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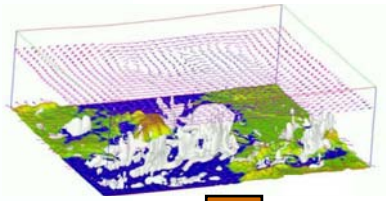
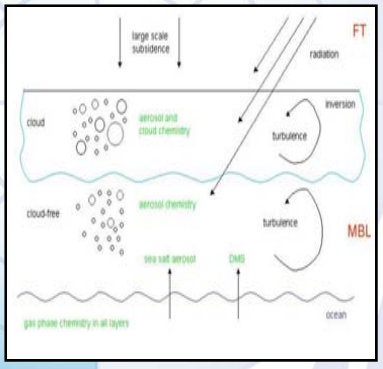
Introduction and Overview of Course

Air Quality Modeling: Improving Predictions of Air Quality (analysis and forecasting perspectives)

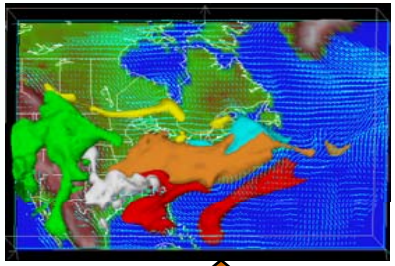
Met model



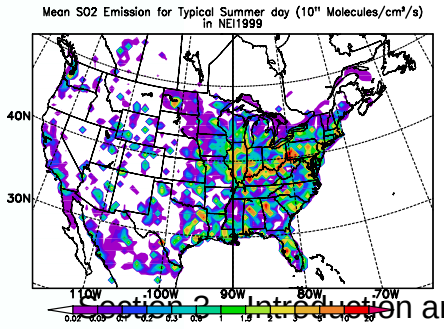
Chemical, Aerosol, Removal modules



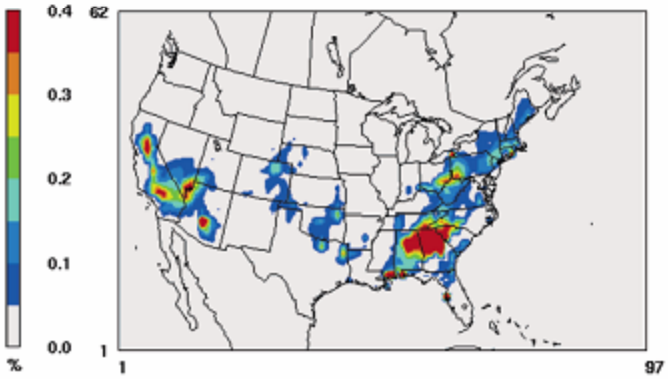
CTM



Emissions

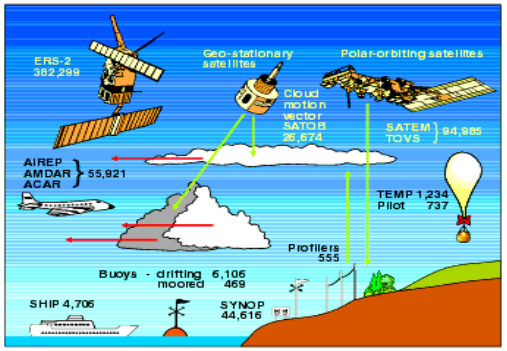


Predicted Quantity: e.g., *ozone AQ violation*



How confident are we in the models & predictions?

