

# Soil Moisture Monitoring Using the National Drought Model

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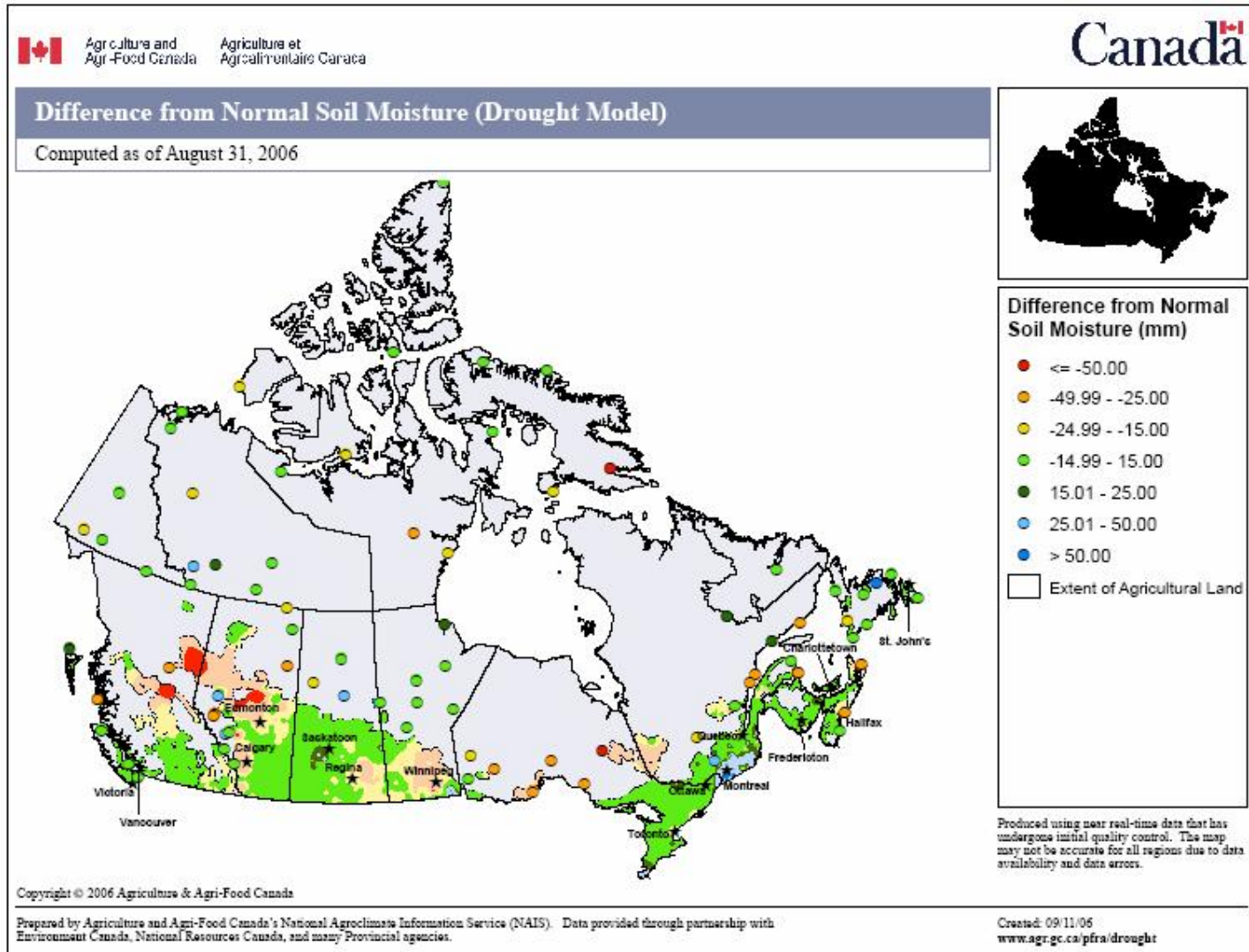
# Outline

