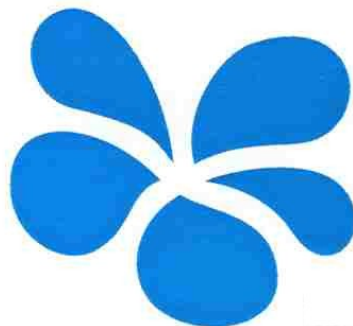


SOPAC



Pacific Islands Applied Geoscience Commission

Climate Variability and Change in Pacific Island Countries



Coping and Adaptation

**2nd Seminar on Water Management in Islands,
Coastal and Isolated Areas**

PECC, Noumea, May 2008

SOPAC

Marc Overmars, Water Adviser



TUVALU





Island Vulnerability

Dialogue on Water and Climate

Policy Brief on Water and Climate

Coping and Adaptation Strategies

No Regrets Approaches

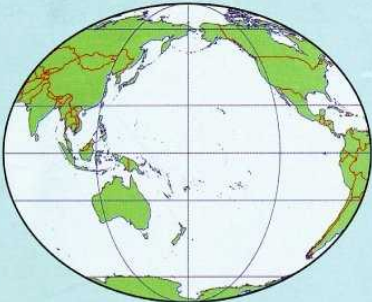
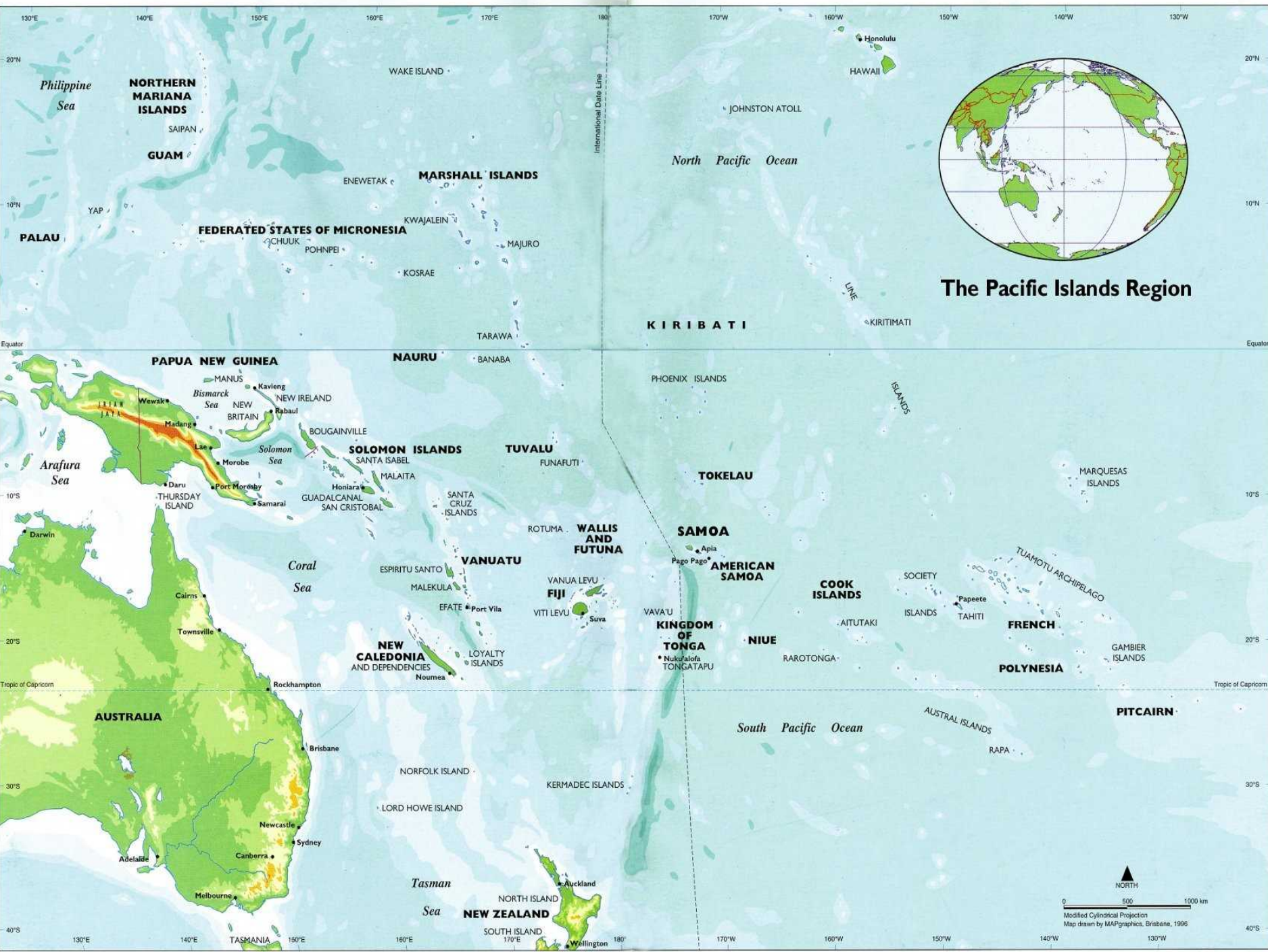
Examples from Pacific Island Countries

