Interagency Coordinating Committee for Airborne Geoscience Research and Applications (ICCAGRA)

Airborne Ocean Sciences Conference

25 May 2006

Moss Landing Marine Laboratories

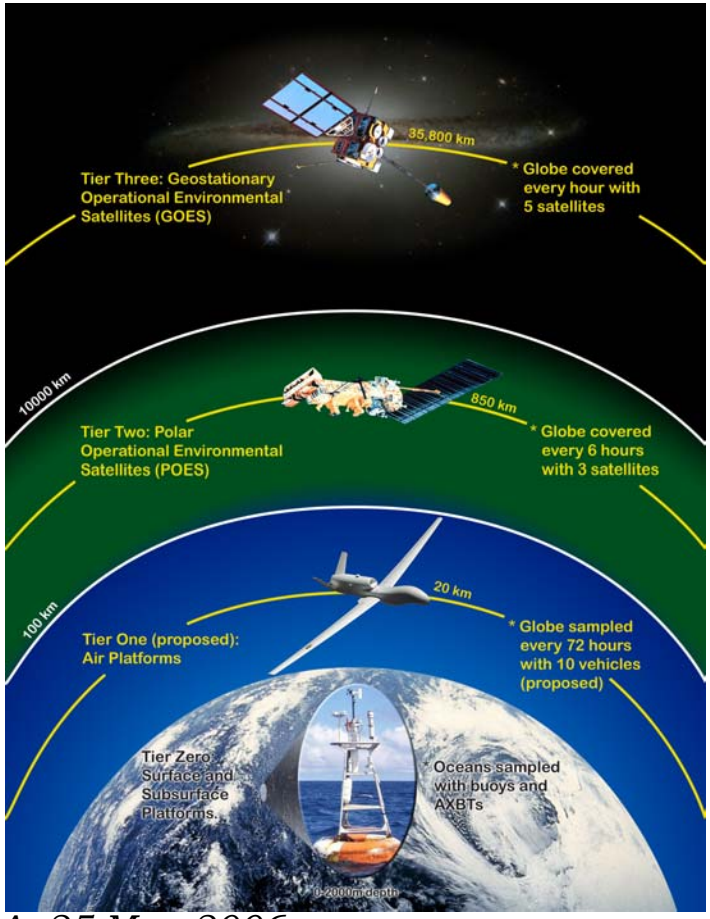
Airborne/Suborbital Science Programs

Suborbital observations fill time and space gap between surface observing networks and orbital platforms: "Connecting local phenomena to the global system"

Sounding Rocket Program

Balloon Program

Aircraft & UAS Program



Objectives

- Development of new sensors and new remote-sensing techniques.
- Satellite calibration/validation.
- Targeted observations of ephemeral phenomena with variable temporal and spatial scales.
- Atmosphere/near-space in-situ observations.
- Improvement and evaluation of predictive Earth process models using satellite data.

ICCAGRA Objectives

- *Improve coordination of airborne geoscience research programs & enhance opportunities for interagency sharing of aircraft resources*

Agencies

- *NSF*
- *NOAA*
- *ONR (NRL & NPS/CIRPAS)*
- *NASA*

C I R P A S
Center for Interdisciplinary Remotely-Piloted Aircraft Studies

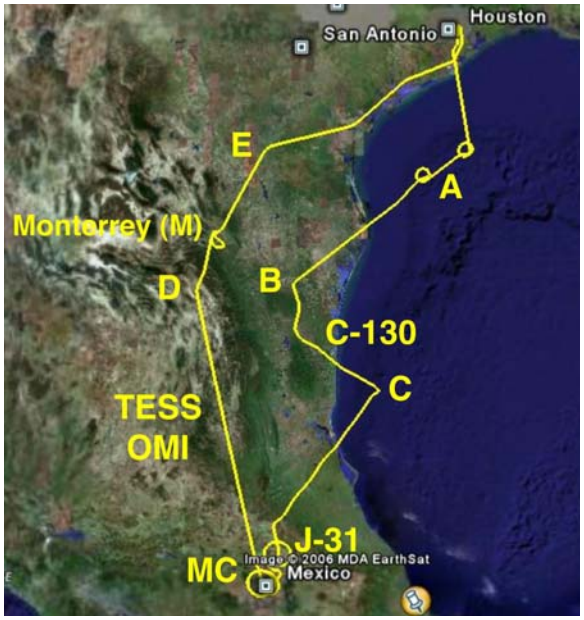
CRYSTAL-FACE 2002

INTEX-B/MILAGRO/IMPEX
NASA DC-8, Sky Research J-31, NSF C-130, DOE G-I, NASA B200

Intercontinental Chemical Transport Experiment (Part B) – Deployment Schedule:

Houston:	Mar 1-20
Hawaii:	Apr 18-27
Alaska:	May 1-15

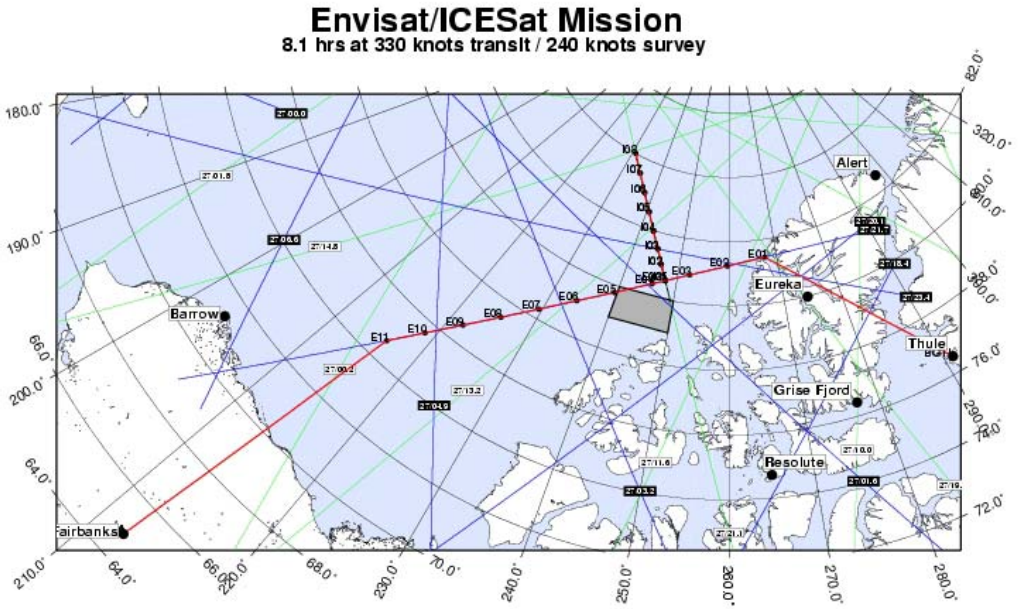
21 sensors
- 11 probes
- 2 lasers
- Species measured:
  - HOX, NOX,HNO4, SO2, O3, HCHO, H2O, CO, CO2, CH4
  - Aerosols



March 19 Flight Plan:
- Intercomparison with NSF C-130
- Coordinated spiral with J-31
- Validation of EOS Aura TES & OMI

INTEX-B Mexico City Pollution from DC-8, Mar 16

Arctic 2006
NASA P3-B



Chukchi – 21 Mar

Alaska & Greenland:

- P3-B with Kansas U snow radar, NOAA PSR, IIP D2P radar altimeter, ATM 4 laser altimeter
- Validate EOS Aqua AMSR-E, ICESat, Envisat