- Conditions reporting
- Soil trafficability

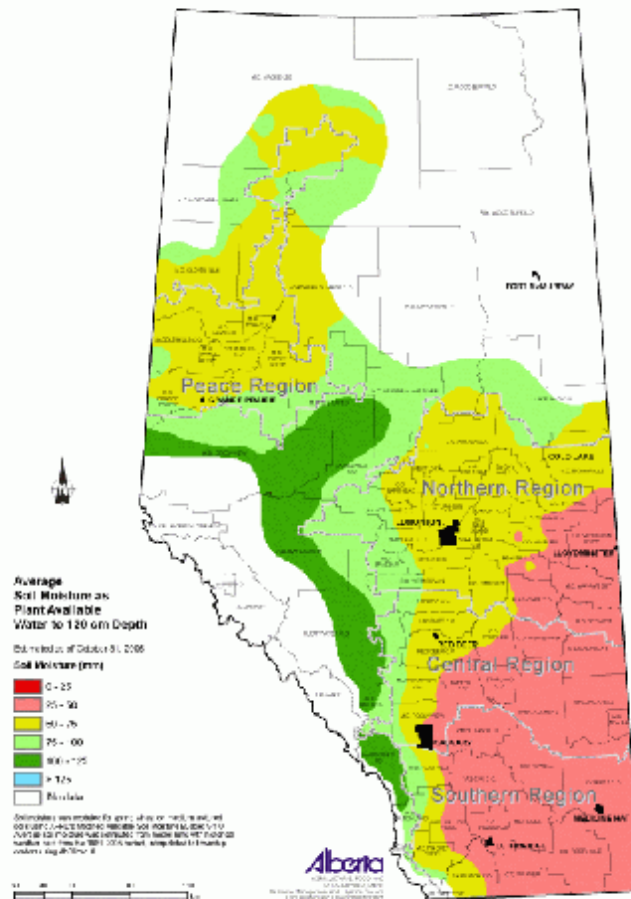
# Conditions Reporting

- Monthly soil moisture anomaly and total moisture in the soil are reported during Growing Season
- Comparisons with actual observations (if available) and with other models are made as means of calibrating the model

