



TEACHERS AND RESEARCHERS
EXPLORING AND COLLABORATING

Welcome to *PolarConnect*

With Russell Hood and the NASA
Operation IceBridge 2014
PolarTREC Expedition

Friday 18 April 2014

12:00 p.m. AKDT

(1:00pm PDT, 2:00 pm MDT, 3:00 pm CDT, 4:00 pm EDT)

Slides will be shown here

Exit the presentation

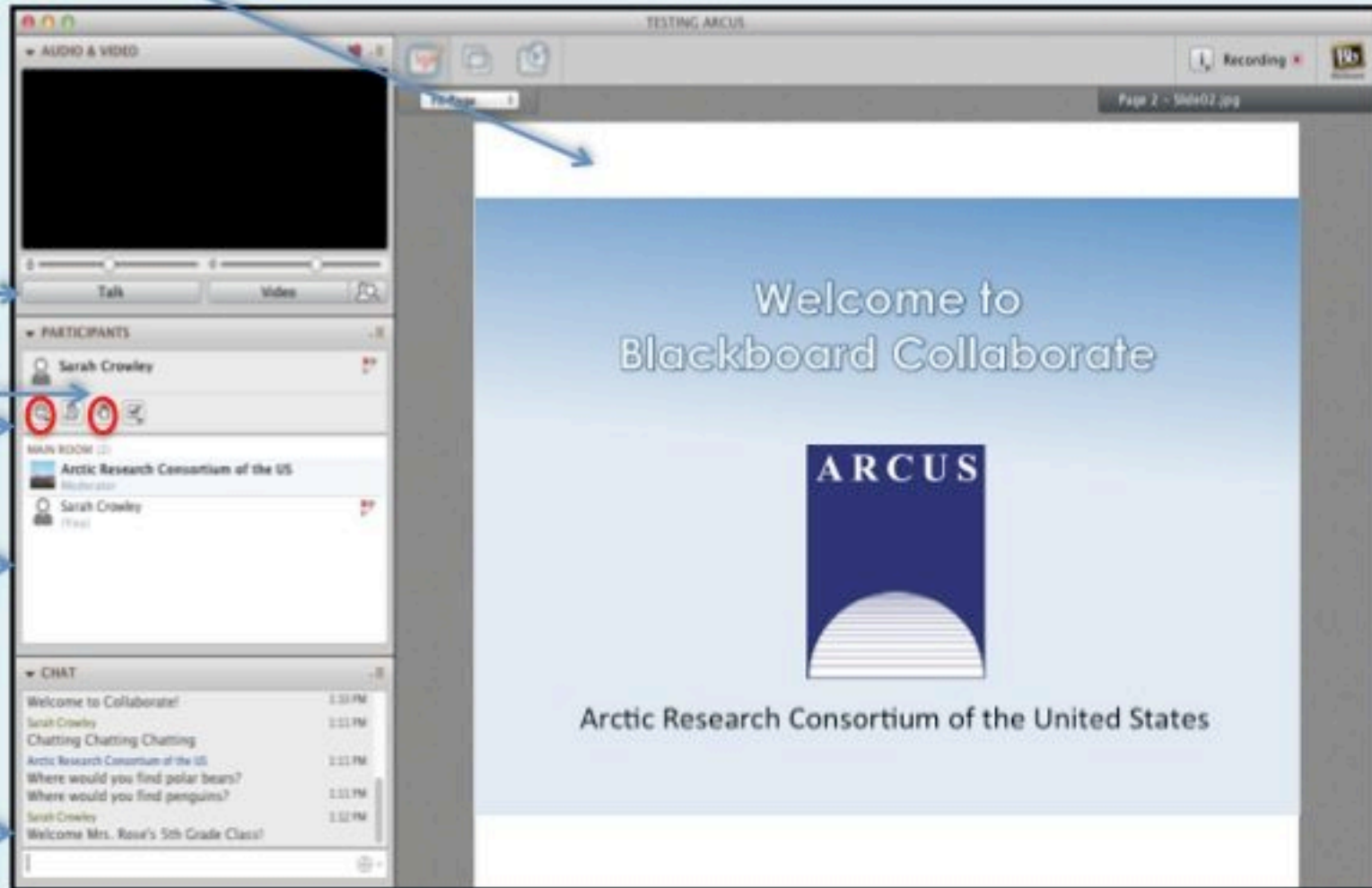
Click to Talk, Unclick to finish talking

Raise your hand to ask a question

Share with emoticons

List of all participants

Chat with one person or the entire group



The screenshot shows the Blackboard Collaborate interface. The main window displays a presentation slide titled "Welcome to Blackboard Collaborate" with the ARCUS logo and the text "Arctic Research Consortium of the United States". The sidebar on the left contains several sections: "AUDIO & VIDEO" with a black video feed and "Talk" and "Video" buttons; "PARTICIPANTS" with a list of users including Sarah Crowley and Arctic Research Consortium of the US, and icons for mute, unmute, and raise hand; "MAIN ROOM" with a list of participants; and "CHAT" with a list of messages and a text input field. Arrows from the text labels on the left point to the corresponding elements in the interface.

Please Note:

- Participants using the telephone can mute/unmute by **pressing *6** on the phone.
- Today's event will be recorded and archived.