Kiribati Adaptation Programme

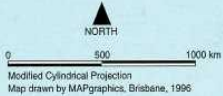
Fiji Flood Management

Vulnerability of Pacific Island Countries





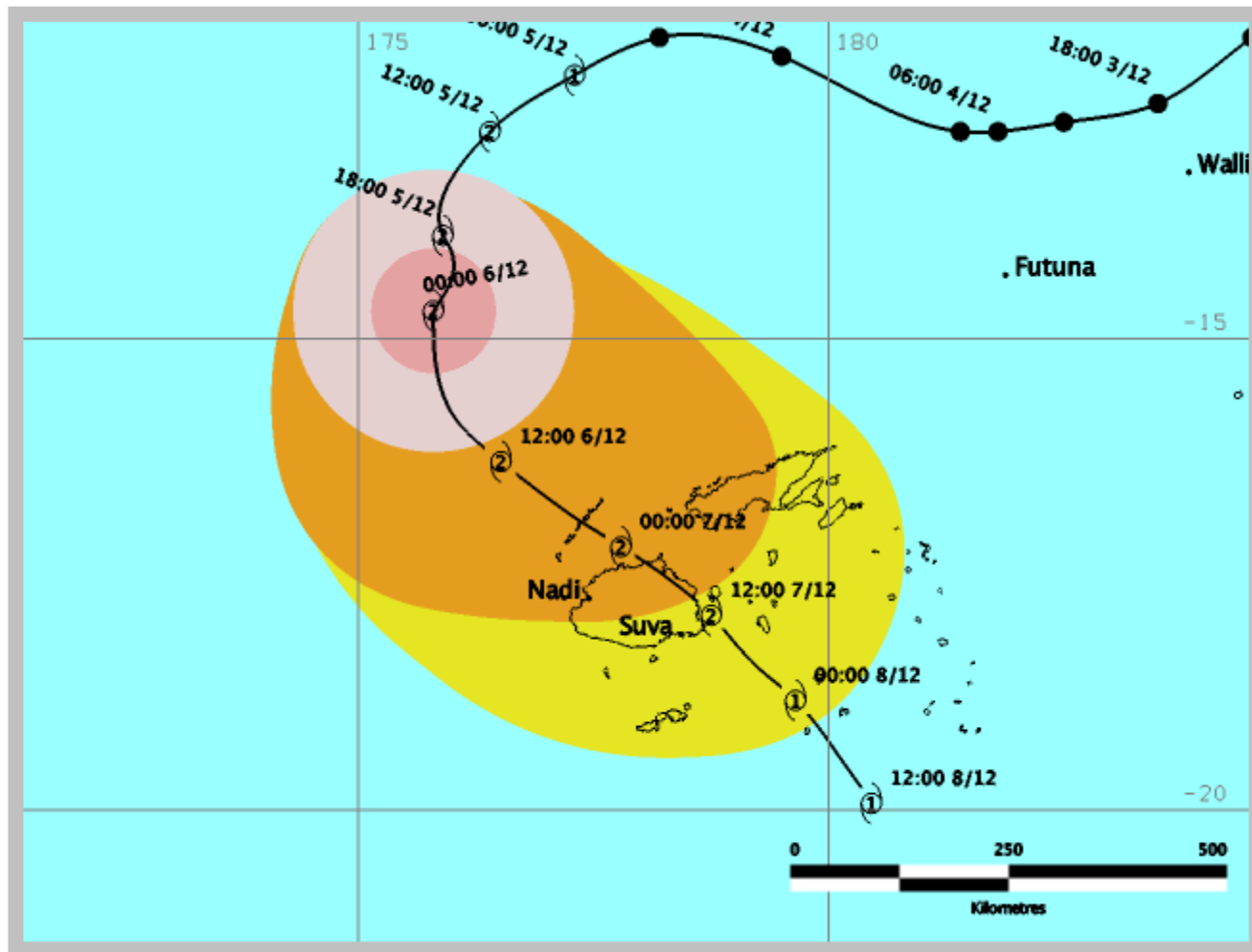
The Pacific Islands Region



Vulnerability to Climatic Extremes

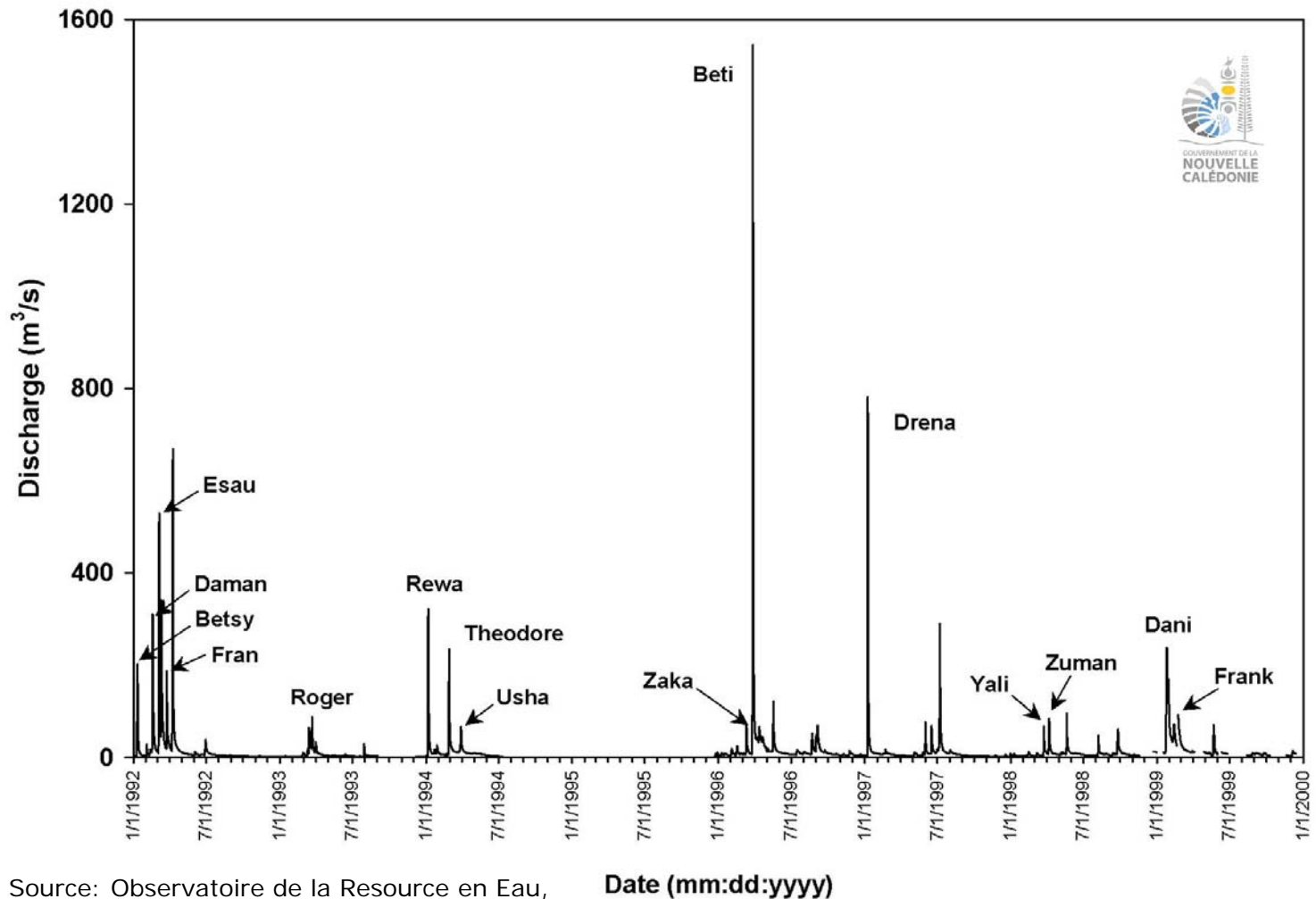


Vulnerability to Cyclones



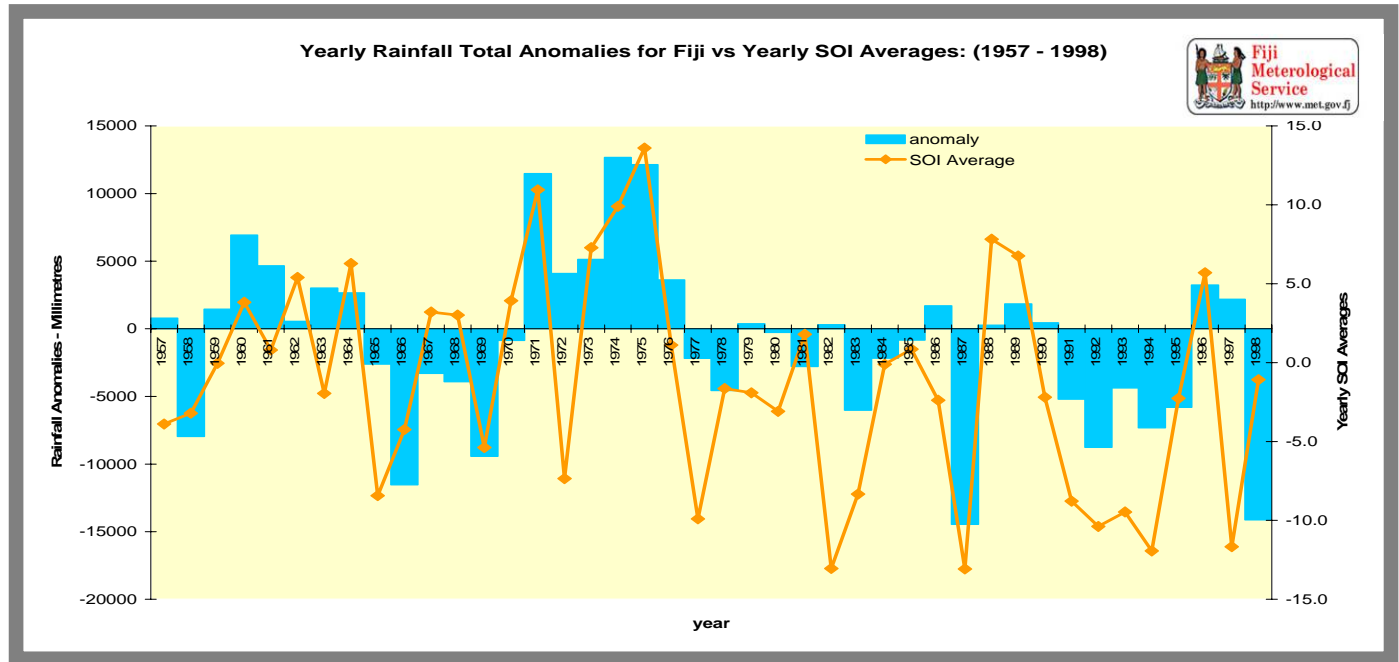
Source: RSMC Nadi Tropical Cyclone Warning Centre

Vulnerability to Cyclones



Source: Observatoire de la Ressource en Eau,
Nouvelle-Calédonie

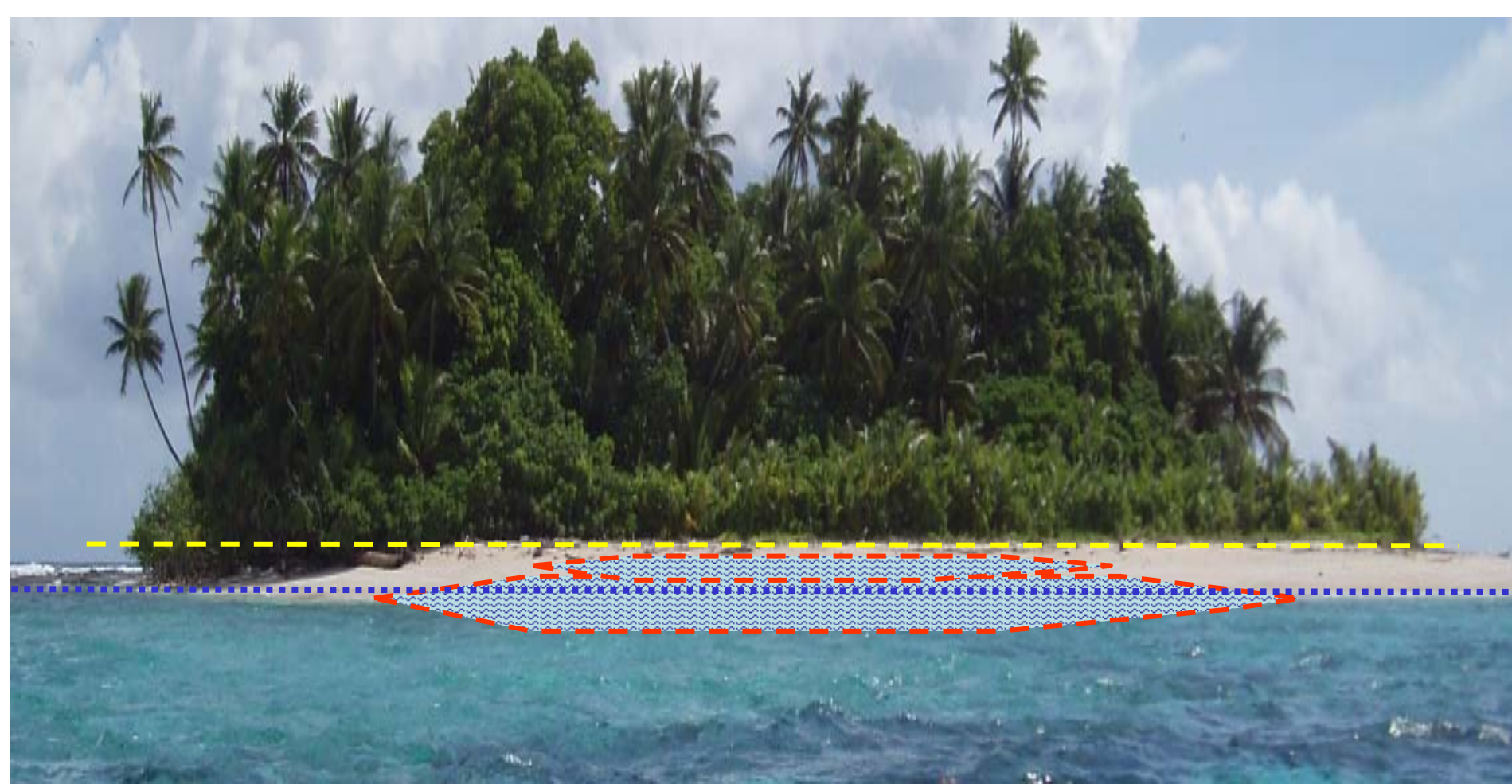
Vulnerability to El Niño Droughts



Source: Fiji Meteorological Service

Vulnerability to SLR and Storm Surges



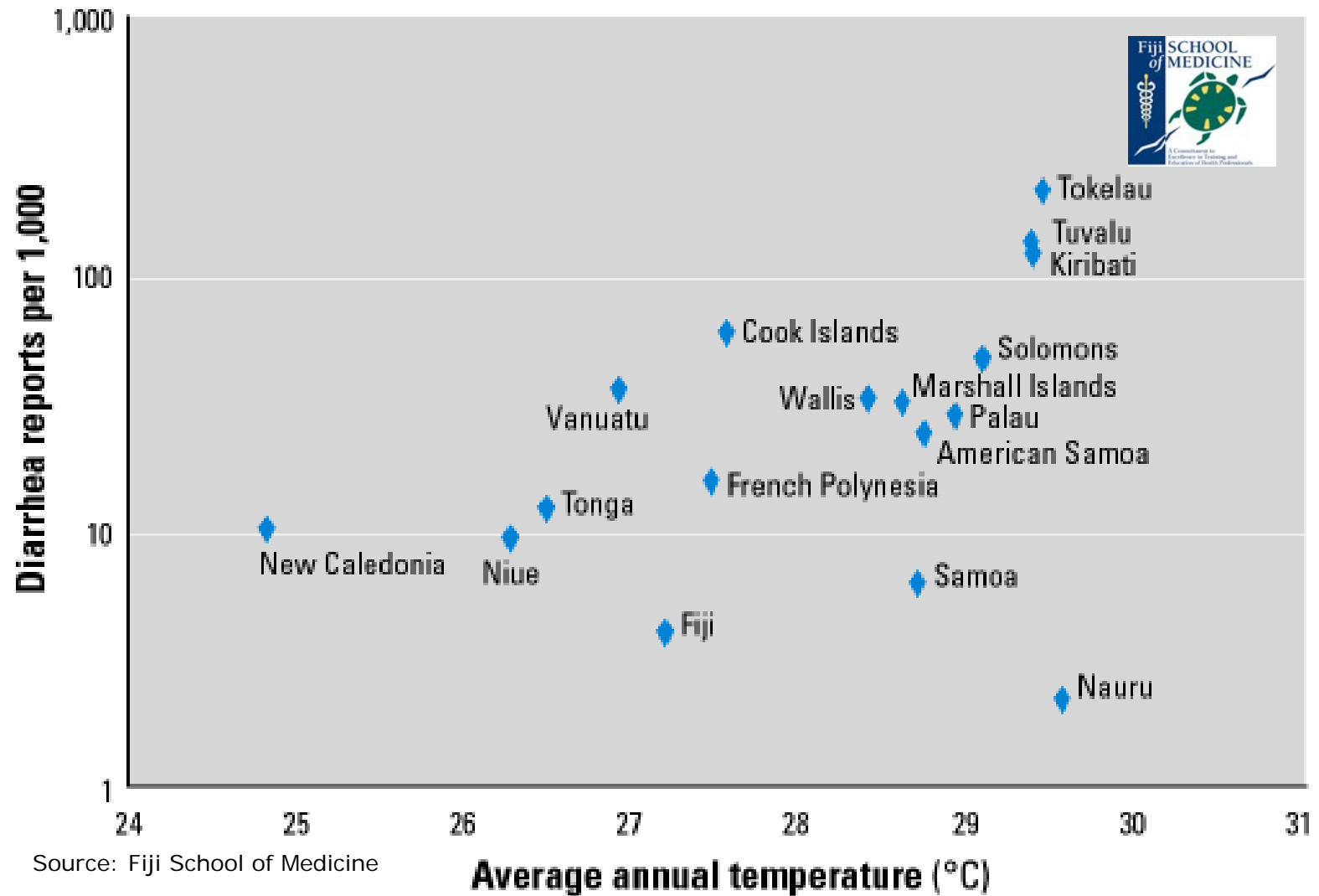


Changing water quality (salinity) of groundwater as well as shoreline processes are thought to be among the first early indicator's of atoll response to accelerated sea level rise / climate change. Considering the importance of these resources to the security and viability of atoll communities, systematic regional monitoring should be undertaken.

