AAFC Adaptation Plans

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AAFC Background

History

- Canada has invested billions of dollars on agriculture support programs for drought and the impacts of other weather and climate extremes

- Canada has invested billions of dollars on climate research to mitigate the emission impact of green house gases,

- it has to a much a lesser degree spent millions on research related to the adaptation of economic sectors to climate change.
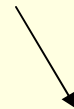
AAFC Background

- Prairie Farm Rehabilitation Administration (PFRA)

  - rehabilitate the drought and soil drifting areas in the Canadian Prairies
  - work with land users to encourage and promote the sustainable use of the natural resources

  - History of monitoring climate for occurrences of drought on the Canadian prairies

  - Prairie wide focus on near real time precipitation, temperature, forage production potential and on farm water supply potential (dugout).
    - Prairie Agroclimate Unit (PAU)

The National Agroclimate Information Service (NAIS) Enables AAFC to…..

- Bring together expertise and resources from our operational, research and policy units.

- Provide information to manage risk under climate variability now and in the future.
  - Climate monitoring for agriculture
  - Development of adaptation tools
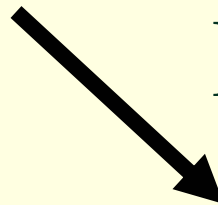   - risk management & decision support.

Research → NAIS 2004 ← Policy → P A U

Data acquisition
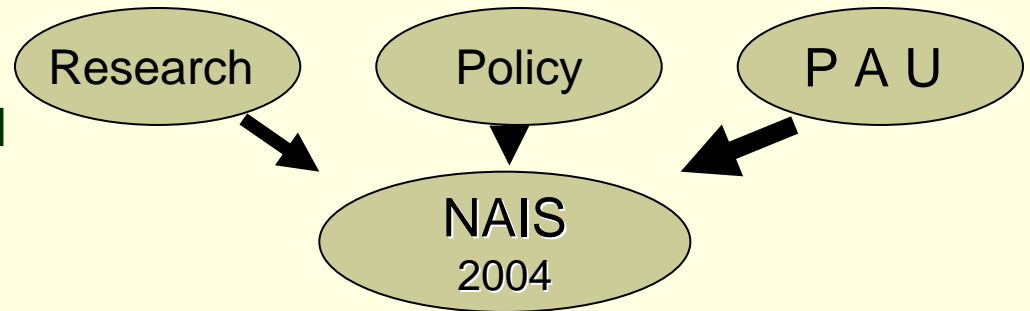
Use of Forecast Information

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Environment
Canada
         ↘
NOAA  ┄┄➤  NAIS  ↘
                  End User
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NAIS has a translation role

NAIS Activities…

- Monitoring and reporting of climate impacts on agriculture

www.agr.gc.ca/pfra/drought

- International drought & desertification

- High quality, accessible agroclimate data and information

- Early warnings of seasonal climate conditions (short term)

