

## High-Resolution Simulation of Super Typhoon Nepartak (2016)

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Typhoon Nepartak was the first category 5 tropical cyclone of 2016 and had significant social impacts. It formed as a tropical depression on July 2 near Guam in the western Pacific Ocean and strengthened to tropical storm the following day. It had a rapid intensification (RI) with the decrease in minimum sea-level pressure (MSLP) from 970 hPa at 00Z 5 July to 910 hPa at 06Z July 6, followed by a secondary eyewall formation (SEF), as shown from satellite observation before making landfall in Taiwan on July 8. The storm hammered Taiwan with 135 knots and a huge torrential rain, causing three deaths and 142 injuries as reported. It made second landfall in Fujian, China, on July 9 with a 65 knots wind speed, causing more than 188 deaths or missing and the most devastating flooding since 1998. The super typhoon Nepartak is a very interesting, while challenge case to study.

The high resolution simulations are conducted using the Coupled Ocean/Atmosphere Mesoscale Prediction System –Tropical Cyclone (COAMPS-TC) to understand the RI, SEF, eyewall replacement cycle (ERC) processes, and the associated heavy rainfall. The detailed diagnostics of the inner-core eyewall structures and the associated strong convection during RI and ERC will be performed to examine and understand the dynamics and physics. Detailed results will be presented at the conference.

Keywords: Tropical Cyclone, Typhoon, Rapid intensification