Climate data: adjusted precipitation data

This website provides monthly, seasonal and annual rain, snow and total precipitation from the second generation Adjusted Precipitation for Canada (APC2) dataset for over 450 locations. Series extend back to 1895 as much as possible: however data availability over most of the Canadian Arctic is restricted to the mid-1940s to present. The present dataset is based on the first generation Adjusted Precipitation for Canada (APC1) dataset developed in the mid-1990s (Mekis and Hogg, 1999).

The method follows the steps described in Mekis and Vincent (2011). Daily rainfall gauge and snowfall ruler data were extracted from the National Climate Data Archive. For each rain gauge type, corrections to account for wind undercatch, evaporation, and gauge specific wetting losses were implemented (Devine and Mekis, 2008). For snowfall, density corrections based upon coincident ruler and Nipher measurements were applied to all snow ruler measurements (Mekis and Brown, 2010). Trace precipitation were adjusted to avoid the underestimation of total precipitation with particular importance over the Canadian Arctic (Mekis, 2005 and Mekis and Vincent, 2011). Observations often combined to create longer time series useful for climate change studies. Adjustments obtained from standardized ratios between the tested site and neighbours or overlapping observations were used to homogenize the joined segments (Vincent and Mekis, 2009).

Monthly rain, snow and total precipitation were calculated by adding the station's daily rain gauge, snow ruler and total precipitation observations, over the month. The APC2 datasets will continue to be updated every year. The impact of the adjustments on rainfall and snowfall total amounts and trends was examined in detail in Mekis and Vincent, 2011.

Questions and comments can be sent to dccah-ahccd@ec.gc.ca.

- Adjusted precipitation data

Reference to the second generation adjusted precipitation dataset

Mekis, É and L.A. Vincent, 2011: An overview of the second generation adjusted daily precipitation dataset for trend analysis in Canada. Atmosphere-Ocean, 49 (2), 163-177.

Further references

Devine, K.A. and É. Mekis, 2008: Field accuracy of Canadian rain measurements. Atmosphere-Ocean 46 (2), 213-227.

Mekis, É and R. Brown, 2010: Derivation of an adjustment factor map for the estimation of the water equivalent of snowfall from ruler measurements in Canada. Atmosphere-Ocean 48 (4), 284-293 doi:10.3137/AO1104.2010

Mekis, É., 2005: J3.7 Adjustments for trace measurements in Canada. 15th Conference on Applied Climatology, Savannah, Georgia, USA, 20-24 June 2005.

Mekis, É. and W.D. Hogg, 1999: Rehabilitation and analysis of Canadian daily precipitation time series. Atmosphere-Ocean 37(1), 53-85.

Vincent, L.A. and É. Mekis, 2009: Discontinuities due to joining precipitation station observations in Canada, Journal of Applied Meteorology and Climatology, Vol. 48, No. 1, 156-166. DOI: 10.1175/2008JAMC2031.1

Date modified:

2023-01-30