

# **A Probability of Event Occurrence Approach to Performance Estimate**

**or**

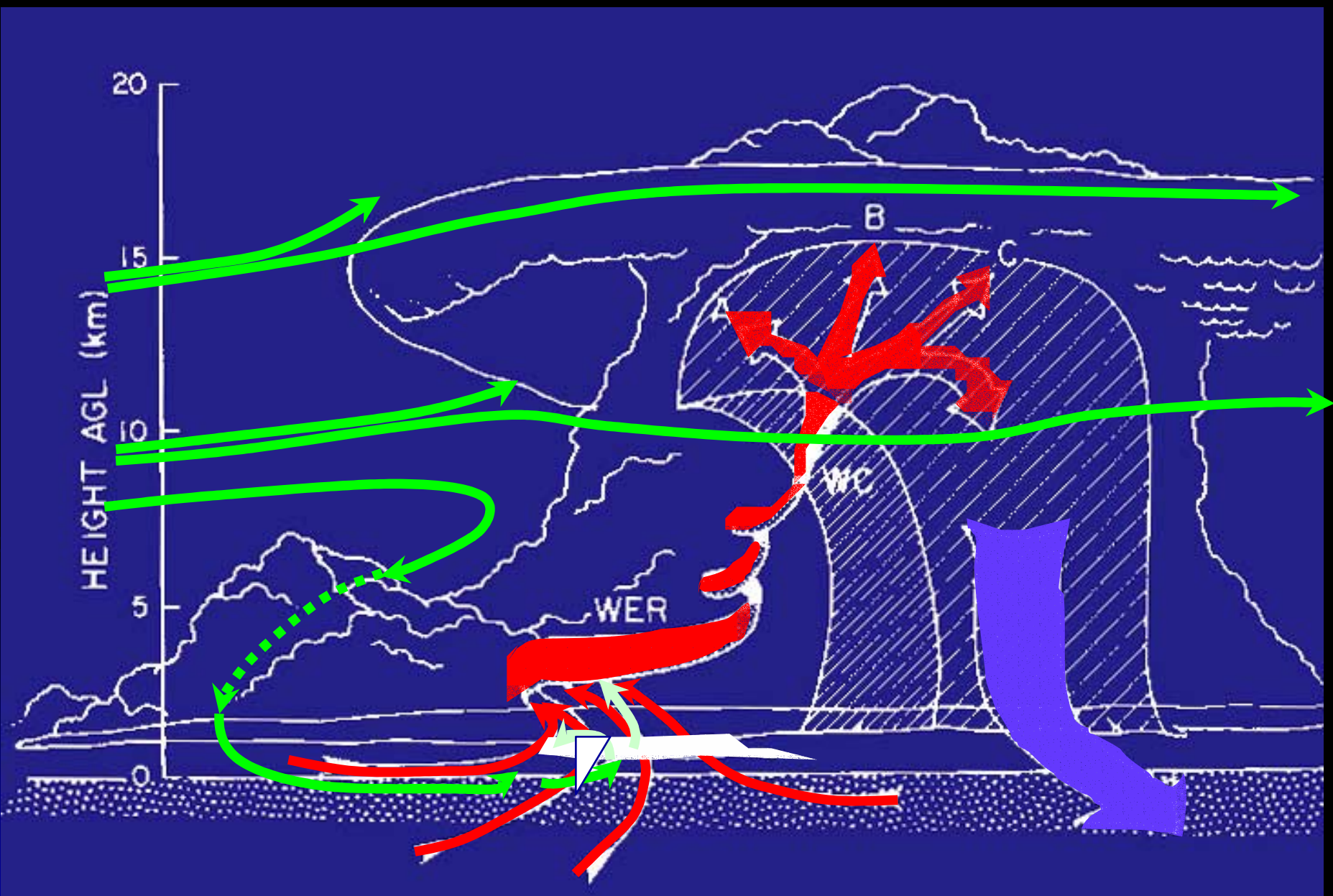
# **Making Maximum Use of Radar Data**

**Phil the Forecaster**

**Chadwick**







# Radar

- Volume Scan Signature of Cell Severity
- Ranked Weight – objective measure of probability of severe weather

ONT\_SUDDS: SCIT 2 (WINDOW 2)

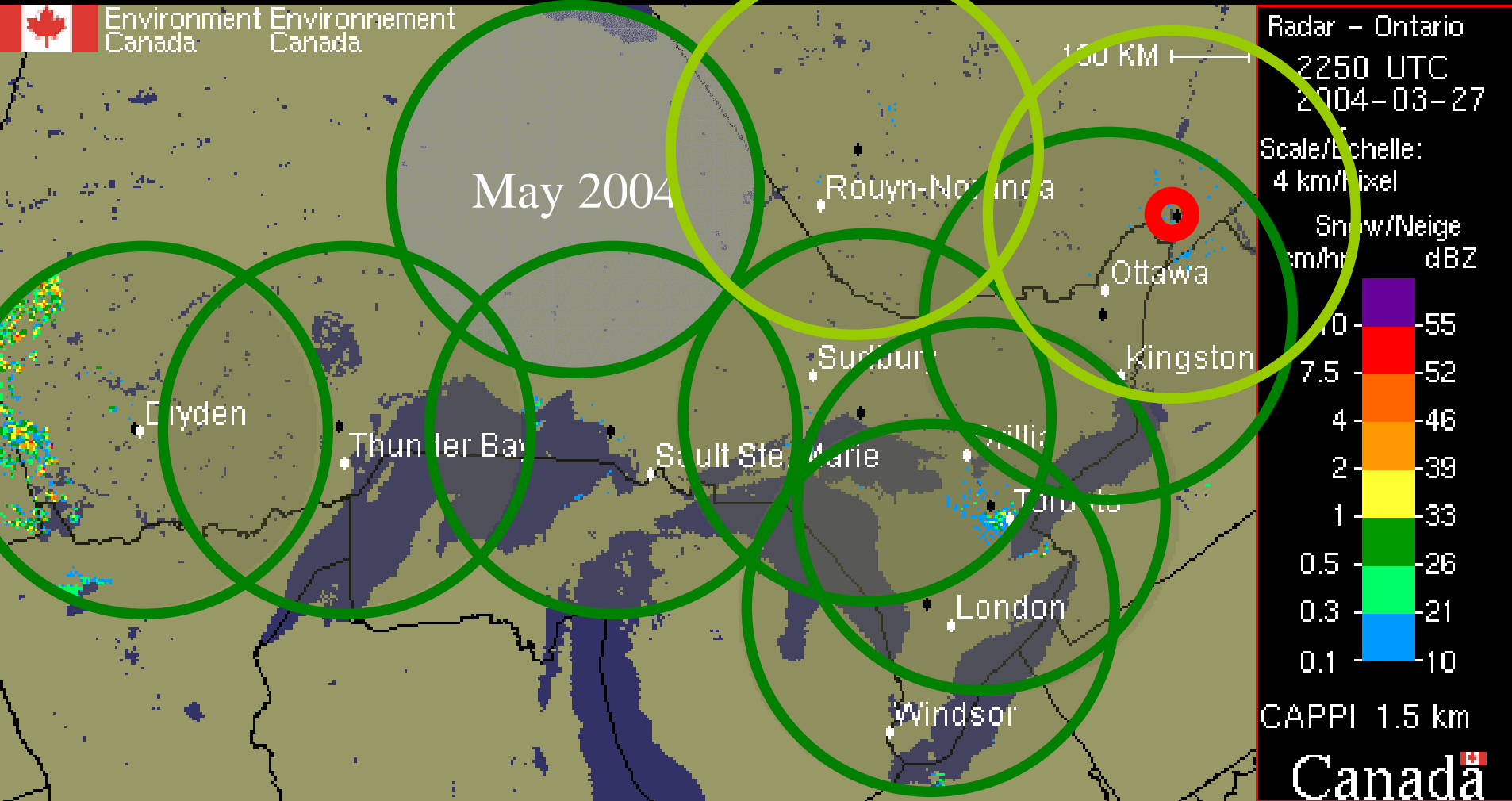
Screen

Table Time: 1700

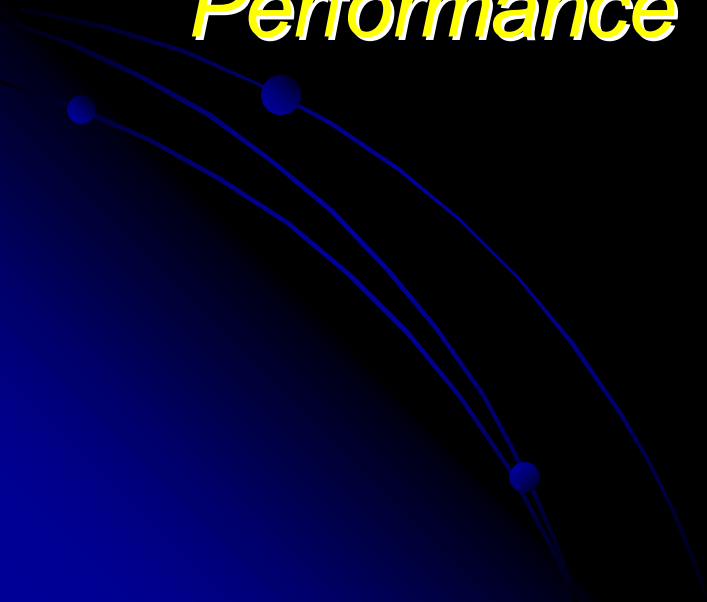
sNumber	RANK	Ra	WST	21	0.0	0.0	0.9	0.7	60.00	97.0	0.0
378	1	2.5	WST	21	0.0	0.0	0.9	0.7	60.00	97.0	0.0
293	2	2.4	SST	20.0	0.0	0.0	0.0	0.0	50.00	70.0	17.6
384	3	2.2	WST	5.9	0.0	14.1	0.0	0.9	51.50	47.0	N/A
256	4	2.1	WST	12.0	0.0	0.0	3.6	2.0	54.00	88.0	19.1
377	5	2.0	WST	14.2	0.0	0.0	3.4	2.3	55.50	87.0	7.3
320	6	1.9	WST	9.7	0.0	N/A	1.9	1.5	53.00	71.0	14.6
305	7	1.5	WST	7.0	0.0	0.0	0.0	1.0	54.50	40.0	N/A

No row is selected.

