

# **Ocean Current Simulation and Characteristics Analysis in the Southwestern Sea of Taiwan**

**Tai-Wen Hsu**

*Distinguished Professor, Department of Hydraulic and Ocean Engineering, Cheng-Kung University, Taiwan  
E-mail: twhsu@mail.ncku.edu.tw*

**Jian-Ming Liou**

*Associate Researcher, Taiwan Ocean Research Institute, National Applied Research Laboratories, Taiwan*

**Yi-Feng Chen**

*Master Student, Department of Hydraulic and Ocean Engineering, Cheng-Kung University, Taiwan*

## ***Abstract***

In this paper, a three-dimensional ocean current model around Taiwan is developed by POM (Princeton Ocean Model). This model is a three-dimensional finite difference model. In the model, two modes are used, one is external mode and the other one is internal mode. The numerical scheme has the advantage to reduce the time of simulation.

The ocean current boundary is provided by Taiwan ocean current model (Liou, 2009). The computational area is narrowed to the range of Southwestern Sea of Taiwan. The combined effect of tidal and ocean current is included in the present model which will achieve a realistic simulation condition in the ocean. The tidal current boundary is simulated by NAO99b (Matsumoto et al, 2000).

The ocean current is simulated using different boundary conditions and grid sizes to achieve a higher resolution in the model. The comparison between the numerical results and measured data is fairly satisfactory. The result of simulation also illustrated the loop current in the southwest waters which is identical to previous investigations.

