The North American Drought Monitor
Status in Canada

Presented by: E. G. (Ted) O'Brien

To The North American Drought Monitor Workshop

Mexico City, Mexico

October 18, 2006

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Objectives of the Presentation

The primary objective of this presentation is to update you on the advances, challenges and directions of the NADM work in Canada:

- Team building
- Data sourcing and access
- Indicators
- Authorship
- Future Directions

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Team building

- Departmental Climate Risk Committee meets bi-weekly throughout the growing season.
- National Land and Water Information Service (NLWIS)
- Maintained existing relationships with provincial contacts.

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What is the National Land and Water Information Service?

- Easy and timely access to detailed geospatial data, information, tools, applications and GIS infrastructure.
- Capability to integrate land, soil, water, climate and biodiversity data from different sources using GIS technology and provide assistance to access the information through the enterprise NLWIS-GIS.
- Service to Agriculture nationally and will collaborate with other federal government departments, provincial, territorial and municipal governments, NGOs and the private sector.

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NLWIS will provide:

- **Applications** that meet user needs to support decision making.
- **Data** that is current, accurate and at an appropriate scale.
- **Collaboration** with other governments, industries and farm groups that have a need for and ownership of land and water information.
- **IM/IT infrastructure** built on GeoConnections principles. This will be a network of independent computers and databases accessible through the Internet which are housed at AAFC and its many partner agencies.
- **Expertise** that includes knowledge management, the capacity to interpret the information and to collect data, and maintain the land and water information service.

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Service Matrix

"Products"	1. Self-Service	2. Assisted	3. Custom
A. Data	Existing formatted data, known quality, with free use	Restricted use; only available to 3rd party with license	Data held by others;
B. Information	maps, tables, graphs etc (Drought map)	Specialized processed data Specialized maps e.g. land claims	Needs intervention e.g. Avian flu
C. Tools	Easy, self-use on the internet, no assistance	User intervention e.g. variables need to be entered	Custom designed specialized tools E.g. Red River
D. Expertise	Automated on-line Video training	Help desk contact lists for easy questions	Custom projects by agreement

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Automated Real Time/ Near Real Time Quality Assurance /Quality Control (QAQC)

- An automated real time/near real time QA/QC system
- Identify suspicious records
- Automatic correction and missing records filling as well as manual inspection

Data sources

- Environment Canada
- NRCan's Canadian Forestry Service & Provincial Forestry station data
- Other Provincial networks
- Crop Insurance

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QA/QC Components

- Range Check: to check if the values are within the acceptable range limits
- Temporal Check: to check if the rate of changes are within the acceptable limits
- Spatial Check: to check if a value is too distinct from surrounding values

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Quality States

- Valid
  - rarely checked by a human
- Suspect (2 Levels of Suspect Data)
  - Needs to be validated or filled
- Invalid
  - needs to be filled
- Missing
  - needs to be filled

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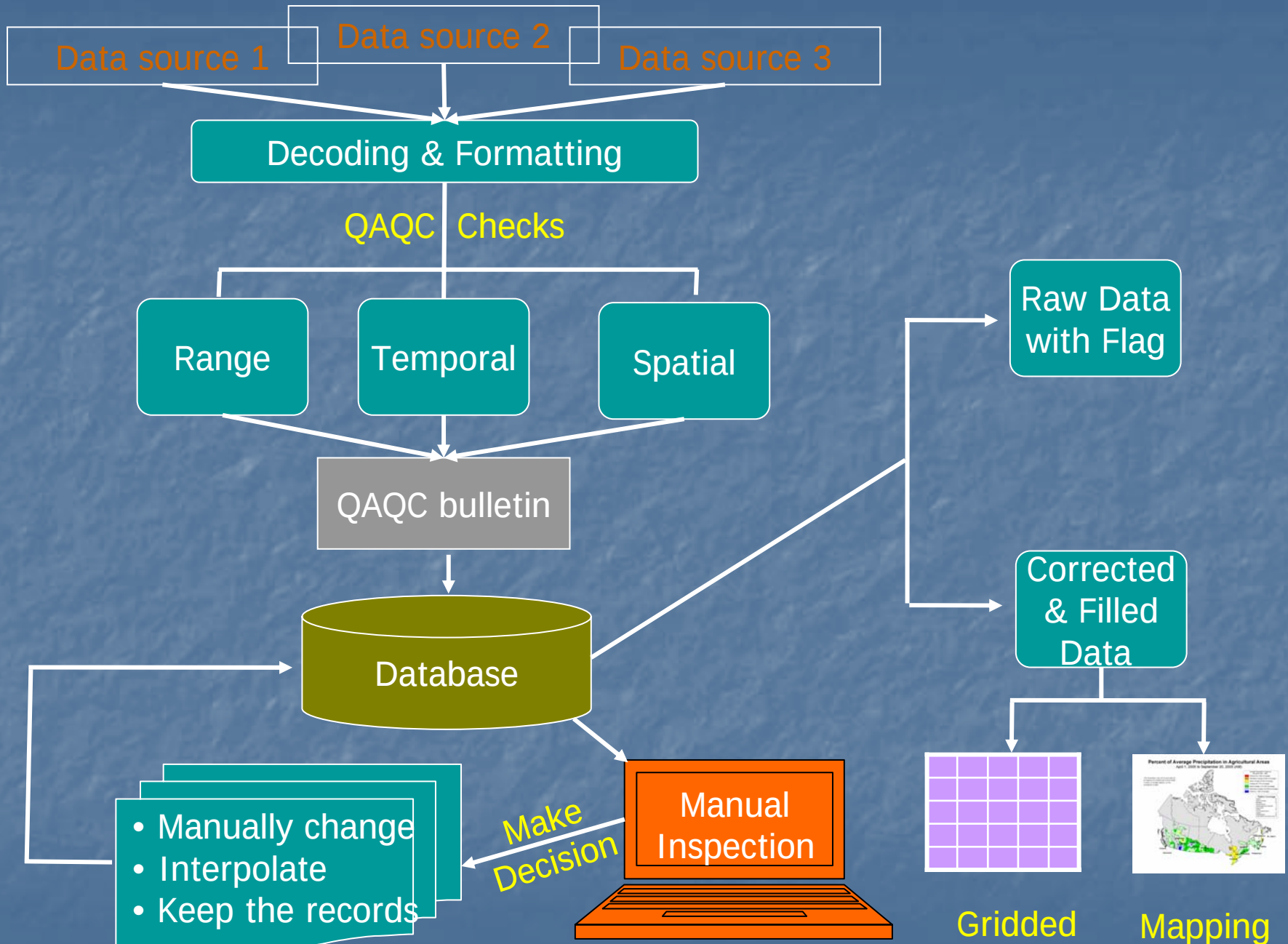
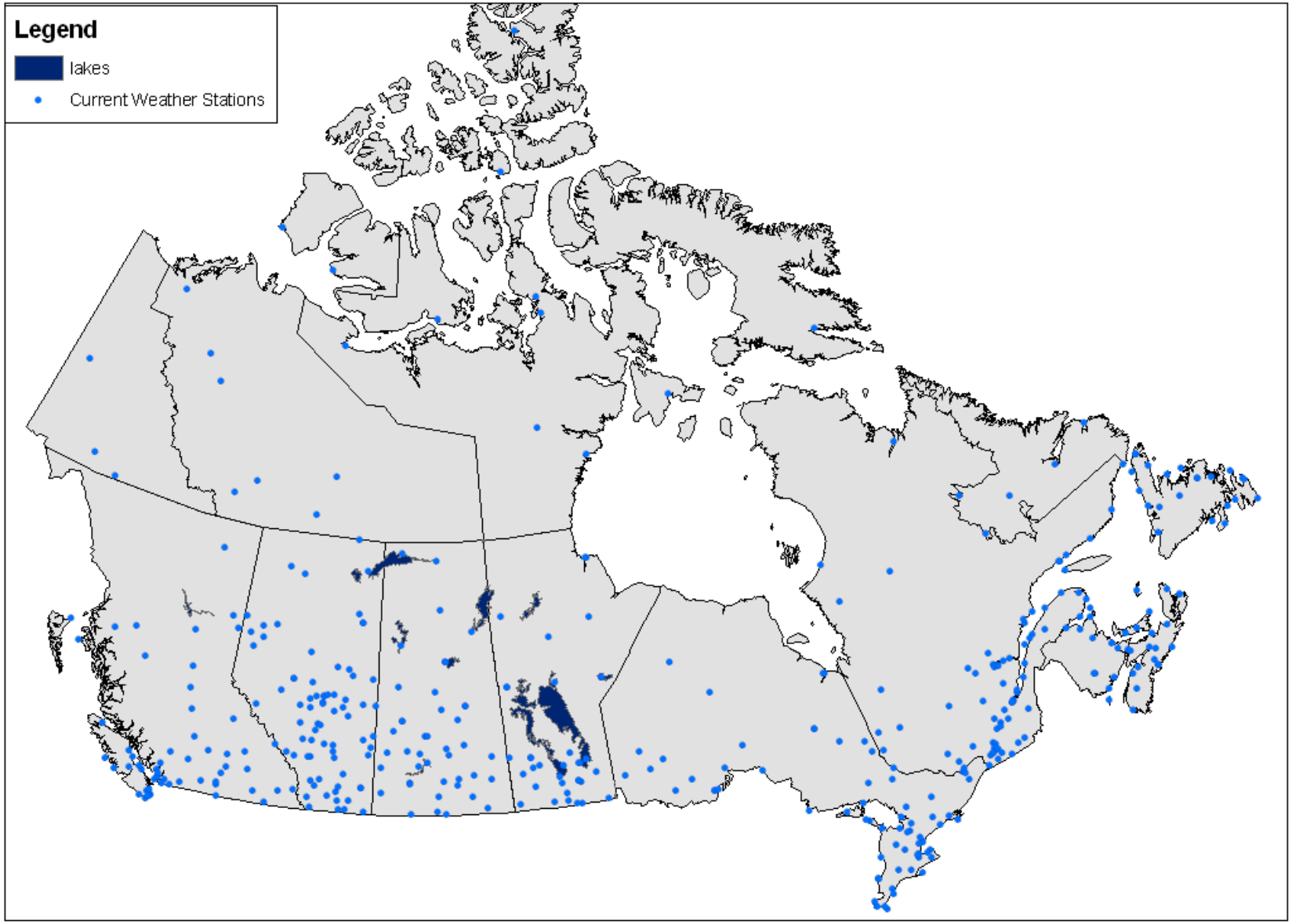

