

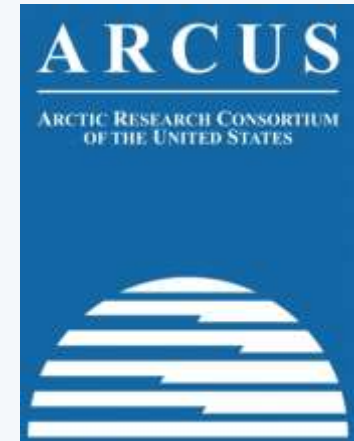
How to Use Real World Polar Data in a Florida Classroom



Adeena Teres, Steve Kirsche
October 20, 2017

What is PolarTREC?

- Since 2004, the Arctic Research Consortium of the United States (ARCUS), a non-profit organization, has been administering the PolarTREC Program.
- PolarTREC is professional development for K-12 teachers. They are paired with researchers for 2-6 week research experiences in the polar regions.
- Over 150 teachers from around the United States have joined scientists in the Arctic and Antarctica to learn about science, the polar regions, and to share what they have learned with their students and communities.

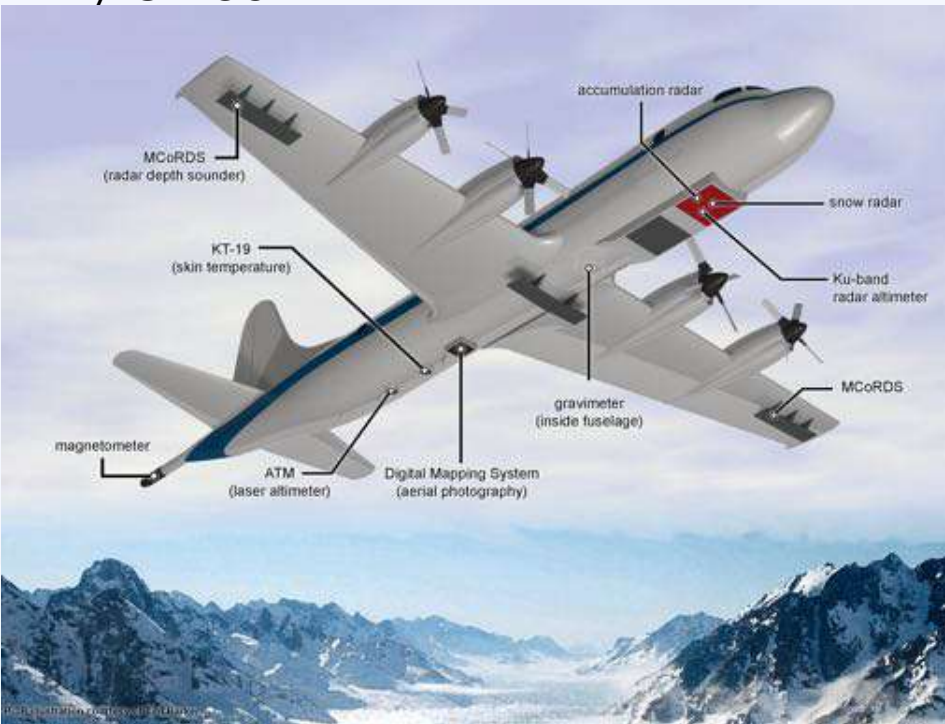


25 Years of Connecting Arctic Research
www.arcus.org

NASA's Operation Ice Bridge 2017

- Welcome to Greenland
- Researcher: John Woods and Operation IceBridge Arctic Campaign Spring 2017

My Office



Measuring Ice and Snow

- Largest airborne survey of Earth's polar ice regions ever flown!
- Yields crowd source data on Arctic and Antarctic Ice Sheets, Ice Shelves, and Sea Ice



How Teachers Can Use This

- Data archived at The National Snow and Ice Data Center
- <https://nsidc.org/data/icebridge>
- Site open to the public
- You Can open an account or be a guest



