

Pacific Wave Models Assist In Coastal Adaptation Planning

Written by Administrator

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Thursday 19 September 2013, Secretariat of the Pacific Community (SPC), Suva, Fiji – On 19 September, guest lecturer

[Dr. Tom Durrant](#)

of the Australian Bureau of Meteorology presented his wave modelling research to students at USP Marine Science Campus. This new research provides a better understanding of ocean wave movements across the Pacific and will be used by SPC's Applied Geoscience and Technology (SOPAC) Division to enhance development planning and disaster management in the region.

According to Durrant, “Waves and wave climate have significant implications for coastal security, marine resources, and alternative energy options. Waves on the ocean, Durrant explained, range in period from tidal waves, with periods of 12 and 24 hours, to Tsunamis, with periods around 15 minutes, to wind driven waves with periods of around 2 to 20 seconds.

In the case of wind driven waves, the focus of Durrant's work, the longer the wind blows over a greater area, the bigger the waves. Pacific Islands are affected not only by local, short period, wind-generated waves but also by long period swells generated by far away storms.

Long period swell waves are fast-moving waves caused by distant storms that can pile up when they reach land. Such waves have caused widespread flooding, damage and loss of life in the Pacific, for example, in the Mortlock Islands of Papua New Guinea in 2009 and in the Marshall Islands in 2012. “These events haven’t been studied much because of lack of data,” said

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Durrant.

To this end, Durrant has been working under the AusAid-funded Pacific and Australia Climate Change Science and Adaptation Planning (PACCSAP) Programme to develop wave models for the Pacific that can in turn be used to assess wave-induced coastal inundation events in detail.

According to Durrant, scientists would ideally use stationary observation buoys to measure wave action in the Pacific, but buoys are very expensive to deploy and maintain and can only give information about a single point. There are currently no such monitoring buoys in the Pacific Islands.

An economical alternative, wave models are essentially computer programmes. By inputting historical wind data, scientists can generate synthetic wave data to fill in observation gaps. They are not perfect, but Durrant's models provide good coverage with proven accuracy.

To ensure that the models are understood and applied regionally, Durrant is running a series of workshops with oceanographers and marine science experts at SPC's SOPAC Division over the next week. The wave models and data are openly available to any interested students, public or private sector organizations via request to the [SOPAC Geonetwork](#) online database.

In addition, the Australian Bureau of Meteorology's Climate and Oceans Support Programme is currently developing an online Ocean Portal which will serve as a one-stop-shop for Pacific Ocean data and information.

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