Mission Summary Report

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Support Team: None
Mission Number: 9
Start of Mission (UTC): 05 November 2013 1521
End of Mission (UTC): 05 November 2013 1818
Submitted at (UTC): 08 November 2013

Summary:

1. Scientific Background
Mission forecast called for weak instability persisting from the weekend with weak trade winds.

2. General Description of the Mission
Radar was deployed to Pali Highway Lookout on the windward side of the Pali tunnels. Radar location was 21°22.0825N -157°47.0078W. Some blockage occurred at low elevation angles due nearby trees and bushes to the north and south of deployment location. The low ridge to the northeast also caused blockage at low angles. The extremely close proximity to the Ko’olau limited viewing to the west. The meteorological mast was deployed at 1505 UTC to a height of approximately 10m.

Initially, there was isolated convection offshore. New cells began to develop over the coast of Kailua and Waimanalo and moved inland near 1600 UTC. Some of these showers moved over the deployment location and .03” of total precipitation was recorded between 1600 and 1800 UTC. Showers developed along the Ko’olau as rainband movement was blocked by the terrain.

While adjusting the scan strategy to look further offshore, the transmitter failed and the mission ended abruptly at 1818 UTC.

The BH scan mode was chosen to start the scanning because the only echoes from NEXRAD radar were a distance offshore. PPI scans of .5, 1.5, 2.5, 4.5, 6.5, 20, and 30 were initialized, however echo tops were not visible above 2.5 and so the scans were adjusted down with new levels of .75, 1.0, 1.25, 2.0 added. RHI scans to view the growing cells were started at 150, 155, 160, 165 and adjusted for cell motion. As cells appeared near the coast higher elevation angles were added and when precipitation started at the deployment site ZDR scans were added. RHI’s to capture clouds anchored to the Ko’olau were used as well.
Scan mode was changed to DH, at 1743 UTC, to get a better view of nearby cells. This strategy was used only briefly before switching back to BH. This is when the transmitter failed.

4. Report on the Radiosonde System
The radiosonde was launched at 1713 UTC and went up to 27.5 km. The humidity sensor failed.

Figure 1. Radar reflectivity and Doppler velocity at 17:54:09 UTC. Isolated convection offshore, moving towards the coast. Second trip echos indicate that there is more convection outside the radar range.

Figure 2. Radar reflectivity and Doppler velocity at 17:56:21 UTC. RHI at 125° shows the vertical structure of the different cells.