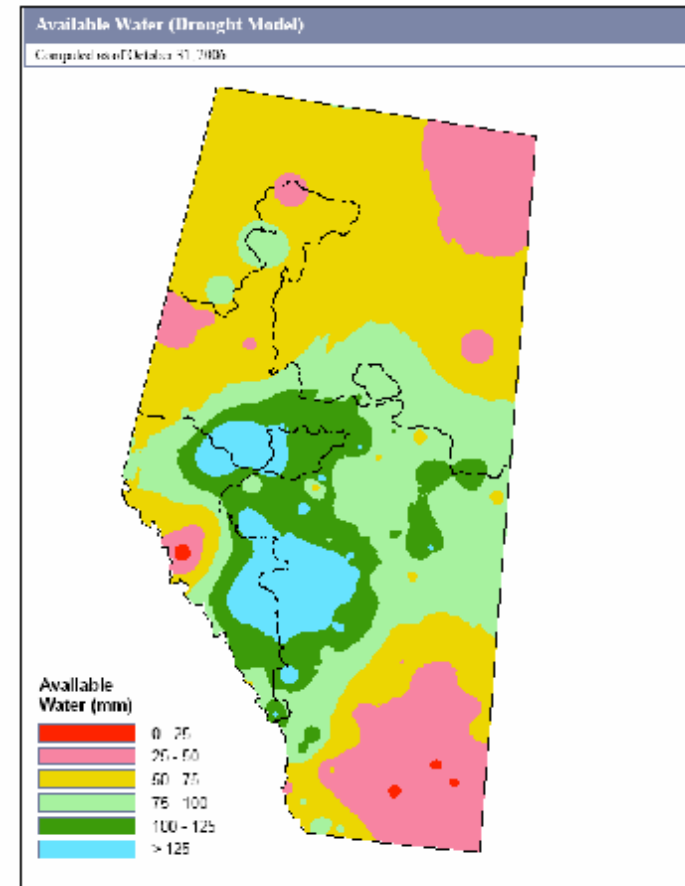
# Monthly anomaly in August '06



# Comparison with simulations in Alberta



AARD

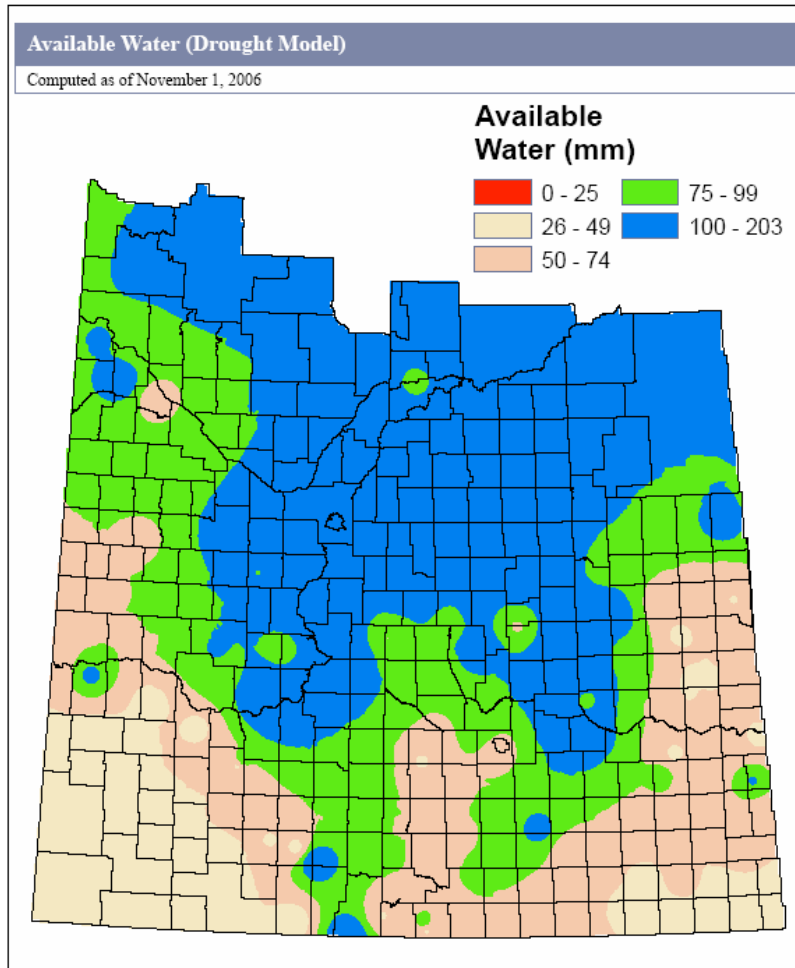


NAIS

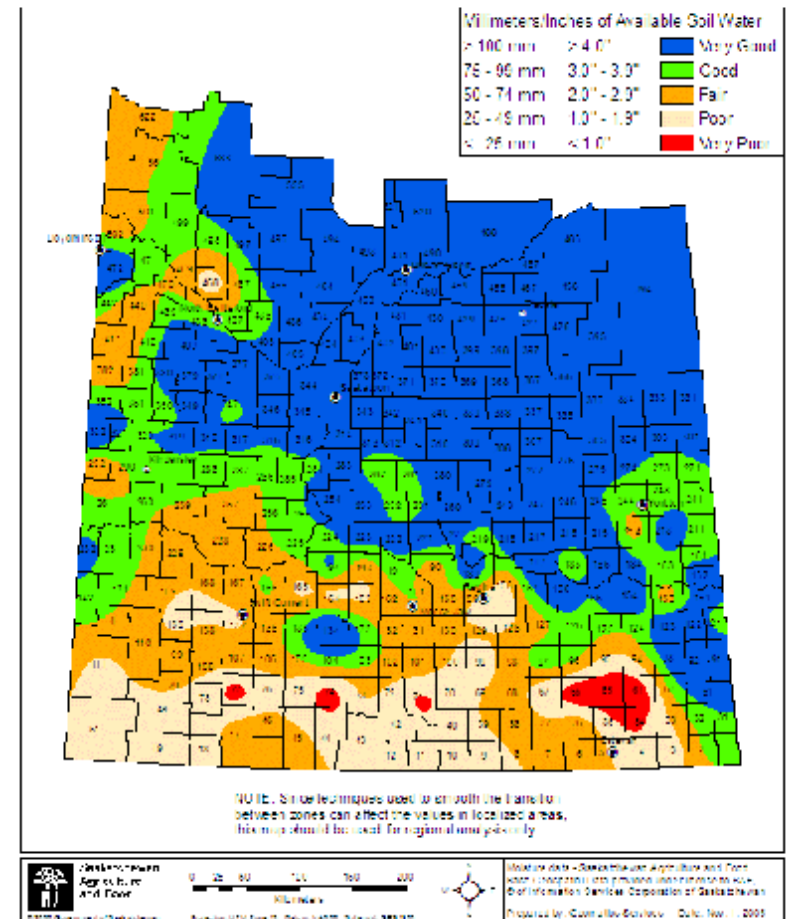


# Comparison with simulations in