Participant Introductions

Please type in the chat box:

- ✓ Name
- ✓ Affiliation (School, Institution, Etc.)
- ✓ The number of students and adults participating with you in the same location

What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers for 2-6 week research experiences in the polar regions.

From 2010-2015, 60+ teachers from around the United States will join 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.

Questions

During the Presentation:

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At the End of the Presentation:

- Raise your hand with the “hand button”.
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- Speak loud and clear and directly into the phone to ask your question.

Click on the Talk button to speak.

Unclick when you are done.

Operation Ice Bridge Greenland, 2014

By Russell Hood

Greenland is a place where...




The street names...



Imeqarfimmut

...are difficult to pronounce.



Tasersuatsiaq

...and dogs still pull sleds...



...and they hang laundry out to dry at
-10 degrees Fahrenheit.



...and locals
paint their
buildings...



...to brighten
their days.



Greenland
has...



...fascinating
rocks...

...and fascinating ice.



LOTS of ice!!!



Operation Ice Bridge is here to study the ice using several instruments aboard this plane.

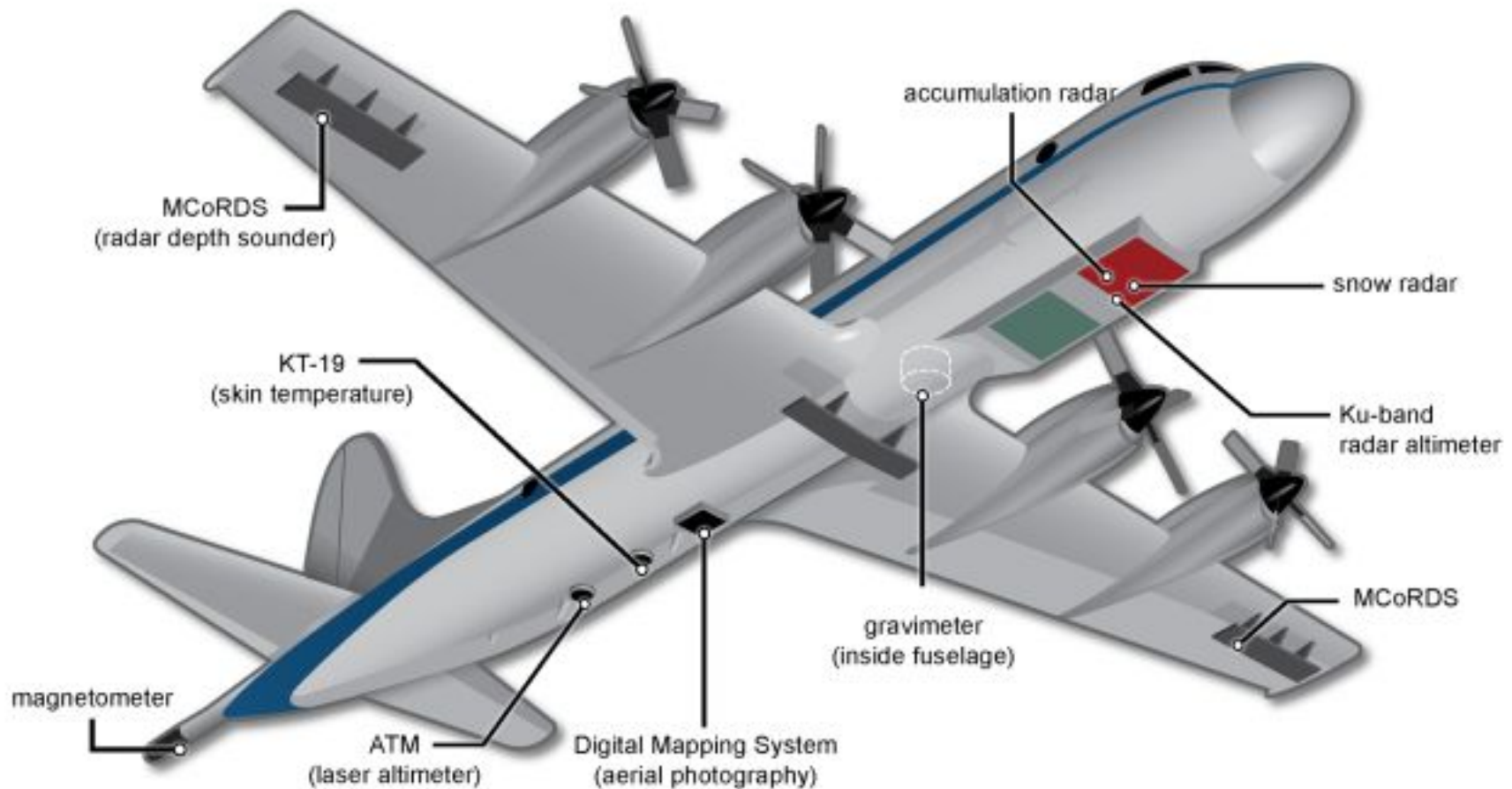




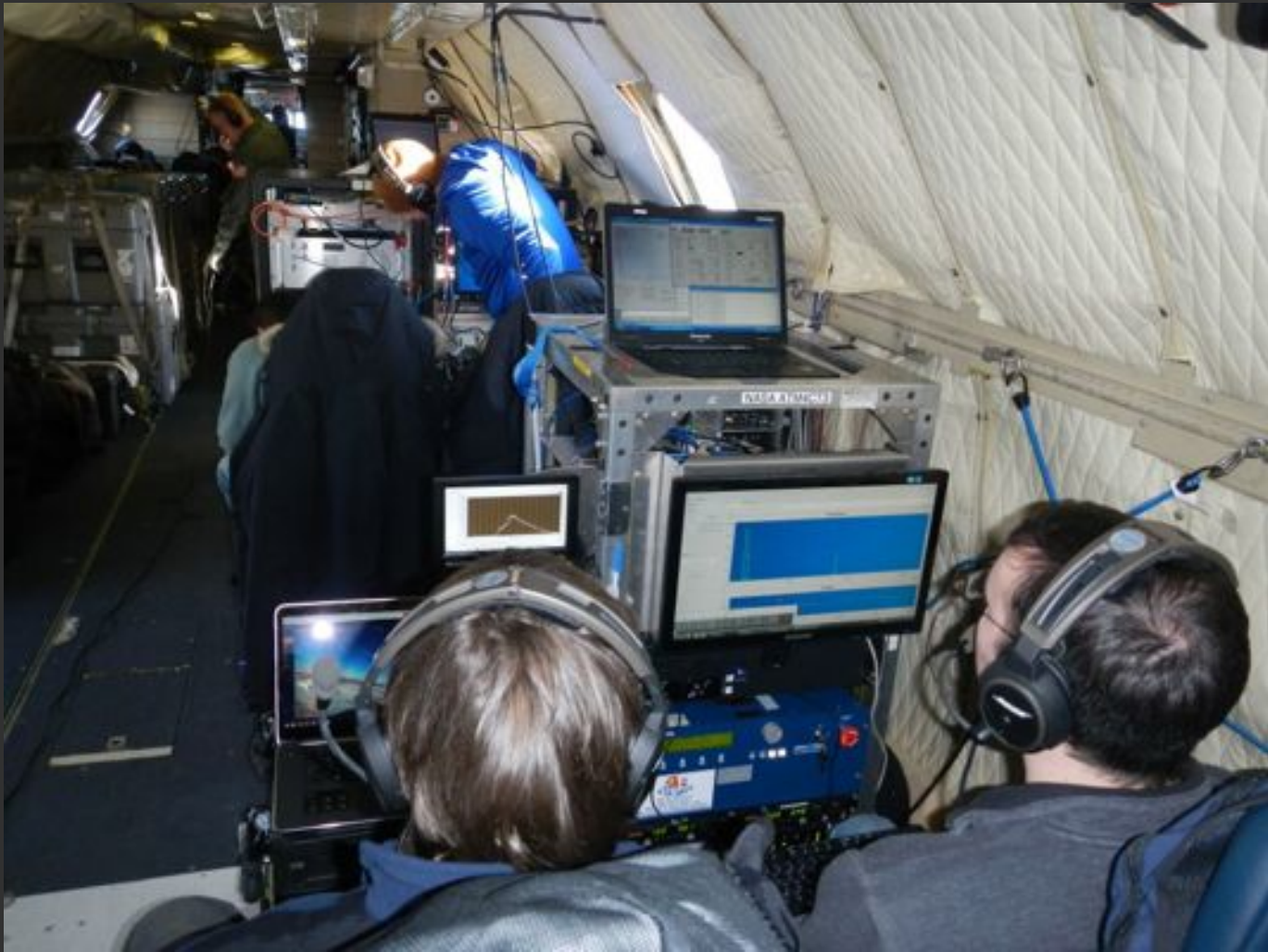
Each day we fly over Greenland's ice. You can see how we zig zag a lot to get large amounts of data for a small area. This route took us over the Jakobshavn Glacier.

