



Improving discharge estimates from routine river flow monitoring in Sweden

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The Swedish Meteorological and Hydrological Institute (SMHI) maintains a permanent river gauging network for national hydrological monitoring which includes 263 gauging stations in Sweden. At all these stations, water levels are measured continuously, and discharges are computed through rating curves. The network represents a wide range of environmental settings, different gauging measurement types and gauging frequencies. Gauging frequencies are typically low compared with river gauges in more research-oriented settings, and thus uncertainties in discharges, particularly extremes, can be large. On the other hand, the gauging stations have often been in use for very long, with the oldest measurements dating back to 1900, and at least partly exhibit very stable conditions. Here, we show the variation in gauging stability in the SMHI's gauging network in order to try to identify more error-prone conditions. We investigate how the current, largely subjective, way of updating rating curves influences discharge estimates, and discuss ways forward towards a more objective evaluation of both discharge uncertainty and rating curve updating procedures.