

Observations of basal change from repeat radar measurements

Cameron Lewis, Prasad Gogineni, Carl Leuschen, John Paden, all at Cressis, KU

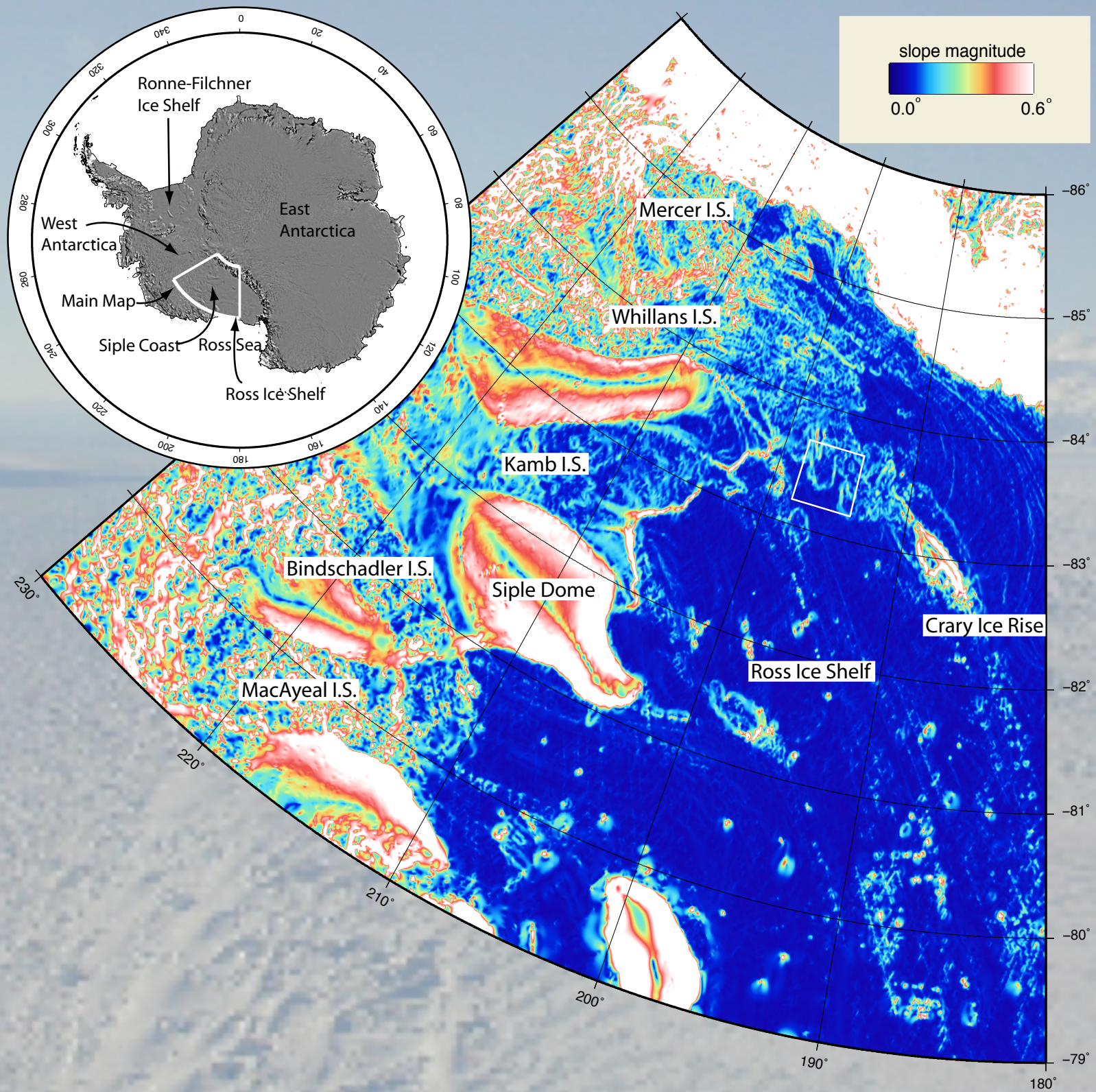
Peter Burkett, Sridhar Anandakrishnan at Cressis, PSU

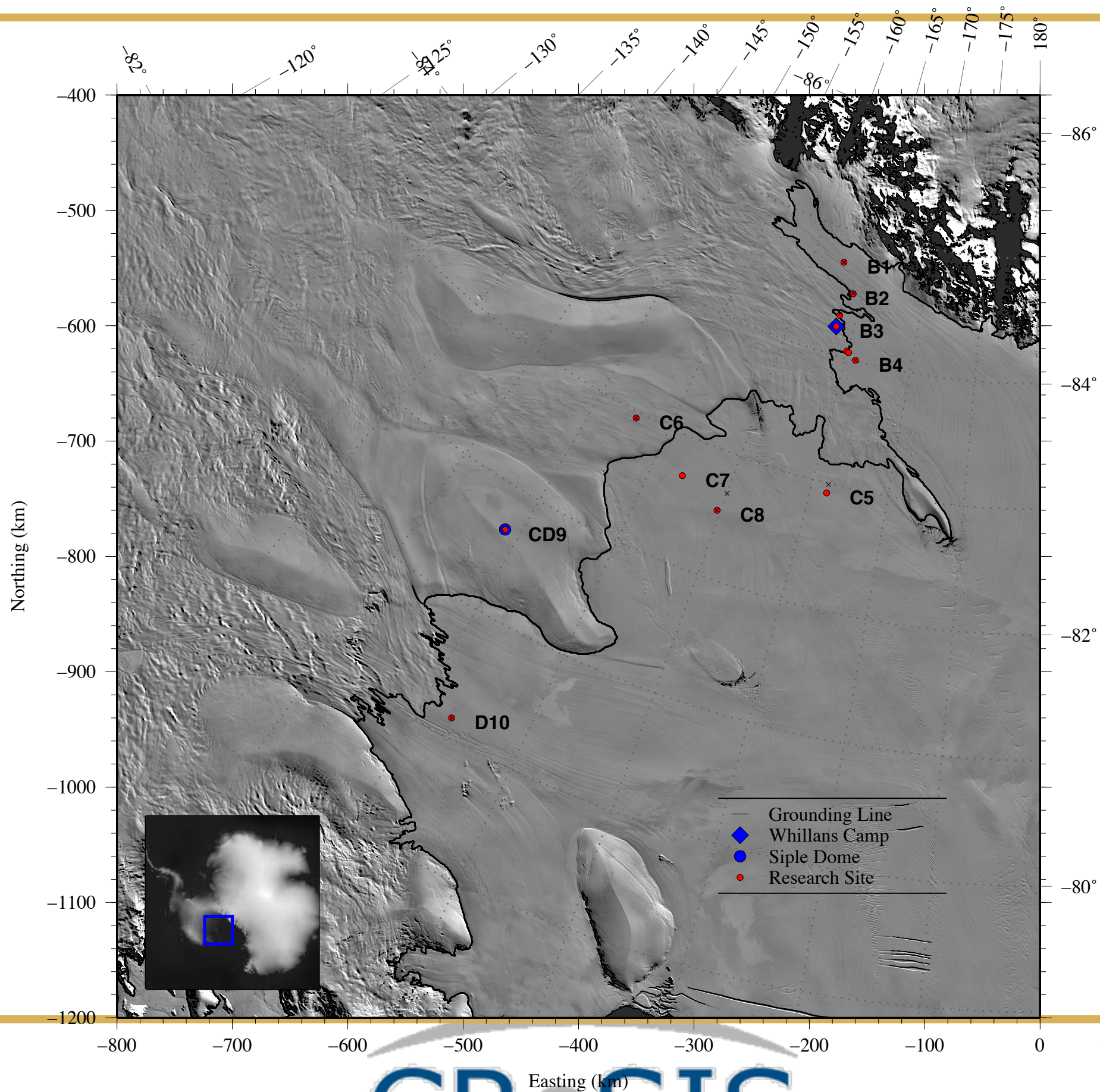
1



