

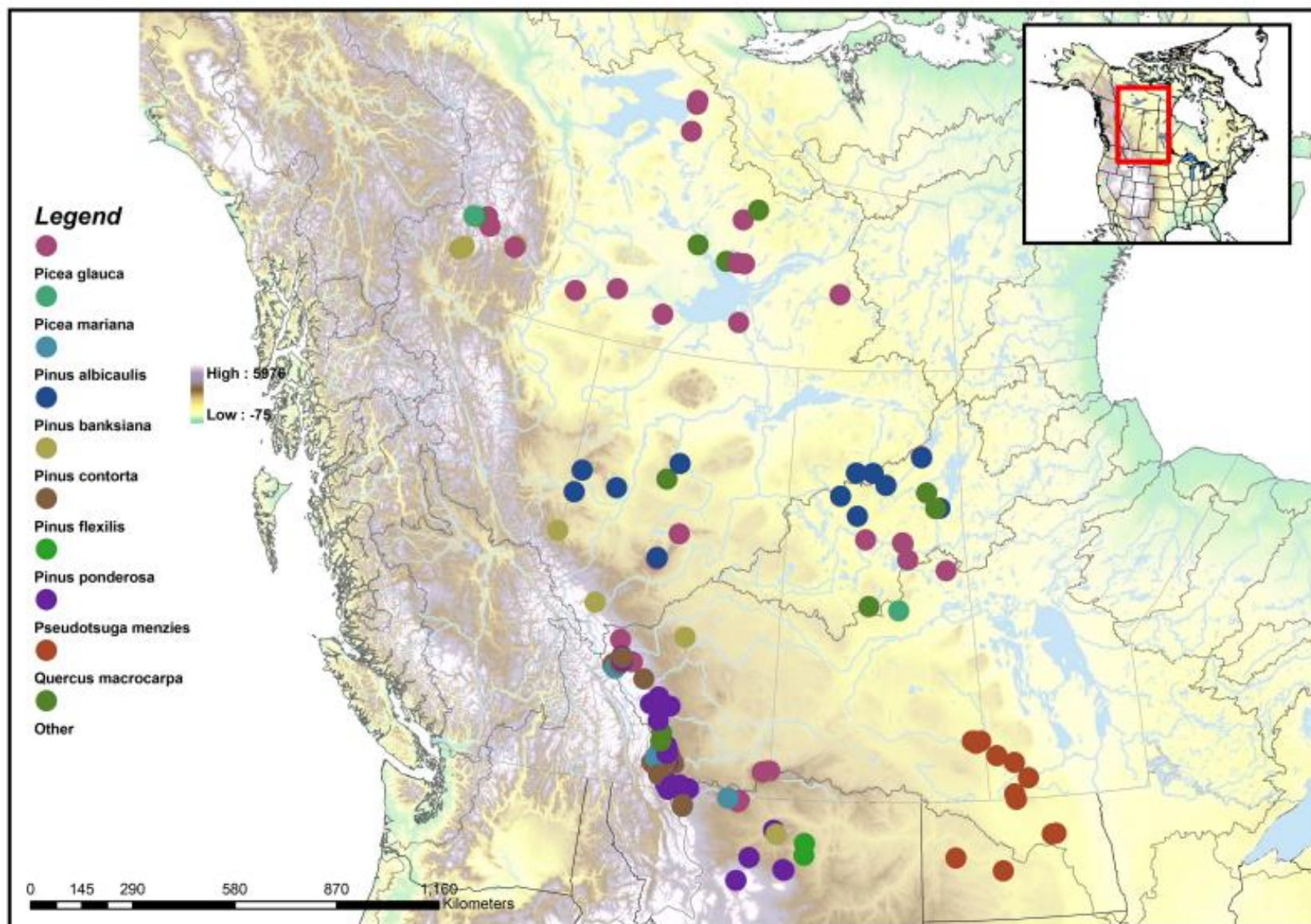
The Watershed's 250-Year Record of Natural Variability



Learning from Past Climate Extremes - Knowledge Outreach
Event, Swift Current, 23 Jan, 2013