Impacts on Drinking Water Quality

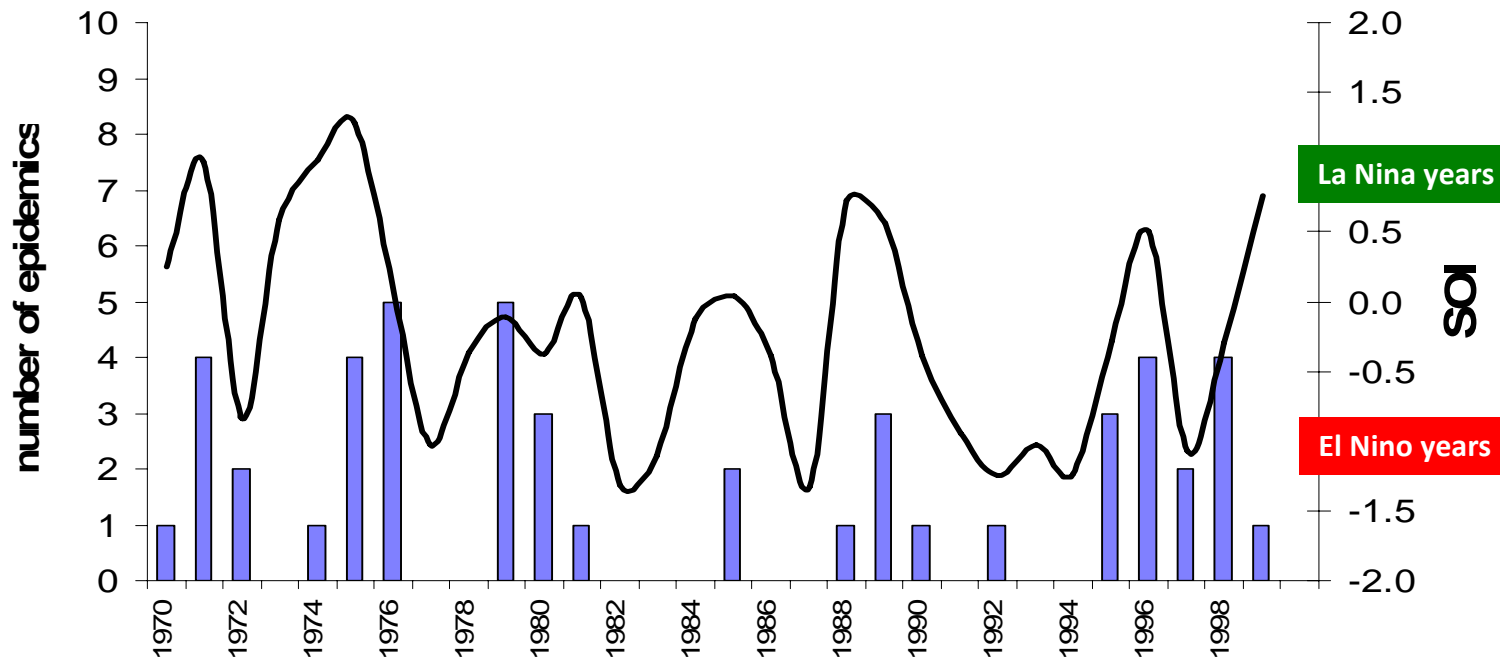


Diarrhoea



Dengue

Dengue epidemics in the South Pacific 1970-1998 vs El Niño

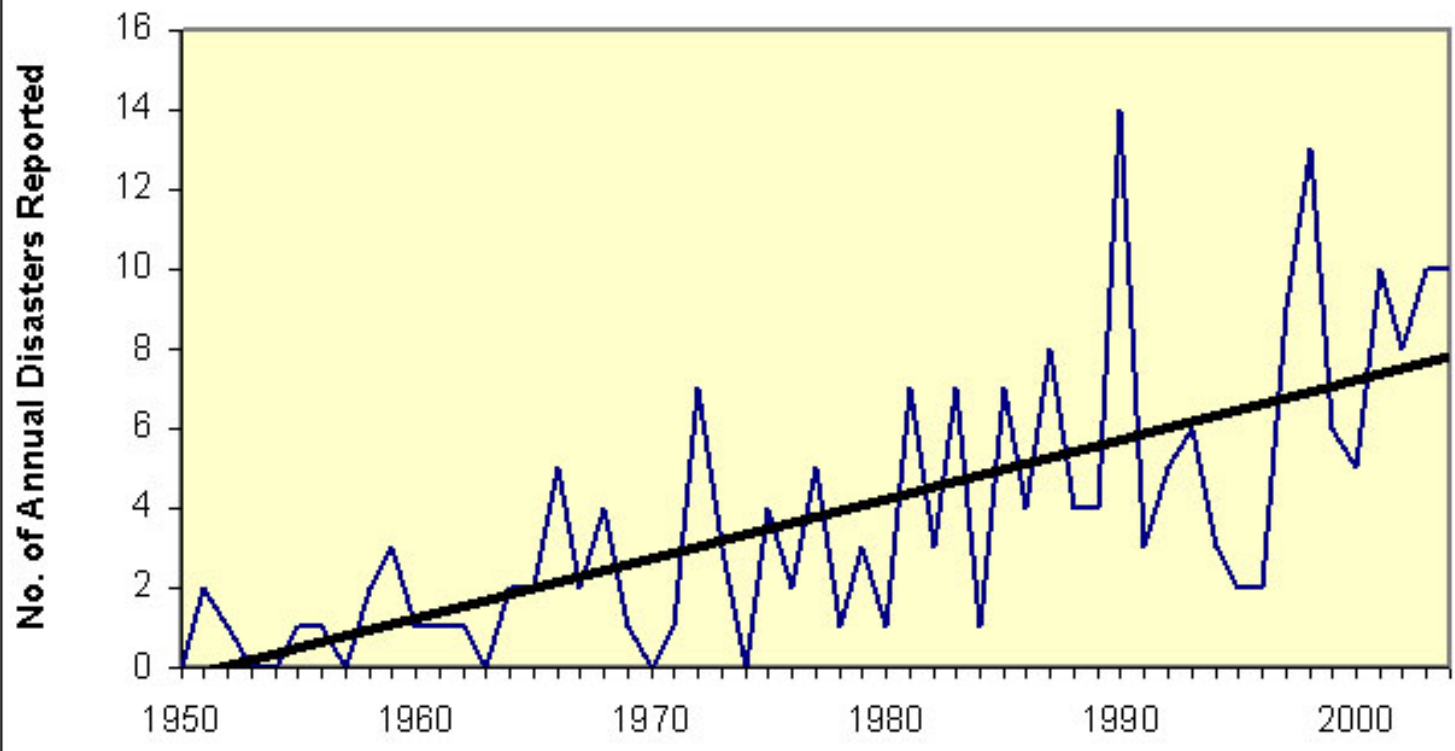


Source: Hales and Woodward, 1999

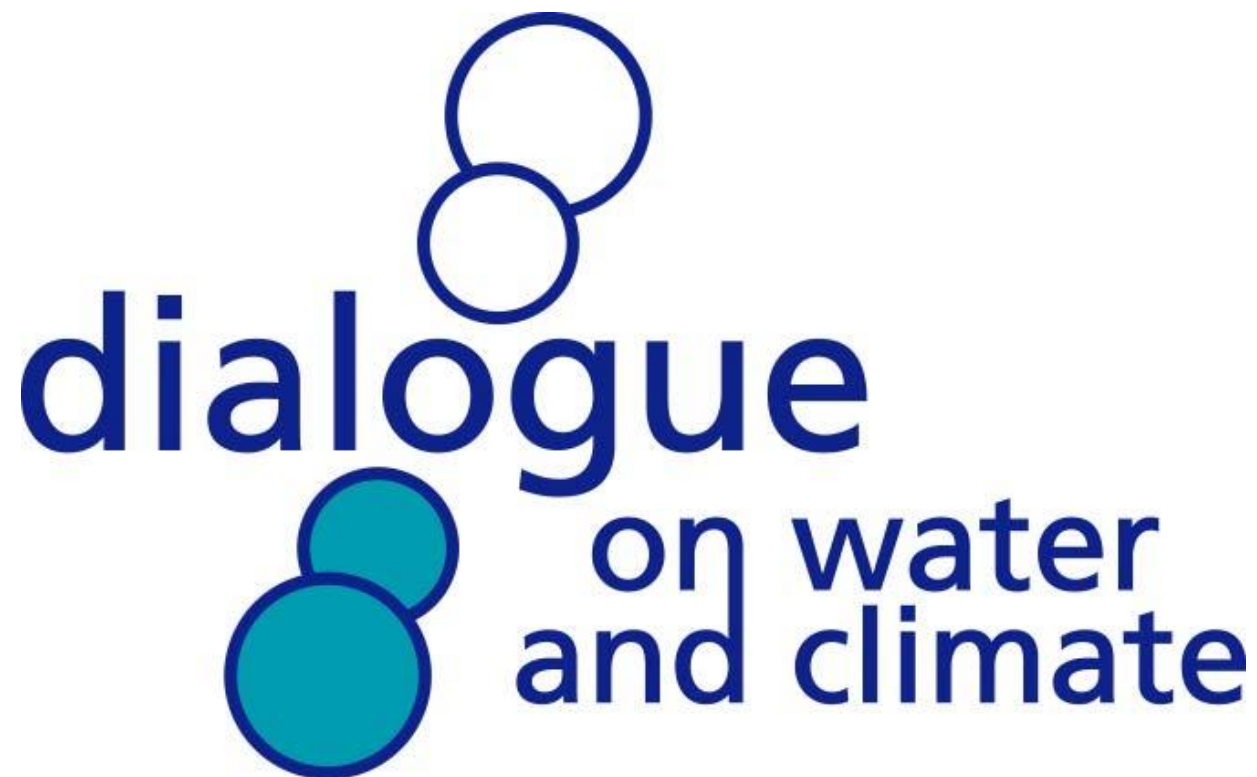
Frequency of Natural Disasters



Trends in No. of Disasters Reported in the Pacific Island Region, 1950-2004



Source: World Bank



Goal

*“To improve the capacity in water resources management to cope with the impacts of increasing variability of the world’s climate, by establishing a platform through which **policymakers and water resource managers** have better access to and make better use of **information generated by climatologists and meteorologists**”.*

Pacific Regional Action Plan on Sustainable Water Management

Thematic Areas

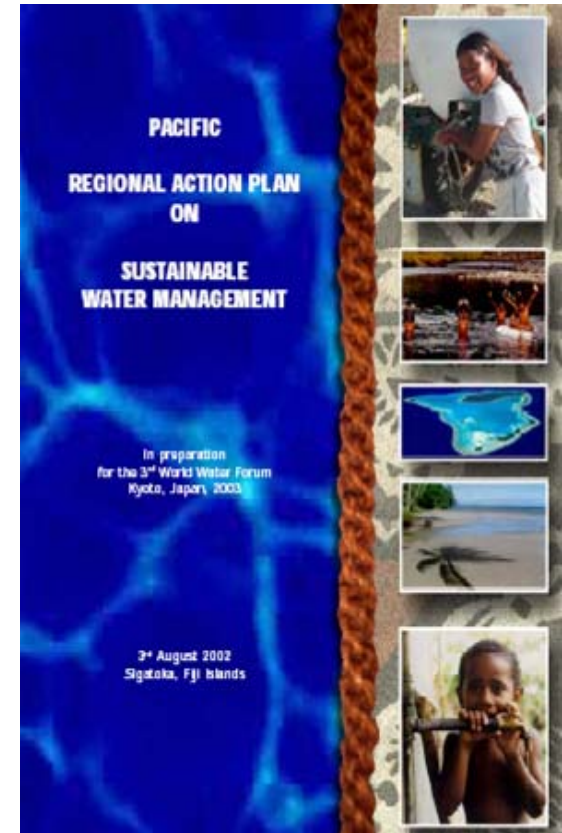
1. Water Resources Management
2. **Island Vulnerability**
3. Awareness
4. Technology
5. Institutional Arrangements
6. Financing

Key Messages

Priority Actions

- **Coping**
- **Adaptation**

Endorsed by 16 Heads of State, August 2003



Key Messages

1. Strengthen the capacity of small island countries to conduct **water resources assessment and monitoring** as a key component of sustainable water resources management.
2. There is a need for capacity development to enhance the **application of climate information** to cope with climate variability and change.
3. Change the paradigm for dealing with Island Vulnerability from disaster response to **hazard assessment and risk management**, particularly in Integrated Water Resource Management and Water Safety Planning.