Saskatchewan

## Drought Model

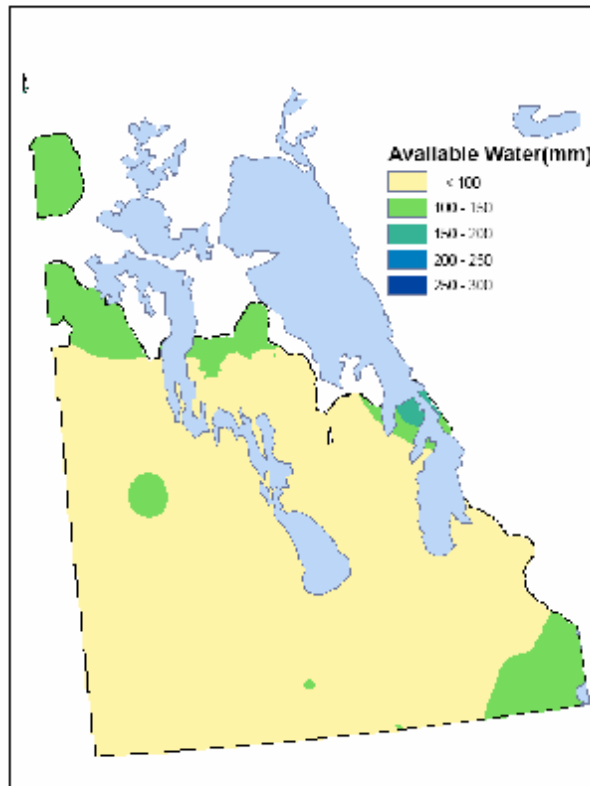


## Stubble Subsoil Moisture Map November 1, 2006

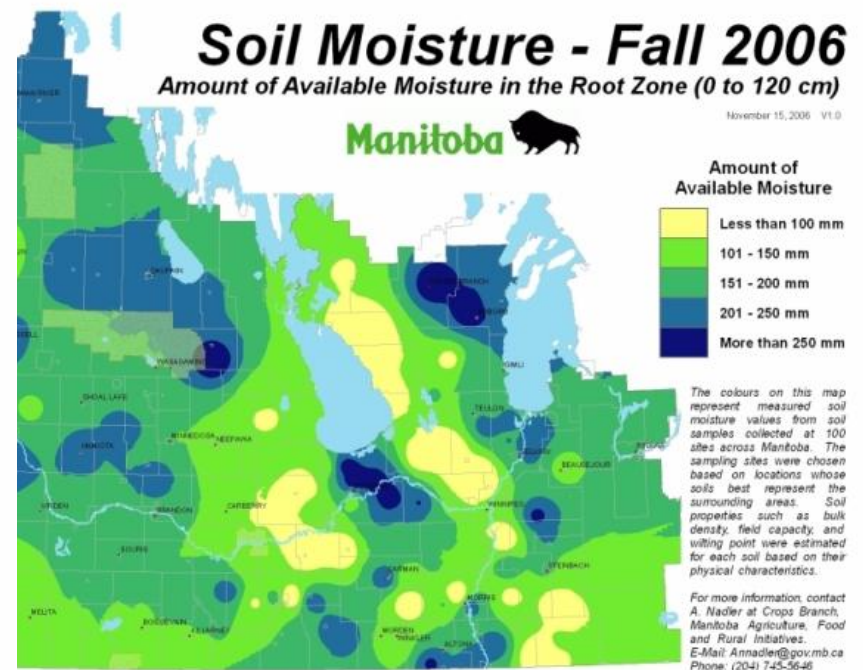


# Comparison with the Fall soil measurements in Manitoba

Drought Model

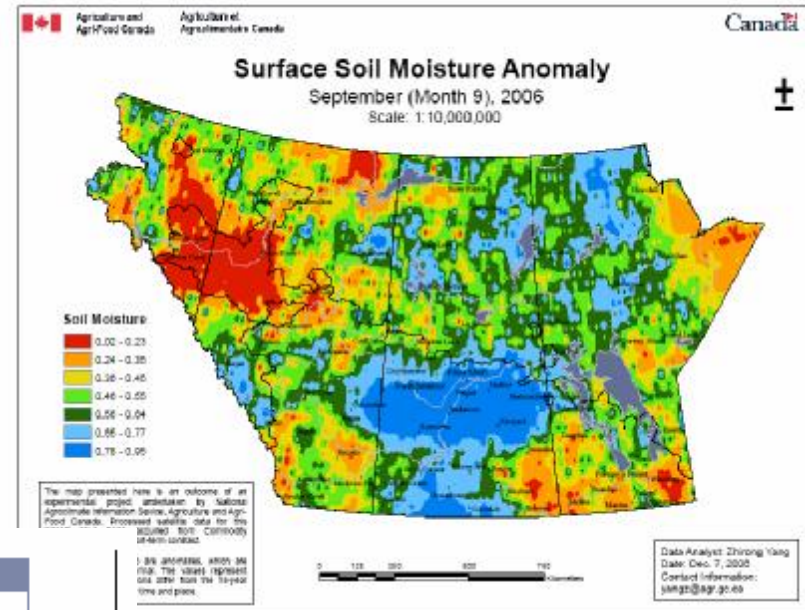


