7th IAHR Europe Congress, September 7th – 9th, 2022, Athens

Conveners: Massimo Guerrero; Bart Vermeulen

Theme: TCEM Theoretical, Computational and Experimental Methods

Title of the session:

HYDROACOUSTIC TECHNIQUES FOR MEASUREMENT IN ENVIRONMENTAL FLOWS

Hydroacoustic techniques have enabled the non-invasive measurement of key flow parameters in a wide range of environmental, industrial, and laboratory flows, including in turbid and/or harsh conditions where other techniques are unfeasible. A number of acoustics devices (ADCP, UVP, ADV, ADVP, ABS, Multibeam sonar) are presently used to measure velocity, mixing and transport processes. Bistatic Doppler velocity profilers have been used to profile the near-bed flow velocity and particle flux. Monostatic acoustic devices such as ADCPs are used for velocity field sediment transport mapping in riverine and coastal flows. Multibeam based methods can be used to reconstruct detailed morphologies of the river bed and sea floor, while multi-frequency acoustics enables the investigation of both the size and concentration of suspended particles. Acoustic measurements of sediment transport (both bedload and suspended load) are frequently calibrated with physical samples, which extends the statistical interpretation of the acoustic signals.

This special session, promoted by the IAHR committee on Experimental Methods and Instrumentation, invites contributions that deal with advanced and novel aspects of measuring fluid flow and particle transport using hydroacoustic techniques. Invited contributions may cover a variety of topics ranging from field and laboratory studies towards the understanding of fundamental processes (e.g., fluids mixing, turbulence, friction dissipation and sediment transport) to the validation of hydroacoustic methods and assessment of the performance of ultrasound devices.