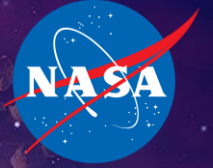


National Aeronautics and  
Space Administration



# EXPLORE SCIENCE

**A New Perspective on Change in Glacier Bay National Park**

**Christopher Shuman with Anita Davis, Geneviève de Messières, and Jenna Giddens**

Research Associate Professor UMBC Joint Center for Earth Systems Technology  
with Co-leads, Earth to Sky Partnership

25 November 2019

## Earth to Sky Connection Leads to A New Perspective on Change in Glacier Bay National Park

- In May 2019, National Park Service rangers Heidi Davis and Emma Johnson, an Earth to Sky (ETS) 2015 alumna, reached out to Anita Davis (ETS Co-lead) for an updated understanding of the changing glaciers in Glacier Bay National Park (GLBA), Alaska.
- Anita turned to Dr. Christopher Shuman (UMBC JCET), a scientist at NASA GSFC's Cryospheric Sciences Laboratory who has expertise on Alaska's glaciers.
- Dr. Shuman created a series of Landsat satellite images of GLBA from 1972, 1978, 1984, 1990, 1996, 2003, 2009, 2014, and 2018. His analysis showed widespread glacial melt and increased debris covered ice; flow system changes; ice front retreat; and recent landslides, some of which were news to park staff. This information and imagery was shared with the GLBA rangers in early July.
- One ranger stated that these images and Chris's assistance "completely transformed how they talk about glaciers at the park." The dramatic changes, not particularly evident from the ground, came into sharp focus when viewed using the time series of Landsat imagery.
- GLBA estimates that park rangers contacted nearly 1 million visitors with these images or with stories incorporating this new information, in both formal programs and informal visitor contacts in summer 2019.
- Dr. Shuman discussed future research opportunities with GLBA rangers during the Earth to Sky Academy in October 2019. He plans to update the time series using data from the most recent melt season that peaked in early September of 2019, then share it with GLBA staff before next year's tourist season.

Photos from top left: Landsat 2019 image showing widespread low albedo ice; GLBA ranger discussing the glacier change time series for an audience of 600 plus visitors; Chris meets ETS folks from SE Alaska face-to-face during the Earth to Sky Academy (GSFC, October 2019).

