

WB-57 Breakout discussion

Instrument updates:

- Weinheimer wants to only measure NO/NO_y rather than switching to particulate NO_y.
- Maycomm laser hygrometer will be added by PANTHER group and downlinked via REVEAL.
- comparisons with DC-8 measurements of aerosols and trace gases at maximum possible altitude are highly desirable.
- spirals through clouds within 30 min of Terra/MODIS overpass requested.
- Harvard water will have second detection axis to compare with old/new configuration.
- CloudSat wants to sample in clouds with high ice water content (few hundred mg/m³).

Candidate mission profiles, clouds and aerosols:

- **Cloud outflow missions -**

Goals: understand microphysical processes and transports and entrainment of air in tropical marine Cbs.

- **Cirrus characterization --**

Goals: Sample a diverse array of cirrus clouds, determine which arise from remnant blow-off, versus in situ formation; life cycle, radiative and chemical properties.

characterize of ice crystal size distributions in maritime anvil cirrus. Flight patterns would include spirals and stairsteps back up, coordination with both **ER-2 and DC-8.**

- **Remote sensing validation --**

The WB-57 is not well suited for direct validation of most satellite sensors. The WB57 is to fly coordinated missions with the DC—8 and ER-2 and validate the remote sensing observations from these platforms, which will then be used in direct satellite validation flights.

The missions above have not been discussed by the team. A WB-57 telecon to discuss them will take place Wednesday.

Candidate mission profiles, composition:

TTL missions --

Goals: Sample air of diverse ages, origins; quantitatively characterize the TTL; understand better the origin, characteristics, and fate of condensed phase water that we see.

WB57 and ER-2 fly together to points distant from CR, one mission each towards E, W, and to Galapagos [*Starr*]. The WB-57 does porpoising and/or stairs with gentle ramps. We choose a cold phase of the mixed Rossby/Kelvin wave in order to combine combination of TTL cirrus sampling and tracer measurements, and to use the opportunity to validate ER-2 cirrus and cloud products [*Jensen*]. *Includes a stratospheric profile; utilizes [Pfister] forecasts of convective influence to maximize air mass types.*

Chemical source inflow/outflow missions-

Goals: Determine the trace gas chemical composition of the TTL and of the air entering the stratosphere, and delineate the controls on composition via convective inputs.

WB-57 and DC-8 must sample together from the PBL to the lower stratosphere. Can be combined with cloud-related objectives [*Wennberg*].

Issues

We expect a number of scrubs due to weather forecasts, which may place excessive stress on the team given the hours of operation.

The intercomparison with the DC-8 will be very challenging to carry out so as to obtain statistically robust information.