



A comparison between the bottom-track data of an ADCP and Laserscanning Data

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A standard Acoustic Doppler Current Profiler (ADCP) is constructed, as the name suggests, to gain data about the flow velocity and discharge of e.g. a river. The device is in fact similar to a sonar and uses the Doppler effect to detect the velocity of particles in the water column below the transducers. Beside that standard function it also can track the bottom of a river or sea. The pulses are scattered by the bottom and the shift in the detected velocities between bottom and bulk phase can be used to identify the surface. However this data set depends on the quality of the signal and can be influenced inter alia when the river-bed is moving.

Under in situ conditions it is almost not possible to evaluate the quality of this bottom track data. On the other hand e.g. a minimum water depth is needed to get proper results with the ADCP which causes problems in a lab flume.

Therefore a reservoir was used for the comparison measurement which could be drained and set nearby dry so the scanning with a RIEGL terrestrial laser scanner became feasible.

Within the reservoir due to sedimentation of silt and fine sand fractions a nature-like bottom structure has developed including a talweg, steeper and more shallow areas. This is a perfect structure for the comparison of the results of these two measurement devices.

With the Laser-scanning data a 3D model is generated. The bottom track cross sections of the ADCP can be implemented in this model and compared.