Data source 1
Data source 2
Data source 3
Decoding & Formatting
QAQC Checks
Range
Temporal
Spatial
QAQC bulletin
Database
Raw Data with Flag
Corrected & Filled Data
Manual Inspection
Make Decision
• Manually change
• Interpolate
• Keep the records
Gridded Data
Mapping

Stations Currently Mapped



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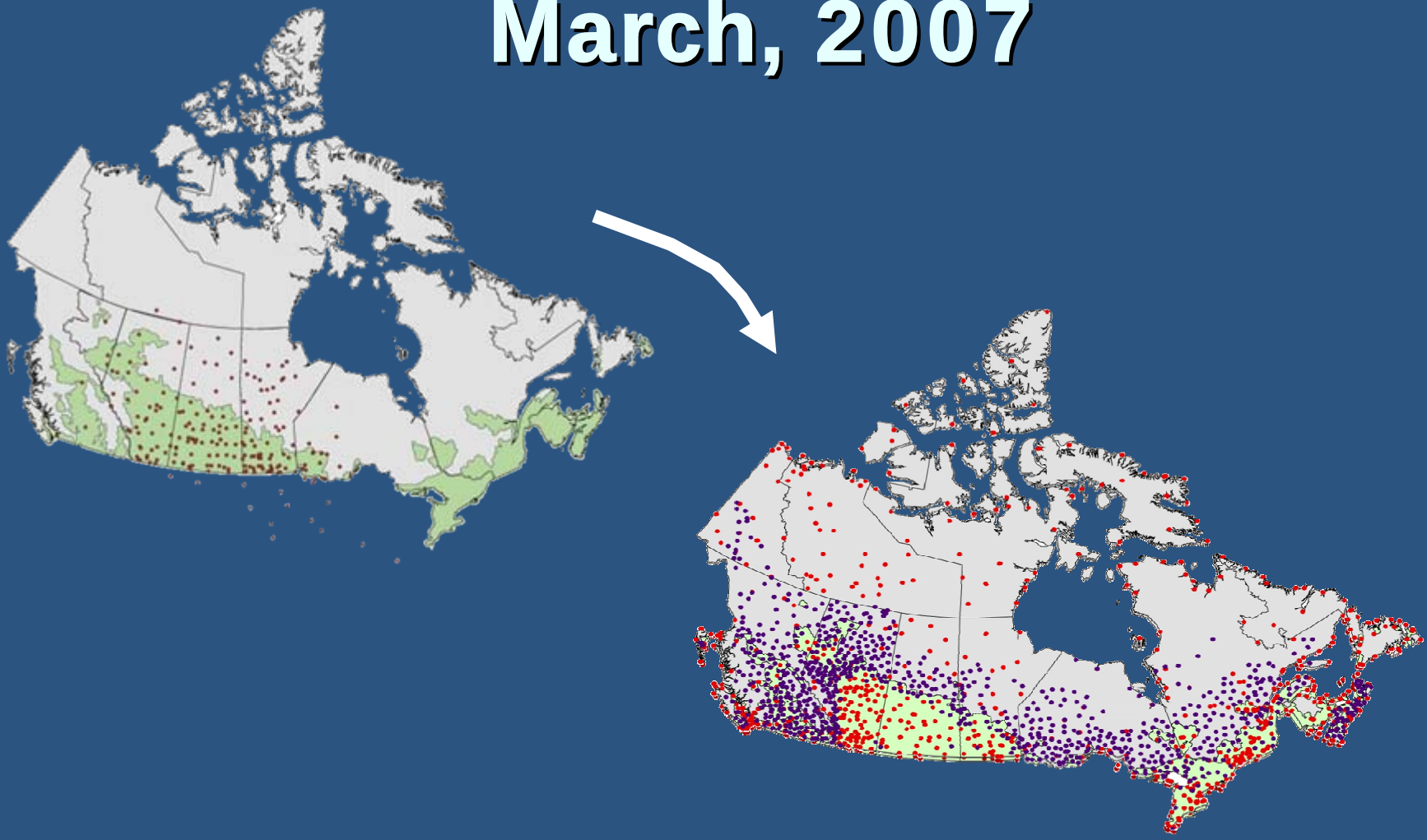
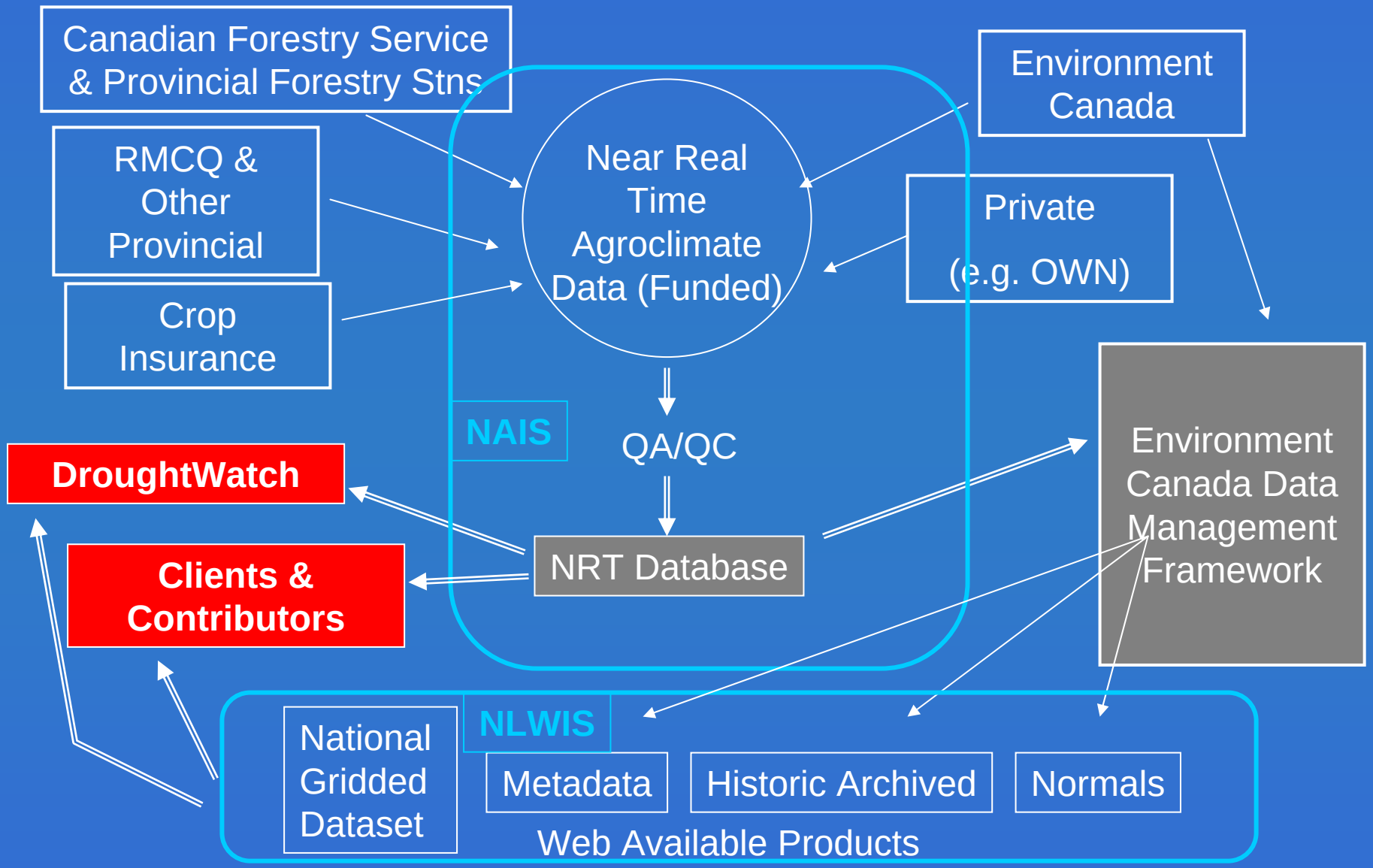
Moving to National Coverage:
March, 2007



