DPH-9.1 Report on Overlap Consistency (interswath)

The USGS Lidar Base Specification Version 1.3 states: "Overlap consistency is a measure of the geometric agreement of two overlapping swaths, and a fundamental measure of the quality of the calibration or boresight adjustment of the data in each lift. It is of particular importance because the match between the swaths of a single lift is a strong indicator of the geometric quality of the overall dataset, establishing the quality and accuracy limits of all downstream data and products. The principles used with swaths can also be applied to the overlap between lifts and projects as well. Overlap consistency will be assessed at multiple locations within overlap in nonvegetated areas of only single returns. Assessment is limited to areas of <10-degree slope. To the degree that the data allow, test areas should be located such that the full width of the overlap is represented. The overlap areas that will be tested are those between the following:
(1) Adjacent, overlapping parallel swaths within a project,
(2) Cross-tie swaths and a sample of intersecting project swaths in both flight directions; and
(3) Adjacent, overlapping lifts.
Each overlap area will be evaluated using a signed difference raster with a cell size equal to the ANPS, rounded up to the next integer, then doubled. The difference rasters will be statistically summarized to verify that RMSDz values do not exceed the limits set forth in the 'Swath overlap' column of Table 2 for the QL of information that is being collected."

Table 2. Relative vertical accuracy for light detection and ranging swath data.

[QL, quality level; $RMSD_z$, root mean square difference in the z direction; m, meter; ≤, less than or equal to]

Quality level	Smooth surface repeatability, $RMSD_z$ (m)	Swath overlap difference, $RMSD_z$ (m)
QL0	≤0.03	≤0.04
QL1	≤0.06	≤0.08
QL2	≤0.06	≤0.08
QL3	≤0.12	≤0.16

The purpose of this section is to show a thematically rendered map of a flightline separation raster for all of the data processed. Processing has been done to isolate measurements either to specific classes of points or to clusters of single returns (depending on the method selected), limited within areas of <10 degree slope. The colors are gradated by the selected QL's swath overlap difference RMSDz limits. Only overlap areas are shown in the raster. The color is overlaid on a lidar intensity background to show land cover features. The swath overlap difference RMSDz values are reported on the following page(s).