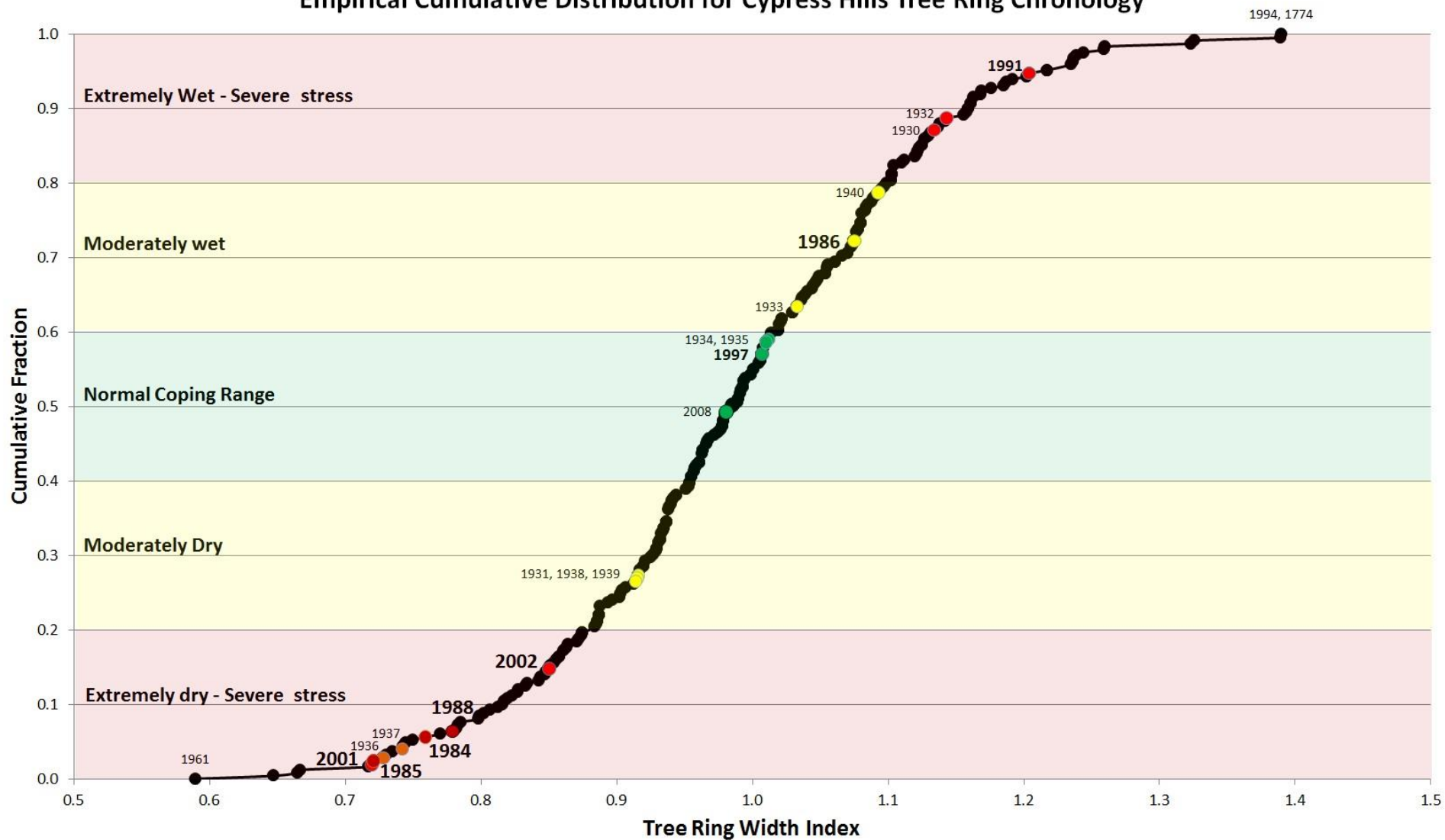


University of Regina Tree-Ring Lab Network





Empirical Cumulative Distribution for Cypress Hills Tree Ring Chronology



The black curve is ~250 years of tree rings, 1760 – 2009

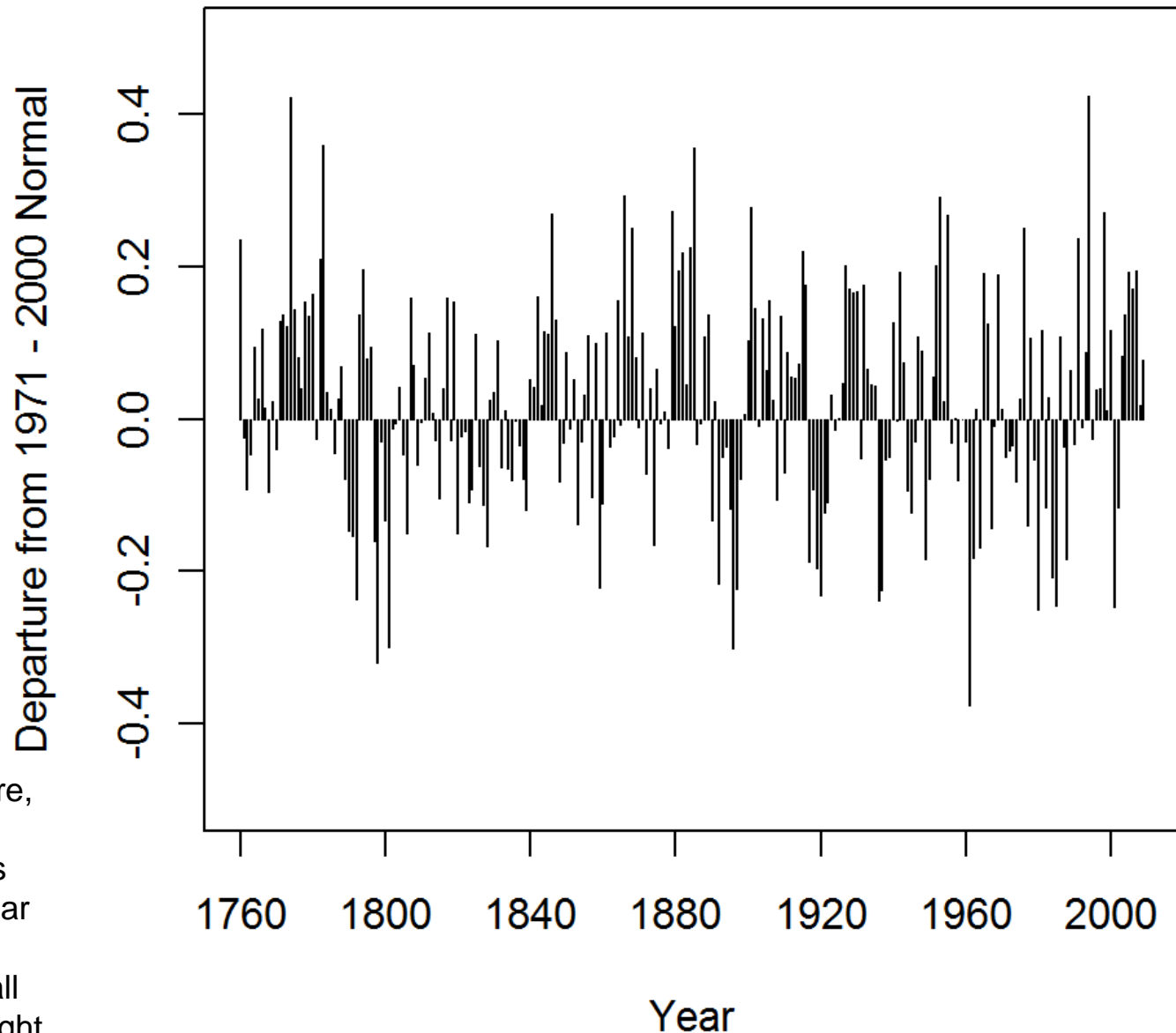
Inter-annual Variability
~250 of Tree Rings;
0 Baseline: 1971-2000
Median

Above "0" is wetter

Below "0" is drier

- The more severe the departure,
the more extreme (wet or dry).
- Repeated years of departures
indicate drier or wetter multi-year
exposure (e.g. 2001-02; late
1980s, 1920s-30s, 1850s are all
recorded historic extreme drought
periods.)

