Uncertainties in geolocation

Some components of the error propagation algorithms for ATL03 have not yet been implemented. To avoid providing incorrectly optimistic estimates of the horizontal geolocation uncertainty and the vertical uncertainty to which it is propagated, fixed, pessimistic (20-m) values of the geolocation uncertainty are reported on release 003. Additionally, a parameter for radial orbit error (*sigma_geo_r*) that is expressed at a static value (30 mm) for each land ice segment has been added to ATL06 for release 003.

We expect that subsequent release will have more precise values reflecting the true accuracy of the measurements: Based on calibration/validation activities, uncertainties in geolocation for release 003 are typically less than 10 m.

Spurious Trends in the data

Released data are calibrated to temporal trends smaller than 1 mm/day. As calibration exercises are completed, those data will be used to produce timing-bias models that will stabilize temporal trends in the beam to be on the order of a few mm/yr.

RGTs with significant off-pointing over the ice sheets

Before the middle of cycle 7 (~April, 2020) calibration maneuvers known as Round-the-World scans (RTWs) were conducted that resulted in substantial off-nadir pointing for a subset of tracks in Antarctica and Greenland. Data collected while ATLAS was pointed away from the RGTs have substantially larger height errors than do data collected while pointing at nadir. These data may be identified by checking the ATL06 *y_atc* parameter. Any segment with *y_atc* larger than 10 km should be suspected of having height errors on the order of 0.2-0.5 m.

Surface window errors, July 6-26, 2019

In the period July 6-26, 2019, a timing error in the ICESat-2 flight software led to compromised tracking of the surface by the on-board software. Data from this period may have fewer detected ground returns, and have somewhat larger (by a few cm) height errors in parts of Antarctica and Greenland. These data were first released in August, 2020.