Airborne DIAL Ozone & Aerosol Measurements During INTEX-B

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Ozone & Aerosol Measurements

- Nadir & Zenith Ozone Profiles
- Nadir & Zenith Aerosol Backscatter at 588 and 1064 nm
- Nadir & Zenith Aerosol Depolarization at 588 nm

Derived Parameters

- Aerosol Backscatter Profiles Corrected For Aerosol Extinction
- Chemical Tropopause Altitudes & Column Ozone Values
- Average Latitudinal & Longitudinal Ozone and Aerosol Distributions
- Estimate of Stratospheric Contribution to Tropospheric Ozone Budget

See Posters by Carolyn Butler et al. & Marta Fenn et al.  INTEX-B Data Workshop, 6-8 March 2007
Flight 12, 25 April 2006 - Hawaii Local #2
Flight 16, 7 May 2006 - Alaska Local #2

Aerosol Scattering Ratio (1064 nm)

Ozone Mixing Ratio, ppbv

Aerosol Depolarization %
Average Latitudinal Ozone Distribution

Average Ozone (ppbv)

All

Troposphere
Average Tropospheric Ozone & Aerosols

121-185 W

Average Ozone (ppbv)

<table>
<thead>
<tr>
<th>0</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>100</th>
<th>125</th>
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</thead>
</table>

Aerosol Scattering Ratio (1064 nm)

<table>
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<tr>
<th>0.01</th>
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101-86 W

Average Ozone (ppbv)

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Average Longitudinal Tropospheric Ozone

Average Ozone (ppbv)

0  25  50  75  100  125

40-62 N

20-40 N
Average Tropospheric Ozone Contributions

All Ozone in Trop.

Non-Strat. Ozone

Average Ozone (ppbv)

Average Potential Vorticity (10^4 Km^2/(kgxs))
Prelim. INTEX-B Phase-2 Results

• Obtained large-scale O₃ and multi-wavelength aerosol scattering and depolarization characteristics on all flights.
• Long-range transport of aged and "fresh" Asian pollution in eastern Pacific observed in O₃ and aerosol data.
• Initiate comparison of observed tropospheric distributions of O₃ and aerosols with chemical transport models.
• Validation of TES, OMI, & MLS O₃ measurements are ongoing with very successful results.
• Average latitudinal and longitudinal variations of O₃ and aerosols have been derived and stratospheric contribution to tropospheric O₃ budget has been assessed.
• Air mass categorization based on O₃, aerosol, and meteorological analyses has just been initiated.

All DIAL data in archive & images via http://asd-www.larc.nasa.gov/lidar/

See Posters by Carolyn Butler et al. & Marta Fenn et al.