Cypress Hills Tree Ring Anomaly

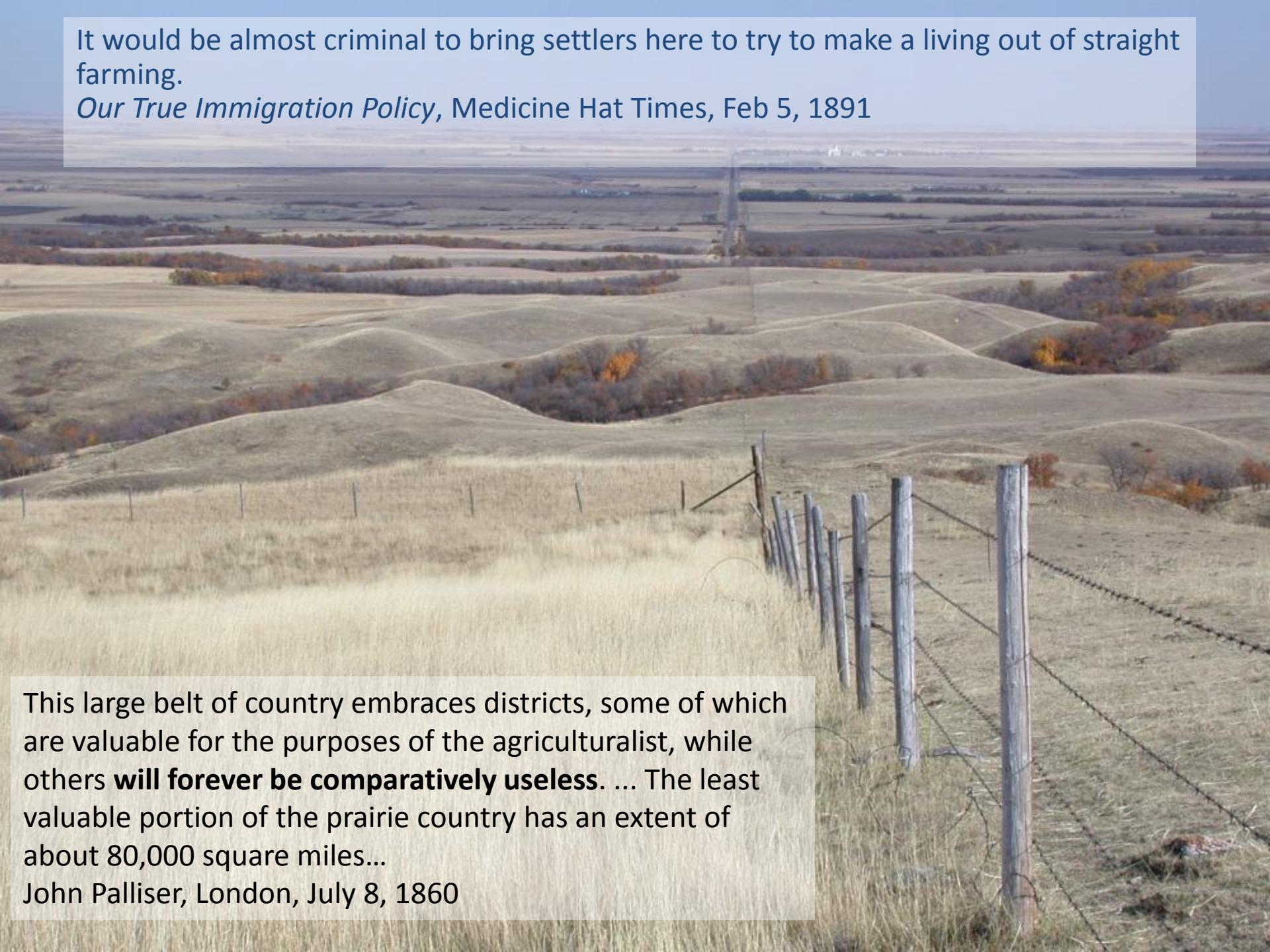


Widespread late 18th century sand dune activity (Wolfe, *et al.* 2001)



It would be almost criminal to bring settlers here to try to make a living out of straight farming.

Our True Immigration Policy, Medicine Hat Times, Feb 5, 1891



This large belt of country embraces districts, some of which are valuable for the purposes of the agriculturalist, while others **will forever be comparatively useless**. ... The least valuable portion of the prairie country has an extent of about 80,000 square miles...