Canadian National Agroclimate Network

AACF-NAIS vision for a unified source of climate data for agriculture



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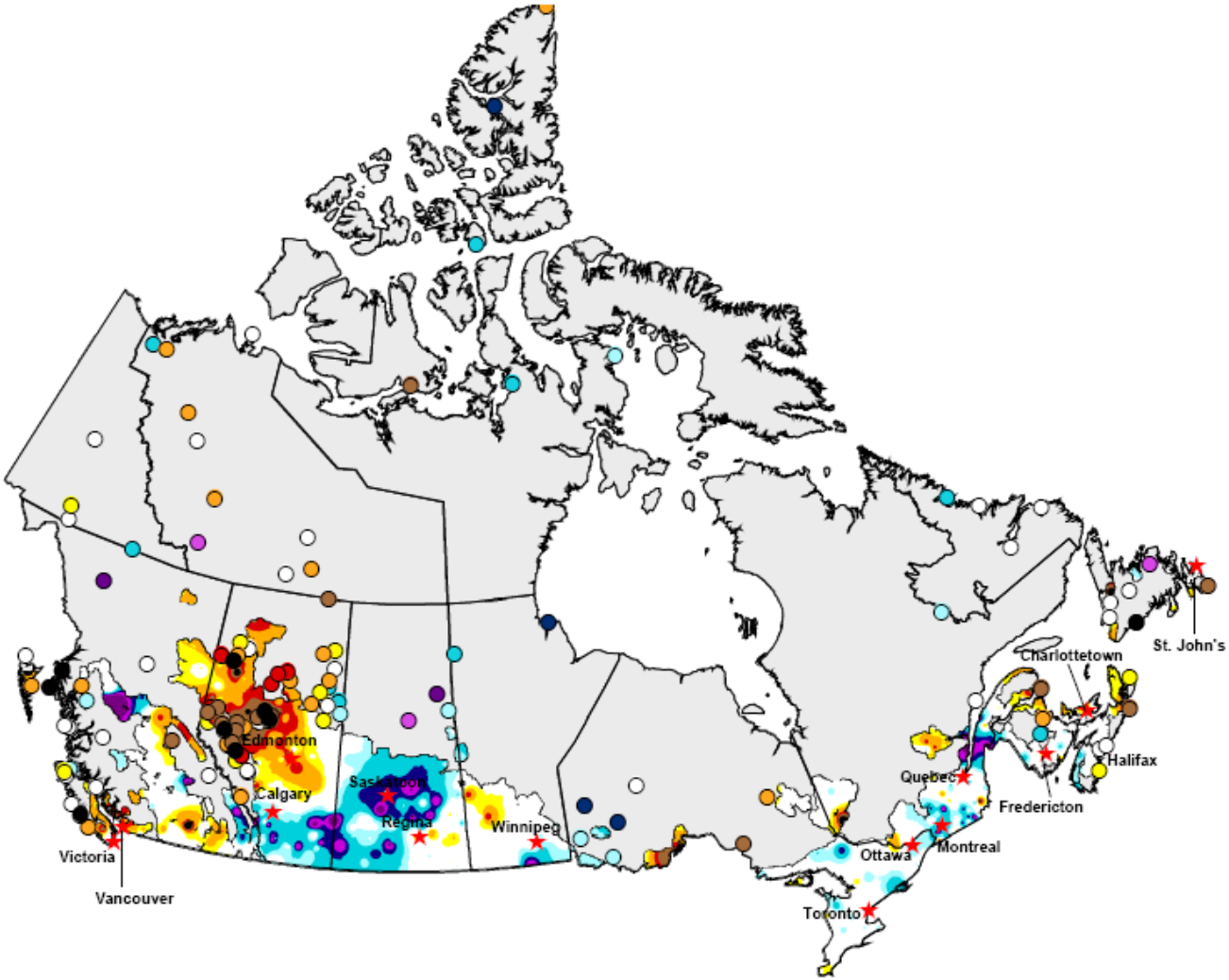
60 Month - Standard Precipitation Index (SPI)

September 2006



SPI

- <= -2.00
- -1.99 - -1.60
- -1.59 - -1.30
- -1.29 - -0.80
- -0.79 - -0.51
- -0.50 - 0.50
- 0.51 - 0.79
- 0.80 - 1.29
- 1.30 - 1.59
- 1.60 - 1.99
- > 2.00
- Extent of Agricultural Land

Produced using near real-time data that has undergone initial quality control. The map may not be accurate for all regions due to data availability and data errors.

Prepared by Agriculture and Agri-Food Canada's National Agroclimate Information Service (NAIS). Data provided through partnership with Environment Canada, Natural Resources Canada, and many Provincial agencies.

Created: 10/08/06
www.agr.gc.ca/pfra/drought

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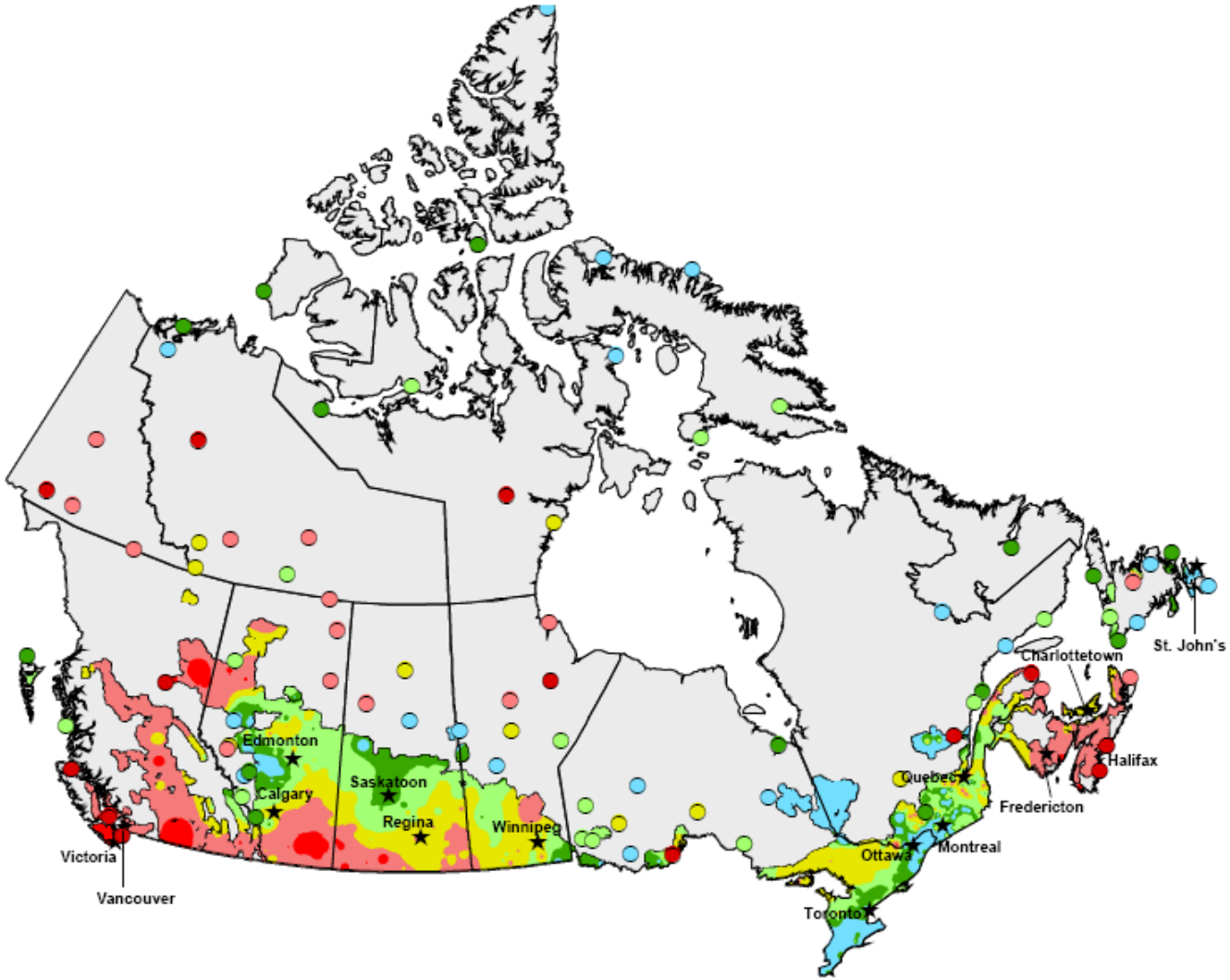
Total Soil Moisture (Drought Model)

