



Agriculture and
Agri-Food Canada

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Canada



The Canadian Drought Monitor Perspectives from Canada

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National Agroclimate Information Service

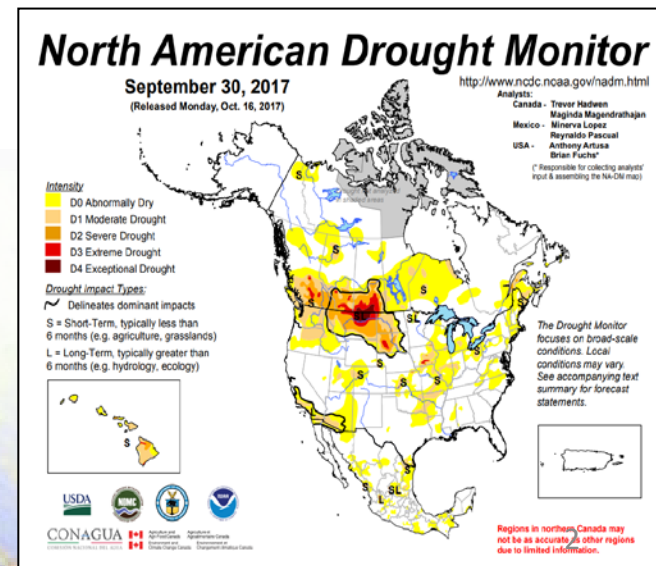
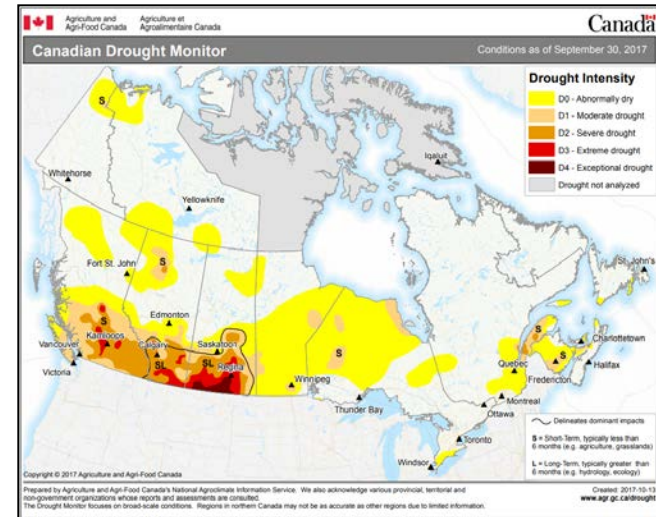
Regina, Saskatchewan, Canada¹

*Improving the Effectiveness of Early Warning Systems for
Drought: 2020 Virtual Drought Summit*

September 29, 2020

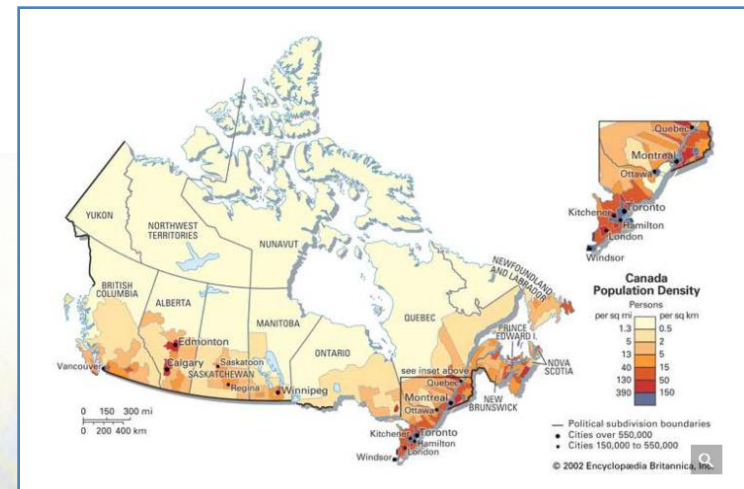
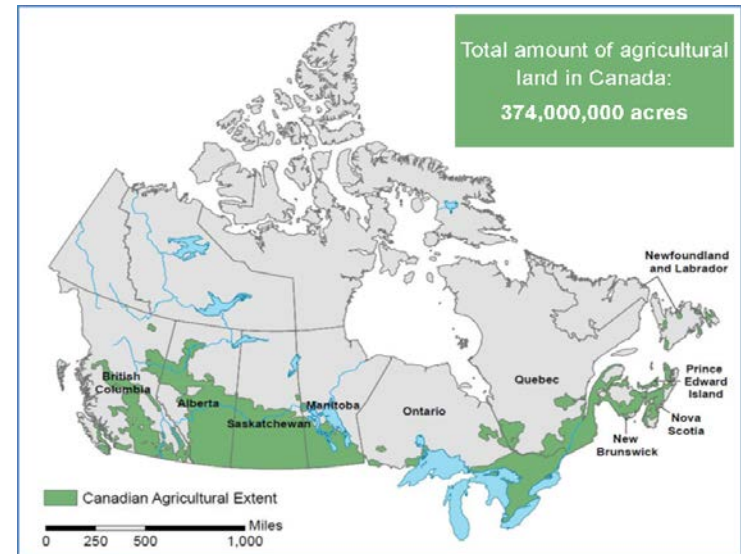
Canadian Drought Monitor Background

