The National Agro-Climate Information Service

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The Agri-Environmental Services Branch

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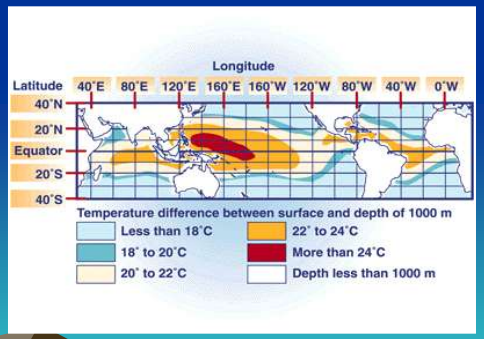
Saskatoon, Sask.

Agriculture and Agri-Food Canada

What is the NAIS Purpose?

- Data
  - Monitoring, data management seasonal climate outlooks
  - Assist in advance warning of losses associated with weather extremes
- Products
  - Decision support products for better farm management
  - Support to integrated watershed planning, environmental farm planning
- Policy
  - Assist in understanding the competitive advantages associated with water and agriculture
  - Work with Lands and Water, Strategic Policy



What is The NAIS Structure?

- To address these expectations, NAIS consists of three units:
  - Climate Monitoring and Forecasting, and
  - Climate Decision Support and Adaptation
  - The Agriculture Ecosystem Modeling unit

Existing and Potential Clients

- Federal and Provincial Departments and agencies
- Agricultural Producers
- Crop Insurance
- Private sector
  - Commodity buyers
  - Processors
  - Consultants
    - Environmental Farm Planning
    - Agro and Environmental Projects
- Rural Municipalities
- Water Managers
- Academic and federal research communities
- International agencies (NADM, Desertification)

NAIS Activities…

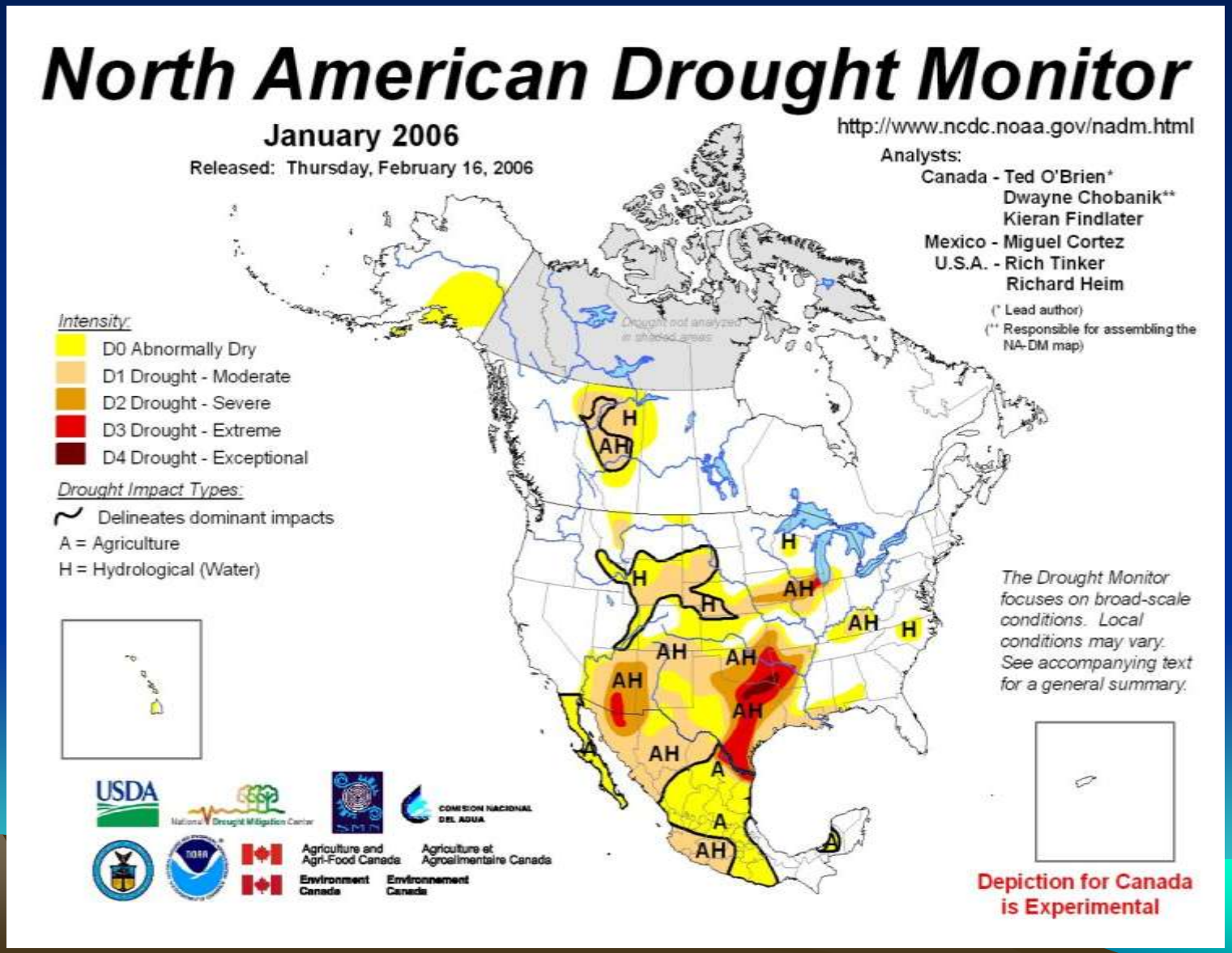
- Development of Improved Monitoring Decision Support for Agroclimate
  - Program support (ongoing)
  - Foundational products
  - Intermediate Products
  - Decision support and risk management products

