

TC4 ER-2 Test Flight: July 9, 2007
Flight Summary

Flight Scientists: S. Platnick, P. Newman

Sortie: 07-916

Pilot: Denis Steele

Takeoff (DFRC): 0917 PDT

Landing (DFRC): 1517 PDT

Duration: 6:00

Objectives:

1. Second check out of all instruments (exceptions: EDOP and MTP).
2. Fly towards upper/mid-level cloud systems off southern Baja in search of TC4-like scenes.
3. Underfly Aqua satellite for:
 - a. S-HIS and MAS radiometric calibration comparisons with MODIS clear sky (S-HIS, MAS) and cloudy sky (MAS) scenes of opportunity.
 - b. Comparison of S-HIS (cloud top properties) and MAS (cloud top properties, optical/microphysical properties) cloud retrievals with MODIS, CPL, and CRS.
4. Test of REVEAL system for CPL (AMPR and S-HIS communication not completed as of test flight).
5. Test of UHF Guard Channel interference (thought to be ground loop in right wing pod – correction from 7 July flight summary notes). Note: VHF Guard Channel will be used during Cost Rica operations.
6. Overfly JPL Table Mountain Facility at request of Ken Jucks for UV-Vis spectrometer comparison.

Satellite Coordination:

Aqua: Overpass at 1404:30 PDT (2104:30 UTC) off Channel Islands.

Flight Plan Summary (see map):

Overfly Table Mountain out of DFRC.

Fly south along Baja coast. Expect mid/upper-level clouds along the way from convective activity on the Mexican mainland. Southern most portion of leg is expected to encounter mid/upper-level from oceanic convection.
Fly towards Channel Islands to intercept Aqua overpass (3 legs).

Cloud Conditions during Flight:

Boundary layer marine Sc along southern coastal CA and Channel Islands. Cirrus and/or mid-level clouds off Baja California, in addition to some layer Sc.

Forecast: NCEP high cloud forecast (12 hour forecast from 0600Z, valid at 1800Z 2007-07-09) is shown in the figure with the flight track superimposed. Forecast calls for upper level clouds towards the southern end of the Baja peninsula (verifying in GOES-WEST IR loop at 1400Z). Winds barbs at 200 hPa are also superimposed on the map. The winds are generally weak, with some possible advection of high cloud at the northern end of Baja towards Southern California (again, some evidence of this behavior in the GOES IR imagery).

Flight Objective Status (preliminary):

