

Prepared by Heather Lazrus, Department  
of Anthropology, University of  
Washington

## A TUVALU ISLANDS CASE STUDY

The nine low-lying atolls and coral reef islands that dot the southwestern Pacific Ocean like slim crescent moons and stars on deep indigo water comprise the Pacific island country of Tuvalu. Inhabitants of each island, who have unique cultural and island identities, now face common challenges from the impacts of global climate change. Sea level rise, shifting precipitation patterns, and increased potential for extreme weather events such as storms and droughts, among other impacts, will require innovative and traditionally informed responses. Urgent attention and immediate action are required at international, national, and island levels to safeguard livelihoods, identities, and cultural heritage in the face of extreme sea change.

### TUVALU PAST AND PRESENT

Tuvalu is one of the smallest countries in the world in terms of land area, population and economy. The nine islands (From north to south: Nanumea, Niutao, Nanumaga, Nui, Vaitupu, Nukufetau, Funafuti, Nukulaelae, and Niulakita) total just 25.9 square kilometers of land area spread over a relatively massive 900,000 square kilometers of ocean. The Polynesian ancestors of contemporary Tuvaluans arrived in the islands an estimated 800 years ago (Munro 1982). The tenacity of Tuvaluans is reflected in their history of survival in the atoll environments and the robust, if relatively small, economy that has proven to be resilient following

national independence in 1978. The economy is founded on four cornerstones of migration, remittances, aid, and bureaucracy (known as a MIRAB economy), and is further bolstered by a successful trust fund. Natural resources, though less significant to the national economy, provide vital means of livelihood through subsistence practices of agriculture and reef and ocean fishing. The islands of Tuvalu are home to approximately 10,000 people currently living there and another 3,000-4,000 who presently live in Fiji, New Zealand, and elsewhere.



Funafuti Atoll 2006, Heather Lazrus

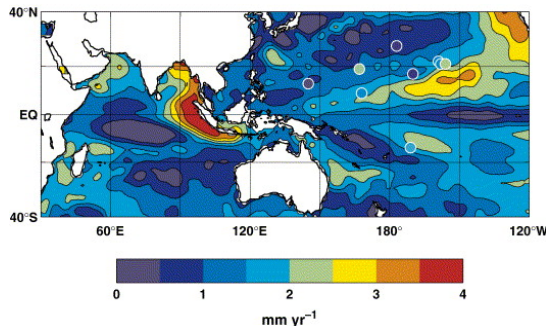
### CLIMATE CHANGE AND TUVALU

The atoll environment on which people depend for livelihoods, well-being, and place-based cultural heritage is deeply susceptible to alterations in the weather and ocean precipitated by climate change.

#### Sea level rise

The average elevation of Tuvalu's islands, which are a combination of true atolls and coral reef islands, is just one meter above sea level and only a few meters at the highest point. The porous coral structures are essentially all coast, dominated by the forces of the sea and continual erosion and deposition. The Intergovernmental Panel on Climate Change, in its recent Fourth Assessment

Report, predicts with very high confidence that sea levels will rise to exacerbate inundation, storm surge, and other coastal hazards. Sea level rise of 2 +/- 1 mm per year has already been measured (Church et al 2006).



Map of sea-level trends 1950-2001. From Church et al 2006.

### **Insufficient freshwater**

Sea level rise threatens the thin, uneven layer of freshwater (known as the Ghyben-Herzberg lens) that floats on the heavier saltwater permeating the islands in some places and is essential to human, animal, and plant life. Shifting precipitation patterns further endanger freshwater supplies. Tuvalu's location between 5°-10° south and 176°-179° east means it has a tropical maritime climate with fairly uniform daily average maximum and minimum temperatures of 31°C and 25°C respectively. Almost a third less rain, around 2,700mm, falls annually in the northern islands, which are also more prone to drought, than in the southern islands which receive around 3,500mm per year.

