

Influences of coastal upwelling on the regional winds system off east Vietnam

*Zhe-Wen Zheng¹

1. National Taiwan Normal University, Institute of Marine Environmental Science and Technology

The impacts of coastal upwelling off southeast Vietnam (CUEV) on local wind field using numerical simulations are elucidated based on atmospheric model of Weather Research and Forecasting (WRF). Several scenarios are simulated by forcing identical model configurations with different SST fields. Based on simulation outputs, the relationship between CUEV and reduction of wind forcing is identified. The local wind speeds can drop to less than 70% of original level while the influence of a typical cold patch with a temperature drop attains to 3-5 °C. We find that the mechanism of response of the wind reduction to CUEV is associated with the enhancement of sea-breeze driven wind modulation. Onshore sea-breeze will enhance, while the contrast between land and sea is even more striking due to the contribution of a distinct coastal upwelling. This implies that air-sea-land interaction dominates the process of local wind system modulation in response to transient CUEV. This result sheds a new light on the air-sea interaction process off southeast Vietnam.

Keywords: coastal upwelling, sea-breeze, air-sea interaction, WRF