Title: Assessing environmental livelihood security in coastal mangrove ecosystems using remote sensing

Susceptibility to climate variability and extremes is acutely felt by many natural resource-dependent coastal communities of the South Pacific. Livelihood and food security in these environments are inextricably linked with coastal ecosystem health. However, the water, energy and food requisites for environmental livelihood security need to be understood at localised spatio-temporal scales. Remote sensing was used to examine the influence of biophysical interactions operating in inter-tidal mangrove environments on local livelihood. In this study we assessed how the spatial distribution of mangrove ecosystem services influences community resilience to chronic environmental stressors such as sea level rise. Sentinel-2 NDVI time-series analysis was used to characterise vegetation phenology across the inter-tidal elevation profile. Household survey data, participatory mapping and causal loop diagrams provided data on subsistence and cash income from mangrove ecosystems, firewood extraction patterns, fisheries resources and community perceptions of system processes impacting mangrove health. Linking remotely sensed detection of mangrove change with livelihood strategies, described by communities, enabled a spatially explicit assessment of contextual factors influencing socio-ecological resilience within these coastal systems.

Bio

Eleanor Bruce is an Associate Professor in the School of Geosciences at the University of Sydney and Assistant Deputy Director of the ARC Training Centre for CubeSats, UAVs and Their Applications. Her work focuses on understanding coastal system response to climate variability. Communities living within low-lying coastal environments are particularly vulnerable, she investigates the physical impacts of climate stressors on their livelihoods. This involves studying the geographical dimensions of coupled human-environment systems and underlying biophysical processes. She uses multiple exploratory tools including high resolution remote sensing, spatial modelling and *in situ* field observation to understand key drivers of coastal change.