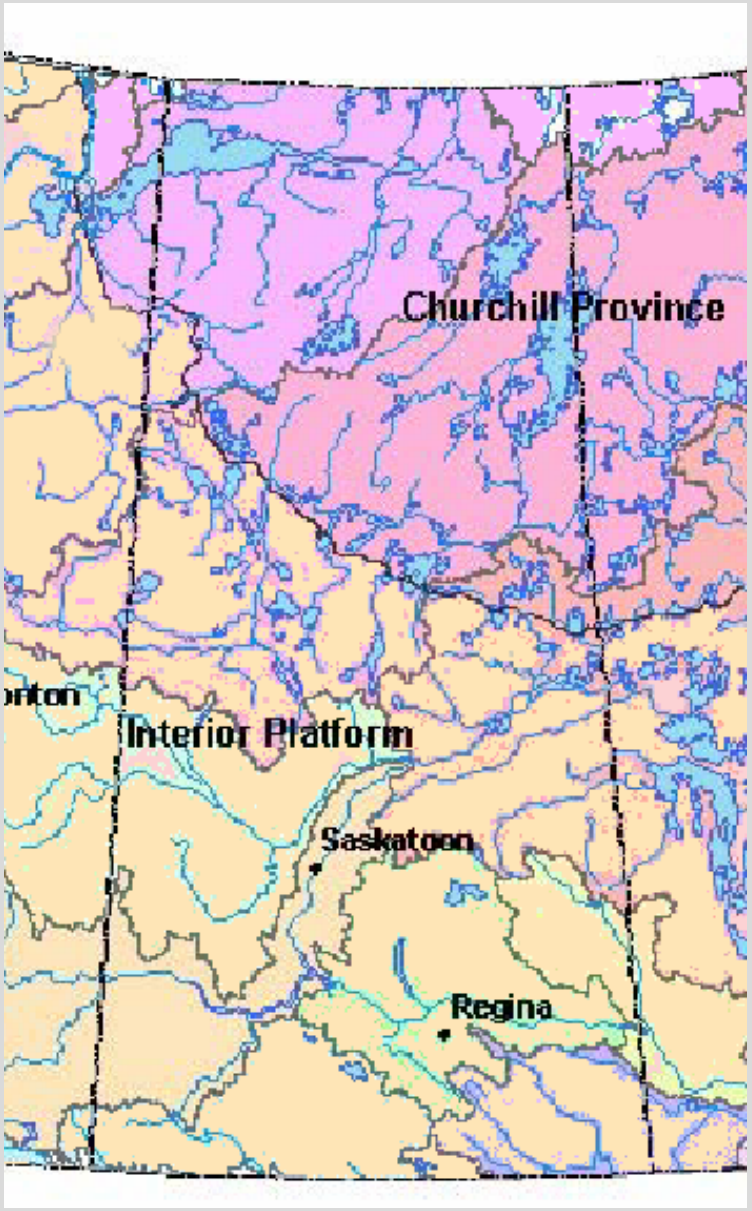
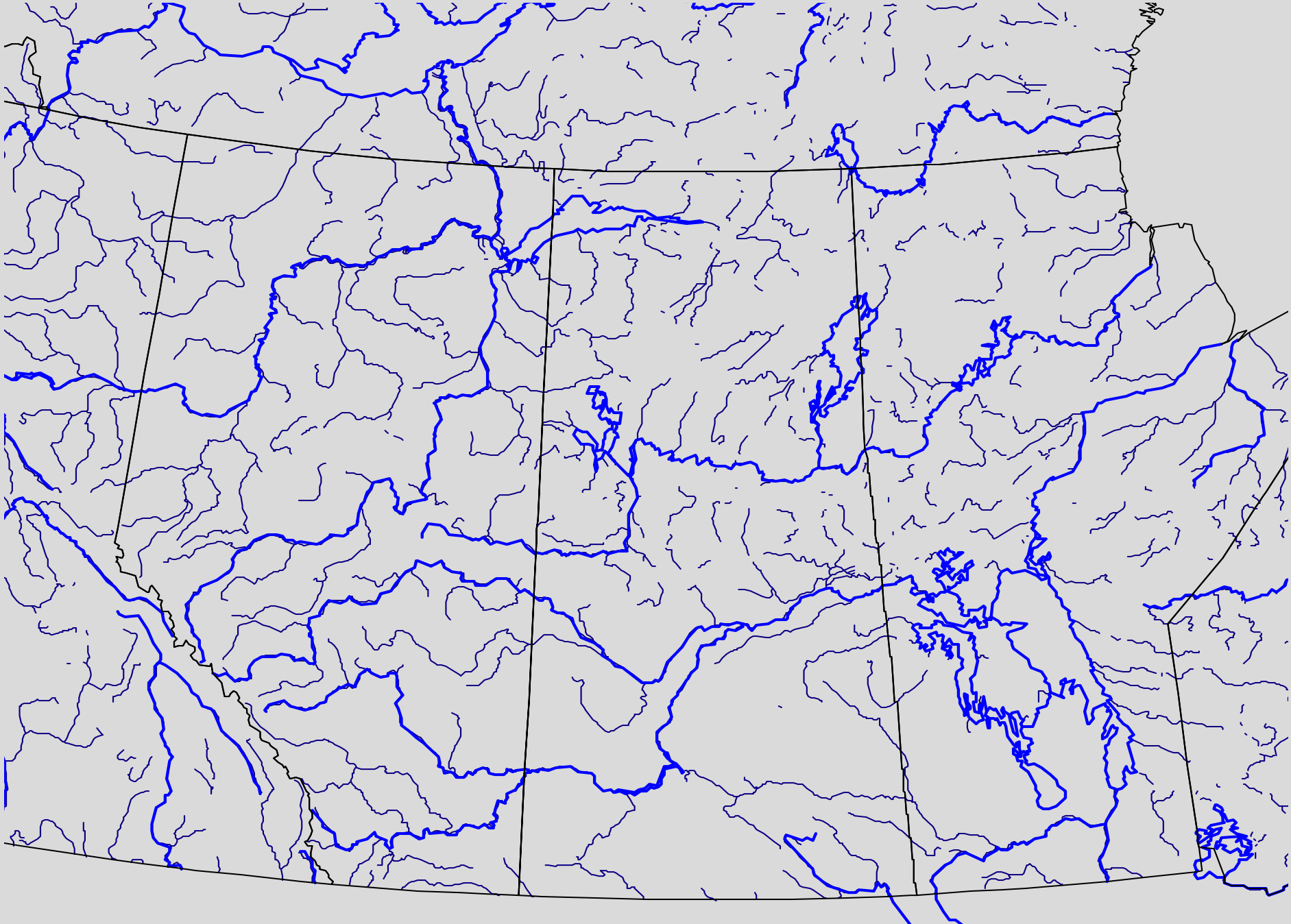

Churchill Province
Interior Platform
Saskatoon
Regina



Arm River valley, Saskatchewan

Swift Current Creek valley, Saskatchewan

Annual Report 1999 - 2000
Saskatchewan Highways and Transportation

Explanation of significant differences between budget and actual:

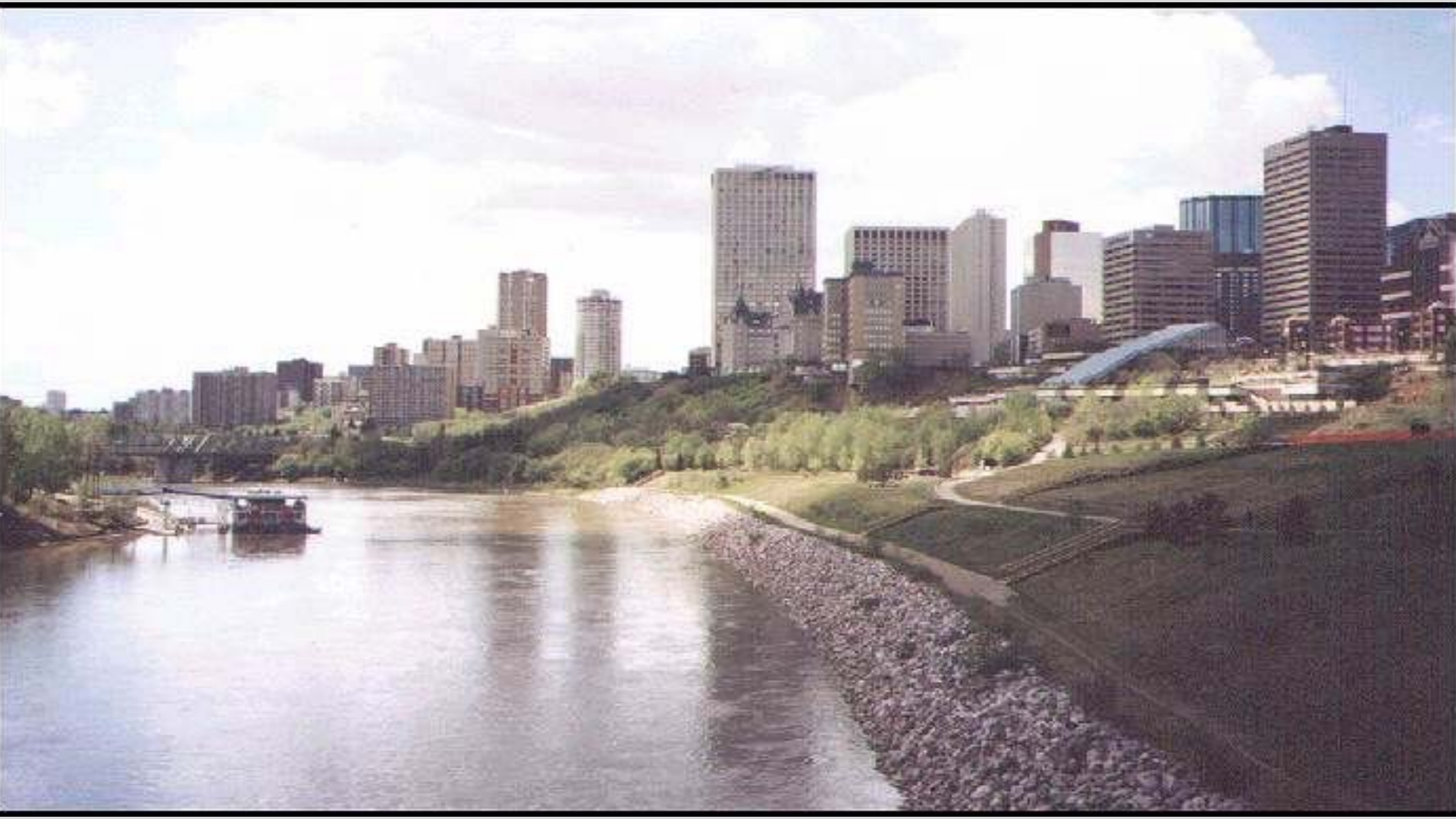
1. Unexpected landslides at various locations resulting from wet summer conditions.
2. Increased costs on various tendered construction contracts.
3. Carry-over of various construction projects to 2001-02 fiscal year.
4. Increased winter gravel crushing and haul
5. Positions transferred.

Thirty-five years of activity at the Lesueur landslide, Edmonton, Alberta

D.M. Cruden, A.E. Peterson, S. Thomson, and P. Zabeti

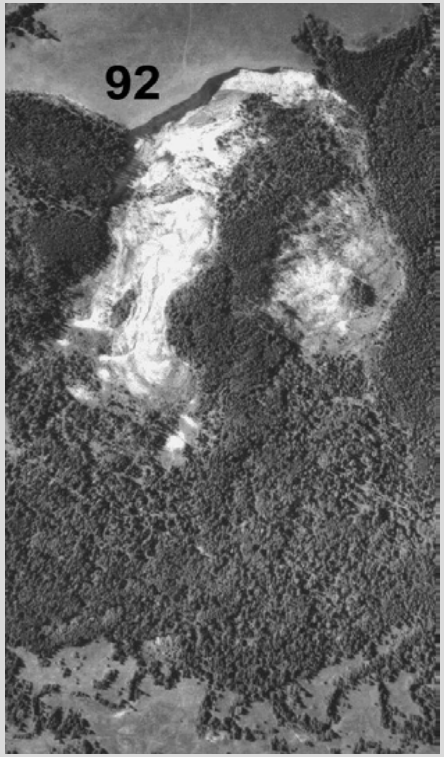
Can. Geotech. J. 39: 266–278, 2002

The Lesueur landslide occurred on 3 September 1963 on the outside of a meander of the North Saskatchewan River in northeast Edmonton. The displaced volume was 0.76 Mm^3 of Pleistocene deposits and underlying Upper Cretaceous mudstones. The trigger of the landslide is believed to be accelerated erosion of the slope toe caused by dumping of mine waste on the inside of the meander. Surveys in 1964, 1971, 1992, 1995, 1997, and 1998 have documented continued slope movements.



North Saskatchewan River, Edmonton

Police Point Landslide




Near Gull Lake, Saskatchewan, July, 1988

Annual frequency of dust storms, 1977-85 (Wheaton and Chakravarti, 1990)

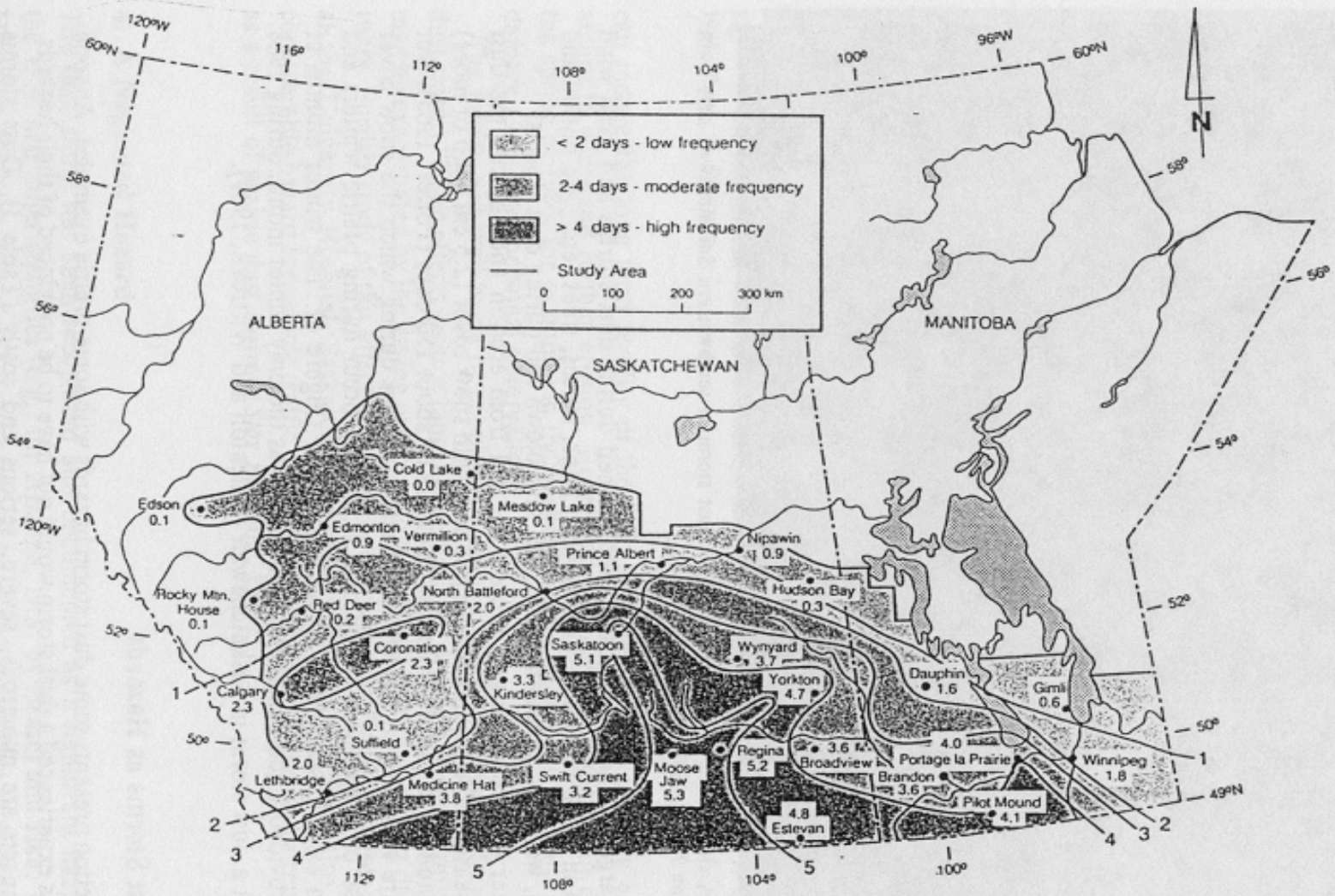


Fig. 1. Spatial variation of the average annual frequency of dust storm days, Canadian Prairies (1977–1985). (Study area stations are included. Wheaton and Chakravarti (1990).