# Ontario Radar Coverage



# Goals – *Use Objective Radar Data*

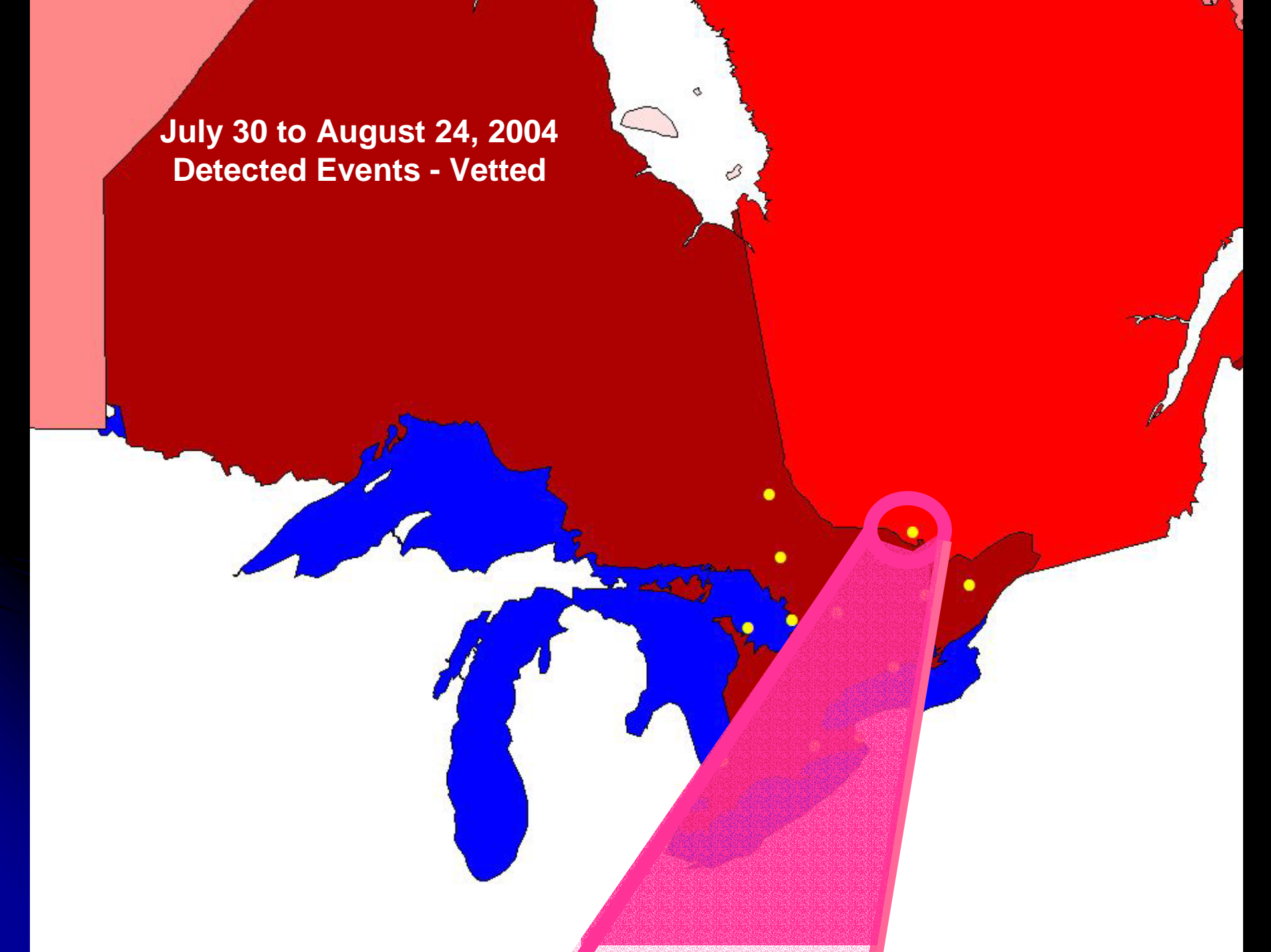
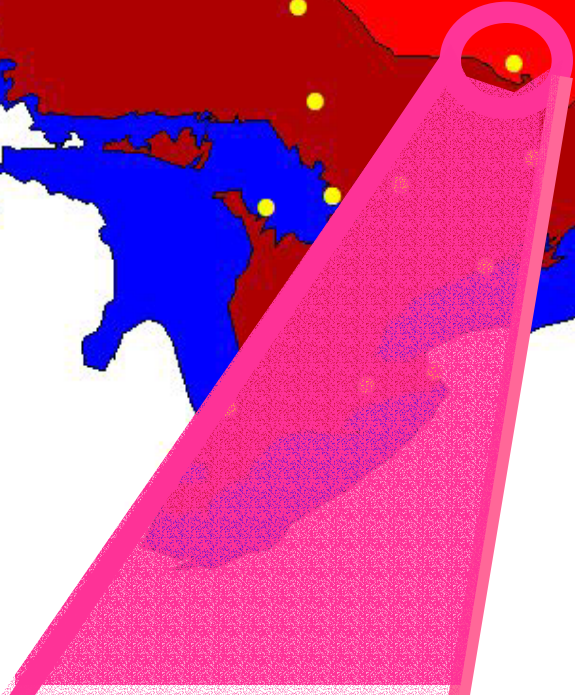
- Better *Severe Convection Climatology* using radar data
  - *Calibration of the Radar Signatures* in terms of severity
  - Estimate the likely range in *Prediction Performance*
- 

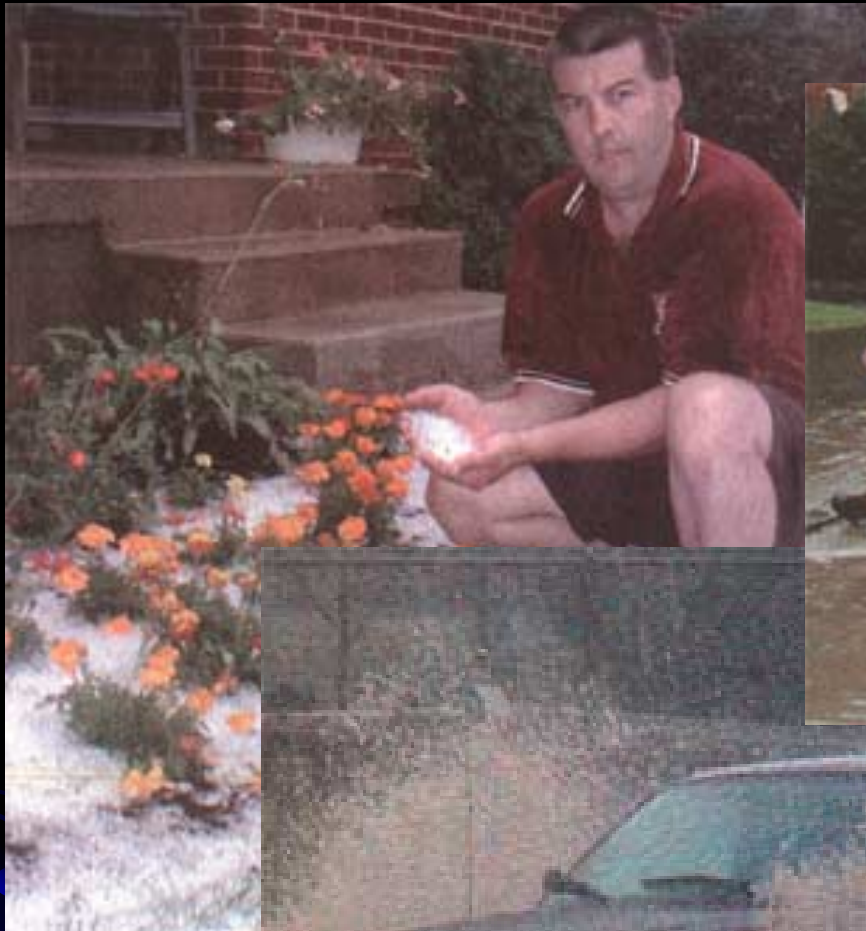






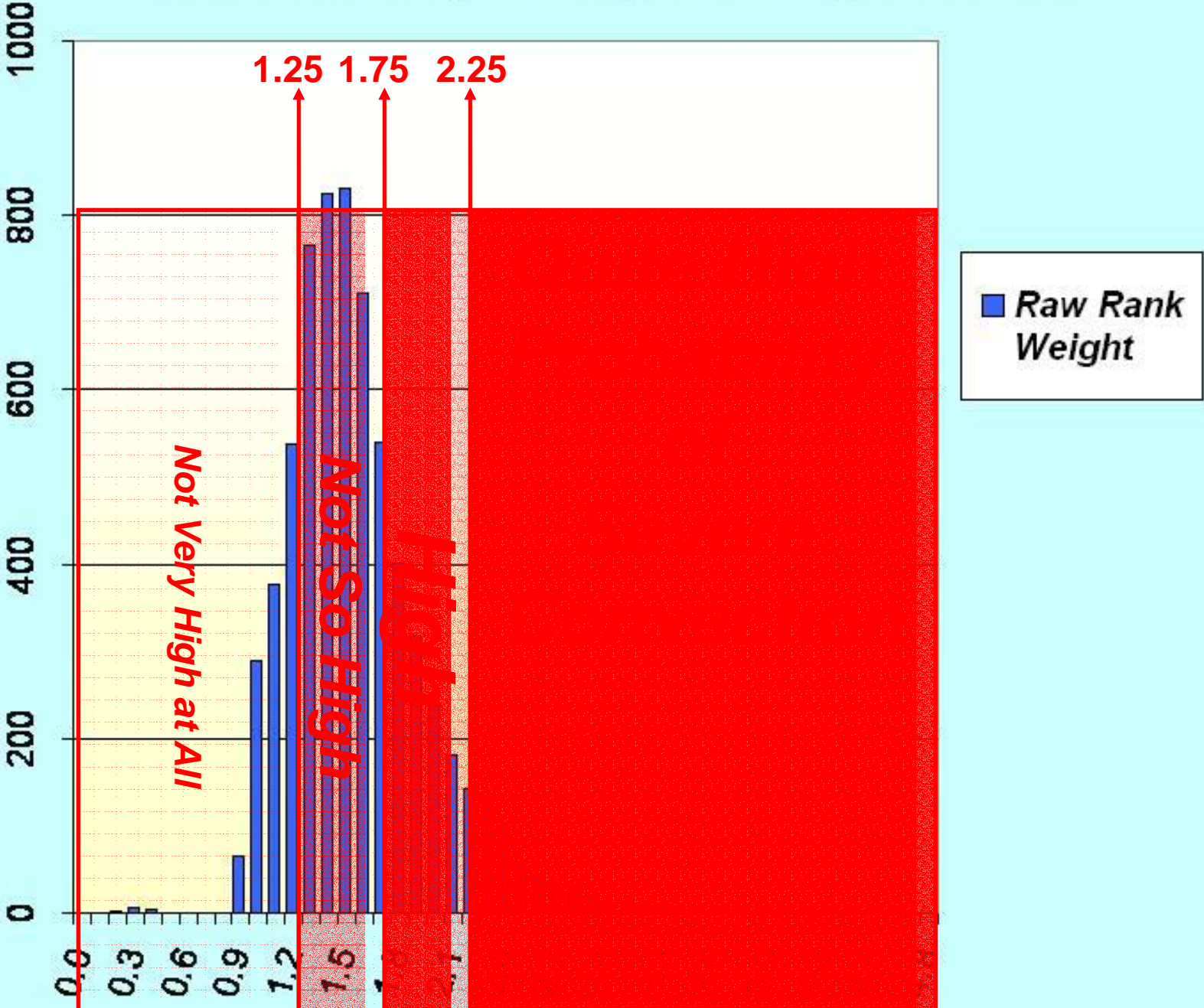
**July 30 to August 24, 2004  
Detected Events - Vetted**



