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# PFRA and the Four Watersheds IWMP

## Drought and Drought Management

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Canada



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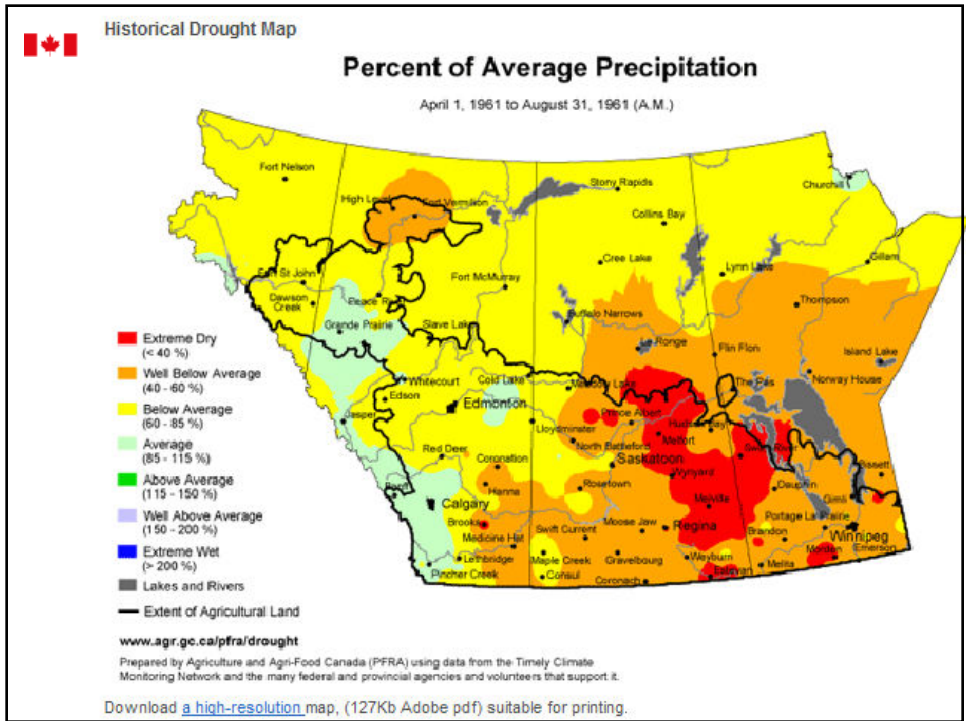
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# Drought and Drought Management

- Drought Occurrence on the prairies- Are droughts an issue?
- Annual Unit Runoff Curves (median values)
- Look at Climatic Change trends (previous presentation)
- Drought Planning Tools – website.

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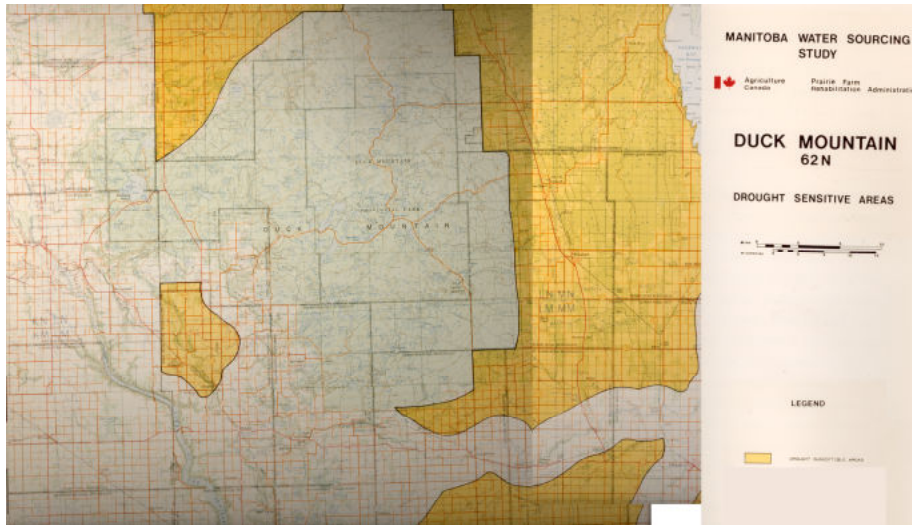
YEAR	DEPARTURE(%)	YEAR	DEPARTURE(%)
1967	-48.4	1970	+04.6
1961	-49.2	1980	+07.9
2001	-20.5	1968	+05.2
1984	-32.1	1989	+10.4
1972	-07.8	1987	+11.1
1979	-34.1	1976	+12.6
1969	-05.3	1977	-11.9
1971	-03.4	1990	-01.5
1988	-01.3	1994	-09.7
1985	-14.4	1986	-10.6
2002	+31.4	1973	+01.8
1992	+07.2	1982	+03.9
1960	-24.9	1974	-13.6
1997	-09.5	1966	+20.6
1996	-17.8	1995	+00.9
1964	-16.1	1978	+00.2
1983	+04.0	1975	+23.5
1962	+06.9	1965	+21.1
1988	+11.0	1989	+10.4
2000	-02.2	1991	+31.4
1981	+00.6	1993	+70.8
1963	+30.8		

