Environment and Climate Change Canada | Environnement et Changement climatique Canada

USE OF CoCoRaHS DATA AT ECCC

Prepared by:
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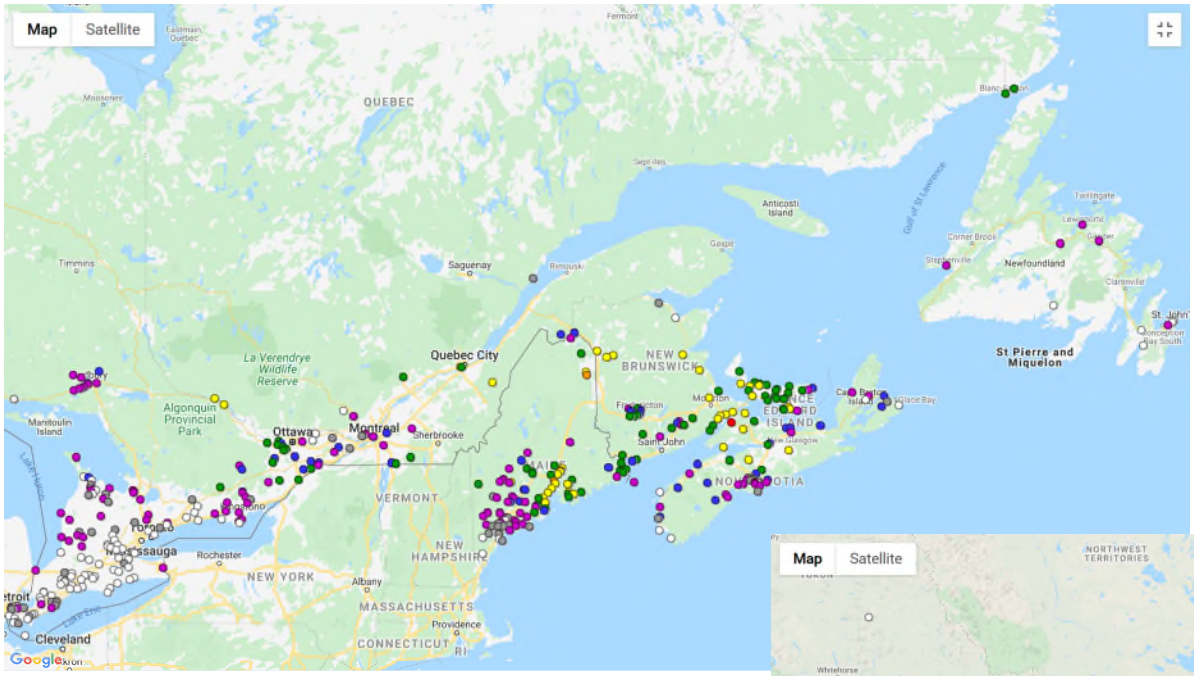
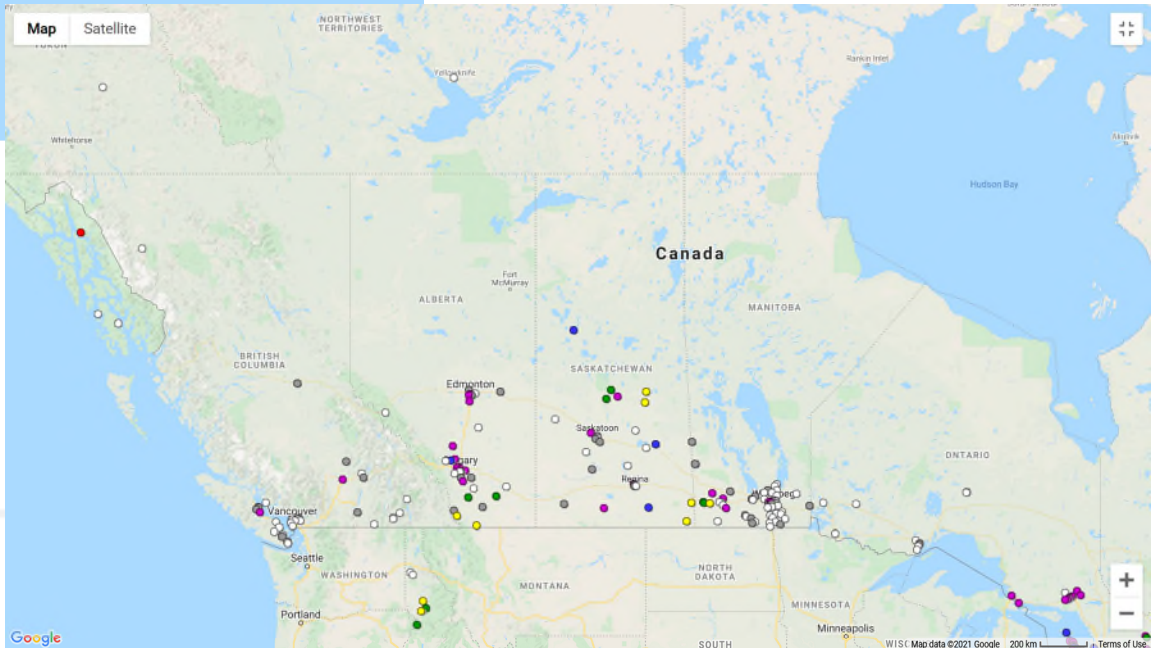
Meteorological Service of Canada (MSC)
Environment & Climate Change Canada (ECCC)