NSF Maldives Autonomous UAV Campaign, ACR Manta UAS

Maldives Hanimadhoo Island

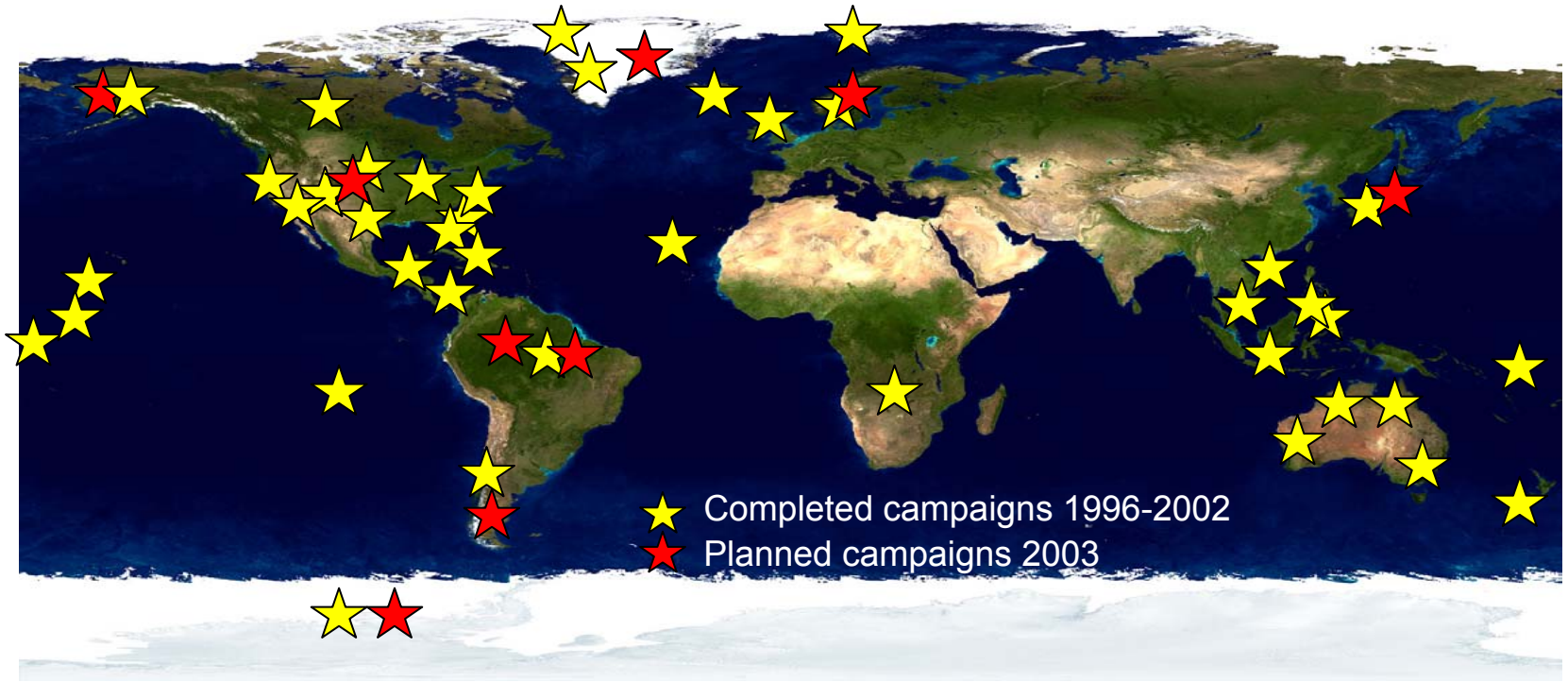
- 3 Manta UAS in stacked formation, above, in, and below cloud
- Aerosol properties
- Black carbon
- cloud microphysics
- Broadband & spectral irradiances

Manta UAS

- Advanced Ceramics Research, Arizona
- Payload 15 lbs, 775 cu.in.
- Endurance 6+ hours
- Ceiling 16K ft
- Airspeed 40kts

NSF – NOAA – NASA

Airborne/Suborbital Campaigns Provide Global Access to Regional Processes



Satellite/Space Data Product Calibration/Validation & Algorithm Development

Process Studies & Model Validation

Space Sensor and Remote Sensing Technology Development & Demonstration

Future capability for focused observations of persistent but finite phenomena and hazardous operations (UAVs)

Challenges

- Competing/conflicting agency missions, for example operational vs. research objectives.
- Different agency processes for allocation, scheduling, aviation management.
- Different funding & pricing mechanisms.
- New challenge: Maintaining funding through requirements-driven OMB budgeting processes.

Enablers

- History of successful interagency science collaborations in many large campaigns, e.g. CRYSTAL-FACE, INTEX/MILAGRO/IMPEX
- Coordinated scheduling affords piggyback opportunities for leveraging costs.
- Use of facility sensors, standardized payload accommodations & data systems.
- Information sharing through experimenter handbooks & linked websites.

Geoscience Research Aircraft Web Sites

- ICCAGRA Charter: http://www.nsf.gov/geo/atm/ulafos/laof/charter.jsp
- ICCAGRA Links: http://suborbital.nasa.gov/platforms/partners.html

- NASA: http://suborbital.nasa.gov/
- NOAA: http://www.aoc.noaa.gov/
- NSF: http://www.eol.ucar.edu/raf/
- CIRPAS: http://web.nps.navy.mil/~cirpas/
- NRL: http://www.nrl.navy.mil/planes/