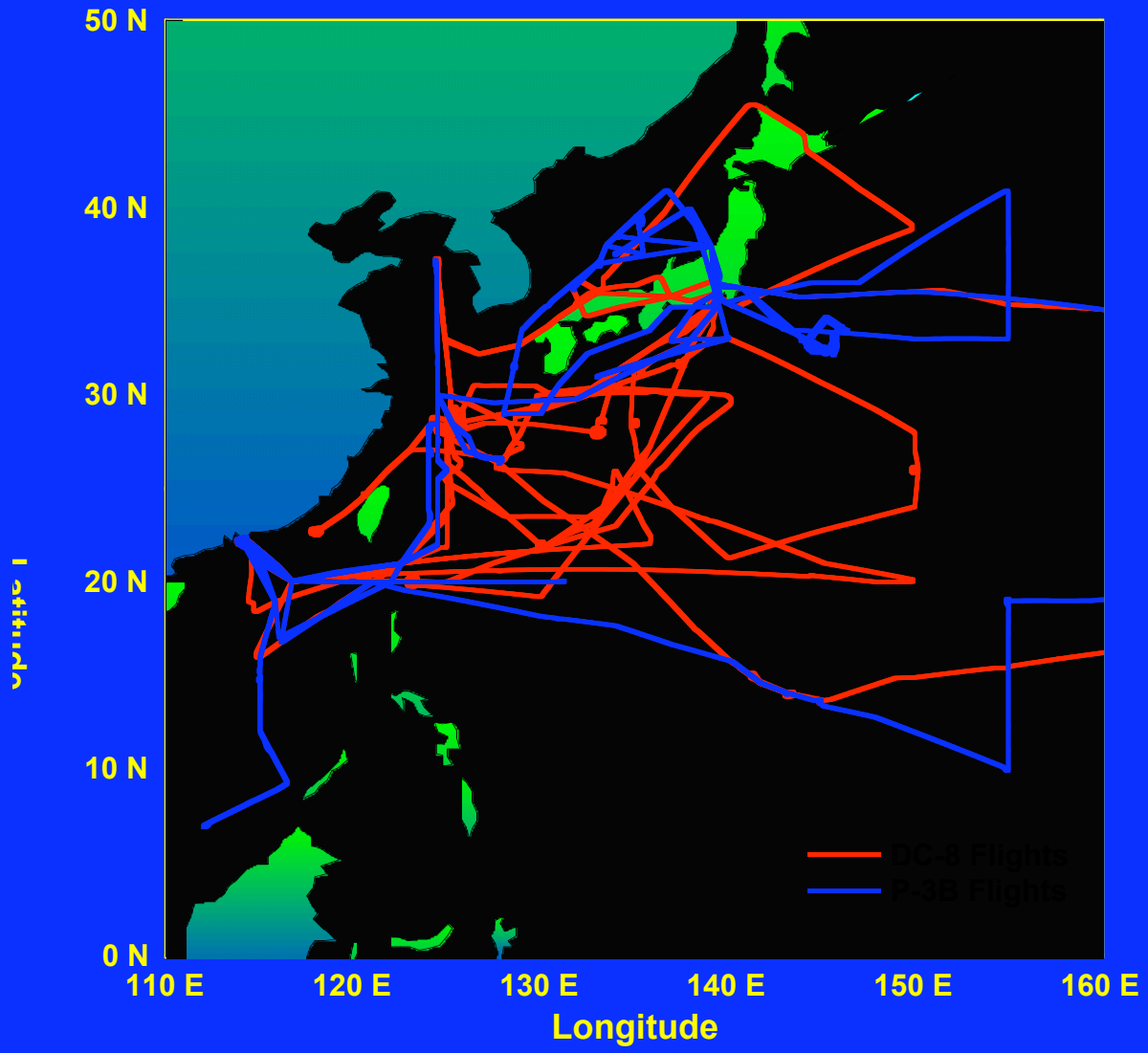
EXPERIENCE WITH COORDINATED PLANNING FROM ICARTT (AND TRACE-P)

THE NASA/TRACE-P AIRCRAFT MISSION (Mar—Apr 2001)

Characterize Asian chemical outflow, place top-down constraints on sources

Two instrumented aircraft (DC-8 and P-3) operating together out of Hong Kong and Yokota AFB (Japan)

