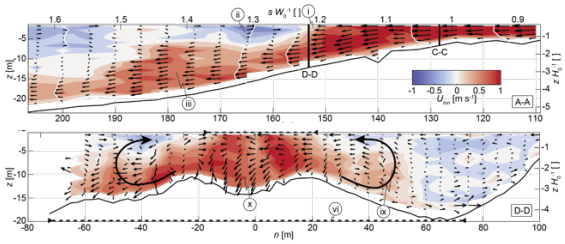
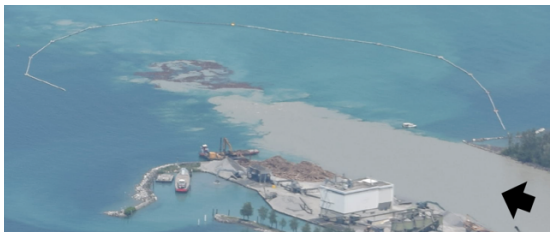
Hydraulic Engineering and Environmental Hydromechanics
E222 Institute of Hydraulic Engineering and Water Resources Management

3-year PhD position at TU Wien, Vienna, Austria

Hydro-sedimentary processes at the river-lake interface

Supervision	Main supervisor: Blanckaert, Koen (TUW, Vienna, Austria) Co-supervisors: Negretti, Eletta and Chauchat, Julien (LEGI, Grenoble, France)
Research topic	The inflow of a river into a lake also brings other substances (sediments, nutriments, oxygen and contaminants) into the lake that are of critical importance for, e.g. the water quality or reservoir sedimentation. This project is on sediment-laden hyperpycnal river inflows. Hyperpycnal means that the density of the river water is higher than the density of the lake water. The focus is on the flow patterns and the interactions between the flow, the sediment and the lake bottom near the river mouth.   The current insight in hyperpycnal inflows is largely based on simplified constant-width geometries and the effect of sediment is poorly understood. This project will address three research questions for a broad range of realistic geometries: (i) What are the main flow processes and on what parameters do they depend? (ii) What is the effect of sediment on these processes? (iii) What are the dominant interactions between the flow, sediment and lake bottom?
Research contexte	The vacant PhD position will focus on laboratory experiment. The PhD will be hosted at TUW, but the laboratory experiments will be performed in the Coriolis platform (https://www.legi.grenoble-inp.fr/web/spip.php?article757&lang=en) at LEGI. In fact, the vacant PhD position is part of a joint research project between TUW and LEGI that is funded by the French (ANR) and Austrian (FWF) science foundations. Besides the vacant PhD position, it also involves a Postdoc at TUW with focus on field investigations and a Postdoc at LEGI with focus on numerical modelling.
Profile	• Master degree in applied physics, environmental engineering, geosciences, civil engineering or a related field • A solid background in fluid mechanics and sediment transport • Experience in laboratory experiments, measuring technology, data treatment and analysis • Fluency in English; fluency in German is an asset
Tasks	Main task (>2/3): • Laboratory experiments in the Coriolis platform • Data treatment and analysis • Writing a dissertation and publications Secondary tasks (<1/3) • Contributions to teaching • Supervision of Bachelor and Master projects and internships related to the research • Assistance/collaboration in organizational and administrative tasks
Offer	• Embedment in an international project and interaction with other researchers and methods • Hybrid working style with up to 60% home office option • A range of attractive social benefits (see Fringe-Benefit Catalogue of TU Wien) • Wide range of internal and external training opportunities, various career options • Gross salary of 2458 Euro/month (x 14 months)
Language	• English • Fluency in German is an asset
Period	Earliest starting date: September 2023
Application	Interested candidates should send their CV and cover letter to koen.blanckaert@tuwien.ac.at. Applications can be submitted until 31.07.2023