830 STATIONS REPORTED IN LAST YEAR
740 REPORTED PREVIOUS YEAR (12% INCREASE)
ECCC FULL NETWORK ~1200 STATIONS





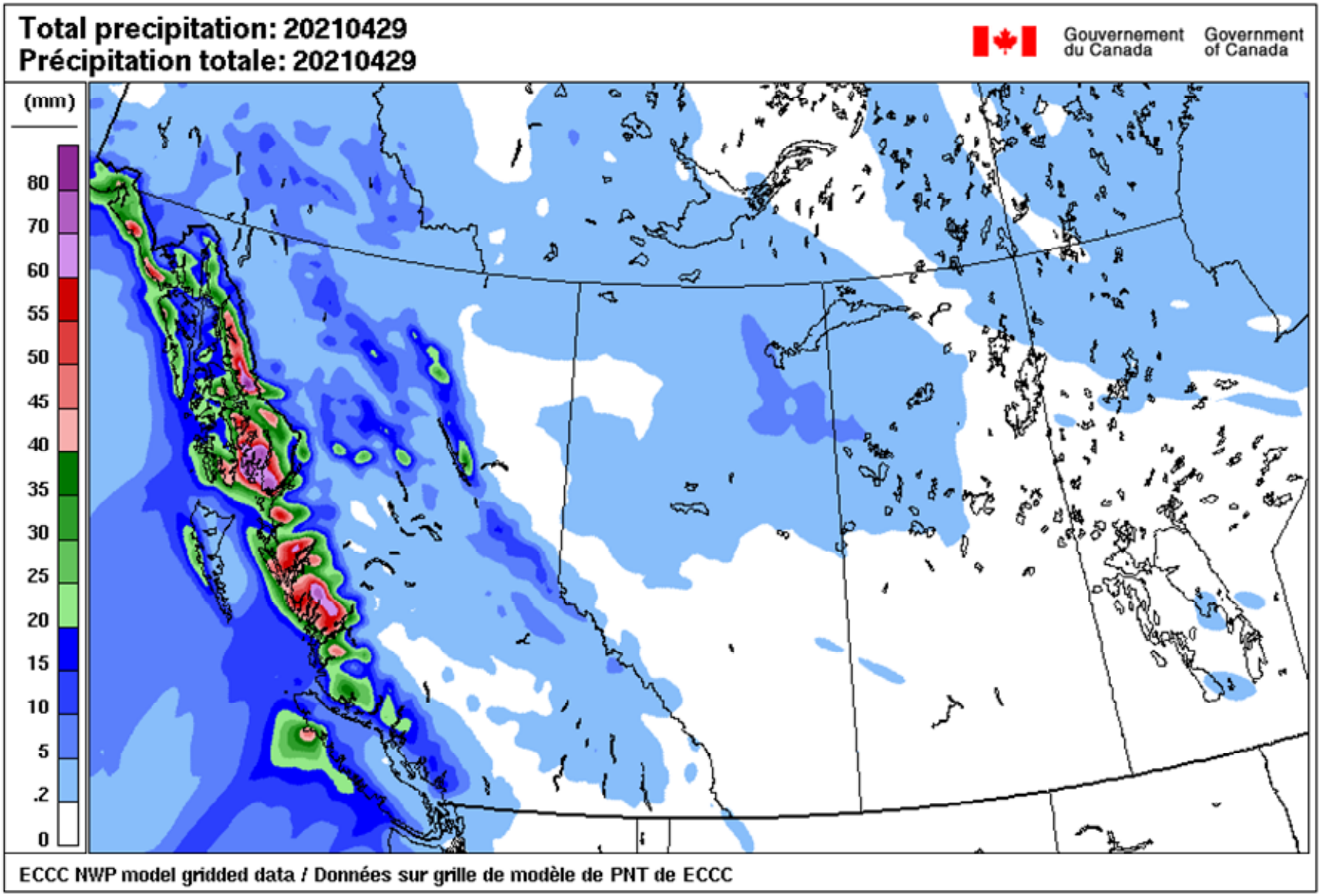
ECCC CoCoRaHS DATA USAGE

- Used to supplement precipitation data from ECCC networks for:
  - Clients and media
  - Storm Summary bulletins issued by SPCs
  - Included in MSC precipitation/snowfall mapping
  - Included in Monthly/Seasonal Climate Bulletins

- Used to help qc ECCC station data and river flow data when needed

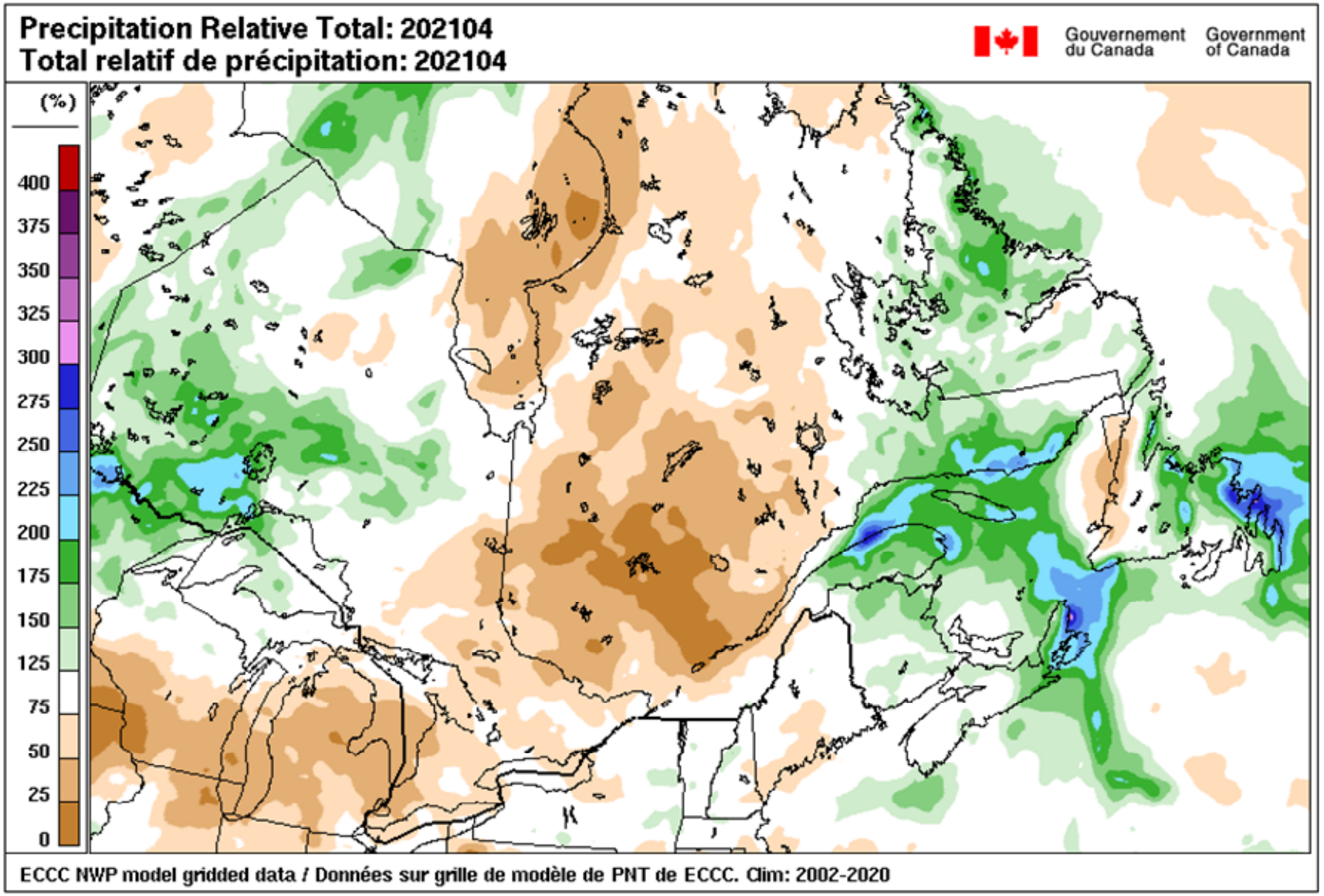
- Forecasters use to help verify/improve the performance of forecasts/warnings