Computed as of September 30, 2006



Total Soil Moisture (mm)

- <= 25.00
- 25.01 - 50.00
- 50.01 - 75.00
- 75.01 - 100.00
- 100.01 - 125.00
- > 125.00
- Extent of Agricultural Land

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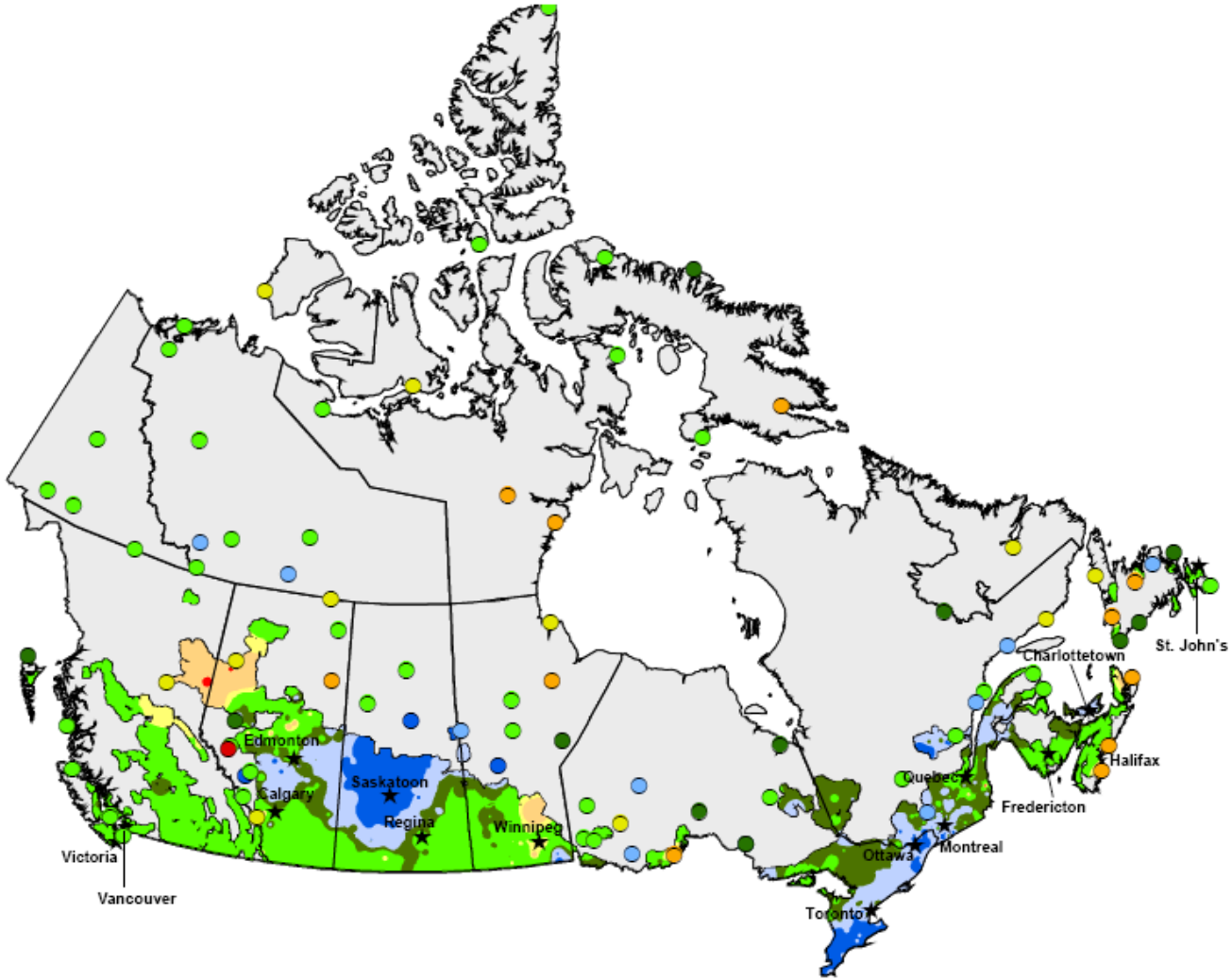
Difference from Normal Soil Moisture (Drought Model)

Computed as of September 30, 2006



Difference from Normal Soil Moisture (mm)

- <= -50.00
- -49.99 - -25.00
- -24.99 - -15.00
- -14.99 - 15.00
- 15.01 - 25.00
- 25.01 - 50.00
- > 50.00
- Extent of Agricultural Land

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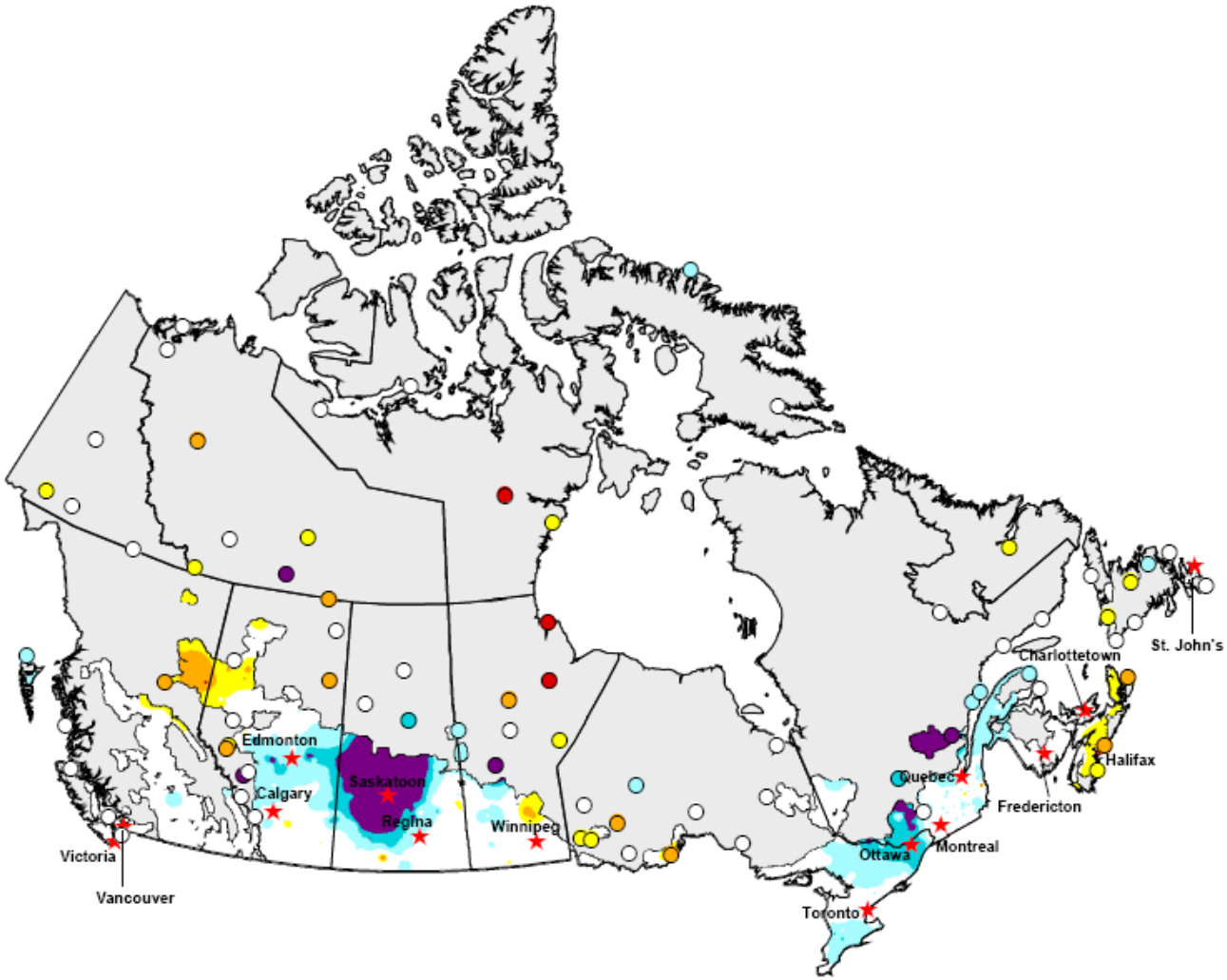
Palmer Z-Index (Drought Model)

