

DPH-9.1 Report on Overlap Consistency (interswath) - Measurable FSR

Description of the process that generates the Measurable Flightline Separation Raster (FSR):

- a. Boundaries are determined for all swath overlap areas.
- b. A TIN is created for each swath in an overlap area, and a Grid is overlaid on those TINs. Grid cell sizes are 3x the aggregate nominal pulse spacing (ANPS) as shown in Table 1 of the USGS Lidar Base Specification v 2.1. ANPS varies depending on the Quality Level of the data.
- c. The grid cells are populated with the vertical separation values between the underlying TINs as measured at the centroid of each grid cell. When three or more swaths coincide with a cell, the value is set to the difference between the maximum and minimum of all elevations. Only areas of slope < 10 degrees are measured. Points flagged as Withheld, and points classed as High or Low Noise, are excluded from this analysis.
- d. The Measurable FSR uses a pre-filtering algorithm that selects only clusters of single returns for use in the RMSDz analysis. The algorithm's purpose is to find areas for measurement that are in the open, away from roof edges, trees, etc. - it is not designed to find ground below vegetation canopy. By using only clusters of single returns (at a minimum distance from any multiple returns) and ignoring cells with NODATA values, reliable RMSDz values are produced. These values are listed for each swath overlap area in the RMSDz table immediately following the raster page.
- e. A vertical separation cut-off is used to remove values that are not appropriate for separation measurements (e.g., trees, moving objects, etc.). This cut-off is set to 10 times the color gradation interval value.
- f. The same RMSDz calculation is then run on the final vertical separation grid. A single, aggregate RMSDz is calculated from this larger, all-encompassing grid, and the final thematic raster is generated from the grid.