

Parin Lopittayakorn 2012: Effects of ENSO on Meteorological and Oceanographic Parameters in the Gulf of Thailand. Doctor of Philosophy (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Professor Nipon Tangtham, Ph.D. 202 pages.

The aim of this research is to study the effects of ENSO phenomena on meteorological and oceanographic parameters in the Gulf of Thailand. The study was carried out using the ENSO indices with monthly air temperature, rainfall observed from 9 meteorological stations in coastal area including monthly sea surface temperature and sea surface salinity recorded by 8 oceanographic buoys in coastal region during 1997-2003. The correlation between ENSO indices and the aforementioned parameters in El Nino years (1997-1998), La Nina years (1999-2000) and normal year (2003) was analysed. The circulation patterns in the gulf was also simulated by Princeton Ocean Model : POM. Using wind speed and wind direction, sea surface temperature and sea surface salinity data as inputs. The outputs of circulation patterns were verified by the measured current data from oceanographic buoys. Results indicated a moderate relationship between ENSO indices and meteorological and oceanographic parameters in the El Nino years, La Nina years include normal year with coefficient of determination (R^2) ranging from 0.5 to 0.8 for the most appropriate ENSO indices (MEI and SST(NINO3.4)) in predicting meteorological and oceanographic parameters with some sufficient lag time.

The POM showed corresponding to circulation patterns monitored by buoys about 60% to 70%. Wind-driven circulation patterns in the gulf during El Nino years (1997-1998) and La Nina years (1999-2000) were similar to that during the normal year (2003) but the current speeds were much stronger during the El Nino and La Nina years. During the South West monsoon, water flowed out of the gulf via the western side, the counter-clock wise eddy existed at the tip of Ca Mau peninsula. In the North East monsoon, the current meander from the eastern of the gulf and flowed along the gulf's western coast into the gulf.

Student's signature

Thesis Advisor's signature