Status of Drought Research in Manitoba Hydro

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DRI Workshop Saskatoon
January 11th, 2007

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Outline

- Why Manitoba Hydro is funding drought research
- Ongoing & future drought research
- Manitoba Hydro's role in DRI

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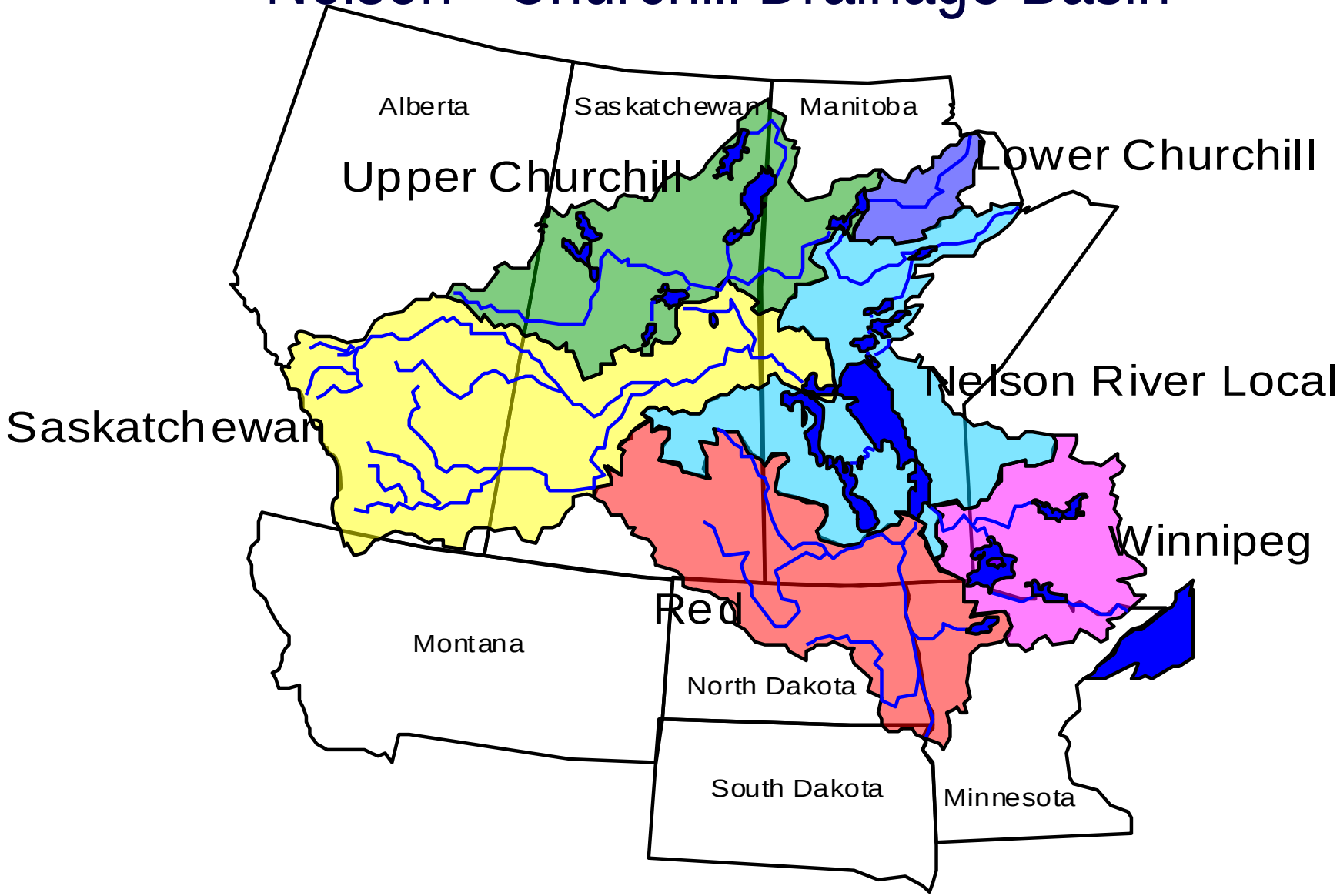
Nelson - Churchill Drainage Basin



