Air-sea interaction between tropical depression (TD) Hato and Pakhar with North West Luzon Coastal Current (NWLCC) as simulated by the Coupled Ocean\Atmosphere Mesoscale Prediction System (COAMPS) model

ABSTRACT

The atmosphere and ocean interact with each other through the exchange of heat, momentum, mechanical energy, mass and water across the air-sea interface. Tropical cyclone (TC) is known to be one of the products of this interaction. In August of 2017, TD Hato and Pakhar passed near the vicinity of Northwest Luzon, where an oceanographic cruise was then being conducted to study the Northwest Luzon Coastal Current (NWLCC). The response of the ocean due to TC passage as well as the change in tropical cyclone (TC) intensity as it passed the vicinity of the NWLCC will be examined using cruise, satellite and Coupled Ocean\Atmosphere Mesoscale Prediction System (COAMPS) model. Recent studies increasingly highlight the importance of coupled air-sea models, like COAMPS, in better representing weather and climate systems. However, forecasts from coupled-atmosphere models remain underutilized, particularly in the Philippines. The purpose of this study is to determine how the COAMPS model was able to simulate the two TC events and validate it with gathered cruise and satellite data. Experiments with COAMPS may also be conducted in order to elucidate the importance of considering interaction between air and sea in understanding weather and climate processes.

Keywords: COAMPS, cold wake, air-sea interaction, tropical depression