



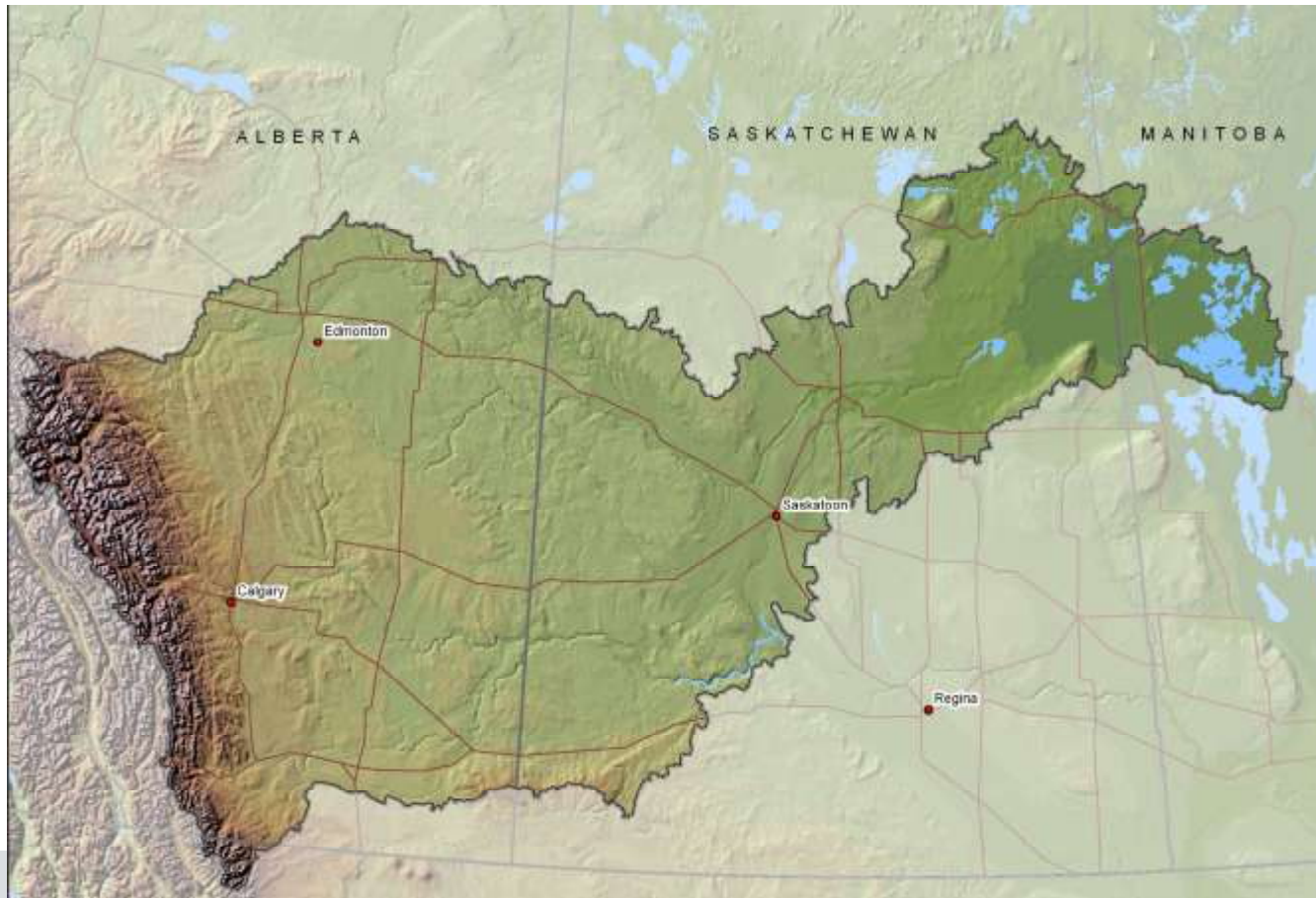
Global Institute for Water Security

Howard Wheater

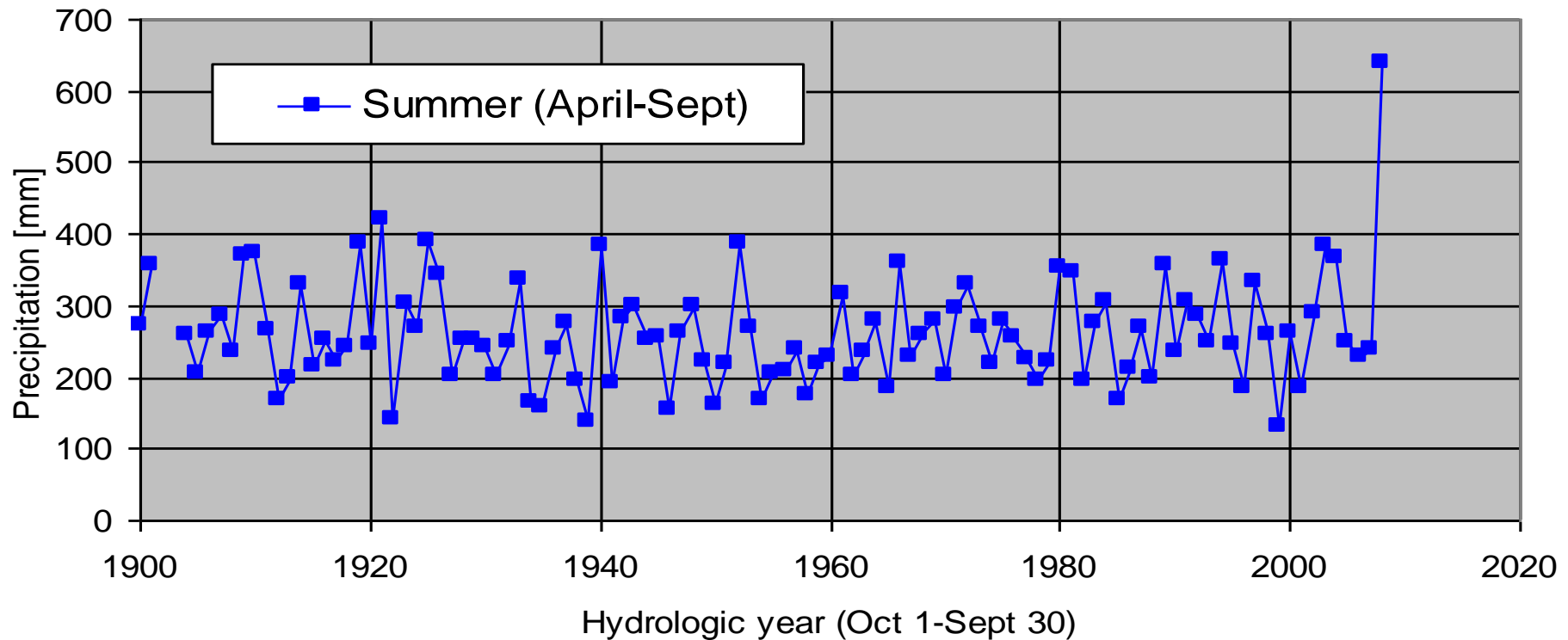
Canada Excellence Research Chair and Director, Global Institute for Water Security

Water Security for the Prairies

Saskatchewan River Basin



Saskatoon Summer Precipitation 1900-2010



Courtesy of Garth van der Kamp

Current flooding in Manitoba



Farmland in southern Manitoba, along the Red River valley, is covered with water.