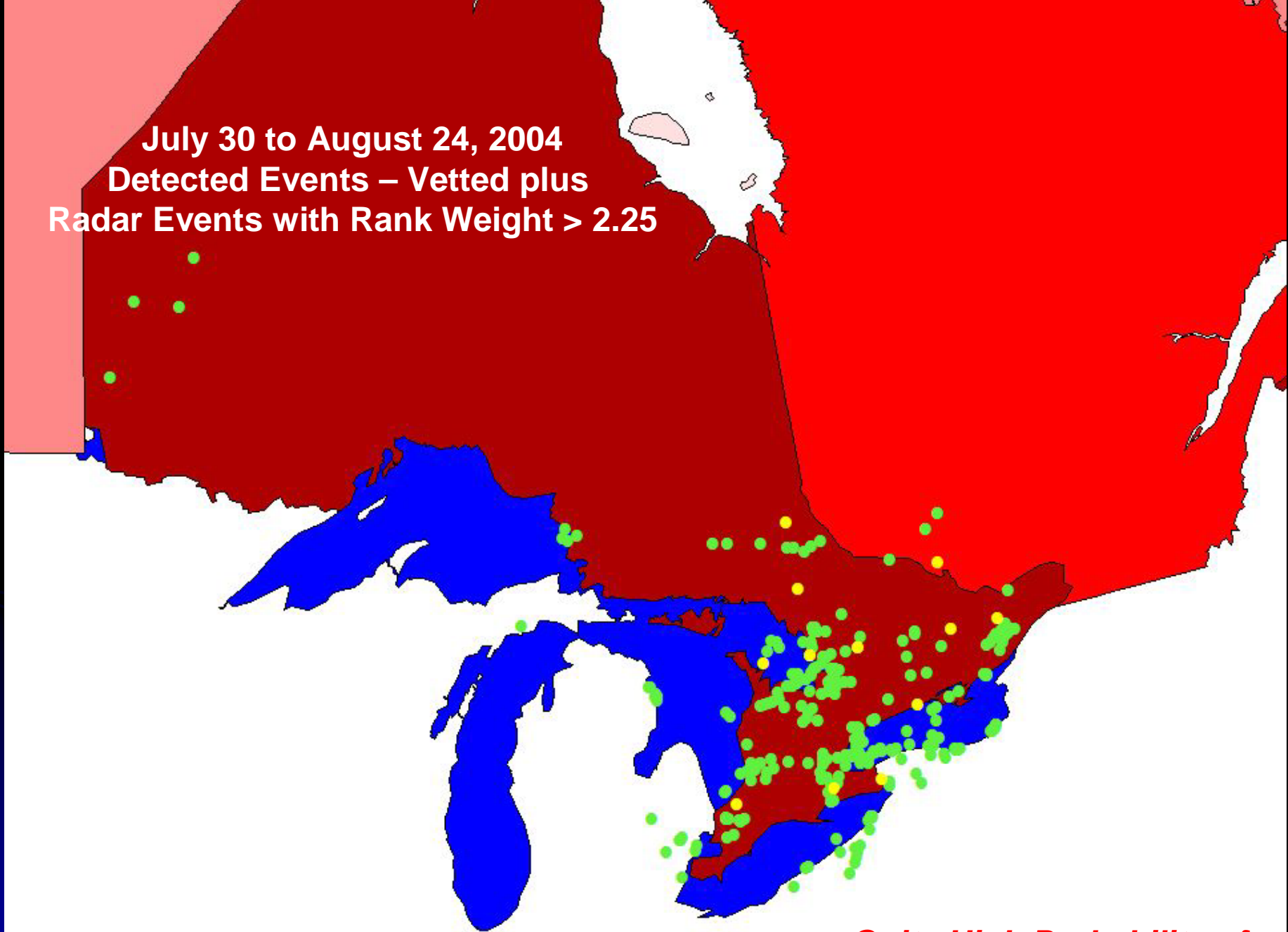


**Pembroke Street (Main Street)**

# Raw Rank Weight - July 31 to August 23, 2004

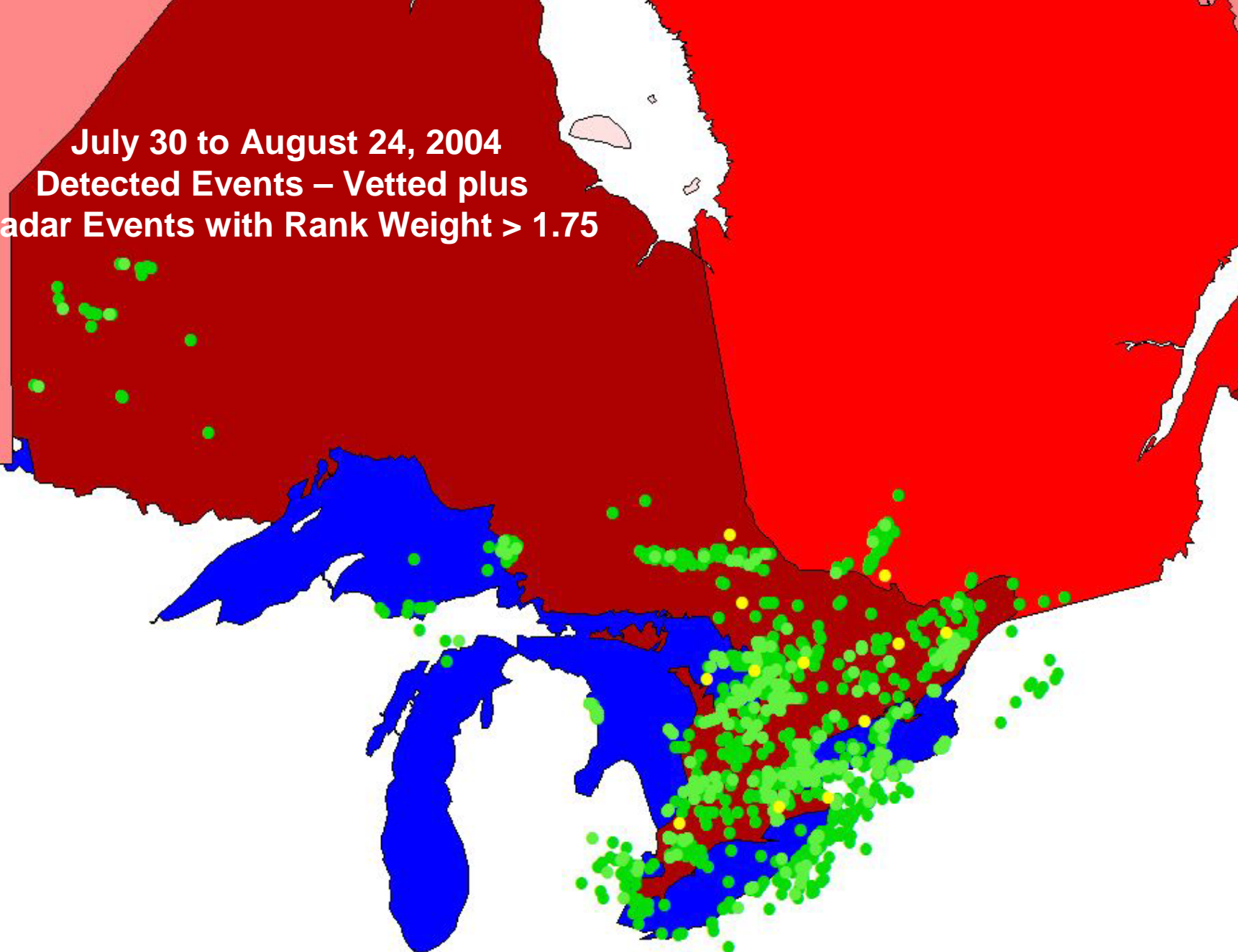


**July 30 to August 24, 2004  
Detected Events – Vetted plus  
Radar Events with Rank Weight > 2.25**



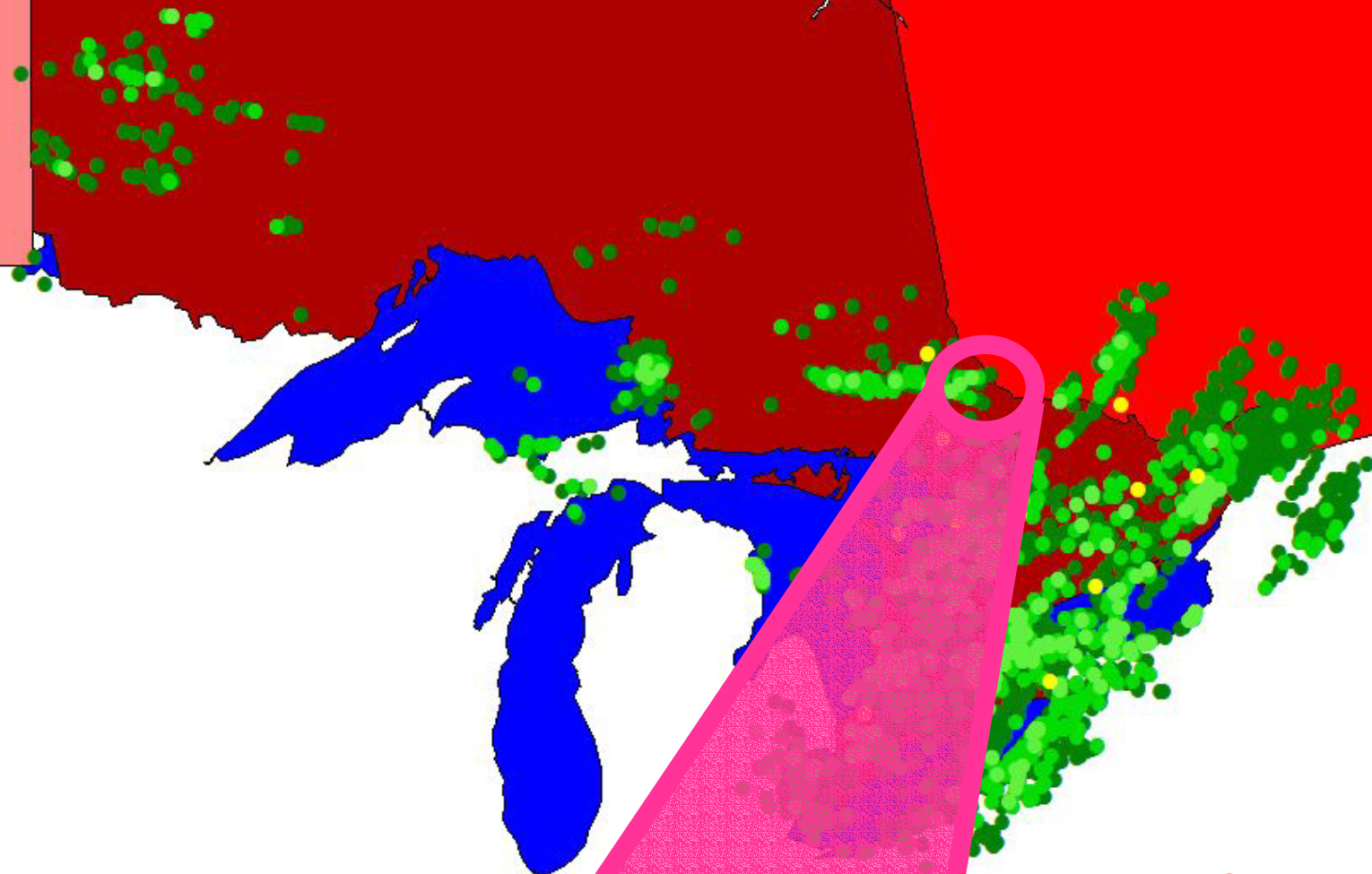
***Quite High Probability of  
Severe Convection***