(from August 2006 to September 2006)



PDI - Z

- <= -2.75
- -2.74 - -2.00
- -1.99 - -1.25
- -1.24 - 0.99
- 1.00 - 2.49
- 2.50 - 3.49
- > 3.50
- Extent of Agricultural Land

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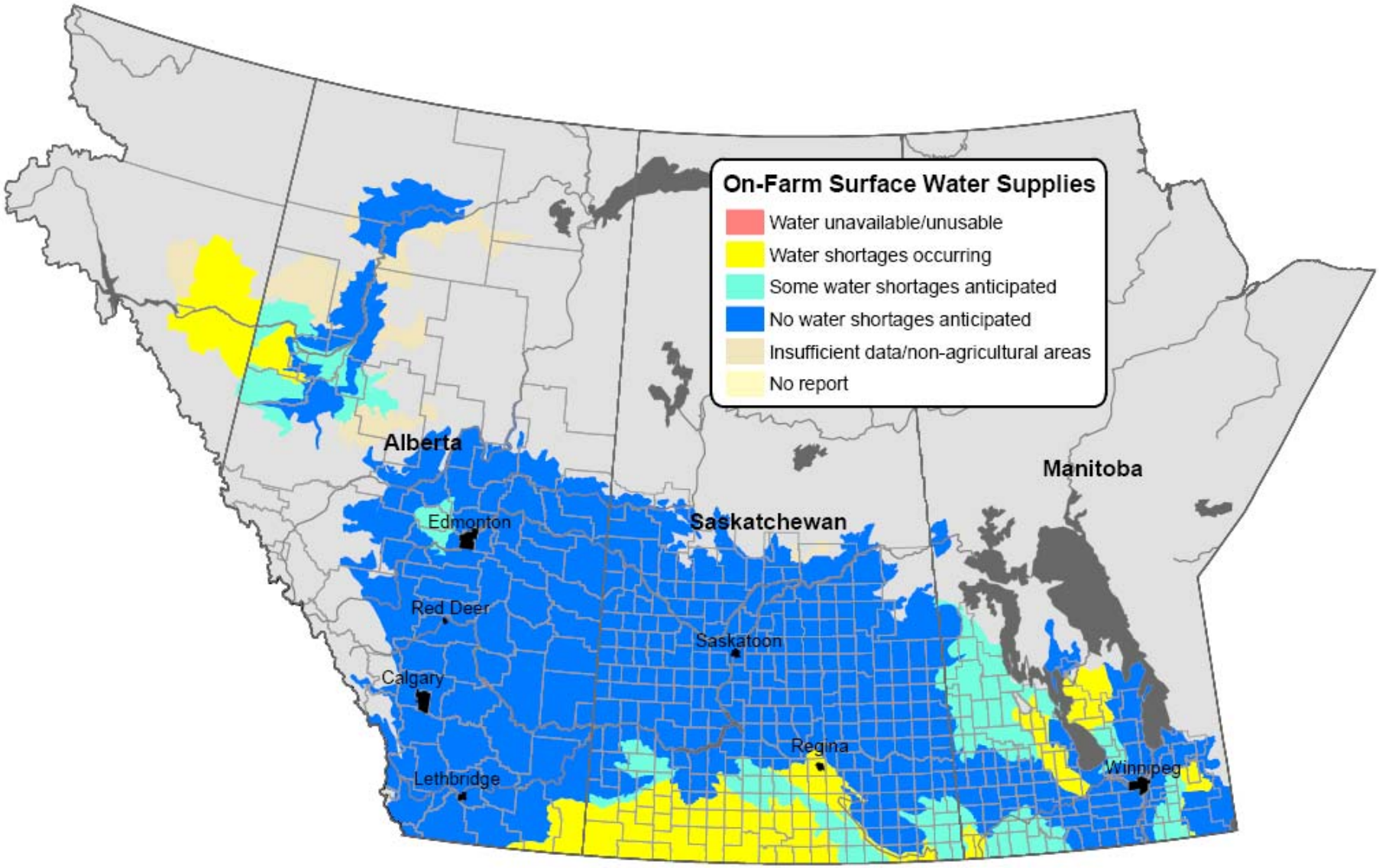
On-Farm Surface Water Supplies

October 1, 2006



www.agr.gc.ca/pfra/drought

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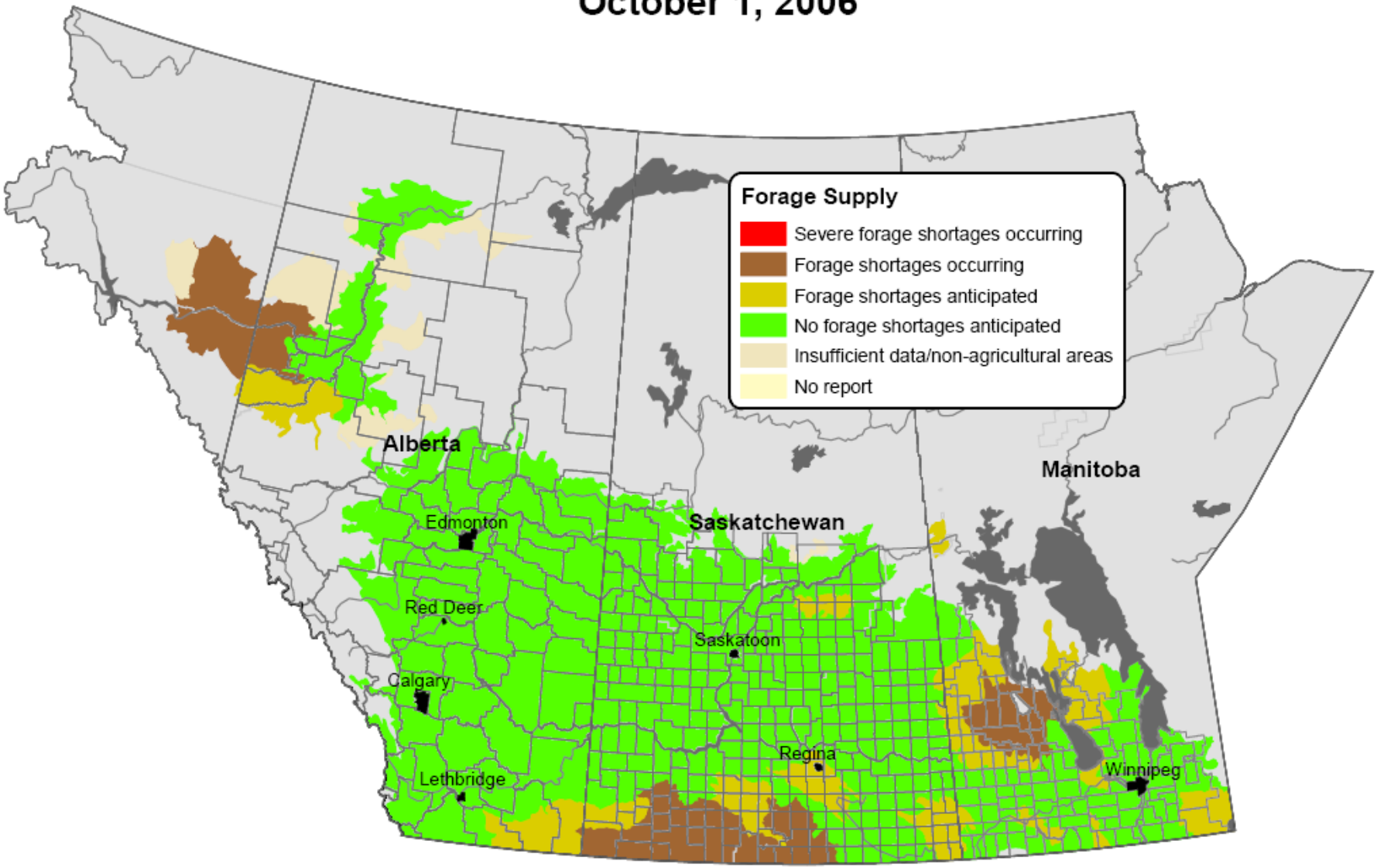
Forage Supply