Rank of precipitation total from driest to wettest



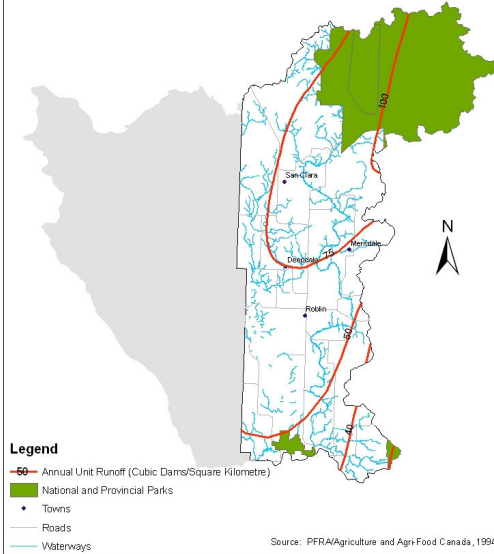
# Drought Sensitivity Index

## Shell River – Drought Sensitivity Areas



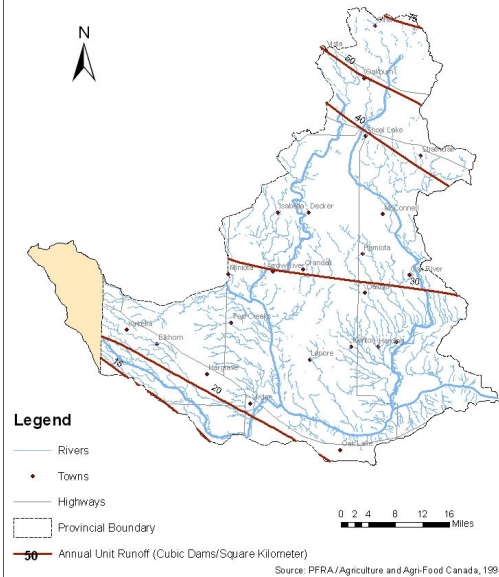
# Annual Unit Runoff

## Shell River Watershed: Annual Unit Runoff: 50% Probability of Exceedence



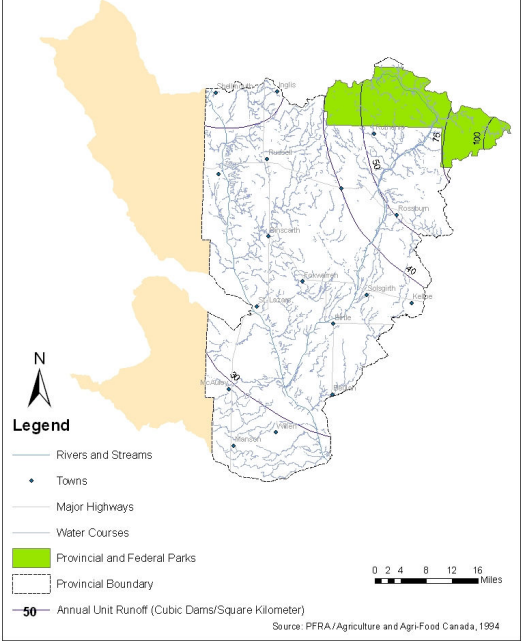
# Annual Unit Runoff

## Arrow-Oak River Watershed Annual Unit Runoff: 50% Probability of Exceedence



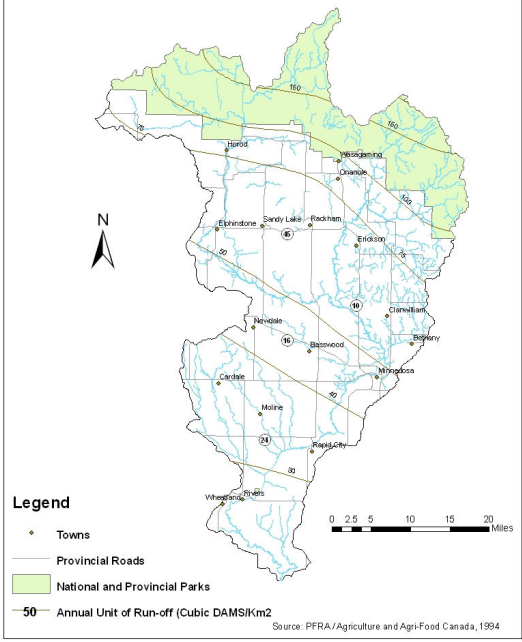
# Annual Unit Runoff

## Assinibline-Birdtail River Watershed Annual Unit Runoff: 50% Probability of Exceedence



# Annual Unit Runoff

## Little Saskatchewan River Watershed Annual Unit Runoff: 50% Probability of Exceedence





## **Lessons Learned from the Canadian