CMET Balloon Mission Summary

Launch date: March 11, 2006
Summary: Two CMET (standard size / 110 liter sp volume)
Balloon 1: Launched from Teotihuacan at ~15:45 CST. Flight duration: ~9.25 hours
Balloon 2: Launched from Texcoco at ~15:45 CST. Flight duration: ~19.5 hours
Altitude: Both balloons stabilized between 12000 to 14000 ft MSL, with soundings between 8000 and 17000 ft MSL.

Notes: Air above Teotihuacan (NE of Mexico City) at ~15:15 pm CST seemed noticeably clean, with blue sky above and 5-10 km visibility. Plume seemed to be to the W with a N-S orientation. This was consistent with the RAMA network ground ozone measurements. Directly above the city were many cirrus clouds which according to Charles Gatabe (J31) seemed to be merged contrail from MEX. Winds shifted to westerly before launch. First CMET balloon was launched at 15:45 CST as these clouds passed overhead on westerly winds, noticeably dimming the light at the ground. The balloon altitude was stabilized between 12000 and 14000 ft MSL after some initial oscillations.

Decision was made to launch second balloon at Texcoco (South of Teotihuacan and NE of Mexico City) to get closer to the MC pollution. As expected, haze increased significantly as the launch team drove approximately 10 km toward the city, with even greater haze further to west. Sun appeared to be setting into a thick haze layer as balloon was launched from Texcoco at 18:45 CST. On the trip back to Veracruz, the launch team noticed that haze was fairly constant in city, then very thick on pass up mountains. Visibility on the highway was approximately 1 km in many places between MC and Pueblo. Some smell of biomass, but not clear that it was not part of MC plume. Cleaner to east and then heavy biomass burning (smell) during descent into Veracruz.

Balloon 1 (from Teotihuacan) went west then turned south and gradually returned to the Mexico City basin around midnight, where it was subsequently terminated for safety reasons.

Balloon 2 (from Texcoco) headed south and out of pass at 14000 ft MSL at around 22:30 CST. A sounding was performed at 23:00 CST. The balloon then turned west. Another sounding was performed at 03:30 CST (Sunday). The balloon then turned north and abruptly shifted back to west later. It was terminated 14:20 CST Sunday after a deep sounding.

Tracks of Balloon 1 and 2 are shown in Figure 1. The transport of both the balloons is generally consistent with the winds observed with the profiler at the T1 ground site (Figure 2). The flow pattern suggests that MC pollution leaked out the south gap instead of going to the north east as forecasted by models. This is further confirmed by the C130 measurements on March 12, which do not show the presence of MC pollution in the north and northeast of MC. Unfortunately, no aircraft measurements were made in the vicinity of Balloon 2 to positively confirm the presence of March 11 MC plume south of MC basin.
Figure 1. Flight tracks of Balloon 1 (blue) and Balloon 2 (red) and altitudes (ft MSL).
Figure 2. Wind profiles measured at T1.