Dust storm 'blackout' causes 8-vehicle crash, closes major Alberta Highway

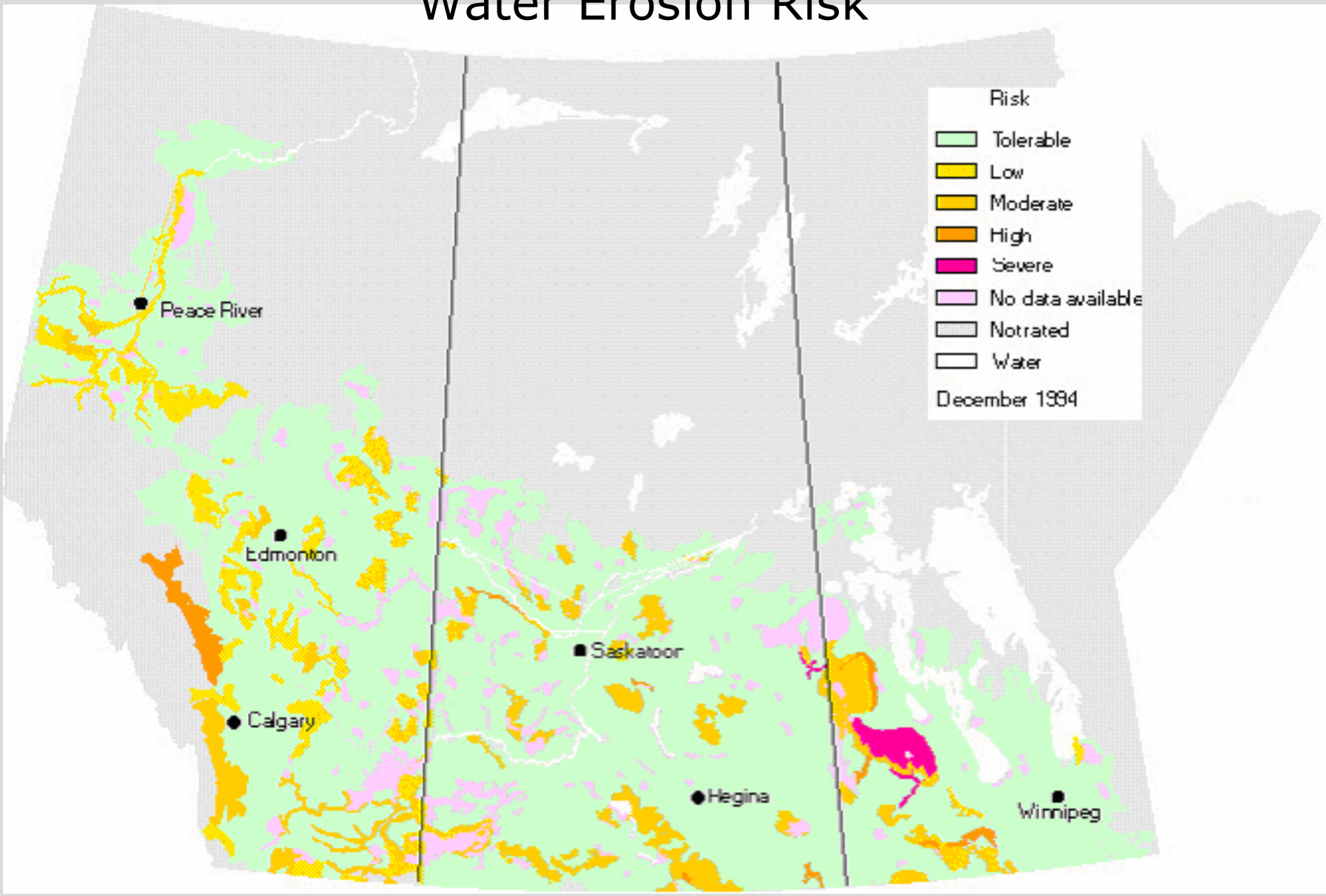
CARSTAIRS, Alta., May 19, 2001 (CP) - Alberta motorists got a horrifying glimpse of the Dirty 30s Saturday when a dust storm caused a multi-vehicle accident on a major highway. Police said dust blown by 100 km/h winds severely reduced visibility on Highway 2 about 50 km north of Calgary and triggered a 15-vehicle pileup. Eight people were treated in the Didsbury, Alta., hospital then released, said Innisfail RCMP.

RCMP Constable Barry Neely of Didsbury said that … "Somebody is losing some topsoil somewhere," he said.

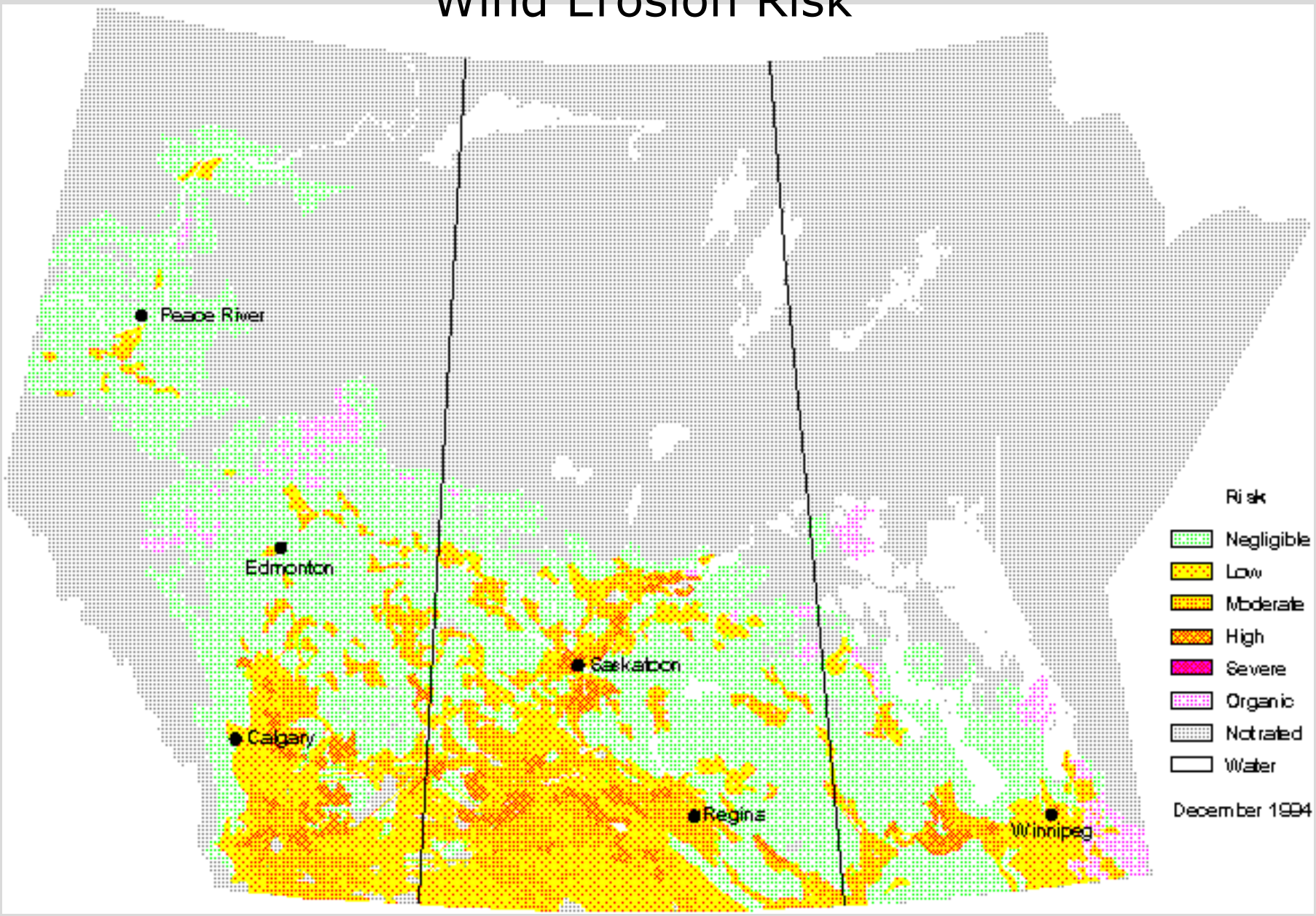
Dust piling up in houses during unusually dry May