October 1, 2006



www.agr.gc.ca/pfra/drought

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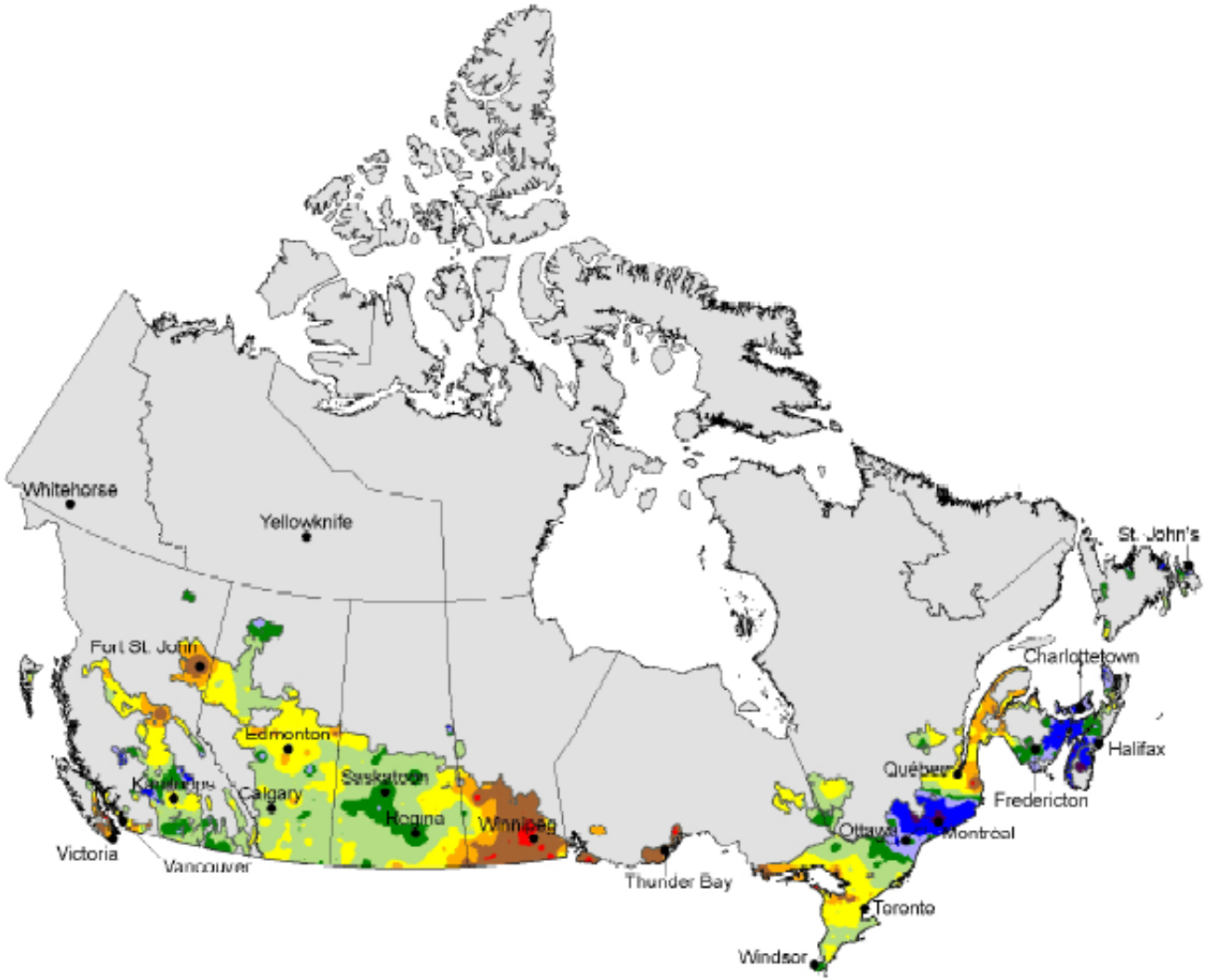
Precipitation Compared to Historical Distribution (National)

April 1, 2006 to August 31, 2006



- Record Dry
- Extremely Low (0-10)
- Very Low (10-20)
- Low (20-40)
- Mid-Range (40-60)
- High (60-80)
- Very High (80-90)
- Extremely High (90-100)
- Record Wet
- Extent of Agricultural Land

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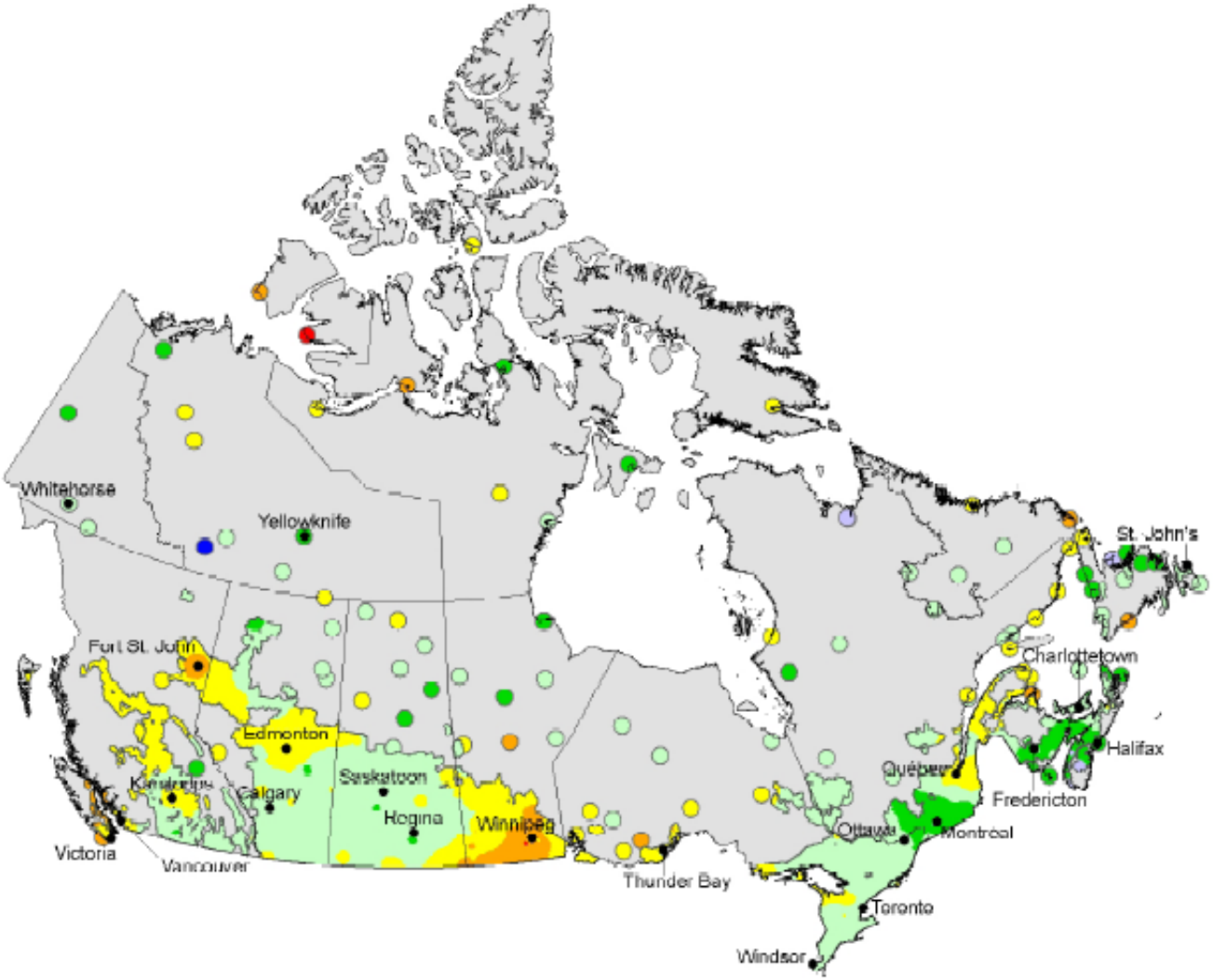
Percent of Average Precipitation (National)

April 1, 2006 to August 31, 2006



- < 40%
- 40 - 60%
- 60 - 85%
- 85 - 115%
- 115 - 150%
- 150 - 200%
- > 200%
- Extent of Agricultural Land

