LP Ozone Product (Version 2)

- Separate retrievals performed with UV, visible wavelengths to cover ~10-60 km altitude range.
- Primary product is ozone density profile on altitude scale. Mixing ratio product created using GMAO temperature data.
- V2 product released in June 2014, operational processing continues to present. No aerosol correction, no merging performed.
- These data continue the long-term record of stratospheric ozone, and show the evolution of vertical structure of Antarctic ozone hole.

V1.0 Aerosol Product

- Ozone Mapping and Profiler Suite (OMPS) is currently flying on Suomi National Polar-orbiting Partnership (NPP) satellite to measure profile ozone and aerosol extinction.
- Limb Profiler (LP) instrument views Earth’s limb looking backwards along orbit using 3 slits (along track, 4.25° to each side).
- Hyperspectral measurements simultaneously cover 290-1000 nm in wavelength and 0-80 km in altitude every 19 seconds.
- Spectral resolution varies from 1 nm (UV) to 30 nm (IR).

Future Plans

- Develop 2-D retrieval algorithm that accounts for line-of-sight variations in aerosols, ozone, pressure, and temperature profiles.
- Use limb retrievals to constrain nadir retrievals.
- Extend ozone profiles to surface.
- Correct for dynamical features (e.g. QBO) that are not resolved by nadir-viewing instrument.
- Simultaneously derive ozone and temperature profiles between 40-65 km with ~2 km vertical resolution.
- Retrieve aerosol Ångström exponent from LP data and validate using solar occultation measurements from SAGE III on ISS. See Roell et al., poster P263.

Polar Mesospheric Clouds (PMCs)

- PMCs are observed at 80-85 km in polar regions (>50° latitude) during summer months.
- Enhancement of radiance signal by PMC in foreground can affect LP measurements at tangent point down to 45-50 km.
- PMCs are much brighter in Northern Hemisphere for LP due to phase function of small ice particles.
- PMCs are observed by Suomi NPP and JPC systems.
- LP profile retrievals assume cloud-free scene. Need to identify any cloud in field of view to set appropriate lower limit retrieval.
- Difference in vertical gradient of radiances between two wavelengths (674 nm, 868 nm) can distinguish top of cloud from background aerosol layer.
- LP cloud detection results are consistent with CALIPSO data for zonal mean coincidences.