John Palliser, London, July 8, 1860

1890s to 1910s: wettest decades of the past millennium

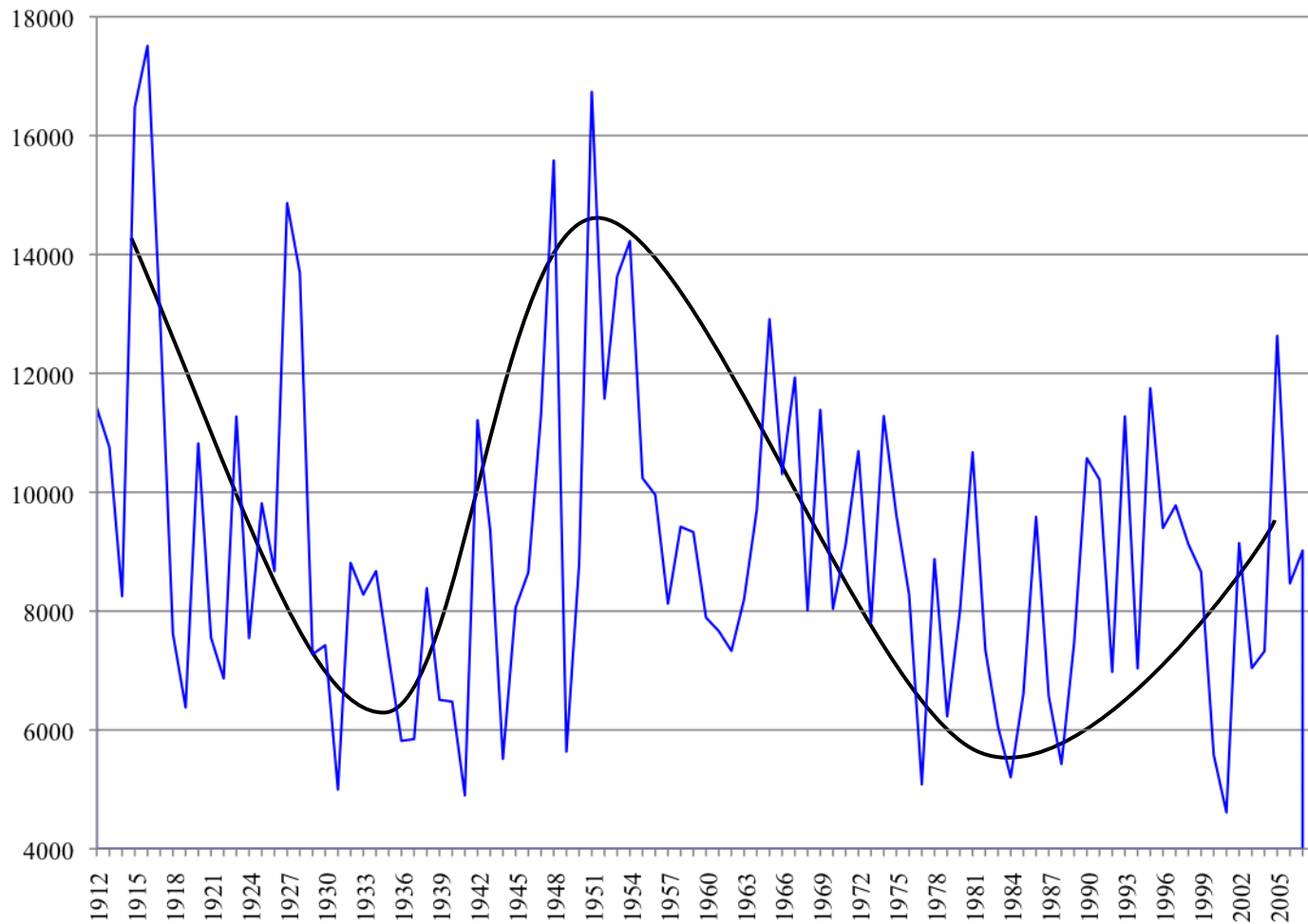
SE 6-33-11-W4, May 1914

1901	73,022	
1911	374,295	413%
1921	588,454	57%





Annual natural flow, South Saskatchewan River at Medicine Hat