www.agr.gc.ca/pfra/drought

Program Support

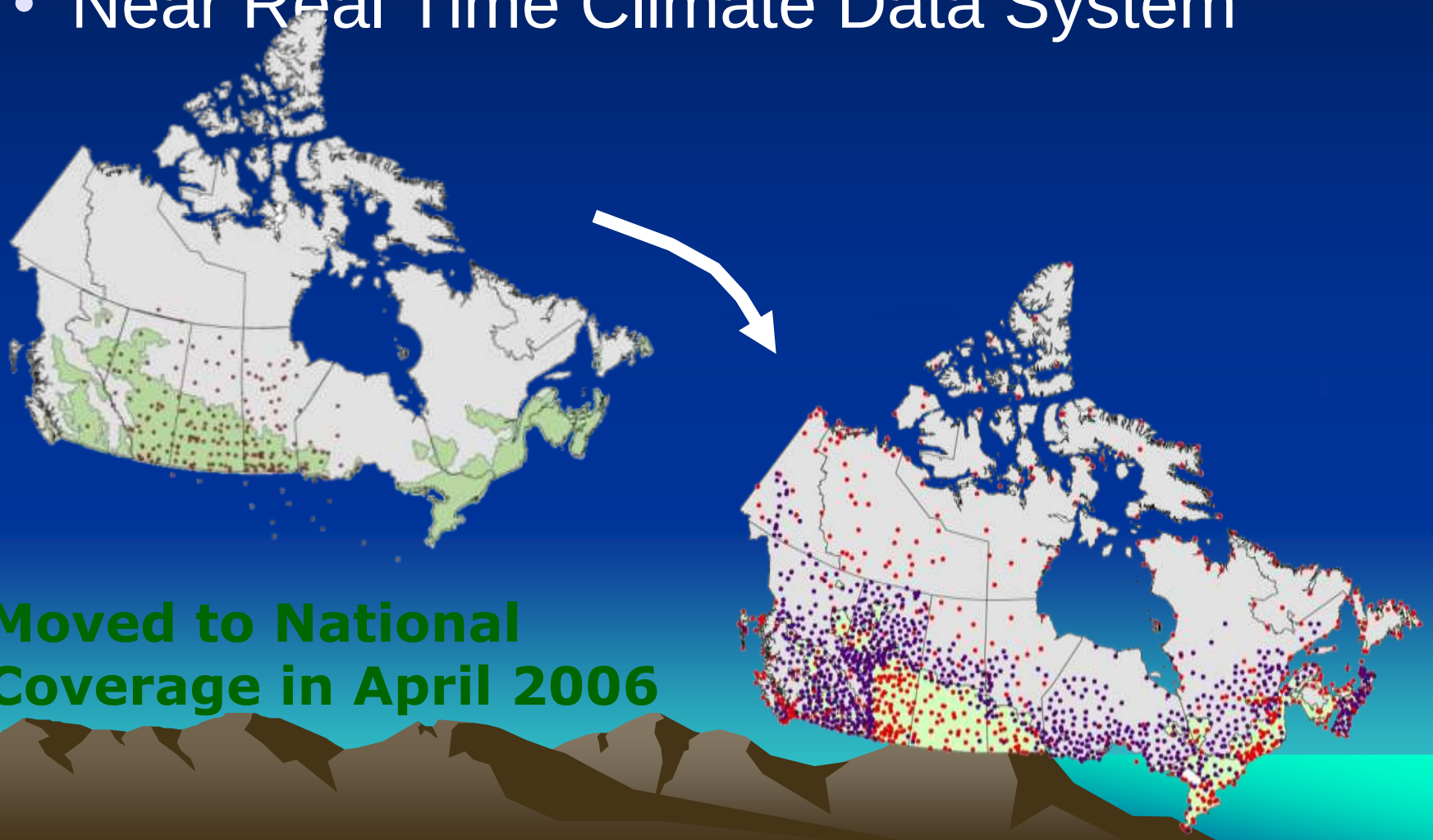
- Tax Deferral
  - Recommend eligible areas for tax deferral on breeding livestock due to drought
- Climate Related Production Risk
  - Reporting committee
- North American Drought Monitor
  - Canada Lead for Drought
- International Desertification
  - UNCCD

Program Support:



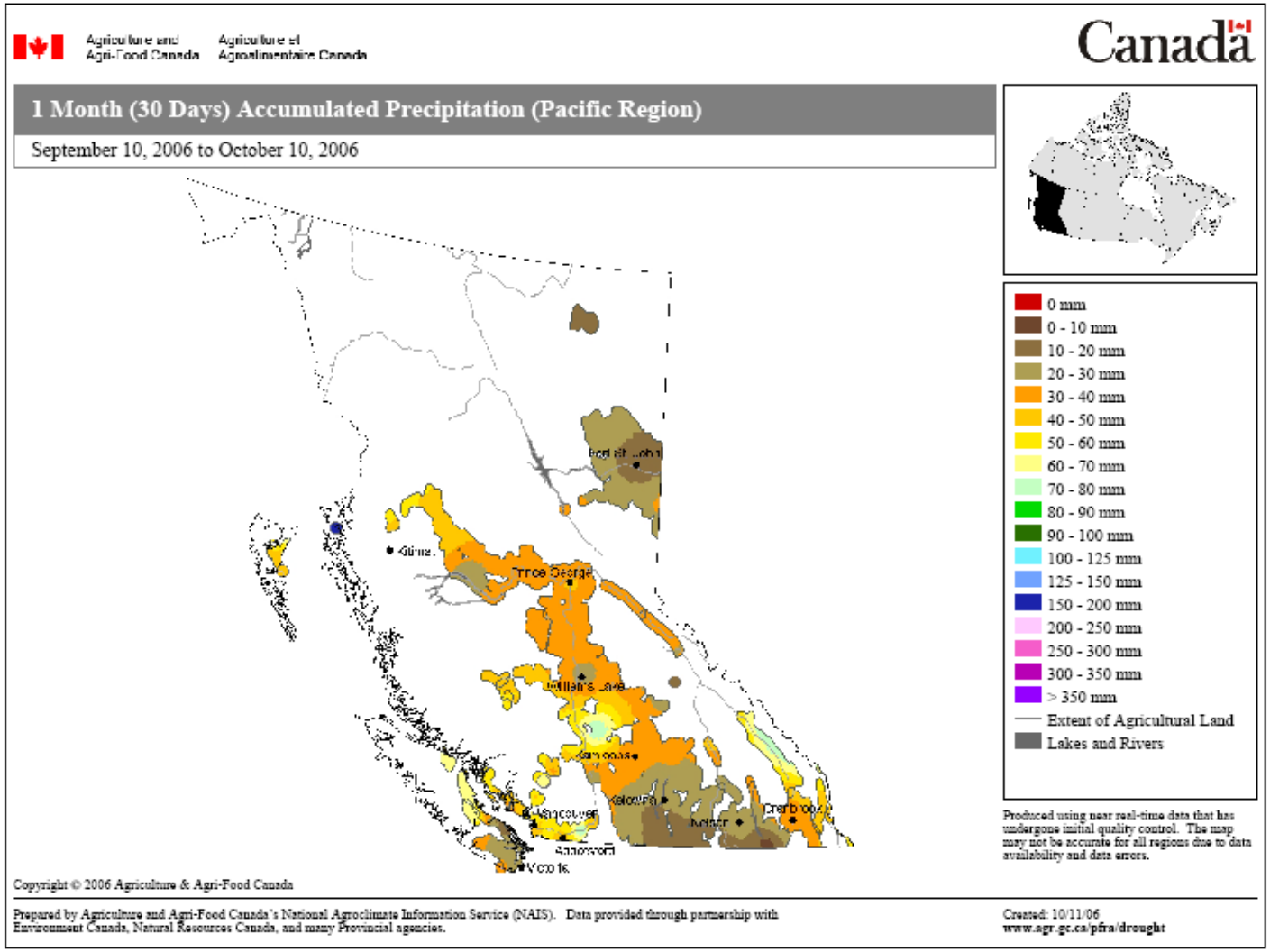
Foundational Products

- Near Real Time Climate Data System



Moved to National Coverage in April 2006

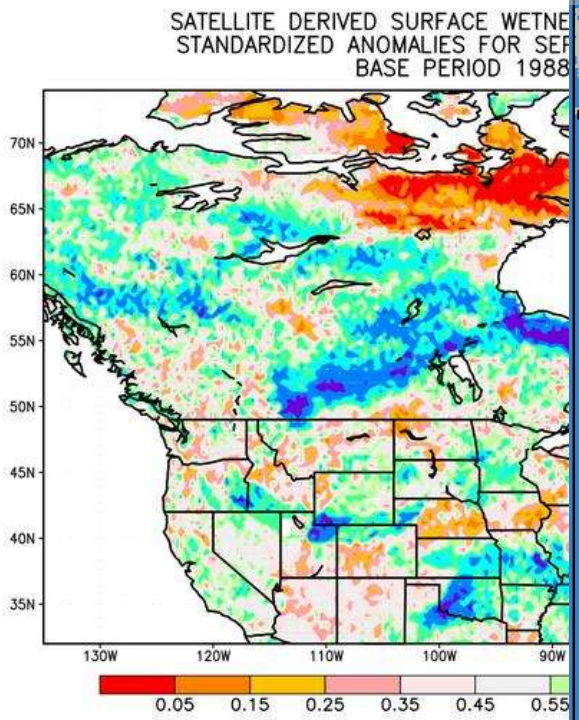
Foundational Products: Near Real Time Monitoring