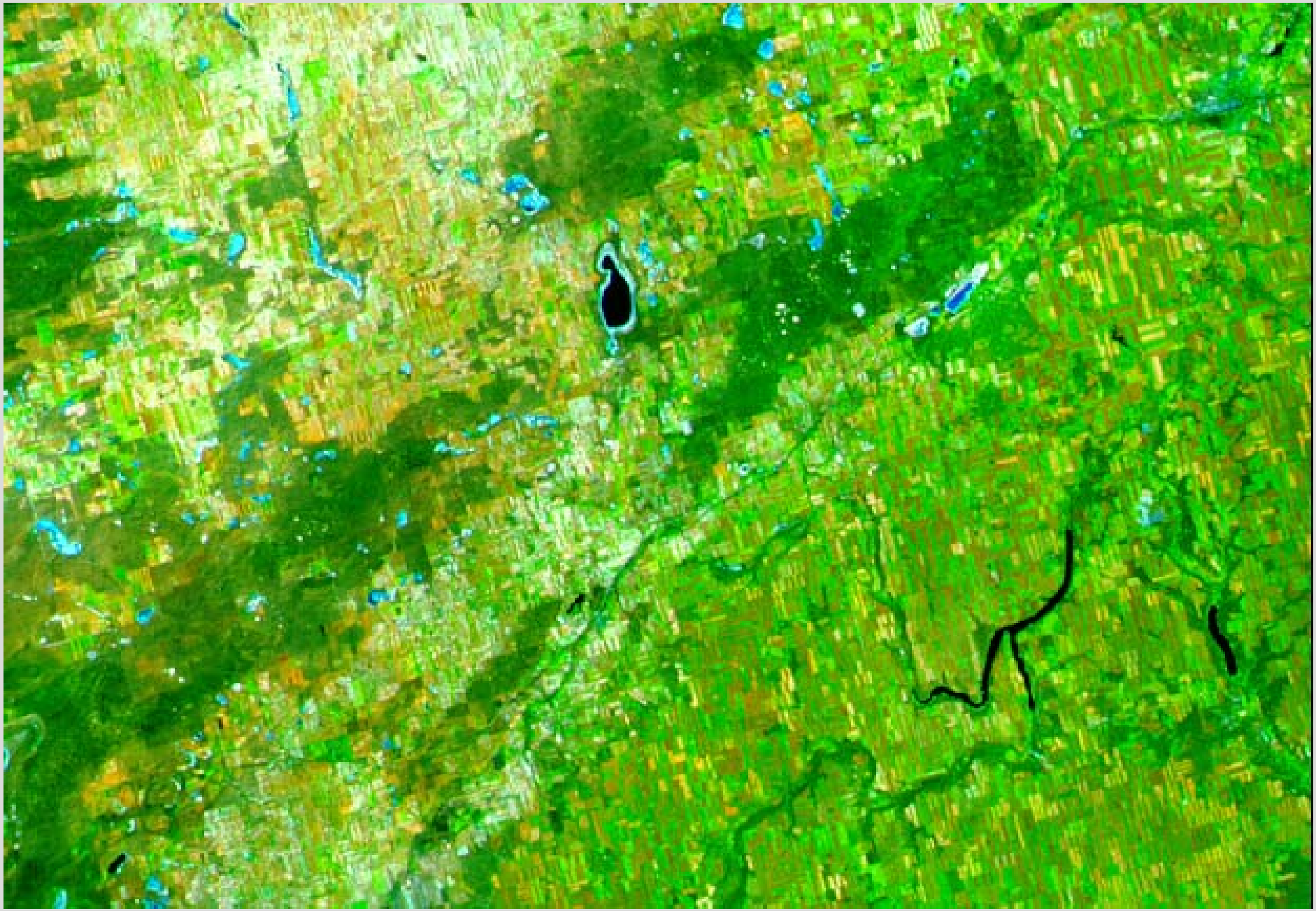
Edmonton Journal, Thursday 17 May 2001

Water Erosion Risk

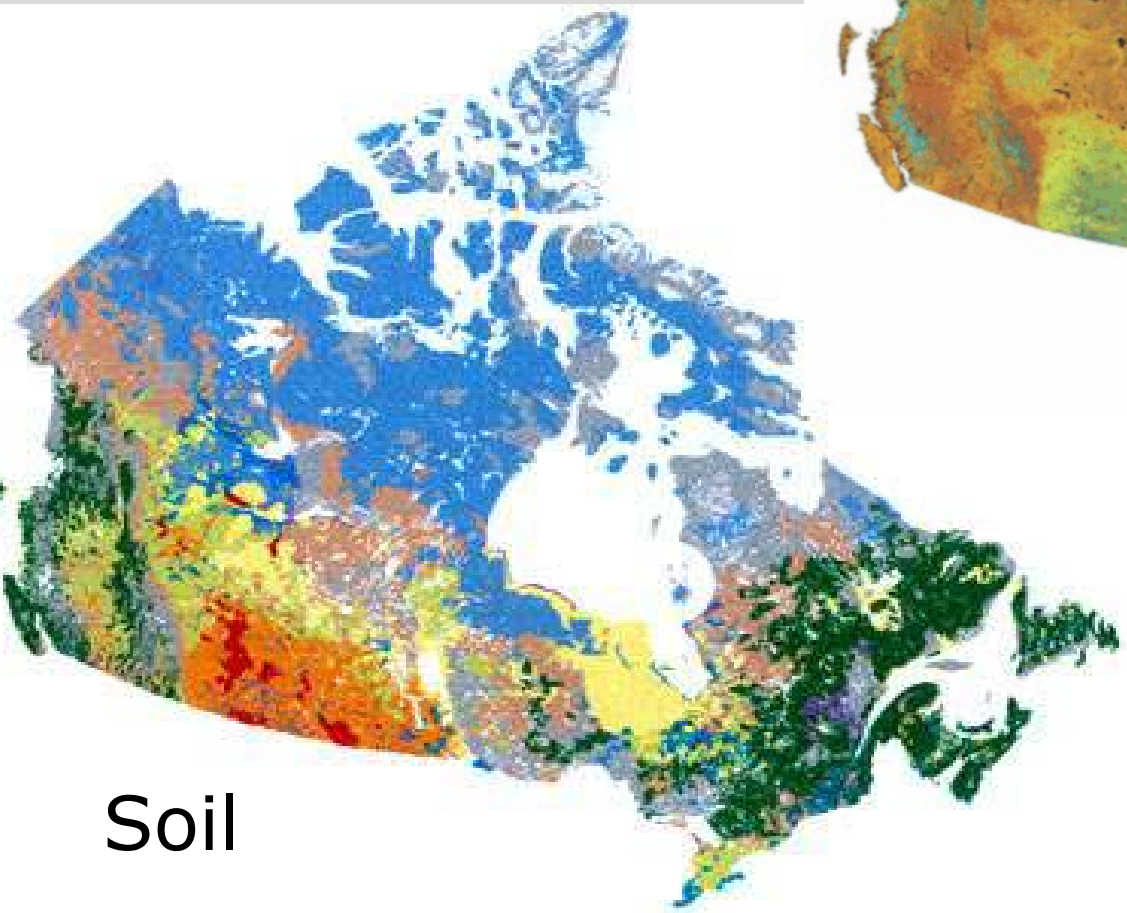


Wind Erosion Risk





Land Cover



Soil

Secretariat of the United Nations Convention to Combat Desertification

CCD

--- Search --- Go

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Knowledge Base
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Focal Points
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Action Programmes
Conference Sessions
Official Documents
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Related Web Sites

UNITED NATIONS

Sand dune fixation, Timbuktu, Mali, March 2000

"Drought and desertification threaten the livelihood of over 1 billion people in more than 110 countries around the world."

Kofi Annan

Calendar of Events 2003

31 March - 1 April

NGO RIOD-Mesoamerica meeting

Tegucigalpa, Honduras

Starting Points

What is UNCCD and Desertification ?- Knowledge Base

Parties to the Convention: Country Database

Documents: Frequently requested

About this website: Usage instructions

Contact us: Your comments, suggestions, questions.

"Global Alarm: Dust and Sandstorms from the World's Drylands" **Publication**

"MAKING A DIFFERENCE", **Stories from local communities**

Current Top News and Focal Areas

CRIC1

CRIC1, 1st session of the Committee for the Review of the Implementation of the Convention:
List of Participants
Reports, Presentations, Official Documents

Other News and Updates

Joint UNCCD/UNFCCC/CBD calendar

- Newsletter, "Down to Earth", **November 2002**
- **Vacancy announcements**

Press Releases

- Press Review, **February 2003**

Rome, 22/11/2002: Sharing of best practices expected to accelerate rehabilitation of degraded land. **More...**

Further press releases...

Last modified: March 13 2003 09:53:10.
Best Viewed with Netscape 4.5+ or Internet Explorer 4.5+ at 800x600x24

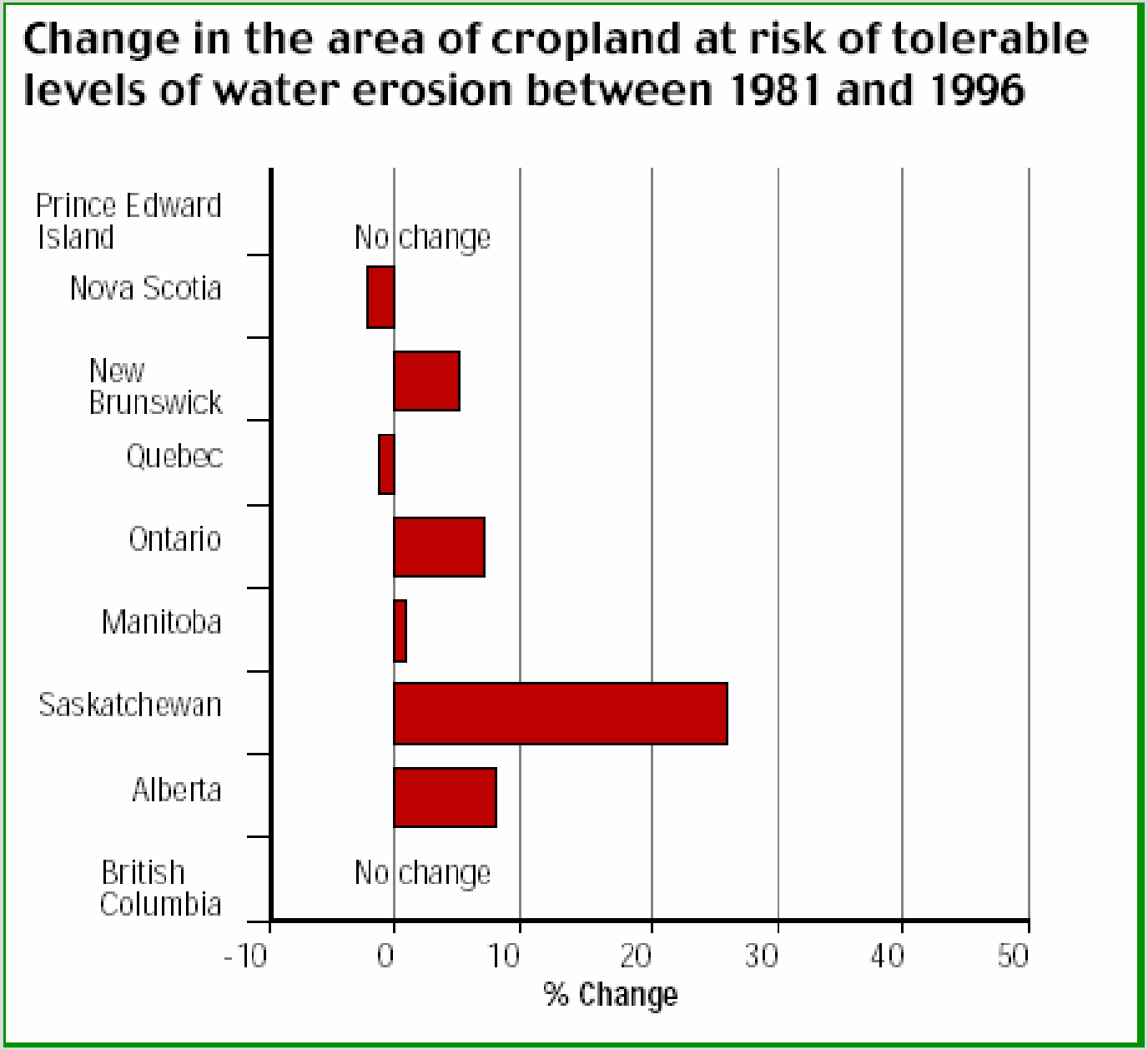
Desertification

"Land degradation in arid, semi arid and dry/sub-humid areas, resulting from various factors, including climatic variations and human impact" (UNEP, 1994).

Desertification

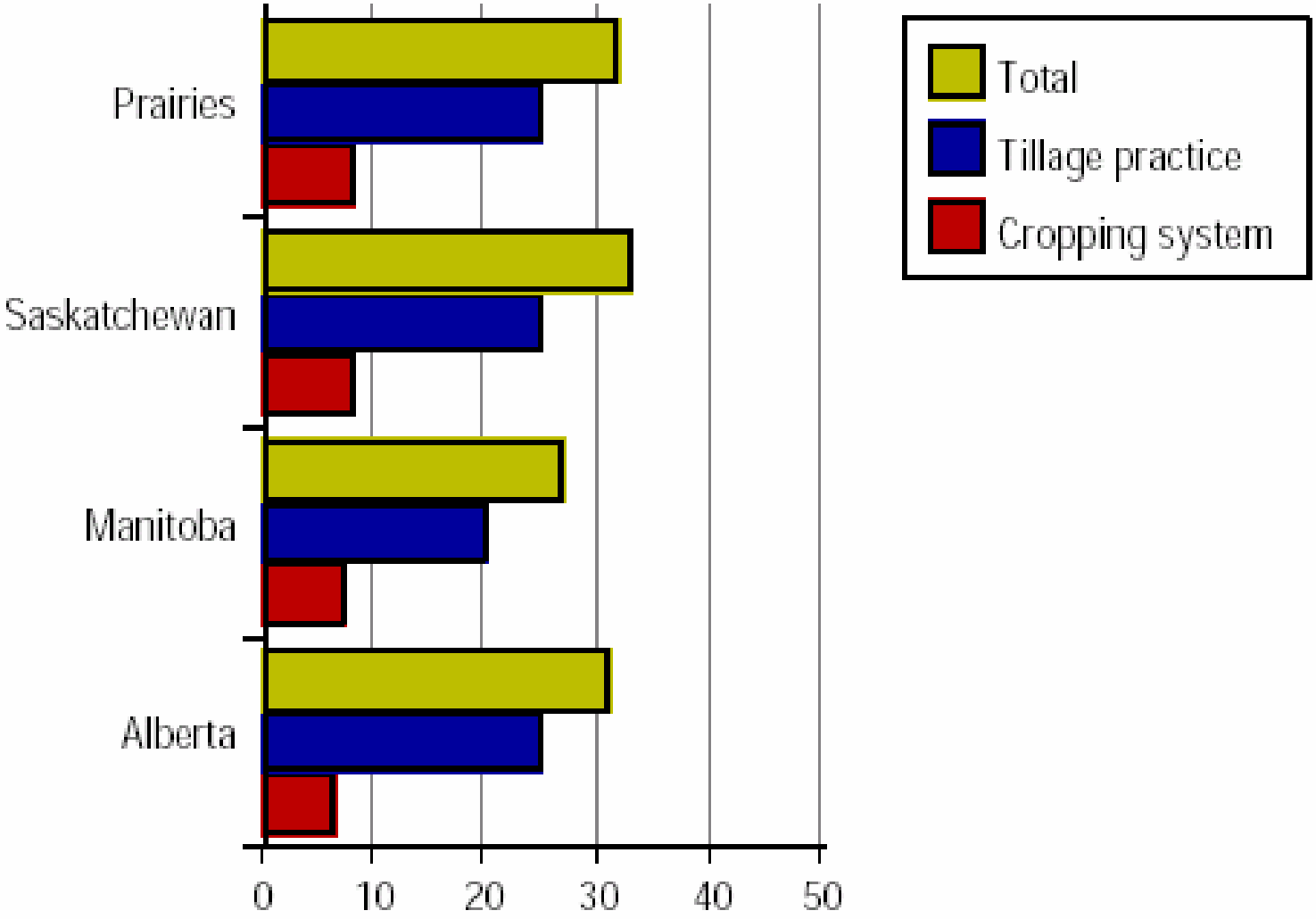
"Land degradation in arid, semi arid and dry/sub-humid areas, resulting from various factors, including climatic variations and human impact" (UNEP, 1994).