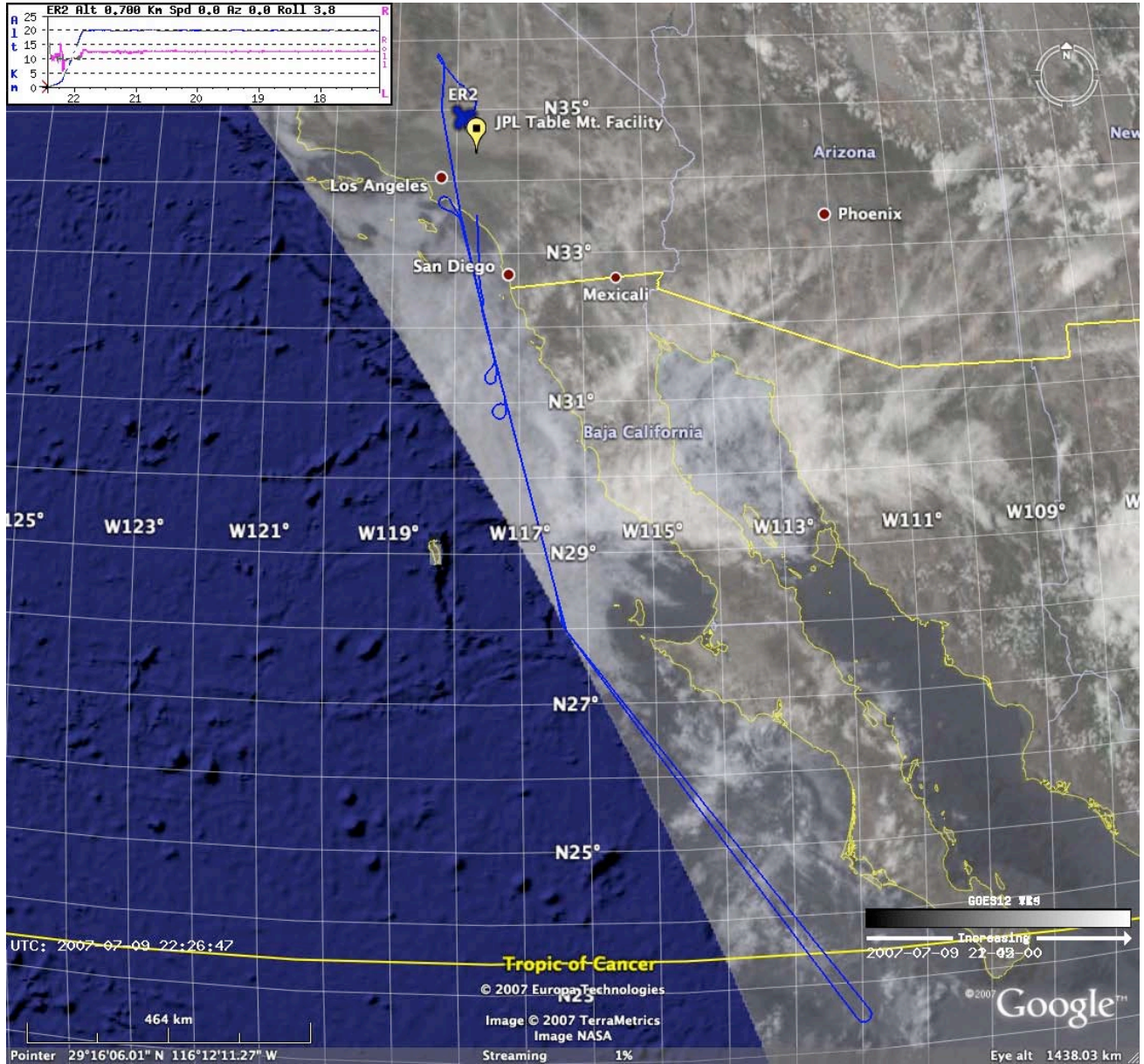
Southern Baja track: Test of all instruments for what appeared to be a variety of mid/upper-level cloud scenes.

Aqua underpass: Mostly marine Sc with some mid/high cloud in southern part of the underpass legs. The Sc scenes will be useful in comparing MAS calibration with MODIS. MAS/S-HIS cloud top property comparisons with MODIS and CPL can be done for all underflight legs.