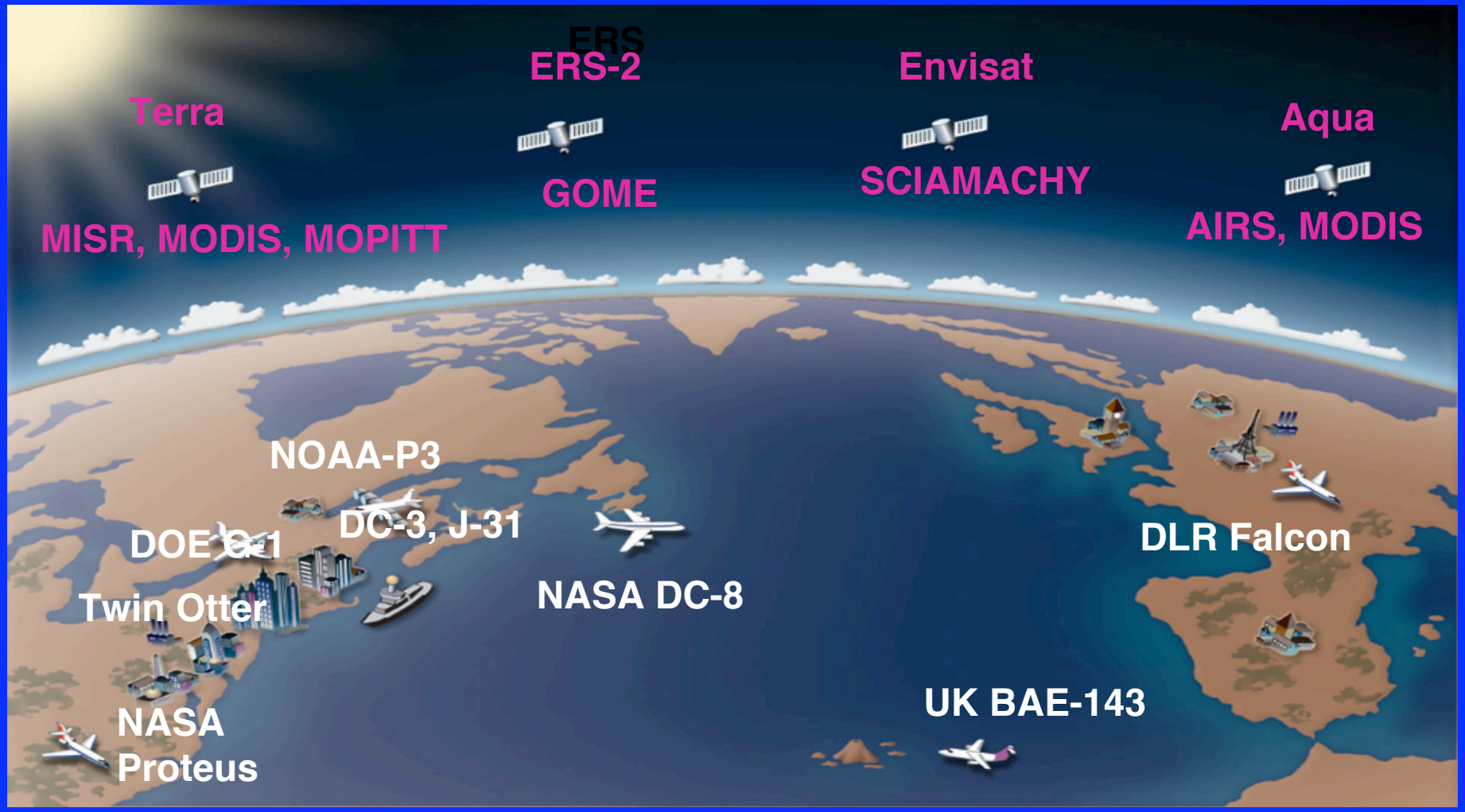


TRACE-P COORDINATION WITH ACE-ASIA

- Two joint Asian outflow chemical characterization flights between the TRACE-P P-3 and the ACE-Asia C-130 out of Japan including a Terra underpass on each flight.

- One DIAL overpass of the ACE-Asia Twin Otter by the TRACE-P DC-8 during a column radiation closure experiment over the Sea of Japan

ICARTT: COORDINATED ATMOSPHERIC CHEMISTRY CAMPAIGN OVER EASTERN NORTH AMERICA AND NORTH ATLANTIC IN SUMMER 2004



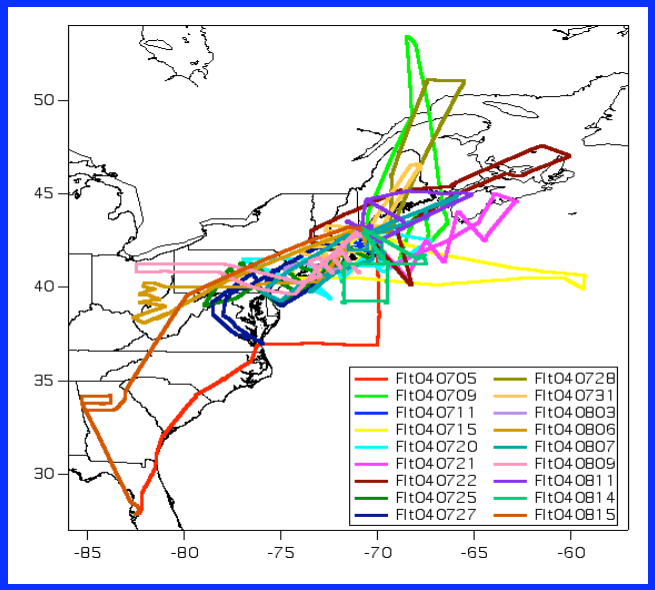
International, multi-agency (U.S.) collaboration targeted at U.S. regional air quality, pollution outflow, transatlantic transport, aerosol radiative forcing