Courtesy of NASA

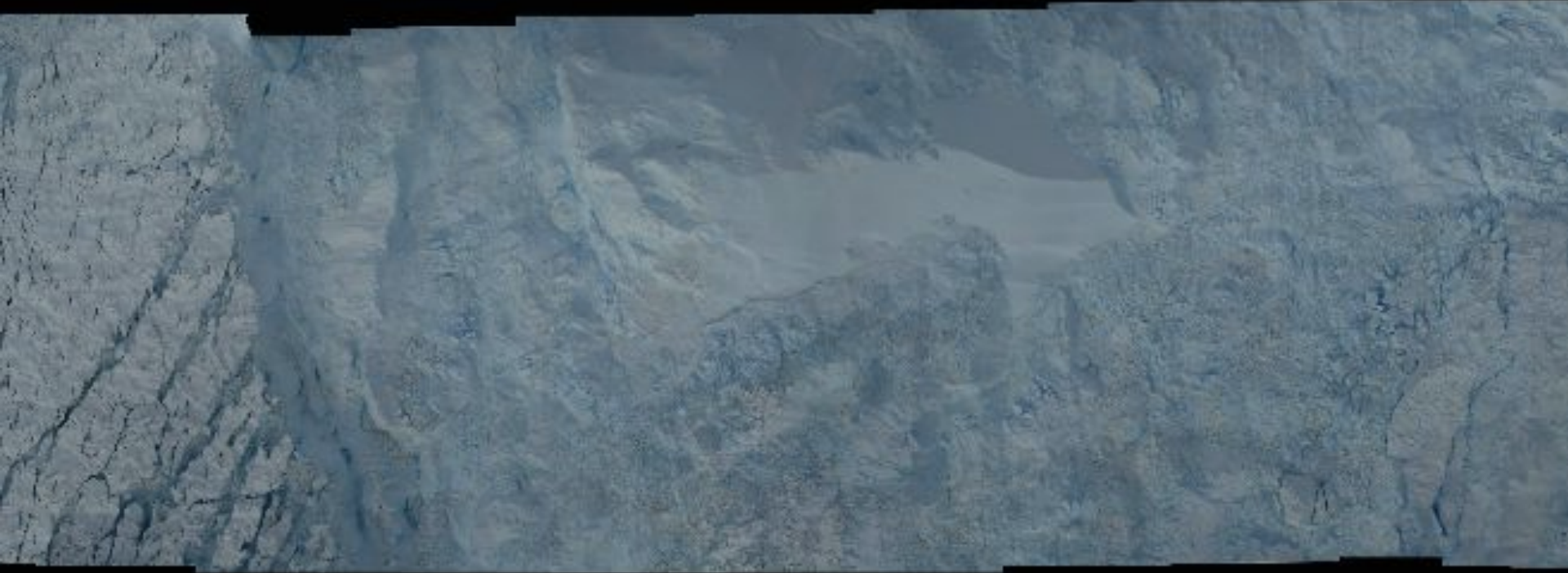
Our plane is a P3-Orion that has 4 radar systems, 2 lasers, and 4 digital cameras to collect data.



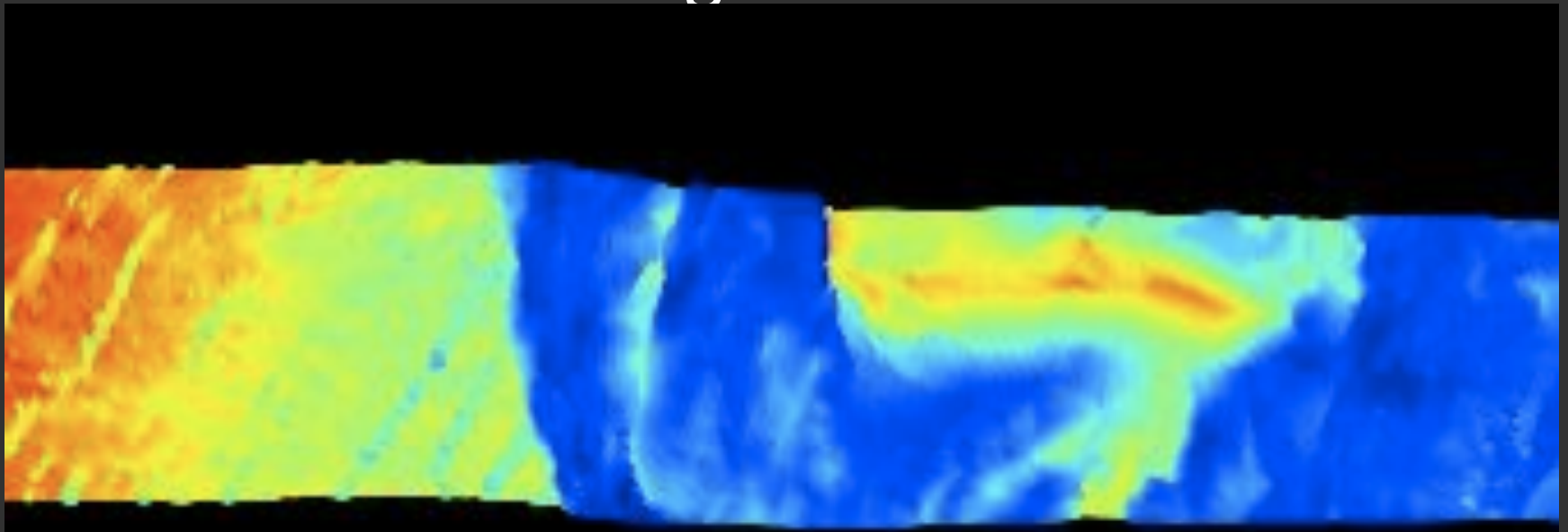
A view of the inside of the plane shows some of the instruments on board.



The Digital Mapping System (DMS) cameras point straight down and take pictures like this every 1.3 seconds.

