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The Ice, Cloud and Land Elevation Satellite-2 (ICESat-2): Mission Status, Science Results and Outlook

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The Ice, Cloud, and Land Elevation Satellite-2 is well past its second year on orbit, and continues to collect high-quality measurements of the changing Cryosphere and beyond. The Advanced Topographic Laser Altimeter System (ATLAS) has now emitted more than ~800 billion laser shots to support science associated with sea ice and the polar oceans, glaciers and ice sheets, the world's forests, oceans, lakes and rivers in addition to vertical profiles of clouds and aerosols. The ATLAS lidar measurements provide elevations with horizontal and vertical accuracies of 10 m and 10 cm respectively. Analysis also reveals the required precision (~2 cm) needed to resolve sea ice freeboard. The data is a unique resource for derived products as well with contributions to global biomass estimations, ice sheet mass balance determination and inventories of our planet's surface water stores. Recently, there have been many open source data tools released to the community to help with data inquires, access and analytics. These tools are important resources as the data volume continues to build. In this presentation, we will provide an update on the operations and health of the observatory, review the many available data products served through the National Snow and Ice Data Center in the US, review new data tools available and highlight selected science results from the mission. As of this writing, more than ~10 million data granules have been downloaded by ~2700 unique data users. Recent science papers have documented the ongoing loss of mass from the Antarctic and Greenland ice sheets, the ability of ICESat-2 to measure the seasonal changes in sea ice freeboard and thickness throughout the year, and the potential for world-wide measurements of coastal bathymetry.