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Limitations of flood discharge measurements using ADCP in Slovenia

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In last few years, new measurement equipment based on ultrasonic Doppler technology was introduced for measurements of the river discharge at Environmental Agency of the Republic of Slovenia and replaced the conventional current meters. The essential advantage of using the Acoustic Doppler Current Profiler (ADCP) is the performance of discharge measurements at extremely high values. Since the rating curves are developed with few stage/discharge measurements, and measurements of high flows are rare, there can be significant errors in rating curves at high levels. Improving discharge measurements enable us to improve the present rating curves and to define the rating curves at high discharges. If the cross-sections are rather uniform, the performance of the discharge measurements is simple. Measurements of river discharge during the floods in 2007 and 2009 in extreme conditions showed that are some limitations in discharge measurements of torrential streams because of high velocities of water, and debris and turbulent flow. The contribution refers to the difficulties associated with measurements of discharges in the case of flash floods and torrential streams. Assessment of accurate flood discharges still remains in spite of the new equipment.