Dynamic Observations of the Microstructural Evolution of Firn

- Worked with Dr. Ian Baker, Professor of Engineering and Senior Associate Dean (Academic Affairs) at Dartmouth College
- Studying how the structure of ice crystals change as firn turns into ice
- Changes caused by temperature gradient and compression due to snow accumulation



Dynamic Observations of the Microstructural Evolution of Firn



<http://www.summitcamp.org/site/>



<http://maps.google.com>

- Spent 3 weeks at Summit Station, Greenland
- Collected ice core samples (remote site) to a depth of 80 meters

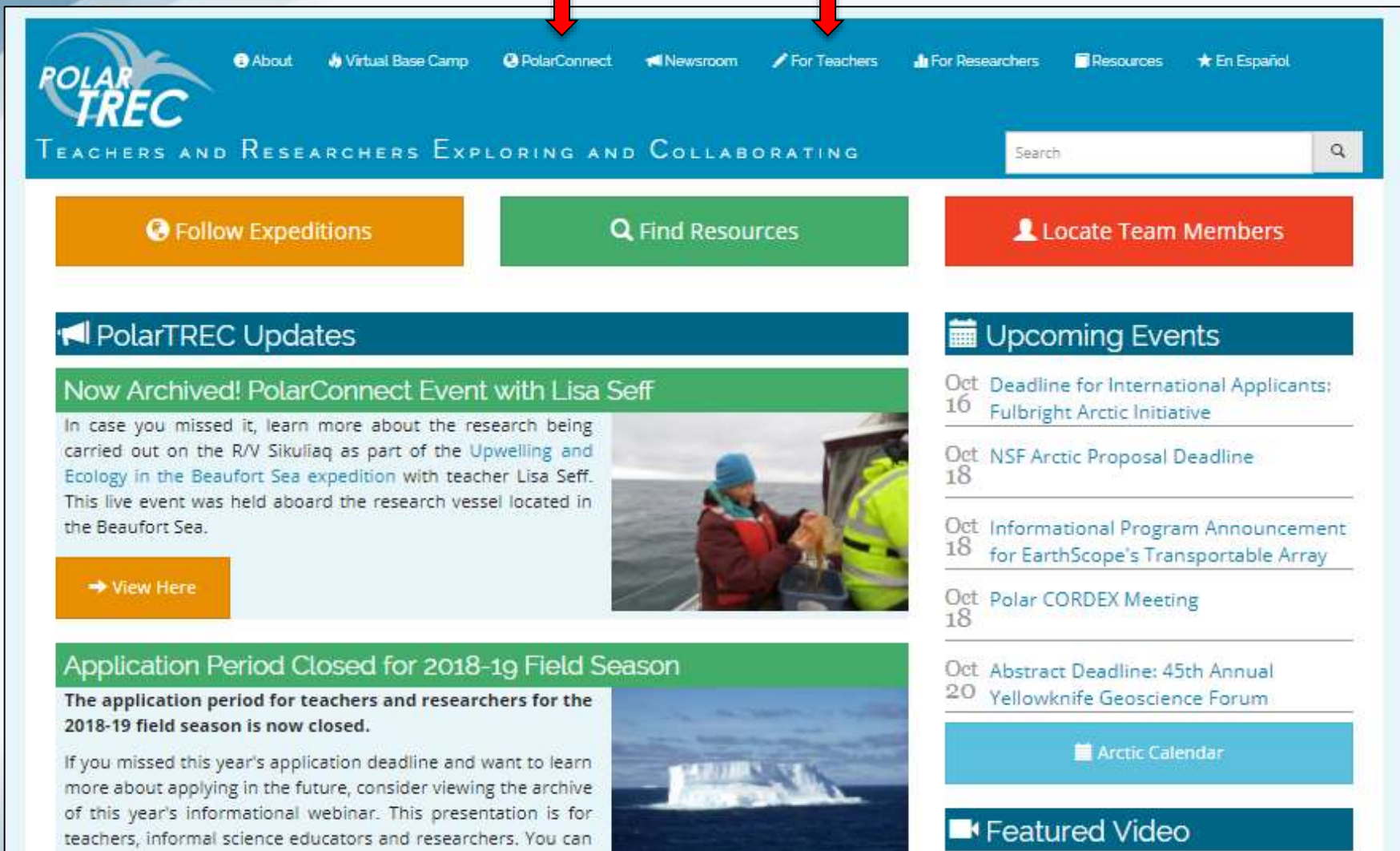
Dynamic Observations of the Microstructural Evolution of Firn

