

**Poster & PICO Contest** 

# Simulation of Flow Characteristics in the Junction of Laishe River and Neishe River in Southern Taiwan Using the Flow-3D Software

(1) Department of Hydraulic and Ocean Engineering, National Cheng Kung University, Tainan 70101, Taiwan, R.O.C. (e-mail:tony60292@gmail.com) (2) Ecological Soil and Water Conservation Research Center, National Cheng Kung University, Tainan City 70101, Taiwan, R.O.C.

In 2009, Typhoon Morakot hit Taiwan, intensive rainfall led to multi-area of landslides in Laishe River and Neishe River and the low condition and the ability of channel sediment transport in Laishe River and Neishe River and Neishe River and Neishe River. This study takes the junction as well as nearby reach at the circumstance of bed level changed. This study utilized Digital Elevation Model (DEM) to analyze the hydrology of the catchment and the flow condition in the channel. We set the boundary flood discharge with 100 years return period in 24 hours duration.

The three-dimensional numerical simulation results show that the flow condition emerges more complex. Through vertical velocity and turbulence parameter analysis, we could estimate the erosion area in the meandering zone. According to the analysis results above, we can realize the downstream flow characteristics effected by the interaction of Laishe River, which could be the basic emplacement reference of the bank protective works in the future.

### **Study Area**

Laishe River watershed locates in the mountain side of Pingtung County. The watershed area is around 4,424 ha, and the elevation mean 970 approximately m average annual precipitation is about 3,265 mm.



Satellite imagery in 200902





Satellite imagery in 200908

### **Study Procedure & Method River Elevation Analysis** A. Horizontal Cross sections elevation analysis B. Vertical Cross sections elevation analysis

**Catchment Hydrology Analysis** A. Frequency Analysis B. Hydrologic Modeling System (HEC-HMS)



**3D River Analysis System** FLOW-3D software





## Abstract

Tung-Yang Lai<sup>\*(1)</sup>, Yu-Chao Hsu<sup>(2)</sup>, Chyan-Deng Jan<sup>(1)</sup>