**July 30 to August 24, 2004  
Detected Events – Vetted plus  
Radar Events with Rank Weight > 1.75**

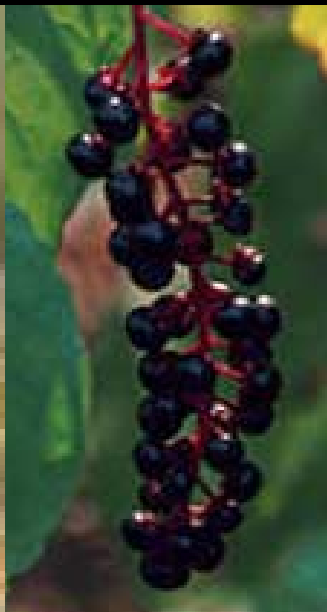


***At Least a High Probability of  
Severe Convection***

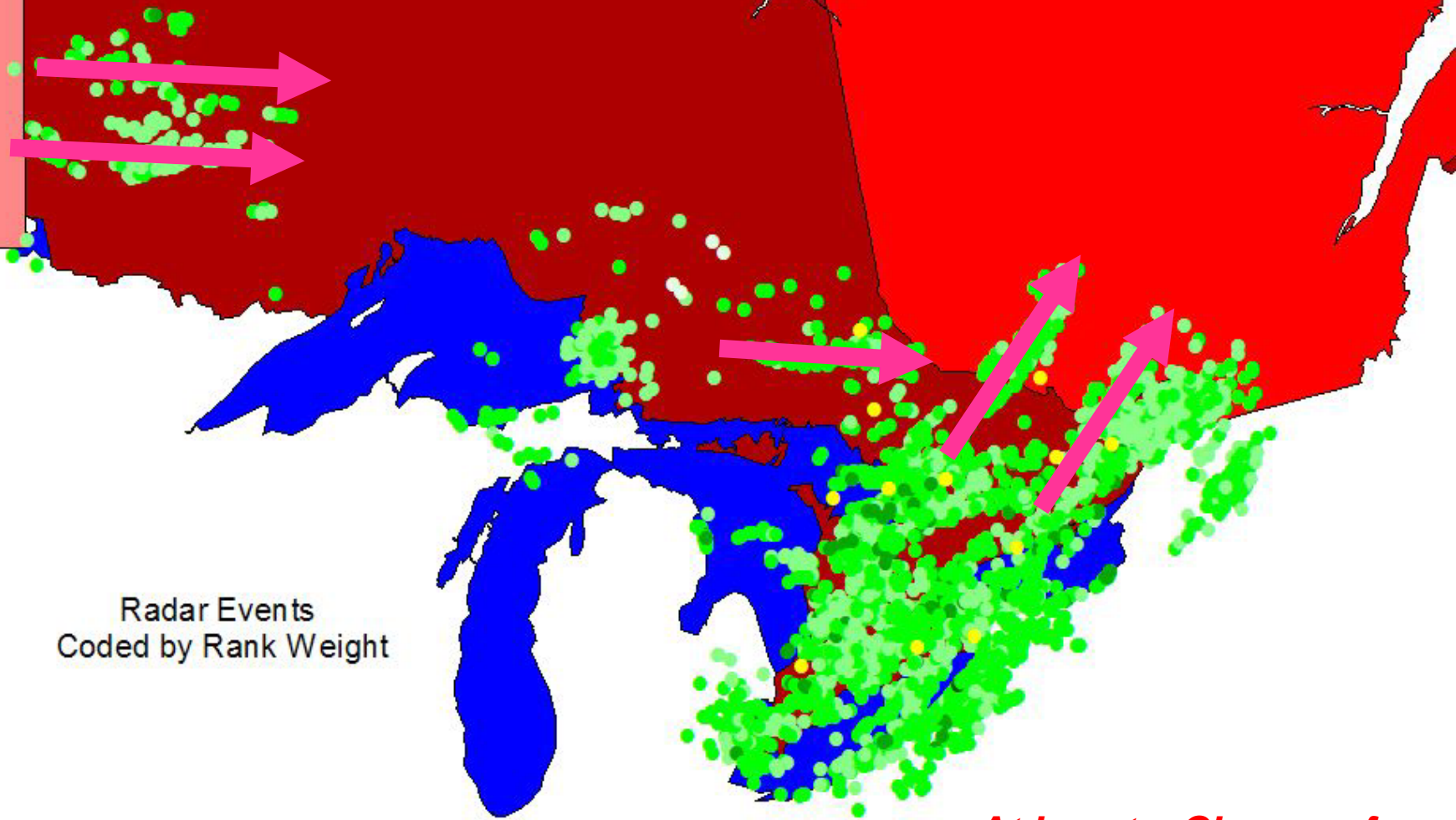
**July 30 to August 24, 2004  
Detected Events – Vetted plus  
Radar Events with Rank Weight > 1.25**



*Not So High and Greater  
Probability of Severe Convection*



**July 30 to August 24, 2004  
Detected Events – Vetted plus  
Radar Events by Rank Weight**

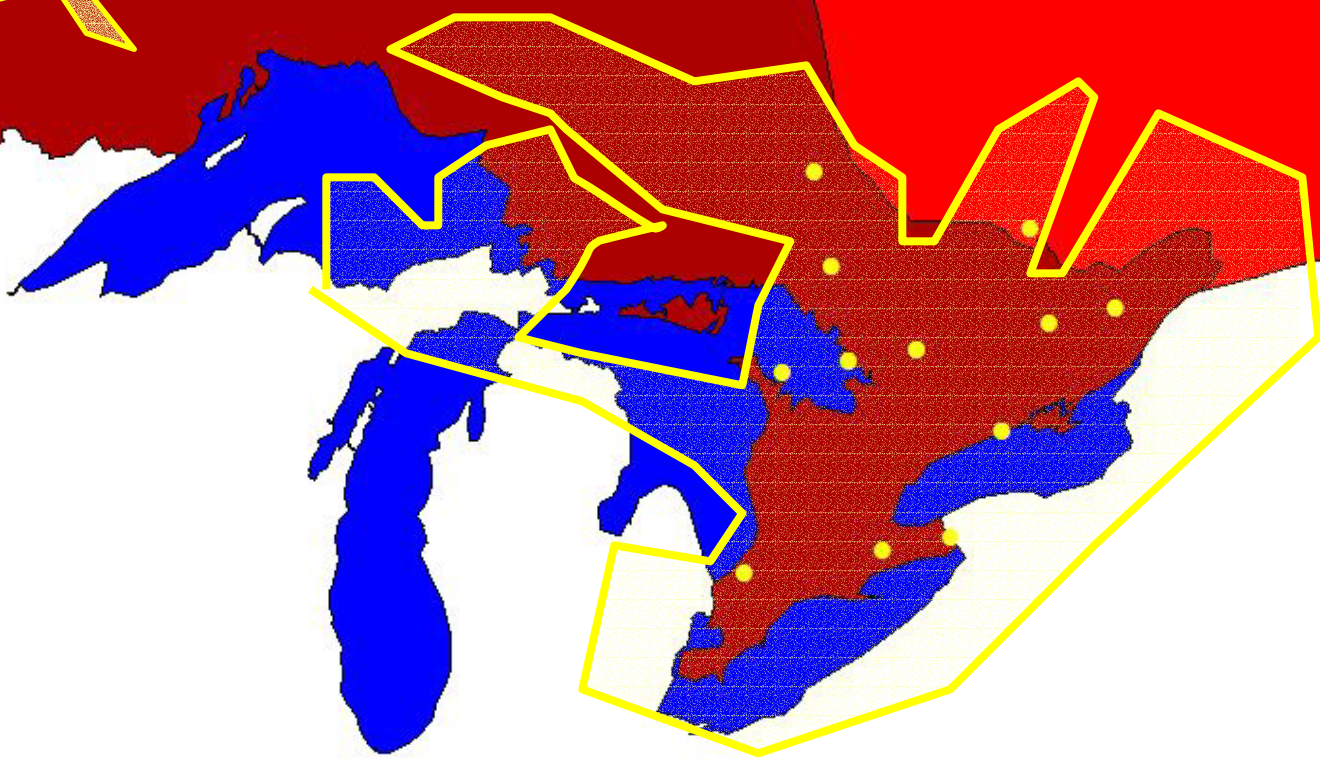
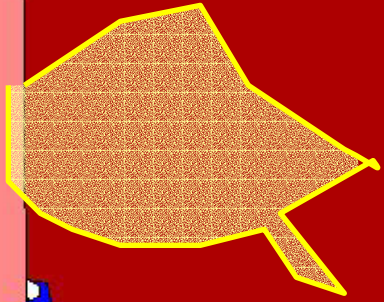


