Potential impact of Asian convection on trace gas distributions in the UTLS during POSIDON

Elliot Atlas[1], Sue Schauffler[1,2], Rei Ueyama[3], Maria Navarro[1], Valeria Donets[1]

[1]*RSMAS, University of Miami, Miami, FL, USA*
[2]*NCAR ACOM, Boulder, CO, USA*
[3] *NASA Ames Research Center, Moffett Field, CA, USA*

Measurement of trace gases, including such compounds as non-methane hydrocarbons, hydrochlorofluorocarbons, halogenated solvents, methyl halides, etc., can be used to characterize source emissions from industrial, urban, biomass burning, or even marine origins. During one flight of the POSIDON mission, we measured from the Whole Air Sampler substantial enhancements of trace gases in the UTLS region that suggested transport from emissions in SE Asia. The layer of enhanced trace gases was located between potential temperatures of 360 – 380 K (approx. 14 – 16 km altitude). Based on the chemical fingerprint of the trace gases, a source from biomass/biofuel burning is suggested, though some urban/industrial emissions were also enhanced. Back trajectories and convective influence analysis indicate sources in SE Asia and approximately 10 day transport to the tropical Pacific.