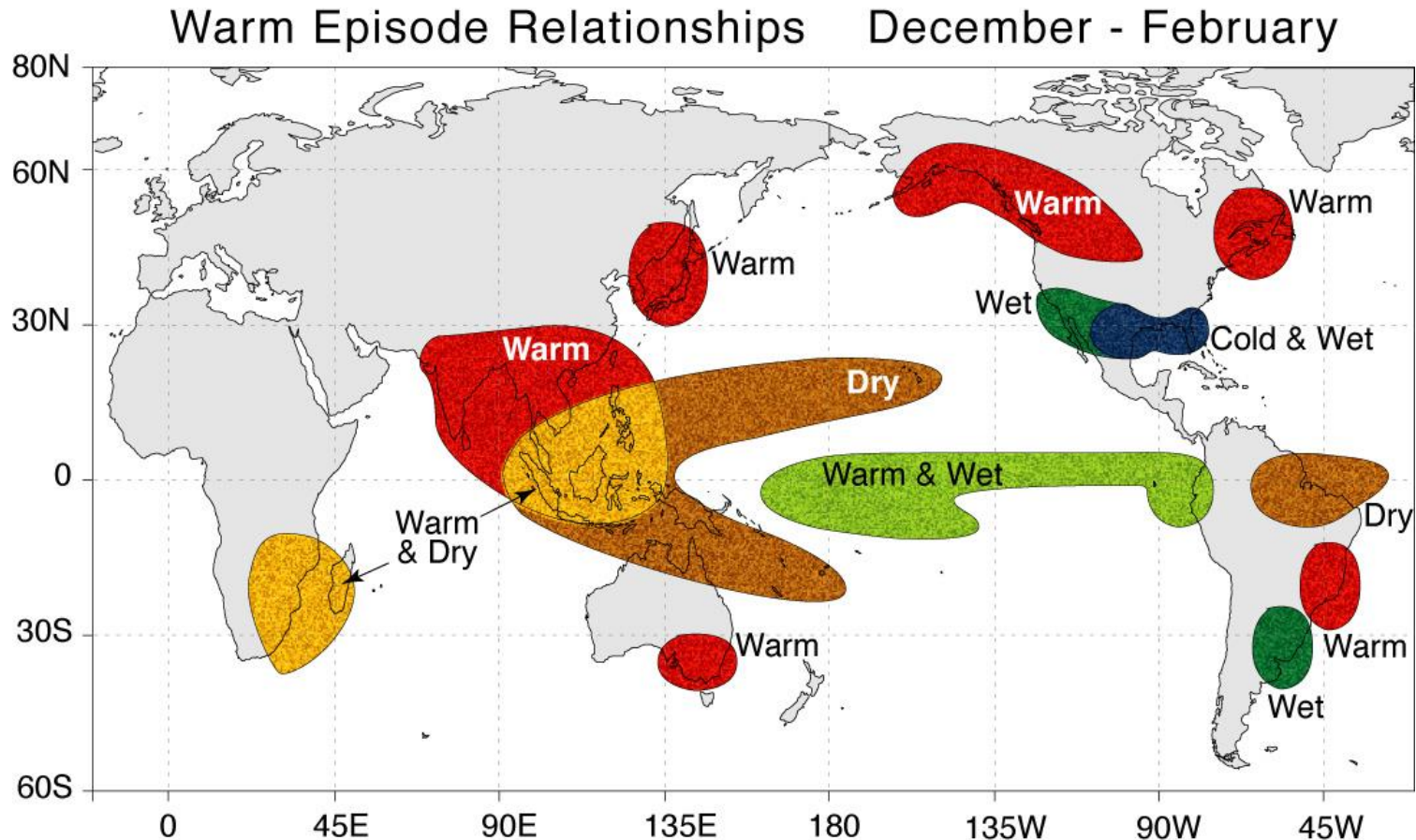


source: PPWB



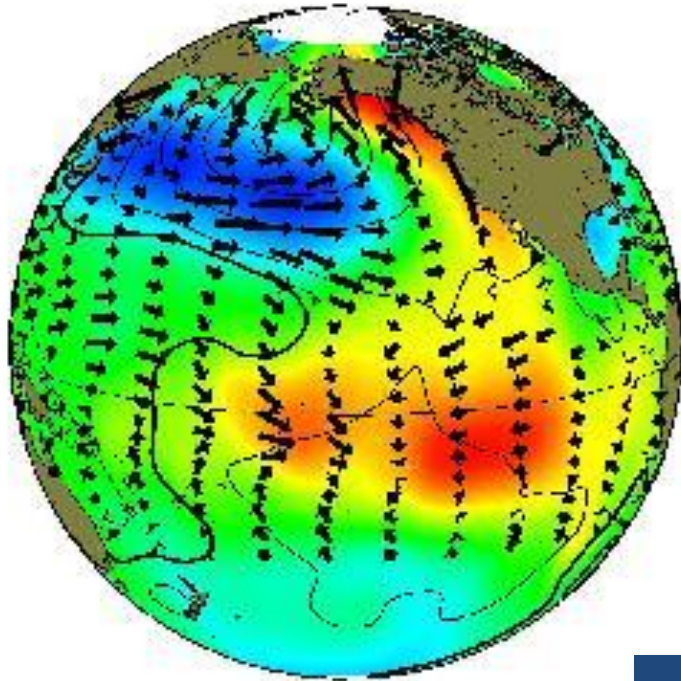
El Niño remote impacts: Teleconnections

La Niña teleconnections have the opposite effect

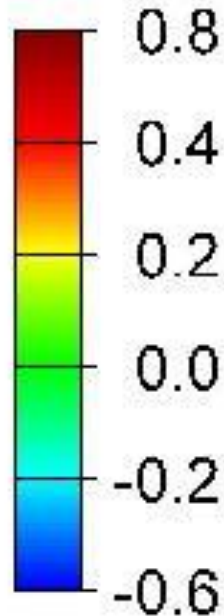


The Pacific Decadal Oscillation (PDO)