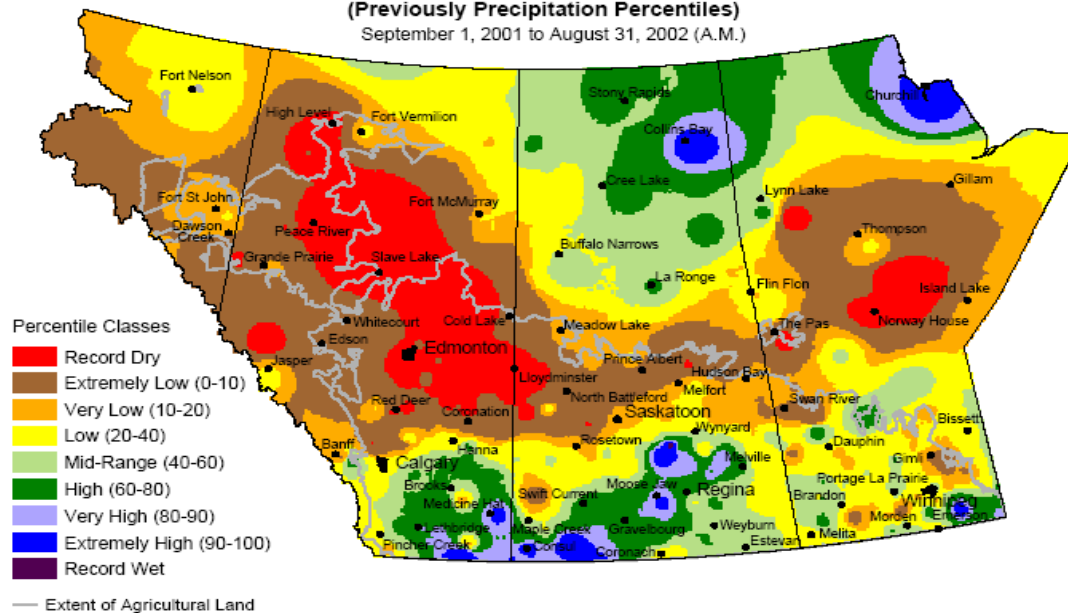
Photo Credit: Josh Arason, Global News

Prairie Drought of 1999-2004

Most Expensive Natural Disaster in Canadian History

 Agriculture and Agr.-Food Canada
 Agriculture et Agroalimentaire Canada

Current Precipitation Compared to Historical Distribution
 (Previously Precipitation Percentiles)
 September 1, 2001 to August 31, 2002 (A.M.)



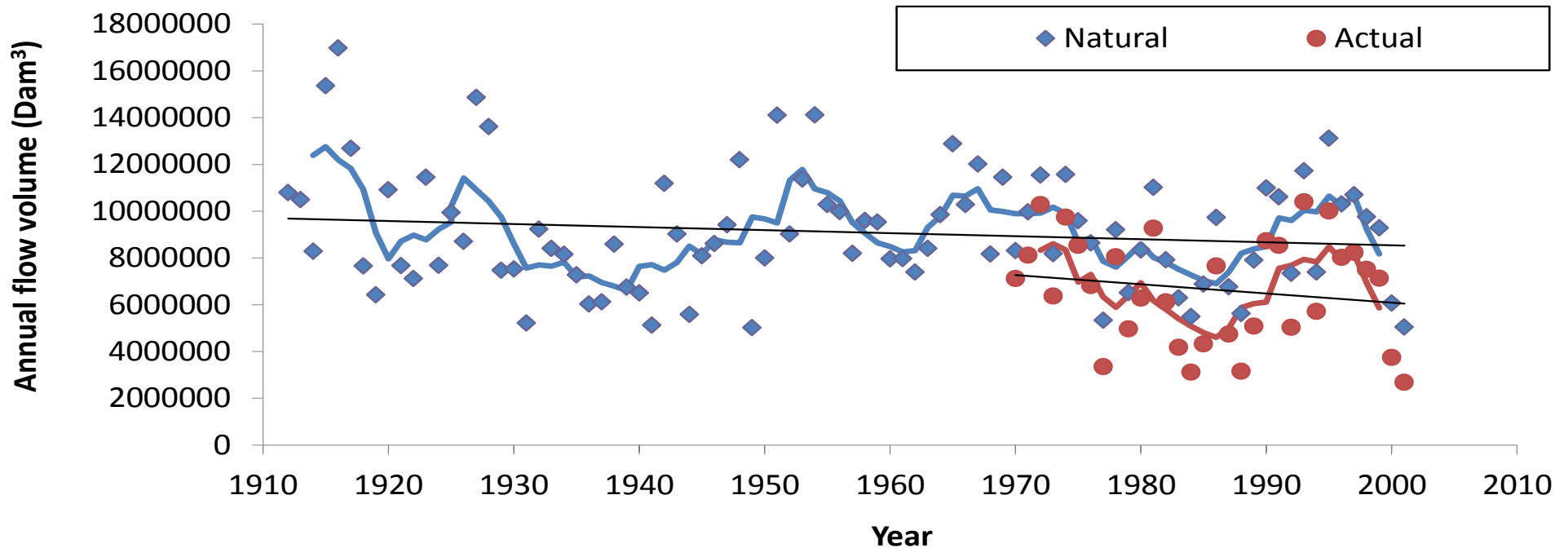
Prepared by PFRA (Prairie Farm Rehabilitation Administration) using data from the Timely Climate Monitoring Network and the many federal and provincial agencies and volunteers that support it.

