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## Inventory of National Rural Health Research Related Databases

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Database name: **NAtChem/Precipitation Database**

Thematic Coverage: This system serves as a Canadian central database and analysis facility to accommodate and maintain diverse and variable network data and combine them together in one database. Its main purpose is to determine the chemistry of regional-scale precipitation in Canada and the United States.

Maintained by: Meteorological Service of Canada

Availability: The system provides highly-resolved spatial distribution maps of wet deposition and associated analyses by merging data from all possible sources. The data, maps and special data analyses will be provided by request. The data request form can be found at: [http://www.msc-smc.ec.gc.ca/natchem/precip/51\\_requests\\_dataform\\_e.html](http://www.msc-smc.ec.gc.ca/natchem/precip/51_requests_dataform_e.html)

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Start Date: 1987; data available retrospectively from 1978  
Release Date: Depends on the different networks used  
Frequency of collection: Annual

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Data Collection: Data are collected from Canadian federal and provincial monitoring networks and major U.S. networks. The Database Management System consists of 3 distinct databases:

- The Network Information System (NIS)
- The Site Information System (SIS)
- The Chemistry Information System (CIS)

Sample size: 834 stations (including duplicate stations and stations that have been moved) and 4 federal monitoring networks (136 sites)

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Geographic coverage: All provinces and territories and portions of the United States

Lowest geographic level collected: Postal code of Facility

Lowest geographic level of release: Regional maps

Existing rural variable: No

Rural definitions that can be constructed from this database include (building block):

- ✓ Although the rural definitions in Appendix A can be theoretically constructed from the postal code of the facility, a classification using an environmental perspective for the purpose of environmental analysis would be more suitable. For example, information on activities which affect water quality could be presented by drainage area. Geocoding could be used to develop a linkage between the postal codes of the establishments of the drainage area and ecozone geographies.
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Data Elements:

The NATChem/Precipitation products include:

- Annual, seasonal and quarterly statistical summary tables of each site of the whole networks
- Isopleth maps showing the annual and seasonal spatial patterns of concentration and deposition for each measured variable
- Trend charts showing temporal variations of integrated wet deposition and area averaged concentration of major ions since 1980.

The measured variables for these tables, maps and charts are concentrations of sulphate, nitrate, chloride, ammonium, sodium, potassium, calcium, magnesium, pH and hydrogen ion; and standard gauge depth (i.e., meteorological rain/snow gauge measurements taken in parallel with the precipitation chemistry measurements).

Notes:

The **Network Information System** (NIS) contains information about the networks that contribute to NATChem/Precipitation. This annually updated database includes: general sampling protocols, chemical components measured, instruments used and a description of the history and objectives of the network.

The **Site Information System** (SIS) contains information about the individual sites in each network. This annually updated database includes: exact location, site description and history, description of regional environs and on-site features. SIS is designed to use this information to generate charts for point and area emissions and statistical summary tables.

The **Chemistry Information System** (CIS) combines all available federal and provincial chemistry network data into a standardized format and applies standard data quality assurance procedures. Standardized data are important when combining data from various networks in order to properly evaluate regional-scale wet deposition trends. CIS contains data from a total of 834 stations (including duplicate stations and stations that have been moved) in 9 provincial (331 sites) and 4 federal monitoring networks (136 sites) operating from 1978 to 2001. While NATChem/Precipitation has data on some Canadian sites dating back to 1973, CIS only contains data from 1978 onward because data quality control was inconsistent prior to that year and, therefore, the collected data is unreliable. Data from NADP/NTN, CASTNET and eight other U.S. networks (367 sites) are also included in the database.

Not all sites that operated during a year by the networks were used to create the spatial patterns and integrated deposition time series. In order for data to be included, a site had to pass two criteria:

- a) The annual/seasonal per cent precipitation coverage length must have been 90 per cent and the per cent total precipitation of valid samples must have been 70 per cent.
- b) The site's rating, based on its site representativeness, must have been 1, 2a or 2b. Sites that were rated as unrepresentative (3) were eliminated.

For more information, see the website at: [http://www.msc-smc.ec.gc.ca/natchem/precip/index\\_e.html](http://www.msc-smc.ec.gc.ca/natchem/precip/index_e.html)