ATL08 Release 006
December 15, 2022
Prepared by Amy Neuenschwander, University of Texas at Austin

Known Issues

1. **Ground Finding Improvements:** A significant change to the ATL08 Release 006 code is the methodology behind ground finding has changed. In Release 006, the ATL08 utilizes the YAPC weights available for each photon on the ATL03 data product. The highest probability of YAPC weights are included as likely ground points for the ground filtering portion of the ATL08 algorithm. Figure 1 illustrates a ground finding solution from Release 005 implementation of the software (LEFT Panel) versus the Release 006 implementation. Brown dots reflect the labeled ground photons and green reflect the canopy and top of canopy. Black lines near the ground photons reflect the terrain height from the MERIT DEM, which serves as the reference DEM on the ICESat-2 data products. As observed in this figure, improvements in the ground finding of the Release 006 version occur between time-tag 124.2 and 124.4 seconds on the X-axis.

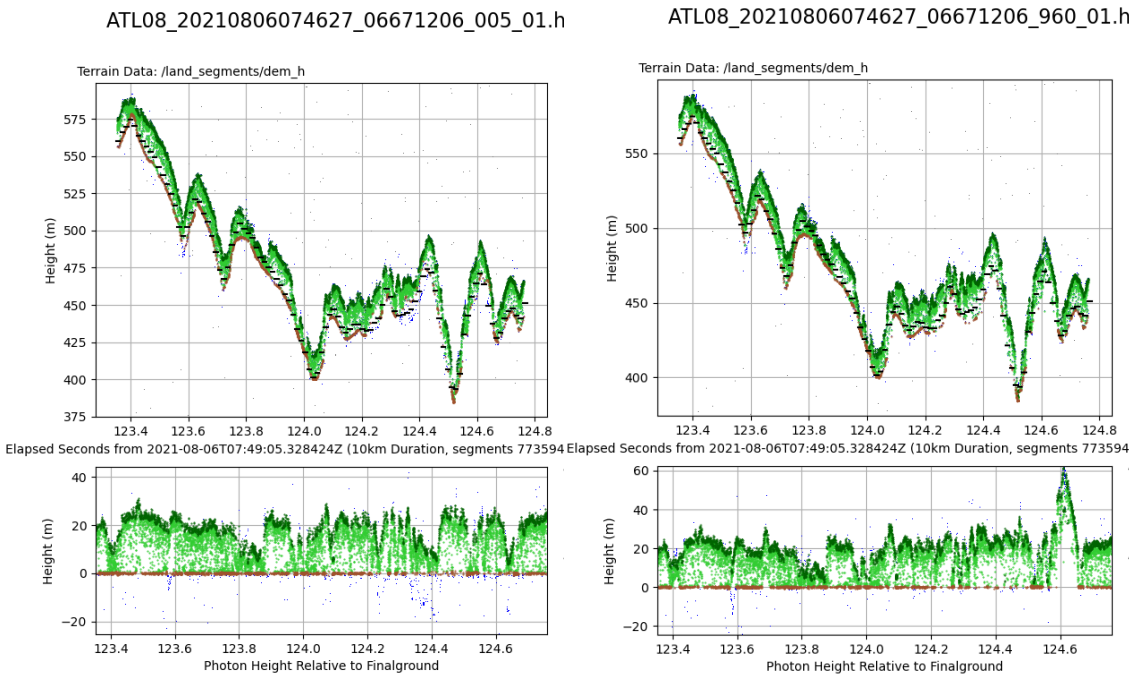

Figure 1. (LEFT) Release 005 version of labeled photons with many ground photons missed beneath the dense canopy. (RIGHT) Release 006 version of labeled photons showing an improvement in the delineation of the ground signal.

In most instances, the ground-finding change resulted in either no change or an improvement in the labeled ground surface. In tropical forests, on occasion, the YAPC weights are pulling the ground signal into the canopy. A further correction to the ground finding is already in development and being tested for Release 007 that will address the issue with tropical forest. Photon labeling results from tropical forest with Release 006, however, are still quite usable as shown in Figure 2.