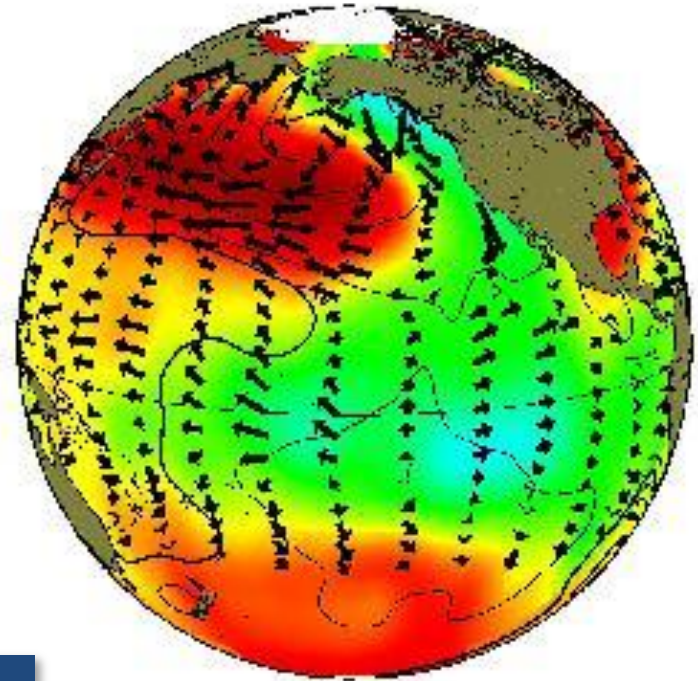
warm phase



C°



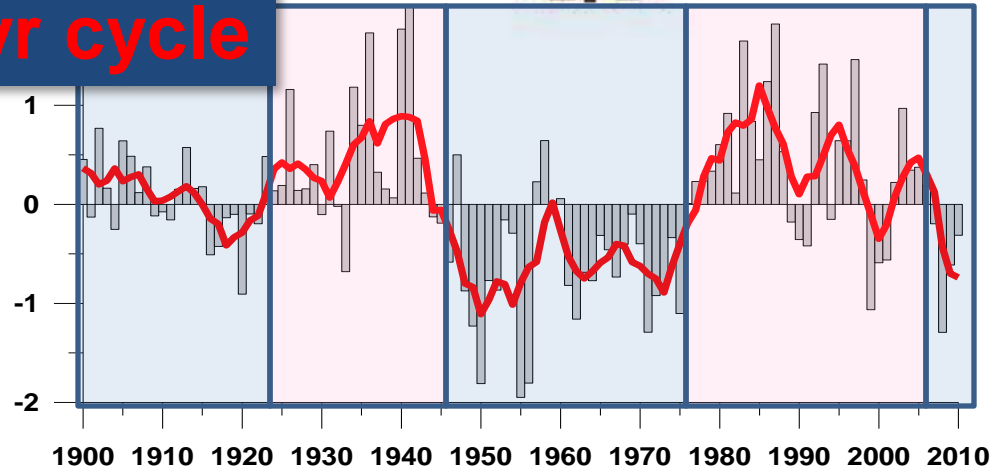
cold phase



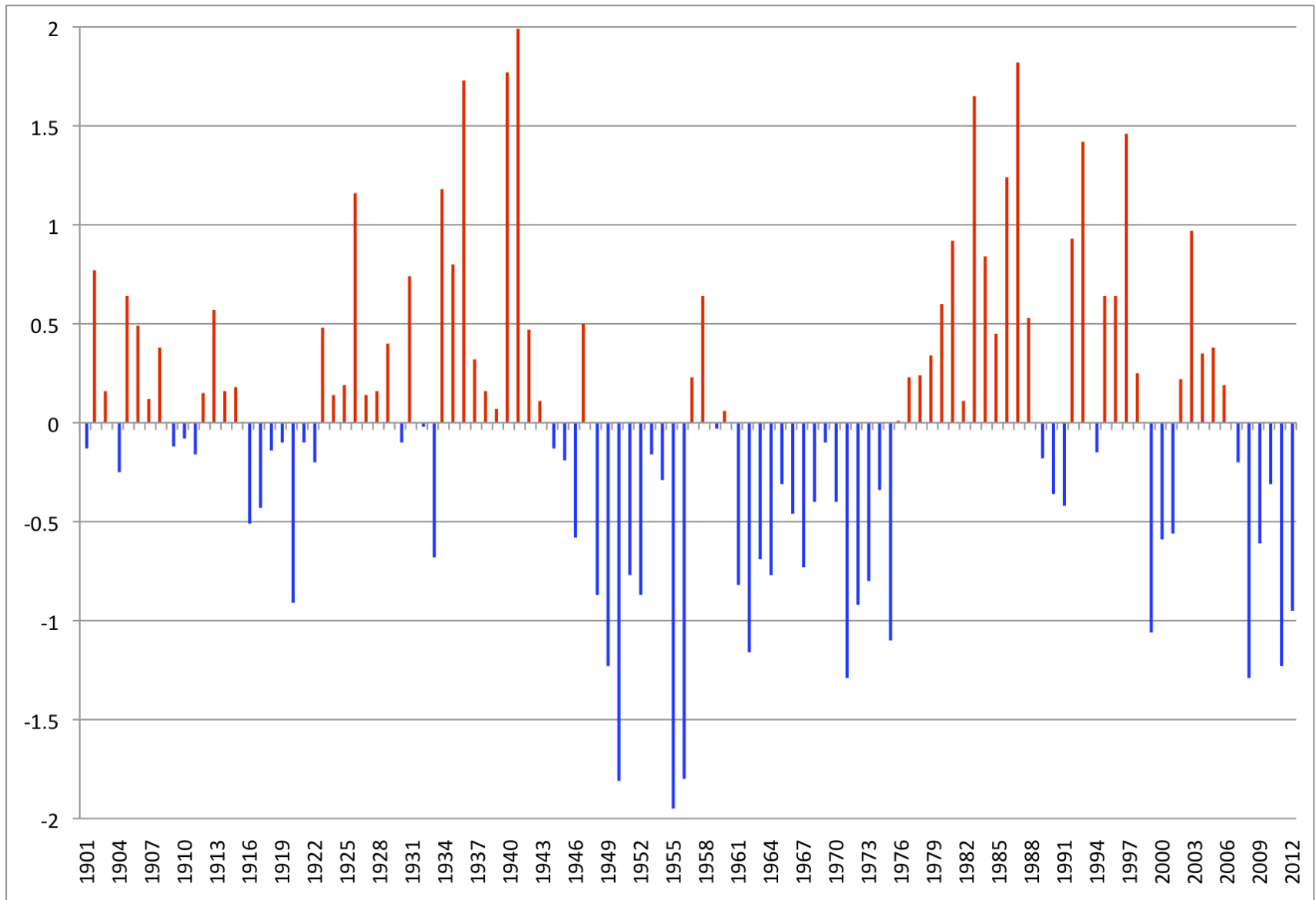
<http://jisao.washington.edu/pdo/>

~60 yr cycle

Typical wintertime Sea Surface Temperature Anomalies (colors), Sea Level Pressure (contours) and surface wind (arrows) anomaly patterns during warm and cool phases of the PDO



PDO Index, 1900-2012



ORLEANS LAKES
DUCK FACTORY NO. 168

BUILT 1945-46 BY
DUCKS UNLIMITED AND
COOPERATING CANADIANS
TO ESTABLISH WATERS FOR THIS
COMMUNITY AND FOR THE DUCKS.
FUNDS CONTRIBUTED BY DUCK HUNTERS OF
NEW ORLEANS, LOUISIANA, U.S.A.
LAND, WATER AND COOPERATION
PROVIDED BY CANADIANS.