CaPA PRECIPITATION MAPPING – DAILY PRECIP CoCoRaHS INCLUDED SINCE 2018



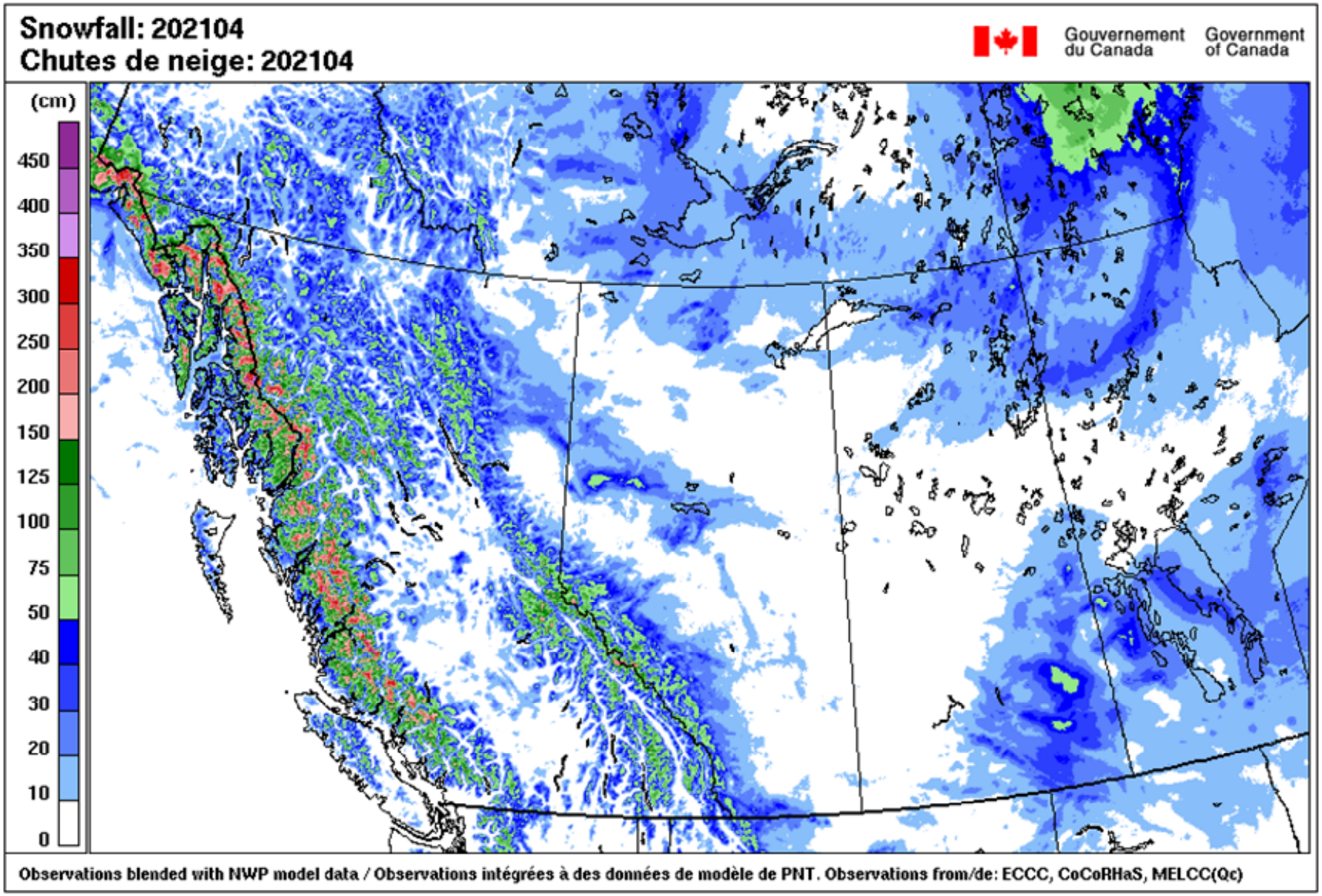
CaPA PRECIPITATION MAPPING

MONTHLY PRECIP ANOMALY

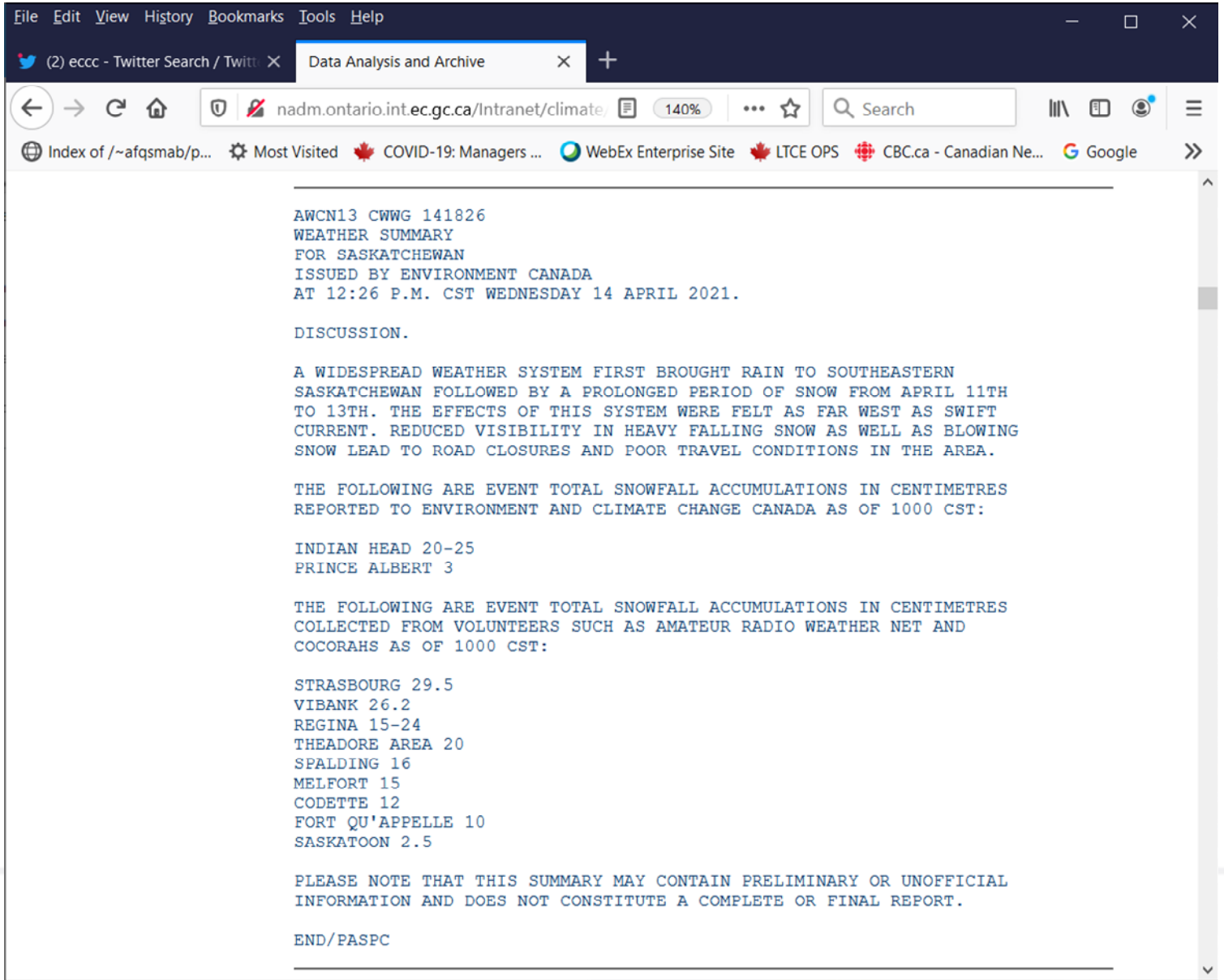


SNOWFALL MAPPING

TOTAL MONTHLY SNOWFALL



ECCC STORM SUMMARY BULLETIN



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Data Analysis and Archive

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Index of /~afqsmab/p... Most Visited COVID-19: Managers ... WebEx Enterprise Site LTCE OPS CBC.ca - Canadian Ne... Google

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AWCN13 CWWG 141826
WEATHER SUMMARY
FOR SASKATCHEWAN
ISSUED BY ENVIRONMENT CANADA
AT 12:26 P.M. CST WEDNESDAY 14 APRIL 2021.

DISCUSSION.

A WIDESPREAD WEATHER SYSTEM FIRST BROUGHT RAIN TO SOUTHEASTERN
SASKATCHEWAN FOLLOWED BY A PROLONGED PERIOD OF SNOW FROM APRIL 11TH
TO 13TH. THE EFFECTS OF THIS SYSTEM WERE FELT AS FAR WEST AS SWIFT
CURRENT. REDUCED VISIBILITY IN HEAVY FALLING SNOW AS WELL AS BLOWING
SNOW LEAD TO ROAD CLOSURES AND POOR TRAVEL CONDITIONS IN THE AREA.

THE FOLLOWING ARE EVENT TOTAL SNOWFALL ACCUMULATIONS IN CENTIMETRES
REPORTED TO ENVIRONMENT AND CLIMATE CHANGE CANADA AS OF 1000 CST:

INDIAN HEAD 20-25
PRINCE ALBERT 3

THE FOLLOWING ARE EVENT TOTAL SNOWFALL ACCUMULATIONS IN CENTIMETRES
COLLECTED FROM VOLUNTEERS SUCH AS AMATEUR RADIO WEATHER NET AND
COCORAHS AS OF 1000 CST:

STRASBOURG 29.5
VIBANK 26.2
REGINA 15-24
THEADORE AREA 20
SPALDING 16
MELFORT 15
CODETTE 12
FORT QU'APPELLE 10
SASKATOON 2.5

PLEASE NOTE THAT THIS SUMMARY MAY CONTAIN PRELIMINARY OR UNOFFICIAL
INFORMATION AND DOES NOT CONSTITUTE A COMPLETE OR FINAL REPORT.

END/PASPC

MONTHLY/SEASONAL CLIMATE BULLETINS

Quarterly Climate Impacts and Outlook

Gulf of Maine Region

March 2021

Gulf of Maine Significant Events – *December 2020–February 2021*

Drought conditions improved in most of the region during **December**; however, abnormal **dryness lingered** through **January** and **February**. See Regional Impacts for details.

December and January were unusually warm with below-normal snowfall.

Storms moved through the region frequently during February.

December

December was mild, with two periods of **unusual warmth**. On **December 1**, temperatures were as high as 17°C (63°F) causing seven New Brunswick sites including Fredericton, Miramichi, and Oromocto to have their **warmest December day** on record. Caribou, ME, recorded its **warmest high and low temperatures of any winter**. Temperatures on **December 25** were as high as 17.8°C (64.0°F). Fredericton and Oromocto had their **warmest December day**, a record that had just been set earlier in the