Drought Years 2001 and 2002: Synthesis Report for Agriculture and Agri-Food Canada**

**“...the drought years of 2001 and 2002 in Canada brought devastating impacts to many sectors of our economy, posed considerable adaptation challenges, and made history.”**

<http://www.agr.gc.ca/pfra/drought/info/11602-46E03.pdf>



### **Drought Ramifications (2001 & 2002)**

- **Agricultural production**
- **Gross Domestic Product**
- **Employment**
- **Net farm income**
- **Crop production losses**
- **Livestock production**
- **Water supplies**
- **Multi-sector effects**
- **Long-lasting impacts**

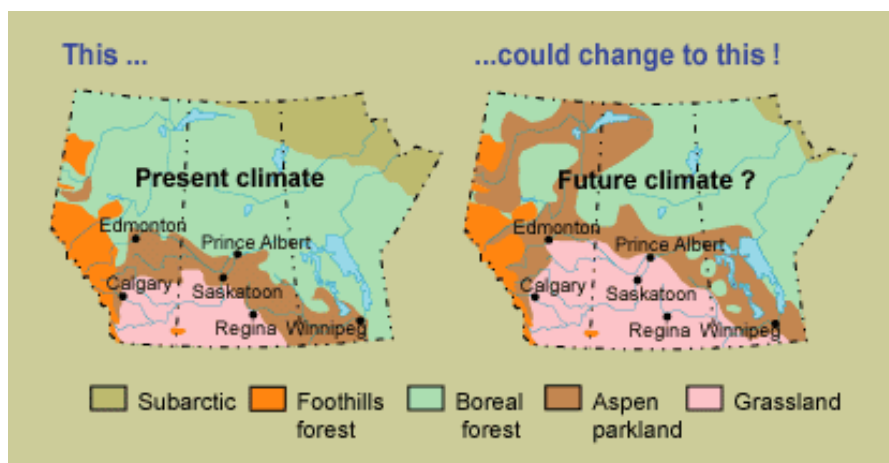
*Lessons Learned from the Drought Years January, 2005  
2001 and 2002: Synthesis Report ii SRC Publication No. 11602-46E03*

