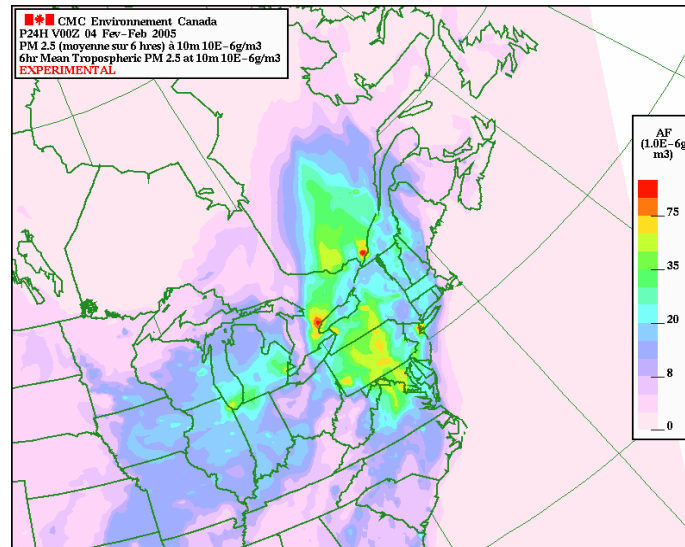


# Canada's National Air Quality Forecast Program



Michael C. Howe

IJC Air Quality Workshop

March 23, 2005



# Presentation Outline

- Overview/Objectives
- Forecast Program
- Challenges
- Partnerships/Collaborations
- Milestones
- Summary
- Questions



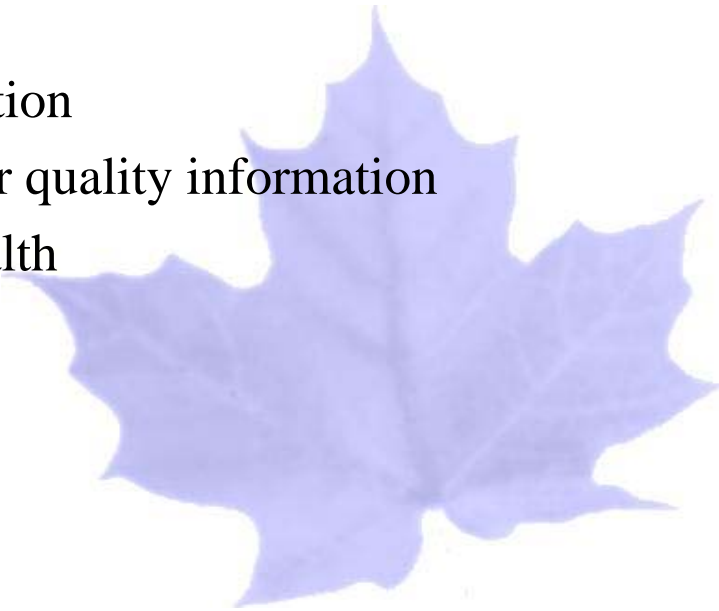
**Overview:** *Canada's Air Quality Forecast Program* is but one of several departmental and inter-departmental activities that contribute to achieving the clean air objectives

#### Intermediate outcomes

- Canadians take action to reduce air pollution
- Canadians understand how to interpret air quality information
- Canadians take action to protect their health

#### Ultimate outcomes

- Air quality is improved
- Effects of air pollution are reduced



# “The survey says” ..... Canadians want and require access to information the future state of the quality of the air that that breathe

Clean Air is major priority of the Government of Canada. As such the *Air Quality Forecast Program* addresses this priority by:

- Providing susceptible individuals with daily air quality forecasts that they can use to reduce their health risks
- Supporting the reduction of pollutant emissions by individuals, organizations and communities i.e. behavioral change
- Supporting provincial & municipal air quality regulations
- Addressing the public “right to know” impending air quality conditions



# Elements of Forecast Program

**Systematic observations**



**Prediction**

**Super Computing Facility**



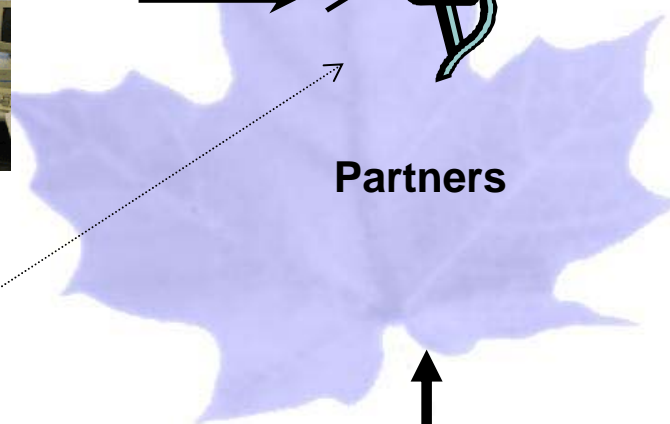
**Regional Weather Service Offices**



**Service Delivery**



**Partners**



**Ontario MOE**



**Research & Development**



Environment Canada  
Meteorological Service of Canada

Environnement Canada  
Service Météorologique du Canada

**Canada**

# Air Quality Forecast Challenges

Mountains  
and  
Rough terrain

Point sources  
And Forest Fires

Summer smog

Summer smog  
Wood smoke



# **Current Program Status: 75% of the Canadian population reside in areas where a *Daily Air Quality Forecast* is available**