THE ICARTT AIRCRAFT COLLECTION

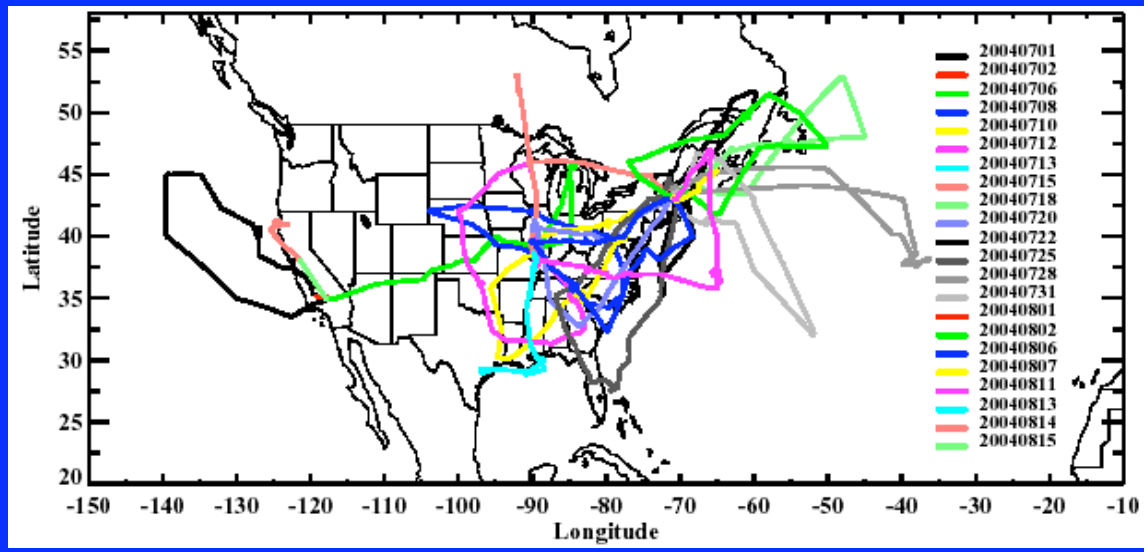
COORDINATED FLIGHT PLANNING DURING ICARTT

- Joint NASA/NOAA flight planning meetings in Portsmouth

WP-3D flight tracks



DC-8 Flight tracks



- Daily NASA/UK/DLR telecons to identify opportunities for transatlantic Lagrangian experiments

IN MILAGRO/INTEX-B, THE DC-8 AND C-130 AIRCRAFT WILL:

- share the same objectives
- have ~ similar capabilities
- operate from different locations

- Flight planning for both aircraft must be done at common meetings
  - but we still need planning teams physically at both locations; solution must be videoconferencing

- Need agreement before the mission on the general approach for conducting flights
  - Let's develop nominal flight plans this week, let's talk about our different approaches to flight planning

A DAY IN THE LIFE OF THE FLIGHT PLANNING TEAM

- -10 am: individual groups retrieve, analyze their products
- 10 am - noon: daily flight planning meeting
  - Individual groups make brief presentations of their products, identify opportunities, make flight suggestions
  - Mission scientists synthesize suggestions into next-day flight decision, flight plans for both aircraft; discussion follows until flight plans gels
  - Brief discussion of longer-term flight planning; heads-up for future flights, guidance to team for looking at opportunities…
- Noon - 4 pm: solidify flight plans, prepare presentation to Science Team
  - Individual groups prepare products targeted at flight plan; bring up to mission scientists anything unexpected
  - Mission scientists confer with navigators/pilots to finalize flight plans
  - Mission scientists prepare presentations for Science Team meeting, web posting
- 4pm: Science Team meeting

MY TWO CENTS ABOUT WORKING WITH TWO AIRCRAFT HAVING SIMILAR CAPABILITIES

- In general, the capabilities of the two aircraft are best used by expanding horizontal coverage, with extensive vertical profiling by both aircraft
  - Use the two aircraft to characterize different source/outflow/transport regions, air masses at different aging times…
  - Using one aircraft as a remote sensor is not a good use of resources; it wastes the in situ capabilities
  - Dividing up the sampling responsibilities vertically is not a good idea either; both aircraft should conduct deep vertical profiling and fly into the juicy stuff.
- Plan at least three wingtip-to-wingtip intercomparison flight segments at different altitudes (vertical profiles are great); two should be very early in the mission
  - Make clear to aircraft crews that wingtip-to-wingtip comparisons are on the menu; pilots need to meet beforehand
  - Have a scientist in the field be responsible for analysis of intercomparison results; prompt submission of data is essential