Observations



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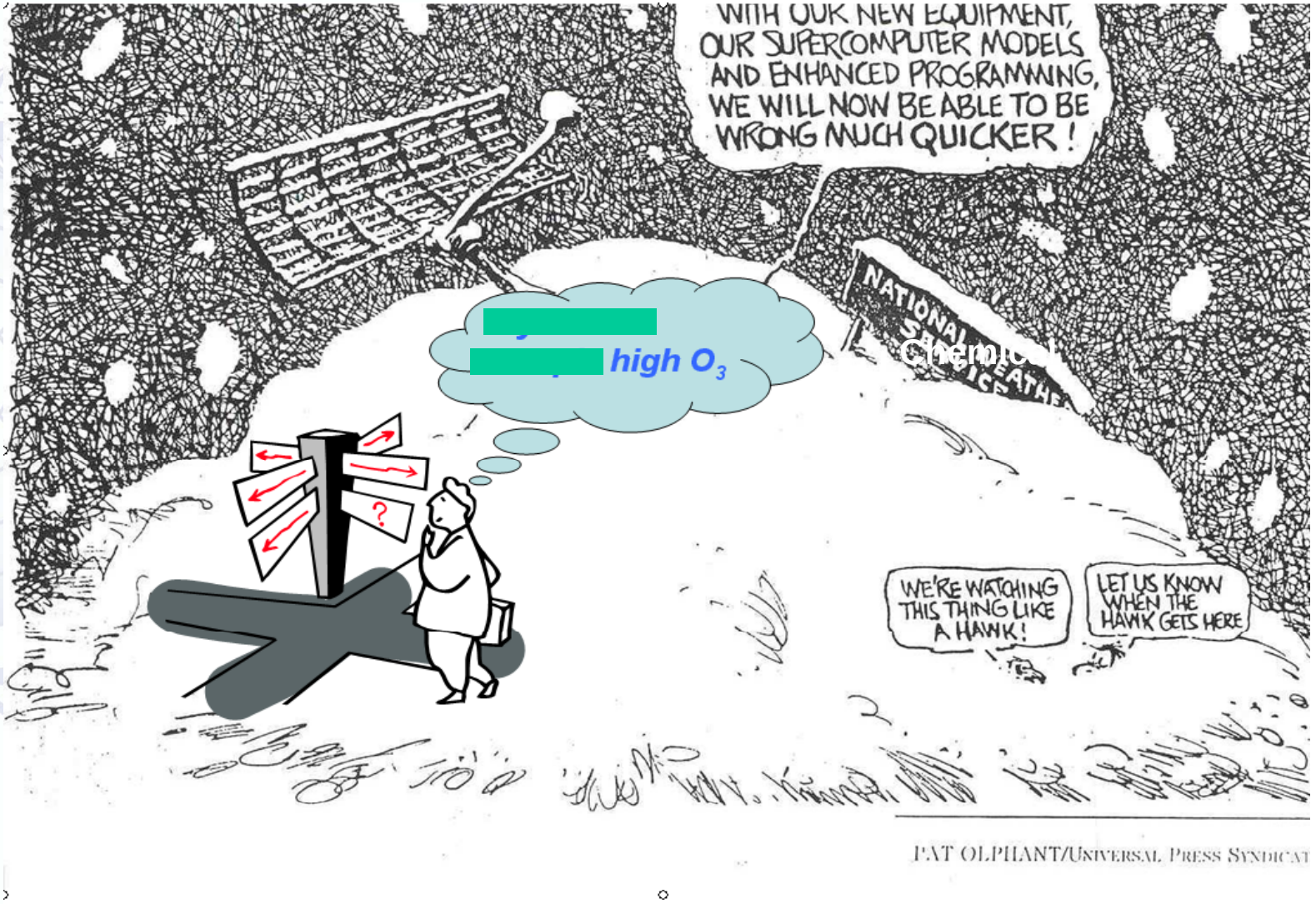
Air Quality Forecasting