Soil Survey

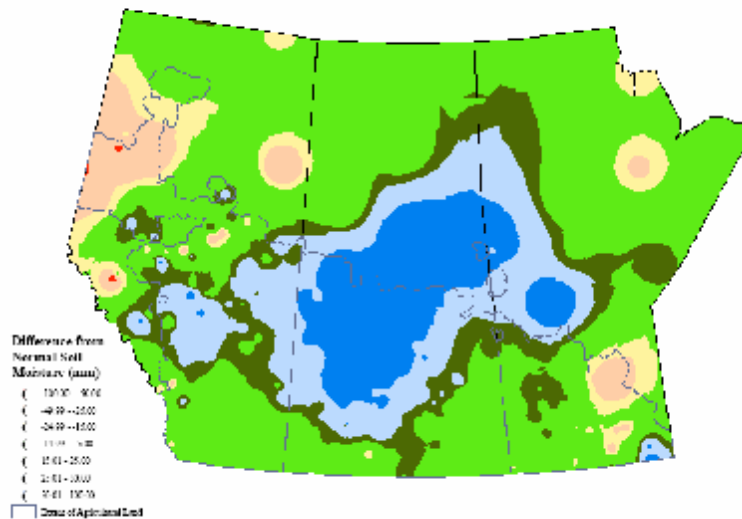


# Comparison with SSMI data

SSMI (top layer)



Difference from Normal Soil Moisture (Drought Model)  
Captured as of September 20, 2006



Drought Model  
(down to root zone)



