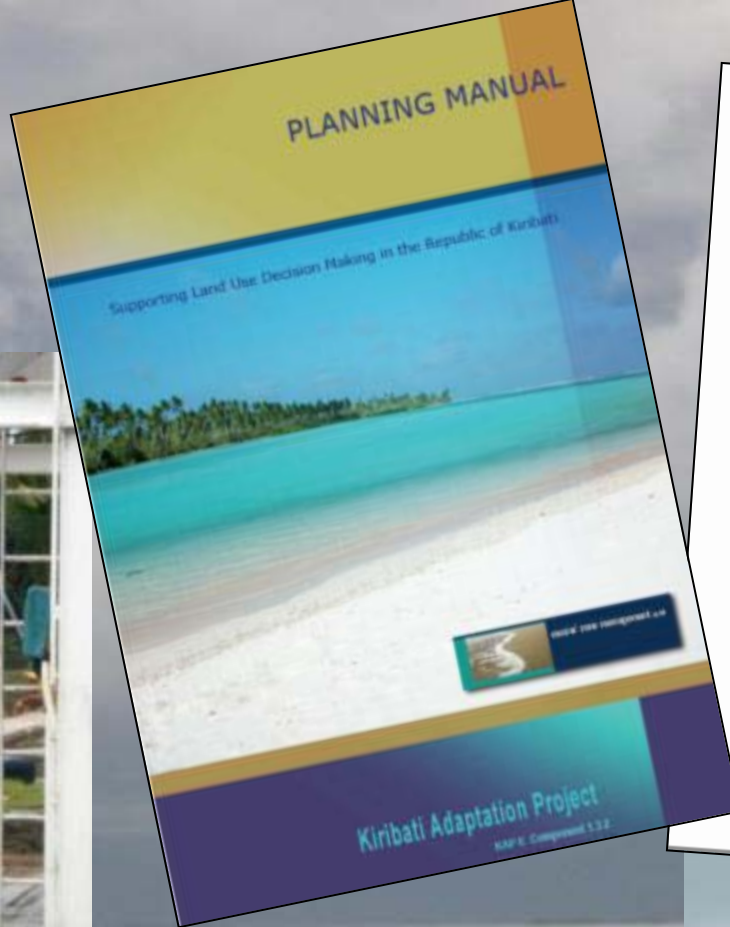
Hawaii Catastrophic Hurricane Operations Plan (OPLAN)