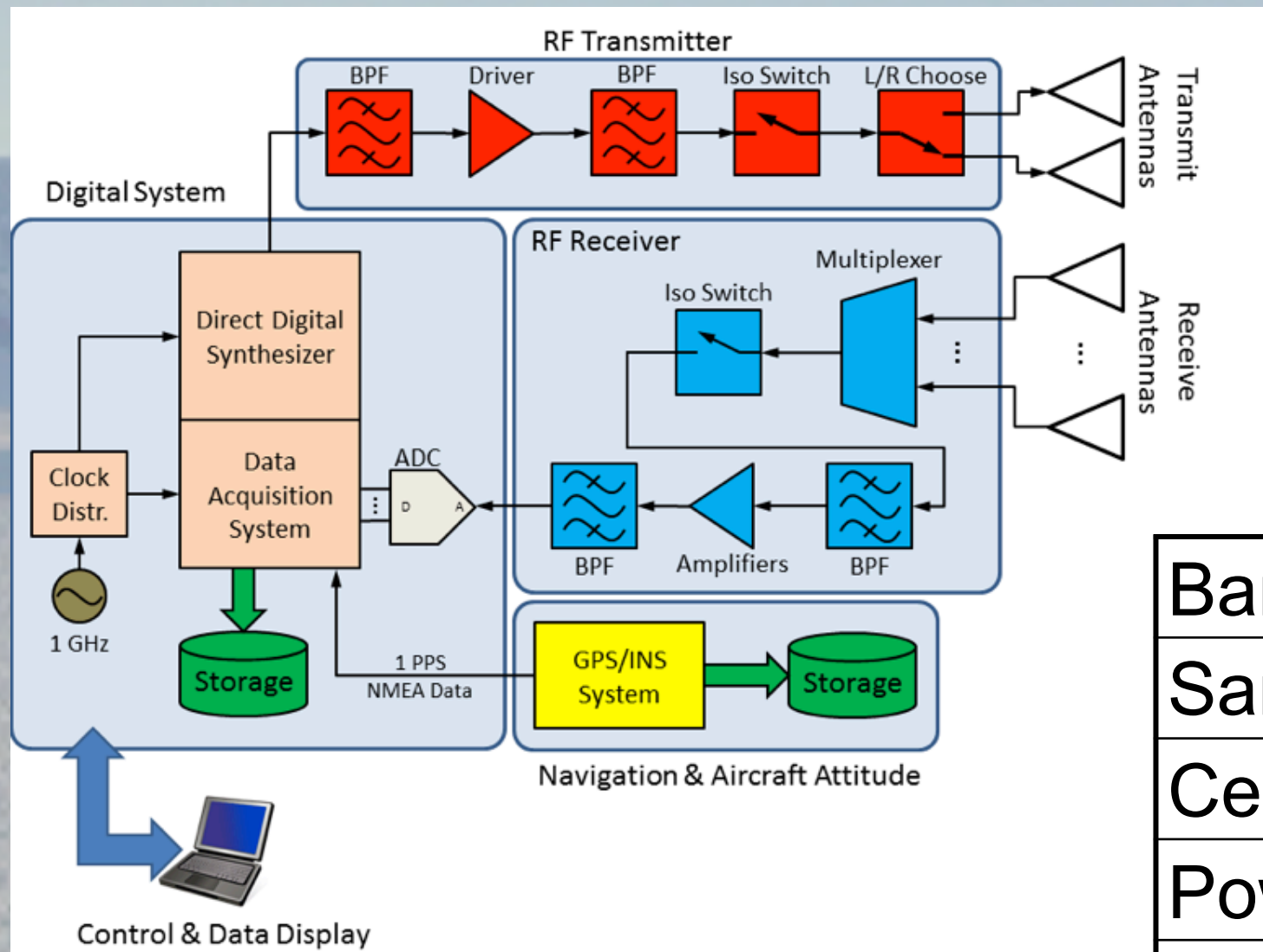
Ice ocean interactions

- Grounding lines of the Siple Coast ice streams
- Instrumentation
 - Broadband profiling radar