NAIS Activities cont'd…

- Policy:
    - Role of agriculture in climate change
    - Technical input into programs (Tax Deferral)
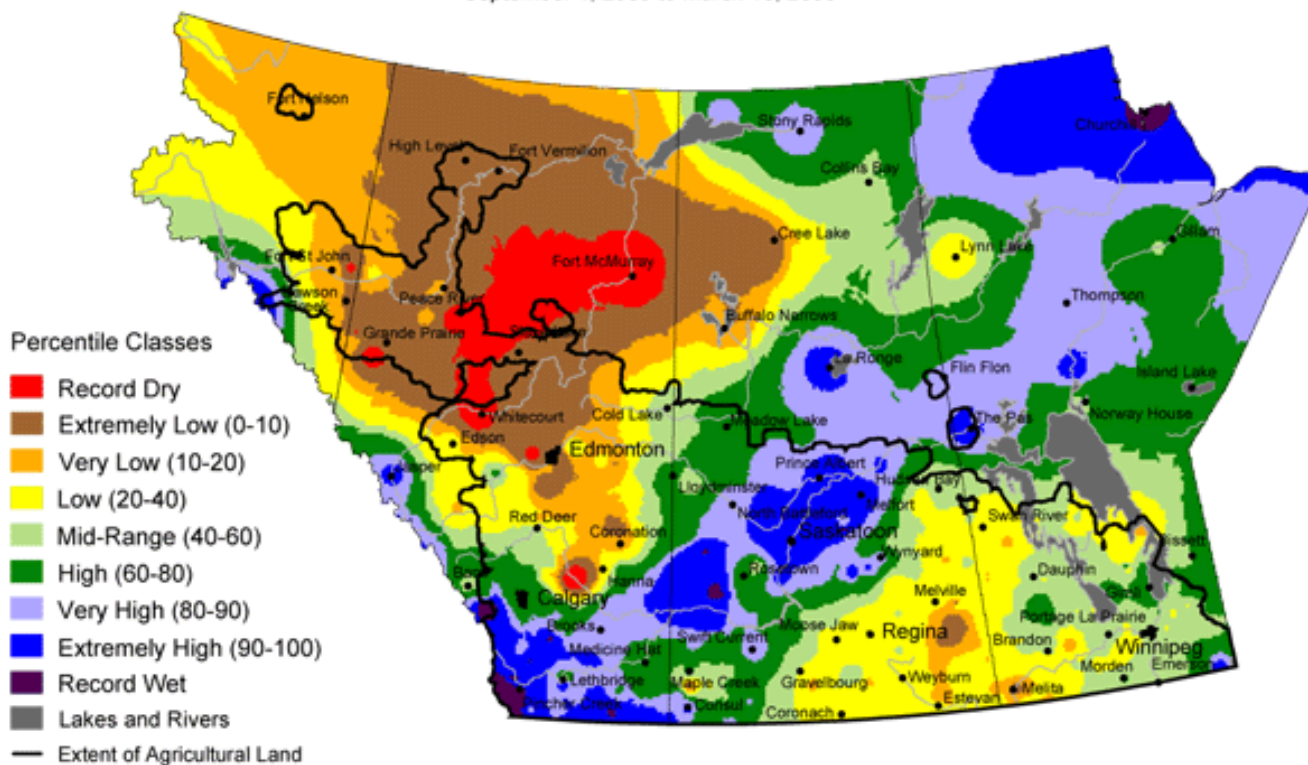- Industry Product Development:
    - GEOSS

Current Precipitation Compared to Historical Distribution
September 1, 2005 to March 15, 2006

International Commitments…

North American Drought Monitor

- In Canada climate change is a key driver
- Climate *variability*, affects individuals and industry in clear and tangible ways.

- Agriculture Canada has traditionally responded by supporting crop insurance programs, farm income support programs, and information products like Drought Watch.
  - International trade and pressure to reduce taxes will drive more rigor into how support programs are structured and implemented
  - More end user responsibility for impacts

- A conclusion that has been drawn in Australia and the United States is that the

  - *value of climate information cannot be captured unless the focus is shifted from climate information to how climate information fits into the management processes of decision-makers and policy makers.*

- This finding also appears to be valid in Canada.

Challenges for NAIS

Maintaining Relevance to the end user

- Who are they, how do we prioritize their needs?
- New mandates to address
    - move to national focus
        - Larger scope, but no increase in resources
        - Opportunity to apply GIS-IMS technology
    - climate adaptation
- How to make climate data relevant to the end user
    - History has been in drought monitoring
        - Need to address all climate extremes
    - How do we add value to make better tools for decision support?