Radar Events  
Coded by Rank Weight

***At Least a Chance of  
Severe Convection***

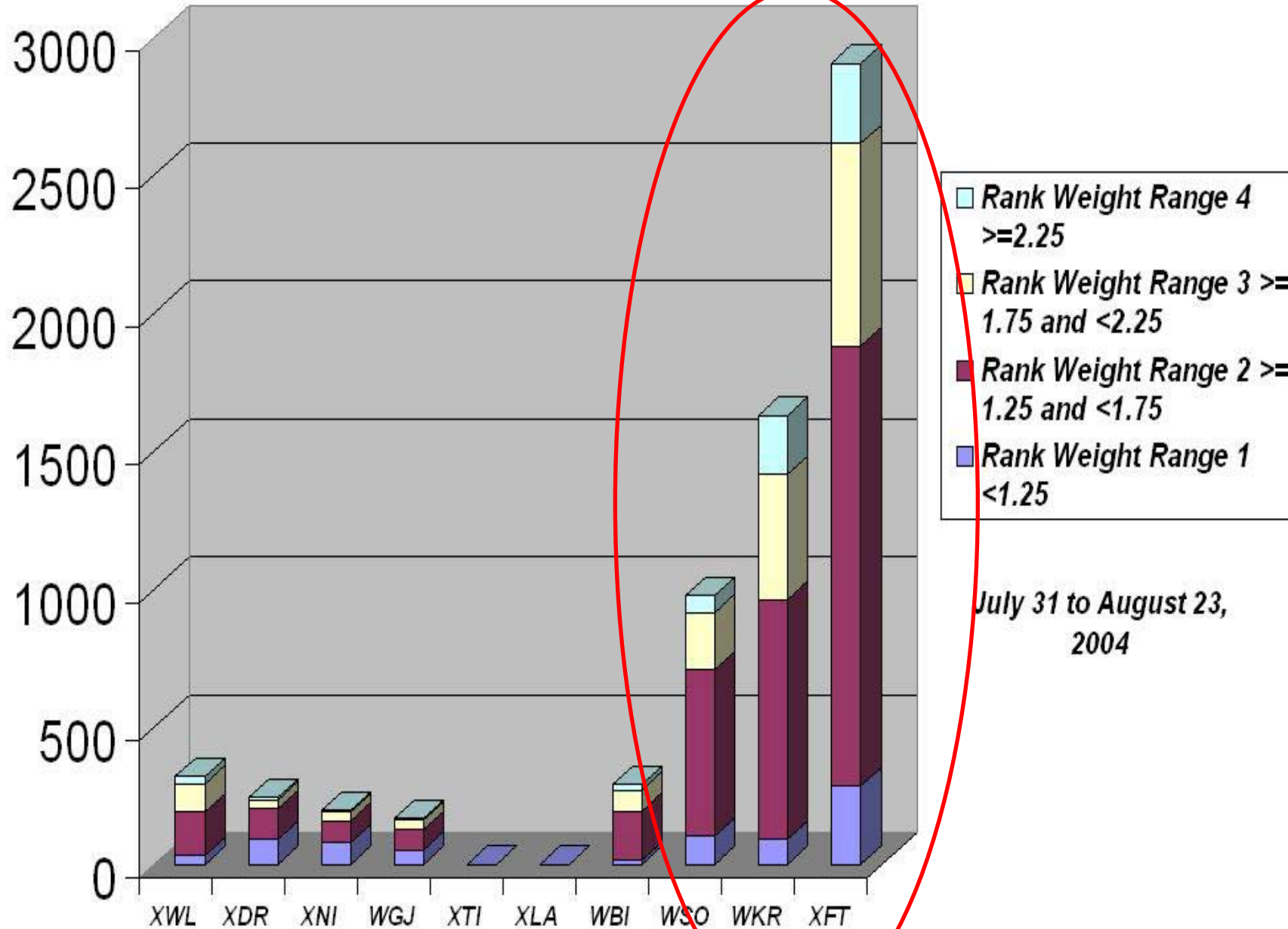


**July 30 to August 24, 2004  
Detected Events - Vetted**



# Radar Rank Weight Distributions

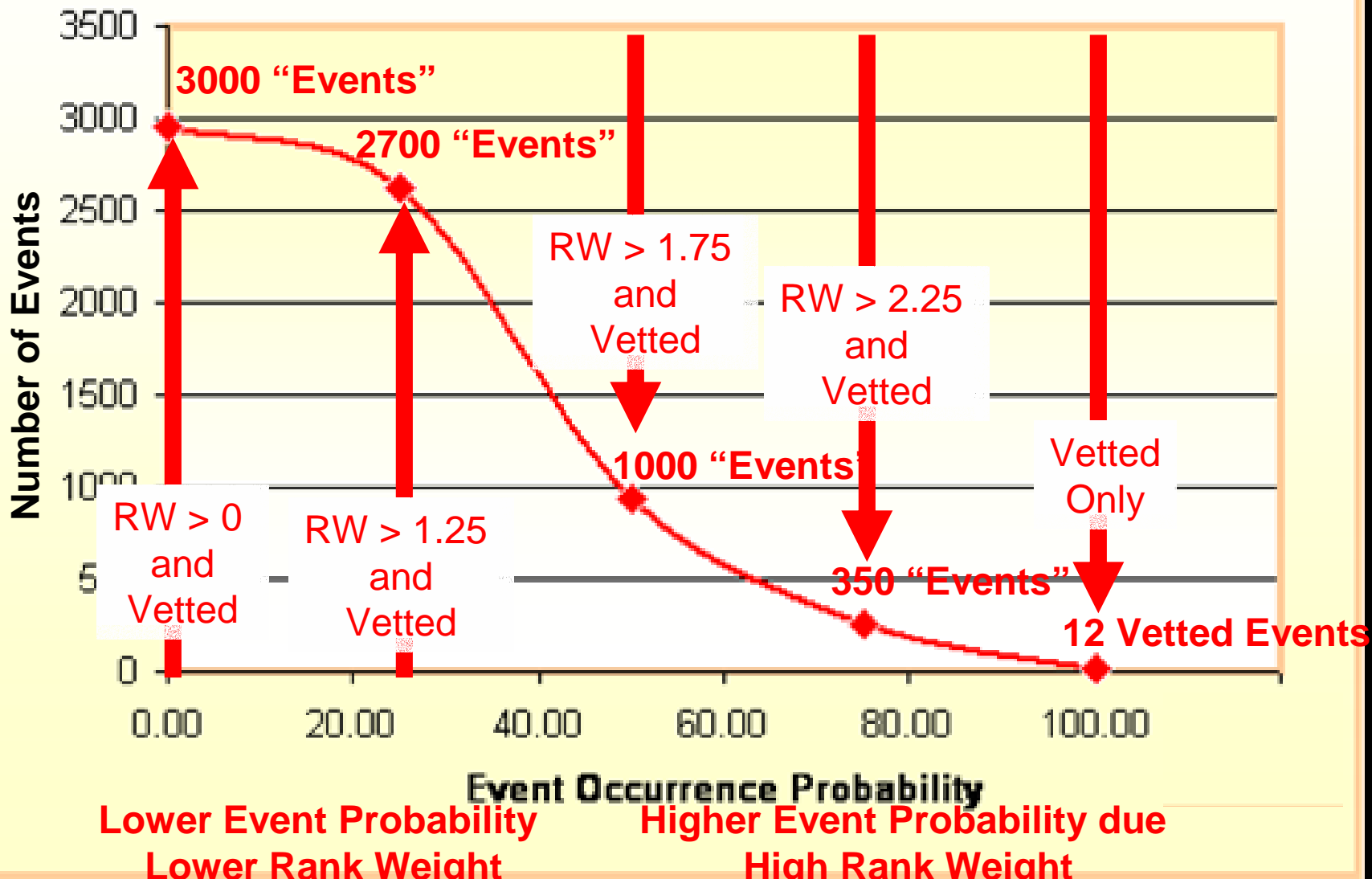
Summarize where the action was.  
How intense the action was.



# Total Number of "Events" - Regions within 200 km of a Radar

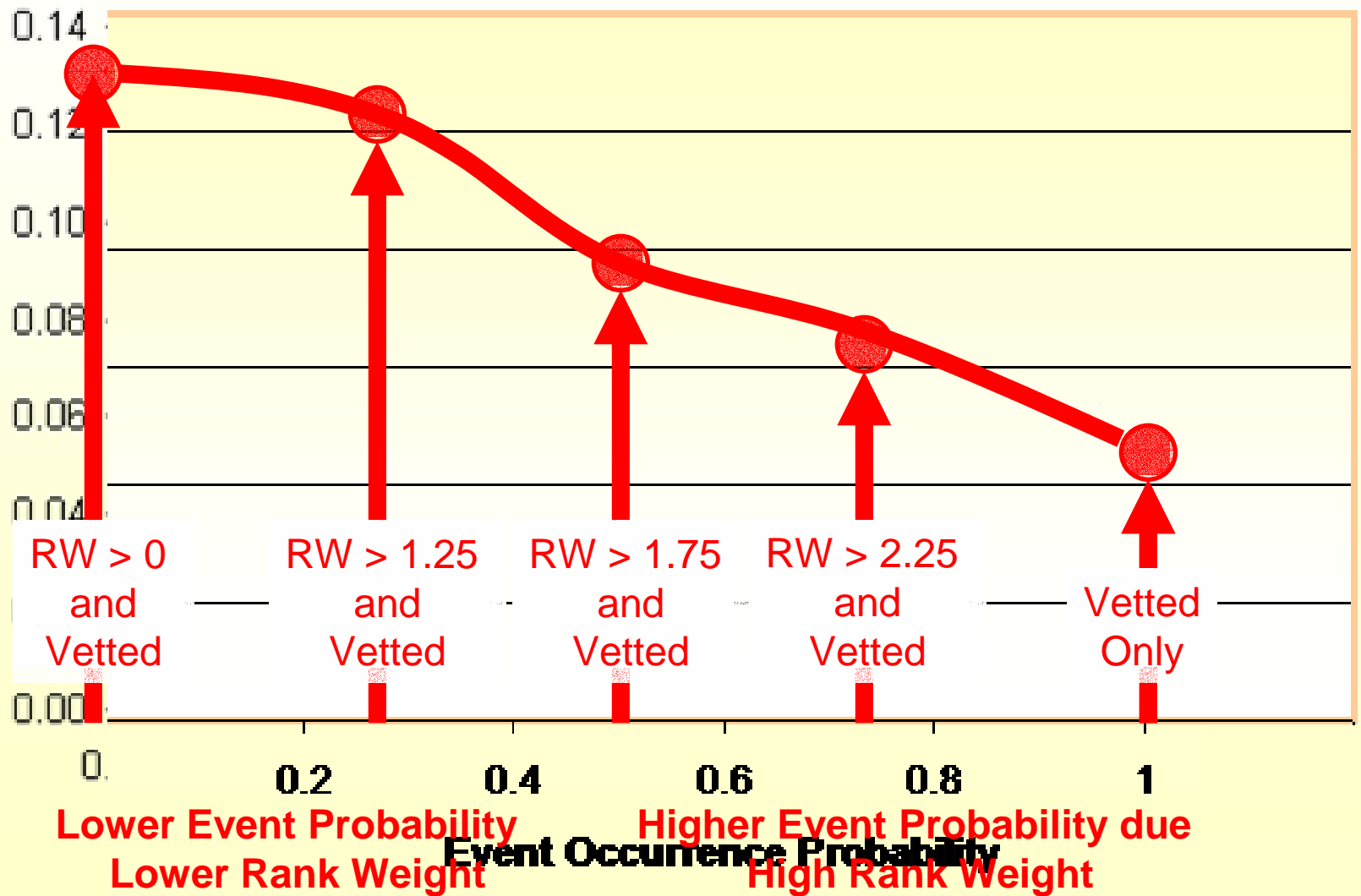
—◆— Total Events

**RW=Ranked Weight = Measure of Severity of Radar Signature**



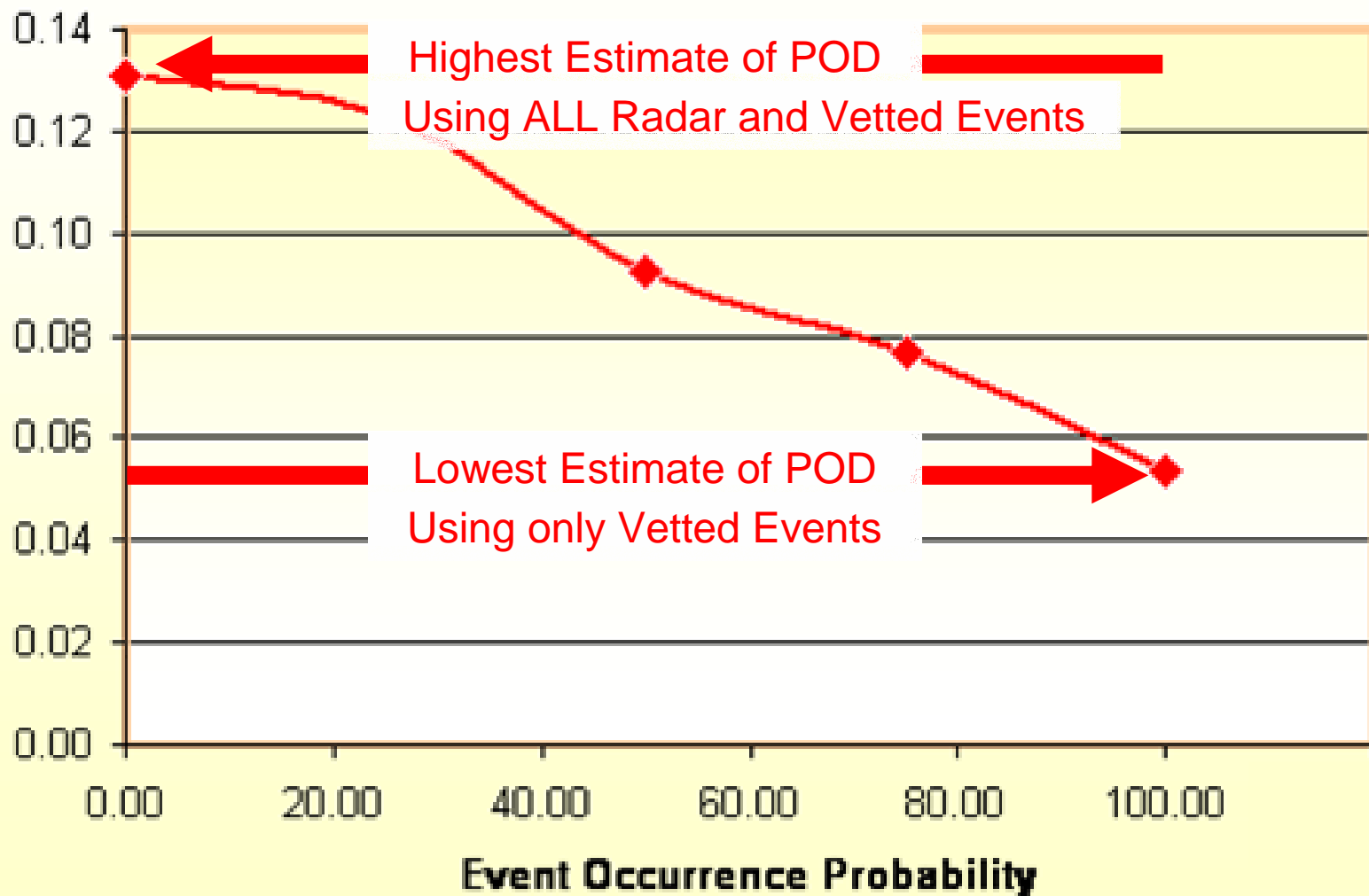
# Message POD - Regions within 200 km of a Radar

