

# Discharge Measurements In Low Flow Conditions With ADCP Technology – First Experiences In Nepal

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## ABSTRACT

Low flows prevail during about nine months of the year in Himalayan rivers as a result of the influence of the monsoon climate. They account for a large portion of the annual water balance and accurate information about these flows is therefore critical for water resources planning, development, management and hydropower design. Issues that occur with the neighbouring country India are often related to low flows and make exact information on low flows a prerequisite for successful transboundary water management.

However, reliable and long-term information on low flows are generally not available as most basins are ungauged. In addition low flow measurements are often associated with measurement errors as measurement cross-sections change during the flood season. Changes in measurement cross-sections are natural, but need frequent re-surveying of the sections in order to obtain good quality discharge measurements. This is often done on in-frequent basis and changes between big flood events are not recorded. The equipment used for discharge measurements is rarely recalibrated leading to additional errors.

Internationally, in the last two decades river and stream discharge measurements have been improved with the introduction of Acoustic Doppler Current Profiler (ADCP) technology. This new technology for hydrologic data acquirement has so far not been used extensively in the Himalayan region. First experiences with a StreamPro ADCP in Nepal as a part of a technology evaluation confirmed the commonly stated advantages of this technology compared to current-meter measurements, and showed its promising potential for various future applications including the application for accurate low flow measurements.

*Keywords: Discharge measurement, ADCP, low flow*