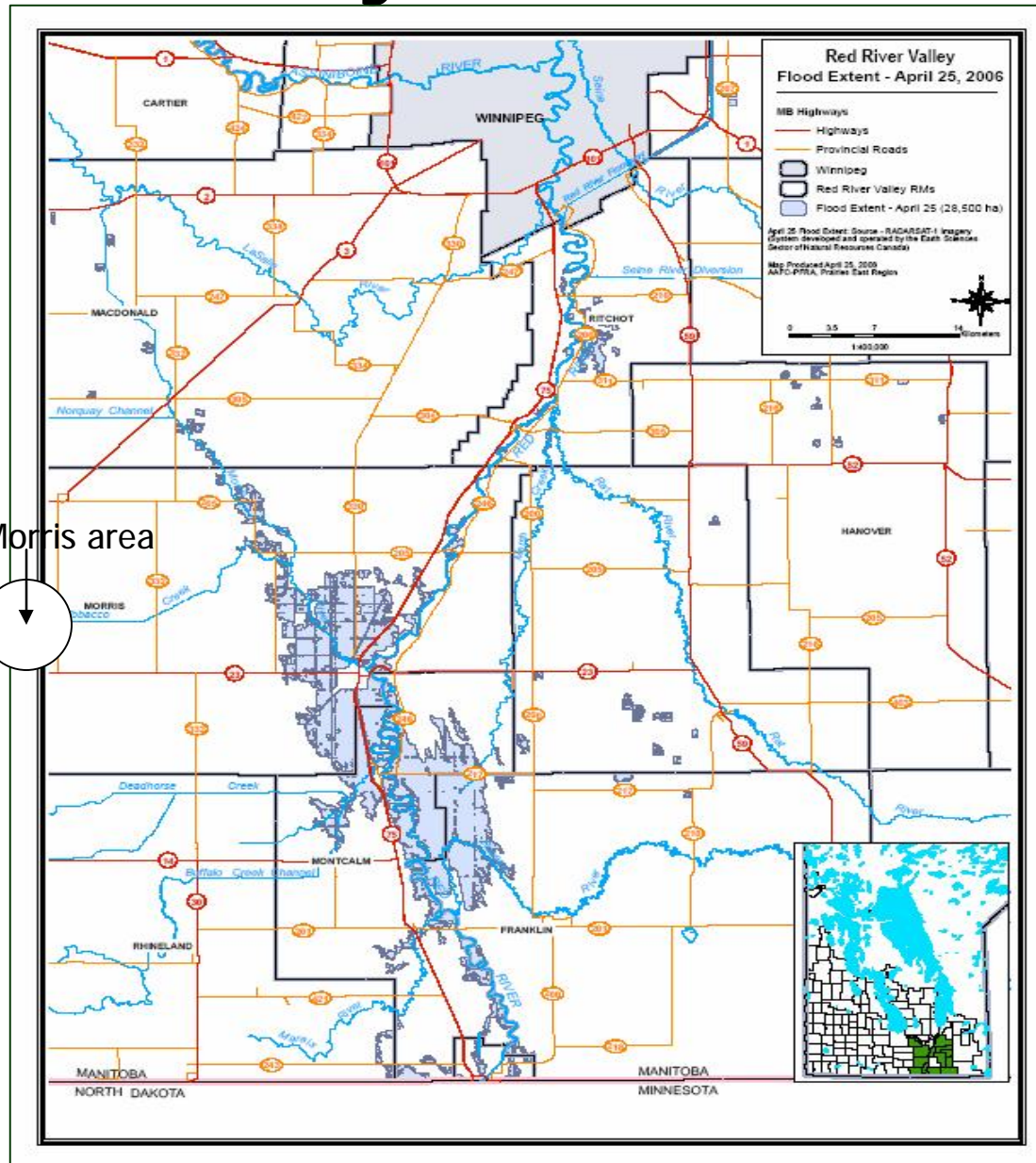
# Conditions Reporting

- We are seeing some spatial agreement in patterns
- More field testing including the use of radarsat is planned in 2007
- Comparison of SSMI data with P, top soil moisture for known events is planned for in 2007

# Soil Trafficability

- Modelling and actual observations were made to determine soil trafficability (after spring floods of 2006 in Manitoba); Morris area
- Trafficability was defined using the 90% of AWC recommendations- (Shaykewich report)

