

Significant Wave Height at Ao Udom Port

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1. Introduction

This paper presents the significant wave height generated at Ao Udom in Gulf of Thailand, Sriracha district, Chonburi province. This location is industrial estate with included the large oil and gas refinery and offshore terminal for export and import cargoes. The wave propagation is estimated by numerical modelling method used Delft3D-WAVE (Open Source) standalone processing not include flow modelling and observed the significant wave height at offshore port as tabulated in Table 1.

Table 1. Observation location

No.	Location	East*	North*
1	LCP Breakwater	703105.54	1444650.10
2	PTT Jetty	702027.26	1448274.33
3	Thai Oil Jetty	703622.36	1451260.61
4	Kerry Siam Seaport	703105.53	1452552.67
5	Sri Racha Harbour	704013.77	1455345.17

Note: WGS84 UTM47N coordinates*

2. Extreme Met-Ocean Data

The extreme met-ocean data assigned in wave model boundary can be digitized from the oceanographic buoy report. The report was published by Geo-Informatics and Space Technology Development Agency (Public Organization: GISTDA). The maximum hourly wind speeds and the maximum significant wave height from 1991 to 2006 due to typhoon upper Gulf of Thailand at Hua Hin and Rayong station are tabulated in Table 2.

Table 2. Maximum hourly wind speeds and maximum significant wave height

Station	Max. Wind Speeds (m/s)	Wind Direction (Deg.)	Max. Significant Wave Height (m)	Direction Significant Wave Height (Deg.)
Hua Hin	16.84*	120.01*	4.06*	159.10*
Rayong	13.91*	131.54*	2.99*	133.65*

Note: The met-ocean data due to typhoon Linda *

3. Wave Model

Delft3D-WAVE multi-grid wave model has been set up to study wave generation, propagation and transformation to the site for the maximum hourly wind speeds and the maximum significant wave height, which generated in typhoon events. The wave model bathymetry has been based on navigation charts (THA chart 142 - Paknam Chao Phraya to Ko Raet, THA Chart 164 - Si Racha and Approaches) and the General Bathymetric Chart of the Oceans (GEBCO2014) dataset of bathymetry.

4. Calculation

In the paper, wave height at the target point representing the harbors are calculated using Delft3D-WAVE multi-grid model. In the model predicting can estimated tranquility in the harbor employing offshore observation data.

Thailand, International Association of Hydraulic Research (IAHR) Congress, Chengdu, China.

Vongvisessomjai S. (2007): Impacts of Typhoon Vae and Linda on Wind Waves in the Upper Gulf of Thailand and East Coast, Songklanakarin Journal of Science and Technology, Vol. 29, pp.1199-1216.

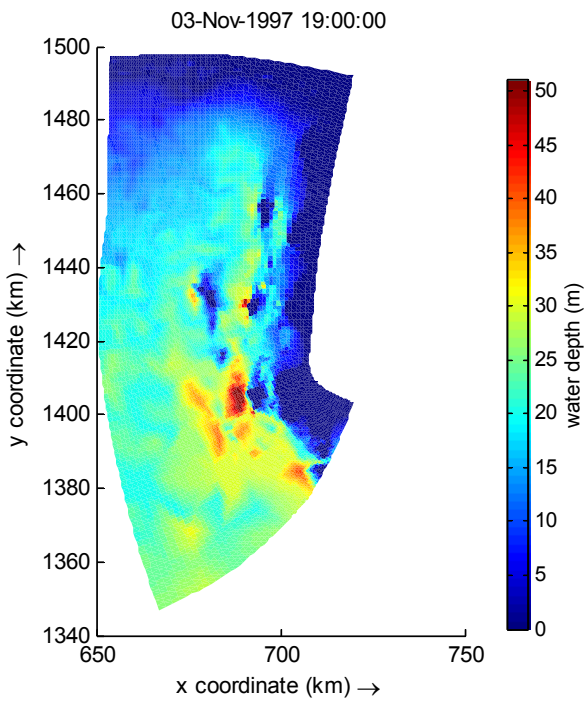


Fig. 1 Bathymetry THA Chart 142

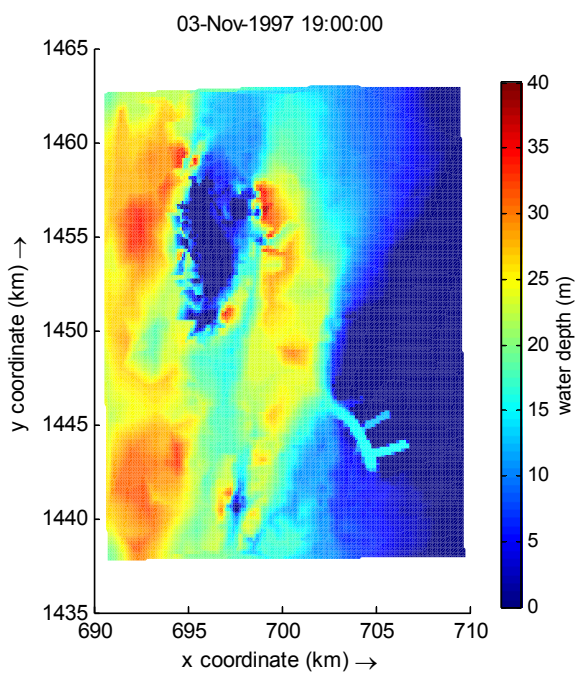


Fig. 2 Bathymetry THA Chart 164

5. References

GISTDA (2003): Buoy Data of 1997, Geo-Informatics and Space Technology Development Agency (Public Organization), Ministry of Science and Technology.

Paul Knox, et al. (2013): Physical and Numerical Modeling of Wave Agitation at Laem Chabang Port,