- In Canada, AAFC's National Agroclimate Information Service is responsible for monitoring drought.
- Since 2003, Canada has been providing NADM input utilizing the shared 'Drought Monitor' methodology.
- A variety of data and the experience of multiple experts are applied to creating monthly assessments.
- Assessments cover all of Canada except the territory of Nunavut.
- AAFC is continuously improving the assessment process and tools we offer.



Monitoring Challenges in Canada

- Canada's variable climate, geography, and hydrology make drought monitoring very challenging. Canada is a big, environmentally diverse country.
- Much of Canada is sparsely inhabited and lacks environmental monitoring infrastructure. Most of Canada's population lives within 100 km of the Canada-U.S. boundary.
- Drought is difficult to monitor during winter and is not well understood in Northern/Arctic regions; and
- Limited people actively participating in drought monitoring. Those that are often focused on one aspect of drought for a particular sector.



We are addressing these issues by:

- Building collaborations;
- Expanding the number and nature of data sets being used;
- Developing new indices and methods to assess drought; and
- Maximizing efficiencies in the assessment process.
 - Created Web Services for our daily climate products to increase efficiency and accuracy of our assessments.
 - Developed ArcGIS Online applications to improve our assessments efficiency and accuracy.
 - Developed and incorporated blended indices, VegDRI, ESI.
 - Increasing our volunteer monthly agroclimate impact reporters.
 - Incorporated ESRI Story Map to help tell the drought story.
 - Adding a section of Drought Analysis tools to allow web users to explore the data and make it more accessible.



Agroclimate Maps

- Drought Watch
- Agroclimate Maps**
- Canadian Drought Monitor
- Satellite Soil Moisture
- Agroclimate Impact Reporter
- Livestock Tax Deferral Provision
- Extreme Weather Indices
- Managing Agroclimate Risk
- Related Links

Agroclimate Maps

View static maps of agroclimate conditions in Canada:

- [current agroclimate conditions](#)
- [historic agroclimate conditions](#)

Explore the maps using an interactive application

- [agroclimate interactive mapping application](#)

Note: you can access digital datasets on open data by selecting 'About' in the application.

Find out how the maps are produced: [About the agroclimate map production process](#).