Cooking Lake, Alberta, 19 Sept

2008





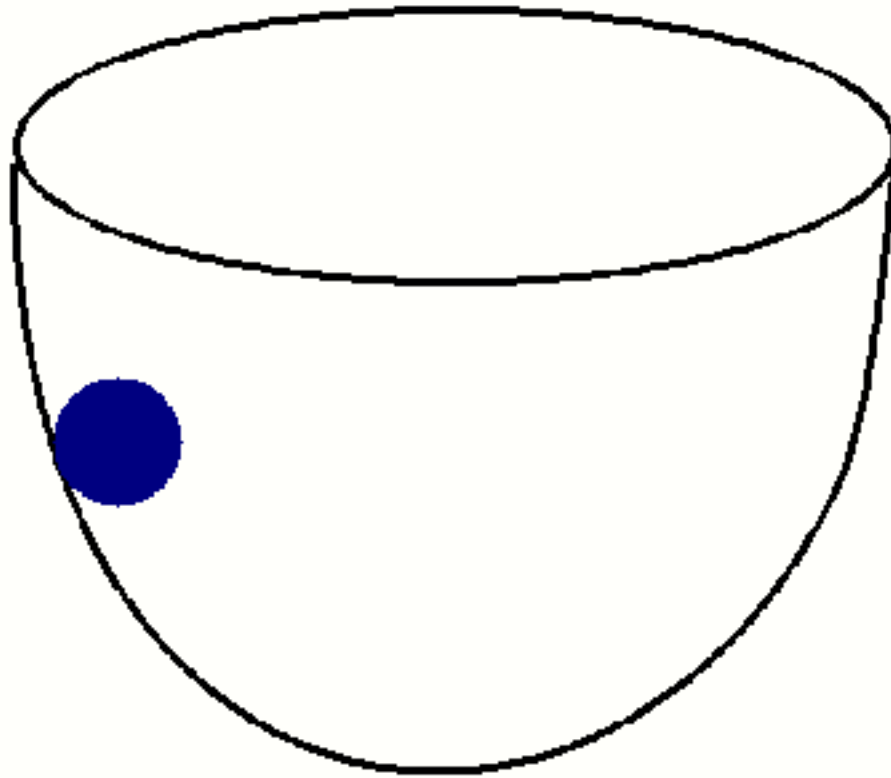
Rosetown
Towing Inc.
831-7373

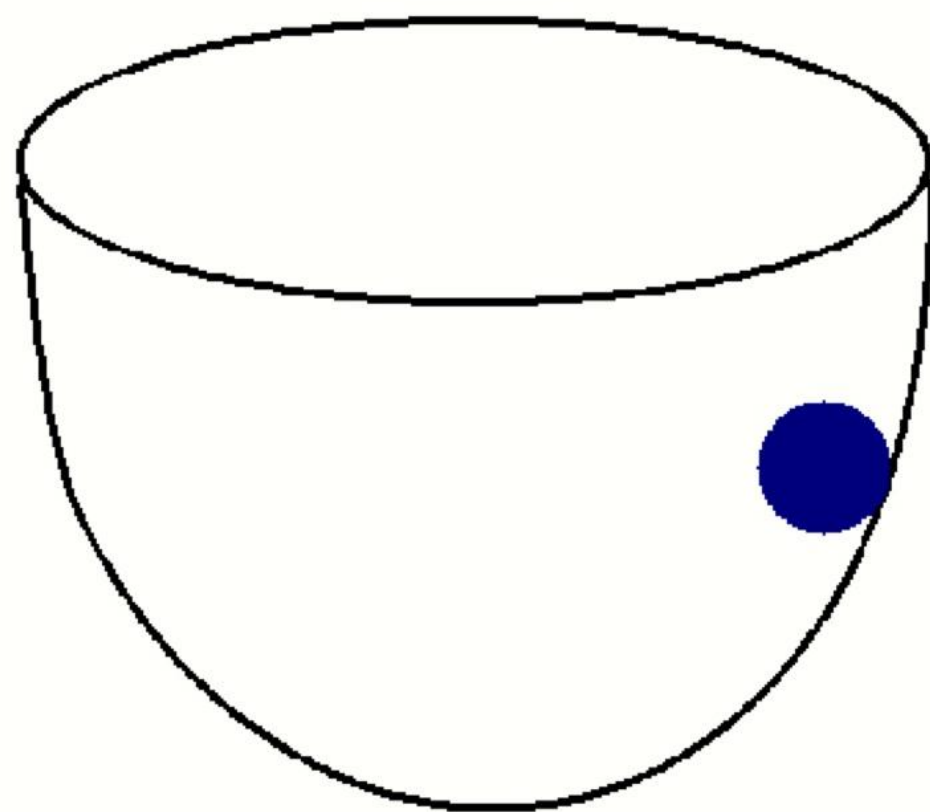
CAA

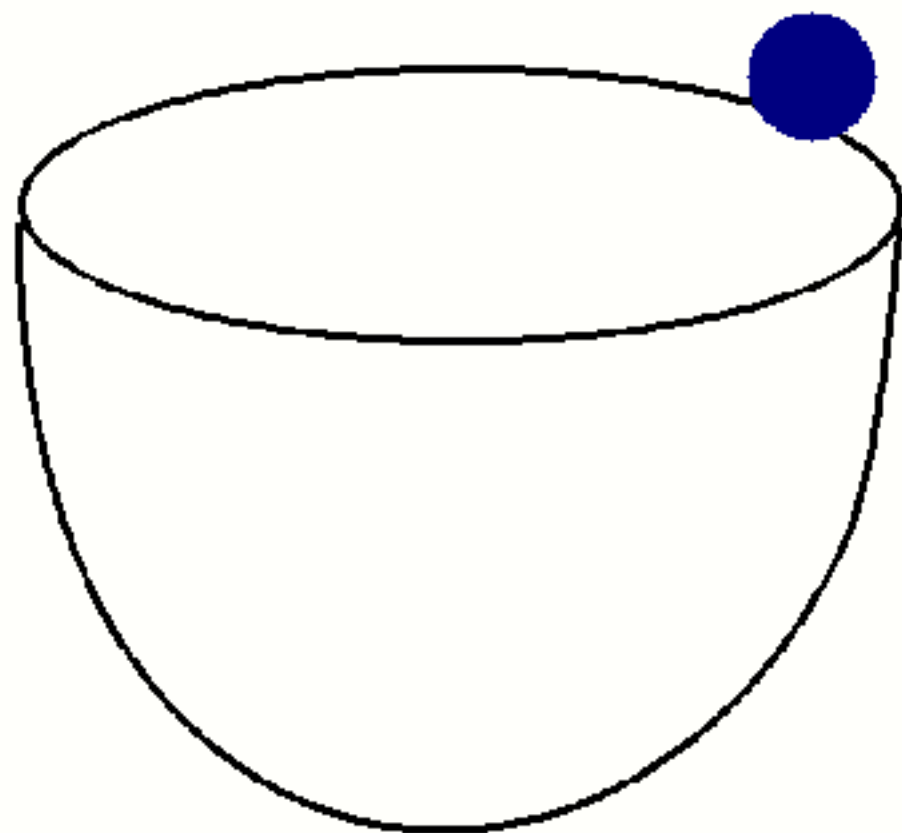
ROAD
CLOSED

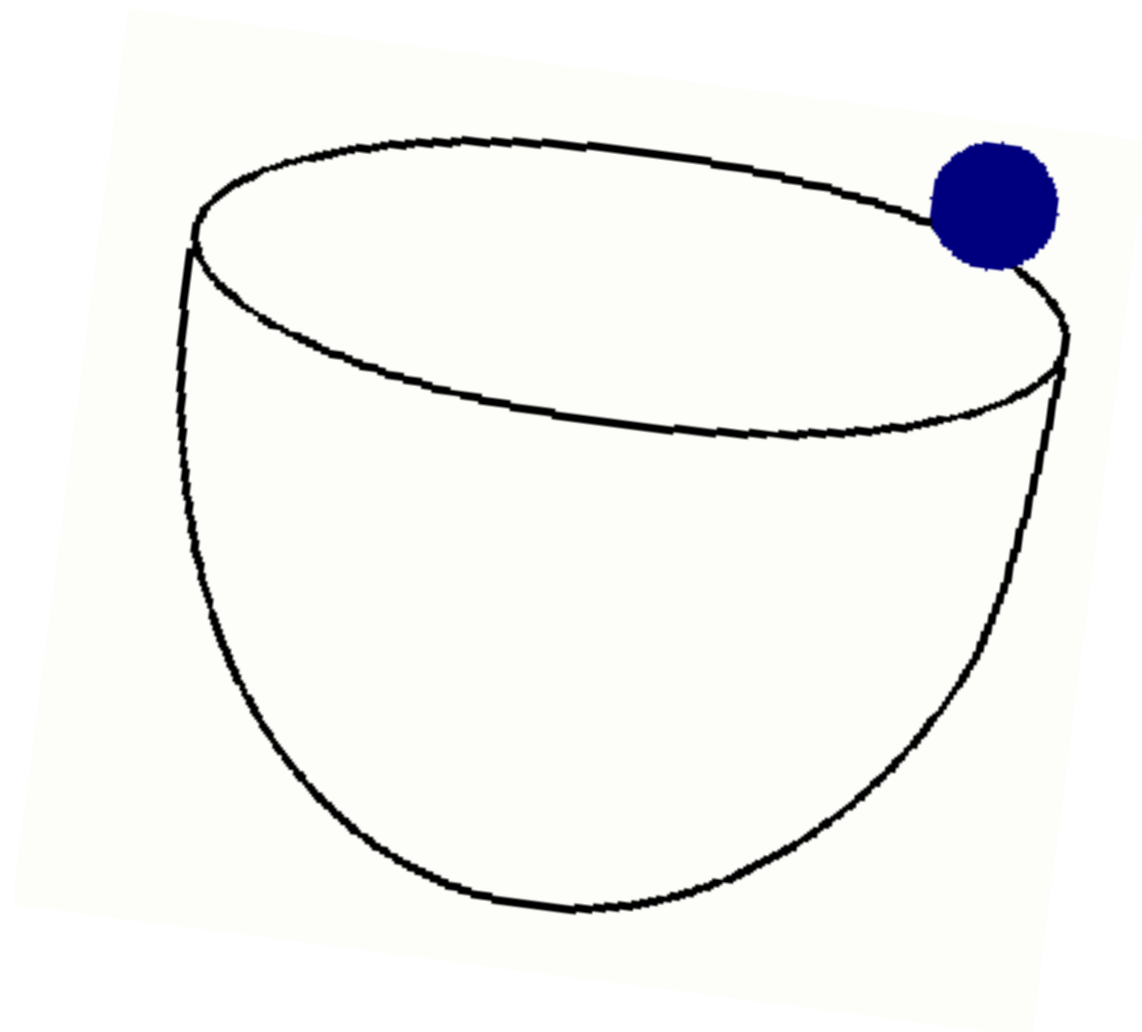
