グローバルCOEプログラム
「極端気象と適応社会の生存科学」
Global COE Program
"Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions (ARS)"

第60回 GCOE-ARSセミナー
The 60th GCOE-ARS Seminar

下記の内容で第60回GCOE-ARSセミナーを開催いたします。関心のある教員ならびに院生（特にARSコース受講生）の参加をお待ちしております。
The 60th GCOE-ARS Seminar will be held with the following contents. We welcome all faculty members and graduate students, especially GCOE-ARS students, who are interested in this seminar.

日時/Date : 2015年9月18日（金） 10:00 - 12:00
場所/Place: 京都大学 宇治キャンパス S-519D
S-519D, Uji Campus, Kyoto University
題目/Title: SCALING APPROACHES FOR FLOOD MODELS
講師/Lecturers:

#1: Prof. Dr.-Ing. Reinhard Hinkelmann
Chair Professor for Water Resources Management and Modeling of Hydrosystems, Technische Universität Berlin (TU Berlin), Germany

Abstract: Shallow water equations based models are becoming increasingly popular for flood modeling. Here, especially Godunov-type finite volume methods have been shown to be very robust and accurate for flow with shocks, e.g. hydraulic jump, over complex topography. The computational cost of such methods is inversely related to the third power of the cell size. Thus, the computational cost increases significantly for high-resolution simulations. In flood modeling, the buildings have a big influence on the flow but the scale of the buildings is very small in comparison to the scale of the city. In order to reduce the computational cost, the influence of building arrays can be conceptually taken into account instead of explicitly discretizing individual buildings. In this case, coarser cells can be used. In this presentation, two methods to parameterize the influence of subgrid-scale features such as buildings are presented: (1) a friction law-based approach, (2) a porosity-based approach. In general, a speedup of about three orders of magnitude is reported in comparison to high-resolution simulations.

#2: Prof. Dr. Qiuhua Liang
Chair professor of hydrosystems modelling at Newcastle University, UK

Abstract: Developing Next Generation of MultiPurpose Modelling Systems for Flood Management: According to the recent World Meteorological Organization report, 44% of the global weather-, climate- and water-related disasters between 1970 and 2012 are due to flooding, which accounts for 14% of the life loss and 34% of the economic damage. Strong evidences have shown that the flood risk will substantially increase throughout the 21st century as a result of socioeconomic development driven by population growth and urbanisation and more frequent extremes caused by clime change. This calls for customised strategies for effective management of flood hazards to ensure resilience and long-term sustainability of our societies. This goal must be facilitated by the development of next generation of modelling systems to support different stages of flood management for correlated events from different sources. This seminar introduces the new High-Performance Integrated hydrodynamic Modelling System (HiPIMS) and its applications in multi-purpose flood management.