PostgreSQL for Canadian Weather Observations

PGCon 2015

Ottawa, Ontario

Christophe Malek

Weather and Environmental Prediction and Services Branch

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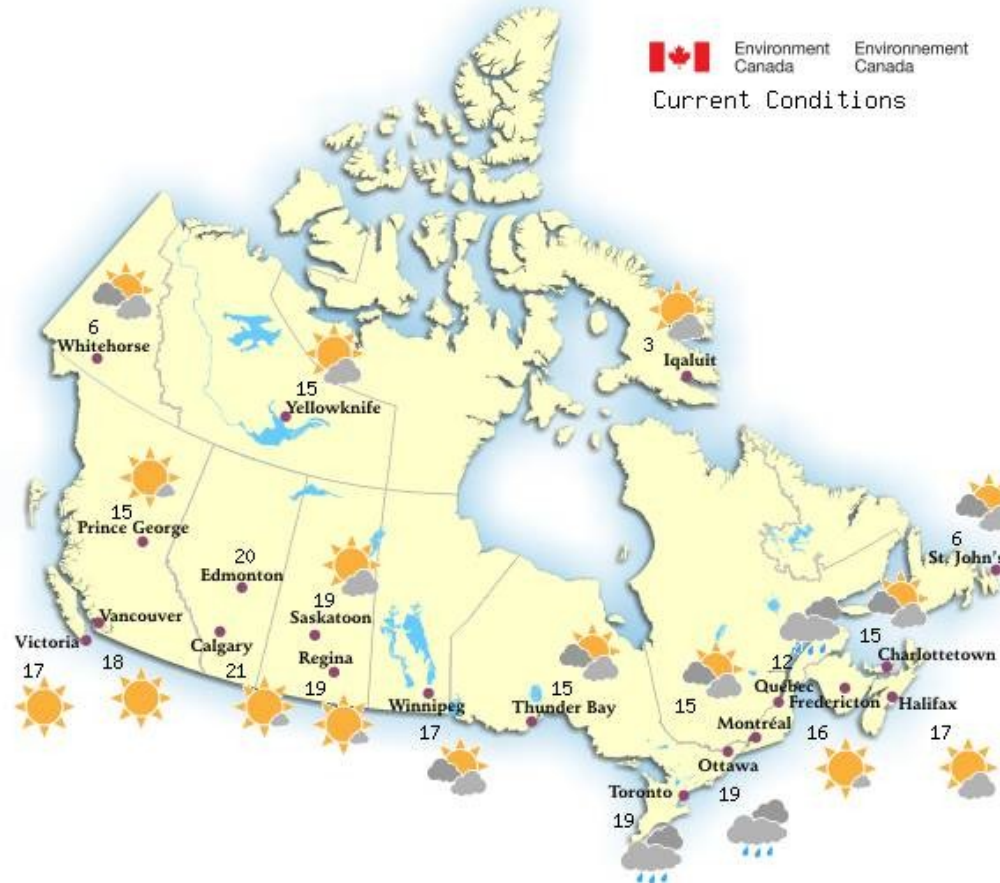
Canadian Meteorological Centre

Environment Canada   Environnement Canada

Canada

weather.gc.ca

Observation Sources

Aircraft

Surface Stations

Buoys
(moored and drifting)

Satellites

Boats

Weather Balloons

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Canada

Environnement
Canada

Canada
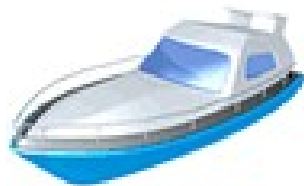
Observation Formats

Binary

- BUFR (Binary Universal Form for the Representation of meteorological data)
- ARINC-620 (AMDAR) (Aeronautical Radio Incorporated)
- NETCDF (Network Common Data Form)
- SIGRID (Sea Ice Grid)
- TDR (Temperature Data Record)
- HDF4, HDF5 (Hierarchical Data Format)
- etc. etc. etc.

ASCII

- WMO FM-42 (AMDAR) (Aircraft Meteorological Data Relay)
- WMO FM-32,-33,-34,-35,-36,-37,-38 (RADIOSONDES) (Radio Probe)
- WMO FM-63 (BATHY) (Bathy (depth) Thermograph)
- WMO FM-64 (TESAC) (Temperature Salinity Current Report)
- WMO FM-12,-13,-14,-18 (SYNOP, BUOY) (SYNOPtic and BUOY)
- WMO FM-15 (METAR) (MEteorological Terminal Aviation weather Report)
- WMO FM-16 (SPECI) (aviation selected SPECIal weather report)
- WMO MANICE
- WMO MANOBS (SA)
- SHEF (Standard Hydrological Format)
- AIRNOW (Air Quality Now)
- CSV (Comma Separated Values)
- etc. etc. etc.
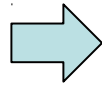
BURP
(Binary Universal Report Protocol)

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Data Volume

- **20+ Gigabytes/day**
- **30+ years worth of tape archives**
- **= Big Database**

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Conversion Process

Observation Data

Legacy Format: BURP (Binary Universal Report Protocol)

The Present

Foreign Data Wrapper
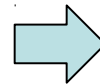
The Future

PostgreSQL Table

date	temperature	wind speed

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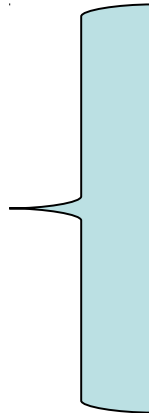
Call for Assistance

- Foreign Data Wrappers
- Large Distributed Databases (pgpool, pg_shard, etc.)
- Other tools to consider?
- Pitfalls to avoid?
- Best practices?
- Other ideas?

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Contact Me

- christophe.malek@ec.gc.ca

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