Landsat 7, July, 2000

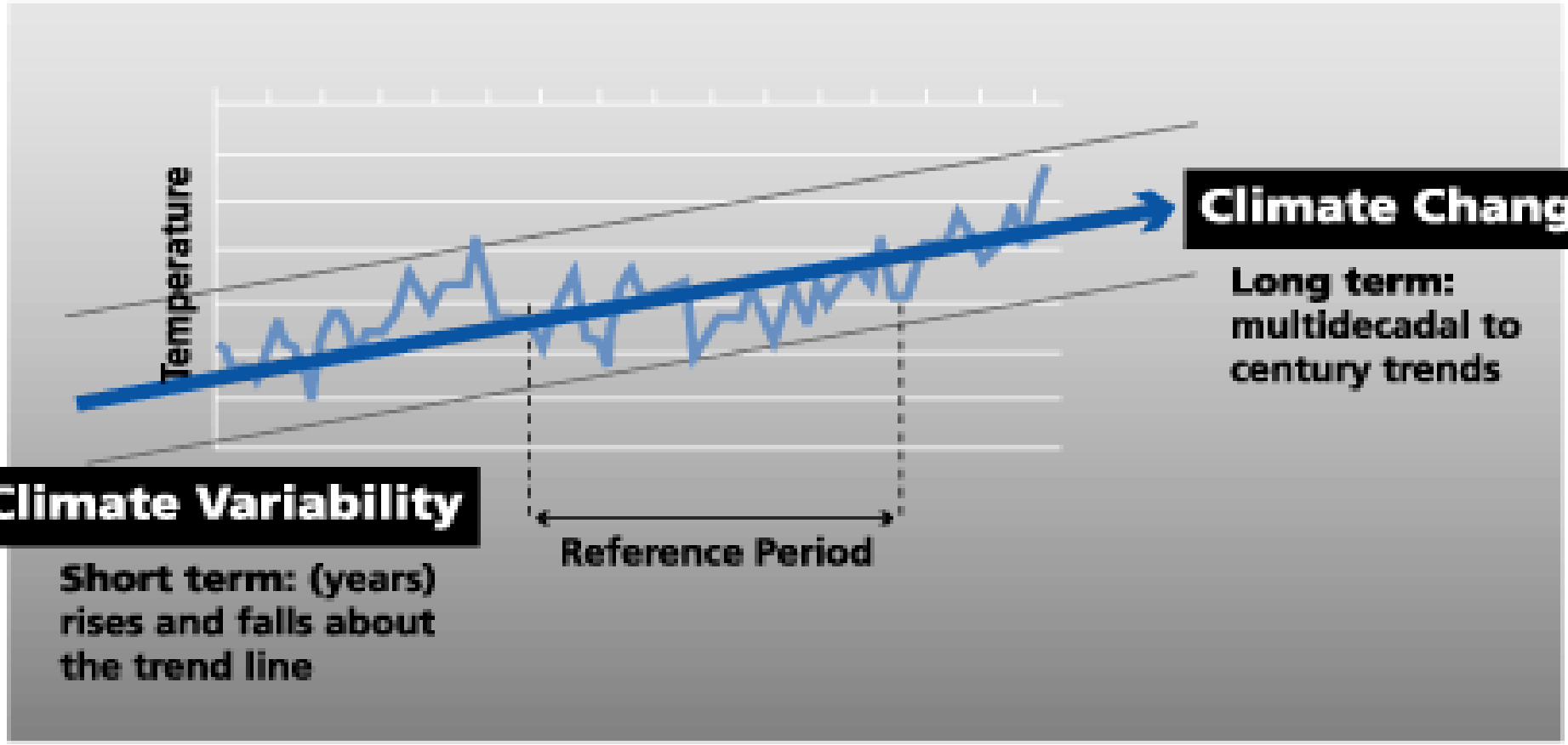


McRae et a
2000

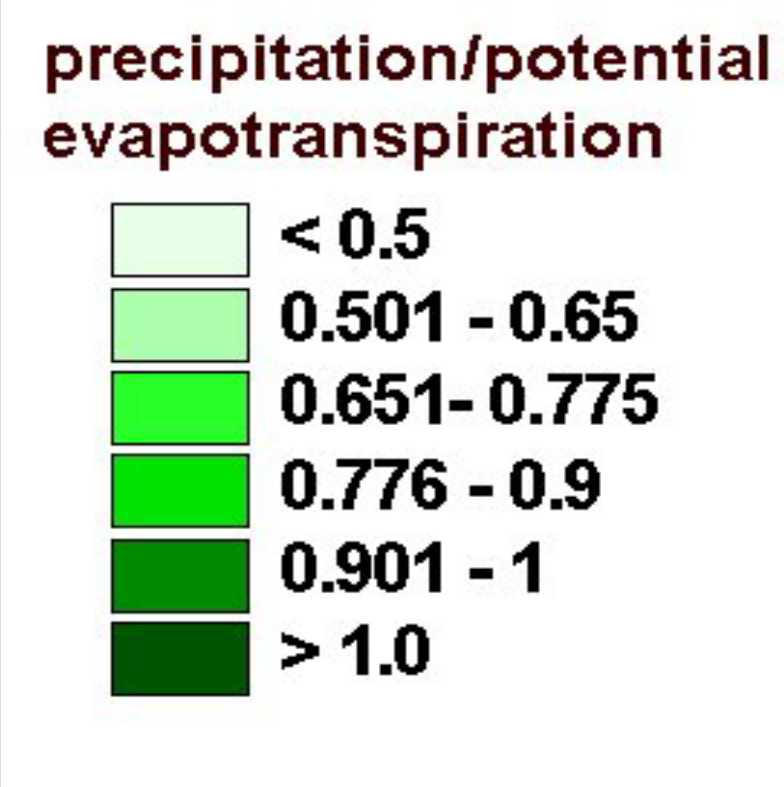
Reduction (%) in the risk of wind erosion in the Prairie Provinces between 1981 and 1996



McRae et a
2000


Temperature
Climate Change
Long term:
multidecadal to
century trends
Climate Variability
Reference Period
Short term: (years)
rises and falls about
the trend line