July 16, 2009

Version 2.0

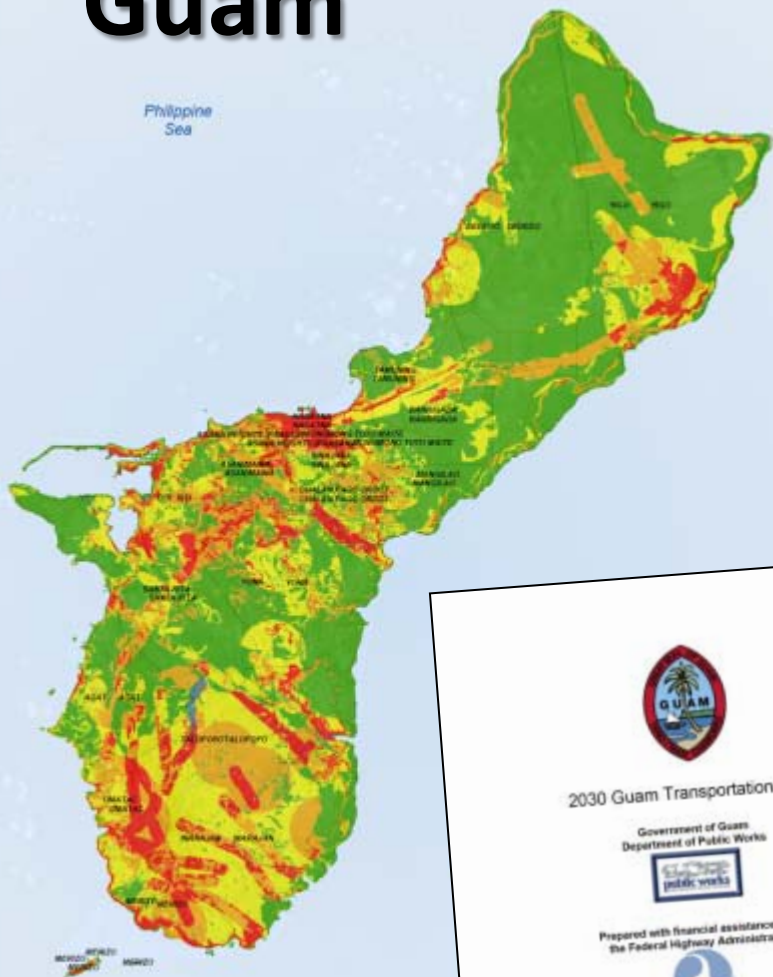


Kiribati



Guam

Philippine
Sea



February 2008

Source: USGS (U.S. Government of Guam) Bureau of In



GUIDELINES FOR LOW-IMPACT TOURISM

ALONG THE COAST OF QUINTANA ROO, MÉXICO

100. **Characteristics of Quintana Roo's Coastal Zone**

- 110. Coral Reefs and Reef Lagoons
- 120. Beaches and Dunes
- 130. Wetlands and Coastal Lagoons
- 140. Sinkholes
- 150. Forests

200. **The Coastal Processes of Quintana Roo**

- 210. Sediment Transport
- 220. Natural Hazards
- 230. Groundwater

300. **Siting Infrastructure Respective to Beaches and Dunes**

- 310. Establish Construction Setbacks or Restricted Zones
- 320. Design Development to Complement Natural Conditions
- 330. Elevate Structures in Flood-prone Areas
- 340. Design Infrastructure to Withstand the Effects of Wind and Waves
- 350. Reduce the Impacts to Nesting Marine Turtles

400. **Siting Infrastructure to Respect Wetlands**

- 410. Design Development to Maintain the Function of Wetlands
- 420. Avoid Alterations that Reduce the Quality of Wetlands and Mangroves
- 430. Reduce Impacts from Land-based Runoffs
- 440. Reduce Discharge of Contaminants to Wetlands
- 450. Evaluate the Siting and Design of Piers
- 460. Use Integrated Methods to Develop Marinas

500. **Vegetation Management and Landscape Design**

- 510. Evaluating Existing Physical Characteristics
- 520. Utilize Native Vegetation in Landscape Design
- 530. Eliminate the Use of Exotic Species
- 540. Replant Areas that are Devegetated
- 550. Maintain Buffer Zones

600. **Use and Management of Potable Water and Wastewater**

- 610. Optimize Design and Siting of Wells
- 620. Optimize Water Use
- 630. Reduce Contaminant Discharge to Water Bodies
- 640. Site Septic Systems at Appropriate Locations
- 650. Utilize Alternative Septic Systems to Enhance Treatment

700. **Managing Solid Waste**

- 710. Reduce, Reuse, Recycle
- 720. Design Sanitary Landfills Appropriately
- 730. Identify Appropriate Locations for Landfills

800. **Options for Alternative Energy**

- 810. Options and Applications for Renewable Energy
- 820. Solar Power
- 830. Wind-generated Energy
- 840. Cost Comparisons
- 850. Implementing Renewable Energy Systems Without Environmental Impact

900. **Applying Tourism Guidelines in Costa Maya**

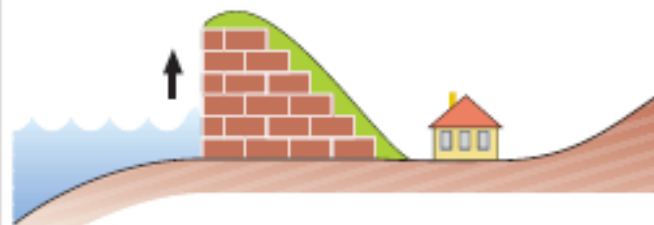
Planning Tools

'it's saving money if we do some of these works now, versus the long term costs...

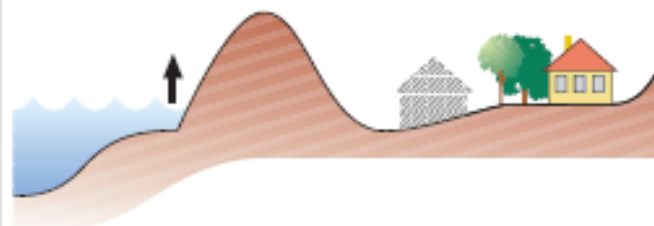
In the case of our Shire, an additional \$3 million is now budgeted each year for flood and erosion works, to prepare for the extreme weather events'

Mayor David Gibb,
Mornington Peninsula Shire

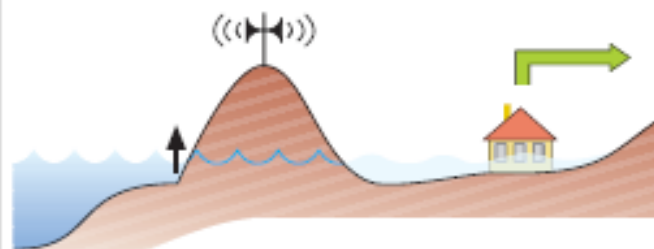
SHORT TERM (0 – 50 years)



Strengthening defences.
(Dike reinforcements, nourishments etc.)