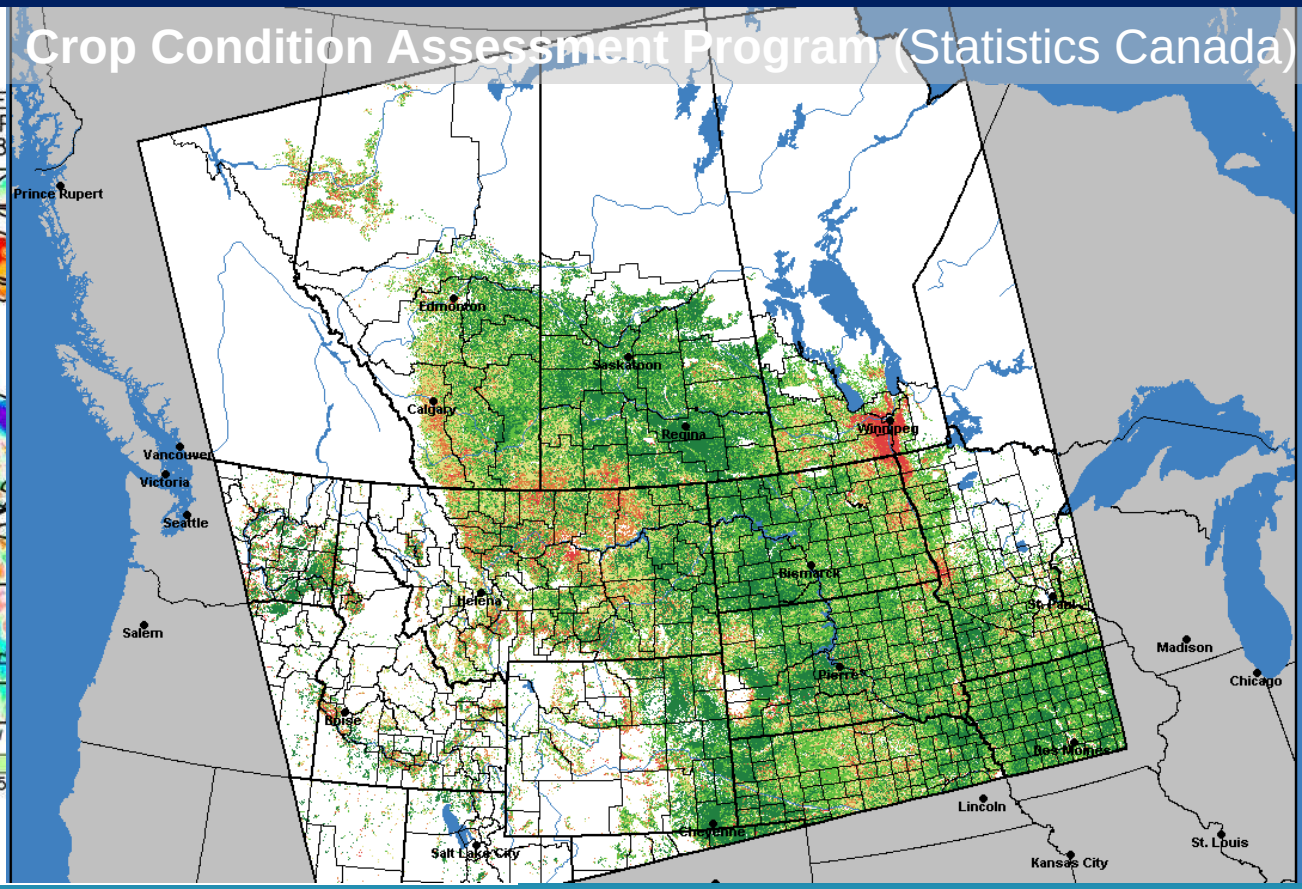


Foundational Products:

Remote Sensing Products – Available Weekly

NLWIS





July 10 - 17, 2005

Foundational Products: National Crop Assessment Service

NLWIS

- MODIS weekly NDVI for Canada's agriculture

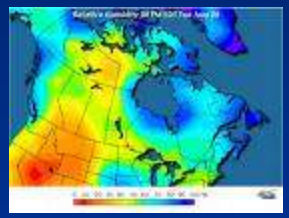
Foundational Products: National Gridded Daily Dataset

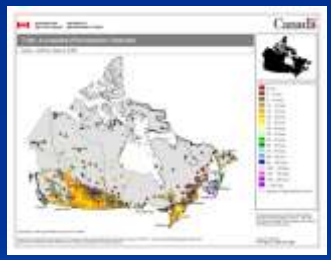
NLWIS

- Features
  - Daily Temperature and Precipitation
  - 10 km grid for Agricultural Zone
  - 40+ year period of record
    - Plan to increase to at least 80 year
  - Extensive buffer into non- Agriculture Zone
  - Error estimate available

Foundational

- Climate products
  - Gridded data set development
  - Improved understanding of variance of key variables by region (if at all possible)
  - Soil Moisture
  - Remote sensing
- Information Gathering
  - Better links with regions to identify end user needs
  - Better links with rest of public sector to capture complementarities and synergies
- Institution Building
  - Catalyze drought and extreme events Provincial Plans
  - Support on going provincial and National Drought and Extreme events Task Forces