—●— Message POD

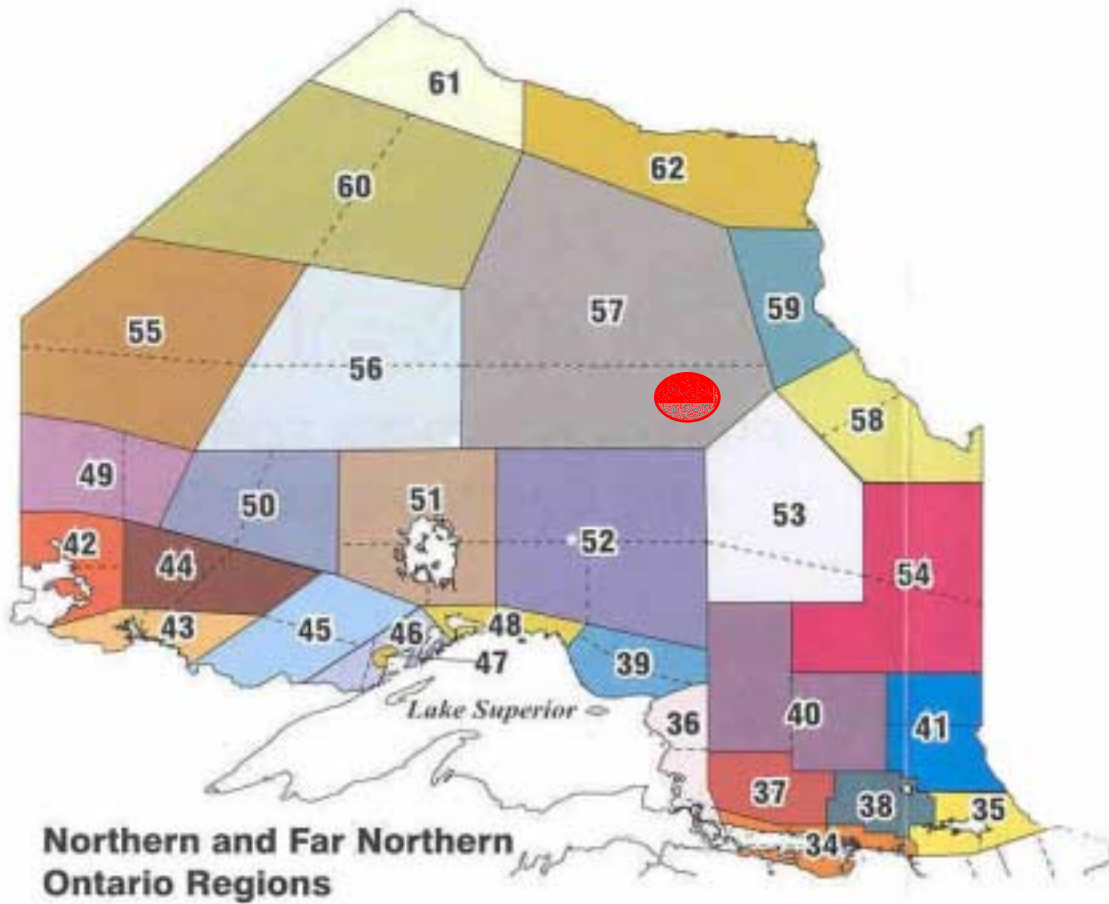


# Message POD - Regions within 200 km of a Radar

—◆— Message POD

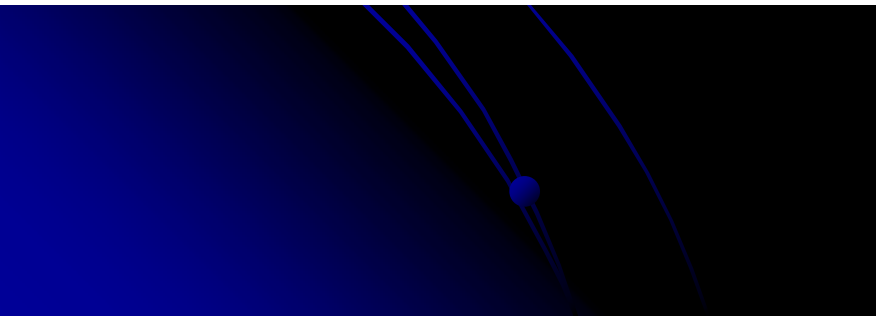
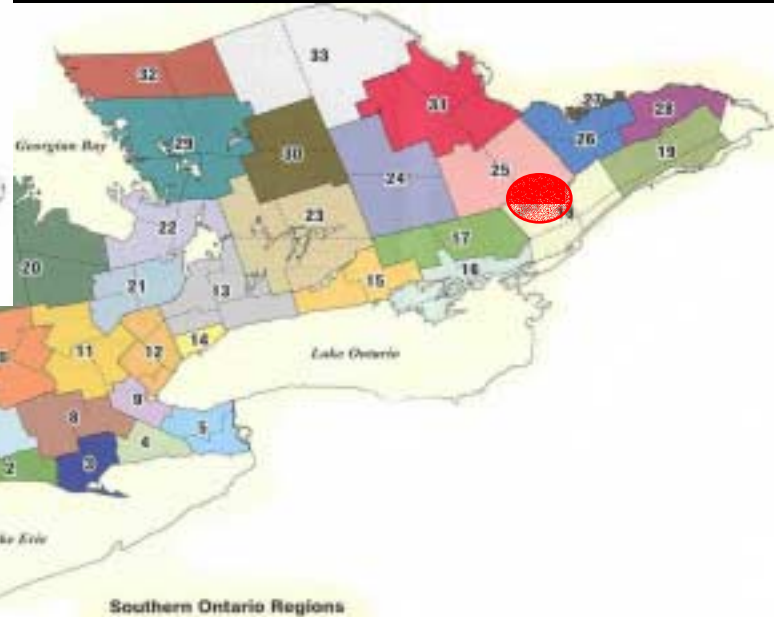


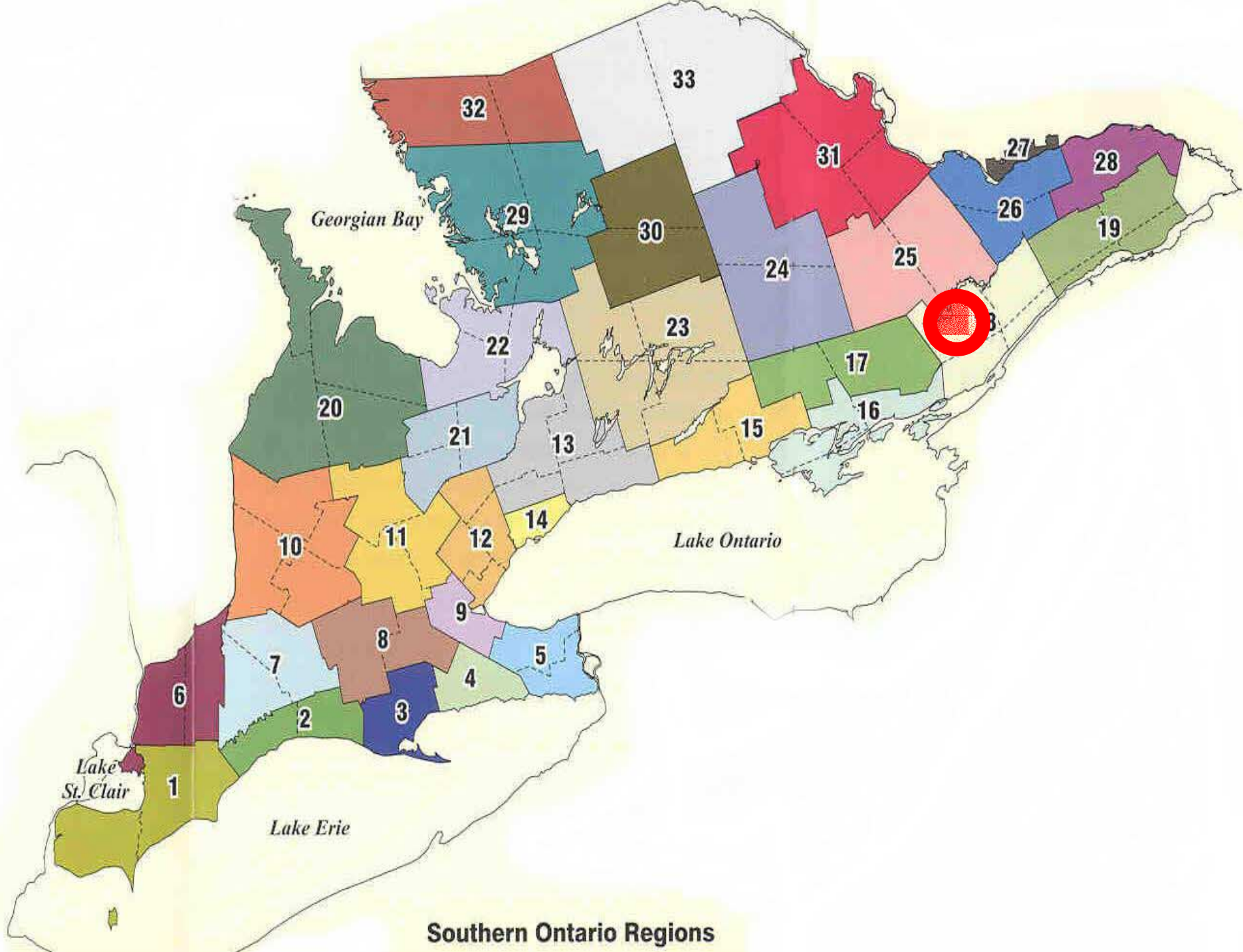
# Small-Parent-Public Scale



Northern and Southern Ontario To Approximate Scale

Public Region Size is NOT equal...  
Reference Lat and Long and Conservative Area Proposal

