

## Western Canada Stations data note

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The RShiny app *wes\_can\_stn\_data\_app* provides access to preliminary quality-controlled daily climate data, including minimum and maximum temperatures and total precipitation, from 1982 Environment and Climate Change Canada (ECCC) stations across British Columbia (BC), Alberta (AB), Northwest Territories (NT), and Yukon (YK). Additionally, it incorporates data from 601 BC stations managed by various agencies, including BCH, Env\_ASP, ENV\_AQN, FLNRO\_FERN, FLNRO\_WMB, FRBC, MoTle, and RTA.

The raw ECCC stations data are sourced from the [ECCC historical data website](#), while additional BC station data are obtained from [BC Station Data](#) page provided by the Pacific Climate Impacts Consortium.

The app enables users to explore or download these datasets. The app provides preliminary quality-controlled long-term (atleast 10 years) daily records in CSV for minimum and maximum temperatures and total precipitation and corresponding plot in PNG format for quick insights.

### Stations' data quality control procedures:

To ensure data reliability, the following quality checks are applied:

- Stations must have at least 10 years of record; ECCC stations must span more than 10 years and include data up to 2021 or later.
- Daily precipitation values exceeding 200 mm are replaced with NA.
- Daily temperatures outside the range of  $\text{mean} \pm 7 \times \text{standard deviation}$  are replaced with NA.
- Daily minimum temperature (tmin) cannot exceed the maximum temperature (tmax).
- **Missing data are interpolated for short gaps: up to 5 days for precipitation and 7 days for temperature.**
- **Missing data percentages are calculated, and gaps under 10% are filled using the mean of available data. Gaps exceeding this threshold remain unfilled.**

### Notes:

- Some stations may only record precipitation or temperature data, leading to NA values and up to 100% missing data in the unrecorded category.

## CSV datafile

The .csv time-series data file accessible to download comprises 16 columns as:

- stationID: Station ID from ECCC or other sources
- station\_name: Full name of the station
- agency: Name of the data generating agency
- lat: Latitude of the station location (°)
- lon: Longitude of the station location (°)
- elev: Elevation of the station location (m)
- date: Date for the data
- tmax: Daily maximum temperature (°C)
- tmin: Daily minimum temperature (°C)
- prcp: Daily total precipitation (mm)
- start\_date: Data record start date
- end\_date: Data record end date
- no\_yr: No of years with data
- mis\_tmax\_per: Percentage of missing maximum temperature data (NA values) for the period of record
- mis\_tmin\_per: Percentage of missing minimum temperature data (NA values) for the period of record
- mis\_prcp\_per: Percentage of missing precipitation data (NA values) for the period of record