3rd International Symposium on Shallow Flows
June 4-6 2012, The University of Iowa, Iowa City, IA, USA

Scope

This will be the third International Symposium on Shallow flows (ISSF) following the meetings in Delft and Hong Kong. ISSF has been established as a major meeting event in the area of environmental hydraulics and environmental fluid mechanics attracting participants primarily from academia.

Shallow flows are important in many applications in water and air environments. Major advances are expected over the next couple of years in gaining insights into the dynamics of shallow flows using state of the art experimental (e.g., particle image velocimetry) and numerical (e.g., highly resolved direct numerical simulation DNS, large eddy simulation LES, large-scale predictive models) techniques. In particular, these advances should allow for better understanding of the role played by the quasi-2D large-scale coherent structures and the interactions between these large scales and three-dimensional turbulence; the degree of non-uniformity of shallow flows in the vertical direction and the role of vertical motions; and the effect of the large-scale turbulence on bottom friction and morphodynamic processes. Shallow water models are routinely used for coastal construction activities as well as to aid risk assessment.

Three of the most important and imminent challenges in shallow flow research are understanding to what extent the physics of these flows is dependent on scale effects; how the physics changes between the simpler geometries studied in the laboratory in controlled environments or using DNS/LES simulations; and how understanding of shallow water flows and their interaction with natural elements can culminate to better predictive models. In this regard, detailed investigations of shallow flows in the field and the use of eddy-resolving numerical simulations in realistic geometries using hybrid RANS-LES techniques can be of great utility in understanding and quantifying relevant contaminant transport processes, fluid-driven ecological processes, anthropogenic influences (e.g., heat, dissolved and suspended organic/anorganic material, storm surges on land) and sediment dynamics. Another challenge is the use of this detailed information on processes and mechanisms to develop accurate simpler analytical models that can help understand global quantities characterizing the spatial and temporal development of these flows. As in nature, shallow flows occur most often over alluvial beds, the investigation of morphodynamics processes in shallow flows will be another major focus area of the conference. Finally, in many shallow aquatic environments, the interactions among flow, turbulence, vegetation, macroinvertebrates and other organisms, as well as the transport and retention of particulate matter, have important consequences on the ecological health of rivers and coastal areas. Large scale atmospheric flows are also often analyzed using shallow water theory, and hence will be of particular interest in the symposium.

The 3rd Symposium will provide an excellent forum for reporting, exchanging ideas and share discussions on the latest advances in the study and prediction of shallow flow, with

particular emphasis on the areas identified above. The papers from all other relevant areas are also welcome.

Organization
The Symposium is co-organized by IIHR-Hydroscience and Engineering, The University of Iowa and by the Department of Civil Engineering and Geosciences, The University of Notre-Dame. The main sponsor of the Symposium is IAHR – Committee on Fluid Mechanics.

Organizing Committee
Chairman of the Symposium: Prof. G. Constantinescu, University of Iowa
Chairman of the Technical Program: Prof. H.J. Fernando, University of Notre Dame

Local Organizing Committee
-Prof. Larry Weber, Univ. Iowa
-Prof. G. Constantinescu, Univ. Iowa
-Dr. Marian Muste, Univ. Iowa
-Prof. J. Odgaard, Univ. Iowa
-Prof. Andrew Kennedy, University of Notre Dame
-Prof. Diablo Bolster, University of Notre Dame
-Prof. Aline Cotel, University of Michigan
-Prof. Cary Troy, Purdue University

Venue
Previously, the Symposium has been held in Europe (Delft University of Technology, 2002) and Asia (The Hong Kong University of Science and Technology, 2008). For the first time, the ISSF Symposium will be held in United States, on the campus of the University of Iowa. The Engineering College provides excellent facilities including lecture rooms, poster areas and coffee break areas that will be used during the conference.

Iowa City is located around 200 miles west from Chicago. Weather in May-June is very pleasant, with day temperature around 20^0C. Iowa City offers a wide range of hotel accommodations at a reasonable price (below $100 per night) and has several relatively new hotels. Suggestions will be given in due time. Additionally, special accommodations for students will be arranged. Iowa City is served by the Cedar-Rapids airport (30 minutes drive to downtown Iowa City). Most major US companies fly into Cedar Rapids Airport. Direct flights are available to several large airports including Chicago, Denver, Atlanta, New York, Minneapolis, Cincinnati and Dallas.

Main topics
1-Laboratory and eddy resolving (DNS, LES) numerical investigations of fundamental physical processes and transport mechanisms in
a) Shallow mixing layers
b) Shallow wakes
c) Shallow jets

d) Shallow open channels (roughness effects, vegetation, curvature effects, effect of free surface dynamics)
2-Experimental and numerical investigations of transport of heat, solutes and pollutants in canonical shallow flows or simplified geometries
3-Field studies and numerical investigations of shallow flows at field conditions and/or in realistic geometries.
4-Experimental and numerical aspects of sediment transport and morphodynamics in shallow flows
5-Scale effects in shallow flows
6-Quasi two-dimensional flows in the atmosphere
7-Shallow flows and stratification
8-Ecological aspects of shallow flows
9-Engineering applications of shallow flows (more applied experimental and numerical – RANS modeling- studies)
10-Analytical modeling of shallow flows
11-Innovative field and laboratory instrumentation for the study of shallow flows

Key dates

1 November	2010 First announcement and setting a conference web site
15 May	2011 Second announcement and call for papers
1 September	2011 Deadline for submission of abstracts
1 October	2011 Notification of provisional acceptance
15 December	2011 Deadline for submission of papers
1 February	2012 Notification of final acceptance
1 March	2012 Early registration
4-6 June	2012 Symposium