The Role of Climate Science Informing Integrated Climate Adaptation and Disaster Risk Reduction and Management in the Western Tropical Pacific
Name of the Session: Innovative tools for adaptation and mitigation

The interaction of extreme weather events and longer term climate change with vulnerable human and natural systems is a major cause of risk from natural disasters in the western tropical Pacific. It is likely that human influences have already led to climate changes causing increased incidence of extreme temperatures and precipitation at the global scale, and increased extreme coastal high water due to mean sea level rise in the Pacific. It is therefore well recognized that integration of climate adaptation (CCA) and disaster risk reduction (DRR) and management for natural disasters into national sustainable development planning and decision-making processes is vital at all levels. Climate science has a key role to play in the implementation of both regional and national strategies for CCA and DRR through providing enhanced scientific understanding of climate risks (past, current and future), as well as supporting tools, technologies, communication products and capacity development. Such knowledge can generate science-based evidence to inform decision-making. In this context, the AusAID funded Pacific Climate Change Science Program (PCCSP) and the Pacific-Australia Climate Change Science and Adaptation Planning Program (PACCSAP), in collaboration with 14 Pacific island countries, SPC and SPREP, has achieved the following major outcomes relevant to underpinning planning and policy development in CCA and DRR:

- *enhanced knowledge of extreme weather and climatic events and of underlying climate processes to improve confidence in climate change projections.*
- *produced a number of publications, web-based tools, workshops, mentoring attachments and training courses to build the capacity of meteorological services to communicate climate information to stakeholders.*
- *Seasonal prediction tools may improve planning and risk reduction strategies for coming seasons, and include a Tropical Cyclone Seasonal* Forecast*, and predictions of extreme ocean temperatures and the associated risk of coral bleaching. Seasonal predictions of sea level currently being developed have the potential to be combined with tide predictions to provide early warning systems for sea level extremes and associated flooding of vulnerable coastlines.*
- *For decision-making that has longer-term implications, data tools have been developed to provide historical information about tropical cyclones, rainfall and temperature, and projected changes in climate variables over the 21st century are provided for each country in the Pacific Climate Futures tool.*
- *Research is now focusing on delivering application-ready data tailored for hazard, vulnerability and risk assessment, such as providing cyclone projections for use in the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) assessment of future cyclone damage (to be presented as a separate abstract). The role of climate science informing disaster risk reduction and management is dependent on access to functional decision support frameworks such as PCRAFI for* effectively and efficiently *extending knowledge to sectoral stakeholders for application at regional, national and community scales. Ultimately, such an informed approach has the potential to enhance community resilience and to facilitate sustainable development in the face of ongoing climatic and environmental threats.*

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