Evolution from Monitoring to Decision Support

- In development…
  - Foundational products
    - Quality controlled NRT data
    - National gridded daily climate dataset

Evolution from Monitoring to Decision Support… cont'd

- Application …
  - Value added products…
    - Outlook scenario building: can we use seasonal forecast data to project reasonable future climate scenarios for agriculture?
      - E.g. modeling soil moisture
        - Using climatology (most probable data)
        - Using meteorology (regionalized forecast data)
    - Crop modeling
    - Infrastructure planning
    - Land use and landscape modeling

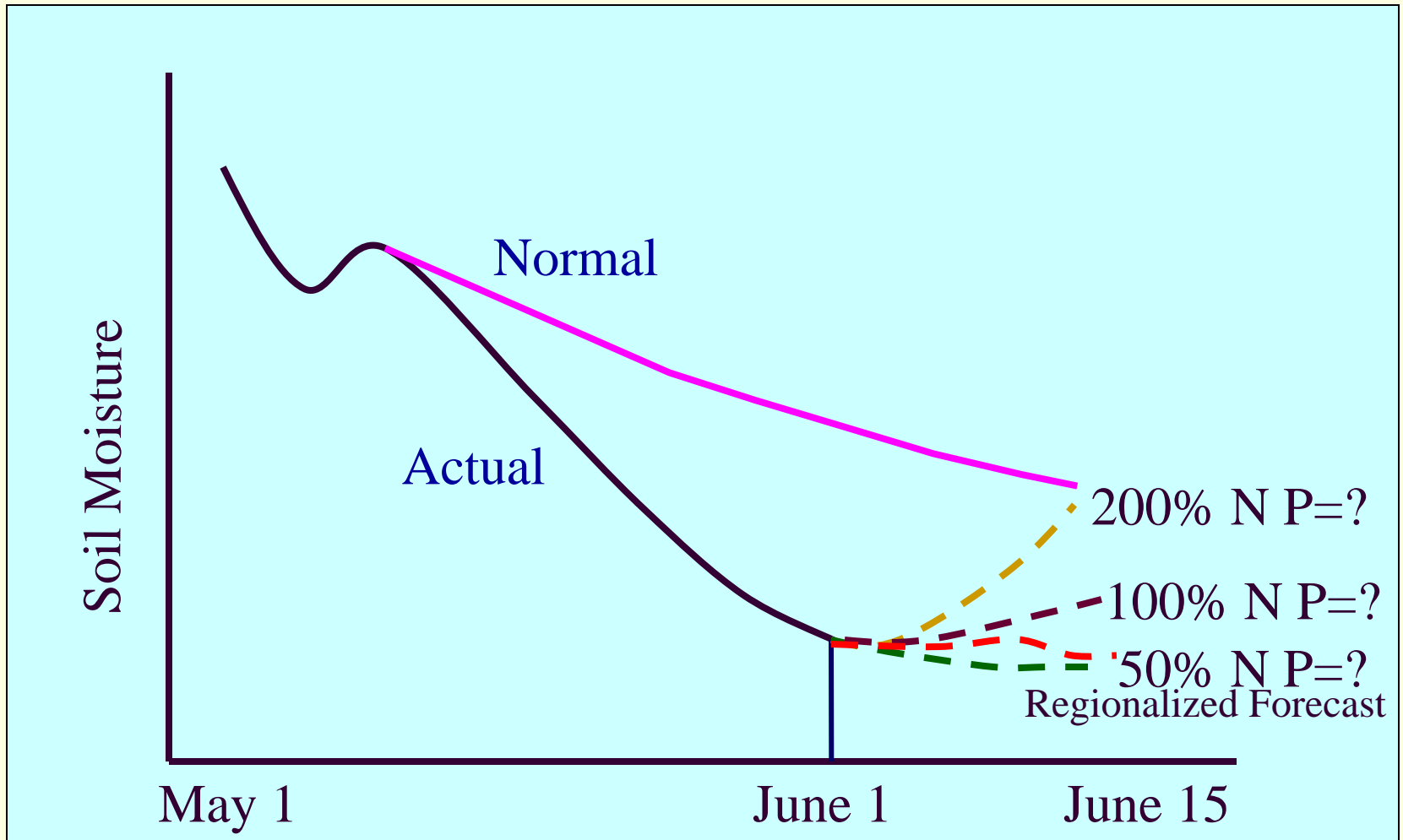# Unique Advantage

- PFRA has a structured system to transfer technology to the end user
  - History of excellence