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## Trends – Climate Change

“Most recent climatic change models for the Prairies show increased temperatures under global warming... Summer temperatures in Manitoba could increase 3 to 4 Degrees Celsius, and winter temperatures by 5 to 8 Degrees Celsius. Such changes would be the largest and most rapid of the last 10,000 years and would have a profound effects on the ecosystems.” (Water in the Prairies, 2006)

## Climate Trends – Ecoregion changes



(NR-Can Pub. 2006)



## Drought Monitoring Program

- Tools for Drought Monitoring
- Total Soil Moisture (as of September 30<sup>th</sup>, 2007)
- Palmer Drought Index (as of September 30<sup>th</sup>, 2007)
- Drought Monitoring Maps (Forage Production and Supply, and On-Farm Surface Water Supplies)
- Historical Maps (Precipitation, Temperature)
- RWDP/NWESP Program

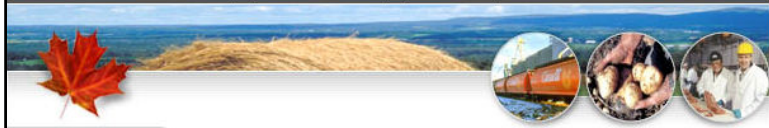
[http://www.agr.gc.ca/pfra/drought/article\\_e.htm](http://www.agr.gc.ca/pfra/drought/article_e.htm)

[http://www.agr.gc.ca/pfra/drought/index\\_e.htm](http://www.agr.gc.ca/pfra/drought/index_e.htm)

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### Drought Watch

#### Our Goal:

- To provide timely information of the impacts of climatic variability on water supply and agriculture.
- To promote practices that reduce drought vulnerability and improve management during a drought.

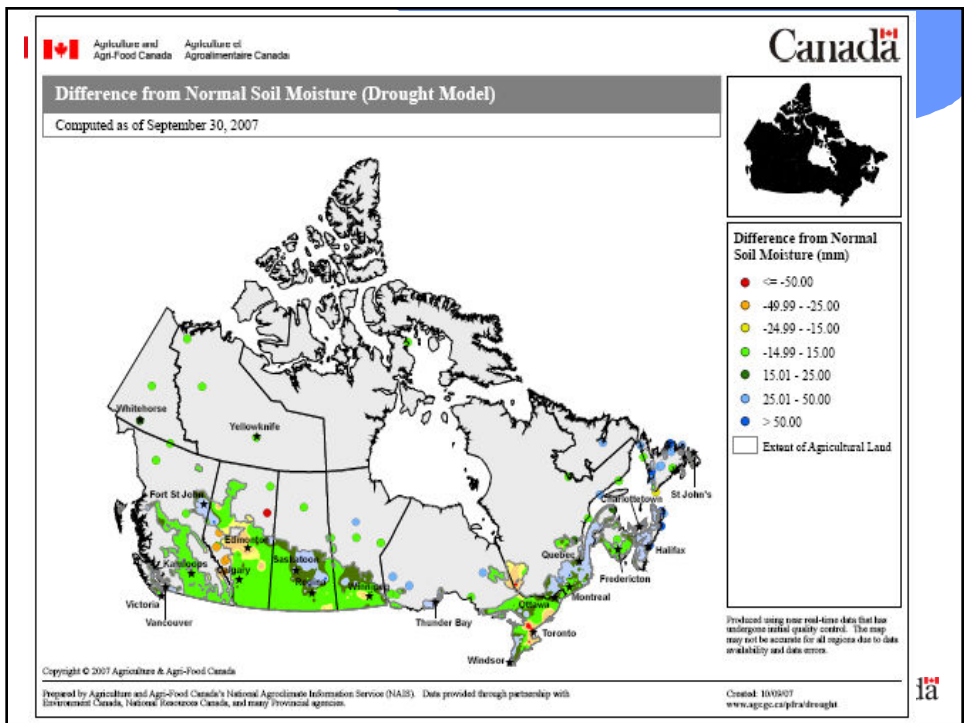
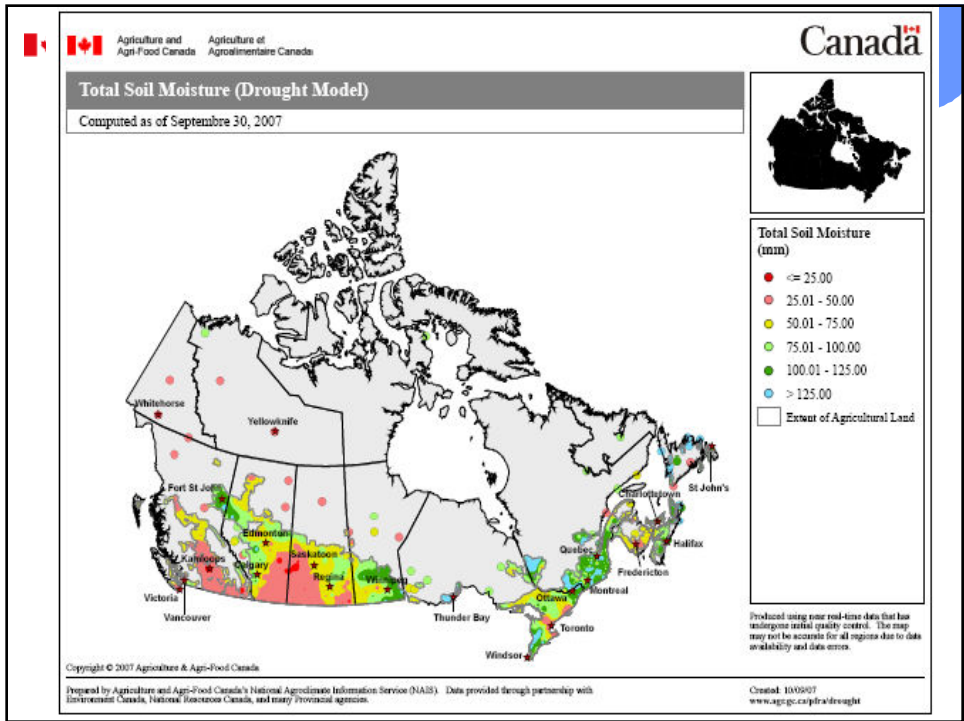
The impact of climatic variability on the environment is of great importance to the agricultural sector in Canada. Monitoring the impacts on water supplies, soil degradation and agricultural production is essential to the preparedness of the region in dealing with possible drought conditions. These pages and maps will provide you with an overview on the risk of drought in Canada.

