Known issues in ATL14 and ATL15, release 005

1. **Ice-front advance and retreat.** (see ATBD section 2.1.3.) The ATL14/15 products are intended to provide surface-height estimates for the ice sheet, and not to include the surface-height changes that happen with ice-shelf fronts advance and retreat (i.e. between the height of the ice-sheet surface and the water as the ice front moves.) A time-varying mask has been applied in Antarctica that covers the major ice shelves, with less reliable coverage for smaller Antarctic shelves. All major Greenland ice fronts should be covered, but front changes in the Arctic regions outside of Greenland are not.

2. **Near-Grounding Zone Tides**. (see ATBD section 2.1.3.) The ATL14/15 products are corrected for the effects of ocean tide fluctuations using tidal constituent outputs from regional tide models. Within grounding zones, ice flexure occurs as the ice transitions from a fully grounded state to a floating state in hydrostatic balance with the ocean. The ATL14/15 Antarctic products include a correction factor applied to the tide model in Antarctica around the edges of the Ross and Filchner Ronne ice shelves, but surface-height change estimates are still less accurate near grounding lines than they are in other parts of the ice shelves. For Greenland and for smaller Antarctic shelves, no such flexure correction has been applied, and grounding line elevation variations should be treated with caution.

3. **Data density in cycle 2.** (see ATBD section 3.2.) The heights cycle 2 come from crossovers between cycle 2 data that were not measured on the reference ground tracks, and data from the other cycles, which were. As a result, the data density is much smaller for cycle 2, and the products are generally less accurate and less able to measure details of the height-change field.

4. **Overlap between Antarctic subproducts in the 40-km subsampled product.** The four quadrants of Antarctica overlap by one pixel in the 40-km subsampled ATL15 product. The higher-resolution versions of the products should have no overlap at the edges.

5. **Poorly constrained grid cells.** In both ATL14 and ATL15, there are a few isolated points that were marked as glacier ice in our input masks but are not well connected to the ice sheets and were not sampled by ICESat-2 repeat tracks. In some cases, the ATL14/15 algorithm provides poorly-constrained solutions for these points that may appear as small areas outside the main ice sheet that have large elevation changes or inappropriate elevation values. They are typically associated with large error estimates (10s or 100s of meters), and these large error estimates are often the best way of identifying points that should not be used in estimates of glacier change.

6. **Gaps in the crossover data.** In release 007 version 01, there are gaps in the crossover data used to constrain cycle 2 that were inherited from the ATL11 crossover product. These gaps are approx. 5 km wide and are aligned with 200-km-tile edges. We expect to fix these gaps in version 2 of the release 007 product.