POSIDON

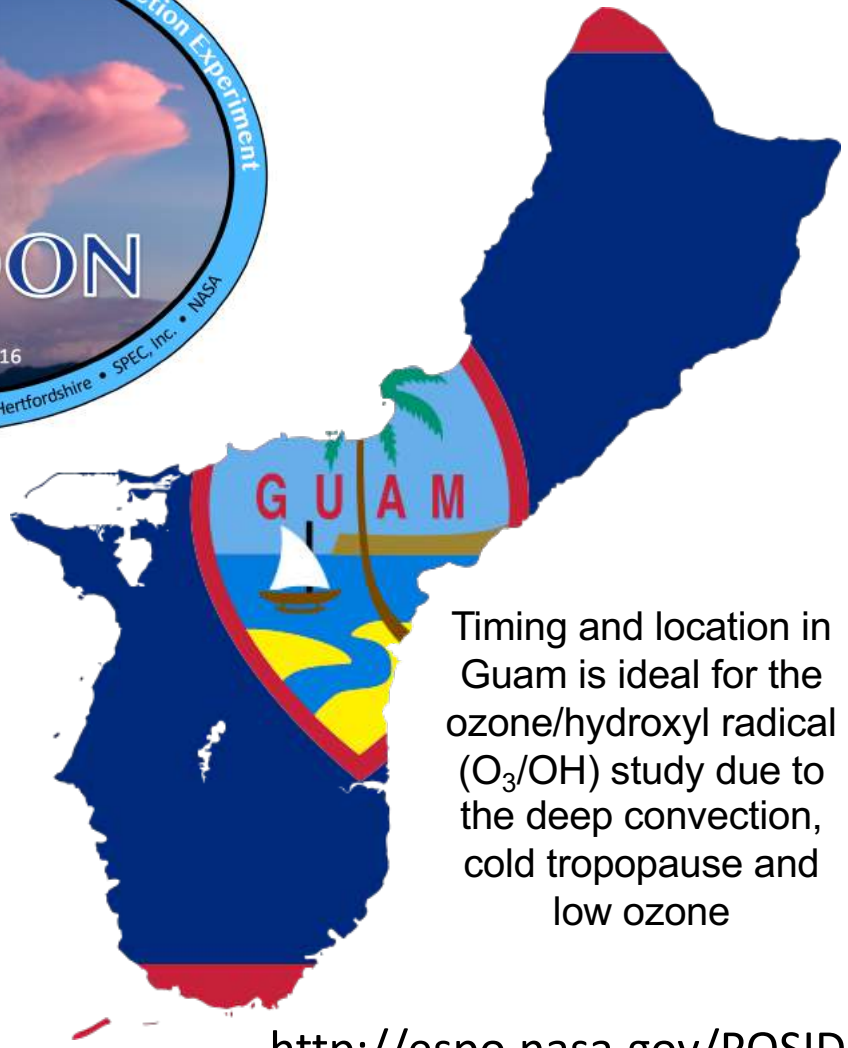
Pacific **O**xidants, **S**ulfur, **I**ce, **D**ehydration, and c**ON**vection experiment

A WB-57F high-altitude research science mission in Guam in October 2016

Science Mission Goals

- Investigate low ozone (O_3) and evaluate the hypothesis of a minimum hydroxyl radical (OH) impacting very short-lived species (VSLS)
- Investigate the transport and chemistry of sulfur species
- Assess the validity of a global chemistry transport model projections of sulfur emissions on stratospheric sulfate aerosol
- Obtain measurements of the microphysical properties and water vapor content of anvil cirrus clouds

Anvil cirrus clouds regulate water vapor entering the stratosphere



Timing and location in Guam is ideal for the ozone/hydroxyl radical (O_3/OH) study due to the deep convection, cold tropopause and low ozone

http://espo.nasa.gov/POSIDON

The WB-57 is a two-crewmember, high-altitude research aircraft that can reach altitudes of over 60,000 feet.
http://jsc-aircraft-ops.jsc.nasa.gov/wb57/

Pilots wear a full pressure suit, similar to space shuttle astronaut suits, that weighs 31 pounds. The suits provide pressured oxygen equivalent to a sea level environment.

Instruments

- DLH: Diode Laser Hygrometer - water vapor – G. Diskin (LaRC)
- Ice Habits: P. Lawson (SPEC)
- MMS: Meteorological Measurement System – P. Bui (ARC)
- NOAA CSD: – Ozone, water, sulfur dioxide, and particles– T. Thornberry (NOAA)
- PANTHER: PAN and Trace Hydrohalocarbon ExpeRiment – J. Elkins (NOAA)
- SID3: Small Ice Detector 3, 1-100 micron cloud probe – J. Ulanowski (Univ. of Hertfordshire)
- WAS: Whole Air Sampler – E. Atlas (Univ. of Miami)
- Balloonsonde – water vapor - D. Hurst – (NOAA)

Management

Project Science: E. Jensen (ARC) & R. Gao (NOAA)
Project Management: Marilyn Vasques, ESPO (ARC)
Aircraft Management: WB-57 Program (JSC)

This project is supported by the Atmospheric Composition Program: K. Jucks (NASA HQ)

Helium-filled balloons carry sondes that relay data on pressure, temperature, ozone, humidity and particles. The balloon rises for 2 hours and bursts at 115,000 feet.