Policy Brief on Water & Climate

1. If our global energy habits are the focus for mitigation, the way we **use and manage our water** must become the focus for adaptation.
2. Changes in climate will be **amplified** in the water environment.
3. Improving the way we **use and manage our water today** will make it easier to address the challenges of tomorrow.
4. The best approach to manage the impact of climate change on water is that guided by the philosophy and methodology of **Integrated Water Resources Management**.

Policy Brief on Water & Climate

5. There are **no simple technical** fixes.
6. In addressing water shortages, as much attention should be given to **managing demand** as to increasing supply, by introducing more efficient technologies as well as simply promoting a culture of conservation.
7. The challenge of “climate-proofing” the future requires that **adequate funds** are allocated today for water resource management.

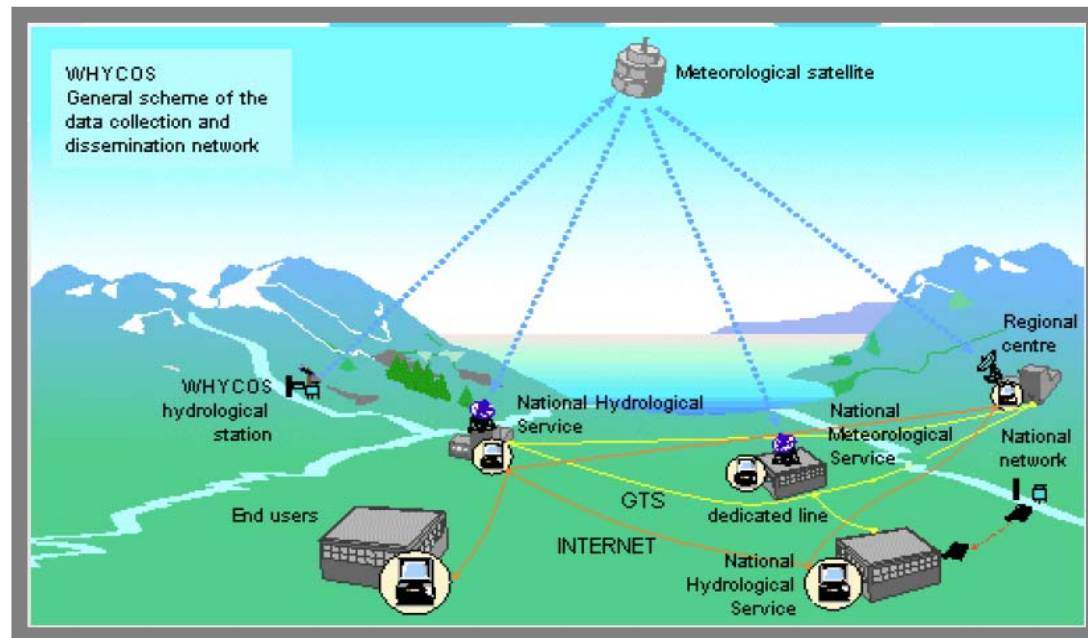
Source: GWP, Policy Brief No 5, Climate Change Adaptation and Integrated Water Resource Management (2007)

8. Adaptation measures should include **adequate attention for water quality especially with regards to drinking water safety.**



Pacific HYCOS

Hydrological Cycle Observing System



WHYCOS

WORLD HYDROLOGICAL CYCLE OBSERVING SYSTEM

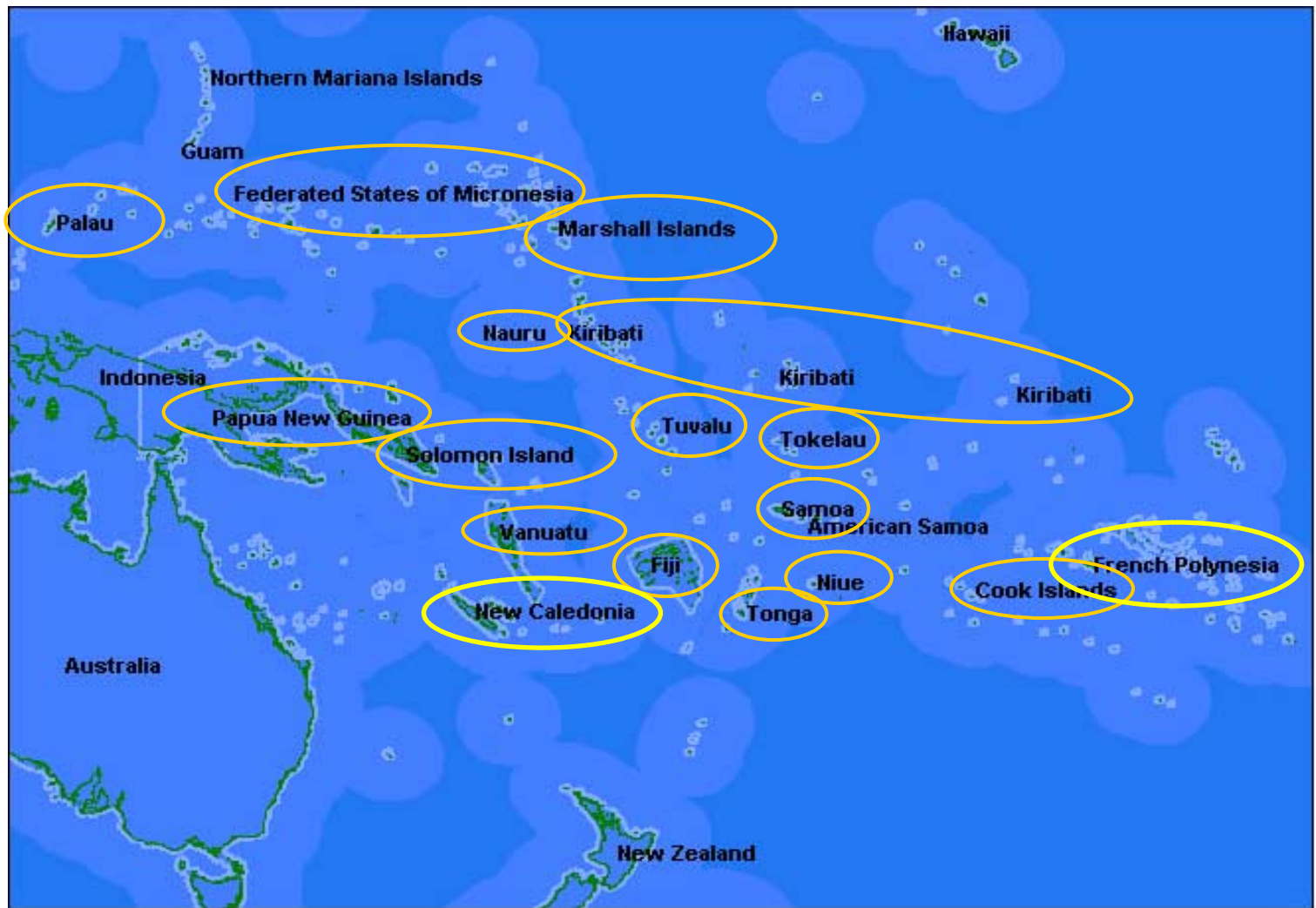


Pacific HYCOS Components

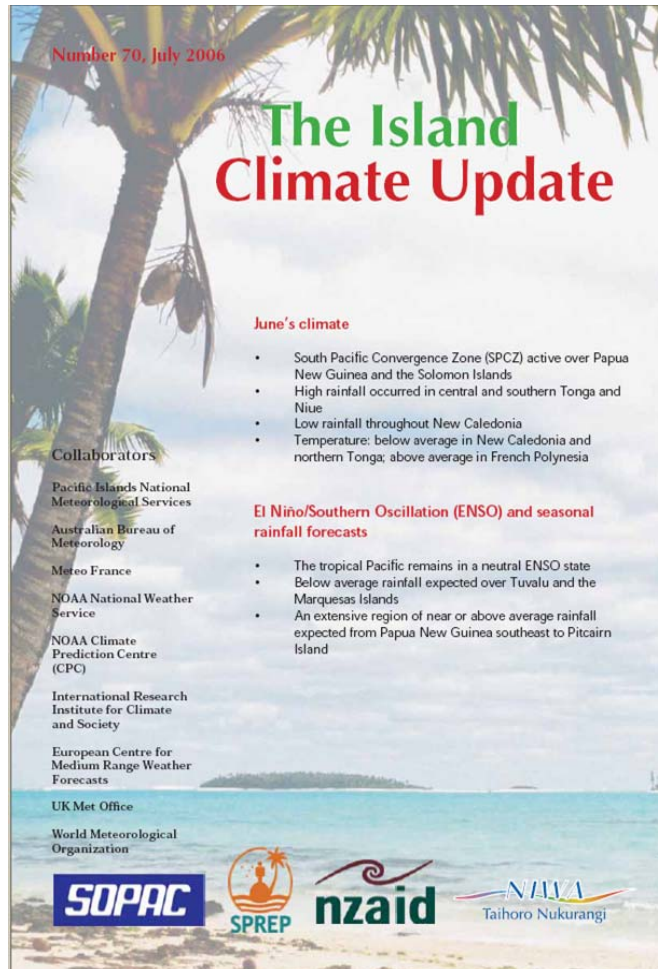
1. Flood forecasting capability
2. Water resources assessment in major rivers
3. Water resources databases
4. Drought forecasting
5. Groundwater monitoring and assessment
6. Water quality monitoring and assessment



Pacific HYCOS Countries



Island Climate Update and Prediction



ICU - To enhance planning processes in climate sensitive sectors through increased access to accurate climate forecasting information

PI-CPP - Pacific Island Climate Prediction Project (PI-CPP) is facilitating the linkage between NMSs and end users (including the water sector) for making climate-sensitive decisions through a Seasonal Climate Outlook prediction model for Pacific Island Countries