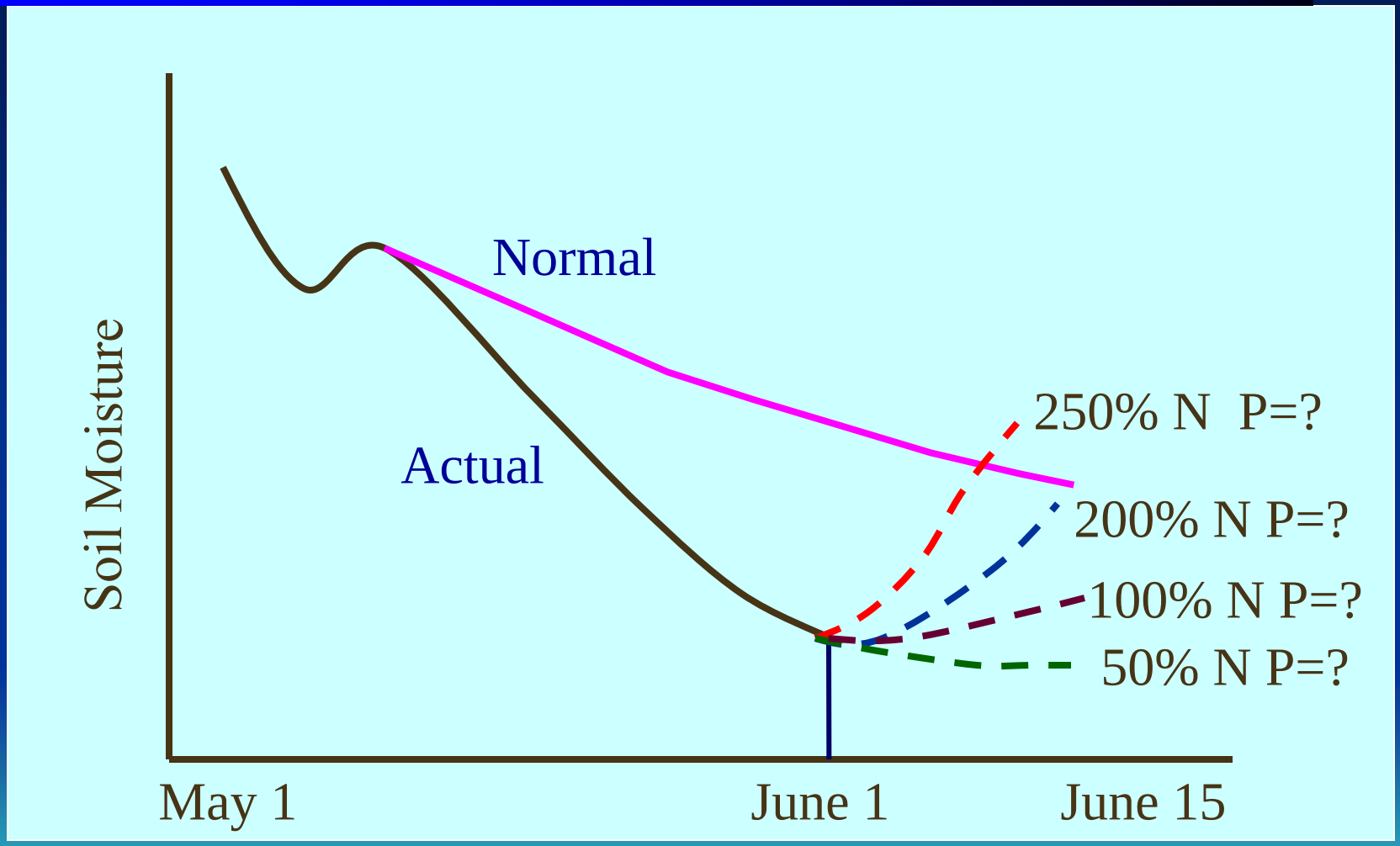




Intermediate

- Link foundational to hydrologic and GIS based models
- Formulate DST and institutional support based on needs identification
- Develop useful interfaces to provide information to a wide range of users in an understandable format
- Link climate foundation tools to crop and pasture models for management DST, regional supply curve estimation

Soil Moisture Outlook



Collaborations and Partnerships

- NAIS working closely with the LUDS and GIS components of Ag-Information.
- It has projects established with the Regional, Strategic, Water, and Lands directorates.
- It is working AAFC Policy and Research Branches.
- Close working relationships established with E.C., NRCan, academic institutions
- Emerging partnerships with U.S., Australian, and other international counterparts

