



## Developing an enhanced tropical cyclone data portal for the Southern Hemisphere and the Western Pacific Ocean

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Tropical cyclones are the most extreme weather phenomena which severely impact coastal communities and island nations. There is an ongoing research (i) on accurate analysis of observed trends in tropical cyclone occurrences, and (ii) how tropical cyclone frequency and intensity may change in the future as a result of climate change. Reliable historical records of cyclone activity are vital for this research.

The Pacific Australia Climate Change Science and Adaptation Planning (PACCSAP) program is dedicated to help Pacific Island countries and Timor Leste gain a better understanding of how climate change will impact their regions. One of the key PACCSAP projects is focused on developing a tropical cyclone archive, climatology and seasonal prediction for the regions. As part of the project, historical tropical cyclone best track data have been examined and prepared to be subsequently displayed through the enhanced tropical cyclone data portal for the Southern Hemisphere and the Western Pacific Ocean.

Data from the Regional Specialised Meteorological Centre (RSMC) Nadi, Fiji and Tropical Cyclone Warning Centres (TCWCs) in Brisbane, Darwin and Wellington for 1969-1970 to 2010-2011 tropical cyclone seasons have been carefully examined. Errors and inconsistencies which have been found during the quality control procedure have been corrected. To produce a consolidated data set for the South Pacific Ocean, best track data from these four centres have been used. Specifically, for 1969-1970 to 1994-1995 tropical cyclone seasons, data from TCWCs in Brisbane, Darwin and Wellington have been used. In 1995, RSMC Nadi, Fiji has been established with responsibilities for issuing tropical cyclone warnings and preparing best track data for the area south of the equator to 25°S, 160°E to 120°W. Consequently, data from RSMC Nadi have been used as a primary source for this area, starting from the 1995-1996 tropical cyclone season. These data have been combined with the data from TCWC Wellington for the area 25°S to 40°S, 160°E to 120°W and with the data from TCWCs in Brisbane and Darwin for the area south of the equator to 37°S, 135°E to 160°E.

In addition, tropical cyclone best track data for the North-West Pacific for 1977-2011 seasons prepared at RSMC Tokyo and for the South Indian Ocean for 1969-2011 prepared at RSMC la Réunion have been added to the dataset. As a result, new design of the Southern Hemisphere/Pacific Tropical Cyclone Data Portal (<http://www.bom.gov.au/cyclone/history/tracks/>) incorporates best track data for the Western Pacific both south and north of the equator and for the South Indian Ocean. The portal has been developed using the OpenLayers web mapping library. Main features of the portal include dynamic map navigation, presenting detailed cyclone information for a selected region in the Southern Hemisphere and North-West Pacific and displaying changes in tropical cyclone intensity over the lifetime of a cyclone. One of the unique features of the portal is its enhanced functionality for spatial and temporal selection for cyclones in selected areas (e.g. economic exclusion zones of the countries).

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