 - phase sensitive profiling radar
 - Array radar
- Field work





Ground Radar

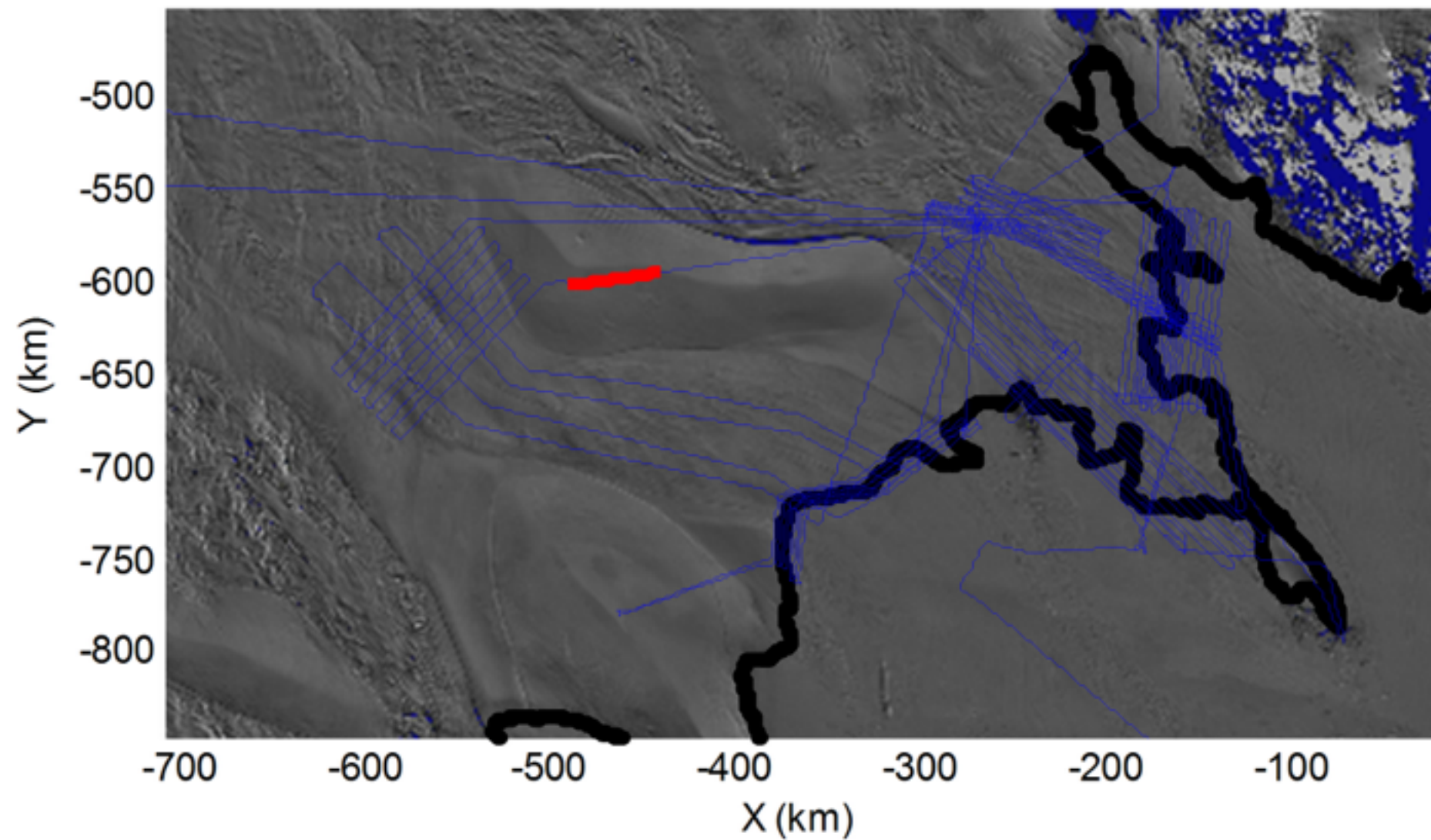