Agriculture and Agri-Food Canada

Environment Canada

Natural Resources Canada

Quebec

PARC

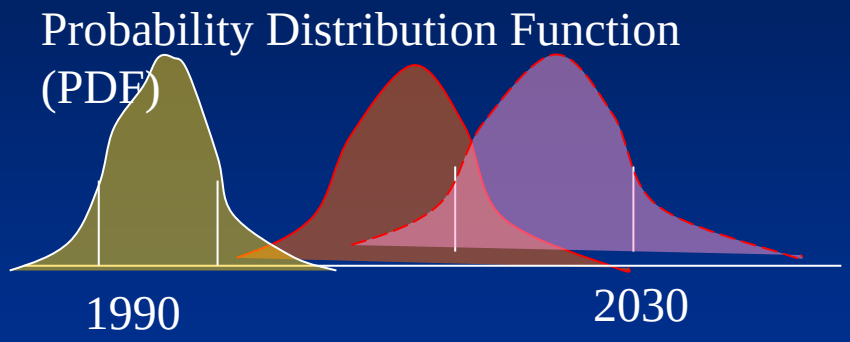
NOAA

Queensland Government Natural Resources and Mines

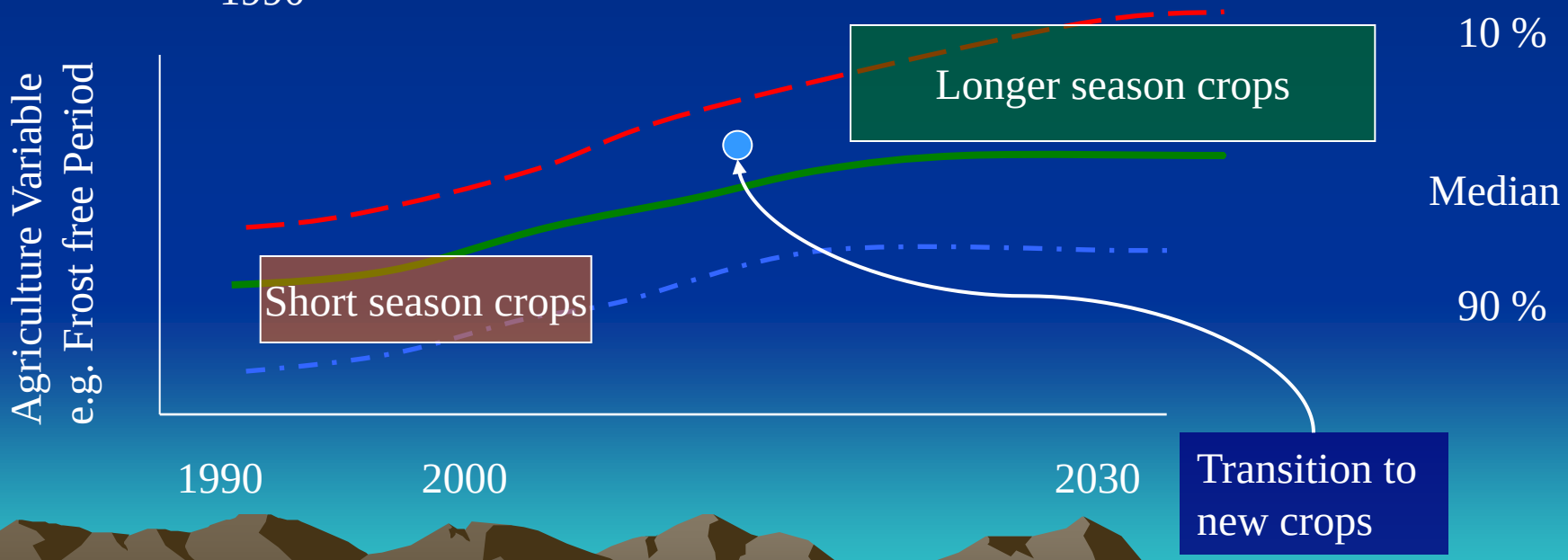
What Has Actually Happened in the Monitoring/Forecasting Area? (Cont.)

