

## Flight Report – SEAC4RS ER-2, September 11, 2013

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Purpose of flight: The science goals for this flight were to: 1) underfly CALIPSO and collect coincident data, 2) acquire aerosol retrieval data over two mobile AERONET sites, 3) observe clouds that have been exposed to smoke and clouds that were not exposed to smoke, and 4) acquire high altitude data and profile data on return to Houston.

Pilot: Denis Steele

Takeoff: 11:30 CDT

Duration: 7.6 hours

### Notes:

The ER-2 flew first toward southern Missouri to set up for a north-south run along the CALIPSO track. On the way to Missouri, the ER-2 performed a dip down to about 45 kft to sample ozone and water vapor gradients in the lower stratosphere. After this, the ER-2 climbed to nominal altitude of about 65 kft and proceeded southward along the CALIPSO track. Along the track, there was a relatively small amount of cirrus with mostly scattered Cumulus clouds along the track. After flying along the CALIPSO track, the ER-2 proceeded to then fly over the mobile AERONET station at Baskin, LA and the AERONET station at Leland, MS. Very little to no cirrus clouds were present over these sites with along scattered Cumulus clouds observed along these legs. After these AERONET legs, the ER-2 then flew a racetrack pattern oriented E-W over northern Arkansas with 150 km long legs. This racetrack was designed to sample smoke and convective clouds impacted by smoke on the eastern portion and convective clouds not impacted by smoke on the western side. It is unclear the extent to which this was achieved as the aerosol optical thickness (AOT) observed above the Upper Buffalo AERONET site along the western portion of this track was similar, if not higher, than the AOT that was observed over the Leland AERONET station located near southeastern Arkansas. Consequently, there was no large E-W gradient in AOT that had been anticipated. The ER-2 then flew smaller 75 km leg racetrack located over western Arkansas to observe convection and convective outflow in conjunction with the DC-8 and Lear Jet. The ER-2 then returned to Ellington.

Aircraft and instruments: All instruments appear to have worked nominally as far as limited in-flight and quick-look analyses showed. All instruments are ready for the next flight.

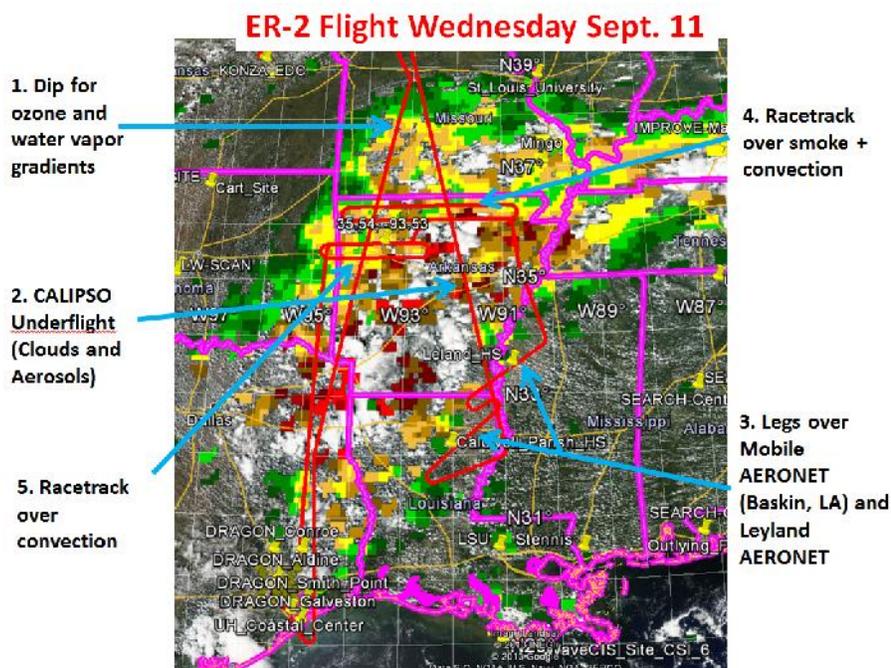


Figure 1. Flight track of ER-2 from September 11 overlaid on Aqua MODIS image showing clouds and color-coded AOT values.