End User Community
End User Community
End User Community
End User Community

National System	Regional	District
	Regional	District
	Regional	District
		District
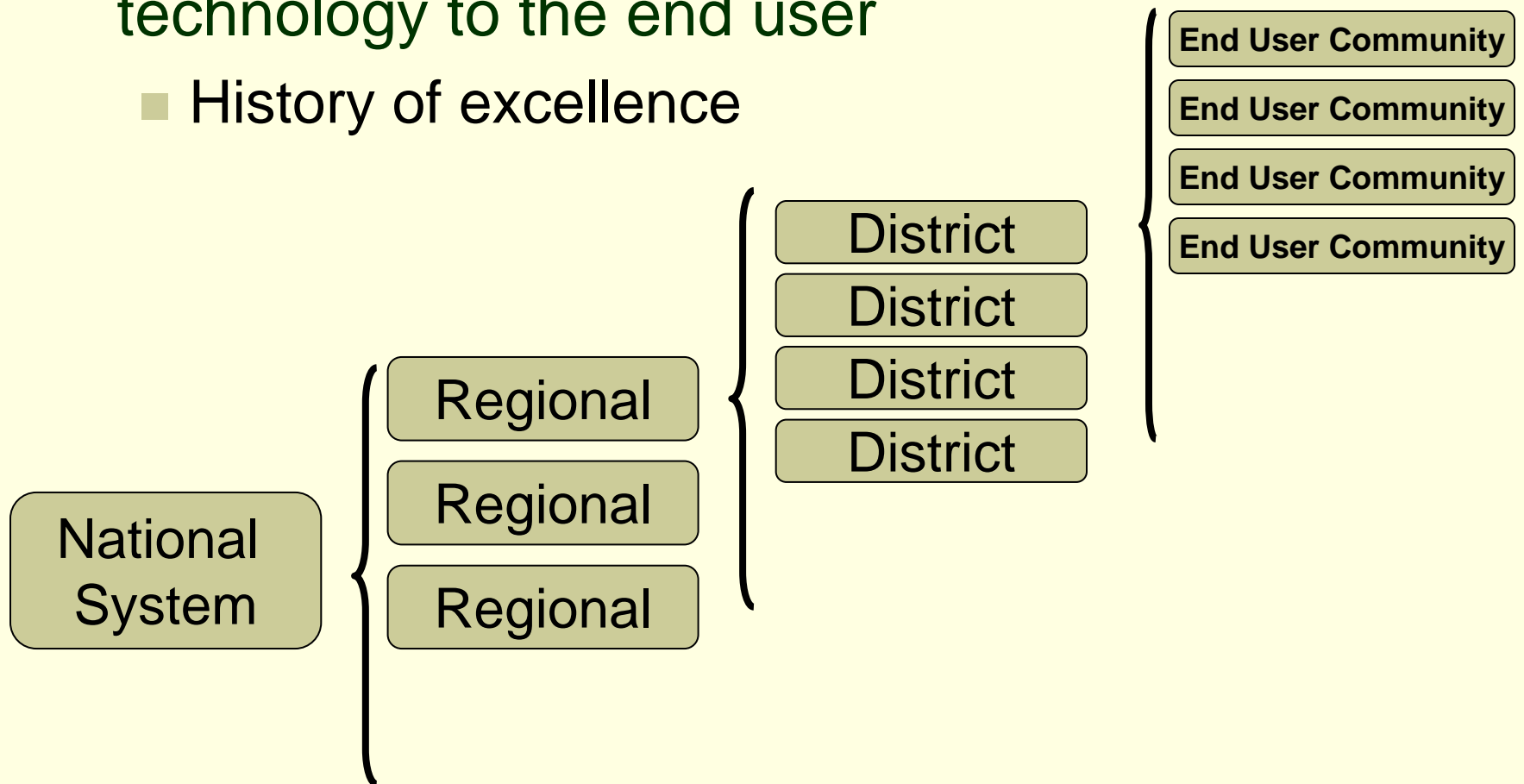
National gridded daily climate dataset