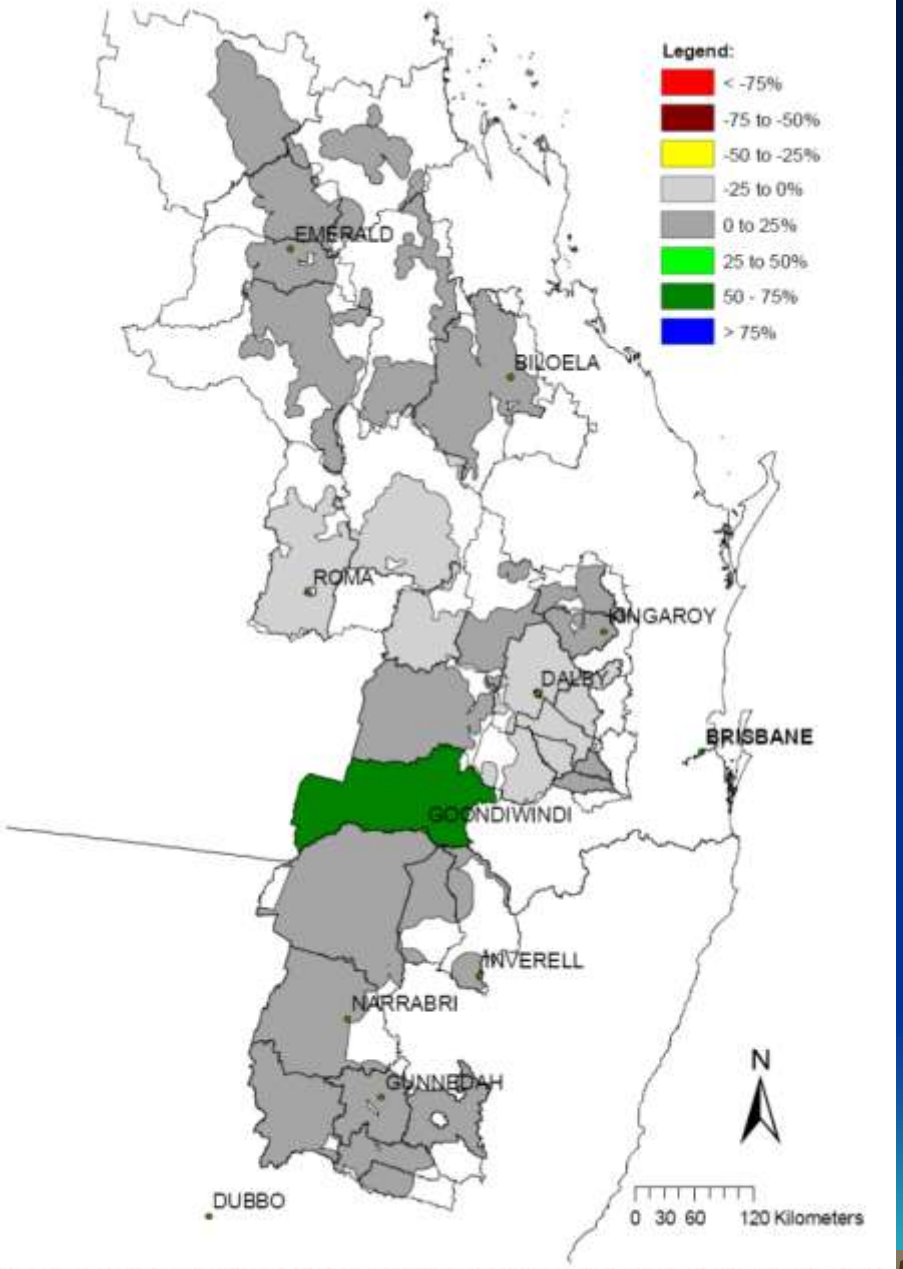
- Remote Sensing is being developed with other AAFC and Federal Partners for soil moisture
- Tax Deferral has been taken on as an important activity of the unit
- The quality control and assurance software developed is being utilized by at least one Provincial agency.
- In season drought reporting and forecasting has been improved and made operational.

Risk/opportunity may change over time

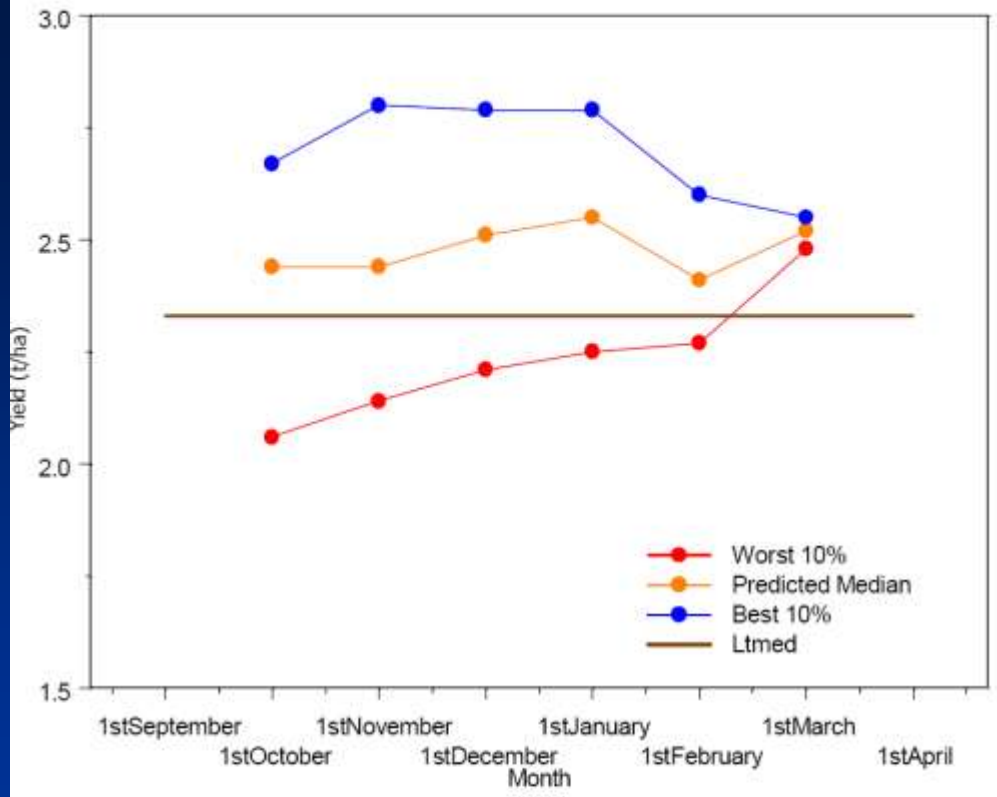


Working with the statistics community and Env. Canada





Percent departure of forecast median yield from long-term median shire yield



Region	Year	Month	Phase	Worst10	PredMed	Best10	NoP10	NoP50	NoP90	Ltmed	Pred%
AUS	2009	14	2	2.48	2.52	2.55	2.48	2.52	2.55	2.33	6
NNSW	2009	14	2	3.14	3.16	3.19	3.14	3.17	3.19	2.82	8
QLD	2009	14	2	2.29	2.33	2.36	2.28	2.33	2.35	2.18	6

