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Wind waves generated by Typhoon Vamei in the southern South China Sea

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Typhoon-generated waves are of interest scientifically for understanding wind-wave interaction physics, as well as operationally for predicting potential hazards. The Typhoon Vamei formed in the southern South China Sea (SCS) was one of the rare typhoon events that occurred near the equator. The typhoon developed on 26 Dec 2001 at 1.4°N in the southern SCS, strengthened quickly, made a landfall along the southeast coast of Malaysia and dissipated over Sumatra on 28 Dec 2001. With the wind speeds were as high as 36 m/s in the southern SCS, this event has significantly affected the atmospheric and oceanic conditions over the region. In the present study, we aim at understanding the wind wave characteristics induced by Vamei along the Sunda Shelf and the southeast coast of Malaysia. Wind velocity vectors over the southern SCS have been simulated for 22-30 Dec 2001 using Weather Research and Forecasting (WRF) model. These winds have been forced in a third generation wave model to compute the wind waves in the affected domain. Simulated significant wave heights reach as high as 7.5m off the southeast coast of Malaysia and 5.8m in the Singapore Strait (SS). Wave propagation from the SCS to the SS is highly noticeable during the typhoon event. Directional distribution and propagation of the Vamei generated waves towards the southeast coast of Malaysia and part of Singapore region have been discussed.

Keywords: South China Sea; wind waves; typhoon; numerical modelling; significant wave height.