### **Extreme weather**

Although Tuvalu is generally considered to fall outside the southern cyclone belt, it suffered significant damage from Cyclone Bebe in 1972 and has experienced an increasing frequency of cyclones since the 1980s (NEMS 1997). People who have spent a lifetime

observing and interacting with the environment in Tuvalu are noticing that there are more strong winds now than before, and that they no longer come during the time of the year known for stormy winds arriving from the west.

### **Depleted marine resources**

The IPCC has high confidence that deterioration in coastal conditions, including higher temperatures and effects of ocean acidification, will adversely affect local reef and deep sea fisheries resources.

### **EFFORTS TO ADAPT**

One of the most significant climate change initiatives is Tuvalu's National Adaptation Programme of Action (NAPA) that has been drafted under the auspices of the United Nations Framework Convention on Climate Change. Fourteen projects areas have been identified to reduce the severity of adverse impacts of climate change under this initiative:

1. Coastal: Controlling of coastal land erosion and degradation through construction of coastal defenses, channel current breakers and green-belt planting with community focus.
2. Agriculture: Introducing salt-tolerant pulaka (traditional root crop) species and controlling the progressive coconut pest infestation and transmission.
3. Water: Improving household water storage capacity including water collection accessories, water conservation techniques and technologies.
4. Land/Coastal: Improving land-use planning and infrastructural development through adoption of environmental impact assessments, building codes, and GIS.

5. Water: Control water and vector borne diseases through public awareness and participation.
6. Fisheries: Establishment of marine conservation areas and effective legislation
7. Health: Promote access to quality potable water through monitoring
8. Health: Focus on the link between environment and human health
9. Fisheries: Promote adaptation of coastal shellfisheries
10. Disaster: Development of a resettlement and rescue safeguard plan
11. Agriculture: Promoting domestic salt-tolerant cash crop agriculture
12. Recording of climate adaptive traditional knowledge in Tuvalu.
13. Disaster: Capacity building on tidal waves and tsunami preparedness
14. Disaster: Establishment of weather and climate monitoring and information dissemination on all islands.

### LOOKING FORWARD

Tuvaluans have a robust tradition of survival in a harsh and always changing environment. The strength of adaptation efforts such as the NAPA will come from the melding of traditionally informed adaptation, local and scientific observations, and international support. The NAPA represents just one example of climate change adaptation. It's greatest potential may be in linking adaptation efforts across multiple scales of governance: from individual actions at the household level, to community identified priorities and projects, to nationally coordinated efforts, on up to international development cooperation.

In addition to rights to livelihood (Article 25.1) and place-based culture

(Article 22, 27.1), the Universal Declaration of Human Rights recognizes that 'everyone has the right to a nationality' (Article 15.1). Climate change impacts in Tuvalu challenge national sovereignty, political and cultural identities, and human welfare. Adaptations to climate change impacts need to be locally informed and culturally appropriate responses to these challenges.



Nanumea, Tuvalu 2006 Heather Lazrus

### References

- Church, J.A., N.J. White, and J.R. Hunter. 2006. Sea-level rise at tropical Pacific and Indian Ocean islands. *Global and Planetary Change*. 53:155-168.
- Mimura, N., L. Nurse, R.F. McLean, J. Agard, L. Briguglio, P. Lefale, R. Payet and G. Sem. 2007. Small islands. *Climate change 2007: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 687-716.
- Munro, D. 1982. *The lagoon islands: A history of Tuvalu 1820-1908*. PhD diss., Sydney: Macquarie University.
- Sharp, R. and B Henson. 1997. *Tuvalu national environmental management strategy*. Apia: South Pacific Regional Environment Programme.
- Tuvalu National Adaptation Programme of Action Draft. 2006. Ministry of Natural Resources, Lands and survey, Department of Environment. Available at <http://unfccc.int/resource/docs/napa/tuv01.pdf>
- Universal Declaration on Human Rights, G.A. Res. 217A, at 71, U.N. GAOR, 3d Sess., 1<sup>st</sup> plen. Mtg., U.N. Doc A/810 (Dec. 12, 1948) Available at <http://www.un.org/Overview/rights.html>