

IceBridge wraps up successful Antarctic campaign

December 11 2013



This is the edge of the Ross Ice Shelf seen from the NASA P-3 on the return flight from McMurdo Station on Nov. 28, 2013. Credit: NASA / Jim Yungel

Operation IceBridge's 2013 Antarctic campaign came to a close after NASA's P-3 research aircraft returned to its home base, NASA's Wallops Flight Facility in Wallops Island, Va., on Dec. 3. During the mission's three-week-long campaign, which was delayed and shortened due to October's U.S. federal government shutdown, researchers completed five of seven possible science flights.

Flying the P-3 from the [sea ice](#) runway at the National Science Foundation's McMurdo Station meant that researchers could survey parts of Antarctica that were unreachable in previous campaigns. From Punta Arenas, Chile, NASA's DC-8 airborne laboratory can reach portions of the Antarctic Peninsula and West Antarctica after transiting the Drake Passage. The P-3 lacks the range to make these flights, but is better suited for flying from McMurdo's ice runway than the DC-8.

Flying from McMurdo also meant the P-3 was able to start collecting data right after takeoff. "During the five missions from McMurdo we have collected data 96 percent of the time," said Michael Studinger, IceBridge project scientist of NASA's Goddard Space Flight Center, Greenbelt, Md.

On these five flights, IceBridge collected data on many facets of Antarctic land and sea ice. IceBridge's laser altimeter, the Airborne Topographic Mapper or ATM, collected ice elevation data along paths previously measured by NASA's Ice, Cloud and Land Elevation Satellite, or ICESat, in 2009. In addition, ATM measured several key areas that will be used to ensure that the laser altimeter aboard NASA's ICESat-2, scheduled for launch in 2017, is taking accurate readings.

Other instruments aboard the P-3 also helped build a clearer view of changing Antarctic ice. The Multichannel Coherent Radar Depth Sounder, or MCoRDS, operated by the Center for Remote Sensing of Ice Sheets at the University of Kansas, Lawrence, Kansas, is a radar instrument that can measure ice thickness, detect internal layering in the ice and map the bedrock below. During one portion of the mission over the Transantarctic Mountains, MCoRDS found a bed depth that differed from the existing Antarctic dataset, Bedmap2. This is largely because of a shortage of airborne radar measurements in this region. On another flight, MCoRDS collected data that will help researchers connect layers in the ice between two deep ice core drill sites high on the Antarctic

plateau.

In addition to land ice, IceBridge also took measurements of sea ice in the Ross Sea, an area that has seen comparatively little attention compared to other parts of the Southern Ocean. With one dedicated sea ice flight, a portion of another survey and the return flight from McMurdo to Christchurch, New Zealand, instruments on the P-3 collected data on sea ice elevation and thickness of snow on top of the ice.

After the P-3's departure on Nov. 28, the remaining members of the IceBridge team began packing the instrument ground stations that ensure aircraft instrument accuracy and computer gear used to process data in the field, before boarding a ski-equipped LC-130 transport plane, flown by the 109th Airlift Wing, on the way back to New Zealand.

Running a successful campaign in a remote and busy scientific station like McMurdo took lots of planning and meant that IceBridge mission planners had to build and maintain relationships with people from a variety of different groups to make sure the P-3 could operate from the sea [ice](#) runway, that mission planners had up-to-date weather data, and that the entire team, which is larger than many expeditions at McMurdo, had the support they needed.

These relationships, built during the 18 month run-up to the campaign, will likely make things even smoother for the scheduled return of the mission to McMurdo in 2015. Next year, the P-3 will undergo scheduled maintenance, making it unavailable for the Antarctic campaign. Because of this, IceBridge will fly the DC-8 out of Punta Arenas in 2014.

Even with the P-3 back home and the rest of the team on the way, the work didn't stop. On Monday, Dec. 9, the P-3 is scheduled to fly a post-campaign calibration mission at NASA's Wallops Flight Facility in

Virginia. The purpose of that flight is to compare readings from before and after the Antarctic deployment to ensure instrument accuracy. While that is happening, IceBridge mission planners already have their eyes on the next campaign, a deployment to Greenland and Alaska starting in March 2014.

Provided by NASA's Goddard Space Flight Center

Citation: IceBridge wraps up successful Antarctic campaign (2013, December 11) retrieved 25 April 2024 from <https://phys.org/news/2013-12-icebridge-successful-antarctic-campaign.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.