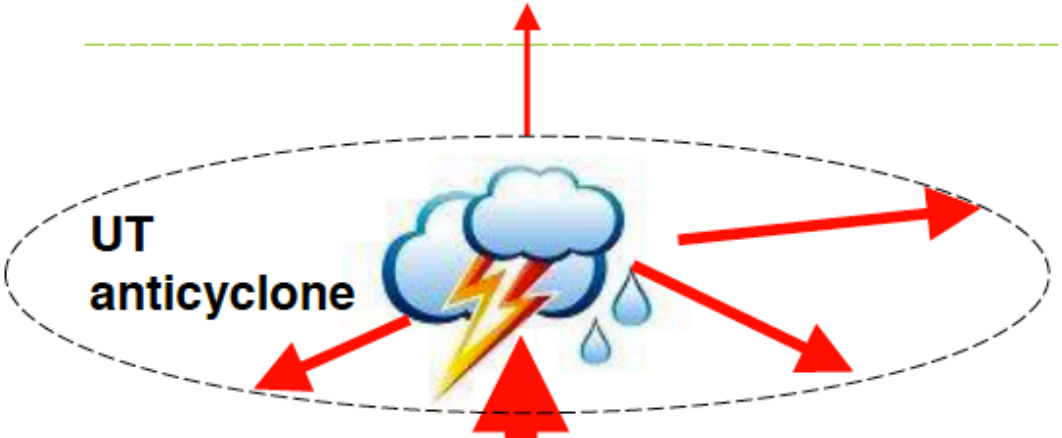
## PI ideas on science goals & flight planning: SE US Chemistry

- BL Chemistry & satellites:
  - Develop a consistent data set for BVOC-NOx-O3 distribution & chemistry
  - How reliable are sat derived formaldehyde and NO2 columns
  - How reliably can you relate HCHO columns to BVOC emissions
  - How does BVOC-NOx chemistry impact O3 over SE US
  - what is the impact of pollution incursions (urban, power plants etc) on chemistry in this region
  - How well can we relate the behavior of OA to BVOC-NOx chemistry
- Deep Convection
  - Can we conclusively relate the UT O3 maxima to chemistry associated with surface biogenic/anthropogenic precursors
  - Is the UT O3 maximum also elevated in aerosol and what is the composition
  - What are the scavenging efficiencies of gases and aerosols during deep convection and cloud interactions

# Central questions for Southeast US chemistry

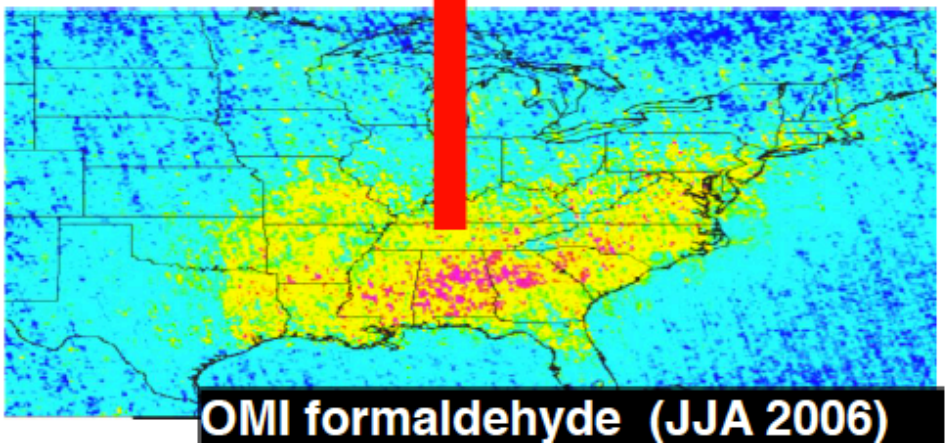
What is the delivery of $H_2O$, other gases to the lower stratosphere by deep convection, and what are the implications for ozone loss?

*tropopause*




What is the aerosol/chemical aging of convective outflow in the UT anticyclone?

How efficiently are gases and aerosols scavenged in deep convection?




How does human influence affect biogenic VOC (BVOC) chemistry with implications for organic aerosols (OA) and ozone?

# Ideas discussed & debated

- City and power plant plume aging and interactions with SE US BVOC
- Observational data to validate HCHO/NO2 sat column retrievals & Polarimeter algorithm developments
- Houston plume and SEAC4RS-DISCOVER-AQ activities
  - Relate AOT to in situ aerosol observations
  - PANDORA-4STAR NOx studies
- AERONET retrievals aided and tested by DC-8 Observations
- ER-2/DC-8 coordination for strat injections of halogens-water