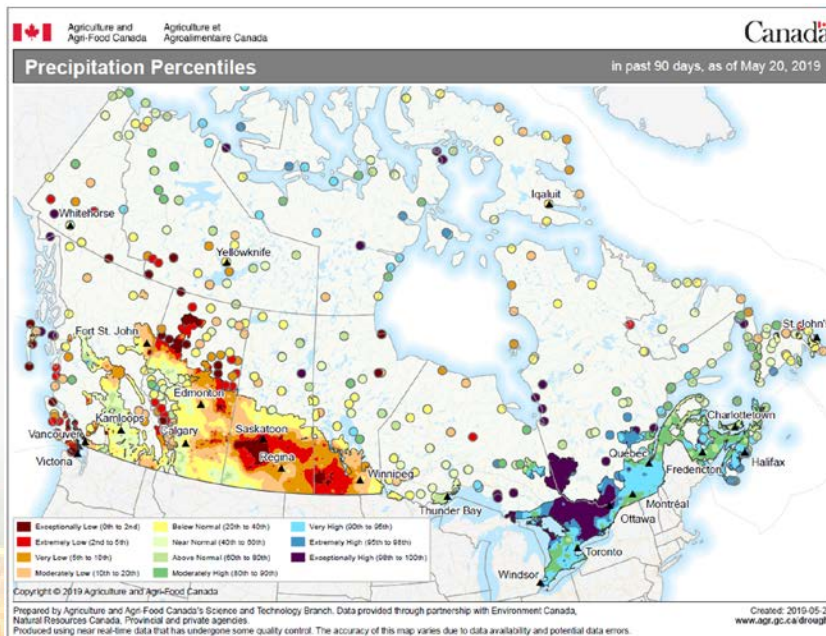
See when the maps are produced: [Agroclimate map production schedule](#).

Date modified: 2019-05-09

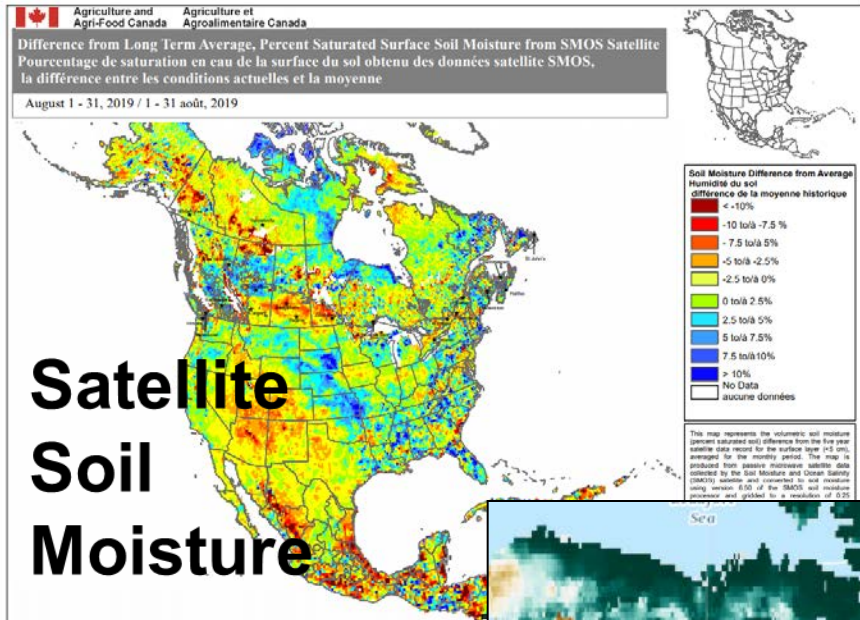
Hundreds of maps online for Temp & Precip and other variables, current and archived. Updated daily. Data are from ECCC and provincial networks, quality controlled.

Users can view and download static maps, data or use our online interactive map.

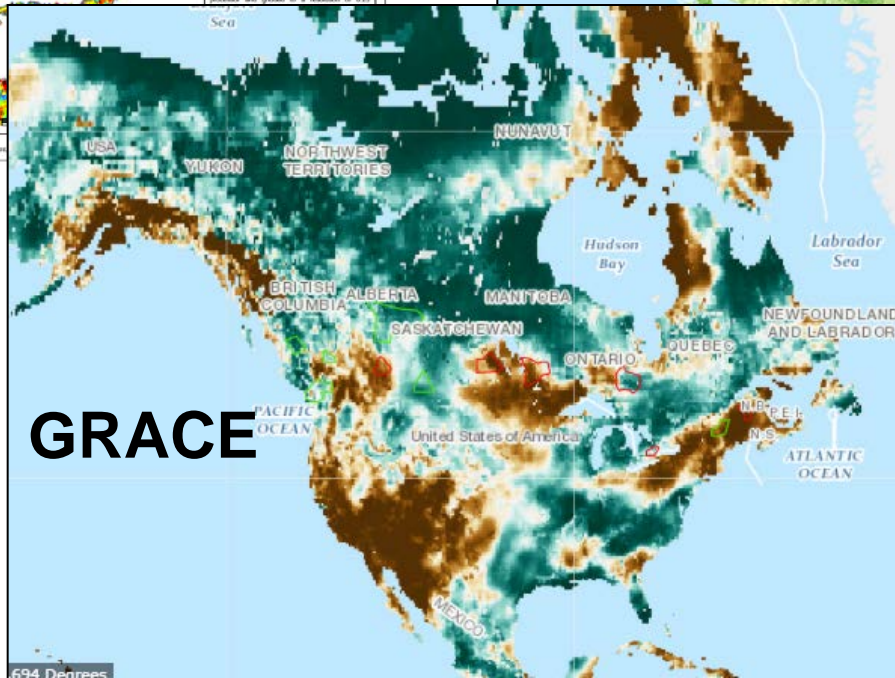
Of particular use to water managers are precipitation maps: totals, percent of average, difference from average, percentiles, SPI, SPEI, and PDI.