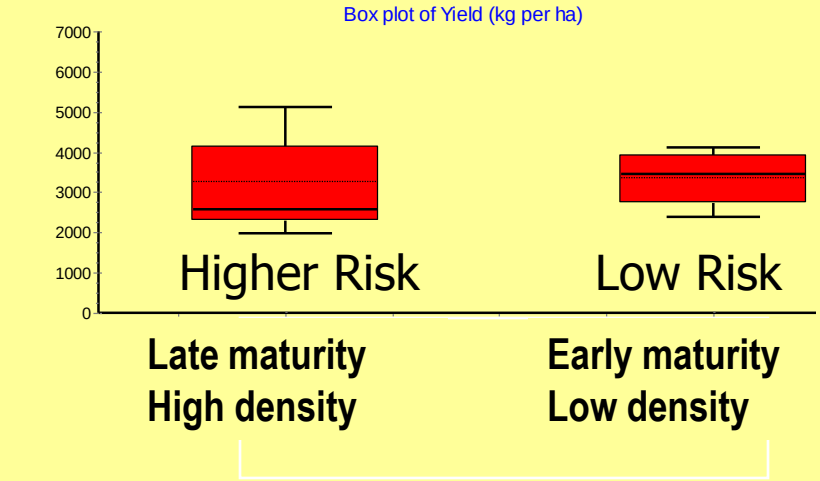
Forecast as at 1st March 2009, given SOI phase was "consistently positive" at the end of February 09. (y-axis and table values are measured in tons/hectares; "No" in table = climatology, Pred% = Predicted percentile)

Managing Water & N in a Variable Climate

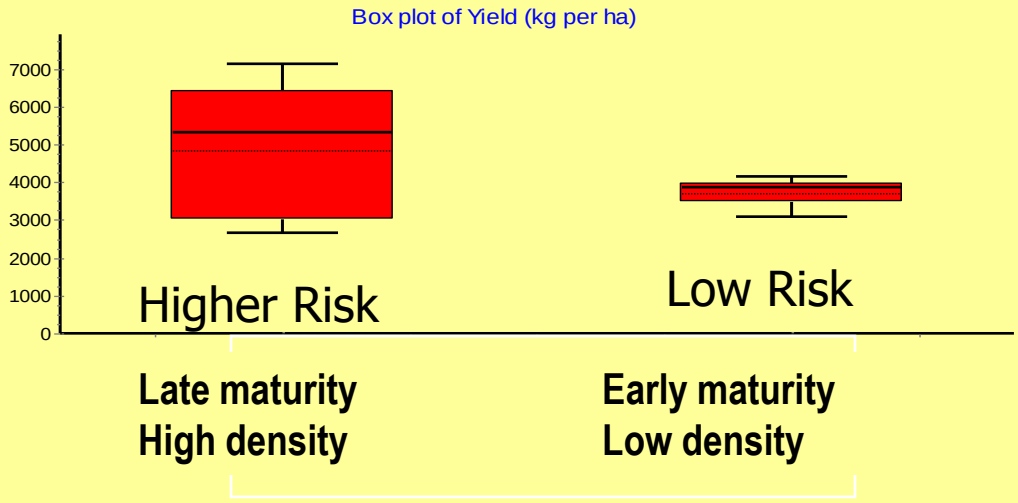
Maturity * density * SOI (Emerald)

Moderate depth vertisol, full profile, Nov planting

SOI phase consistently negative



SOI phase consistently positive



Basis of simulation-aided discussion - process not tool Private and public advisors being trained

Extreme rainfall events can cause flooding and significant damage to both infrastructure and the agricultural Landscape.

In the future we may see higher magnitude extreme rainfall events more often.

What, if anything, should be done to prepare for extreme rain events now or in the future?

RM of Porcupine Plain (April 2006)

RM of Corman Park, 2007

Spatial Scale

Temporal		Farm	Regional	Provincial	Inter-Provincial	National	International
	1-3 years	EFP, GIS decision tools	Simulations, LIRA,	Simulations, Policy Development	PPWB, simulations,	Policy Development	Drought Monitor, Adaptation
	4-10 years	Simulation, Research, Adaptation	Simulations, Adaptation, Policy	Simulations, Adaptation, Governance	Governance, Adaptation, Simulations	Policy Development, Adaptation, Governance	Water management, MOUs, Research, IJC, reporting
	Beyond 10 years	Simulations, Adaptation, Policy, Research	Simulations, Adaptation, Policy, Research	Simulations, Adaptation, Policy, Research	Simulations, Adaptation, Policy, Research	Simulations, Adaptation, Policy, Research	Simulations, Adaptation, Policy, Research

The End