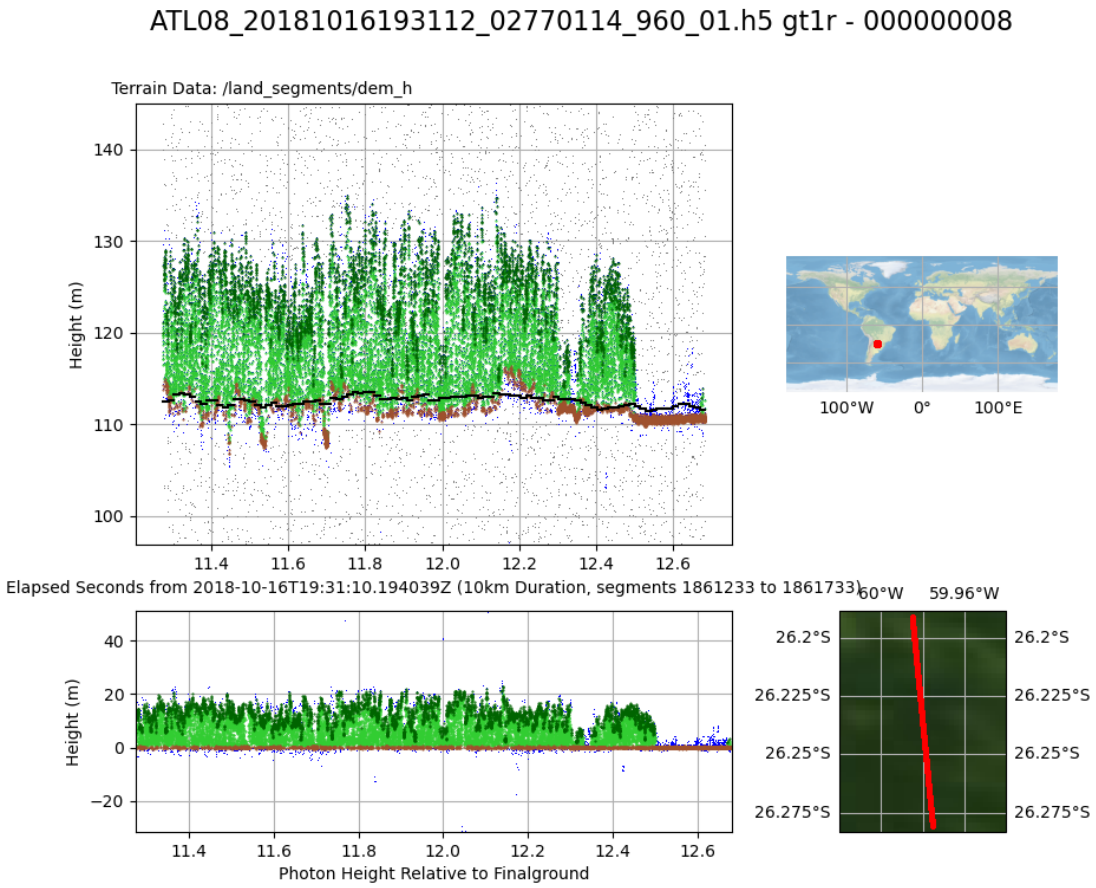

Figure 2. Results from Release 006 ground finding algorithm over tropical forest.

2. Missed Canopy Photons: In some instances, the ATL08 photon labeling does not successfully label all canopy photons, in particular the top of canopy photons. An extreme example is shown in Figure 3. A correction procedure is in place and this error will be addressed in Release 007.

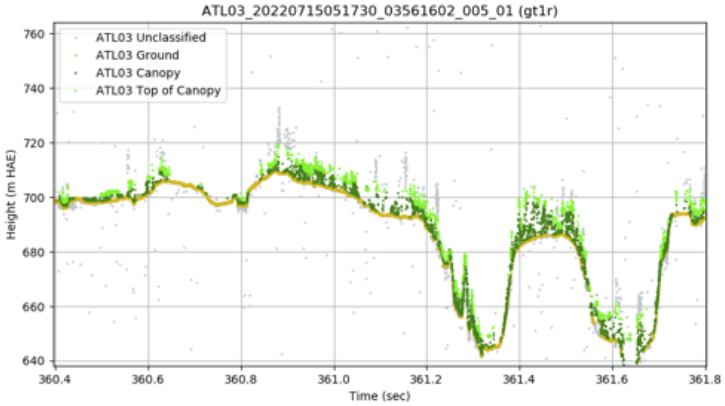

Figure 3. Illustration of missed canopy photons from ATL08 algorithm.