- Samples transported to Dartmouth
- Temperature gradient/pressure will be imposed and structure will be observed using x-ray computed micro-tomography (μ CT)



Resources Available from PolarTREC Website

- <http://www.polartrec.com>
- PolarConnect events allow real time video conferencing with PolarTREC teachers
- Participant's journals that document field work
- Lesson Plans available covering a wide range of topics



The screenshot shows the PolarTREC website interface. At the top is a blue navigation bar with the PolarTREC logo on the left and a list of menu items: About, Virtual Base Camp, PolarConnect, Newsroom, For Teachers, For Researchers, Resources, and En Español. A search bar is located on the right side of the navigation bar. Below the navigation bar are three large, colored buttons: an orange button for 'Follow Expeditions', a green button for 'Find Resources', and a red button for 'Locate Team Members'. The main content area is divided into three columns. The left column features a 'PolarTREC Updates' section with a green header. The first update is titled 'Now Archived! PolarConnect Event with Lisa Seff' and includes a text block and a photo of a person on a boat. Below this is a 'View Here' button. The second update is titled 'Application Period Closed for 2018-19 Field Season' and includes a text block and a photo of an ice formation. The middle column features an 'Upcoming Events' section with a blue header and a list of events with dates: Oct 16 Deadline for International Applicants: Fulbright Arctic Initiative, Oct 18 NSF Arctic Proposal Deadline, Oct 18 Informational Program Announcement for EarthScope's Transportable Array, Oct 18 Polar CORDEX Meeting, and Oct 20 Abstract Deadline: 45th Annual Yellowknife Geoscience Forum. Below the events is a blue button for 'Arctic Calendar'. The right column features a 'Featured Video' section with a blue header.

Sample Lessons

- Land Ice, Sea Ice and Sea Level Rise – Adeena



- Ice Cores: A Cool Way to Study the Past – Steve



Try them!

- Trying the lesson

Age	Accumulation				
Column 1: Age (thousand years before present)		1.64209	0.232827	3.31299	0.229629
		1.6709	0.23092	3.3418	0.228996
Column 2: Accumulation rate (m. ice/year)		1.69971	0.22909	3.37061	0.228532
		1.72852	0.227613	3.39941	0.228887
		1.75732	0.226839	3.42822	0.228653
		1.78613	0.227184	3.45703	0.228894
0.144043	0.244106	1.81494	0.229276	3.48584	0.229515
0.172852	0.246155	1.84375	0.232074	3.51465	0.230348
0.20166	0.248822	1.87256	0.235215	3.54346	0.230963
0.230469	0.249856	1.90137	0.237659	3.57227	0.232332
0.259277	0.249943	1.93018	0.240476	3.60107	0.233774
0.288086	0.249348	1.95898	0.242551	3.62988	0.234926
0.316895	0.248137	1.98779	0.243055	3.65869	0.235833
0.345703	0.246449	2.0166	0.242107	3.6875	0.236974
0.374512	0.244663	2.04541	0.2414	3.71631	0.238026
0.40332	0.243783	2.07422	0.240748	3.74512	0.238434
0.432129	0.242928	2.10303	0.239481	3.77393	0.23878
0.460938	0.242702	2.13184	0.239228	3.80274	0.238878
0.489746	0.24233	2.16065	0.240399	3.83154	0.238709
0.518555	0.242347	2.18945	0.242701	3.86035	0.237975
0.547363	0.24224	2.21826	0.244714	3.88916	0.237327
0.576172	0.242056	2.24707	0.246742	3.91797	0.236126
0.604981	0.241764	2.27588	0.247946	3.94678	0.234957
0.633789	0.240684	2.30469	0.247801	3.97559	0.233812

Thank You!

Questions?



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