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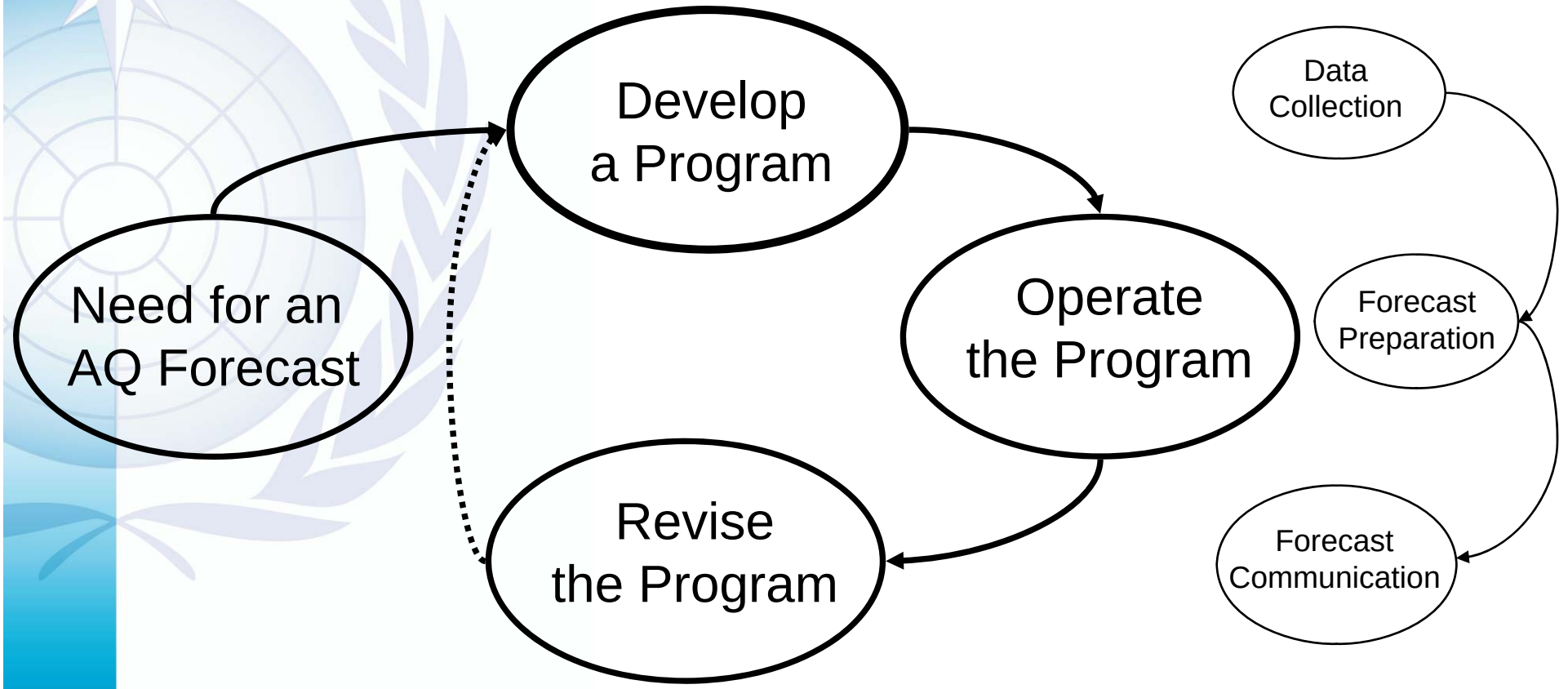
Introduction – Forecasting Programs

The process of developing, operating, and improving an air quality (AQ) forecasting program



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Audience for Course

- Decision makers
  - Overview of air quality analysis & forecasting
  - Uses of air quality models and general steps to develop/improve an air quality modeling program
- Meteorologists and forecasters
  - Overview of air quality emissions and chemistry
  - Discussion of how weather affects air quality
  - Discussion of tools used to forecast air quality
- Air quality scientists
  - Discussion of how weather affects air quality
  - Introduction to varies tools and techniques in air quality analysis

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Introduction (2 of 3)

Predicting weather (and air quality) requires examining information for several different spatial and time scales.