Use of satellite and other modeled



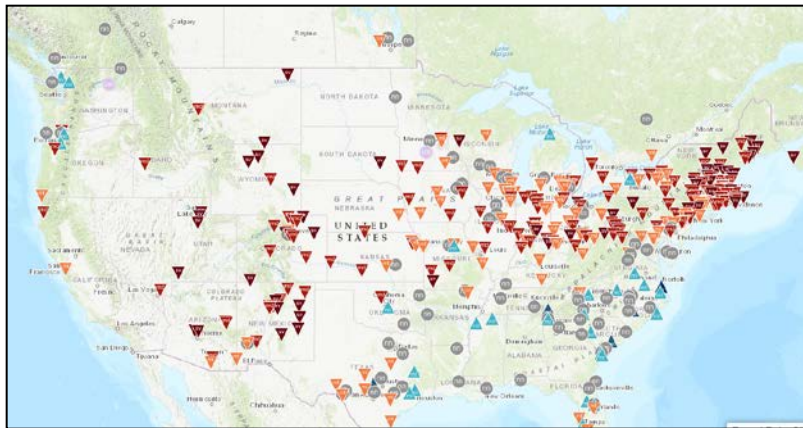
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 Prepared by Agriculture and Agri-Food Canada's Agriculture Geomatics and Earth Observations Division / Préparé par la division de Géomatique et d'Observation de la Terre



694 Degrees

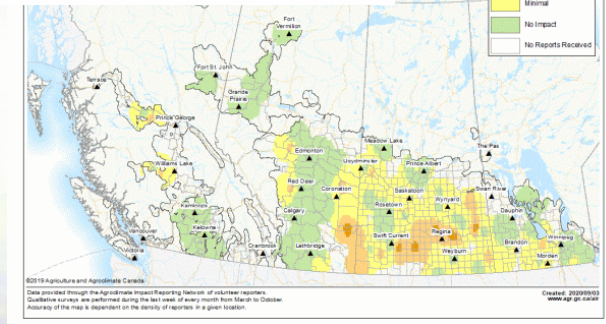
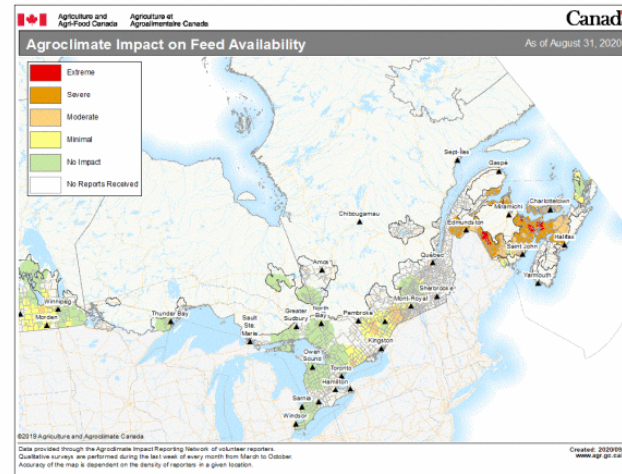
Impact Reports

- CoCoRaHS Condition Monitoring



“Moderately dry especially for September. It has been 3 weeks since any measurable moisture. 9/9/20 reported 1.05" and was much needed then. Low humidity and high daytime temps continued all through September which dried up every bit of moisture in the forest floor behind our house”