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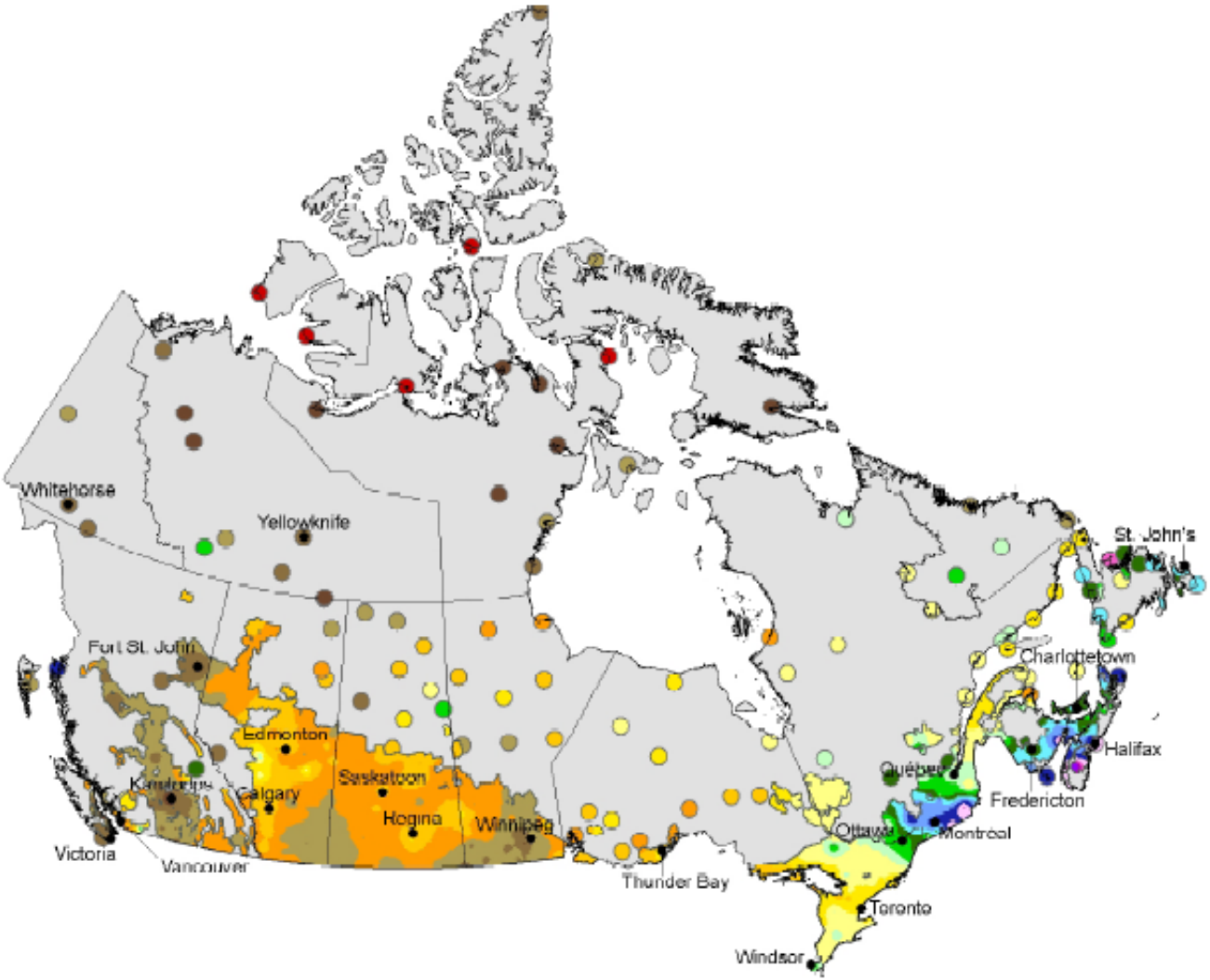
Accumulated Precipitation (National)

April 1, 2006 to August 31, 2006



- 29 - 76 mm
- 76 - 122 mm
- 122 - 168 mm
- 168 - 214 mm
- 214 - 260 mm
- 260 - 306 mm
- 306 - 352 mm
- 352 - 399 mm
- 399 - 445 mm
- 445 - 491 mm
- 491 - 537 mm
- 537 - 583 mm
- 583 - 629 mm
- 629 - 676 mm
- 676 - 722 mm
- 722 - 768 mm
- 768 - 814 mm
- 814 - 860 mm
- Extent of Agricultural Land

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2006 Census will update impact assessments.

July 19, 2001	Farms	Cattle Farms	Pasture-ha	Cropland-ha
Record Dry	1,370	338	385,113	916,018
Extremely Low	30,332	14,645	7,584,878	16,901,683

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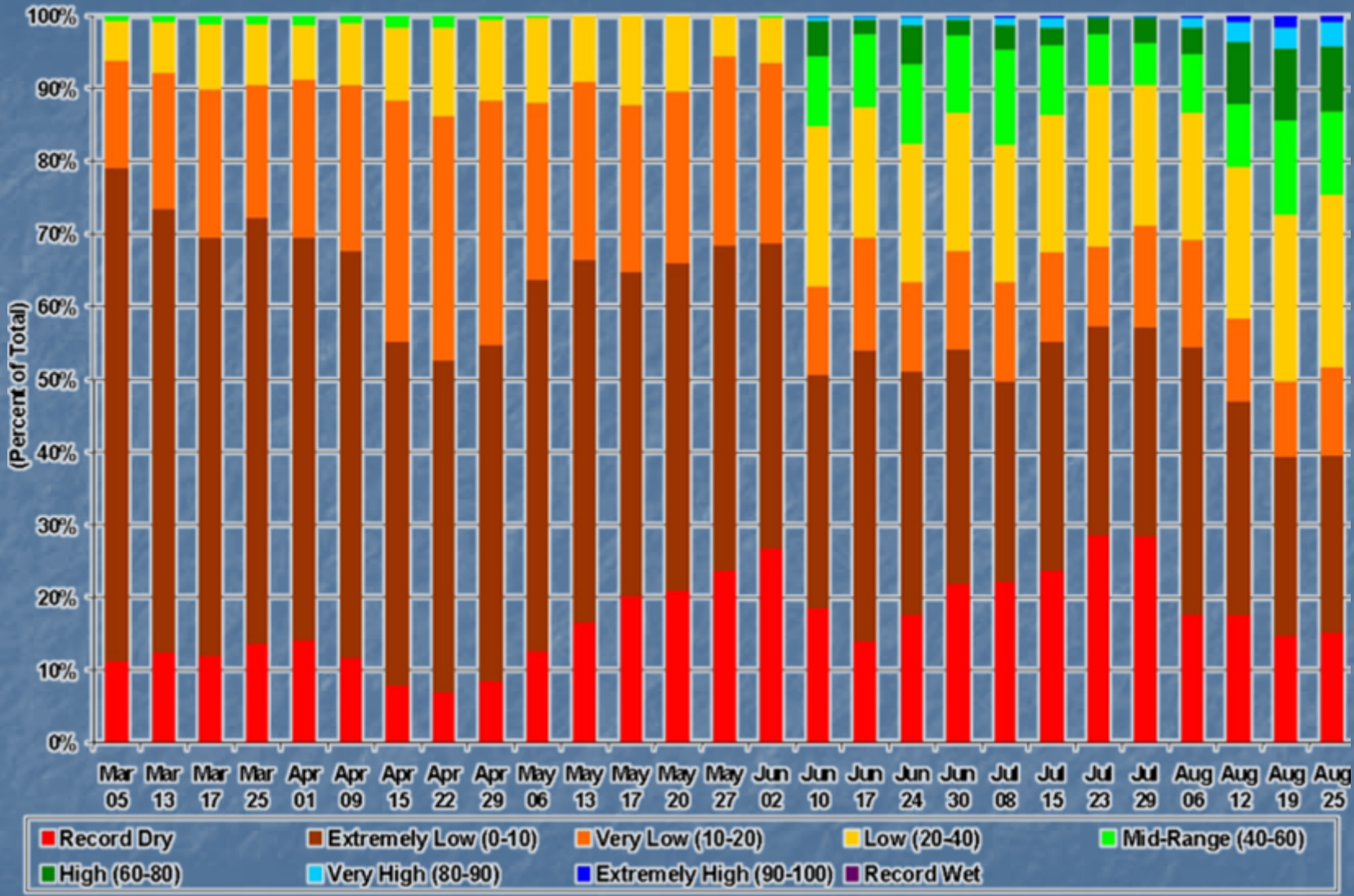
PRAIRIE FARMS and ANNUAL PRECIPITATION