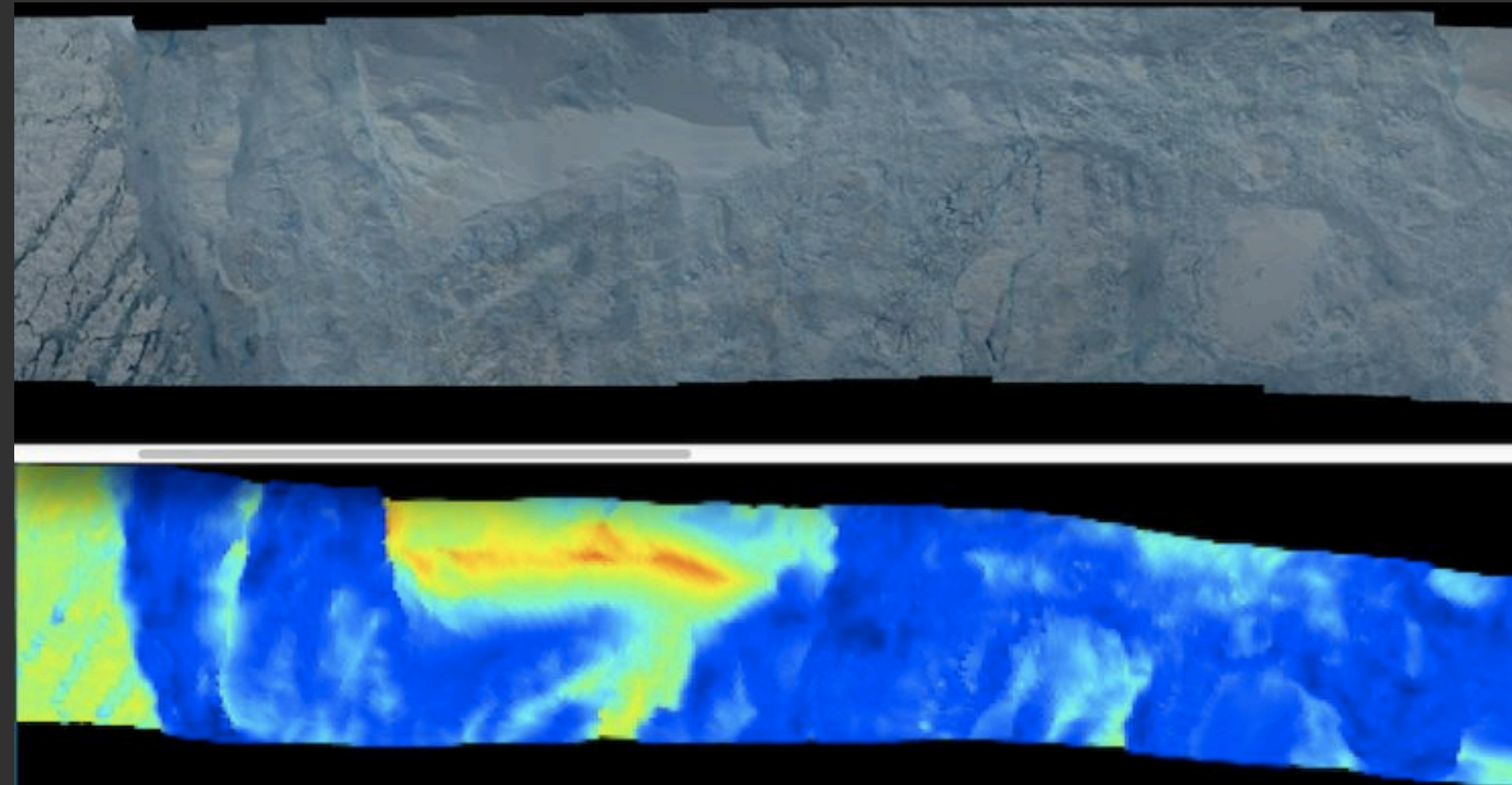


The Airborne Topographic Mapping (ATM) lasers on the bottom of the plane can accurately measure the height of the ice surfaces below. That information can be displayed like this: blue = sea level, orange = 60 m.