Global

Space: 4,000 km – 20,000 km
Time: 1 - 2 weeks

Synoptic

Space: 400 km – 4,000 km
Time: 1 day – 1 week

Mesoscale

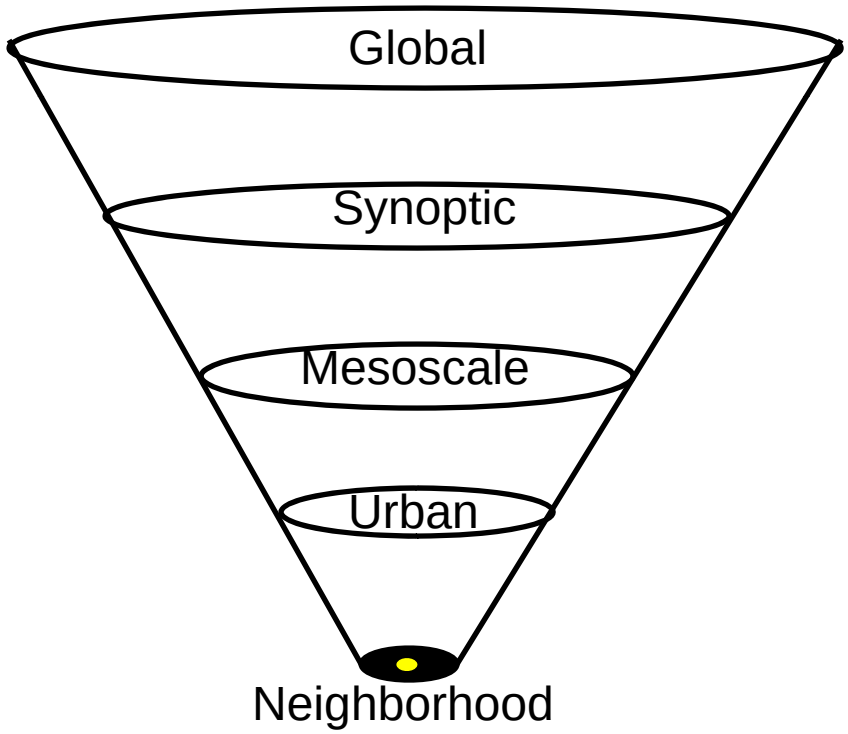
Space: 10 km – 400 km
Time: 1 hr – 1 day

Urban

Space: 5 km - 50 km
Time: 1 hr - 4 hr

Neighborhood

Space: 500 m - 5 km
Time: 1 min – 1 hr



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Day-by-Day Guide (Mon)

- Day 1 (Monday) - Afternoon

I. Meteorological Aspects of Air Pollution

II. Chemical and physical processes impacting air pollution

Break (1530-1545)

III. Emission Inventory Session:

- Emission Inventory: Major Issues, problems and recent development in South Asia
- Emission Inventory: Emission factors and Methodology

IV. Introduction by students on their activities

20.00 Ice Breaker Dinner, hosted by Director, IITM

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Day-by-Day Guide (Tues)

- Day 2 (Tuesday) – Morning

  V. Monitoring

  VI. Air Quality Modeling (AQM) overview

  Break 1030-1100

  - AQM data feeding

  Lunch 1230-1400

  – AQM applications

  – AQM for policy support

  Break 1530 – 1600

  – City applications, modeling needs and integrated modeling

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Day-by-Day Guide (Wed)

VII. Overview of WRF-Chem

VIII. WRF /Chem tutorial Part 1

Break (1030-1100)

IX. Presentation by Venders

- Silicone Graphics Systems India Pvt. Ltd..

– Presentation by M&G analyzer Systems

VIII. (cont) WRF /Chem tutorial Part 1, continued

Lunch 1300 – 1400

– WRF/ Chem tutorial Part 1, continued 15.30 – 16.00

Break 1530 – 1600

– WRF/ Chem tutorial Part 1, continued

Indian Dance programme –Glimpses of India

Special Dinner (Sponsored)

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Day-by-Day Guide (Thurs)

- Day 3 (Thursday) – Morning
  - X. AQ Impacts
  - – Air pollution and agriculture
  - – Air pollution and Health
  - – Air Pollution and respiratory Health
  - Break (1030-1100)
  - XI. WRF/Chem tutorial Part 2
  - Lunch (1300-1400)
  - – WRF/Chem tutorial Part 2, continued
  - Break (1530-1600)
  - – WRF/Chem tutorial Part 2, continued
  - Village tour (Culture of Rajasthan)
  - Banquet (Dinner at Traditional Village Environment) (Choki Dani)

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Day-by-Day Guide (Fri)

- Day 4 (Friday)

  XII. AQ Forecasting

  – Real time air quality forecasts using WRF/Chem

  – AQ Forecasting examples

  Break (1030-1100)

