

**The Storm Surge Model  
Associated With Tropical Cyclone Linda In  
The Gulf of Thailand**

**A thesis presented as the requirement for the degree of Master of  
Science**

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## Abstract

A numerical model, COHERENS, is used to study the storm surge associated with tropical cyclone Linda (1997) in the Gulf of Thailand. The domain of the model is 98.5E-103E and 5N-14N with a resolution 5 min of arc. The core of the wind field in the model was created with the Holland (1980) equation modified with the translation speed. The required wind data is that of intensity and position of tropical cyclone Linda, provided by best track data from the Joint Typhoon Warning Centre. This numerical model also included the four main components of tides, from tidal charts provided by the National Tidal Centre, Australia.

The aims of this thesis were to hindcast the water level caused by the storm surge when tropical cyclone Linda came to the Gulf of Thailand in 1997. We also studied the sensitivity to different model parameters of the water level response to the tropical cyclone. The four parameters we tested were the radius of maximum wind of the model cyclone, the minimum depth of the storm surge model, the Holland's B-parameter and the track position displacement. The tidal model was used for testing the stability of the model. The surge results were added to the tidal result to hindcast the sea water level compared to the observed data from Royal Thai Navy at Kolak station.

The storm surge results did not fit well with the observed data from Kolak station, there being significant differences in amplitude, and a 13 hour time lag. The discrepancies have been investigated based on the accuracy of best track data from JTWC and the analysis of the sensitivity of the storm surge to model parameters. The results should help in understanding the complexity of both hindcasting water levels with limited storm data, and in the forecast problem.

## Declaration

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma at any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Anucha Srerurngla

Anucha Srerurngla, 12 August 2010

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