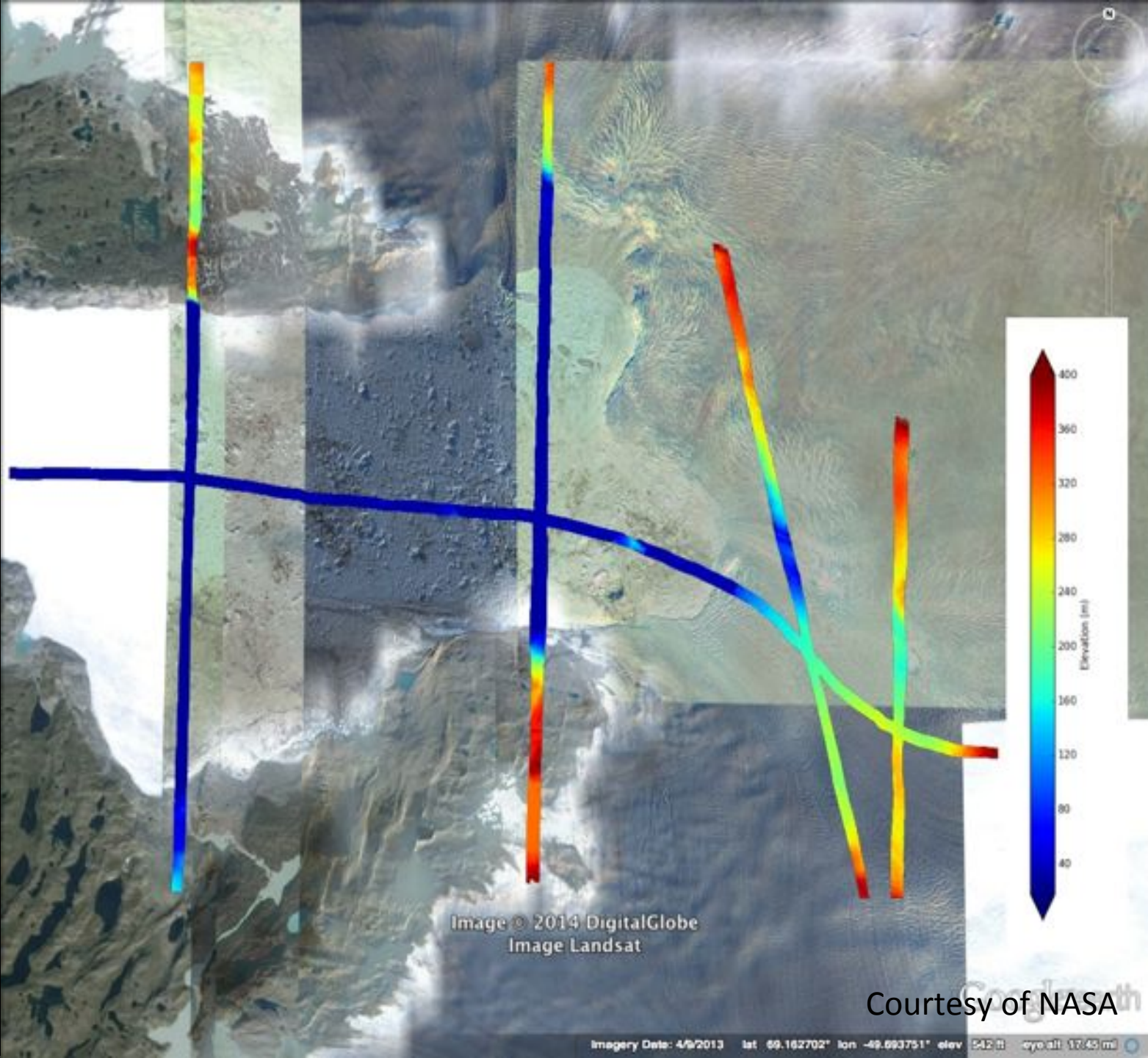
Courtesy of NASA

When placed together the data can tell us the height of the ice front (50 m) as well as the iceberg (60 m).