"Best Management Practices: For the Agricultural Climate of Tomorrow"

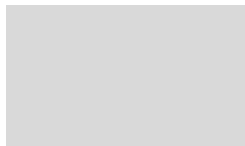
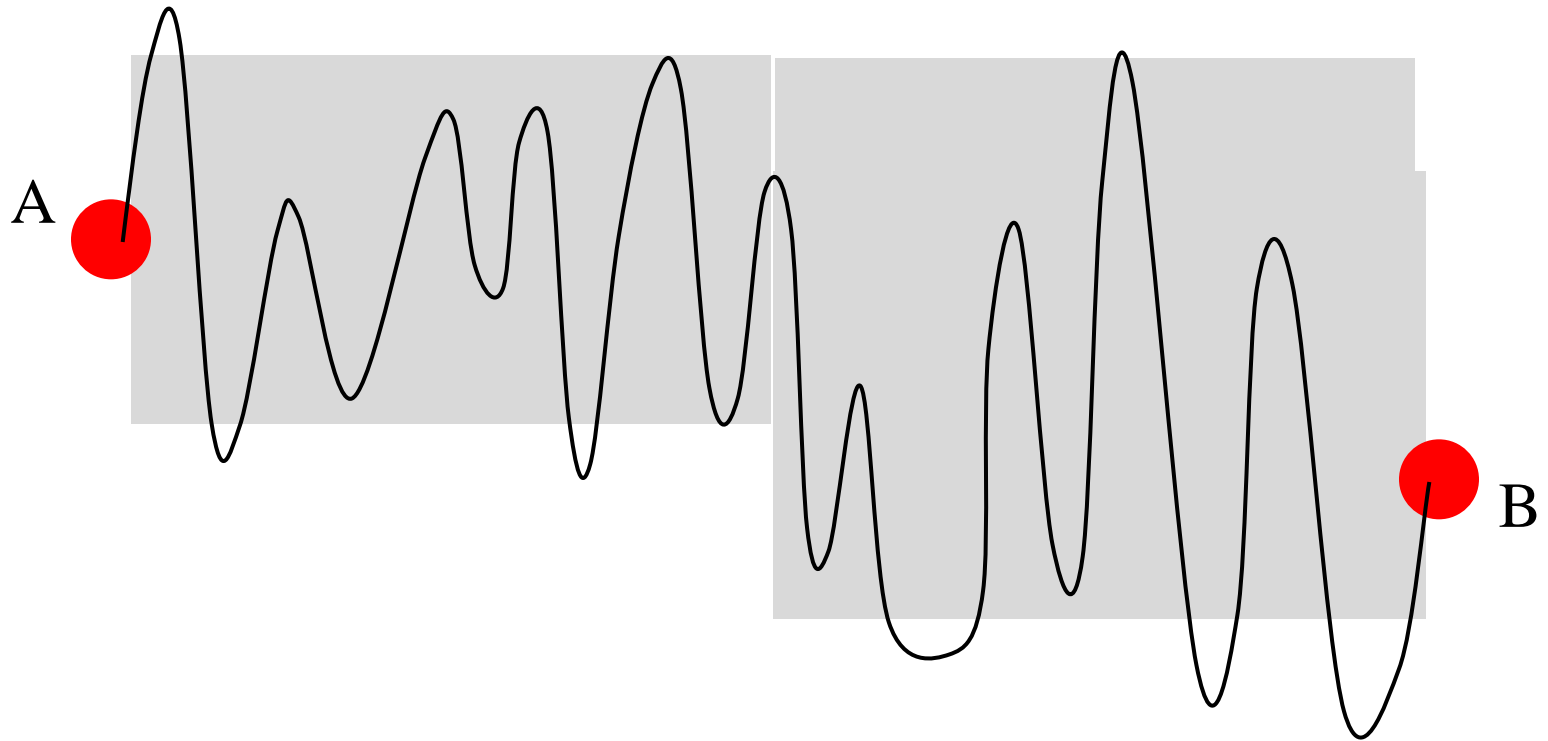
Vegreville, AB, March 26, 2009











Adaptation of practices, policies, infrastructure ...