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## Measuring runoff

In 2013 the Finnish network of small catchments comprised 35 basins where the outlet discharge was monitored accurately by using measuring weirs. Discharge values converted to runoff ( $\text{l/skm}^2$ ) are stored in the hydrological register. In addition to runoff, precipitation, snow water equivalent and soil frost depth are also measured. In some catchments, water quality variables are also determined for estimating diffuse load.



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The areas of these catchments vary from 0.1 to 122  $\text{km}^2$  and they do not contain lakes, so variations in runoff are more distinct. The soil, vegetation and topography of catchments vary, too. The longest records started in 1930's and over 20 of the currently instrumented catchments have had continuous daily runoff values for more than 50 years.

The mean annual runoff in Finland is about 10  $\text{l/skm}^2$ , but in small basins without lakes the instantaneous runoff may vary considerably, for example from zero in dry periods to 1900  $\text{l/skm}^2$  after heavy rain (2.9.1968) from a cultivated field catchment in Vihti.

These long runoff series, which are based on careful observations, offer a reliable basis for different hydrological and multidisciplinary research projects as well as for practical applications. For example, runoff data from catchments can be used as reference data for developing hydrological models, for estimating the effects of changes in land use (e.g. logging, ditching), for determining design floods, for studying the leaching of nutrients and for examining various other catchment processes. The long time series may also be of value in the future to estimate changes in runoff as a consequence of climate change.