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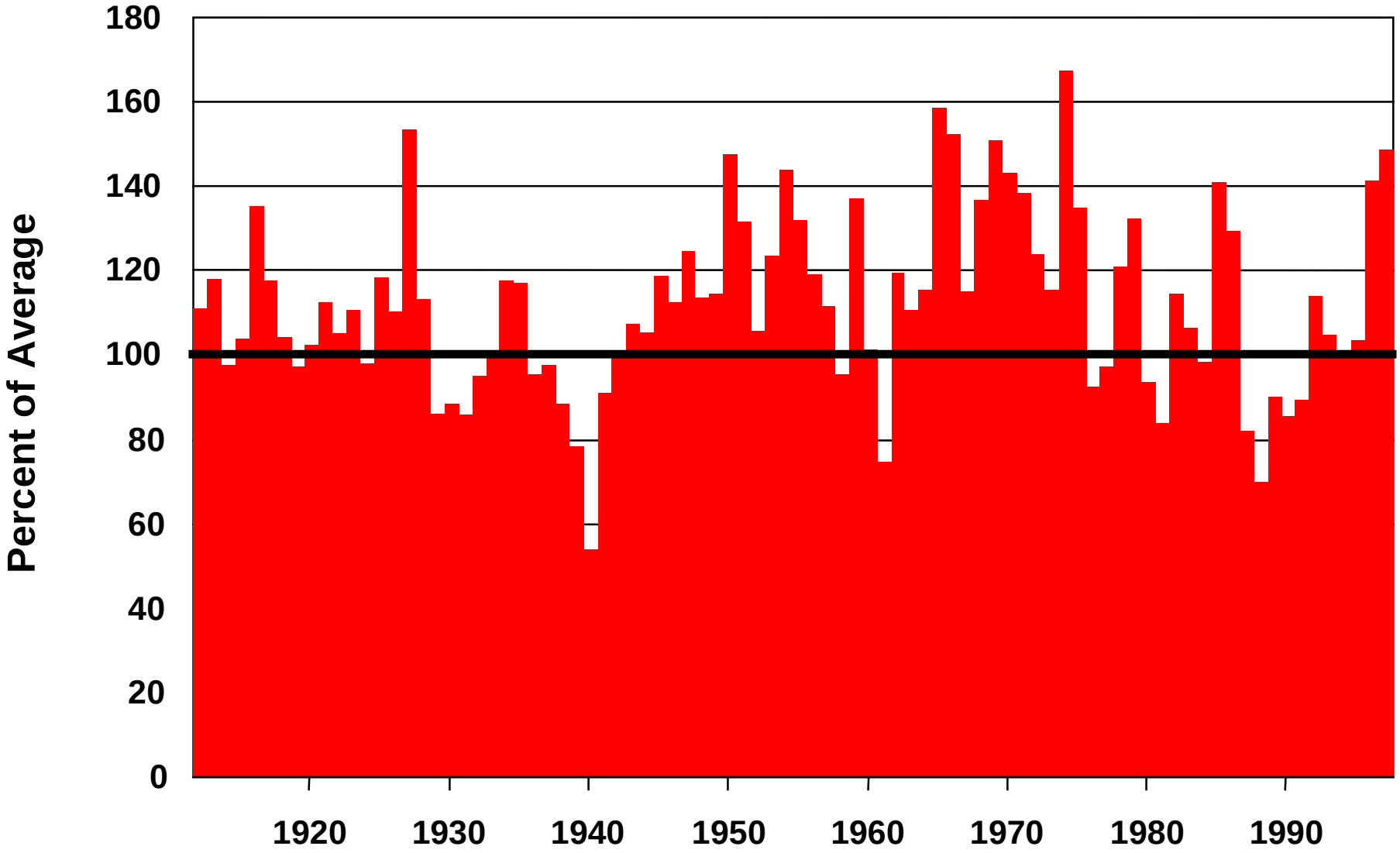
