Transport & Air Mass Characterization

What are the important transport mechanisms and observations during INTEX?

- Long-range transport
    - Asian air
    - Alaskan and Canadian fire plumes
    - Saharan dust
- U.S. continental advection
- Descent associated with Bermuda high
- Vertical mixing
    - Warm conveyer belt lifting
    - Descent associated with Bermuda high
    - Convection
    - Strat-trop exchange
    - PBL to free troposphere (FT) and FT to PBL exchange

Transport Con't

- Long-range transport
    - Asian air
        - Characteristics of Asian air (UCI & UNH)
        - GEOS-CHEM modelling of Asian air contributions over U.S. (Harvard)
        - Representativeness of INTEX data via GEOS-CHEM model (Harvard)
        - CH4 transport from Asia (UNH)
    - Alaskan and Canadian fire plumes
        - Long-range transport of fire plumes (CO) using models and AIRS data (FSU)
        - Regional transport of Alaskan BB and entrainment into PBL using RAQMS (LaRC)
    - Saharan dust
        - Long-range transport of Saharan (LaRC)

Transport Con't

- **U.S. continental advection**
    - **Regional impact of Ohio River Valley on PBL SO2 (GIT)**
    - **STEM model study of source tracers from different regions (U Iowa)**
- **Vertical mixing**
    - **Warm conveyor belt lifting**
        - **Cyclones in context of warm conveyor belt (FSU)**
    - **Convection**
        - **Observed LNOx through convection (FSU)**
        - **Convective exposure time (ARC)**
        - **Asian convection contribution to Asian air (ARC)**
    - **Strat-trop exchange**
        - **STE and mixing with trop. air from RAQMS (LaRC)**
        - **Quantifying strat. O3 contribution to Asian air (UW&LaRC)**
    - **PBL to free troposphere (FT) and FT to PBL exchange**
        - **INTEX-ICARTT team**
    - **Descent associated with Bermuda high (?)**

Transport & Air Mass Characterization

How to do air mass characterizations to capture INTEX observations and relate to sources/sinks and fluxes?

- Air mass characterizations

    - Cross-continental latitudinal O3 and aerosol cross sections (LaRC)

    - Airborne remote and in situ

        - Combination of lidar O3, aerosol scattering and depolarization, and PV distributions yield air mass types and frequency (LaRC)

        - Air mass types defined remotely used to define average air mass compositions from in situ data (LaRC)

    - In situ

        - Use of detection criteria for the following candidate air mass types to be used to define the presence of different air mass types in each in situ sample with confidence est. (URI & All)

            - Types: Asian, BB Plumes, Stratospheric, Clean Marine, Saharan Dust, Urban, Industrial, Biogenic, Convection (?)

Air Mass Characterization, Con't

- **In situ, Con't**

  - **Use of PV and backward trajectories to confirm (or refute) the composition of the air masses (URI & All)**

- **Flux**

  - **Combined lidar O3 and wind cross sections used to get at flux observed on each flight and on average (LaRC)**
  - **RAQMS modeling of O3 and NOx fluxes (LaRC)**

- **Ozonesonde/meteorology analysis in collaboration with IONS data (Merrill et al., request for early publication)**

Integrated Investigations!
Models and Aircraft and Satellite Measurements

We are ready to go, but the data analysis and publication schedule will depend on the timing and amount of the……………

Funding!!!