

Flight Report – SEAC4RS ER-2, September 4, 2013

Prepared by: Richard Ferrare (richard.a.ferrare@nasa.gov)

Purpose of flight: The science goals for this flight were to sample the life cycle of marine cumulus clouds including its anvil. A secondary goal includes 150 km flight legs along the principle plane for radiation measurements. The flight was to also attempt acquisition of remote sensing measurements over convection along the CALIPSO/CloudSAT overpass at ~19:22 UT.

Pilot: Dean Neeley

Takeoff: 12:46 UT

Duration: 8.4 hours

Notes:

ER-2 first flew ESE over the Gulf to meet the DC-8 and fly principal plane legs over convective outflow cirrus. There was only thin cirrus in this early portion of the flight, but soon the aircraft encountered extensive cirrus from nearby convective systems. The aircraft were loosely coordinated along the principal plane for the radiation run. Satellite imagery showed that convection along the CALIPSO/CloudSAT track was dissipating and so the CALIPSO/CloudSAT track was abandoned for the aircraft to pursue other objectives. After flying the principal plane legs, the ER-2 attempted to fly convection with the DC-8. These legs were first oriented along the principal plane but then were adjusted to match the orientation of the convection and/or the path of the DC-8. The ER-2 flew these legs while the DC-8 attempted to locate and pursue convective towers. After the DC-8 and Lear Jet had determined a suitable location to pursue convection, the ER-2 then flew to this location and flew three 50 n. mile legs over this point. On the return to Ellington, the ER-2 climbed to 65 kft, dipped to 43 kft, then climbed back to 61 kft before the final descent. A full set of MMS maneuvers was performed at 41 kft on the return to Ellington.

Aircraft and instruments: All other instruments appear to have worked nominally as far as limited in-flight and quick-look analyses showed. INMARSAT had a problem during flight, but came back up after a power cycle. All instruments are ready for the next flight.

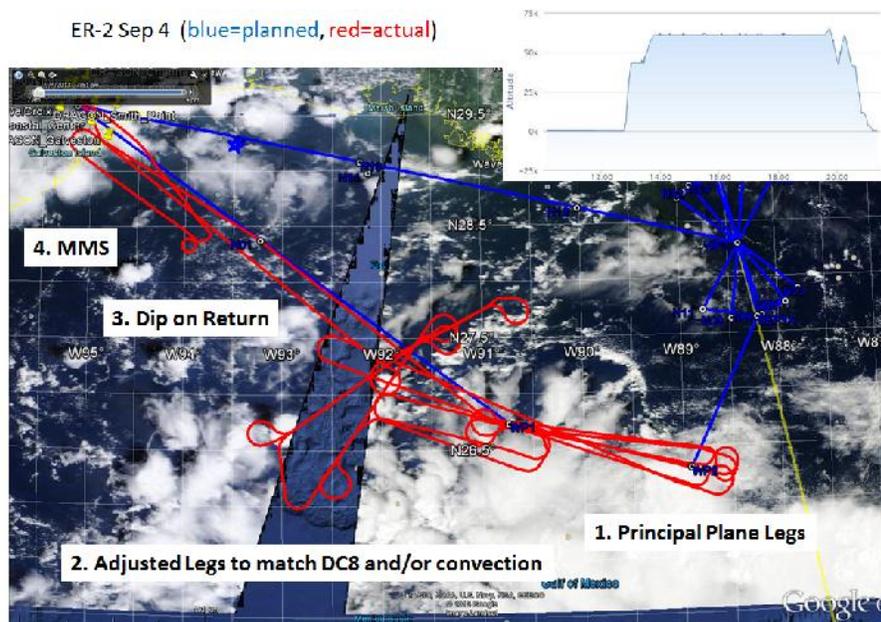


Figure 1. Planned and actual flight tracks of ER-2 overlaid on Terra image. Inset shows the altitude profile of the ER-2.