Whopper Cropper
- Crop Management Discussion Support -

Exploring "*What if?*" questions:

- Which crop to sow?
- When to sow?
- How much N to apply?
- Which variety to sow?
- What density?
- Analysis of different starting conditions and seasonal forecasts
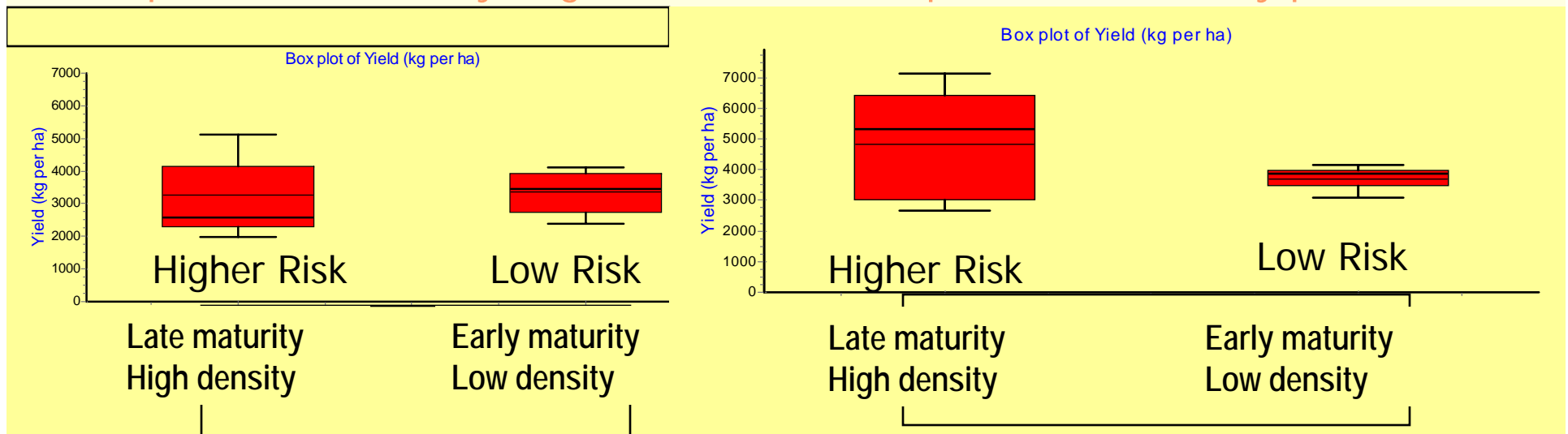- Uses a SOI forecasting tool

H. Meinke, 2002

Managing Water & N in a Variable Climate

Maturity * density * SOI (Emerald, Au)

Moderate depth vertisol, full profile, Nov planting

SOI phase consistently negative   SOI phase consistently positive

H. Meinke, 2002

- Basis of simulation-aided discussion
- In Australia, private and public advisors being trained
- In Canada, role of private sector need to be defined

1 / 500 yr event

- It can happen in Canada.
- Largest agricultural area is water deficient
  - Most at risk
- Most recent 2 year drought affected 8% of total GDP.
- Longer drought likely to have much greater impact.
- *How do we use our climate information to determine the cost-benefit of water infrastructures?*
  - investment can be made now, not when a crisis hits

Summary

- **NAIS:**
  - Translation mandate
  - Moving from prairie focus in drought monitoring
    - National service
    - Extremes monitoring
  - To maintain relevance we must seize the opportunity to use climate data to develop better decision support tools for the industry
  - 5 yr horizon