- **Atlantic Provinces**
  - Daily GLO forecasts May-Oct inclusive; Winter Dispersion (PM<sub>2.5</sub>) Forecast Pilot
- **Quebec**
  - Daily GLO forecasts available May – Sept inclusive for Quebec City, Montreal, Gatineau
  - Winter Dispersion (PM<sub>2.5</sub>) Forecasts for Montreal available Dec to April
- **Ontario**
  - Daily GLO/PM forecasts produced by **OME** available year-round
- **Manitoba, Saskatchewan & Alberta**
  - Automated Daily GLO forecasts for Edmonton, Calgary, Regina, Saskatoon & Winnipeg; Automated ventilation forecasts – year round
- **British Columbia**
  - Daily GLO/PM forecasts for LFRV, Victoria and the Okanogan Valley
  - Smoke Control forecasts



# Air Quality Forecast information is seen as an important component for the health and quality of life of Canadians as well as national economic competitiveness

- Canadians need a comprehensive, coherent and understandable picture of the future state of the quality of air
- Canadians from all sectors need the tools to readily locate, access and use air quality forecast and health information
- Federal-provincial-territorial/**International** cooperation on air quality information is well established but could be more cohesive **i.e. enhanced coordination between adjacent jurisdictions**
- Discussions should be intensified amongst all stakeholders to address these requirements



# The quality of air that we breathe is and will continue to be a concern to Canadians.....

*Global Quebec* – February 4, 2005

“Smog Blankets Montreal....”

*Windsor Star* – February 4 2005

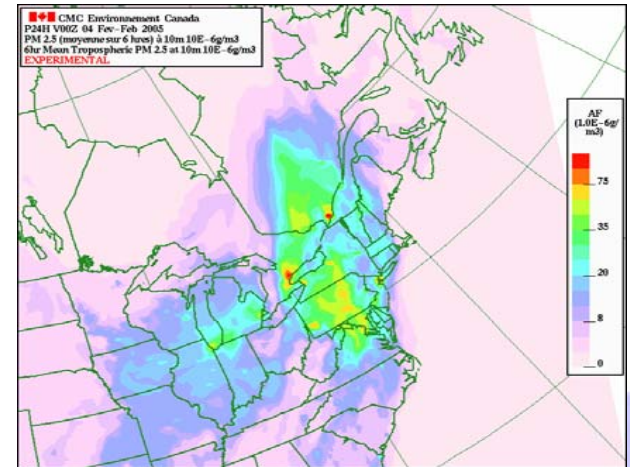
“Unprecedented Smog Watch Issued for Area...”

*Windsor Star* – February 5 2005

“Smog Warning Extended....”

*CFCF Montreal* – February 5, 2005

“Smog Warning in Montreal Could last for days...”



# Partnerships/Collaborations are the “key” to any successful endeavor.....

## NOAA

- MSC/NOAA Operational Air Quality Working Group

- Agreement to enhance collaboration on AQ forecasting
- WG sub-committees now being populated
- Areas of collaboration to include
  - PM2.5 behaviour/modelling/forecasting
  - Data assimilation
  - Model Intercomparison
  - Forest/Wild Fires
  - Intercontinental Transport of Air Pollution
  - Data Management/Streamlining
  - Operational forecast training

- EPA

- Data exchange; AIRNow Ozone/PM<sub>2.5</sub> mapping
- Discussions have begun to develop a more “**formal**” collaborative relationship
- Would like to establish framework similar to the NOAA agreement
- Initial meetings tentatively scheduled for April 2005



## Important Milestones to Date.....

- 1993 Air Quality Advisory Program
- 1997 Atlantic Region Daily Forecast Pilot
- 2002 summertime forecast coverage 67% of population
- 2004 summertime forecast coverage 75%
- **Operational Air Quality Training Program – MSC/NOAA**
- PM included in AQI forecast in BC Ontario and Quebec



## .....Important Milestones to Date

- ***CHRONOS*** 48HR forecast maps for PM and Ozone across North American Domain
- Data assimilation combining **CHRONOS** model output with AIRNOW observations
- **NOAA Agreement**
- **Model inter-comparison with US - ICARTT**
- 2005 - Development of additive health risk-based Air Quality Index



# Summary: Will move forward with implementation of the 4 pillars – Standardization, R&D/Modeling, Outreach and Performance Measurement

- **National standardization** of data/product format and accessibility
  - Transition from a “**weather forecast**” to an “**environmental forecast**”
  - Move to year round forecast production
- Implementation of the health risk-based AQI (proposed 2007)
- Developing methods to increase Canadian's awareness of the use of the *Air Quality Forecast* as a decision-making tool
  - New interactive web-site/consolidation of air quality forecast information
  - Engaging the Warning Preparedness & Outreach Meteorologist community
- Increasing use as a regulatory tool
- Research and Development
  - Model improvements including  $NO_2/SO_2$  forecasting capability/data assimilation
- Product verification and outreach performance measurement will provide required feedback for next steps
- Ongoing collaborative efforts with EPA/NOAA will lead to improved product for the benefit of citizens in both the US & Canada



# Questions?



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**AQ**  
FORECAST PROGRAM

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