Canadian Prairie Drought and the Drought Research Initiative (DRI)

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CONCERNS

Many concerns associated with drought are linked with prediction

Will there be a drought? decadel seasonal 'now' Let's first of all understand how drought develops, is sustained, and ends and how it is structured

COMMONVIEW...



DROUGHT RESEARCH INITIATIVE

The objectives of DRI are:

Ø To better understand the physical characteristics of and processes influencing Canadian Prairie droughts, and

Ø To contribute to their better prediction

OURSTRATEGY

Focus on the recent 1999-2005 drought



GPCC Full Data Product Version3 Gauge—Based Analysis 1.0 degree precipitation percentage of normals 61/90 for year (Jan — Dec) 1999 (grid based)



Wells show Major Drought Impacts on Sub-Surface Water Levels



Saskatchewan well log

BIGISSUES

Given the drought, some key issues include:

1. What maintained it over multiple years?

2. What governed its actual structure?

3. Why did it end?

And, what was the role of the cold season ... a natural Canadian focus

4. What did prediction systems 'miss' and why?

5. Given this progress, how can we better cope with drought?

DRITHEMES

- 1. Quantify the physical features,
 - ø flows of water and energy into and out of the region, and
 - ø storage and redistribution within the region
- 2. Improve the understanding of processes and feedbacks governing the
 - ø formation,
 - ø evolution,
 - ø cessation and
 - ø structure of the drought
- 3. Assess and contribute to reducing uncertainties in the prediction of drought
- 4. Compare the similarities and differences of current drought to previous droughts and those in other regions
- 5. Apply our progress to address critical issues of importance to society

WATERANDENERGYCYCLING



The DRI team ~ 30 university and government researchers

1. QUANTIFY THE DROUGHT



2. MANY CRITICAL FACTORS ...







3. MODELLING AND PREDICTION



4. COMPARE THE DROUGHT

Ø Previous Canadian Prairie Droughts Ø Others in North America Ø Around the world

Anomaly



GPCC Monitoring Product Gauge—Based Analysis 1.0 degree precipitation percentage of normals 51/90 for year (Jan — Dec) 2002



5. INTERACT WITHTHOSE AFFECTEDBYDROUGHT

Some of our current partners are:

- Ø Agriculture and Agri-Food Canada
- Ø Alberta Agriculture, Food and Rural Development
- Ø Alberta Environment
- Ø Canadian Forestry Service
- ø Environment Canada (several components)
- ø Health Canada
- ø Manitoba Hydro
- Ø Manitoba Water Stewardship
- Ø Natural Resources Canada
- Ø Saskatchewan Research Council
- ø SaskWater
- Ø Saskatchewan Watershed Authority
- ø ... and others







Final Comments

- Ø Drought is a major concern for the Prairies as well as all other regions of Canada
- Ø DRI is a research activity focused on the recent multi-year drought over the Canadian Prairies



DROUGHT RESEARCH INITIATIVE RÉSEAU DE RECHERCHE SUR LA SÉCHERESSE

www.drinetwork.ca

- Ø DRI is working with Canadian partners to assist society in better coping with drought
- Ø DRI is also beginning to work with US and international researchers elsewhere
- Ø Major funding from CFCAS is greatly appreciated!

NETWORK DELIVERABLES

Ø Improved understanding and description of the drought

Ø Assessment of simulation and prediction capabilities

Ø Recommendations for monitoring, modelling, and predicting drought

ø 'Test bed' for future efforts in integrated water and energy cycle assessment