month. Many places in the Maritimes, as well as Caribou, ME, saw their warmest Christmas on record. In fact, it was a green Christmas for most of the Maritimes, where a white Christmas is becoming rarer. This **was the warmest December** for several Maritimes sites including Halifax, N.S., and among the five warmest Decembers for most of the rest of the Maritimes and Caribou, ME. Three of Caribou's 10 warmest December days on record occurred this December. The month's warm temperatures led to **snowfall deficits** in many areas and contributed to a delay in the ski season in the Maritimes. There were **two notable storms** in December, a nor'easter that brought rain, snow, and gusty winds to the region from **December 5 to 6** and a storm that dropped heavy snow on parts of New England from **December 16 to 17**. See Regional Impacts for details.

January

January was also **unusually warm**, particularly in Maine and the Maritimes. The North Cape, P.E.I., area recorded its **warmest January** on record. This January ranked among the **five warmest on record** for most Maritimes sites and Caribou, ME, and among the 10 warmest Januaries for Portland, ME. There were **few significant storms** in January, leading to **drier-than-normal** conditions and **below-normal snowfall** for many locations. Several New Brunswick and Nova Scotia sites had one of their **10 driest Januaries**.

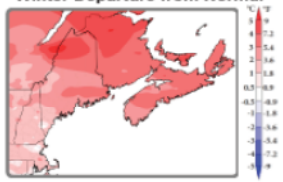
February

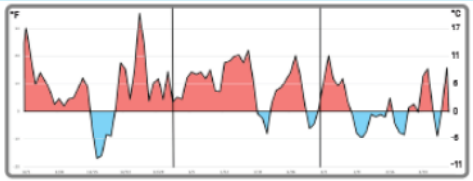
The Gulf of Maine region did not experience the record-setting cold conditions that the central U.S. and much of Canada saw as the polar jet stream plunged south during February. In fact, this February ranked among the **10 warmest** on record for several Maritimes sites. However, the **jet stream frequently steered storms** through the Gulf of Maine region. For instance, a nor'easter brought **heavy snow and strong winds** to parts of the region from **February 1 to 3**, while a storm from **February 7 to 8** dropped **heavy snow** on the Maritimes. See Regional Impacts for details.

This **winter was the warmest on record** for Fredericton and Moncton, N.B.; Halifax (Shearwater) area, N.S.; and Charlottetown, P.E.I. and among the warmest winters on record for many other locations in the Maritimes. In addition, Caribou, ME, had its third-warmest winter.

Regional Climate Overview – *December 2020–February 2021*

Temperature
Winter Departure from Normal





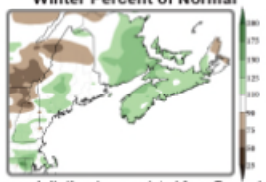
Daily average temperature departure from normal during winter at Caribou, ME. Warmer-than-normal days are shaded red and colder-than-normal days are shaded blue.

