Measuring precipitation

The precipitation network is operated by the Finnish Meteorological Institute. Data from about 200 stations are daily delivered to the Finnish Environment Institute.

Precipitation is measured by various automatic gauges, weather radars and manual precipitation gauges. The gauges have evolved significantly during the past few decades, and especially snowfall can be currently measured with better accuracy. The inaccuracy of precipitation measurements is, however, still considerable: the measured values are on average 10–20 % lower than the actual precipitation. In the publications of the Finnish Environment Institute, precipitation is usually given as uncorrected values, i.e. measured values without gauge corrections.

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At the Finnish Environment Institute, the main use of precipitation data is computing areal precipitation values for catchments. Areal precipitation is the mean value of precipitation within a given area (e.g. a catchment) during a given period. As a general rule, the areal precipitation is computed for a catchment for which the discharge is also determined. The number of areas for which areal precipitation values are currently computed is around 110. The national hydrological database contains values from some 250 areas.

Areal precipitation values have been computed in Finland since 1911. Since early 1950's, pentad values are given. Pentad is here a period of 5 days, counted from the beginning of a calendar month. The length of the last pentad of the month is thus of variable length, 3–6 days depending on the month. No gauge corrections have been made for the values available in statistics.

The method, by which the areal precipitation values for the years 1911–1945 were computed, has not been documented. For the years 1946–1981, the isohyet method was applied. Since 1982, a grid

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point net of 10 x 10 km has been used. In that method, precipitation values for every point are computed using the nearest precipitation observations. Since the method of calculation has varied in time, the areal precipitation values from different decades are not entirely homogeneous.

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