

1 Correction of the Daily Precipitation Measurements

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Precipitation is a subject of quite big errors and wind-induced error is the largest one. In order to assess the correct water balance, the precipitation has to be corrected for the largest errors. In the procedure of the correction of the measured precipitation we followed the Dynamic Correction Model presented by F. Rubel and M. Hantel. The 34-years daily precipitation series for 201 meteorological stations were analysed among which there were 28 reference climatological stations available. Precipitation stations were classified according to the spatial distribution of mean wind speed. The corrected value of the measured precipitation amount was estimated through the wetting loss and the dynamic correction factor, depending on the type of precipitation and wind speed. For liquid precipitation it was a function of wind speed and rain intensity. Wind speed data for all 201 analysed meteorological stations were calculated on the basis of measurements on 34 reference stations. Wind speed was corrected according to relation between mean wind speed on the precipitation station location and reference station location, obtained from mean wind speed distribution. The homogenized wind speed measurements on 34 meteorological stations were used. Hourly rain intensity was assessed from the daily precipitation amount separately for coastal, alpine and inner part of Slovenia. The linear models for each region were obtained from regression analysis of 5 minutes precipitation on reference stations. For solid precipitation dynamic correction factor is a function of wind speed and temperature. For a chosen precipitation station the temperature of a reference climatological stations, regarding the classification of the stations, was used.

Maximum average correction factor 3.15 for solid precipitation was calculated for the highest alpine station Kredarica (2514 m), maximum average correction factor for liquid precipitation was 1.14. The lowest average correction factors for solid precipitation is 1.01 and for liquid is 1.02. Monthly and yearly mean precipitation maps for the reference period 1971 – 2000 were calculated from corrected precipitation measurements and used for the assessment of water balance in the period 1971-2000.