

Reconstruct the 1845 Kouhu Storm Surge Event with Ensemble Method

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In 1845, a severe storm surge event occurred in Kouhu, a township in southern western Taiwan. In this event, the storm surge caused more than 10,000 casualties which makes it the most serious storm surge event in the history of Taiwan. However, limited by the technology, no description of the typhoon track in the literature. Considering the dense population on the west coast of Taiwan in recent years, and also a large substation which transports the electric from a large number of offshore wind turbines to the cities in Taiwan. A deep understanding of the storm surge event is important. A non-linear multi-grid COMCOT storm surge model in conjunction with the ensemble method is applied to reconstruct the event and assessing future risks on the western coast of Taiwan. To reconstruct the storm surge event in 1845, cases are chosen from the modern typhoon database as a reference to build test scenarios. Then varying the typhoon track, typhoon moving speed, and typhoon intensity to find the most reasonable one which has the best agreement with the description in the historical documents. Besides, the effect of the tidal component is also considered on the storm surge height and inundation. Further discussion about the coastal hazard assessment is provided.

Keywords: Typhoon Track, COMCOT Model, Ensemble Method, Storm Surge, Inundation