#### Drought Watch User Survey:

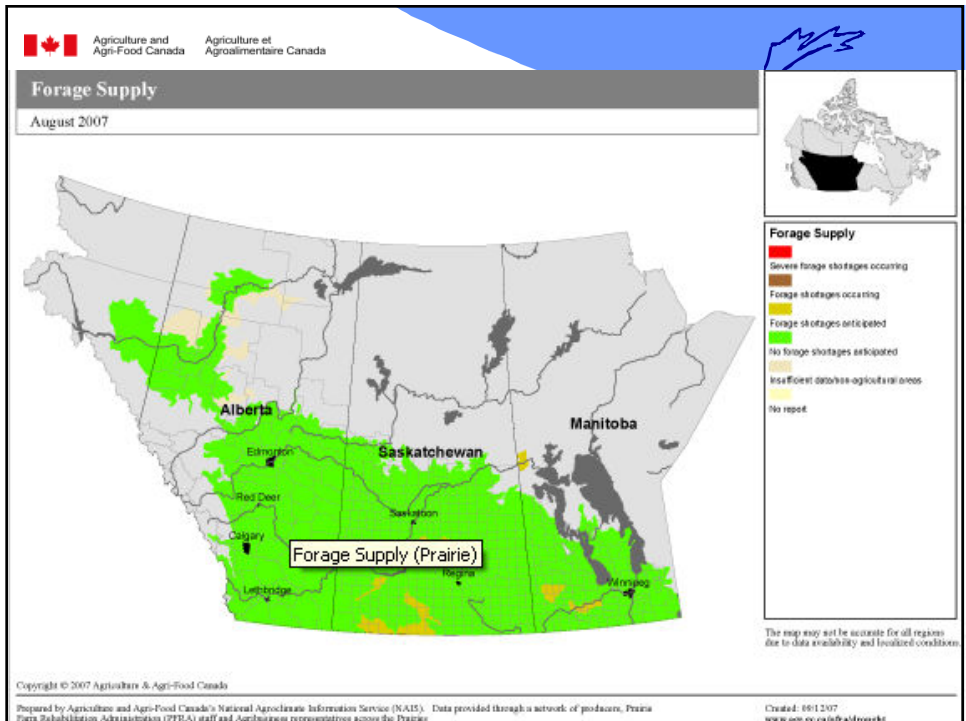
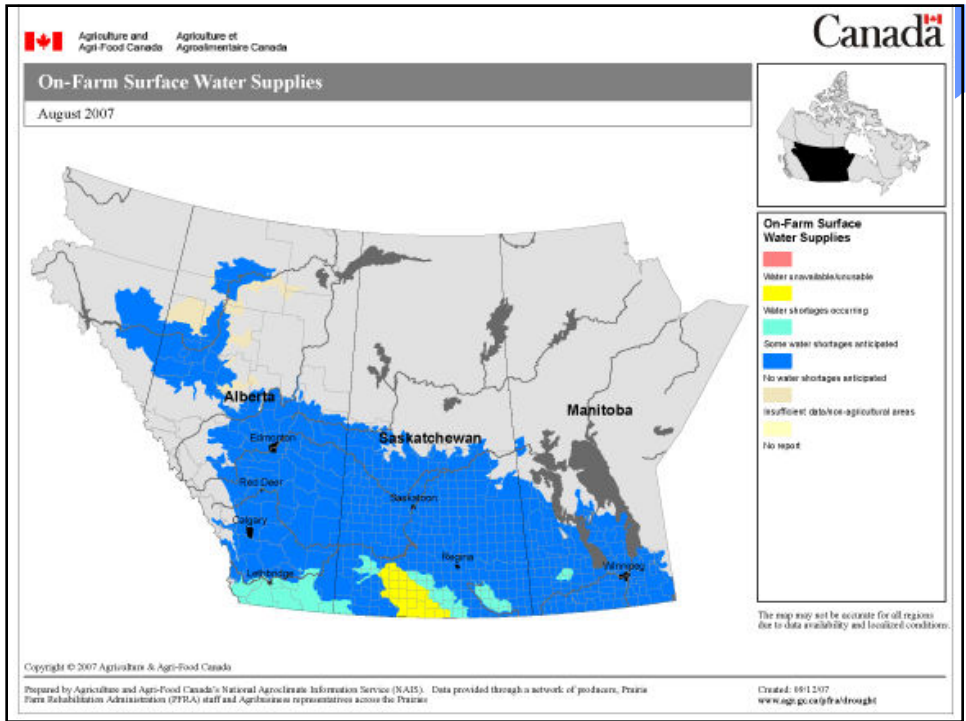
We are interested in your feedback and invite you to participate in [this short survey](#) that will take about 2 minutes of your time. Please do not hesitate to contact us if you have any questions regarding this survey. Your feedback will be important to ensure that this service meets your needs.