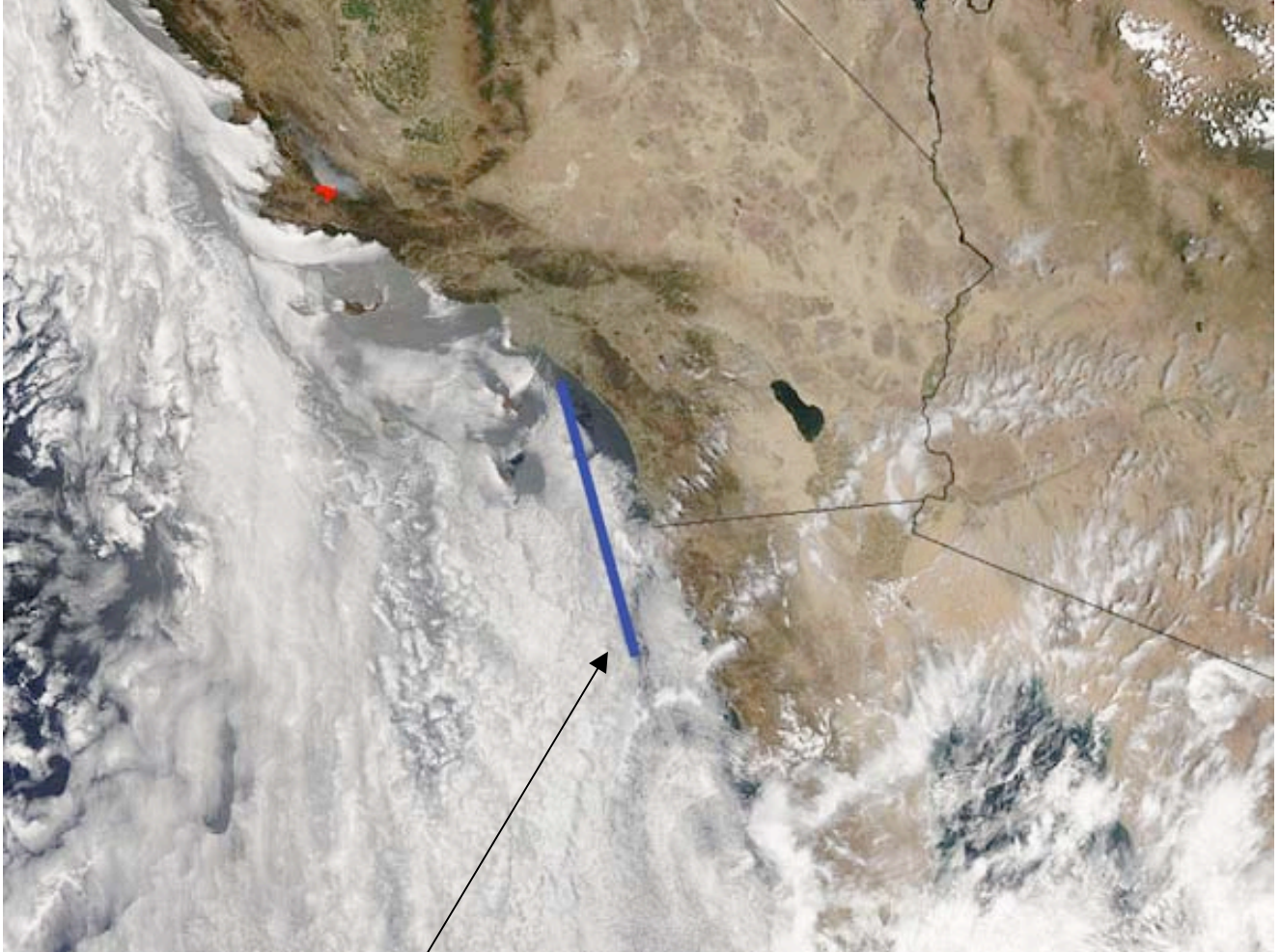
REVEAL: CPL data was successfully acquired by the REVEAL system.

Table Mountain: All facility instruments operating and a sonde was released at the overpass time.

REVEAL/RTMM map w/GOES-W VIS overlay:



**MODIS Aqua True Color
(Rapid Response La Jolla subset):**



Approximate ER-2 Aqua
underflight tracks

ER-2 Science Instrument Payload and Status:

Instrument	Status	Notes
CPL Cloud Physics Lidar	G	Data successfully captured by REVEAL. Preliminary visualization by CPL team.
CRS Cloud Radar System	G	
EDOP ER-2 Doppler Radar	–	Not integrated for flight (flew alternate nose)
AMPR Advanced Microwave Precipitation Radiometer	G	Will adjust flight s/w configuration controlling scan mirror position for transit flight.
CoSSIR Compact Scanning Sub-mm wave Imaging Radiometer	F	Hard failure 10 minutes into flight, but worked during ground test after return.
MAS MODIS Airborne Simulator	G	
S-HIS Scanning High Resolution Interferometer	G	
IR Radiometer Broadband flux radiometer (nadir & zenith)	G	
SSFR Solar Spectral Flux Radiometer (nadir & zenith)	G	
MVIS video camera	G	
MTP Microwave Temperature Profiler	–	Not integrated for flight (integration on 7/10)

G = good; P = partial data collected; F = failure, no data