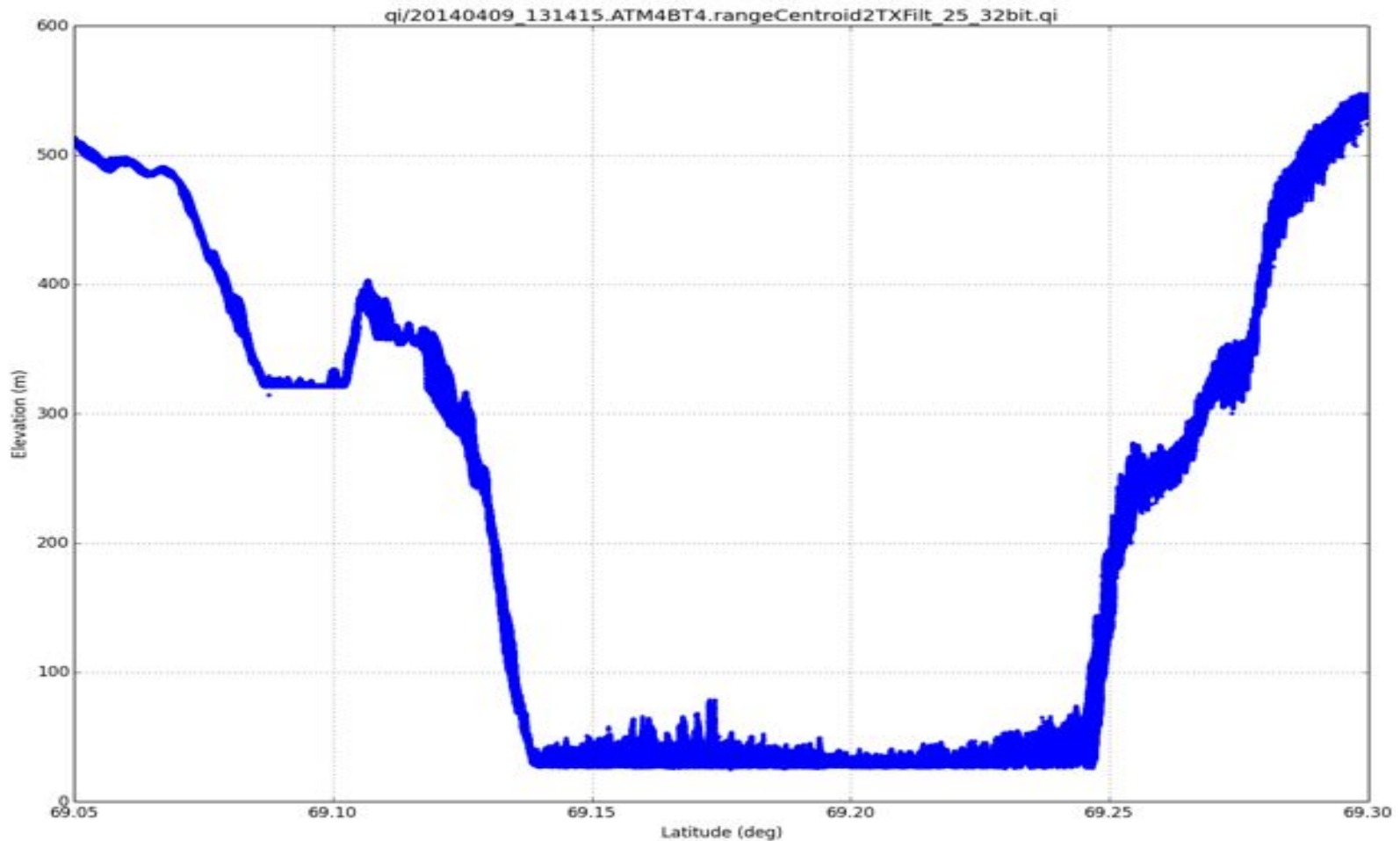


Courtesy of NASA

This slide shows our ATM data in color on top of a Google Earth image of the Jakobshavn Glacier ice front. This can quickly show us where the glacier has gained or lost ice.



The laser (ATM) data shows cross-section of the ice front of the Jakobshavn Glacier. The “well” at the bottom shows icebergs floating in front of the glacier.

