Mission Summary Report

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Mission Number: 7

Start of Mission (UTC): 03 November 2013 1514

End of Mission (UTC): 03 November 2013 2017

Submitted at (UTC): 07 November 2013 0314

Summary:

1. Scientific Background
There was an upper level low with a cold pool forecasted to move close to the northwest region of the Hawaiian Islands. Moisture forecasts showed some pockets of moisture coinciding with this cold pool giving way to unstable conditions favorable for convective rain on the windward areas of Oahu. Inland areas were also favorable for some convection, however, the 12Z sounding did not show as much moisture available to deploy inland to the Wahiawa site.

2. General Description of the Mission

The radar had a planned deployment to the fish pond but was redirected to the Kahalu’u Regional Park because we were unable to unlock the gate. The GPS coordinates for the radar site were 21° 27.5593N 157° 50.4062W. The bearing of the truck was 40° from the front end of the parking region near the road. Beam blockage was evident behind the truck from the Koolau Range, power lines and poles. To the right of the truck was a small raise in topography as well as some houses. Left of the truck was also some more trees and the Koolau Range blocked a good portion to the left and behind the truck. The front of the truck was facing a pretty good view of the ocean, although there was a large palm tree that can be seen blocking in some of the PPIs.

There were no problems with the truck GPS system the mission started according to plan. We
started our first scan at 0.5° elevation angle to 24.5° in steps of 2° to get a general idea of where an area of interest maybe. A few short lived trade showers came through. Along the mountains, orographically anchored clouds began to rise, so RHIs were taken along the mountains. Around 2209z there were some showers northeast, offshore when we switched to a higher range in order to see this. At this point Dr. Wen-Chau Lee made a good point that we were using too many angles in order to see the quick development of the trade wind cumulus clouds that day. When most of the trade showers over the ocean died out, a more sensitive scanning strategy was used to capture the orographic lifting and nearby showers in higher detail. Towards the end of the deployment, the weather was very calm and not much was observed.

4. Report on the Radiosonde System

We set the antenna to the left of the truck. We had some issues getting a good frequency from the first radiosonde package so we switched to another one. The second radiosonde had a good frequency, however the GPS did not sync to the antenna. It should also be noted that the initial wind direction and speed were not inputted. The balloon launch took place around 2130z near the water edge.
Figure 1 - Velocity RHI of mountain clouds at Kahalu'u
Figure 2 - Reflectivity RHI of mountain clouds at Kahalu’u