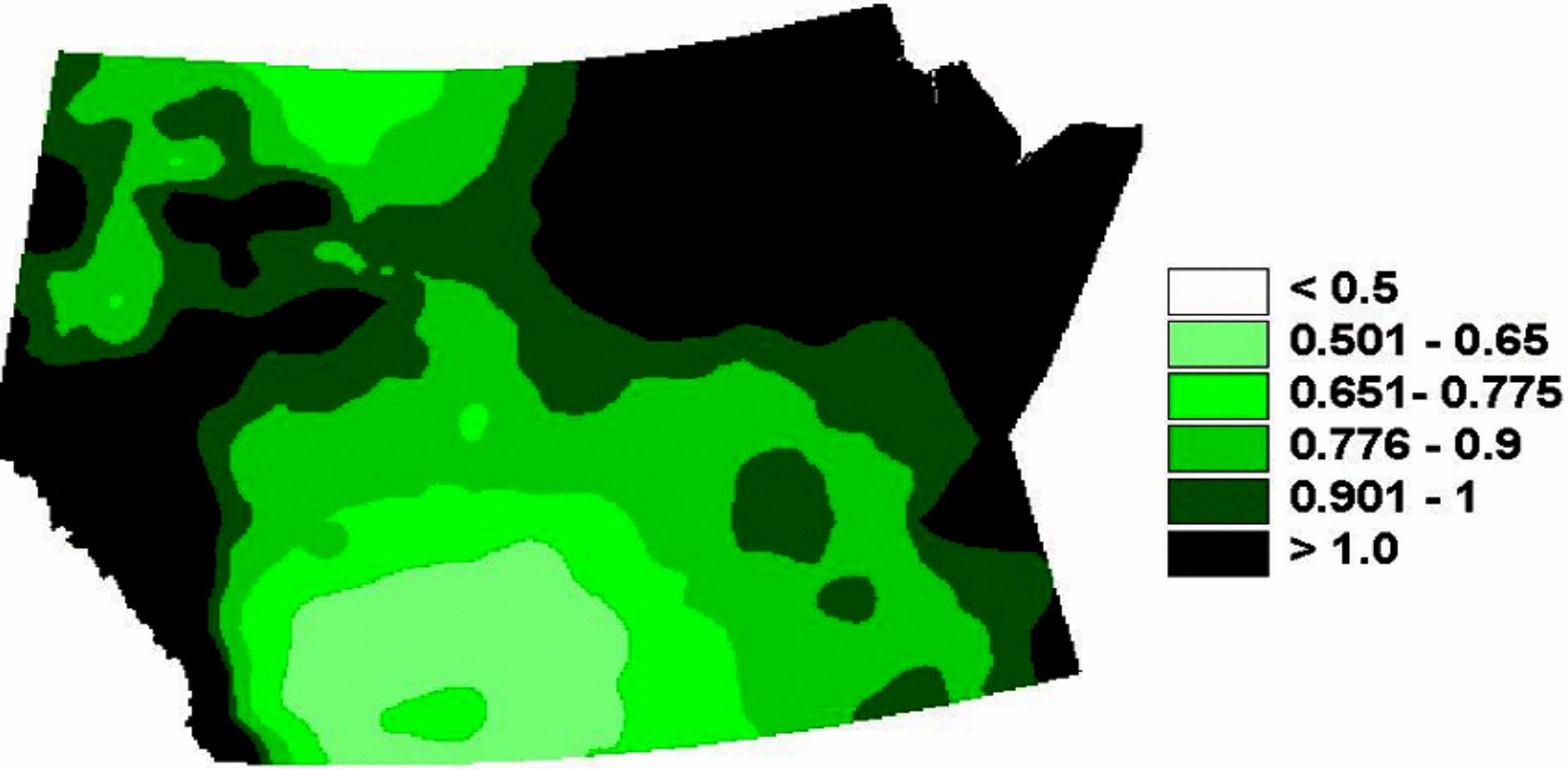
Aridity Index: P/PET



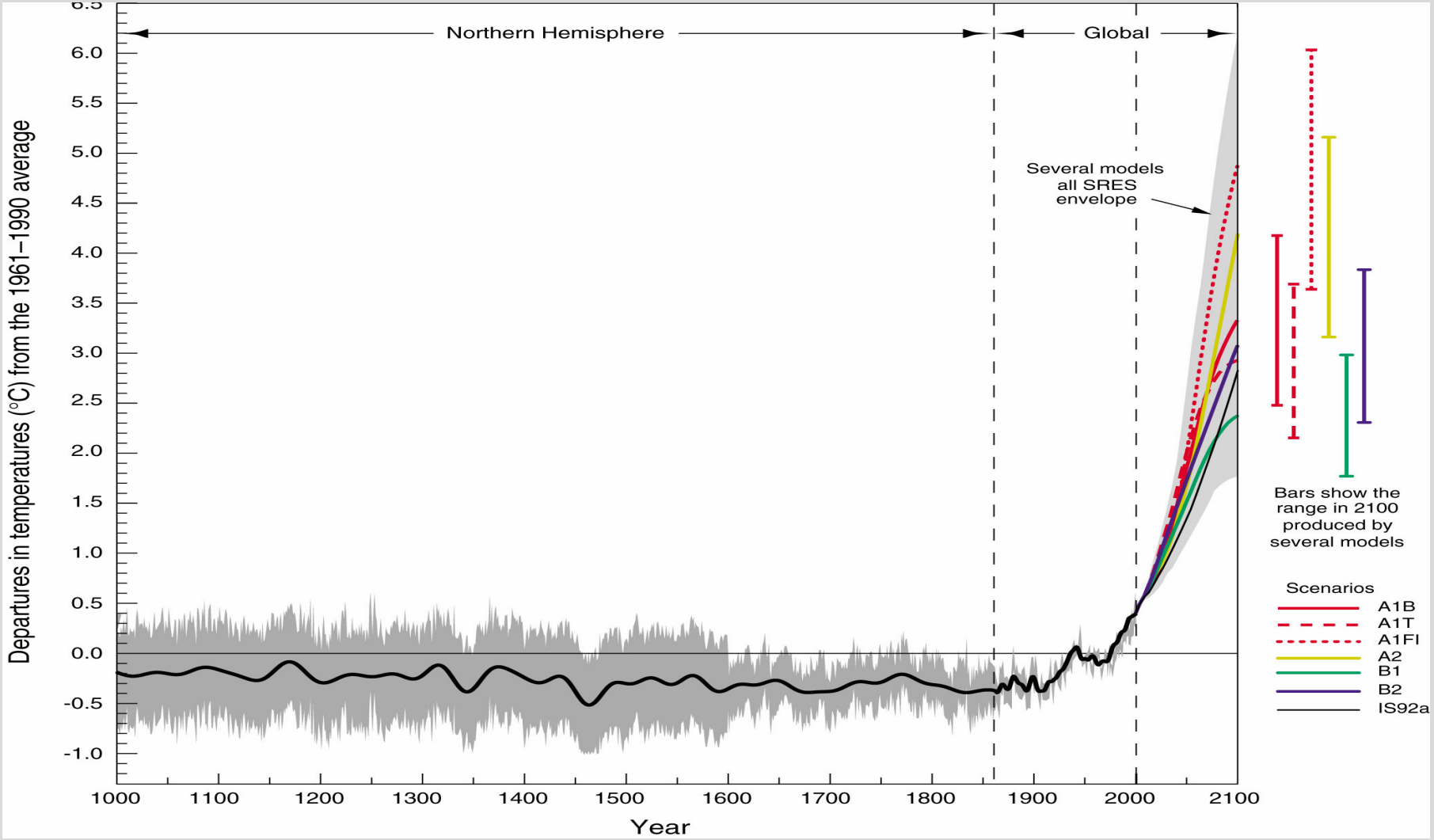
semiarid: P/PET < 0.5

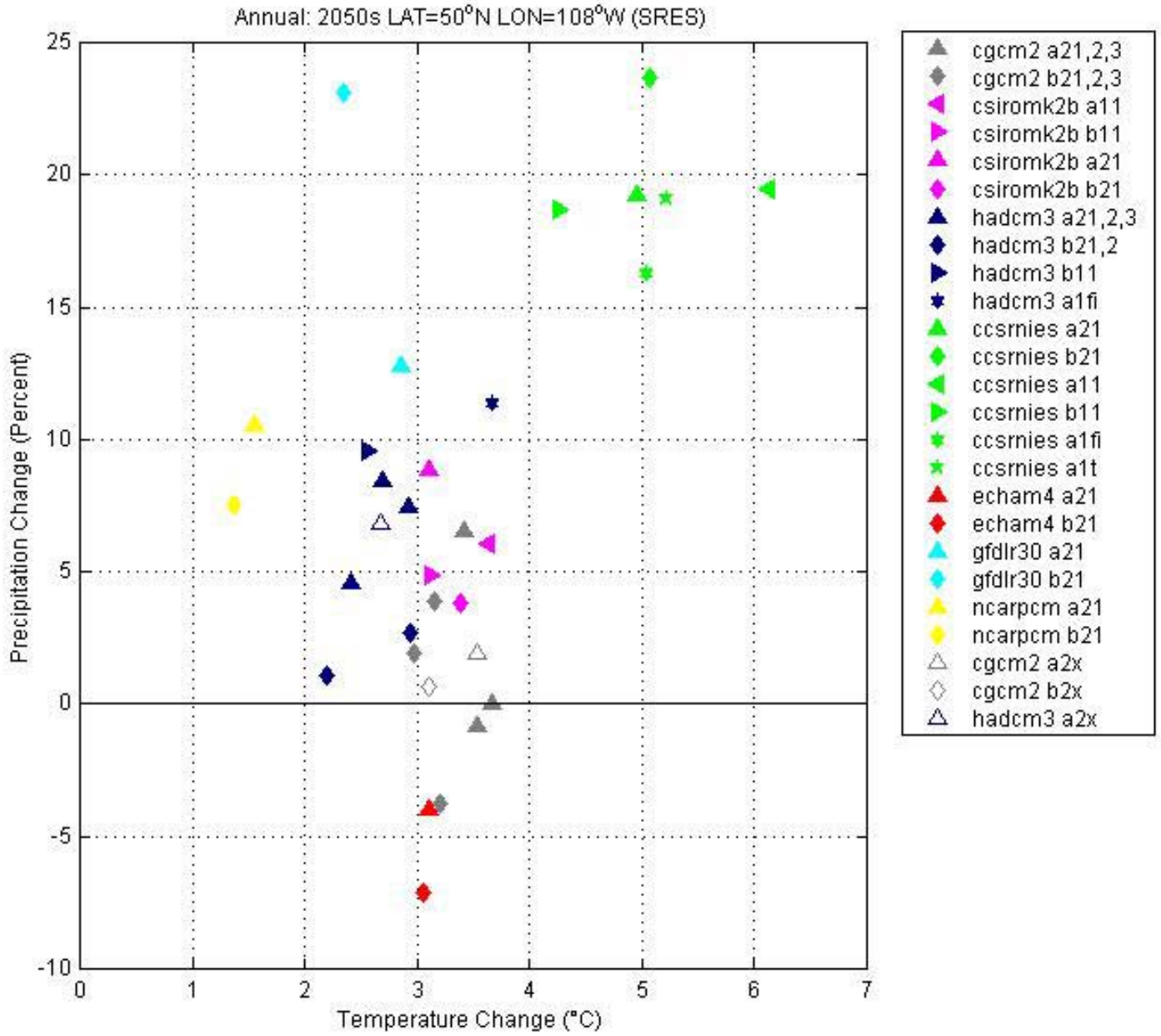
dry subhumid: 0.5 ≤ P/PET < 0.65

Aridity Index (P/PET), 1961-90

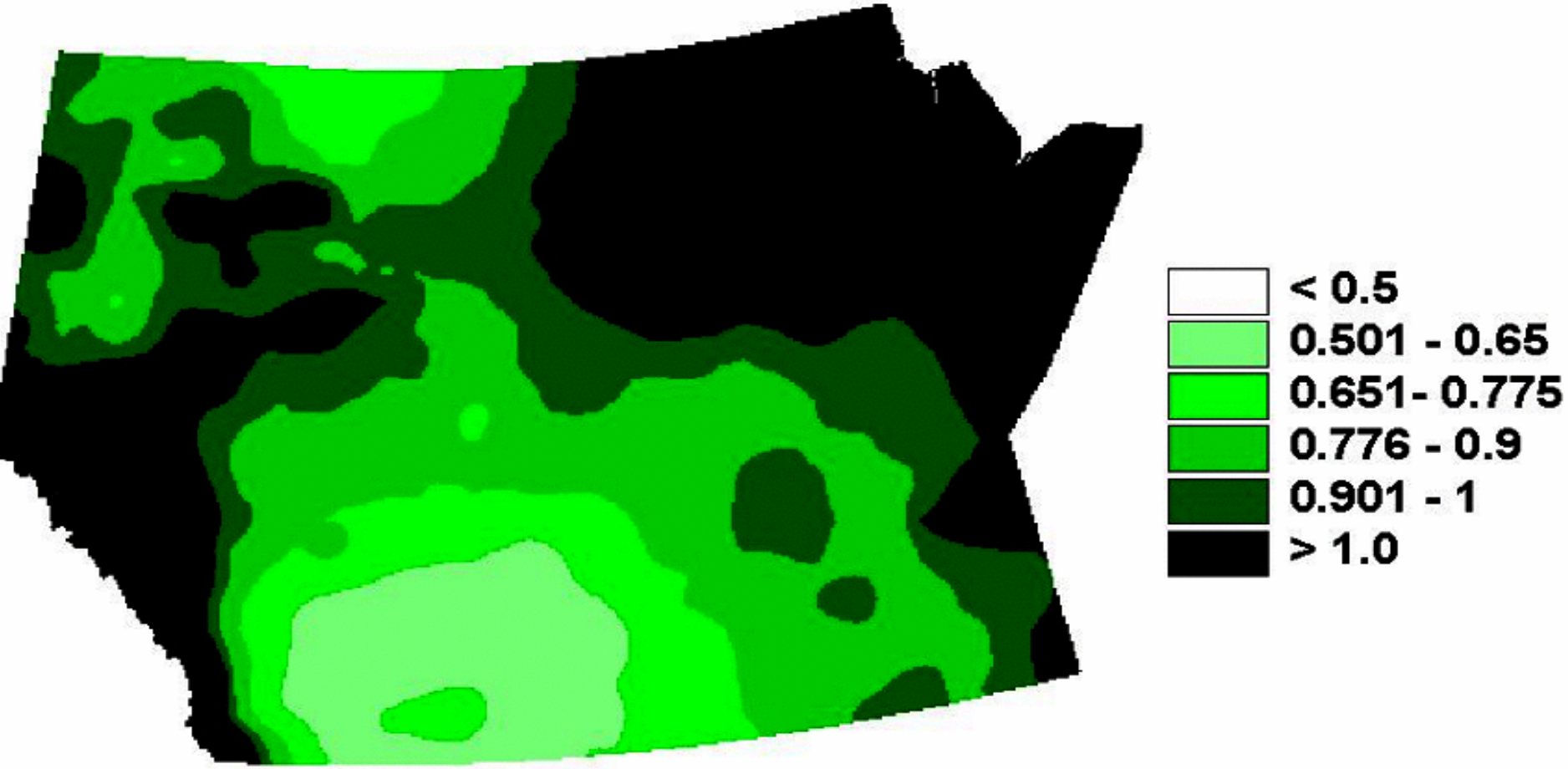


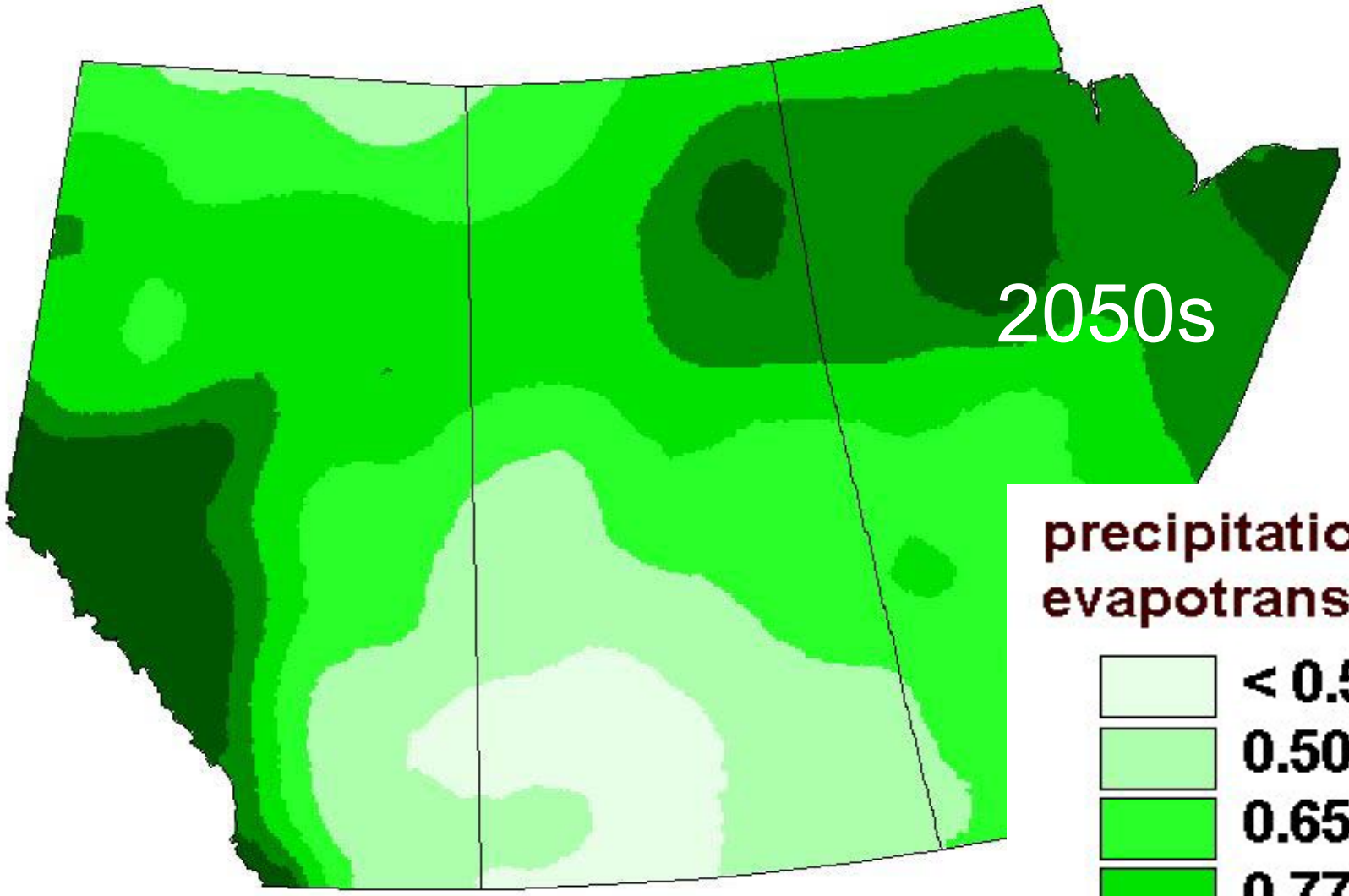
Temperature Projections for 21st Century

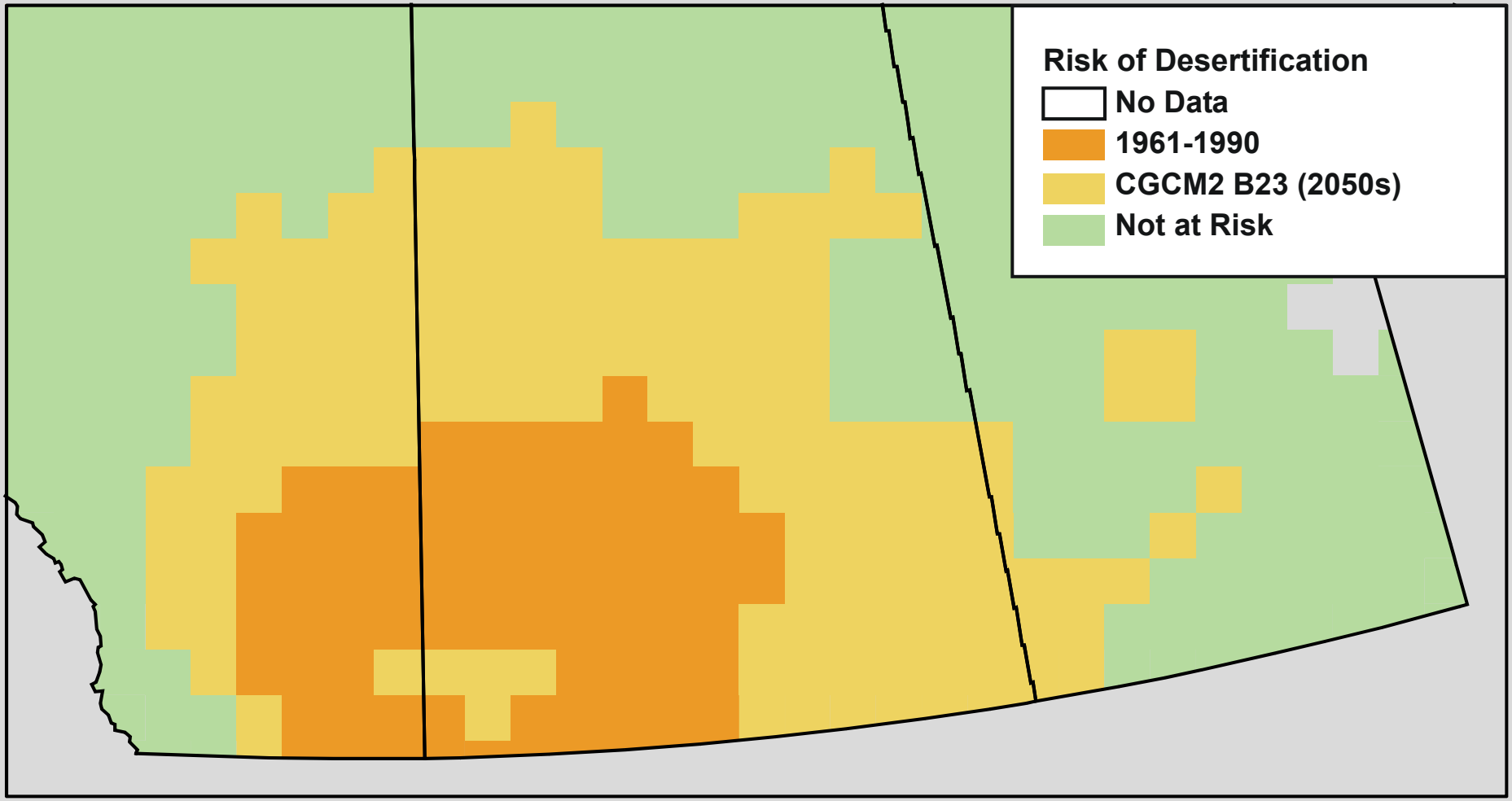


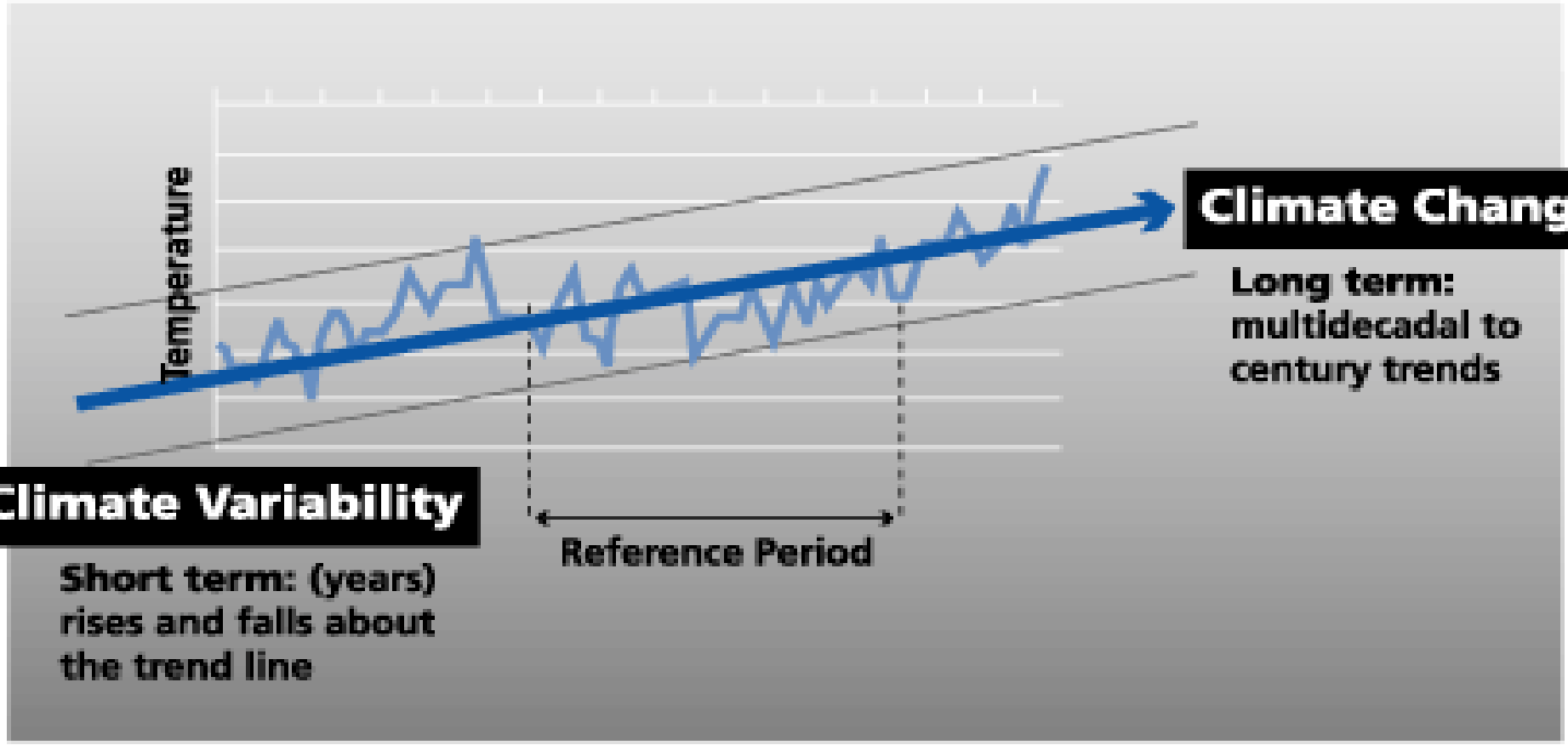

Annual: 2050s LAT=50°N LON=108°W (SRES)
Precipitation Change (Percent)
Temperature Change (°C)
25
20
15
10
5
0
-5
-10
0
1
2
3
4
5
6
7
cgcm2 a21,2,3
cgcm2 b21,2,3
csiromk2b a11
csiromk2b b11
csiromk2b a21
csiromk2b b21
hadcm3 a21,2,3
hadcm3 b21,2
hadcm3 b11
hadcm3 a1fi
ccsrnies a21
ccsrnies b21
ccsrnies a11
ccsrnies b11
ccsrnies a1fi
ccsrnies a1t
echam4 a21
echam4 b21
gfdlr30 a21
gfdlr30 b21
ncarpcm a21
ncarpcm b21
cgcm2 a2x
cgcm2 b2x
hadcm3 a2x