- AAFC’s Agroclimate Impact Reporter

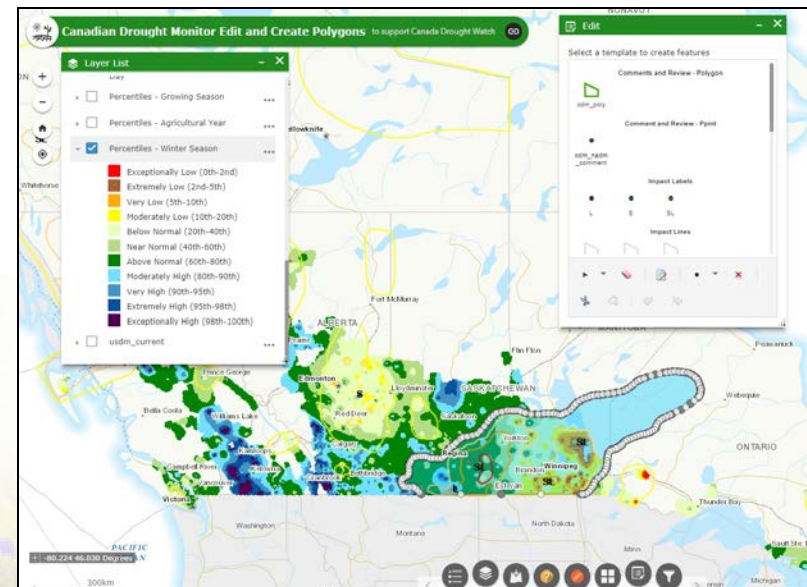


Editor and Reviewer Applications

- The CDM Editor and Reviewer Applications are ArcOnline Applications that allows the CDM authors/ reviewers to edit/comment on the assessment in a cloud-based environment.
- The applications contains the CDM and many of the indices required to assess drought as Web Service layers

The benefits:

- Increased efficiency and flexibility
- Multiple editors
- Portable
- Easily incorporate web services and outside spatial data



ESRI Map Journal

March 2018 Assessment

Prairies.

Pacific Region (BC)

In the Pacific region, overall conditions improved with some persisting dryness along the coast. Conditions improved greatly along the central interior region, as normal to above normal winter precipitation and snow storms continued to improve lingering soil moisture deficits from the growing season. **Abnormally Dry (D0)** conditions emerged in the southeast near Revelstoke following below normal precipitation. Dry conditions continued to worsen along the coastal regions with a **Moderate (D1) Drought** pocket emerging in the north, with a small **D0** pocket emerging on south Vancouver Island.


Prairie Region (AB, SK, MB)

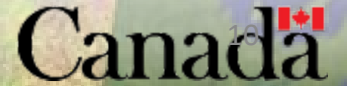
Overall, drought conditions in the Prairie region were variable throughout March, with some regions experiencing improved moisture

Allows direct and interactive navigation to specific locations

Links to additional NAIS products embedded into the Story Map text

- [Total Accumulated Precipitation Map](#)
- [Standard Precipitation Index Map](#)
- [Palmer Drought Index Map](#)
- [Soil Moisture - Percent of Normal Map](#)

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Drought Analysis Tools

- Various analytical tools have been developed to provide additional content, increased visibility and interactivity and use of our products and data.
 - **Time Slider:** slide through historical assessments
 - **Monthly Comparison Tool:** compare two CDM maps side by side
 - **Change Maps:** view improvement or degradation of drought over a given period of time
 - **Stats and Graphs:** allows users to interact with the current and historical CDM data looking at the impact of drought



As a result of recent development efforts that have been focused on greater assessment efficiency, increased indices, improved timeliness, better-quality usability and interactivity

- Increasing the data sets and indicators being used in assessing drought;
- Improved internal assessment efficiencies have cut our assessment time despite adding more indices;
- Improved the accuracy of the assessments;
- And strengthened and expanded web presence.

The Canadian Drought Monitor has experienced significant growth and exposure.



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Thank You

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National Agroclimate information Service,
Agriculture & Agri-Food Canada

Drought Watch

<http://www.agr.gc.ca/drought>



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