



## **On nearshore currents in the shallow water of Taiwan Strait**

Khai-Jing Liew and Zhi-Cheng Huang

National Central University, Graduate Institute of Hydrological and Oceanic Sciences, Taoyuan County, Taiwan  
(zchuang@ncu.edu.tw)

Effects from nature forcing of tide, summer monsoon wind, and wave and artificial effects due to coastal jetty construction on nearshore currents in shallow waters were studied. The study site is over GuanXin algal reef with a condition of water depth of 1 to 4 m in northern Taiwan Strait. Nearshore currents were observed using ADCPs at sites close to and far from the coastal jetty. The comparison between the modelled and observational results is in a good agreement with a skill up to 0.7 to 0.9. The verified model was used to perform idealized scenarios, i.e. with and without the forcing from wind, tide, and wave. The results show that the effects due to tide, wind, and wave on the currents exhibit a spring-neap and flood-ebb tidal variation. We found that the tide is the primary forcing driving currents at the studied sites while wind and wave forcing play a shifting effect when the tidal flow is weak. Summer monsoon wind enhances the northeastward longshore current with less effects caused by waves at the site far from the coastal jetty; however, wave forcing becomes significant at the site close to the jetty. Results of idealized scenarios by removing the jetty show a consistent result that the presence of the jetty enhances wave-driven current and circulation and alters the mechanisms driving the total current flow.