Winter (averaged over December, January, and February) was up to 5°C (9°F) **warmer than normal***. **December** was as much as 5°C (9°F) **warmer than normal**, with the warmest locations in the Maritimes and northern Maine. **January** temperatures were as much as 6°C (11°F) **warmer than normal**, with the warmest locations in New Brunswick and Maine. **February** temperatures ranged from 2°C (4°F) in western Maine to 4°C (7°F) above normal in Cape Breton, N.S.

*Temperature normals based on 1981–2010 data.

Regional Climate Overview – *December 2020–February 2021*

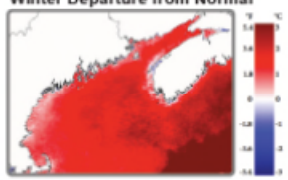
Precipitation
Winter Percent of Normal



U.S. precipitation normals based on 1981–2010 data; Canadian precipitation averages based on 2002–2020 data.

SST normals based on 1985–2014 data

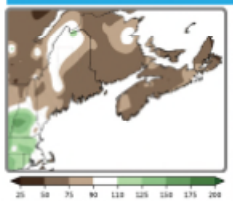
Sea Surface Temperature
Winter Departure from Normal



Winter precipitation (accumulated from December to February) ranged from 50% of normal to 150% of normal. **December precipitation** ranged from 50% of normal to more than 200% of normal, with much of the region seeing near- or above-normal precipitation. Some New Brunswick sites had one of their 10 wettest Decembers on record. **January** was dry with precipitation ranging from 25% of normal to near normal for most areas. **February precipitation** ranged from 75% of normal in parts of New England to 200% of normal in northern Maine and the Maritimes. Ingonish Beach and Malay Falls, N.S., had their second-wettest February on record.

Sea surface temperatures over the entire Gulf of Maine were **strongly above normal** for the **winter** season. Anomalies were strongest over the Scotian Shelf at greater than 2.5°C (4.5°F) and the deeper basins of the western Gulf at greater than 2.0°C (3.6°F). Positive anomalies were less than 1.0°C (1.8°F) only along the extreme western edge of the Gulf. The Gulf's winter sea surface temperature ranked as the **fourth warmest on record** (since 1985).

Regional Impacts – *December 2020–February 2021*



Winter percent of normal snowfall.

Winter Conditions

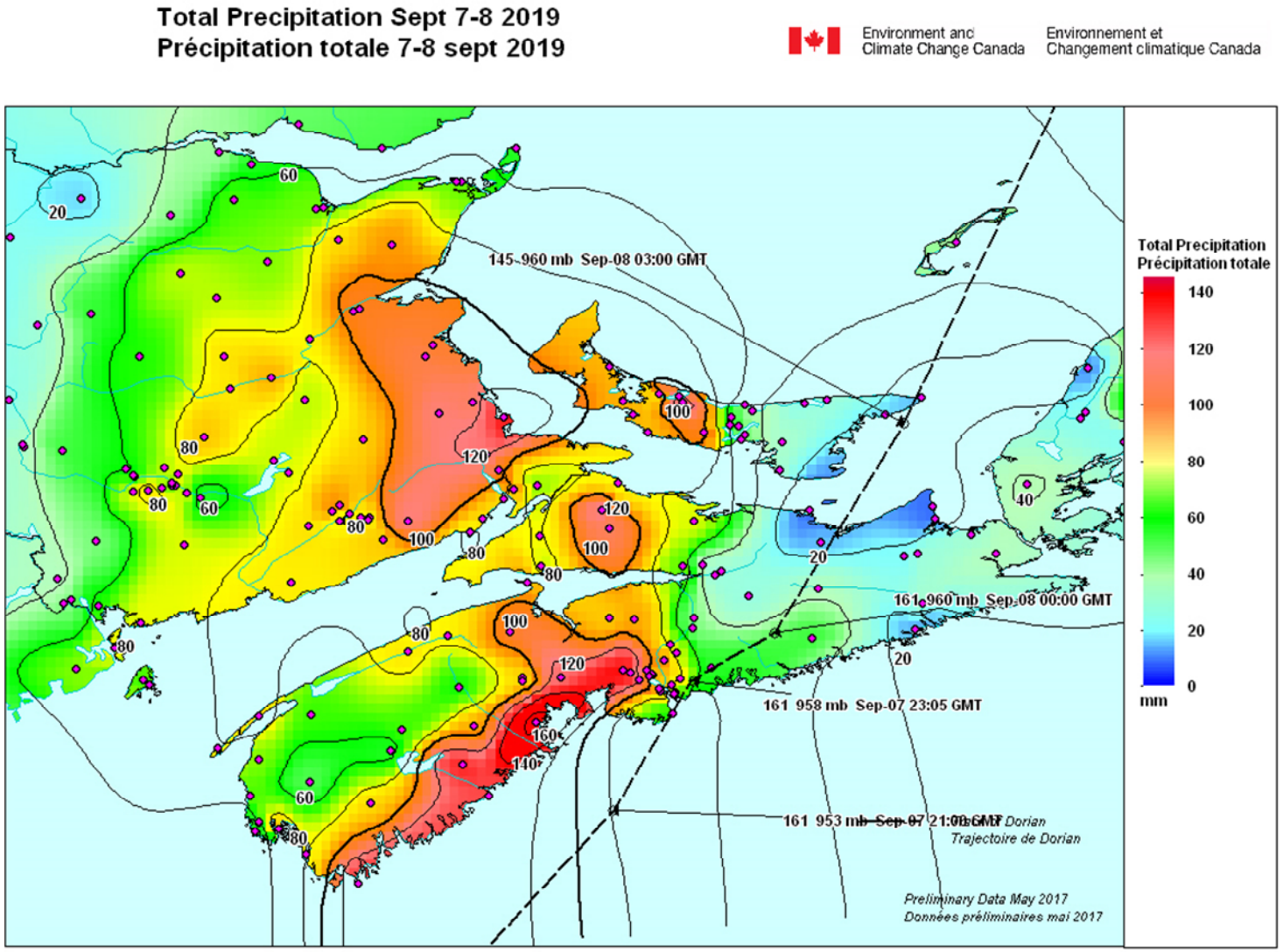
From **December 5 to 7**, a **rapidly intensifying nor'easter brought** up to 102 mm (4 in.) of **rain** to eastern Massachusetts, southern New Brunswick, and parts of Nova Scotia and up to 38 cm (15 in.) of **snow** to northern New Brunswick and the rest of New England. **Wind** gusts of up to 109 km/h (68 mph) contributed to power outages across the region including around 230,000 customers in Maine—more than a quarter of the state. A storm from **December 16 to 17 dropped** up to 122 cm (48 in.) of snow in southern New Hampshire, up to 71 cm (28 in.) in southern Maine, and up to 41 cm (16 in.) in eastern Massachusetts, with snowfall rates of over 13 cm (5 in.) per hour. Concord, NH, **had its all-time snowiest day** on record **and largest December snowstorm**, while Portland, ME, and Boston, MA, had one of their 10 biggest December snowstorms. Parts of New England **wrapped up** December with above-normal snowfall due to the storm, with Concord having one of its 10 snowiest Decembers. However, much of the **Maritimes saw below-normal December snowfall.**