Canada

- \$5.8 billion decline in GDP 2001-2002
- \$3.6 billion drop in agricultural production, 2001-2002
- 41,000 jobs lost
- BC, Alberta forest fires
- Saskatchewan dust storms

Water resources

South Saskatchewan River - natural and actual flow leaving Alberta



Natural flow: 12% decline over 90 years; Actual flow: 15% decline over 30 years

Water quality

Lake Winnipeg algal blooms covered 15,000 km² in 2007




Photo: Reuters
<http://www.canada.com/news/Feds+lack+know+deal+with+dirty+rivers+lakes+report/3802002/story.html>



Image: Greenpeace Canada
<http://www.greenpeace.org/canada/en/Blog/beyond-factory-farming-hog-farms-and-friendly/blog/3761>

The CERC at U of S

- 65 Faculty
- 5 Canada Research Chairs
- Partnership with Environment Canada
- \$30 million investment
- Global Institute for Water Security



“Ecotoxicohydrology”
...n. a new science that will transform how the world uses and manages water

It's not a common word yet, but with the University of Saskatchewan's \$30-million Canada Excellence Research Chair (CERC), it will be.

Howard Wheater,
Canada Excellence
Research Chair

Led by Howard Wheater, one of the world's foremost hydrologists, the CERC team will develop this new cutting-edge science—and the tools, techniques and policies to manage the world's freshwater resources sustainably.

Working with partners in Environment Canada, the Saskatchewan Research Council, and industry, Wheater will establish a world-leading research and training institute to solve water challenges and train the next generation of water scientists.

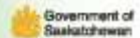

Our new global institute will recruit 85 people—including six new faculty, 20 post-doctoral fellows, 24 Ph.D., and 24 master's students.

These researchers will have access to two of Canada's top science projects—the Canadian Light Source and the International Vaccine Centre—and will work closely with these new graduate schools in public health, public policy and environment and sustainability.

With our world-class facilities, five Canada Research Chairs in water-related areas, and a unique breadth of expertise among 65 researchers in diverse disciplines, the U of S is in the forefront of efforts to find solutions to water quality and water supply issues around the world.

Protecting our clean and safe water supply is a top priority of the Saskatchewan government, which has awarded \$30 million in the new CERC.

www.usask.ca/water



The CERC programme themes:

a) Climate change and water security

Canadian exemplar: Saskatchewan River

b) Land-water management and environmental change

Canadian exemplar: South Saskatchewan River

c) Sustainable development of natural resources

Canadian exemplar: oil sands development, remediation and risk assessment

Saskatchewan River Basin

Location of research sites within Saskatchewan River basin



Marmot Creek Research Basin



Smith Creek – effects of agricultural drainage?



Global Institute for Water Security

- Approved by University 17 March 2011
- Aims to be a world-leading centre of excellence:
 - providing a framework for interdisciplinary collaboration, across the University, with Environment Canada and other partners
 - supporting the development of a broad water security research agenda, including
 - Policy, Governance and Social Science
 - Water and Health

Socio-hydrology

- understanding and managing complex human-natural systems

Water managers,
Decision Center
for a Desert City,
Phoenix Arizona





Water
means
the **WORLD**
to Us...

Global Institute for Water Security

www.usask.ca/water



UNIVERSITY OF
SASKATCHEWAN