Preparedness and Awareness



FLOOD

REMEMBER the risk

RESPECT the river

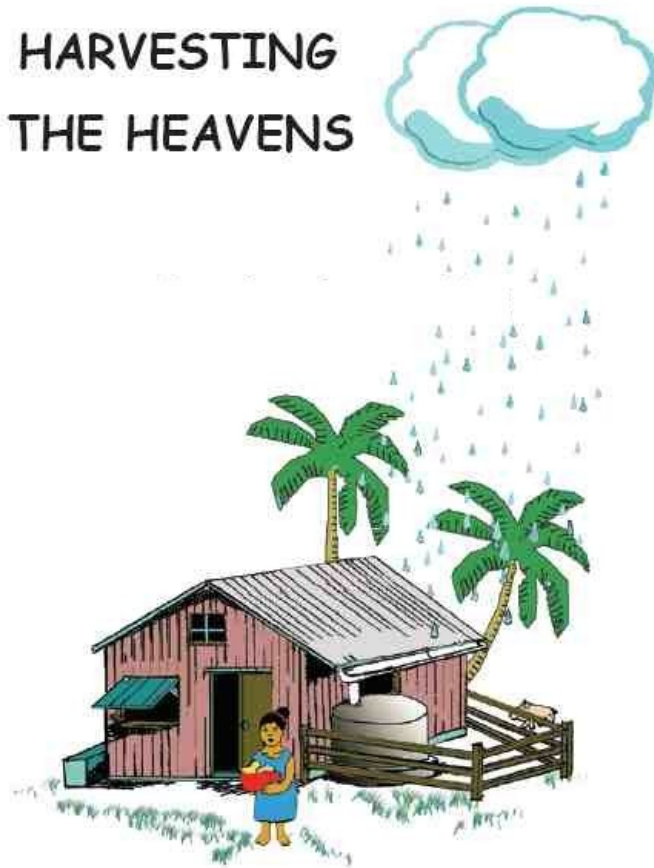
BE ALERT

BE PREPARED



Rainwater Harvesting

HARVESTING THE HEAVENS



"IWRM an intelligent strategy for adaptation" (GWP, 2007)

GEF-funded IWRM **Demonstration** Projects EU Water Facility-funded IWRM **Planning** Programme

Based on the Pacific Regional Action Plan the two programmes will promote IWRM in 14 Pacific Island Countries (2008-2012)

Adaptation to Climate

Drought proofing
Flood and Ecosystem Management
Reducing Environmental Stress
Managing and Monitoring Resources

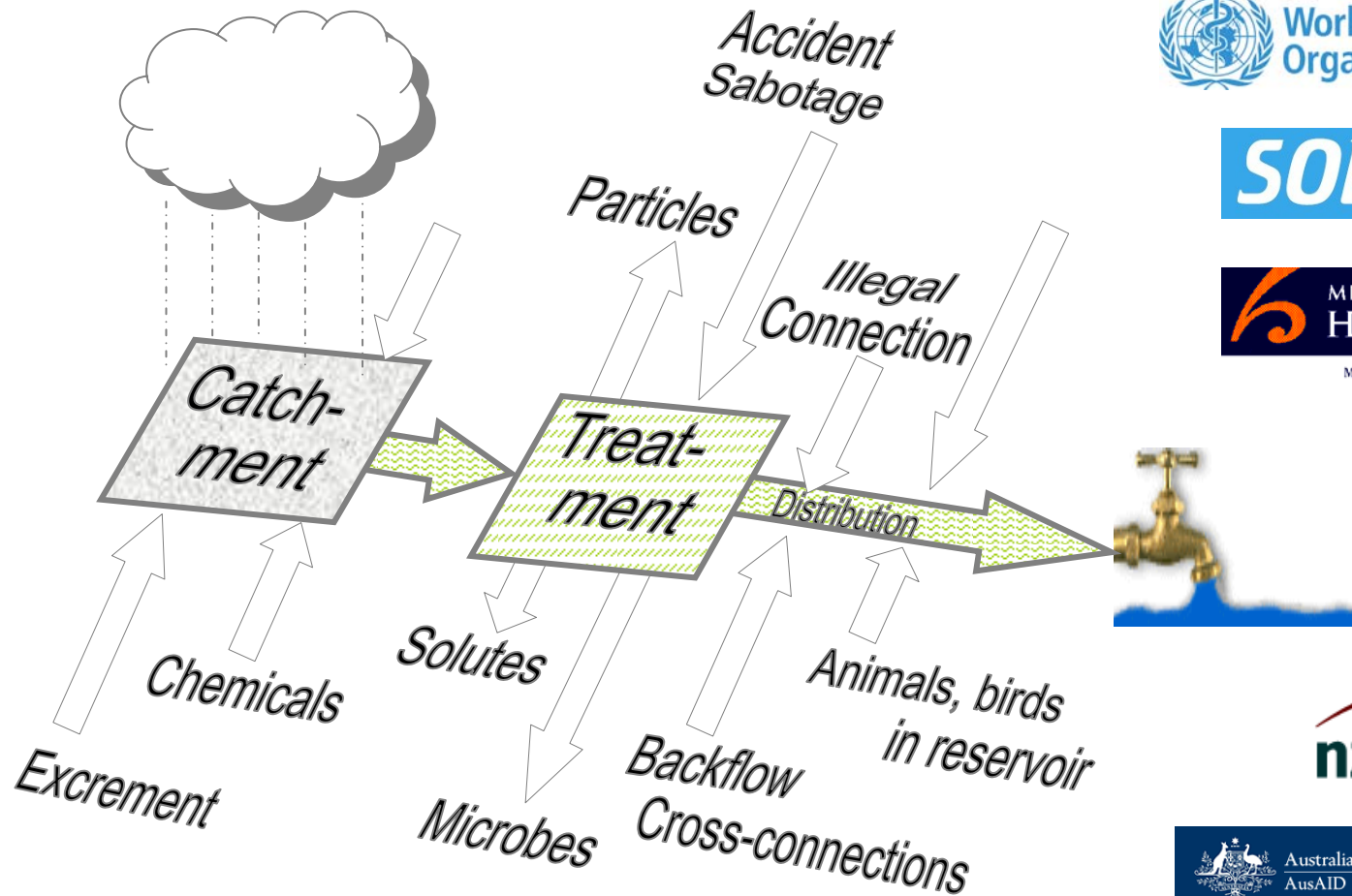
Total amount = 80 M USD
EU 2.8 M Euros
GEF 10 M USD
Co-fin > 60 M USD

Future Targets

2007 Submission Full Sized Project to GEF Council (April)
2008 Start IWRM Project implementation
2009 Complete National IWRM Plans