# Study area



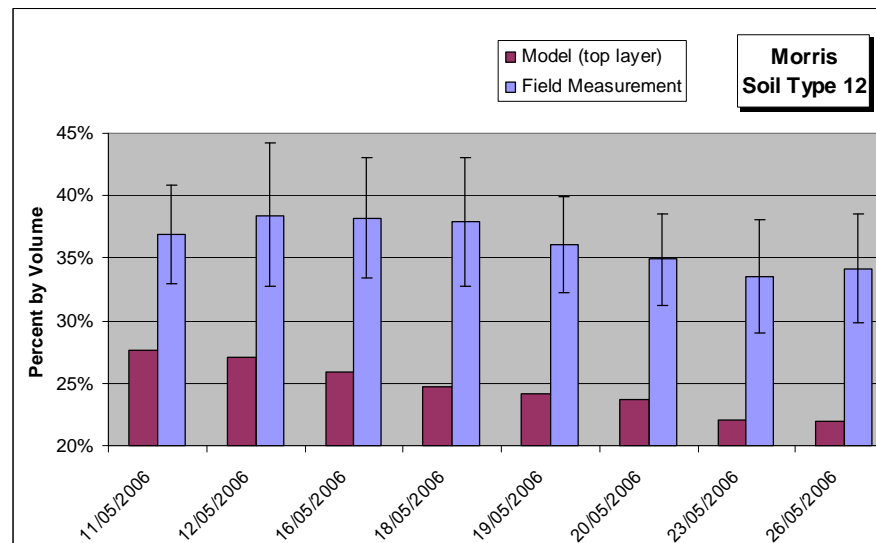
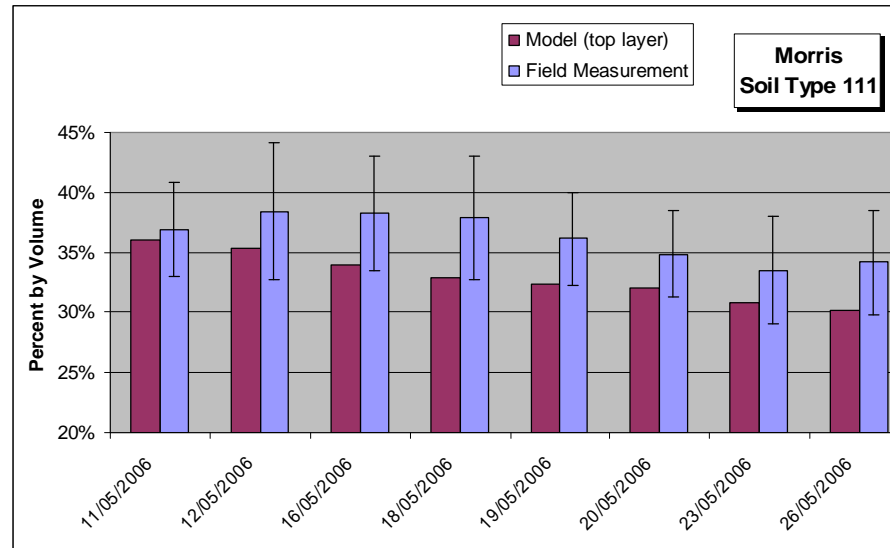
Note that Morris was flood free by April 25