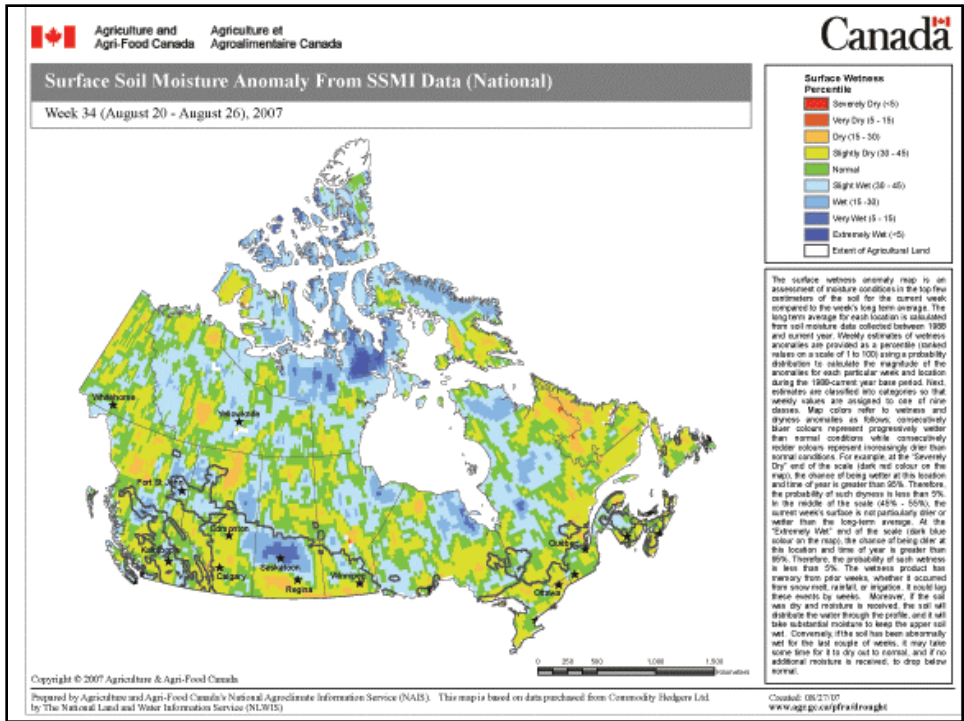
We would appreciate your [comments/suggestions](#) on how we can improve this site.

*If the maps on this site are not accessible to you, please contact Trevor Hadwen at 306-*







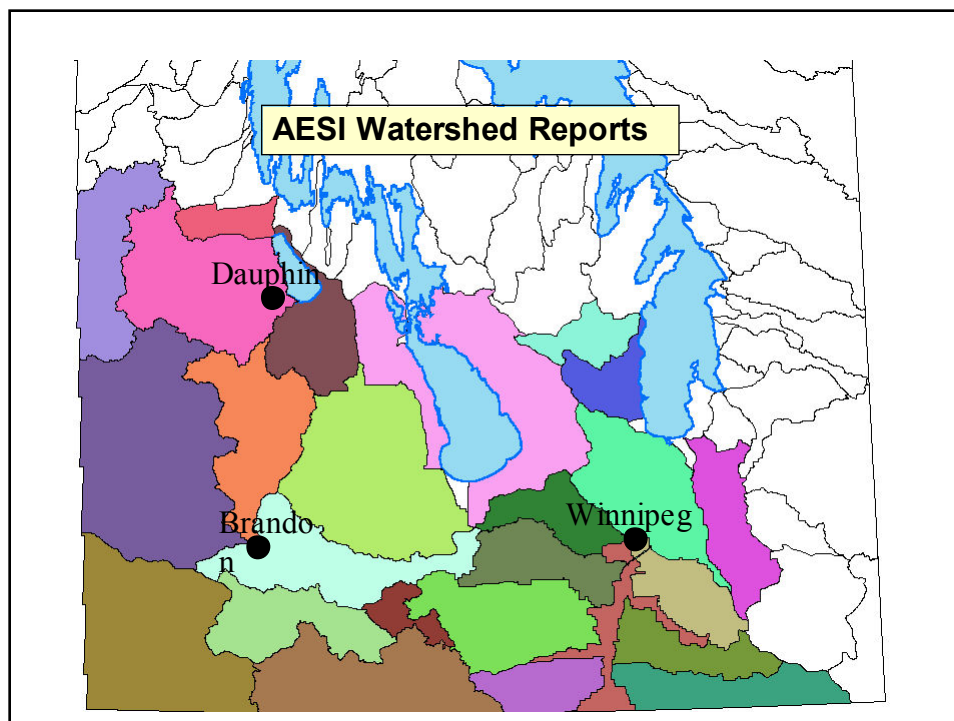



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## Contacts/Information

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- *EAEP contact- Jeff Thiele, Dauphin PFRA, 622-4214*

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## References

The winds of change: Climate change in Prairie Provinces. NR-Can, 2006