Risk Management through Water Safety Planning



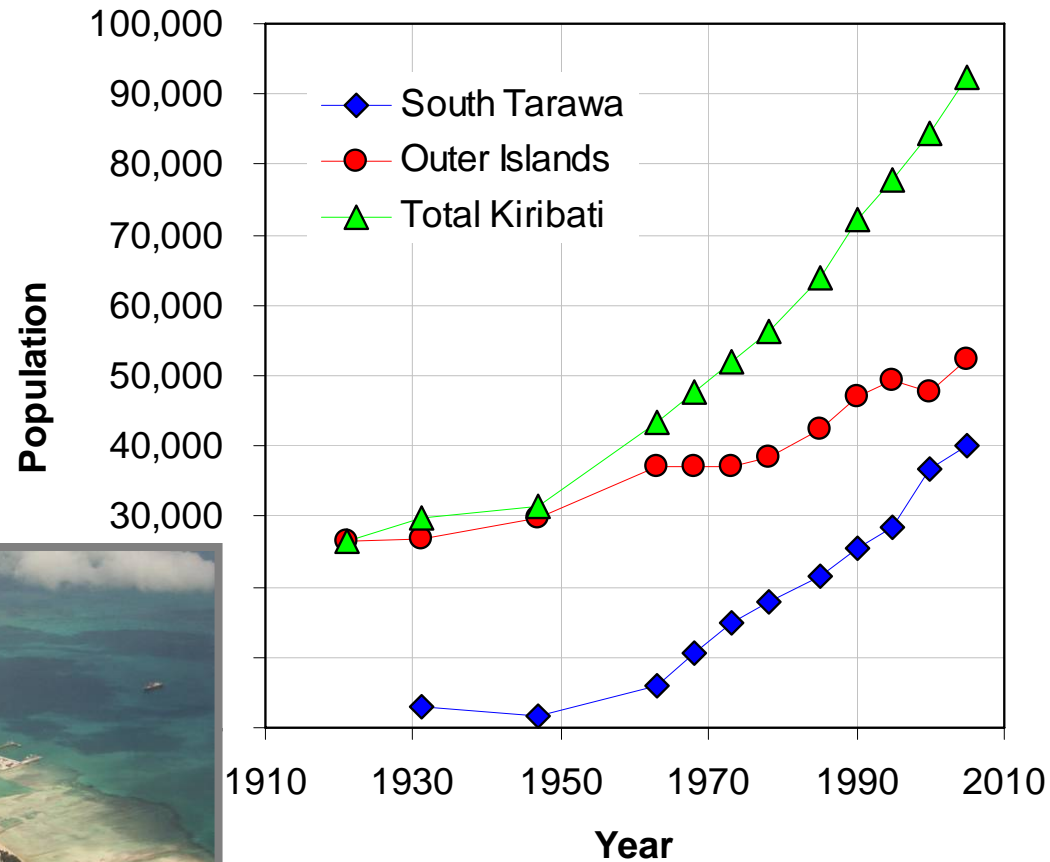


Kiribati Adaptation Programme

Fragile Groundwater Resources

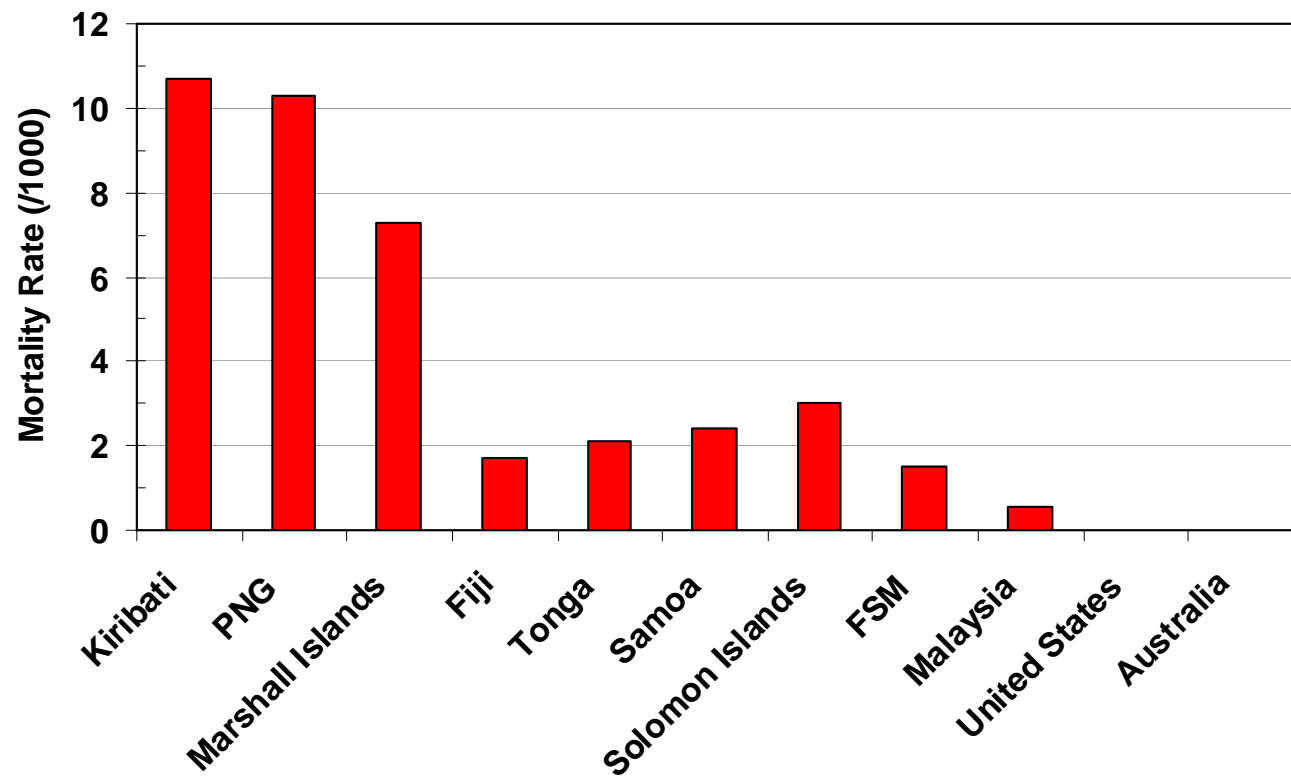


Urbanization and Inward Migration



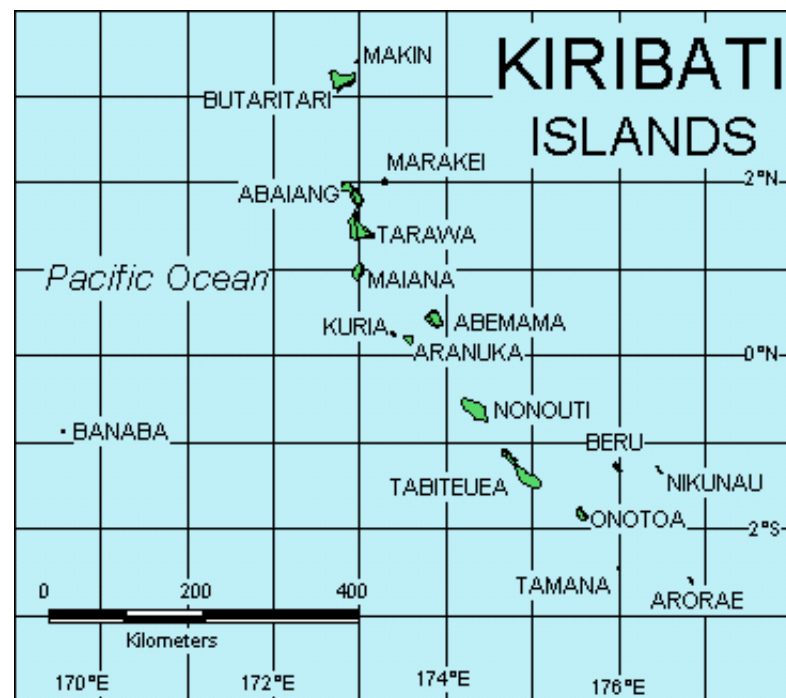
Diarrhoea

Infant mortality rate caused by Diarrhoeal diseases
(/1000)



Kiribati Adaptation Program, Phase I

- Extensive consultations throughout the Gilbert Group for the National Adaptation Program of Action, KAP I
- Identified 50 priority adaptation strategies
- **Seven out of the top ten priorities were water and sanitation related**



Kiribati Adaptation Programme, Phase II

Adaptation strategies covering 3 main themes:

1. *capacity strengthening*
2. *demand management*
3. *refurbishment, protection and supplementation of freshwater resources*

“No-Regrets Approach”

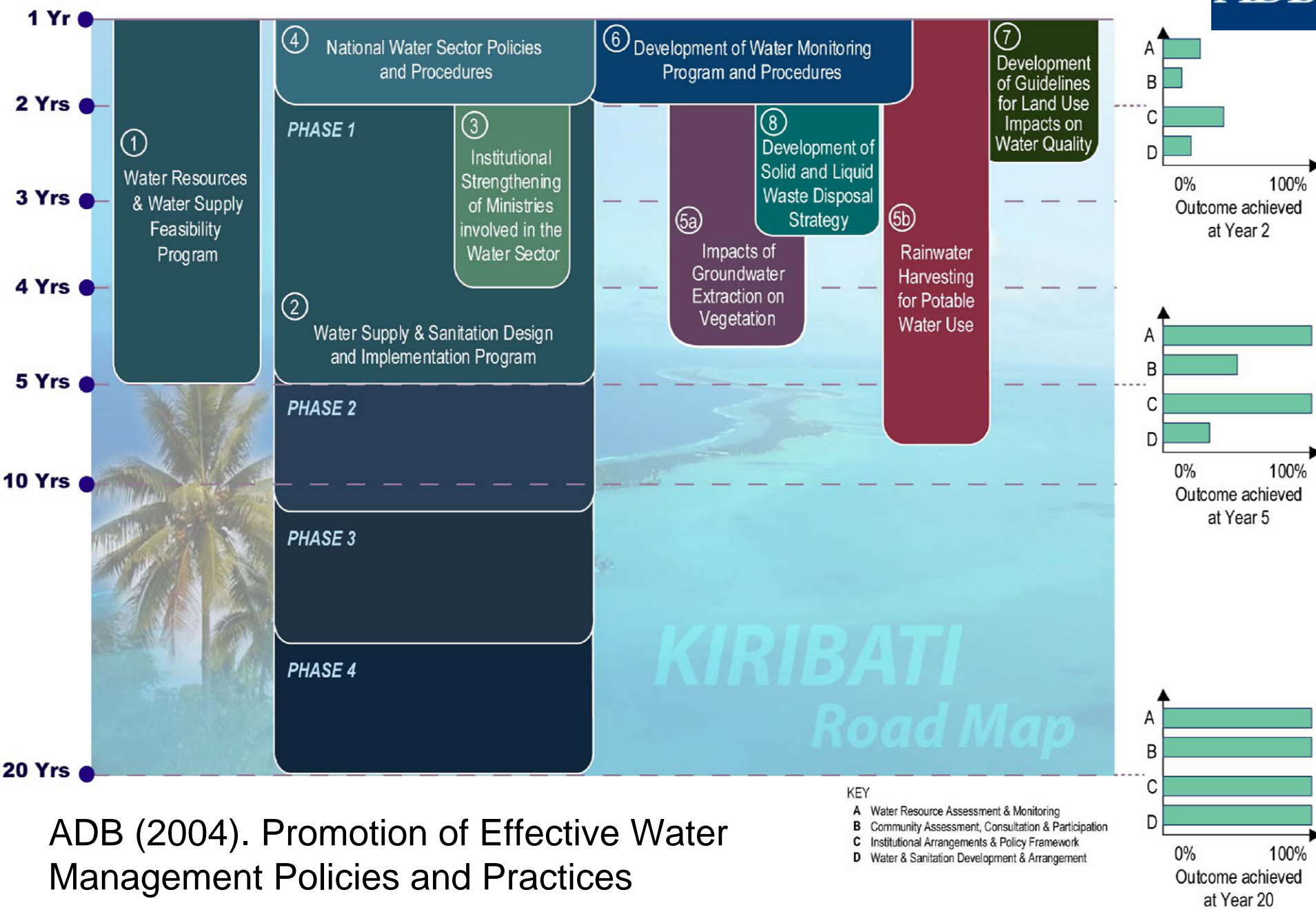


Kiribati Adaptation Programme, Phase II

1. Establish a sound **institutional basis** for the management of water and sanitation (policy, regulations, incentives, plans, institutions and organisational reform and assignment of responsibilities).
2. Improve **community participation** in water and related land management and planning and reduce conflicts.
3. Increase capacity to **manage water and sanitation** at the household and community levels.
4. Increase **capacity to analyse and predict** water-related extreme events.
5. Improve knowledge of available **water resources**, their **quality** and demand for them.
6. Improve **water conservation and demand management** strategies and reduce leakages.
7. Increase household and communal **rainwater harvesting** and storage.
8. **Protect groundwater** source areas from contamination.
9. Improve **sanitation** systems to minimise water use and pollution.

