

MISSION SCIENTIST SUMMARY
Missions 244-1 244-4

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MISSIONS FLOWN

<u>Mission Number</u>	<u>Type</u>	<u>Aircraft</u>	<u>ABMS</u>
244 - 1A	7B1 Radiation	Sabreliner	Cox
244 - 1B	5B1 Fair Weather Boundary layer "L" Patterns	Queen Air	Stull
244 - 2	Tower Fly-By	Electra	-
244 - 3	7B1/7C2 Radiation Profile and Compari- son of Aircraft and Ship Radiometers	CV-990	Smith
244 - 4	Dropsonde Mission with Respect to Vortex	WC - 135	Simpson, R. H. assisted by William Gray

As can be determined by comparing the "Missions Flown" above to the primary missions set by the MST on Page 1 of the Mission Scientist's Log, Only one mission - 244-3 - was flown as planned. This, combined with the telephones being out, transportation difficulties; the lack of English spoken at Bloc Technique, and other assorted problems, made Day 244 a most interesting one.

The missions are summarized below individually.

244-1: SQUALL LINE MISSION WITH BOUNDARY LAYER AND RADIATION ALTERNATES.

By 0515 it was clear that the squall line which had downed trees between Yoff and Dakar earlier in the morning could not be our mission objective: both radar and satellite fixes indicated a westward movement of around 40 knots. Based on this speed and the passage by Dakar of the western and eastern edges of the line; at 0156 and 0500, respectively, the line at takeoff time (0800) would lie between 240 and 120 nm west of Dakar. By 1000, the line would be between 320 and 180 nm to the west, which meant that the Queen Air at 1000' could barely, if at all, have penetrated the western edge. Further, we expected the line to weaken rapidly after it hit the ocean. However, the IR photos did show some areas of white to the east which may have been cells, so instead of immediately going to the alternate, we postponed the briefing to 0900 at 0530.

Due to the telephone not working we could not notify the crews in time and they had to be sent home.

By 0730 from looking outside it seemed likely that the alternate would be flown: there seemed to be nothing but middle to high debris. Hence, Jean Kelley went to the N'Gor to inform S. Cox that the 7B1 alternate was likely and to ask him if he would like to postpone his briefing. In the absence of good communication, both briefings were tentatively postponed with Mission Scientist approval at 0811. A look at the Dakar radar at 0730 had confirmed that the IR blobs were debris.

Both alternates were reasonably successful:

Stull, on finding no cumulus clouds, flew a fair weather 5B1 mission, with L's along and perpendicular to the surface wind, (020/7 kt) at 170', 300', 1000', 2000', 2500', 3000', 3500', 4500' and 5500'. Because of rapid growth of the mixed layer, with the inversion changing from 3000' to 4500', during the patterns, no repetitions were possible. The refractometer has not yet been installed. With an estimate of the surface water vapor flux from other data, the data will be useful. An 80% success.

Cox flew his 7B1 with respect to an altostratus deck, and considered it successful.

244-2: TOWER FLY-BYS.

The MST had the L-188, the IL-18M, and the US C-130 listed for tower fly-bys. The fly-by for the US C-130 was cancelled immediately after it landed and reported some malfunction. The Electra fly-by was delayed slightly from 0830 to 0847 due to weather, but performed a successful comparison. The IL-18M fly-by was never conducted. The previous night several people said the IL-18M was not planning to fly - so there was probably a communications breakdown somewhere.

244-3: CV-990 RADIATION MISSION

The CV-990 flew a 7B1/7C2 radiation mission, whose purposes were to obtain a radiation profile in cloudless air, to compare low level pyranometer, pyrgeometer, and pyrliometer radiation measurements with those from the Oceanographer, and to obtain bi-directional reflectance measurements of the ocean. The first and third objectives were successfully accomplished; however, broken clouds over the Oceanographer prevented a successful inter-comparison.

244-4: WC-135 DROPSONDE MISSION.

The primary mission for the WC-135 was a "Pattern A" to fill in the gaps left by the Krenkl and Capricorne to the East of the B-array and to examine the flow around the ill-defined ITCZ in that area. The alternative mission was a flight with respect to a vortex to the north, should it develop sufficiently and be sufficiently interesting.

By 1026 the decision to fly the alternate mission was an obvious one: The vortex was well organized on the early morning IR satellite picture, with apparent deep convection imbedded in one of its spirals, and the "hole" to the east of the array was not as bad as originally thought. Capricorne was making two soundings a day while heading for its position. Its 00Z sounding taken at 7.8N 14.9W had winds to 100 mb - and was not far from Capricorne's assigned position - 6°40'N 14°42'W. Krenkl was making 2 soundings a day, with its 00Z sounding having winds to 150 mb.

The flight plan - planned by Simpson, Burpee, Parker, and Zipser, illustrated in the Figure, was successfully executed, with 2 traverses through the main vortex, and good coverage in the clear area to the south and the cloudy area to the north, with 18 successful drops. The position of the center was estimated at 13.2°N, 35.8°W, which was SW of the position estimated from the satellite picture at GOCC. Both Simpson and Gray considered the vortex well developed and were eager to try to survey it the following day.

The squall line which had passed through Dakar earlier in the morning was found to be dissipated when the WC-135 passed through it at 1400 GMT, at 14°N, 22½°W, with only a few cumulus and mostly middle and high cloudiness. It was approximately 50 nm wide.