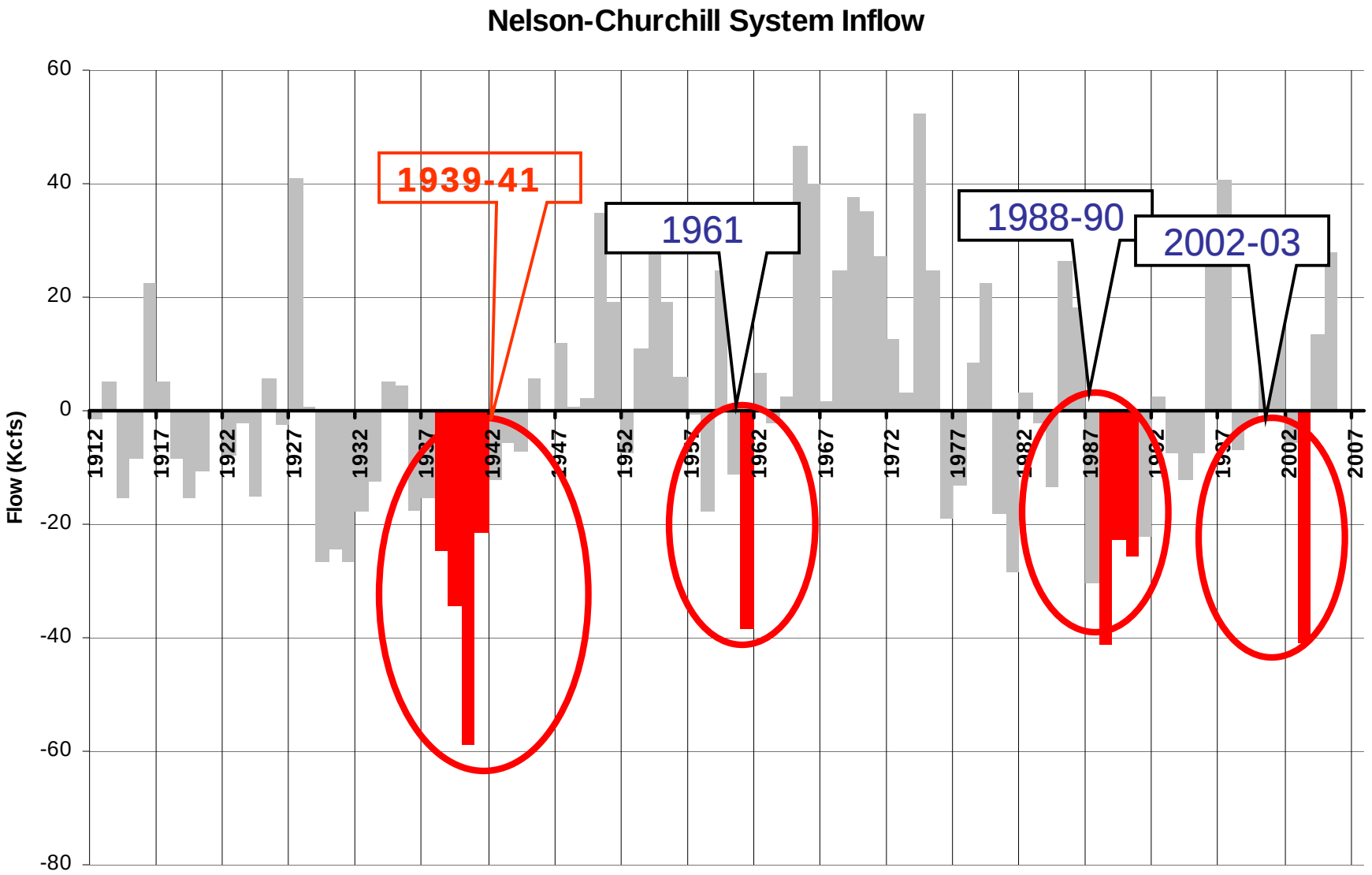
Nelson-Churchill Water Supply