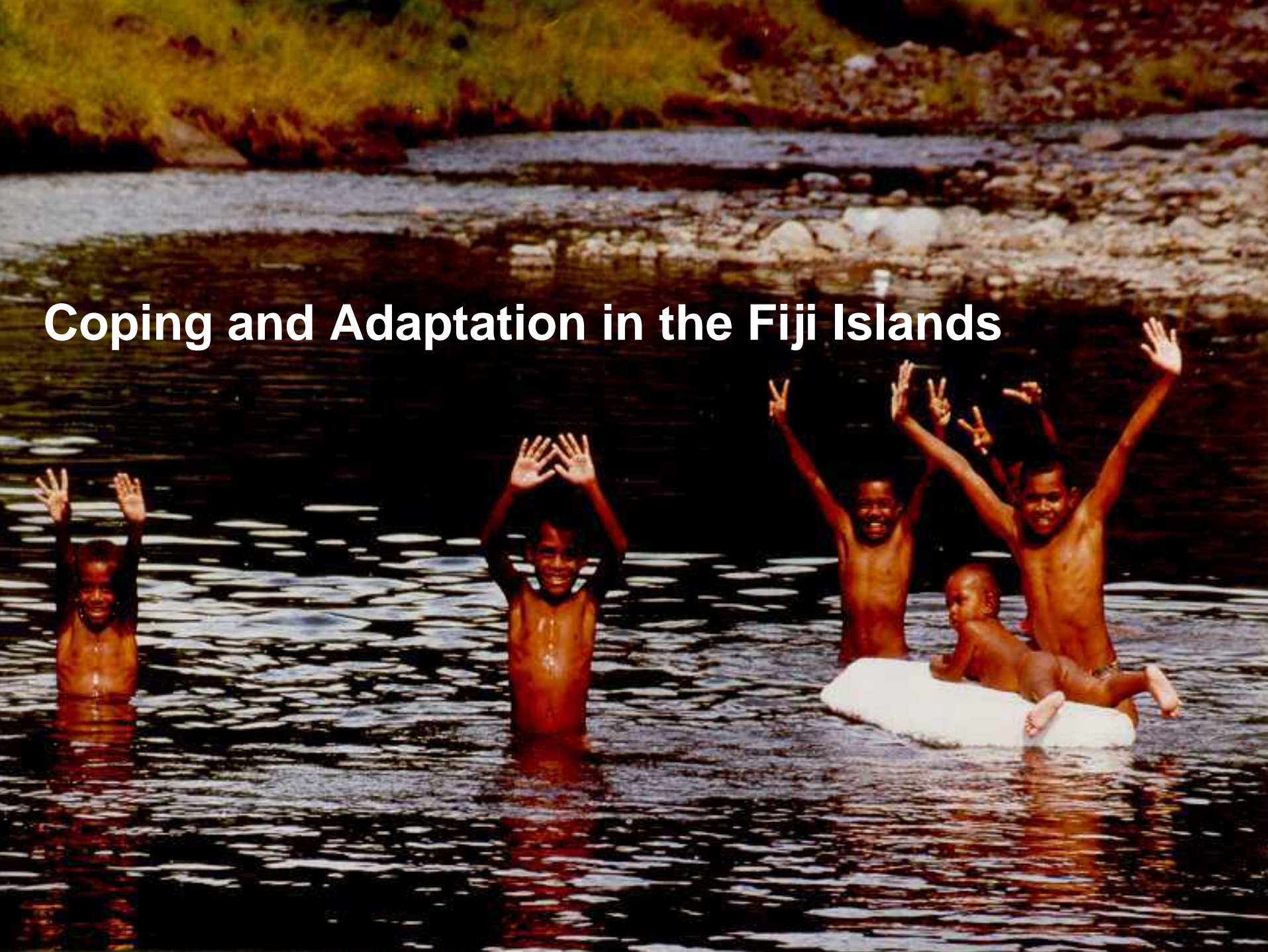


Kiribati Water Sector Road Map - 2004

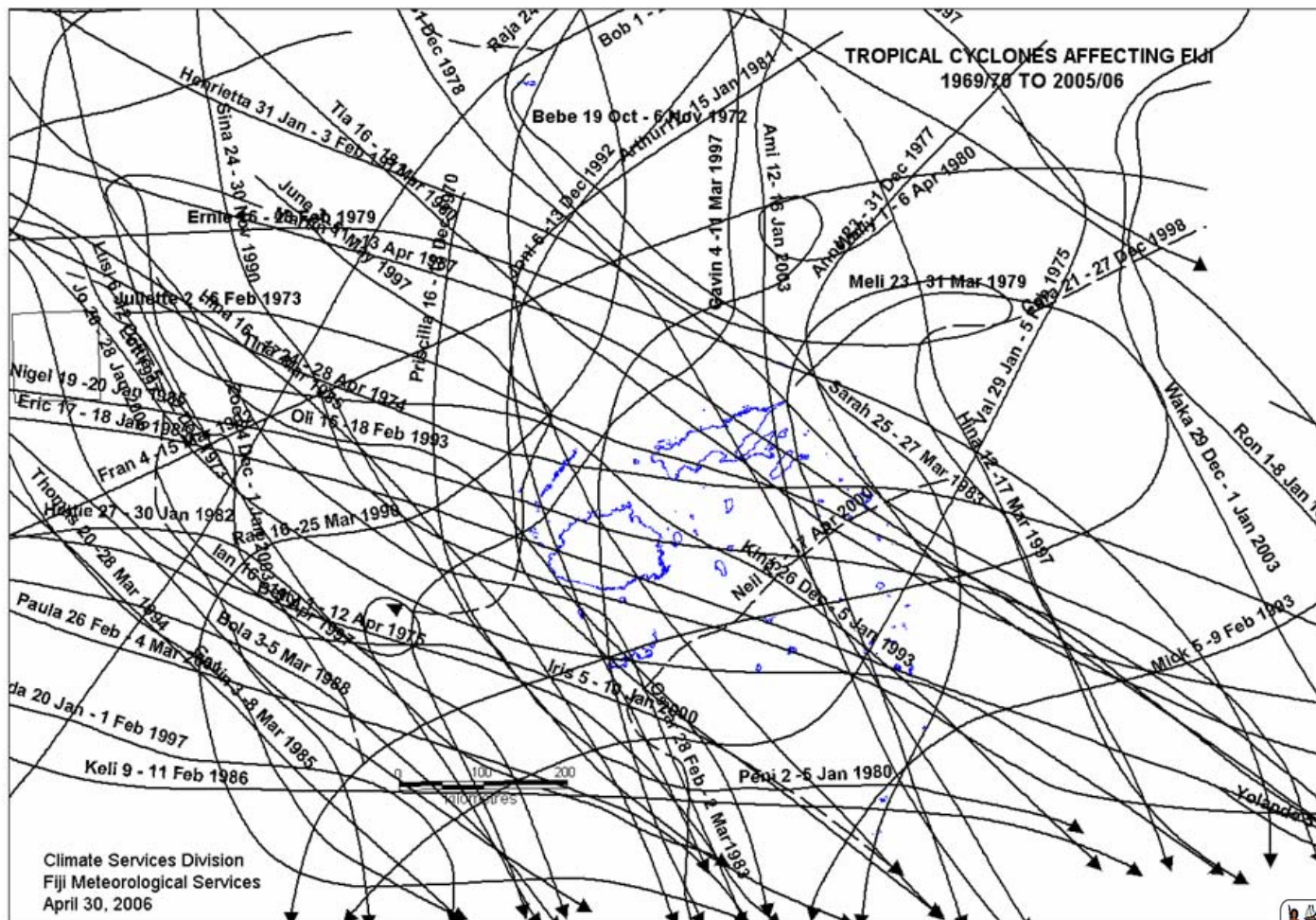


ADB (2004). Promotion of Effective Water Management Policies and Practices

Coping and Adaptation in the Fiji Islands

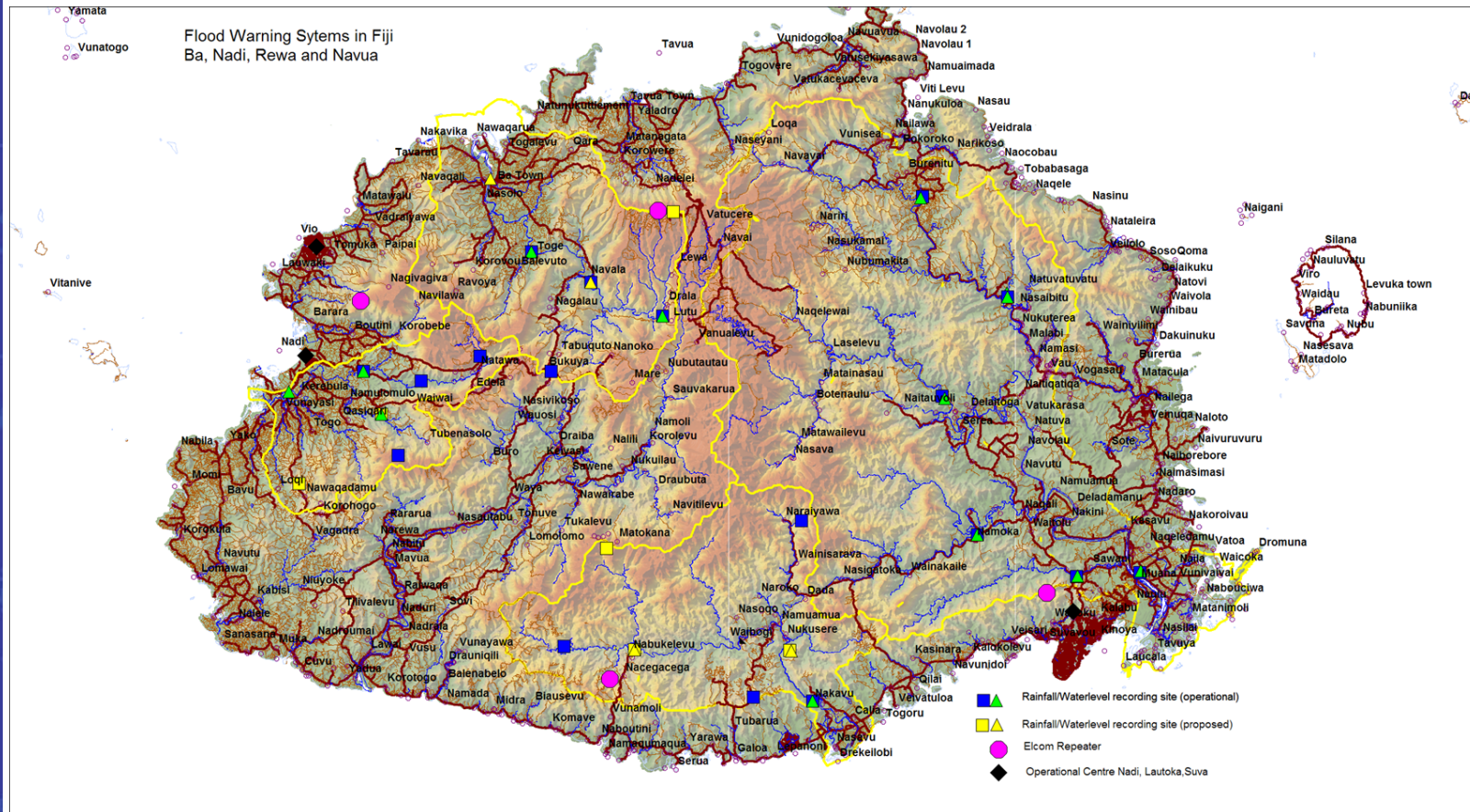


Cyclones Affecting Fiji Islands (1969-2006)