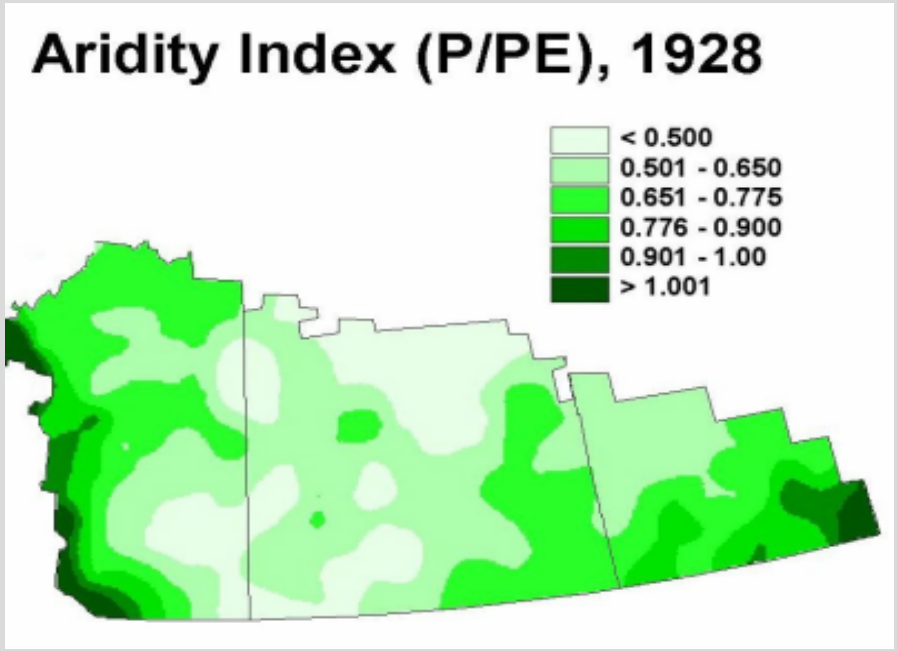
Aridity Index (P/PET), 1961-90

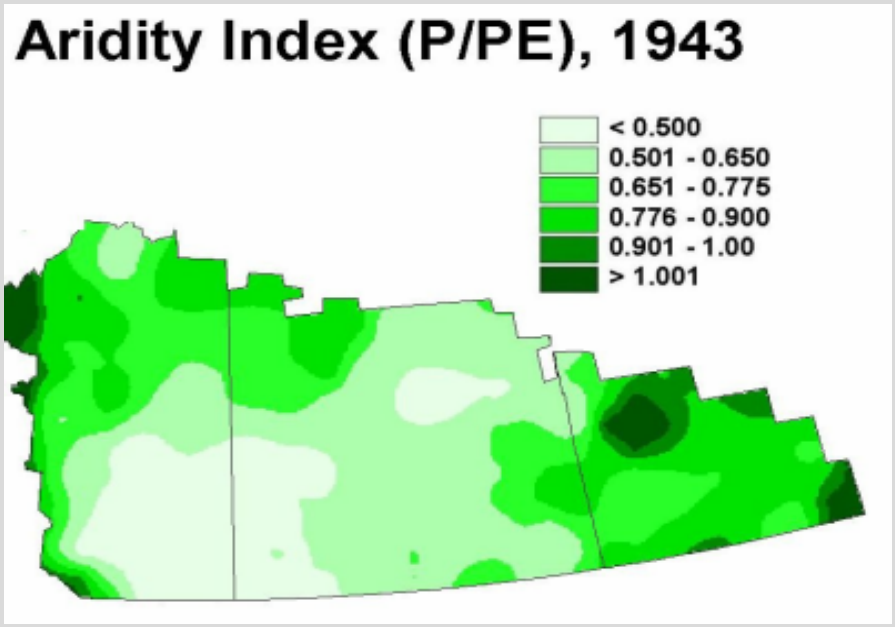


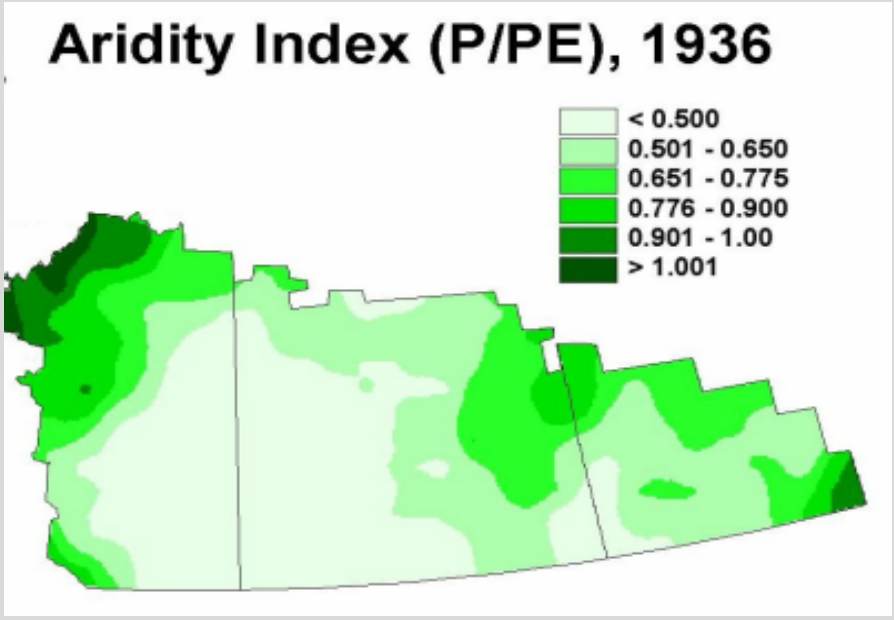

2050s
precipitation/potenti
evapotranspiration
< 0.5
0.501 - 0.65
0.651- 0.775
0.776 - 0.9
0.901 - 1
> 1.0

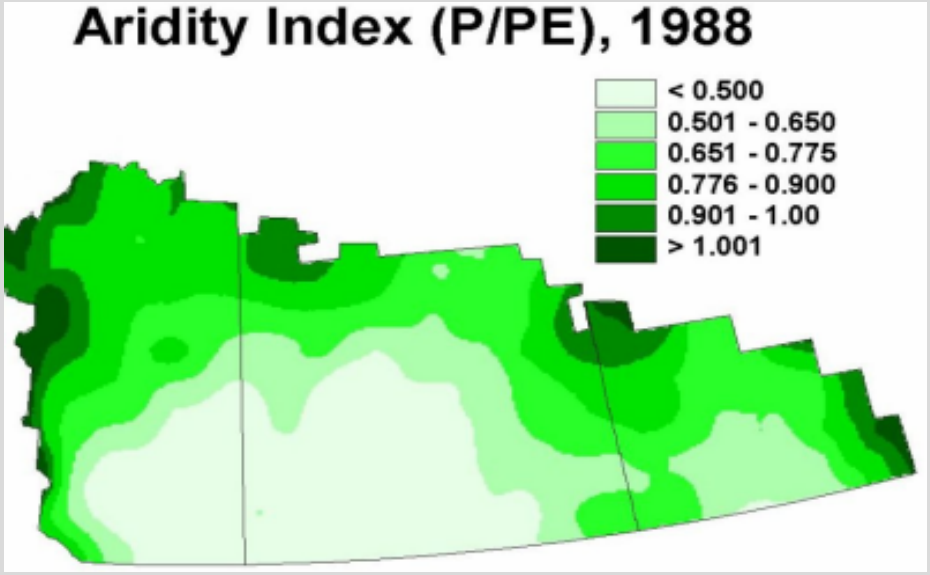

Risk of Desertification
No Data
1961-1990
CGCM2 B23 (2050s)
Not at Risk

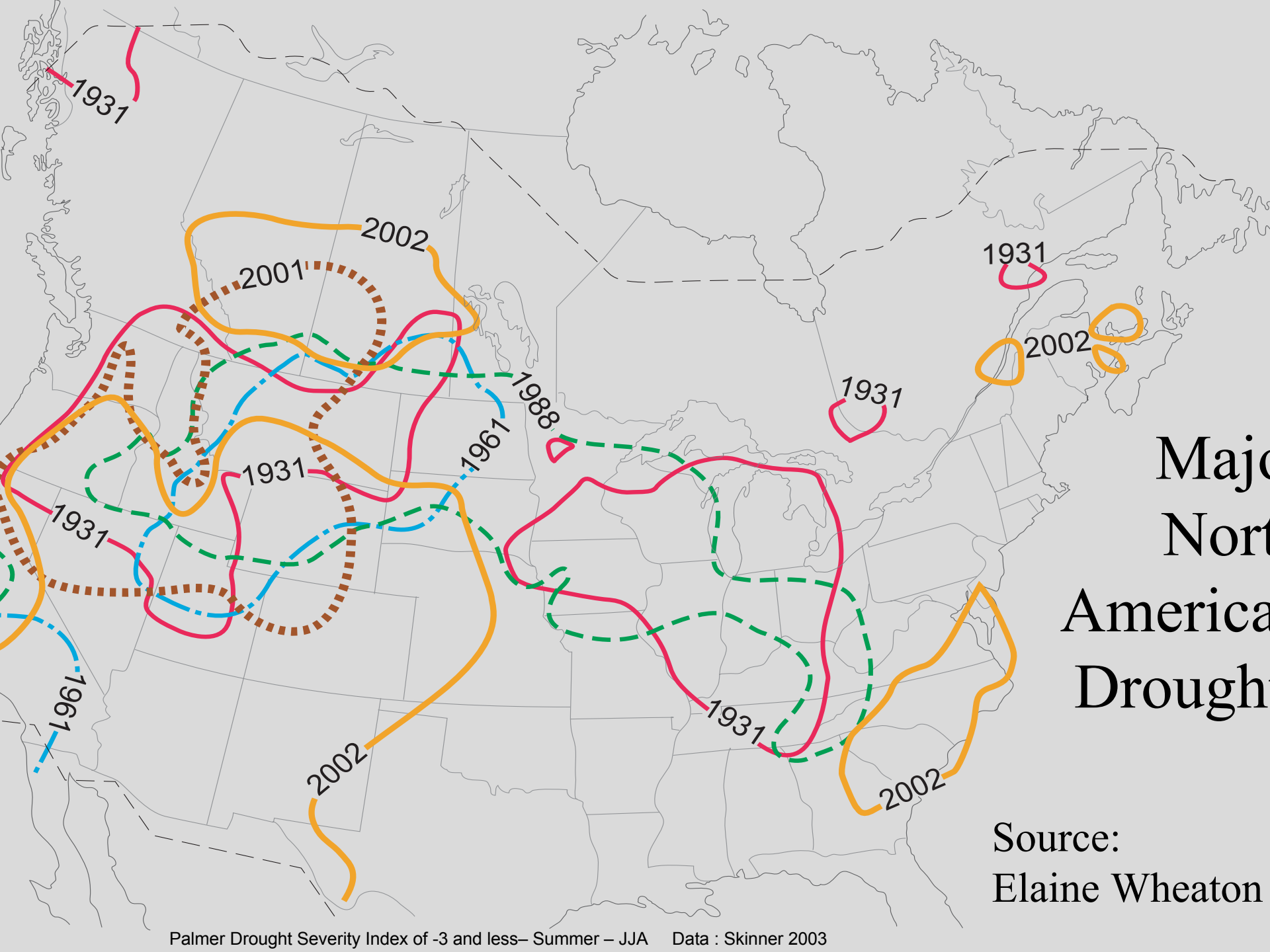

Temperature
Climate Change
Long term:
multidecadal to
century trends
Climate Variability
Reference Period
Short term: (years)
rises and falls about
the trend line


Aridity Index (P/PE), 1928
< 0.500
0.501 - 0.650
0.651 - 0.775
0.776 - 0.900
0.901 - 1.00
> 1.001


Aridity Index (P/PE), 1943
< 0.500
0.501 - 0.650
0.651 - 0.775
0.776 - 0.900
0.901 - 1.00
> 1.001


Aridity Index (P/PE), 1936
< 0.500
0.501 - 0.650
0.651 - 0.775
0.776 - 0.900
0.901 - 1.00
> 1.001


Aridity Index (P/PE), 1988
< 0.500
0.501 - 0.650
0.651 - 0.775
0.776 - 0.900
0.901 - 1.00
> 1.001


1931
2002
2001
1988
1961
1931
1931
1931
1961
2002
1931
2002
1931
2002
Majo
Nort
America
Drough
Source:
Elaine Wheaton
Palmer Drought Severity Index of -3 and less– Summer – JJA Data : Skinner 2003

Saskatoon (1908-2002)

1-yr	2-yrs	3-yrs
2001	**2001-02**	**2000-02**
1952	**2000-01**	1951-53
1987	1987-88	1987-89
1960	1952-3	1999-01
1941	1964-65	1986-88

Edmonton (1883-2002)