A storm from **January 16 to 17 brought** up to 38 cm (15 in.) of **snow** to northern parts of New Brunswick, Maine, and New Hampshire and up to 55 mm (2 in.) of **rain** to the rest of the region. Rain and melting snow led to flooding in some locations. With few storms and above-normal temperatures, **January snowfall was below or much below normal** for most areas. This January was among the **10 least snowy** on record for Caribou, ME; Concord, NH; Saint John, N.B.; and Yarmouth, N.S. Little snow cover led to a slow start to the snowmobile season. Thin ice and open waterways created unsafe conditions for snowmobiling and ice fishing. The Saint John River in Fredericton, N.B., froze over on January 20, the **second latest date** since 1965, making the 2020–2021 open water season the fourth-longest on record at the site. In early January, a **lack of ice** in the Bay of Chaleur, N.B., **allowed hundreds** of harp seals to drift unusually far into the bay. In late January, ice coverage in the Gulf of St. Lawrence was **around 1.6%, the lowest in over 50 years** of records.

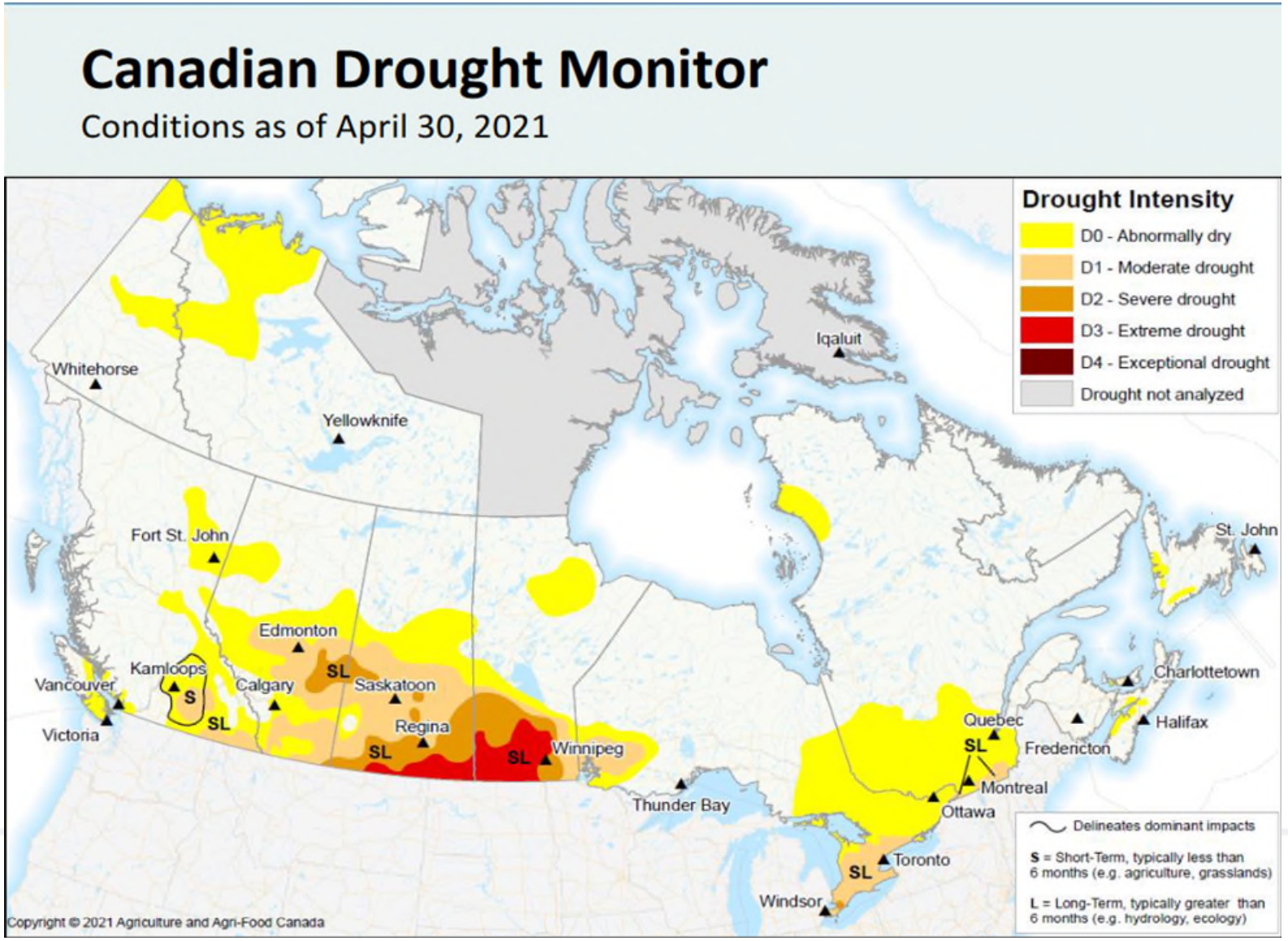
From **February 1 to 3**, a **nor'easter dropped** up to 56 cm (22 in.) of snow on the region, with the greatest amounts in northeastern Massachusetts, while parts of Nova Scotia saw over 70 mm (3 in.) of rain. **Wind** gusts of up to 100 km/h (62 mph) led to power outages. **Coastal flooding** in Massachusetts inundated roads and low-lying areas and contributed to the partial collapse of three seasonal homes. From **February 7 to 8**, a storm brought up to 50 cm (20 in.) of **snow and strong winds** to the Maritimes, closing schools and cancelling postal service. A storm from **February 15 to 17 produced** up to 15 mm (0.60 in.) of freezing rain, 10 cm (4 in.) of sleet, and 25 cm (10 in.) of snow in the region, creating hazardous travel conditions. With frequent storms, **February snowfall** was **near or above normal** for most areas, with Caribou, ME, having its 10th-snowiest February. In early February, the water equivalent of the snow pack in the Saint John River basin was only 28% of normal but that increased to 70% of normal by early March. Ice coverage in the Gulf of St. Lawrence was **around six weeks behind normal** by late February. The lack of ice can lead to shoreline erosion, damage to the fisheries, more seals on shore, and dangerous ice fishing conditions. **Winter snowfall ranged** from 25% of normal in Cape Breton, N.S., to 175% of normal in western New Hampshire (map above).