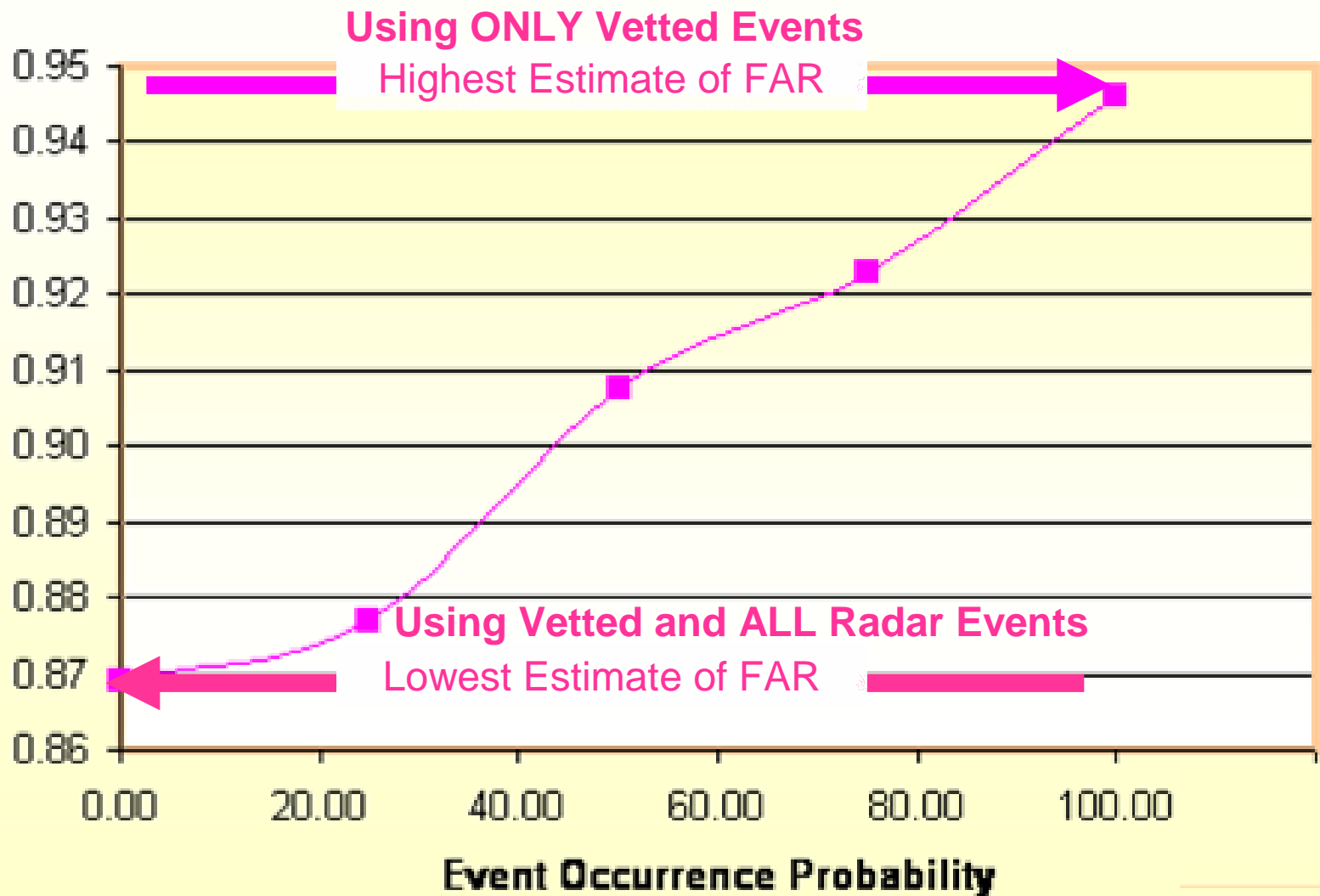




**Southern Ontario Regions**

# Message FAR - Regions within 200 km of a Radar

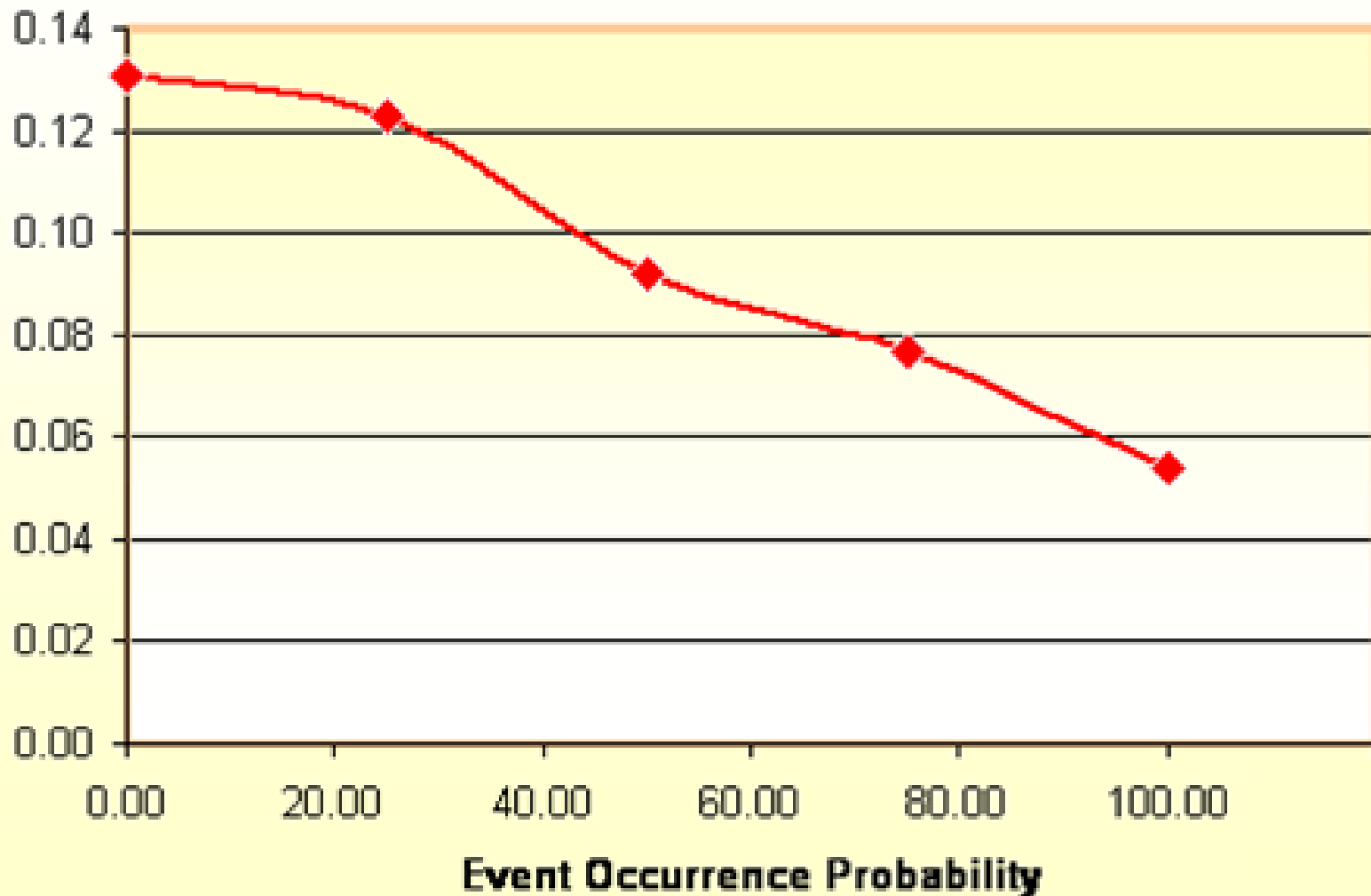
Message FAR



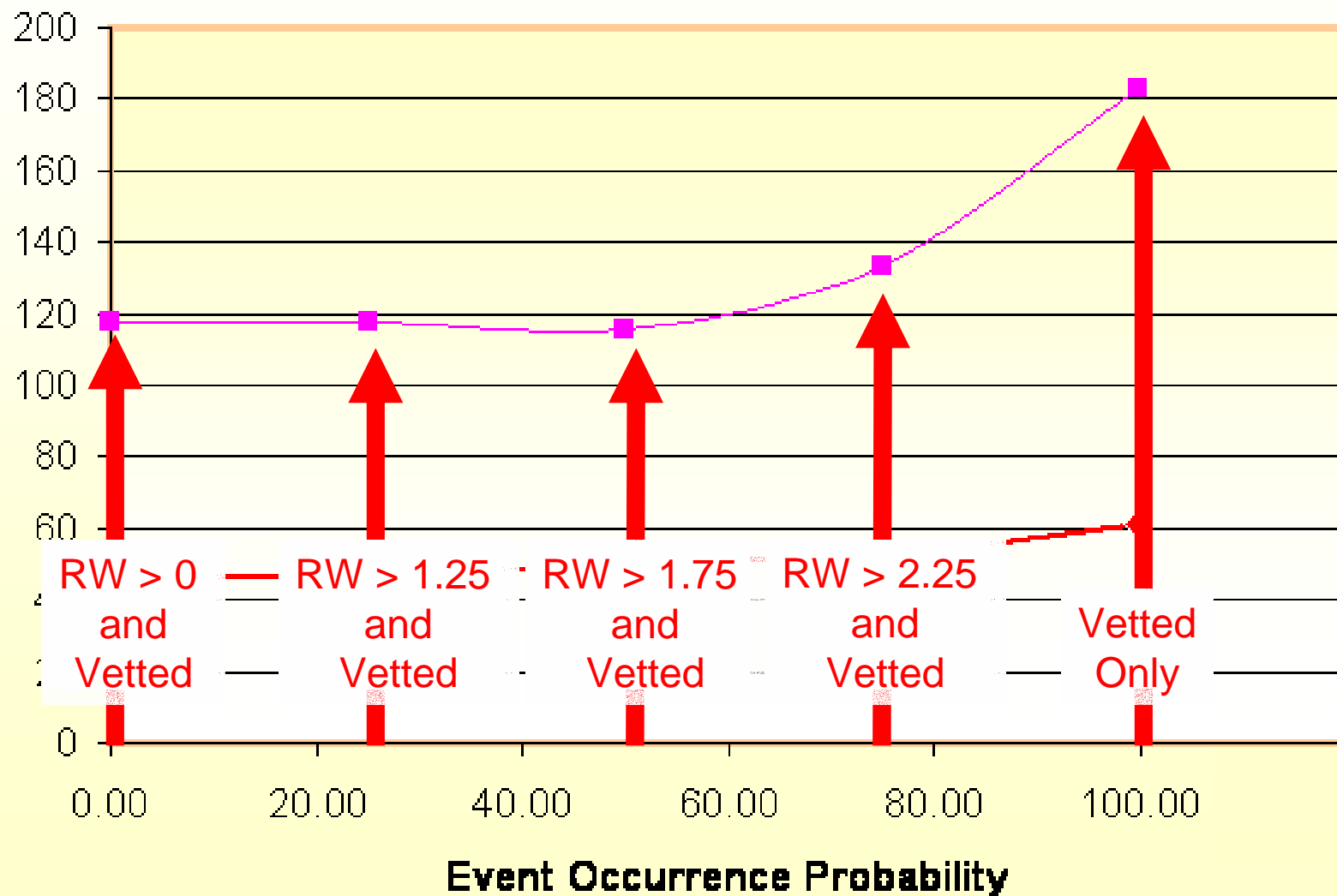
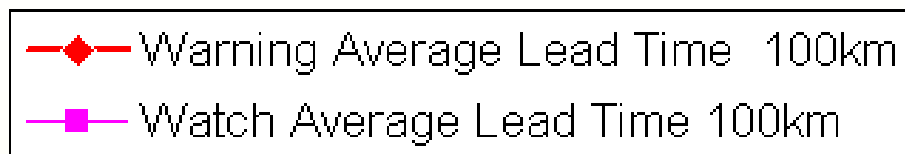


# Message CSI - Regions within 200 km of a Radar

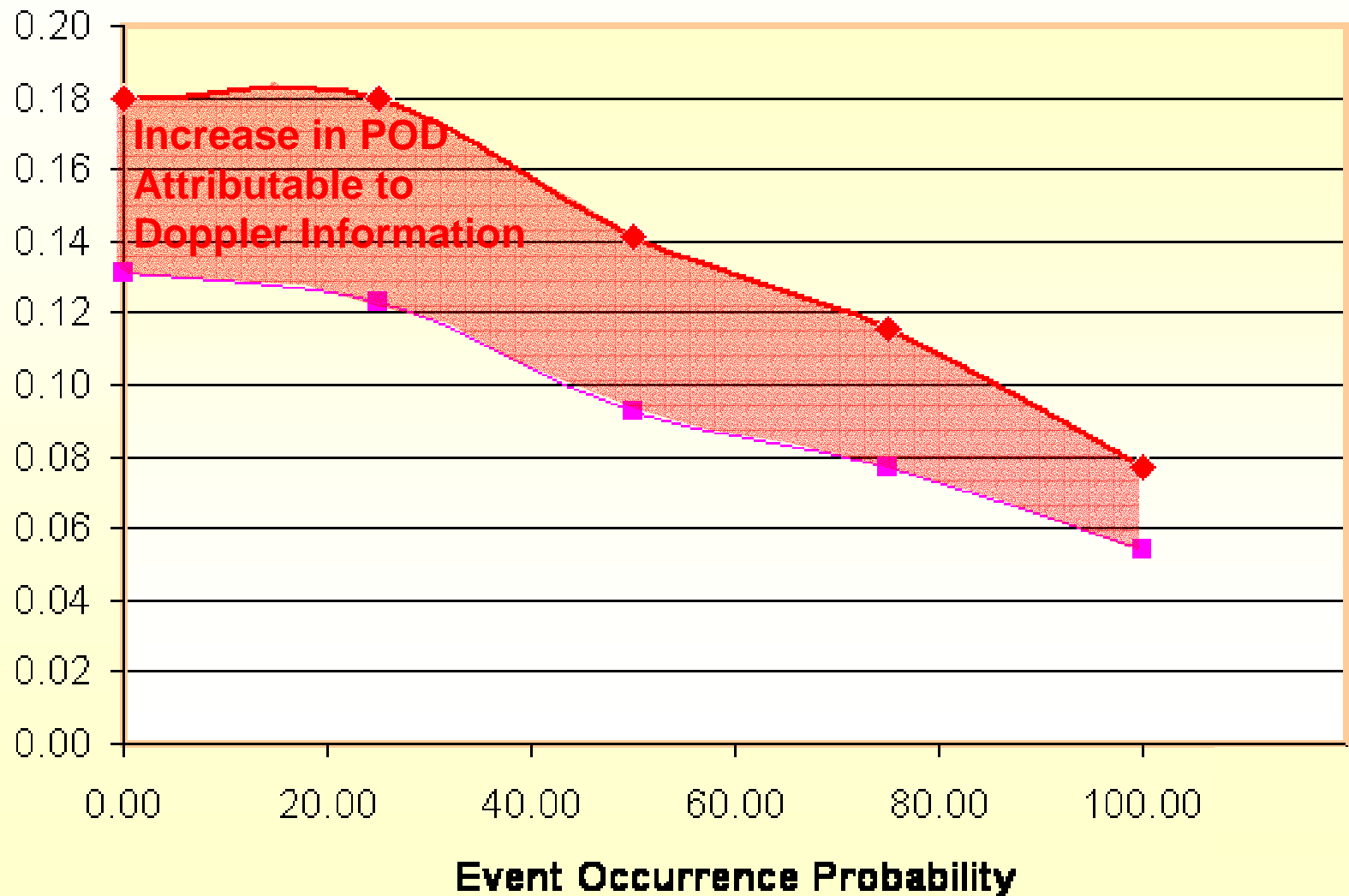
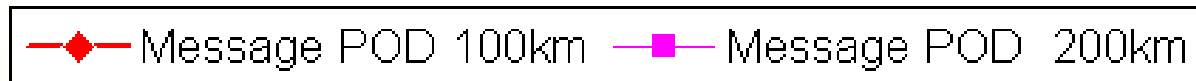
Message CSI