  – AQ Forecasting, continued

  XIII. Concluding

  Lunch (1300-1400)

  End of Workshop

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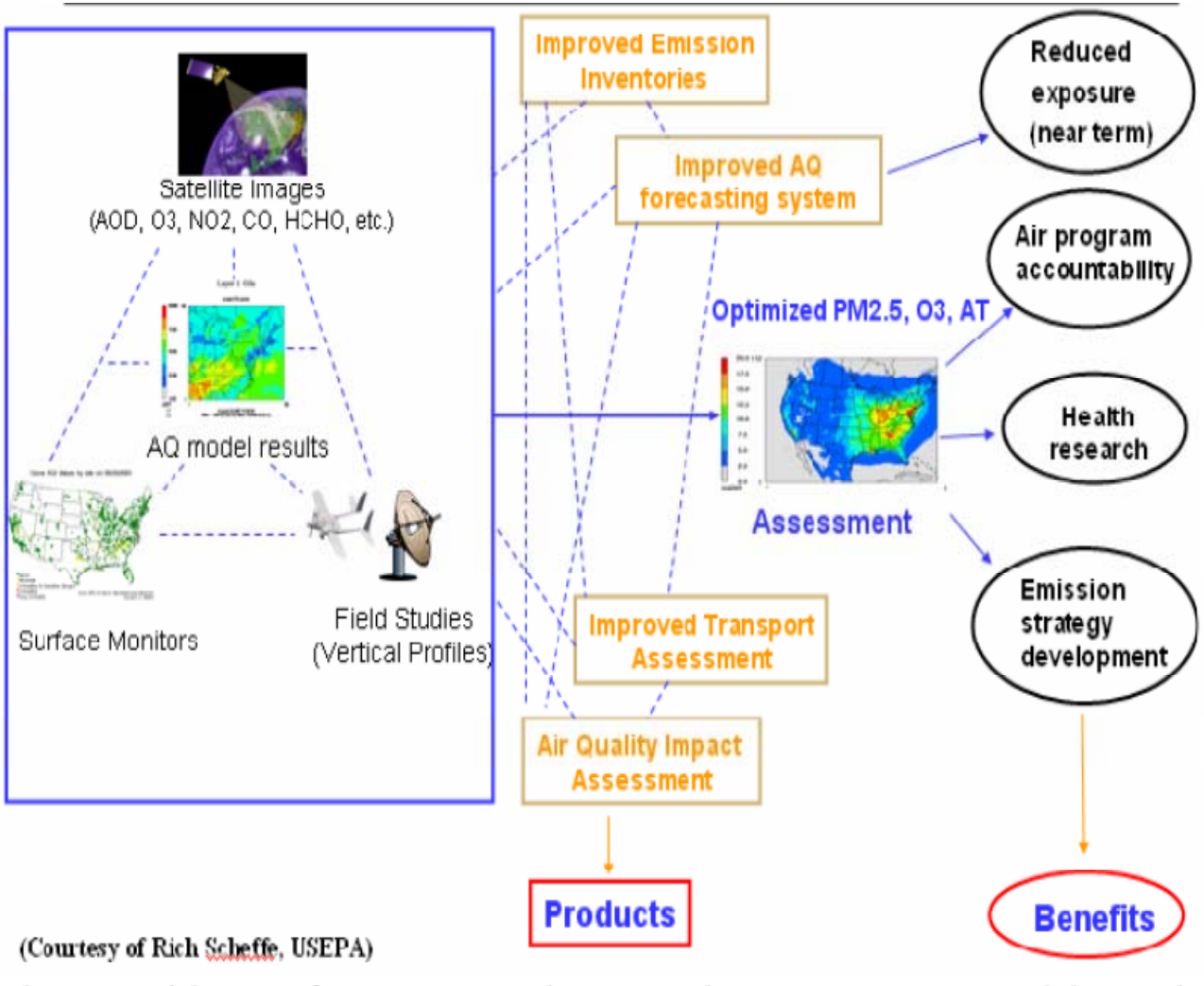
Summary of Course – Introduction to Air Quality Modeling



(Courtesy of Rich Scheffe, USEPA)

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