

EGU2020-21659

<https://doi.org/10.5194/egusphere-egu2020-21659>

EGU General Assembly 2020

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Estimation of wave induced sediment resuspension using an ADV

Gábor Fleit and **Sándor Baranya**

Department of Hydraulic and Water Resources Engineering, Budapest University of Technology and Economics, Budapest, Hungary

The ever-increasing demand for fluvial navigation and the more and more efforts made for ecologically sustainable water usage (facilitated by e.g. the Water Framework Directive of the EU) have highlighted potential conflicts of interests in river management. Riverine traffic has notable hydrodynamic effects, i.e. the local hydraulic regime of river reaches may get significantly altered by wave events generated by passing vessels. As ship waves reach the shallower areas, the related hydrodynamic stresses affect the near-bed boundary layer increasingly, bed shear stress increases gradually, leading to the resuspension of fine sediments. In order to find out more about the nature of this phenomenon, simultaneous ABS (acoustic backscatter sensor) and ADV (acoustic Doppler velocimeter) measurement were performed in the Hungarian Danube. Such measurement not only offer the opportunity to reveal the likely interconnections between hydrodynamic variables (e.g. flow velocity, turbulent kinetic energy) and suspended sediment concentrations (SSC), but the found correlation between ABS data and the backscatter strength of the ADV also suggests the applicability of the latter for the estimation of instantaneous SSC in a high temporal resolution.