



The impact of ENSO on upper ocean response to a typhoon

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This study examines the impacts of large scale forcing such as ENSO on the process of typhoon inducing upper ocean response that is highly related to the typhoon intensity changes through air-sea flux across sea surface by designing and executing a series of numerical experiments. In previous study, we pointed out that all intense (Saffier-Simpson category larger than 3) typhoons during 2003 to 2008 induced extreme cooling responses while under strong wind forcing or encountering preexisting oceanic condition except four outlier typhoon cases only. More interesting is that, all of these four typhoon cases all occurred during El Nino years. This implies that large scale forcing such as ENSO must play a crucial on the process of typhoon caused an extreme cooling response. In this study, these four typhoons were all simulated to resolve the impact of ENSO on upper ocean response to a typhoon and the mechanisms of how did ENSO affect these cooling responses. These numerical experiments were completed by Regional Ocean Modeling System (ROMS) and boundary conditions derived from Hybrid Coordinate Ocean Model/Navy Coupled Ocean Data Assimilation system (HYCOM/NCODA) and Global forecast system (GFS). The results show that large scale forcing such as ENSO do play a key role on modulating the process of typhoon inducing upper ocean response.