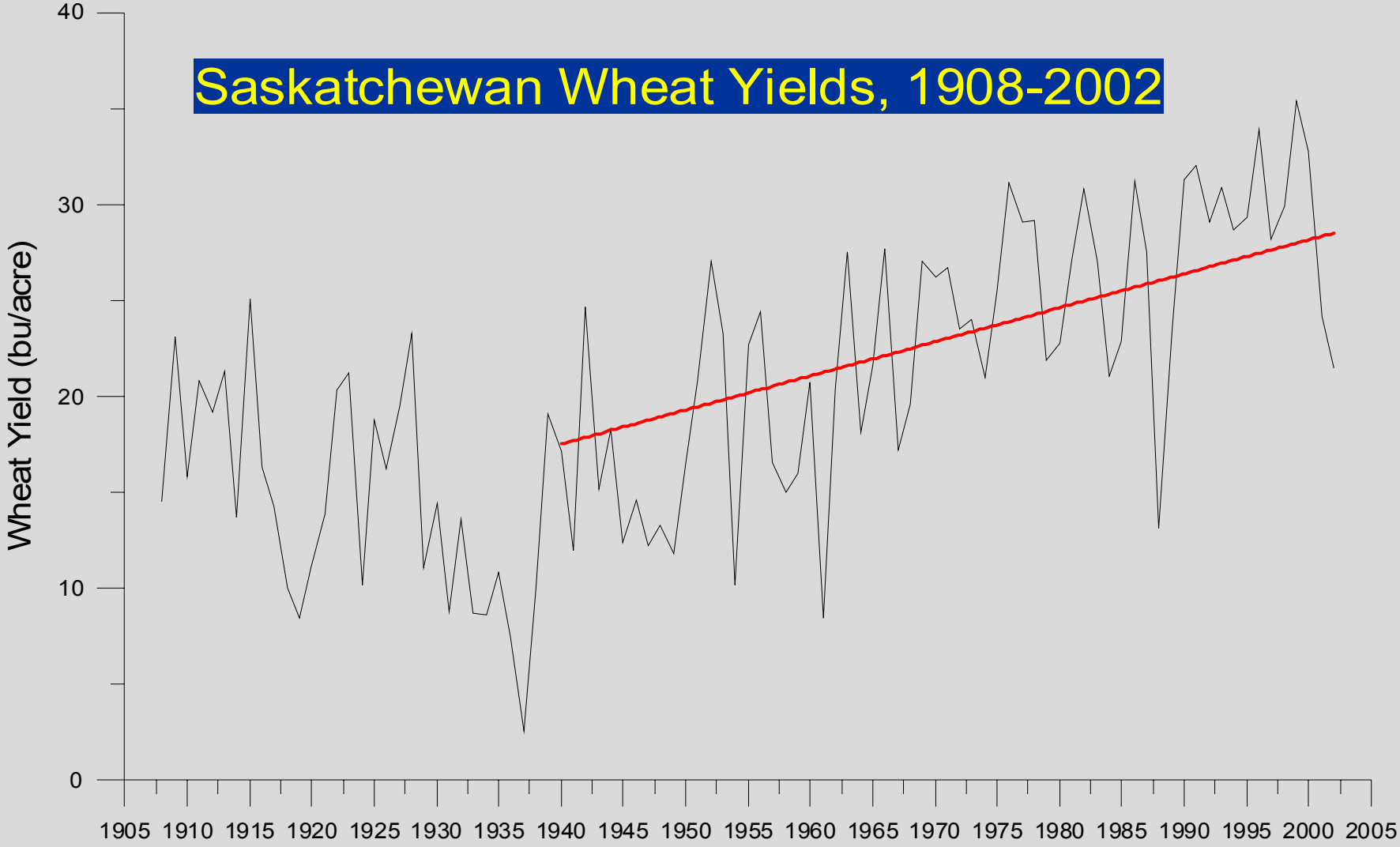
1-yr	2-yrs	3-yrs
1889	**2001-02**	1883-85
1883	1883-84	1896-98
2002	1897-98	1887-89
1898	1886-87	1885-87
1961	1949-50	**2000-02**


Dust, Regina, May 22, 2002

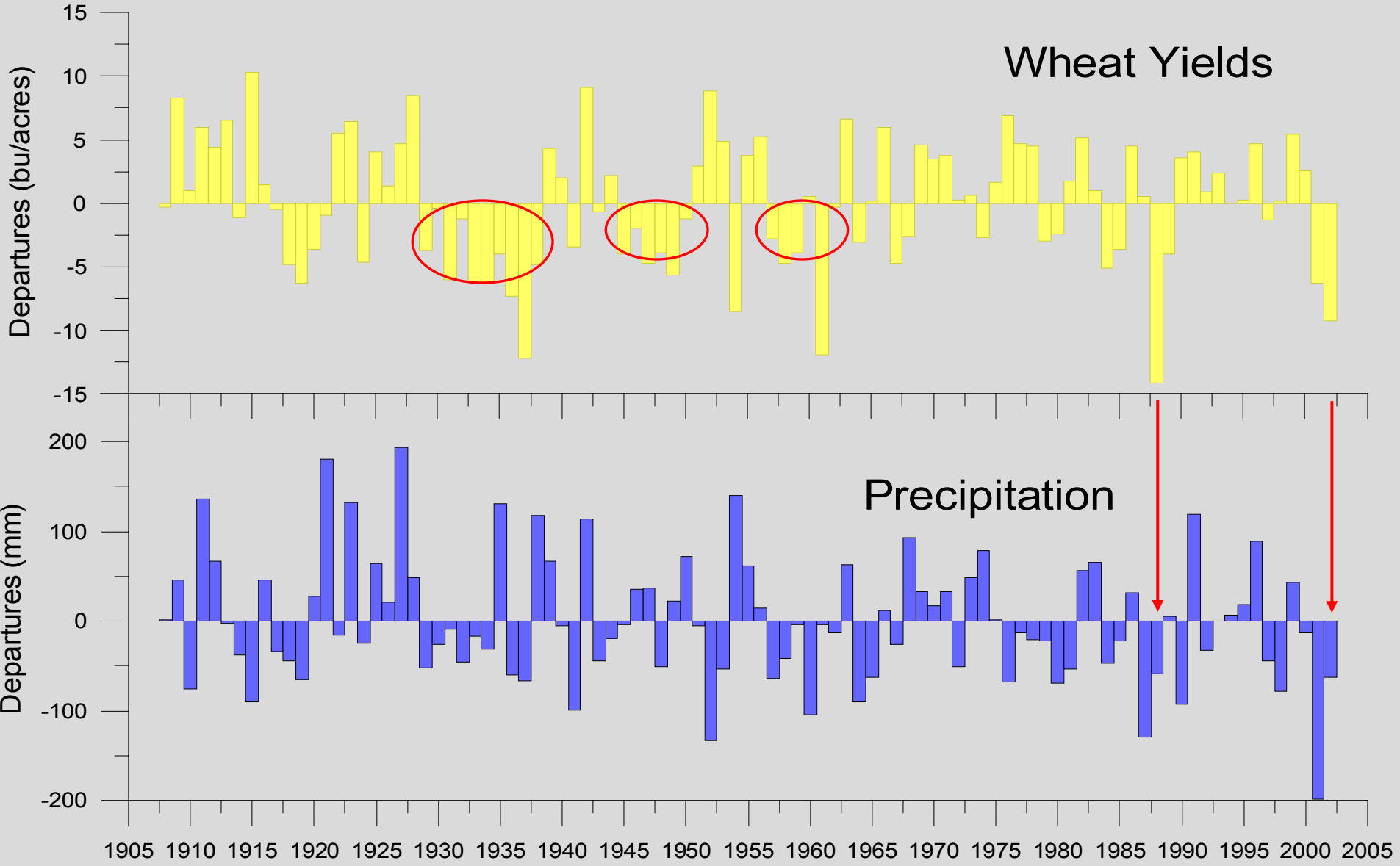
Prairie Agricultural Landscapes (PFRA 2000: 32-33)

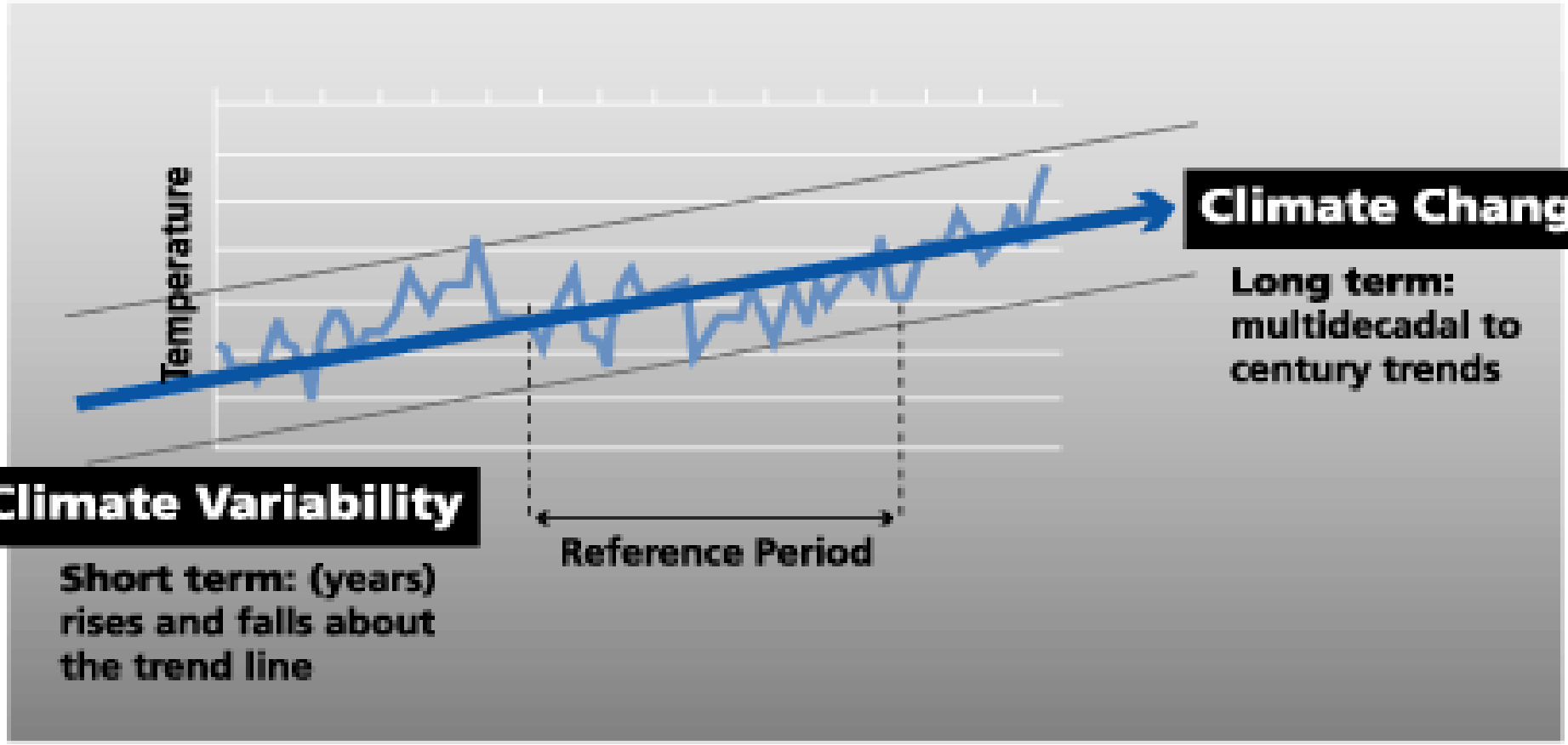
Very severe wind and water erosion is dominated by infrequent occurrences of when highly erosive events impact exposed soil. Such events may only happen once during the farming lifetime of an individual farmer, making it difficult to justify the expense and inconvenience of many soil conservation practices.

Severe and widespread erosion could still occur during extreme climatic events and especially during a period of years with back-to-back droughts.



source: Statistics Canada


Wheat Yields
Departures (bu/acres)
15
10
5
0
-5
-10
-15
Precipitation
Departures (mm)
200
100
0
-100
-200
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005


