

Journée ECOUFLU 26 mars 2018

LEGI, 1209 rue de la piscine,
Domaine Universitaire, Saint-Martin d'Hères

8h45 – 9h15 : Accueil au LEGI

9h15 – 9h30 : Mesure de la réduction de frottement d'écoulements à surface libre par ajout de polymères (E. Mignot, LMFA, Lyon)

9h30 – 9h50 : Couplage entre lâcher tourbillonnaire et oscillation de plans d'eau en cavités à surface libre (C. Perrot-Minot, LMFA, Lyon)

9h50 – 10h10 : Conditions de génération spontanée des bancs alternés en canal et étude de leur mobilité (C. Martin, IRSTEA, Lyon)

10h10 – 10h30 : What drives the existence of Kelvin-Helmholtz instabilities in shallow shear flow? (S. Proust, IRSTEA, Lyon)

10h30 – 10h50 : High-resolution non-intrusive sheet flow results (G. Fromant, LEGI, Grenoble)

10h50 – 11h00 : Pause Café

11h00 – 12h00 : Hydrodynamics of dense riverine inflows into lakes and reservoirs, Koen Blanckaert, TU Wien, Faculty of Civil Engineering, Research Center of Hydraulic Engineering (invité, voir résumé page suivante)

12h00 – 13h15 : Pause déjeuner

13h15 – 14h00 : Visite labo LEGI (Canal à houle, Canal à densité variable et plateforme CORIOLIS)

14h00 – 14h15 : Mesure vidéo de la houle dans un canal appliquée à l'étude d'un gaz de soliton (I. Redor, LEGI, Grenoble)

14h15 – 14h30 : Spatially developed steady gravity flow (A. Martin, LEGI, Grenoble)

14h30 – 14h50 : La mesure de charriage par ADCP : bref état de l'art, campagnes de mesure EDF 2017 et perspectives (A. Hauet, EDF DTG, Grenoble)

14h50 – 15h05 : Mesure de charriage en rivière (T. Geay, EDF DTG, Grenoble)

15h05 – 15h25 : Simulation diphasique du phénomène d'affouillement sous un cylindre horizontal (A. Mathieu)

15h25 – 15h45 : Simulation diphasique de l'affouillement autour d'un cylindre vertical (T. Nagel)

15h45 – 16h00 : Pause Café

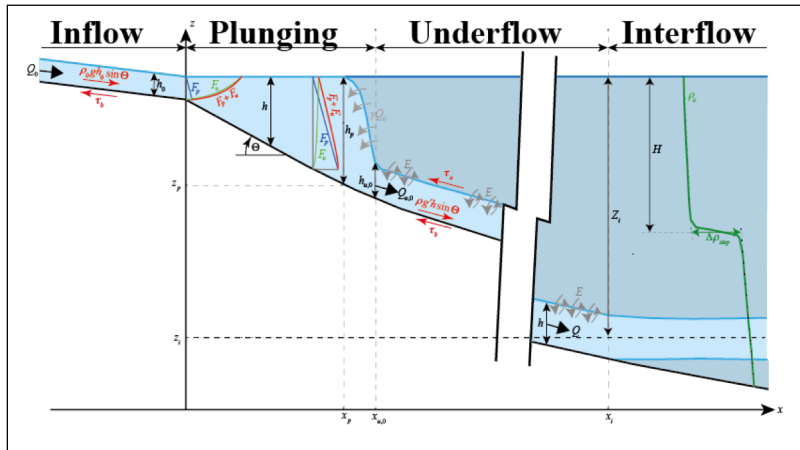
16h00 – 17h00 : Echanges avec Paolo Laj directeur d'Envirhonalp et vie de la plateforme

Hydrodynamics of dense riverine inflows into lakes and reservoirs

Koen Blanckaert

TU Wien, Faculty of Civil Engineering, Research Center of Hydraulic Engineering

Open-channel inflows into lakes and reservoirs are vectors of momentum, sediments, nutrients, oxygen, heat and anthropogenic contamination. The spreading and mixing of the introduced quantities control the water quality, which is of paramount importance for drinking water supply, beach water quality, and fisheries. The inflow of sediments leads to reservoir sedimentation and underwater avalanches that threaten infrastructure. Negatively buoyant inflows plunge under the lighter surface waters of the reservoir or lake. This plunging process is accompanied by intense mixing, and conditions the characteristics of the subsequent underflow along the bottom of the receiving water body. The density of the underflow changes during its propagation due to mixing with ambient water and exchanges of sediment with the bottom. When the underflow reaches its depth of neutral buoyancy, it lifts off the bottom and forms an intrusion. Insight in the plunging, underflow and intrusion processes is still incomplete.



I am setting up a research project that will combine field measurements, laboratory measurements, and numerical simulations. In the seminar, I will first introduce the topic and discuss the importance of some open questions related to hydro-morphological processes. I will then show some initial results from field measurements on the inflow of the Rhone River into Lake Geneva and numerical simulations.

