• Local emissions and long range transport of pollution from Asia contributes to climate change in California.

• Collect an annual record of the vertical distribution of aerosols, ozone and solar fluxes over central CA.

• Mar 2008 – Feb 2009
• Collect an annual record of aerosol, black carbon, ozone, $\text{NO}_x^*$ and $\text{CO}^*$ pollution concentrations from surface up to 12,000 feet asl.

• California generated pollution vs. long-range pollution from other regions.

• Look at the impact of pollution layers on radiative forcing to quantify the amount of solar dimming and heating rates.
Asian particulate pollution transported to North America
Influence of Asian black carbon increases with altitude.

Hadley et al., JGR 2007
CAPPS Project Summary

- Fly missions twice a month (flexible)
- Missions will climb to 12,000 ft asl.
- Missions will last approx. 4-5 hours.
- Two aircraft will be launched (aerosol and gas measurements)
- Flights at NASA Dryden
- Mar 2008 – Feb 2009
Measurements collected during CAPPS

- Aerosol Number Concentration
- Aerosol Size Distribution (0.3 – 3 μm)
- Aerosol Absorption/Black Carbon Concentration
- Ozone*
- $\text{NO}_x$/NO/NO$_2$*
- Solar Flux
- Temperature, Pressure, Relative Humidity

* New instrumentation
Miniaturization of Instruments to fit aboard a UAV

Corrigan et al, ACP 2008
Integration of miniaturized instruments into UAV payload
New miniaturized ozone instrument compares well to commercial instrument.

![Graph showing comparison of Ozone Concentration (TEI) and Ozone Concentration (UAV-2B Tech), both in PPB.](image)