# Wave ensemble forecast system for tropical cyclones in the Australian region

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Wave forecasts for North West Western Australia (NW WA) issued by the Bureau of Meteorology have previously been limited to products from deterministic operational wave models forced by deterministic atmospheric models. The wave models are run over global (resolution 27.5km) and regional (resolution 12km) domains with forecast ranges of 168h and 72h respectively. Because of this relatively coarse resolution (both in the wave models and in the forcing fields), the accuracy of these products is limited under tropical cyclone (TC) conditions.

Given this limited accuracy, we have developed a new ensemble-based wave forecasting system for the NW WA region. To achieve this, a new dedicated 8-km grid was nested in the global wave model. Over this grid, the wave model is forced with winds from a bias-corrected ECMWF atmospheric ensemble (240h lead time) that comprises 51 ensemble members to take into account the uncertainties in location, intensity and structure of a tropical cyclone system. The system is designed to operate in real time during the cyclone season. This presentation will outline the system, describe some of the main issues encountered and present the verification of specific events.