# Soil Characteristics

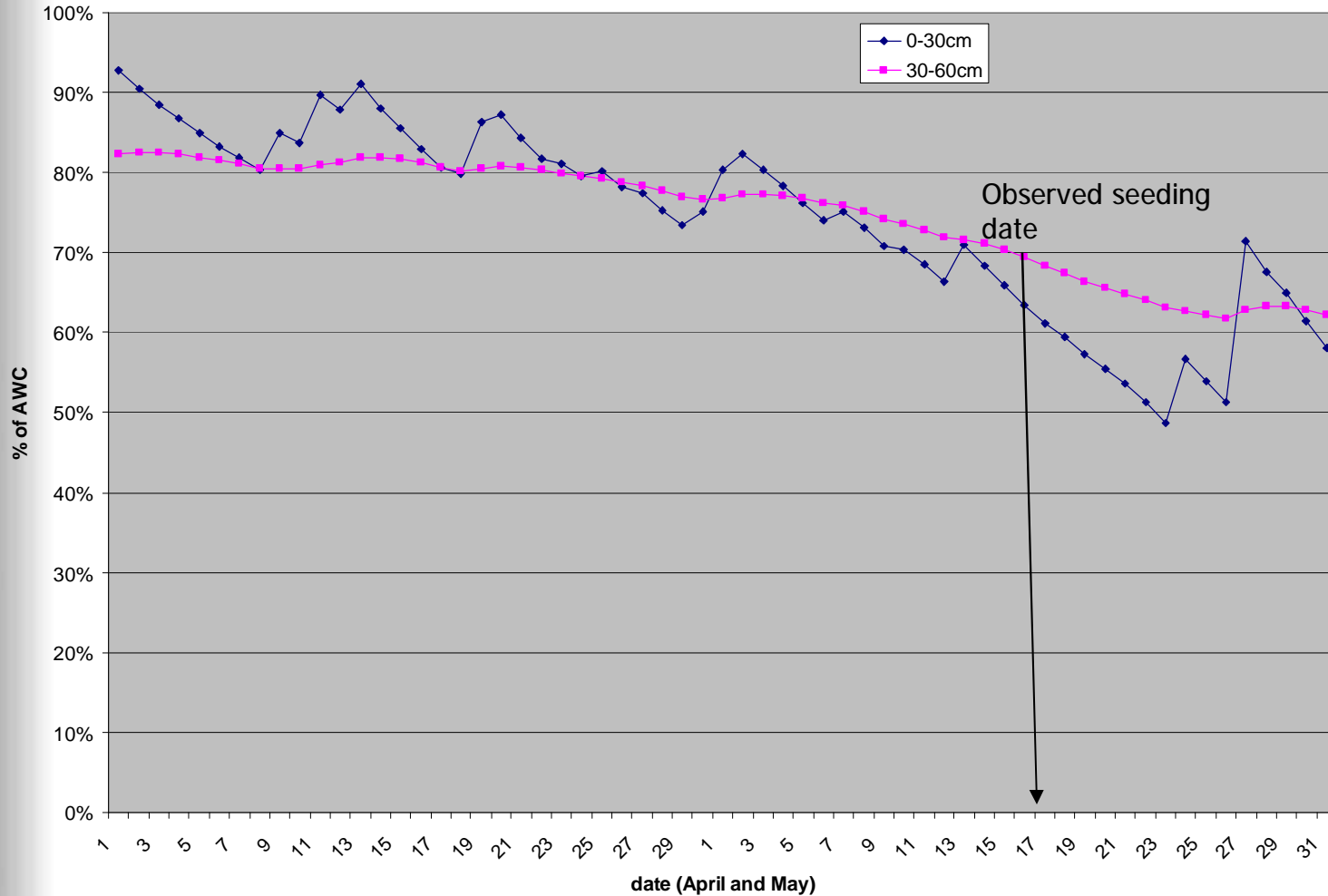
SiteID	Depth	Date	Town	Crop	PSM	BD	FC	WP	AWHC
ALT03	A	10/25/2005	Morris	Cereal Stubble	34.8	1.1	55.9	20.8	35.1
ALT03	B	10/25/2005	Morris	Cereal Stubble	33.3	1.3	49.7	20.5	29.2
ALT03	C	10/25/2005	Morris	Cereal Stubble	30.3	1.3	91.1	33.3	57.8
ALT03	D	10/25/2005	Morris	Cereal Stubble	28.1	1.3	108.4	38.3	70.1
ALT03	E	10/25/2005	Morris	Cereal Stubble	30.3	1.3	119.5	31.4	88.0
ALT10	A	10/25/2005	Rosenort	Cereal Tilled	44.7	1.0	64.5	27.5	37.0
ALT10	B	10/25/2005	Rosenort	Cereal Tilled	39.0	1.2	72.7	30.7	41.9
ALT10	C	10/25/2005	Rosenort	Cereal Tilled	30.9	1.3	136.4	61.3	75.1
ALT10	D	10/25/2005	Rosenort	Cereal Tilled	29.7	1.3	140.1	63.9	76.2
ALT10	E	10/25/2005	Rosenort	Cereal Tilled	31.4	1.3	134.4	64.1	70.3



# Point simulation vs. averaged Soil moisture observations



# Onset of trafficability (model, observations and field interviews)



# Plans for 2007

- More simulations in the Red River Valley coinciding with new Manitoba climate stations (careful description of soil physical parameters needed)
- Work with historical data and come up with a probability distribution of trafficability dates
- Relate soil moisture simulations and observations to remote sensing work (SSMI and Radarsat)