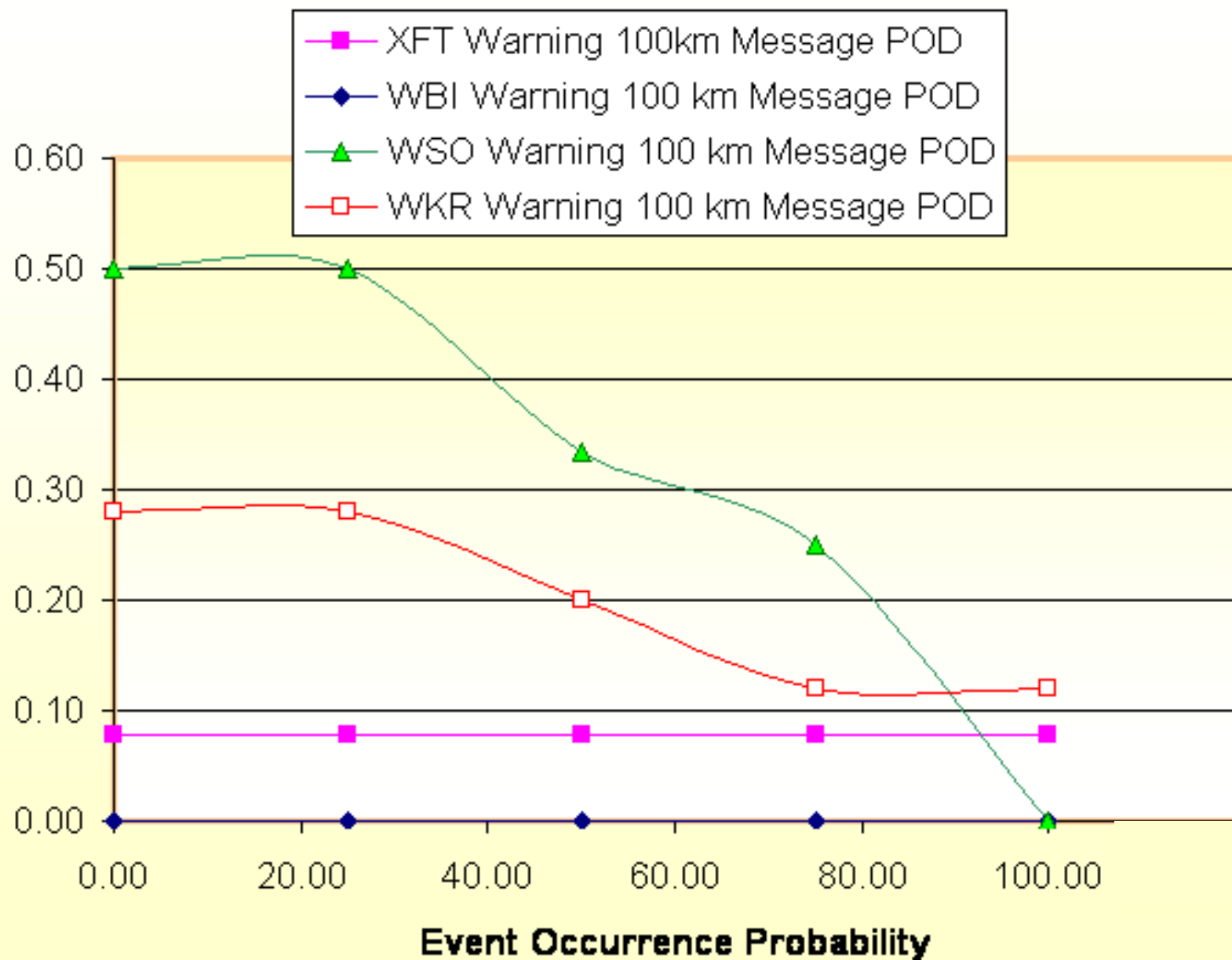
# Warning Lead Time - Regions within 100 km of a Radar



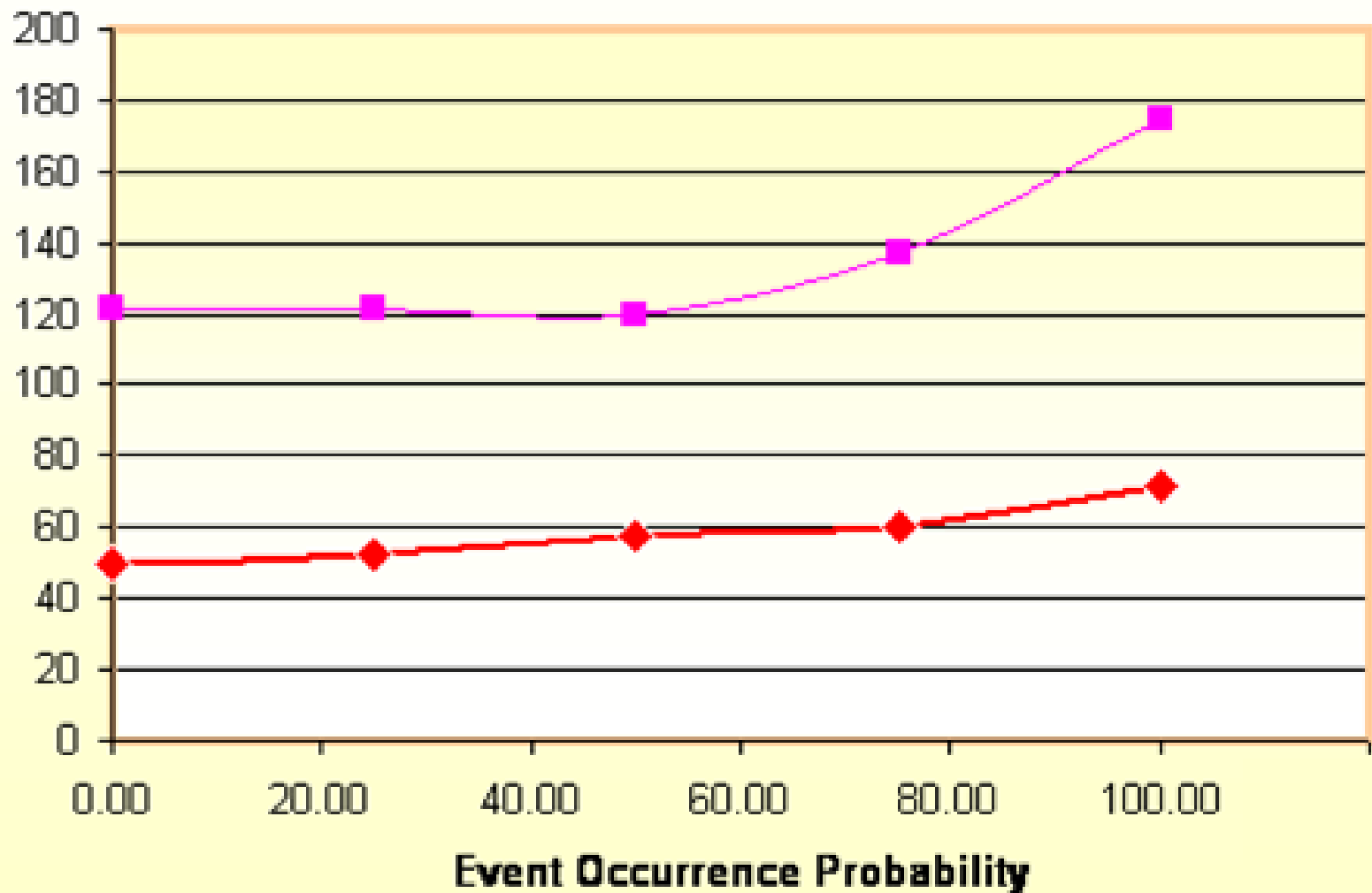
# Warning POD - Regions within 100 km vs 200 km of a Radar



### Warning POD - Regions within 100 km of a Radar

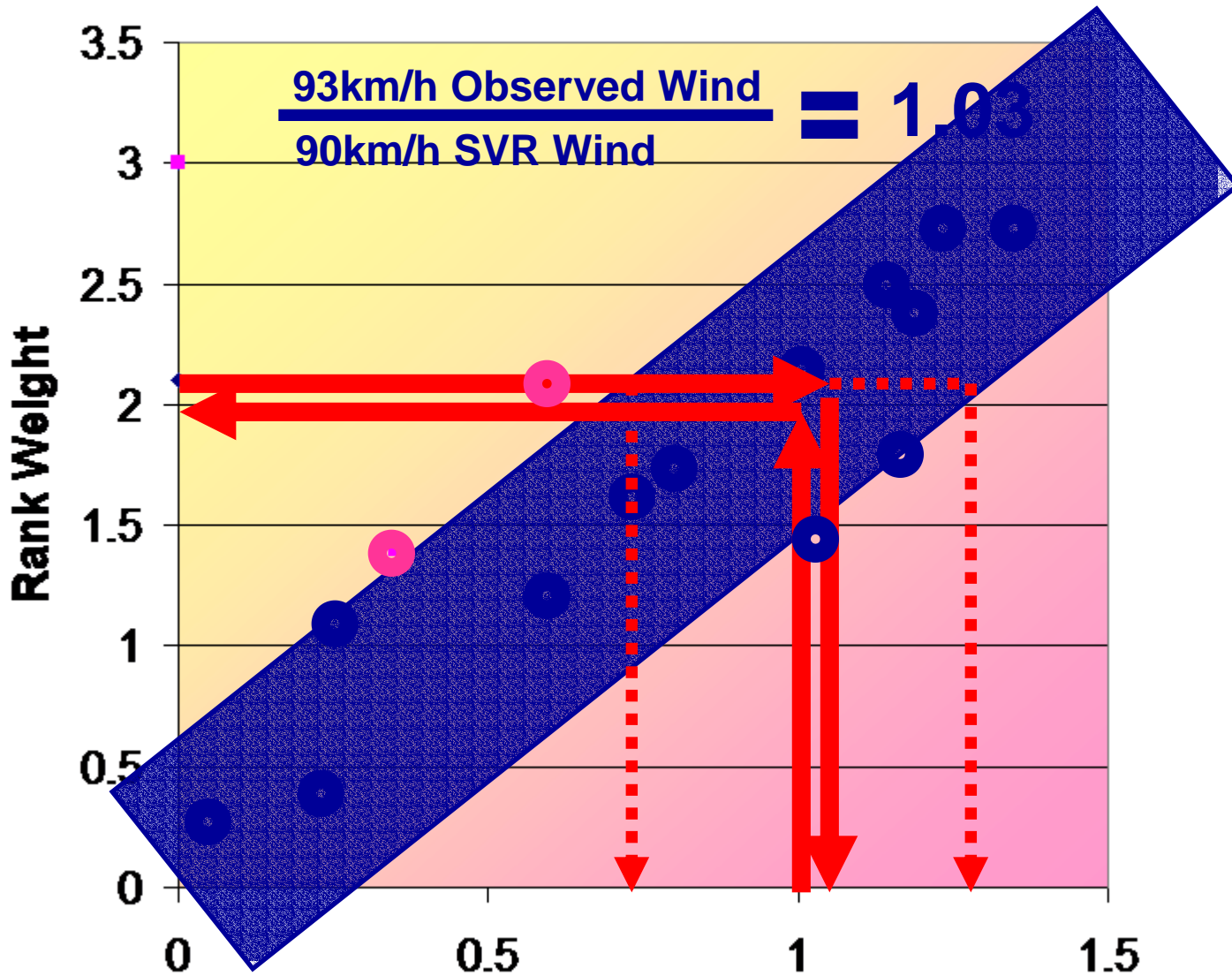


## Message CSI - Regions within 200 km of a Radar



# Vetted Events and URP Events within 5km and 5 min

◆ OBS Wind as percentage of SVR    ■ OBS Hail as Percentage of SVR



# Conclusions

- Performance measurement by only vetted events severely *underestimates* Actual Performance
  - Radar data useful in developing *climatology* of the event in *space and time*
  - Radar signatures need to be quantitatively *calibrated*... more than big is bad...
- 