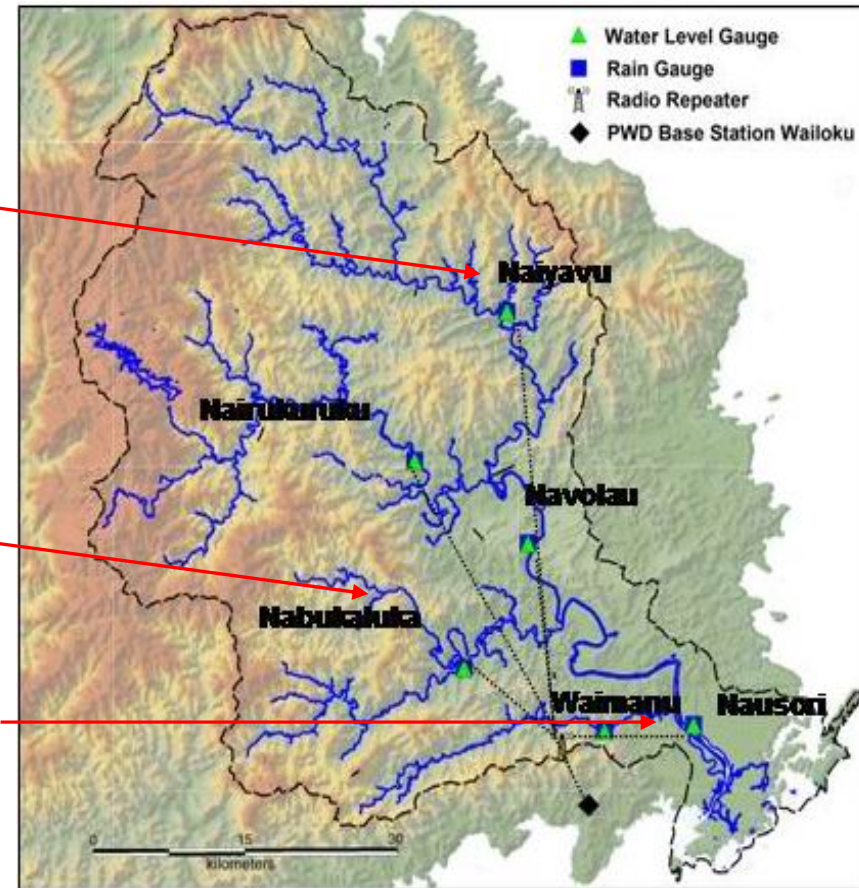




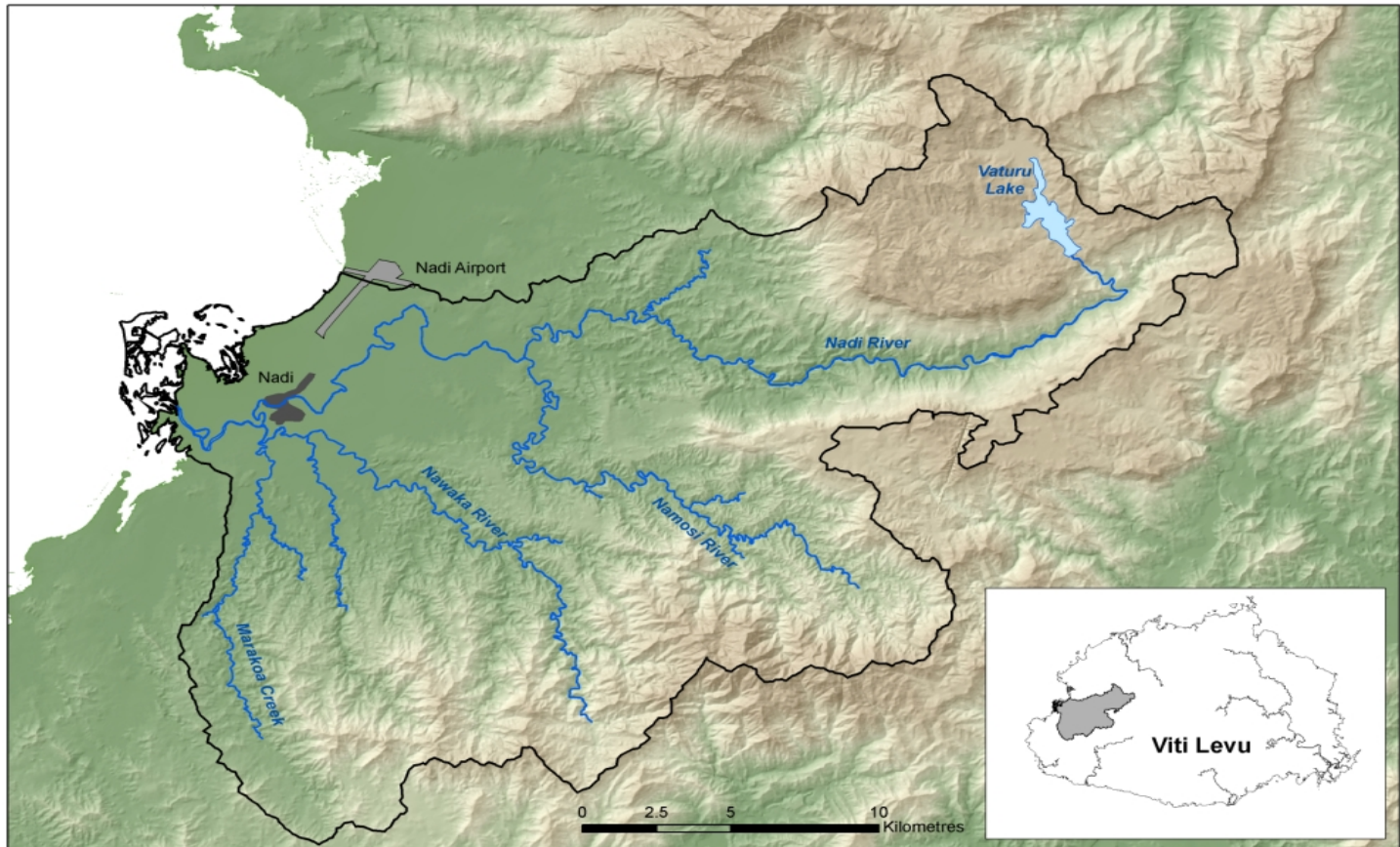
Flood Warning Systems, Viti Levu, Fiji



Upgrade FFS Rewa River, Viti Levu, Fiji



IWRM approach Nadi River Basin



Dependencies and stressors on water resources



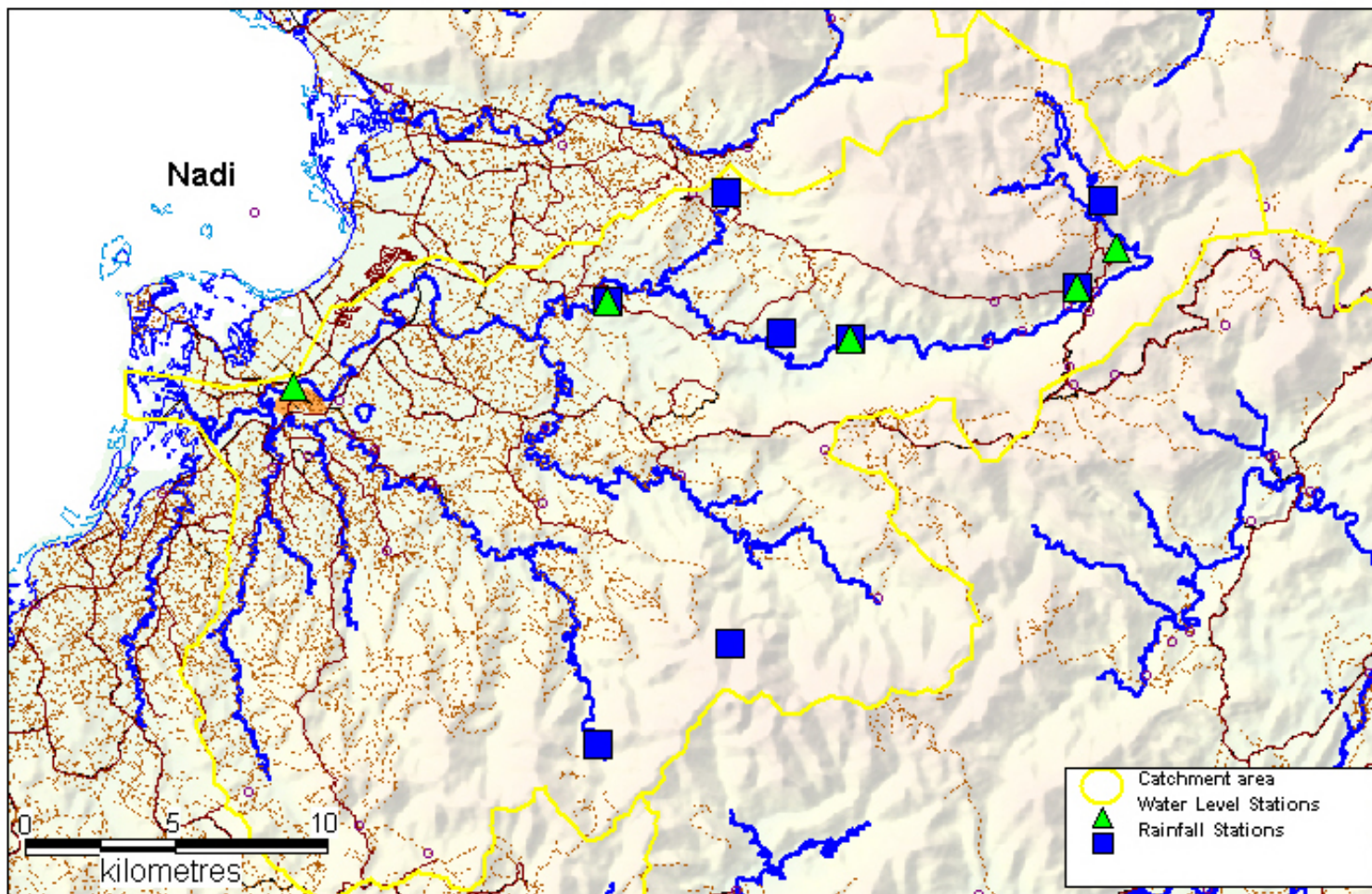
- Tourism
- Hydro power development
- Urbanisation
- Airport
- Rural landuse
- Ecosystem services

Increased need for Integrated Approach through Climate Change:

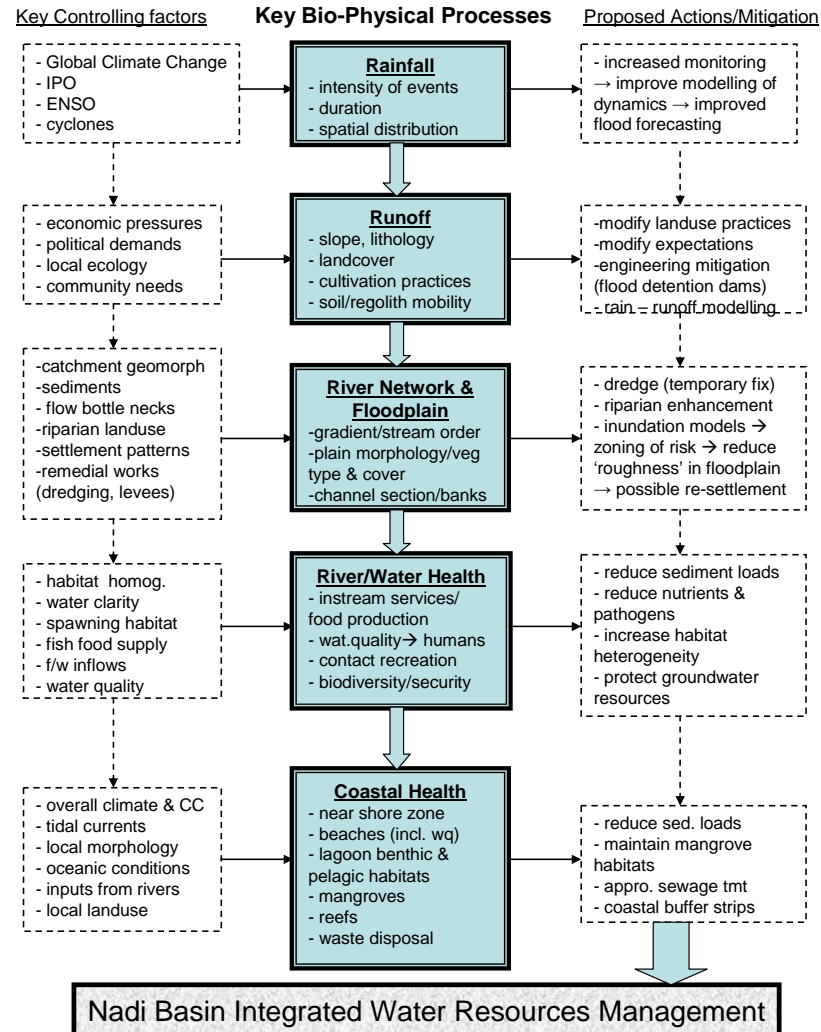
- intensification of high rainfall
- increased risk of cyclone events
- higher sea levels



Hydrological Regime of the Basin



Flood Processes and Possible Actions/Mitigation



Adaptation to Protect Human Health

- Barbados
- Bhutan
- Jordan
- Kenya
- Uzbekistan
- China
- **Fiji**

1. Health and meteorological data indicating an increasing trend of climate-sensitive diseases (CSDs) including respiratory, gastrointestinal, vector-borne and nutritional diseases
2. Fiji's location in the Pacific makes it vulnerable to both seasonal and interannual variations in climate, particularly rainfall
3. Fiji's further vulnerability to El Niño events and tropical cyclones
4. Meteorological data indicating an increasing frequency and severity of extreme weather and hydro-meteorological disasters (HMDs)



Adaptation to Protect Human Health

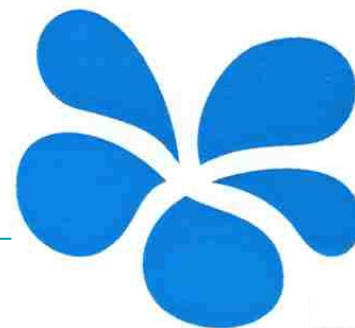
Pilot Programme to address current deficiencies in the adaptive capacity to deal with water-related adverse health impacts of climate change and climate variability in Fiji

Components:

1. relevancy of policies,
2. innovative mechanisms, and
3. strengthened capacity for related surveillance and response



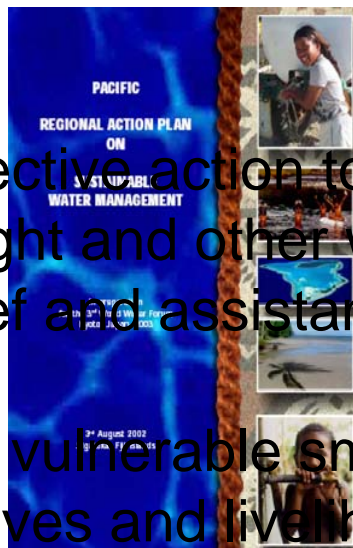
Asia Pacific Water Summit 3-4 Dec 2007



Message From Beppu

We, the leaders of the Asia-Pacific, coming from all sectors of our societies and countries, meeting at the historic inaugural Asia Pacific Water Summit, in the beautiful city of Beppu, in the hospitable Oita Prefecture of Japan, do hereby agree to:

- ❖ Take urgent and effective action to prevent and reduce the risks of flood, drought and other water-related disasters and to bring timely relief and assistance to their victims.
- ❖ Support the region's vulnerable small island states in their efforts to protect lives and livelihoods from the impacts of climate change.



Asia Pacific
Water Summit