Spatial planning.
(Minimise risks, reserve space for future adaptation measures)



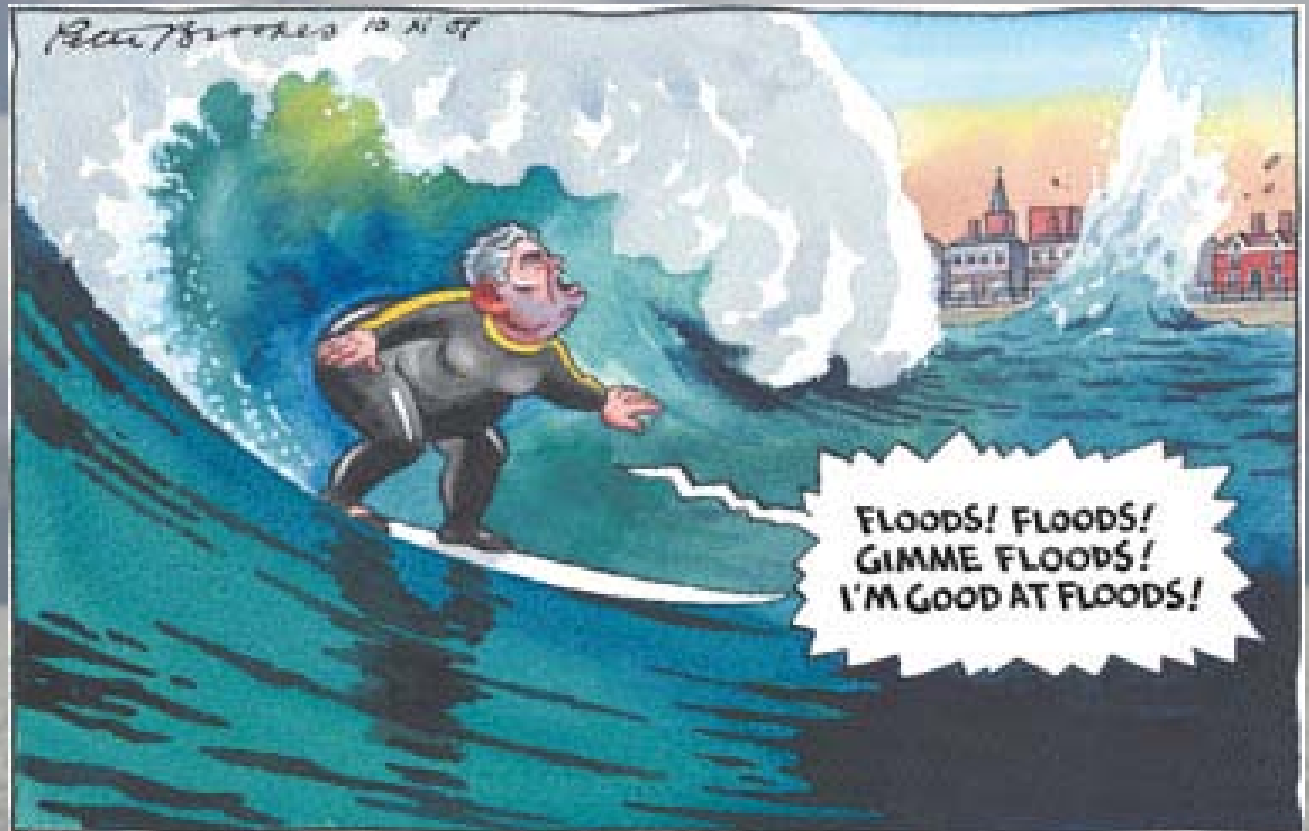
Increasing risk of awareness and preparation.
(Support for proposed adaptation measures – early warning, evacuation plans etc.)

Source: *Climate Change Risks to Australia's Coast* 2009:146.

Menin Kairoir: The View Forward

- Strong ties between:
 - climate adaptation planning,
 - land use planning,
 - infrastructure planning,
 - disaster management planning,
 - ecosystem restoration & mitigation, &
 - population growth planning.
- Need best practices & practical lessons learned.
- Easily replicable to ensure implementation.

We know what to do with our water world...



**...But are we prepared
to adapt and modify
our way of business
and practice for a
changing world?**



Eti am kauti



Elizabeth E Fischer

RLA, ASLA, APA, IAEM

USDOT FHWA HI

300 Ala Moana Blvd #3306

Honolulu HI 96850

808.541.2325

elizabeth.fischer@dot.gov