Contact: Ellen Mecray (Ellen.L.Mecray@noaa.gov) Samantha Borisoff (sgh58@cornell.edu)
Gulf of Maine Region Quarterly Climate Impacts and Outlook | Mar. 2021
https://drought.gov/reports
Quarterly bulletins: climate impacts and outlook - online at Canada.ca

SIG EVENT PRECIP MAPPING
HURRICANE DORIAN SEPT 7-8 2019
(INCLUDES 165 CoCoRaHS REPORTS)

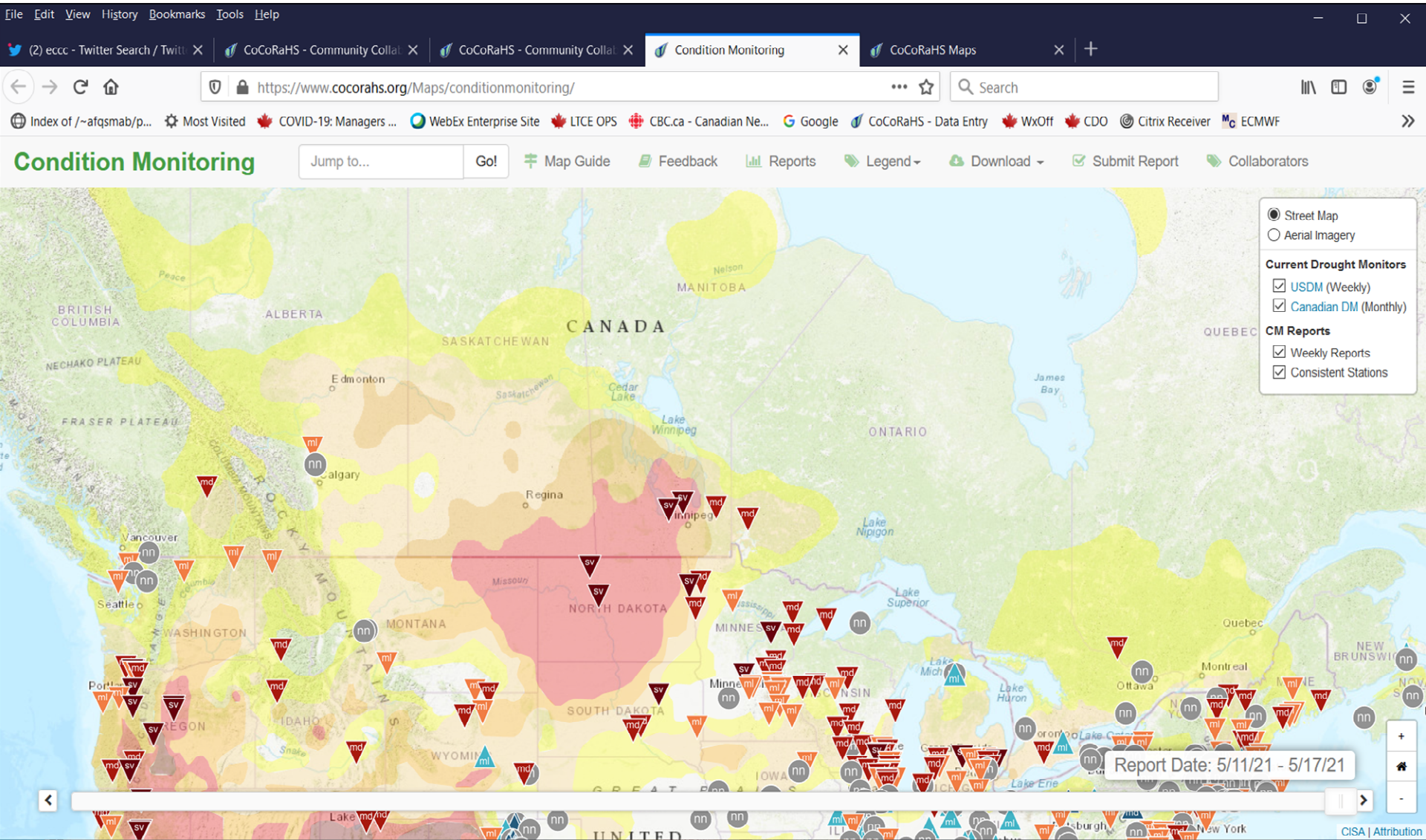


AAFC USING CoCoRaHS WITH ECCC DATA FOR DROUGHT MONITORING



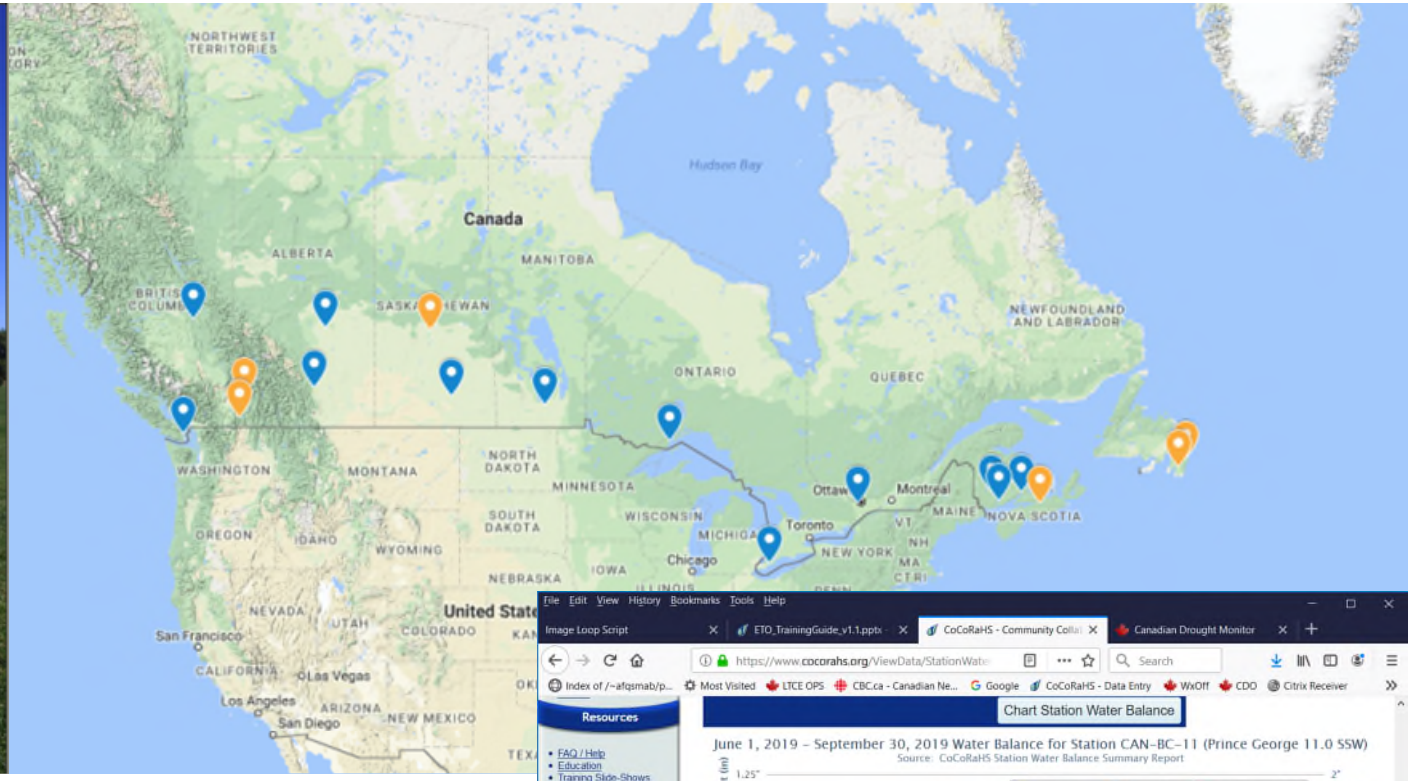