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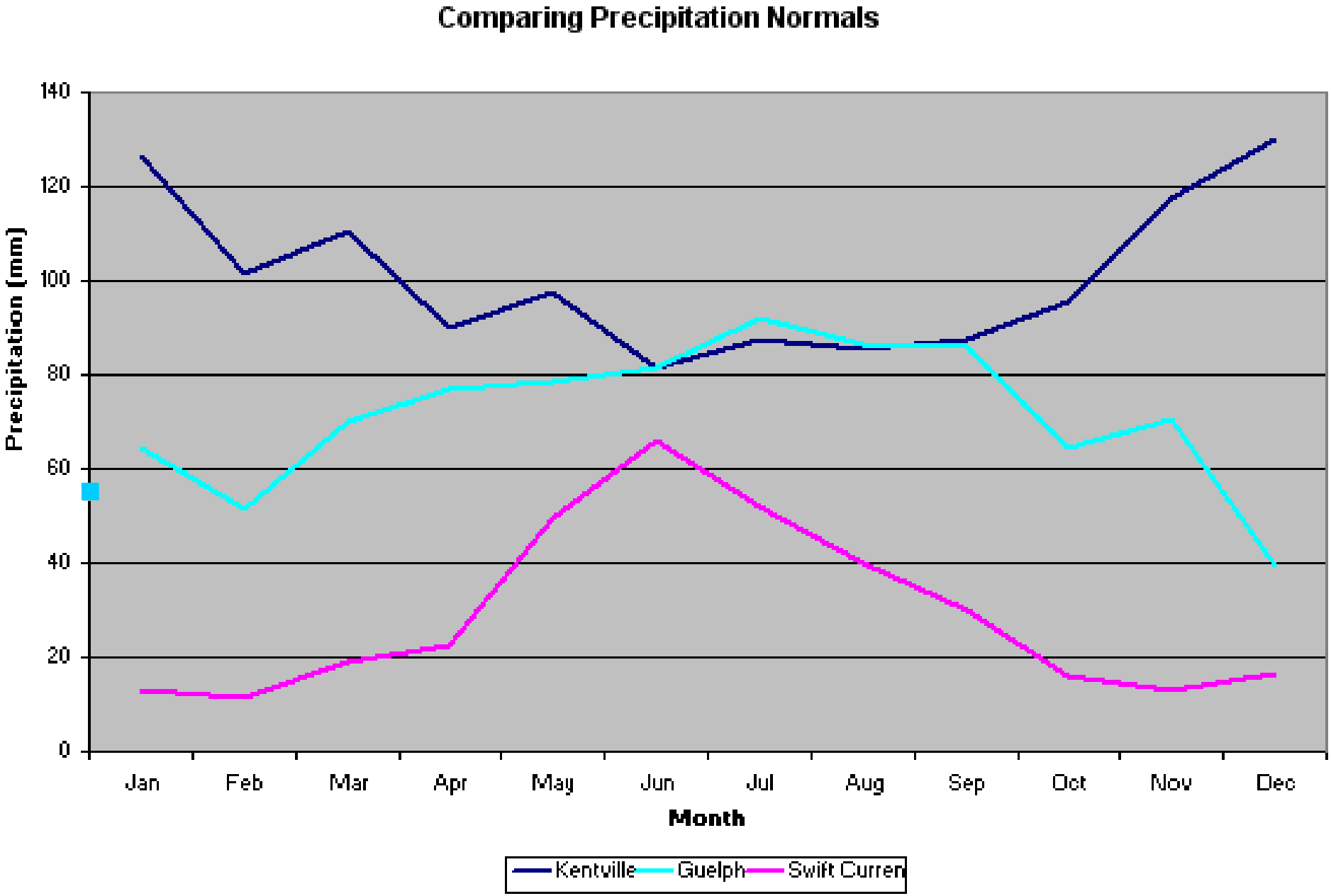
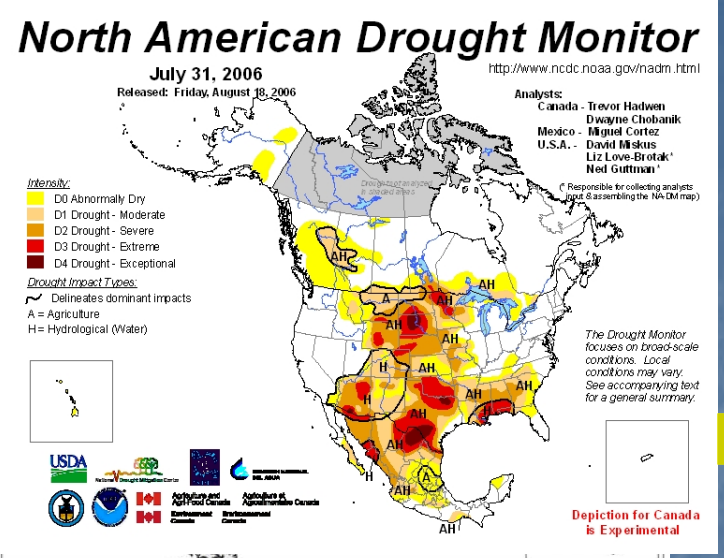
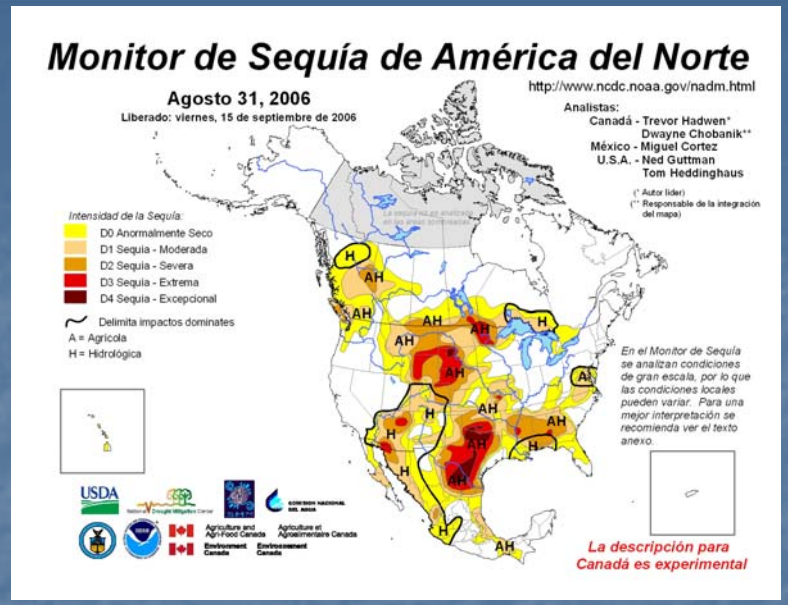
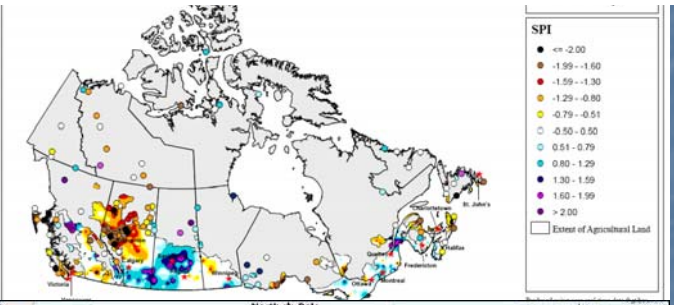
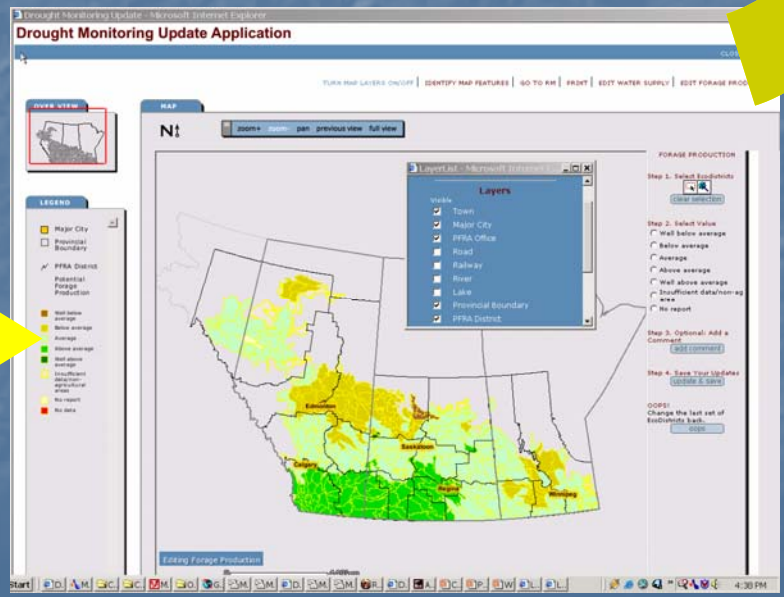

Comparing Precipitation Normals
Precipitation (mm)
140
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Kentville
Guelph
Swift Curren









Internet Map Server

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Components of Canada's National Drought Strategy

- **Drought Research**
- **Drought Monitoring and Reporting**
- **Drought Education and Preparedness**
- **Drought Response**

Reference: Draft Framework for a National AAFC Drought Strategy

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Questions?

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