水土保持學系短期課程公告

講題: Introduction to Modeling River Flow and Morphodynamics within the iRIC Interface

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時間: 2019 年 9 月 24 日 (星期二) 早上 9:00-下午 5:00

地點一(早上場 9:00~12:00): 國土資源保育中心LB02演講廳

地點二(下午場 13:00~17:00): 中興大學資訊大樓第二電腦教室

備註: 中餐請自理

課程簡介

This class covers a broad spectrum of river modeling techniques within the International River Interface Cooperative (iRIC) public-domain modeling interface. The course will be taught in a workshop format starting with basic data input and stepping through the processes of grid generation, model execution, visualization, and verification. The interface incorporates a variety of computational modeling approaches including finite difference and finite volume models using both structured and unstructured coordinate systems; only a subset of the available techniques will be covered in this short class. Basic principles will be briefly covered, but the emphasis of this short course is hands-on application using data sets for realistic problems on real rivers and hill slopes. For the class at NCHU, the students will learn about and use the following:

Morpho2DH: Hillslope model for the generation and propagation of debris/mud flows. Useful for delineating high-risk areas and for hindcasting sediment volumes and debris/mud flow characteristics.

Fully unsteady, two-dimensional model for river flow and morphodynamics incorporating sophisticated graded sediment treatments and vegetation to ensure good reproduction of flow and bed deformation. Useful for a wide spectrum of river problems including bed response to structures (spur dikes, etc), bar formation and evolution, spatial grain size sorting, and seepage flow.

Students can bring a laptop with at least 4 GB of ram and a few giga of empty hard disk space. The system was designed for use with current 64bit Windows operating systems or Windows emulators on Macs. Users will need to have software installation capabilities on their laptops, so check with your administrator if necessary. All software is freely provided and in the public domain.

Class Schedule

<u>9:00</u>	Introduction to the iRIC interface, basic equations for debris/mud flow analysis and application of the model for sediment disasters
<u>10:30</u>	Introduction to basic equations for bed deformation analysis with bed material load and application of the model for bed deformation phenomena
<u>12:00</u>	Lunch Break
<u>13:00</u>	Computing debris/mud flows (Morpho2DH Debris/Mud flow Tutorial 1 & 2)
<u>15:00</u>	Computing bed deformation analysis with bed material load (Morpho2DH Bed material load Tutorial 1 & 2)
<u>17:00</u>	End