CANADA PROMOTING CONDITION MONITORING

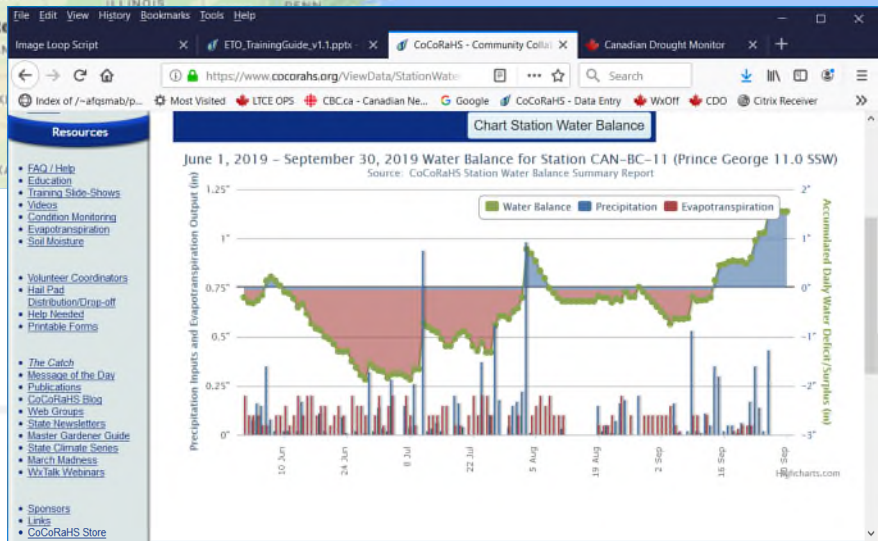
AAFC USING DATA ALONG WITH AIR NETWORK



CDN ET NETWORK ~15 STATIONS

AAFC CONSIDERING USING TO VALIDATE ET ESTIMATES

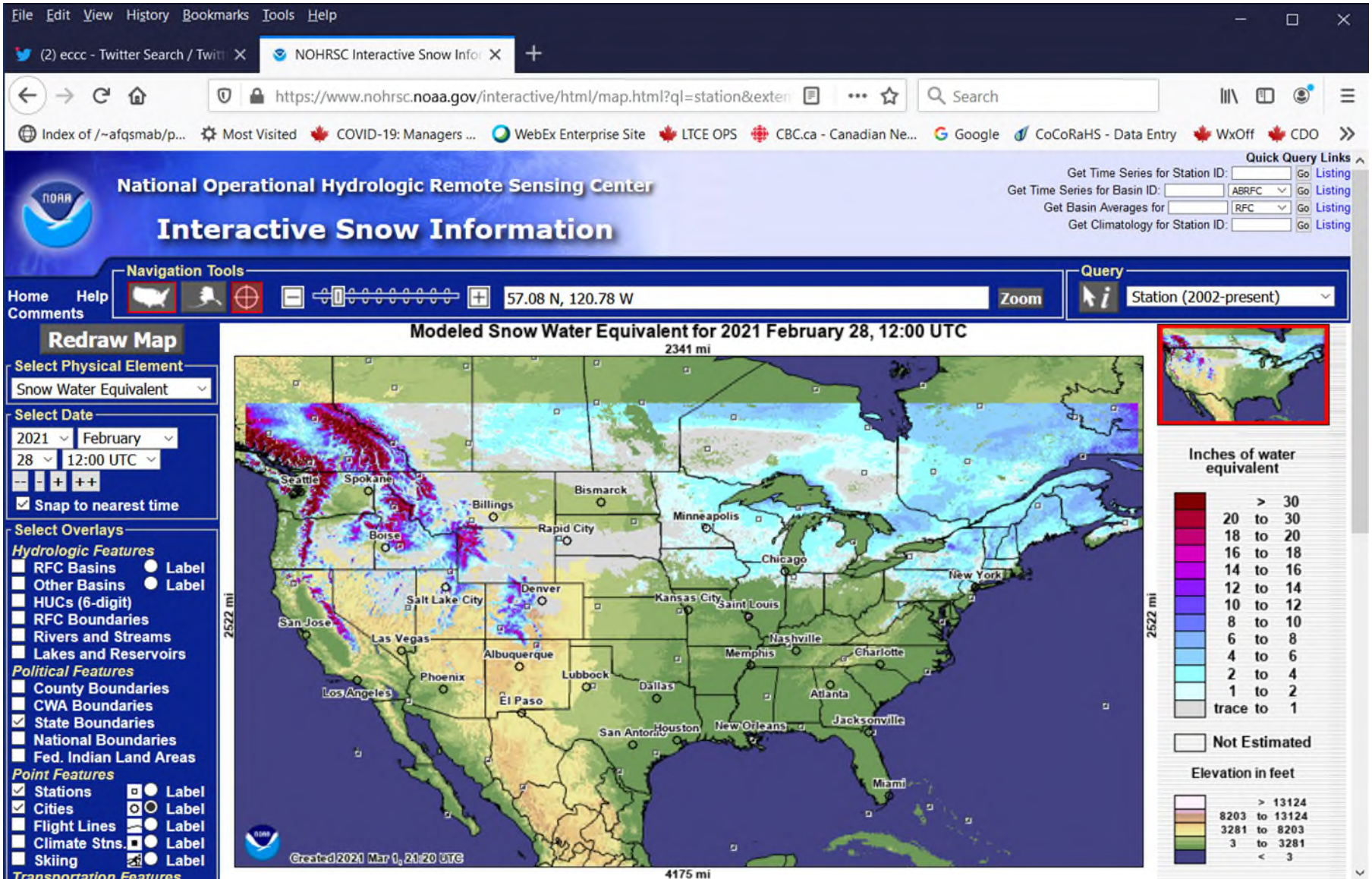




CoCoRaHS IN THE MEDIA

- CBC TV Meteorologist using CoCoRaHS reports for the evening newscasts

NOHRSC USES CoCoRaHS DATA SUPPORTS FLOOD FORECAST PROGRAMS IN CANADA AND THE USA



QUESTIONS?

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