Temperature
Climate Change
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multidecadal to
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Climate Variability
Reference Period
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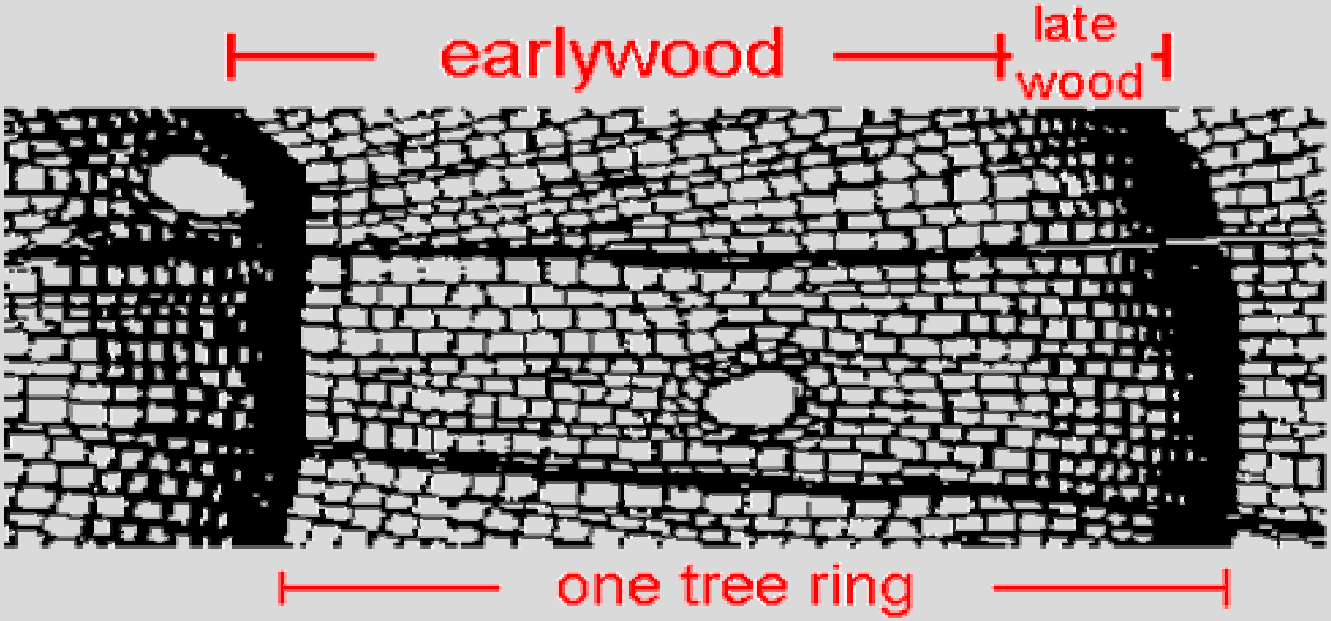
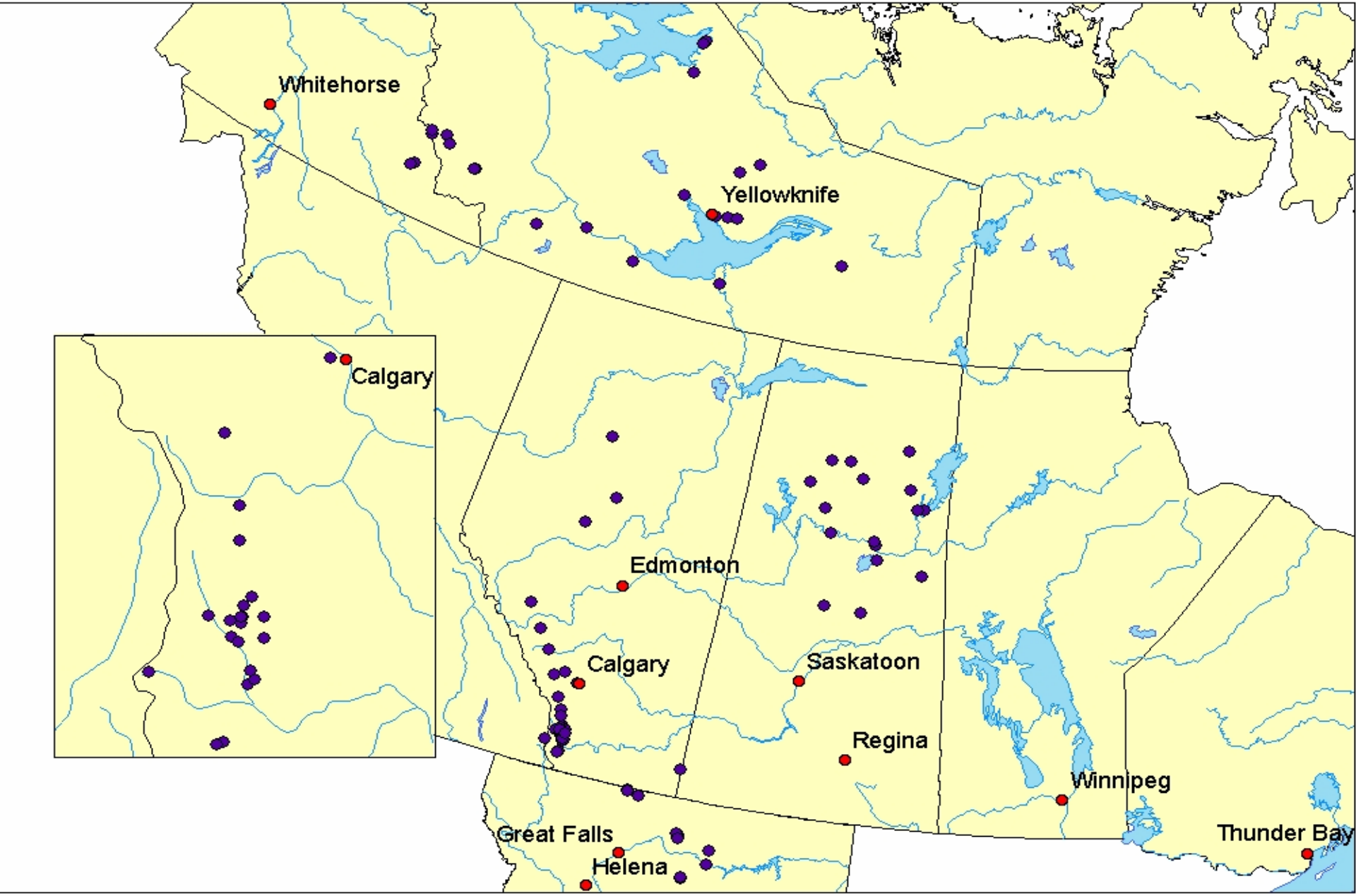
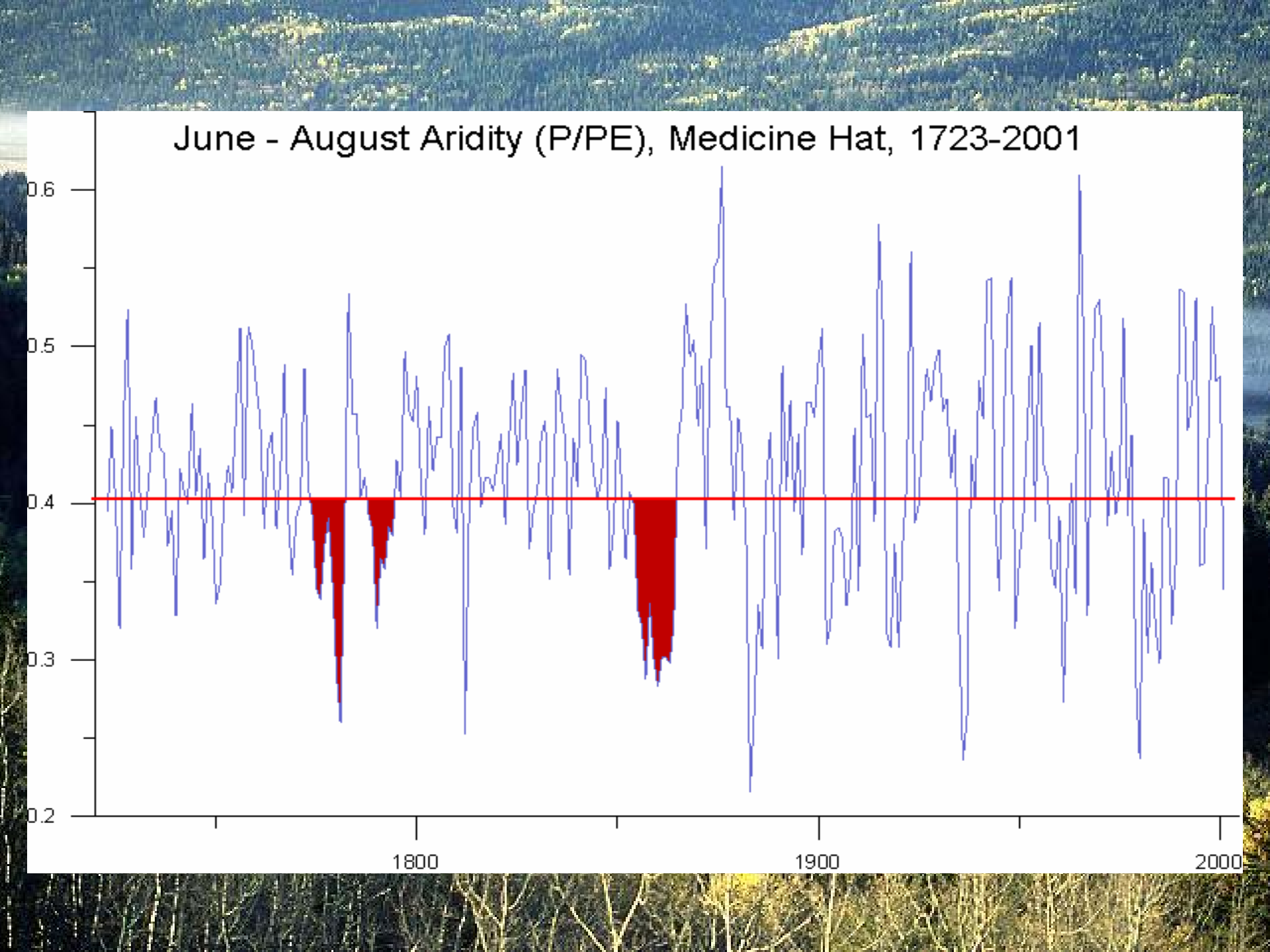
rises and falls about
the trend line


earlywood
late wood
one tree ring

Tree-Ring Sampling Sites



Widespread dune activity induced by late 18th century dryness
Wolfe, *et al*. 2001


June - August Aridity (P/PE), Medicine Hat, 1723-2001
0.6
0.5
0.4
0.3
0.2
1800
1900
2000


WESTCOTT® Flexible Stainless Steel Ruler

Extreme rainfalls in southern Saskatchewan

Buffalo Gap, May 30, 1961

- one-hour: 258 mm

Parkmanm, August 3-4, 1985

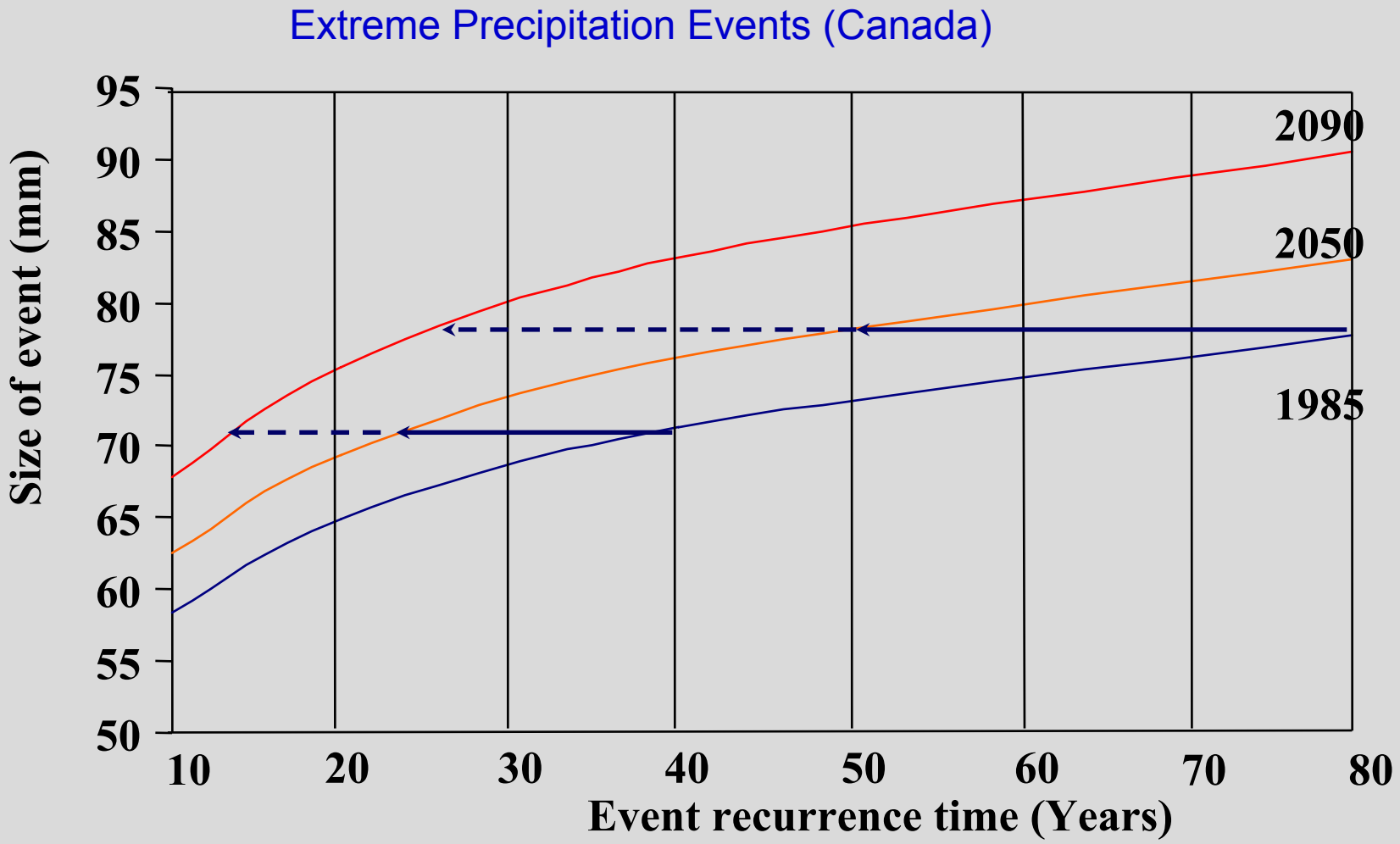
- six-hour: 267 mm
- 12-hour: 362 mm
- 24-hour: 381 mm

Vanguard, July 3, 2000

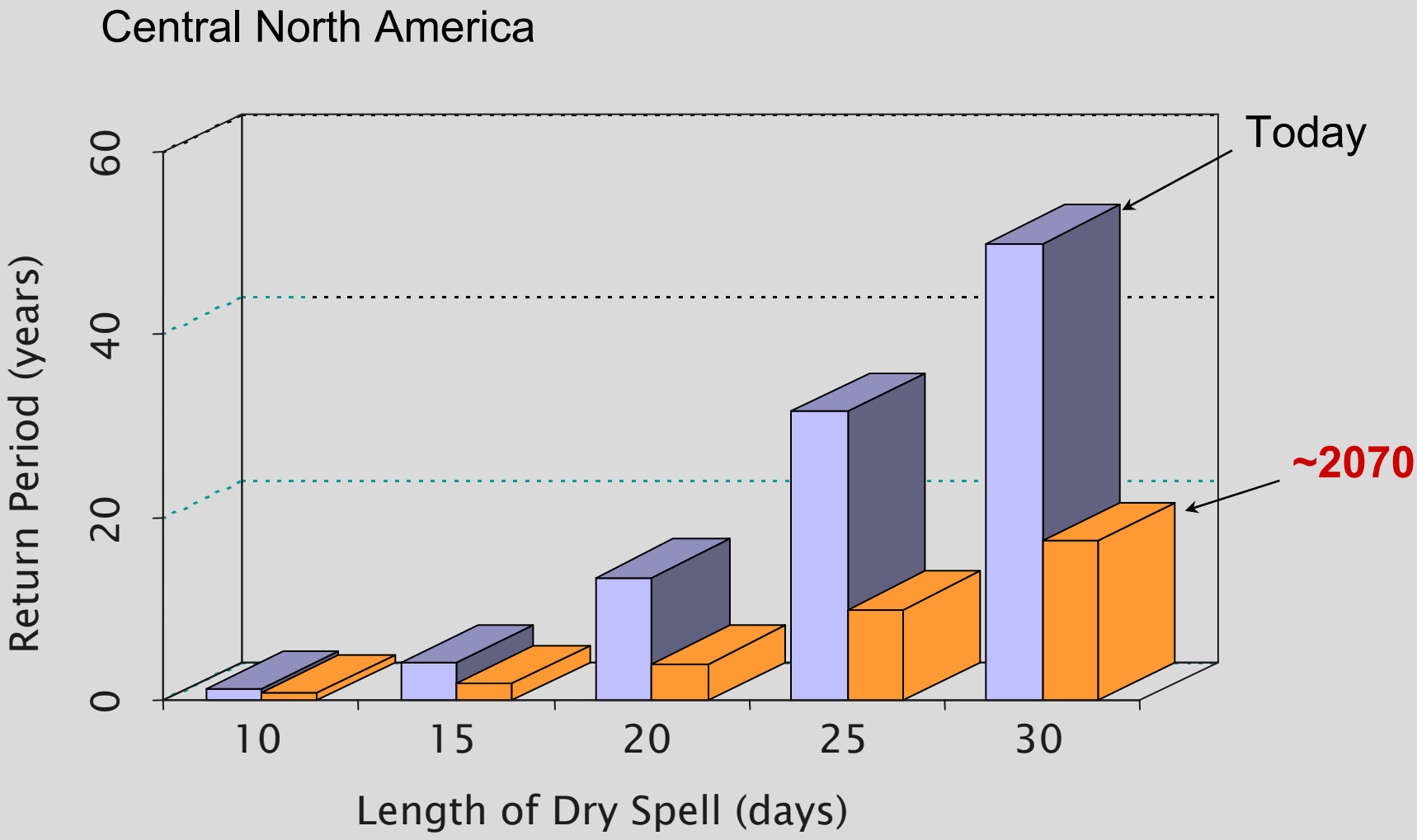
- eight-hour: 334-387 mm

Note: all data from bucket surveys

Extreme precipitation events are likely to become more frequent



Increasing Drought Frequency



Kharin and Zwiers 2000

Web Resources

- Landslides
  http://gsc.nrcan.gc.ca/landslides/index_e.php
- Sand Dune & Climate Change Studies in the Prairie Provinces
  http://gsc.nrcan.gc.ca/climate/sanddune/index_e.php
- Palliser Triangle Global Change Project
  http://gsc.nrcan.gc.ca/climate/palliser/index_e.php
- Geoscientific insights into the Red River and its flood problem in Manitoba
  http://gsc.nrcan.gc.ca/floods/redriver/index_e.php
- The Health of our Soils
  http://www.agr.gc.ca/nlwis-snite/index_e.cfm?s1=pub&s2=hs_ss&page=intro
- United Nations Convention to Combat Desertification
  http://www.unccd.int/
- Prairie Adaptation Research Collaborative
  http://www.parc.ca/