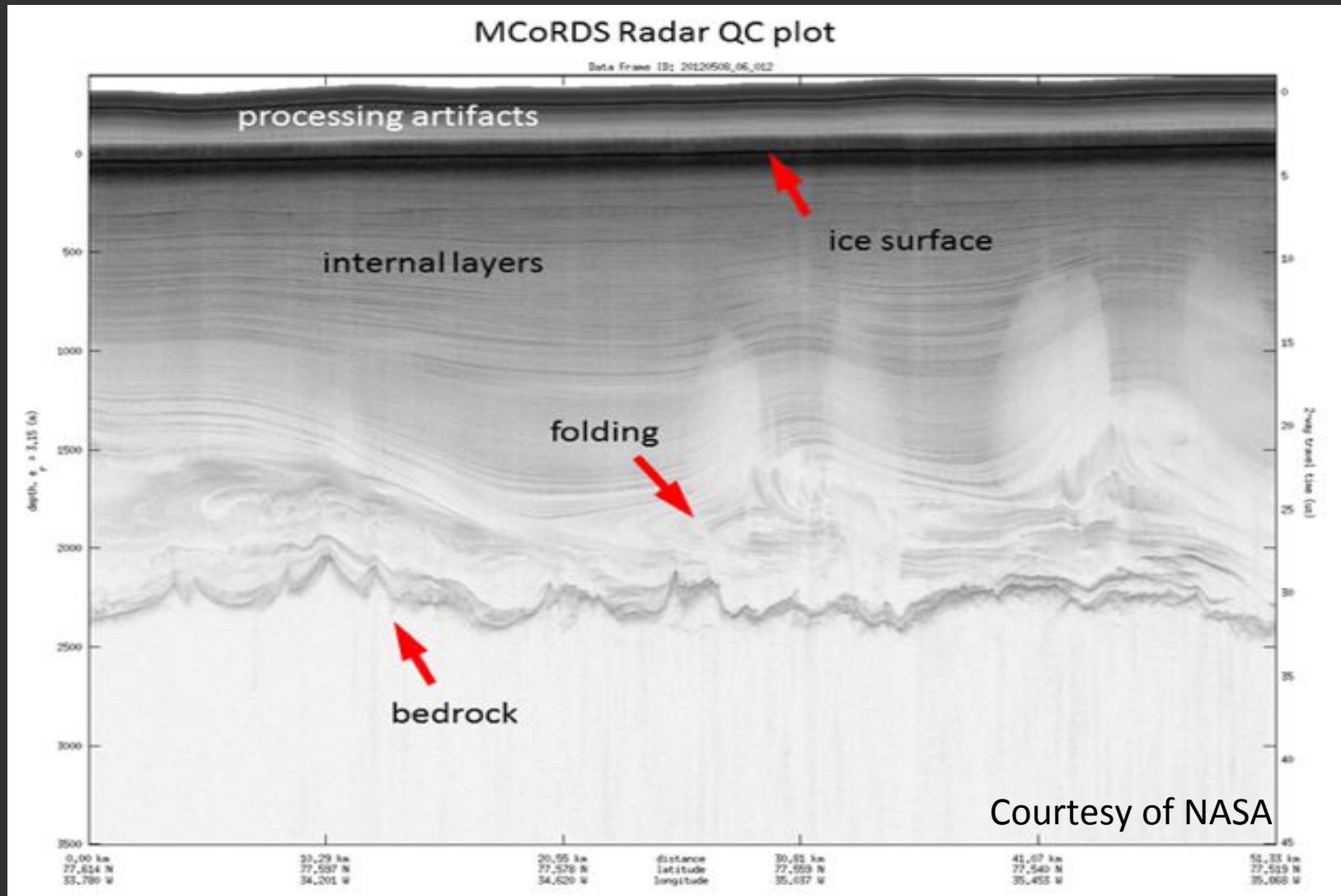


Courtesy of NASA

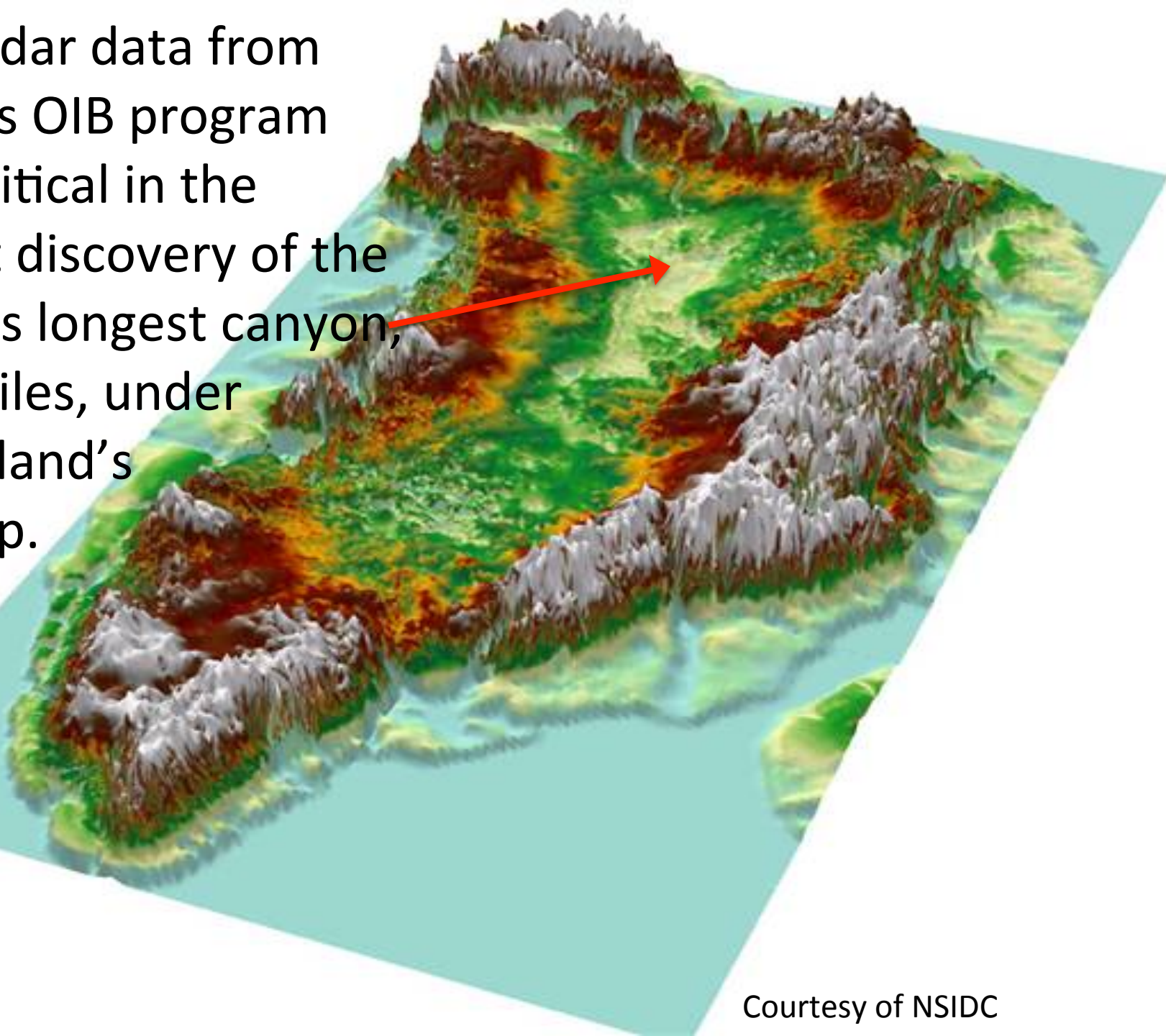
The four radars on board the plane can:

- Map the bedrock that lies beneath more than 3 km of ice! (MCoRDS)
- Determine the snow thickness on top of sea ice. (SNOW)
- Provide information about the top layer of ice on a glacier. (Accumulation)
- Determine the elevation of the top of ice. (Ku radar)

Raw radar data looks like this. In this case the bedrock is between 2.0 – 2.5 km deep.



The radar data from NASA's OIB program was critical in the recent discovery of the world's longest canyon, 460 miles, under Greenland's ice cap.



The data from Operation Ice Bridge is critical for researchers to fully understand how the earth's changing climate affects Greenland's ice cap. The long term results indicate that the ice is melting at an ever increasing rate. The big question is:

“What should we do about it?”



Collecting data on a long flight can be exhausting! But it's worth it.

Special thanks to NASA and the 2014 Operation Ice Bridge team members for welcoming me into their family. I appreciate your patience with my relentless questioning and your willingness to go the extra mile for me. Thank you all.

Any questions???



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Teachers: Join PolarTREC!

www.polartrec.com/about/join

Every teacher can participate in different ways:

- **Following Expeditions**
- **Participate in PolarConnect Events**
- **Join the Polar Education Email List**
- **Become a PolarTREC Teacher!**

Upcoming Events

Watch for and register for upcoming events at [www.polartrec.com!](http://www.polartrec.com)

Thank You!

An archive of the event will be available shortly.

<http://www.polartrac.com/polar-connect/archive>