Historical Drought of Record



Planning Criteria for Supplying Load

- Firm Capacity

- minimum of 12% reserve capacity required over forecast peak load demand

- Dependable Energy

- have adequate energy resources to supply the firm energy demand in the event that the lowest recorded coincident river flow conditions are repeated.

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Ongoing Research
($300K in Funding Research)

§ Stochastic studies

- Generates multiple synthetic flow sequences from historical streamflow data.
- Computes energy potential using flow-to-power factors.
- Identifies energy droughts by computing energy deficits in synthetic series.
- Probabilistic analysis of synthetic vs. historical droughts.

§ Ongoing R&D Projects

- Tree-ring analysis- Churchill R (Sauchyn)
- Tree-ring analysis- Wpg.R (St. George)
- Isotope analysis of paleo data (Buhay)
- Lake sediment analysis (Cumming)
- Climate Change Research Professorship at U Regina/ U of W

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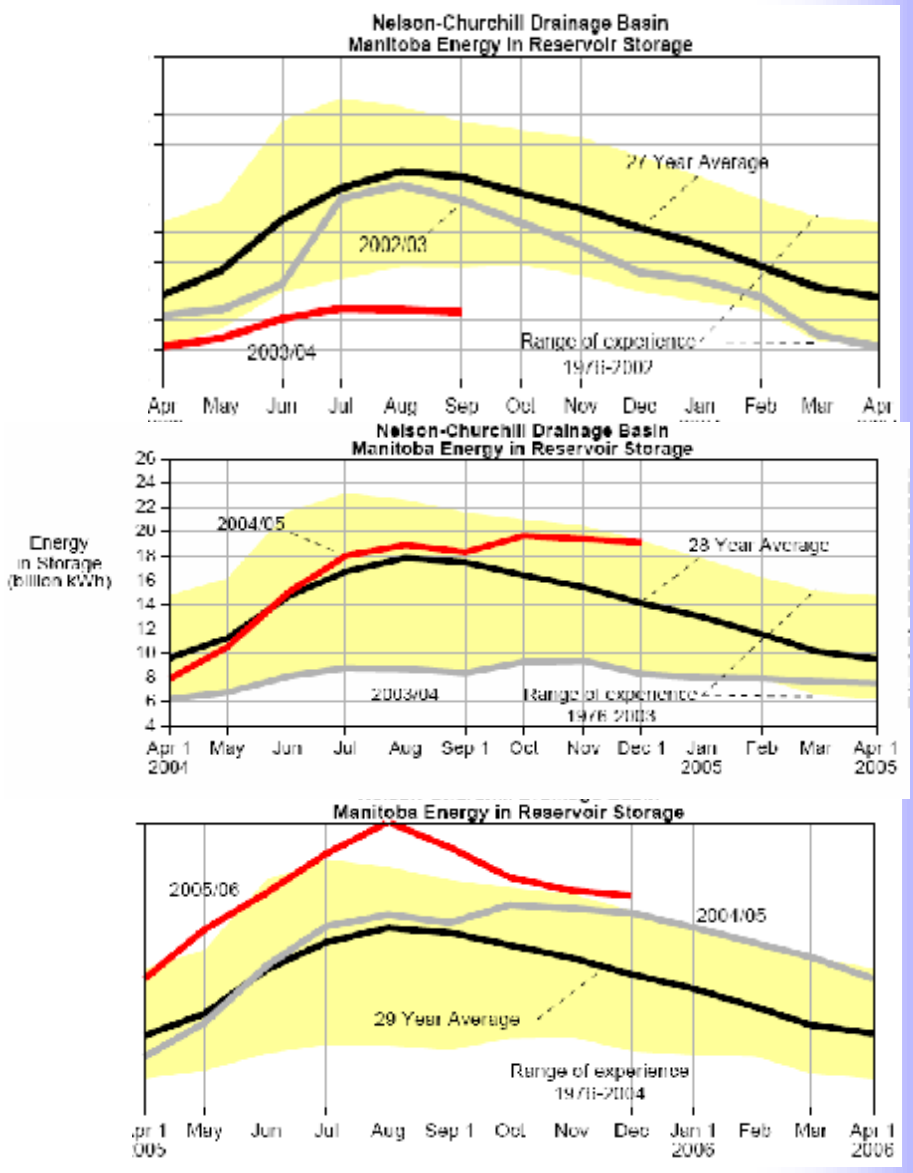
Future Work

- Internal risk assessment & sensitivity analyses of more severe drought
- The 2003 to 2005 period represents the single most significant transition from system-wide drought to flood in history
- Climate change or variability?



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Manitoba Hydro requirements from the Drought Research Initiative

- Enhanced statistical modeling of frequency & severity of drought
- Climate Drivers of major system-wide droughts in Nelson-Churchill basin
  - Cyclic patterns of major Prairie drought
- Impacts of climate change on the severity and frequency of system-wide drought

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Questions?