Photochemistry and Models Working Group

Potential manuscripts ideas were identified

Ideas then grouped topically

Four broad topics identified:

- **Fundamental photochemistry**
- **Convection and UT photochemistry**
- **Photochemical evolution**
- **Regional budgets of ozone and reactive nitrogen**

Primary responsibility (contributors) identified and listed

- **Supporting ideas/possible papers are indented**

There is currently no clear strategy for exploiting non DC-8 data sets

Useful research diagnostics were identified and responsibility assigned for their archival or inclusion in the merged data sets

Fundamental Photochemistry (11):

Fried (Heikes, Crawford)-Formaldehyde distributions during INTEX

Fried-Unexpected formaldehyde abundance in marine BL

Brune (Crawford)-Oxidation chemistry and oxidant levels in INTEX vs previous campaigns

Brune-Use of higher resolution obs to assess impact on oxidation

Brune (Cohen)-Vertical distribution of ozone production in the BL

Crawford-NMHCs impacts on photochemistry

Wingenter (Crawford)-Iodine sources and photochemistry in the marine BL

Lefer (Carmichael,Crawford)-Impact of clouds and aerosols on photochemistry

Cohen (Dibb, Wennberg)-Isoprene nitrate yields & BL chemistry

Wennberg/Crounse-High resolution H2O2 obs in clouds

Cohen-Reactive nitrogen balance and budget

***Huey (Cohen,Brune)-Pernitric acid during INTEX**

***Wennberg/Crounse (Heikes, Jaegle, Crawford)-Peroxyacetic acid during**

***Fast-track request**

Currently unaddressed: Acetaldehyde

Convection and UT photochemistry (3) (Mailing List suggested):

Qinbin-INTEX data and consistency with GEOS-Chem UT O3
(Crawford, Browell, Clarke, Cohen, Anderson, Wingenter, O'Sullivan, Blake, Carmichael, Chatfield, Pierce, Hudman)-convection and photochemical clocks (complications from mixing)
Fried-Formaldehyde in UT (convective contributions)
Heikes (Carmichael, Crounse, Fried, Dibb, Weber)-Effects of precipitation and physical removal on photochemically generated species

Photochemical Evolution (4):

G. Pfister/Chatfield-Photochemical evolution of biomass burning plumes
Cohen (Brune, Huey, Crawford, Wingenter)-DC-8 near-field lagrangian opportunities and chemical evolution
Millet (Fried)-Formaldeyde, acetone and methanol during INTEX and implications for satellite obs
Hudman-Cross-Atlantic Lagrangian chemical evolution

Regional budgets of ozone and reactive nitrogen (9):

Crawford-Ozone budgets across air mass types
Pierce (Cohen, Avery, Dibb)-Regional O3/NOy budgets during INTEX
Pierce (Cohen, Avery, Dibb)-Large-scale Lagrangian source-receptor
Hudman (Cohen)-Reactive nitrogen budgets and export efficiency
Carmichael-Regional photochemistry and the impact of reanalysis
Carmichael (Crawford, Lefer, Hudman)-Constrained eulerian and 0-D modelling differences
Carmichael-Predictability of ozone and SOA (improvements from INTEX?)
Carmichael-Impact of lateral boundary conditions on regional ozone
Jaegle-Asian influence on ozone and reactive nitrogen over N. America
Chatfield-Pollution aging during INTEX, comparison with CMAQ

Still lack clear strategies for integrating other data sets with the DC-8 to broaden photochemical analyses:

AIRMAP
AIRNOW (speciated PM2.5)
IONS
NOAA P-3

Research tools for inclusion in the data merges:

Biomass Plume Encounter Index (a challenge to the BB plume group)
Planetary Boundary Layer Index (Pierce, Crawford, Fuelberg)
Cloud Impact Factor (Lefer)
Time from convection and lightning intensity (Porter/Fuelberg)
Mixing diagnostic (Brad Pierce)
Distance/Time downwind of cirrus encounters (Westberg?)

Other tools:
Biomass Burning emission grid and index (Turquety)
Model Curtains and products along flight tracks (should also produce for P-3B)
Cloud Impact Factors along trajectories (Carmichael, Lefer)