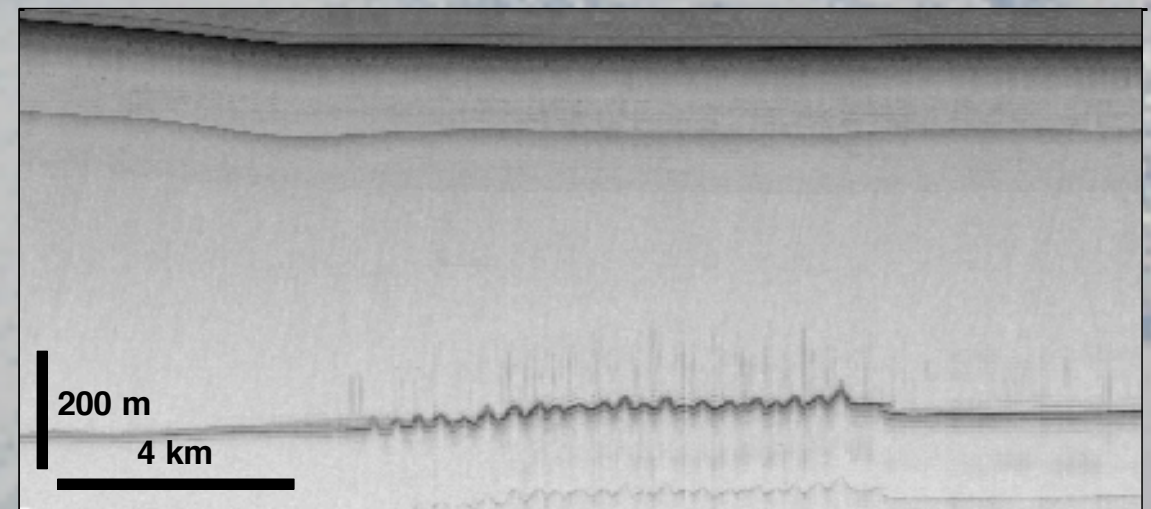
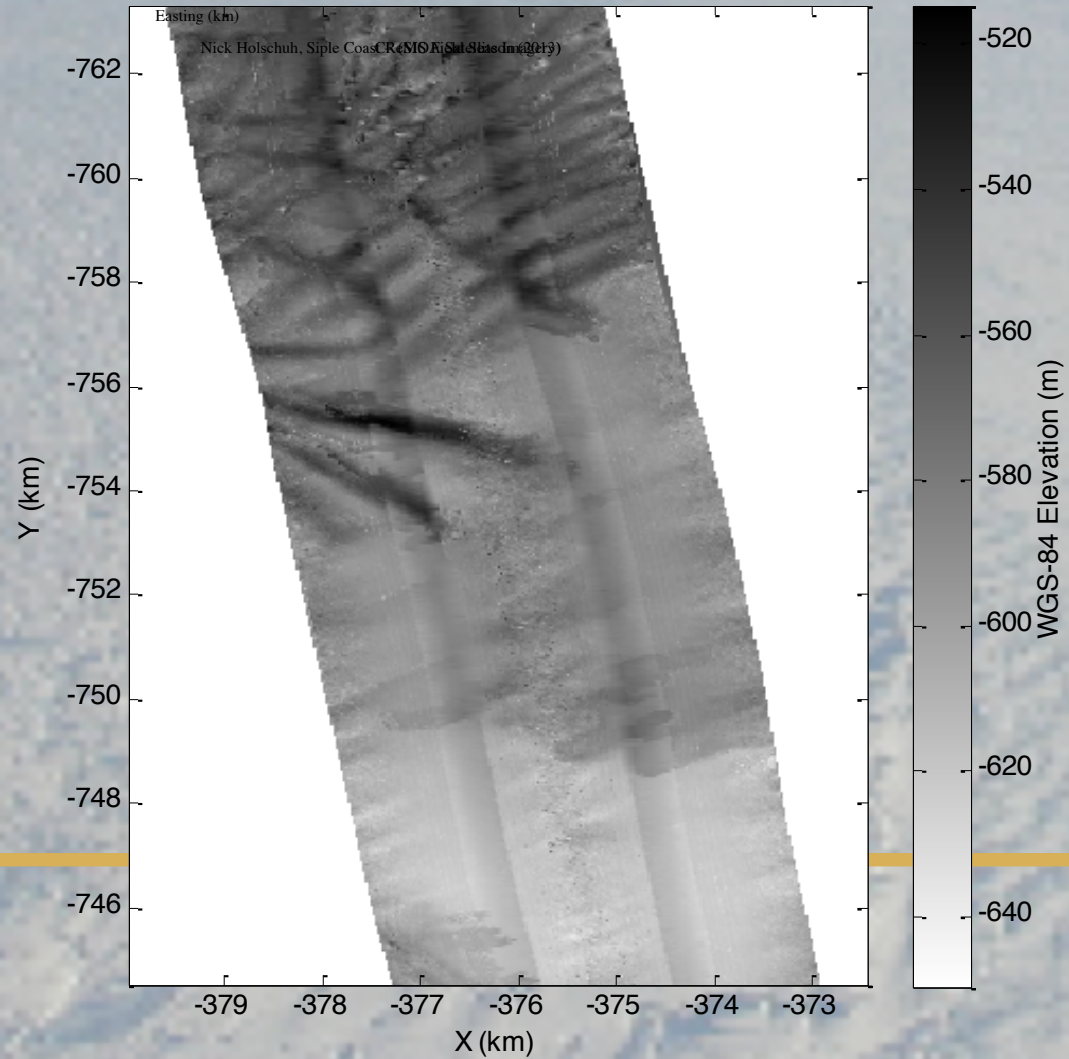
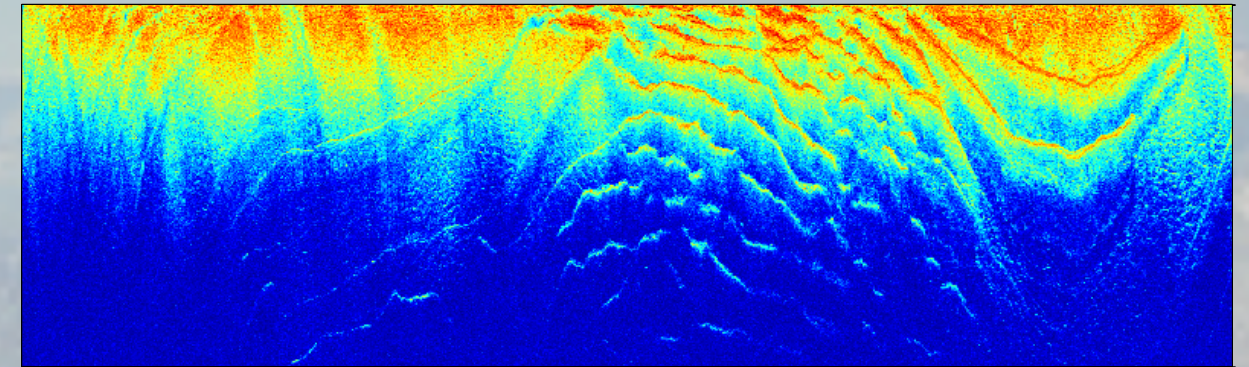
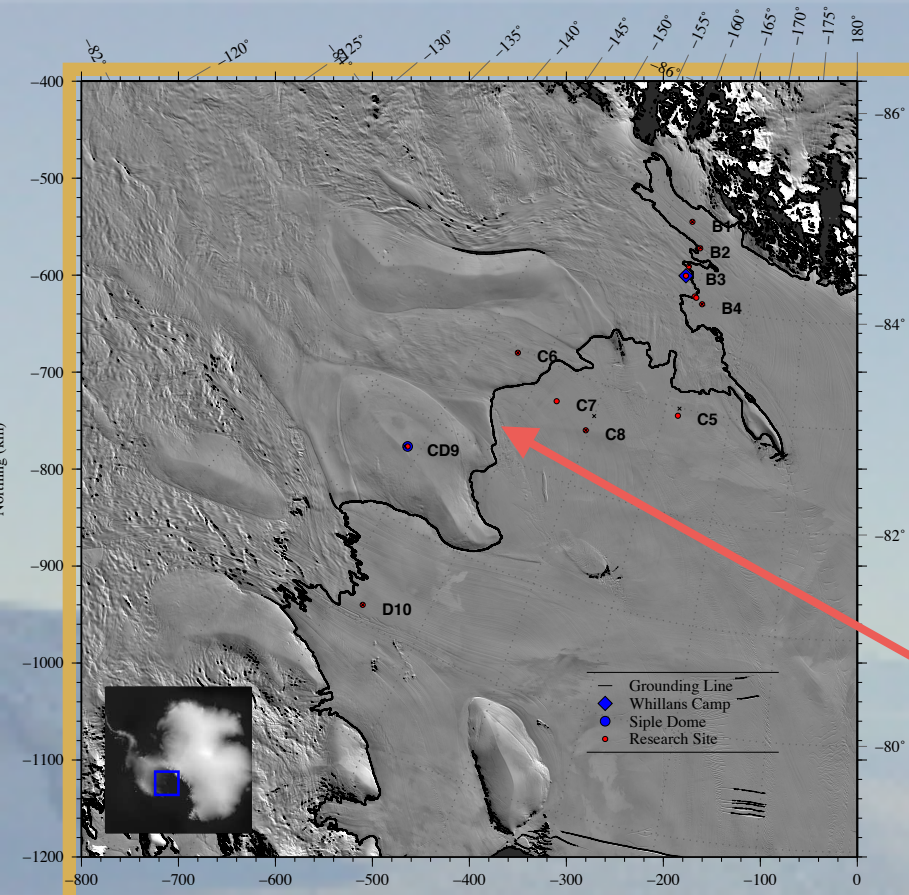
Bandwidth	300 MHz
Sampling Rate	1 GHz
Center Freq	750 MHz
Power	5W
Sensitivity	145 dB
Tx/Rx	2/6 Ping-Pong

For John and Michelle

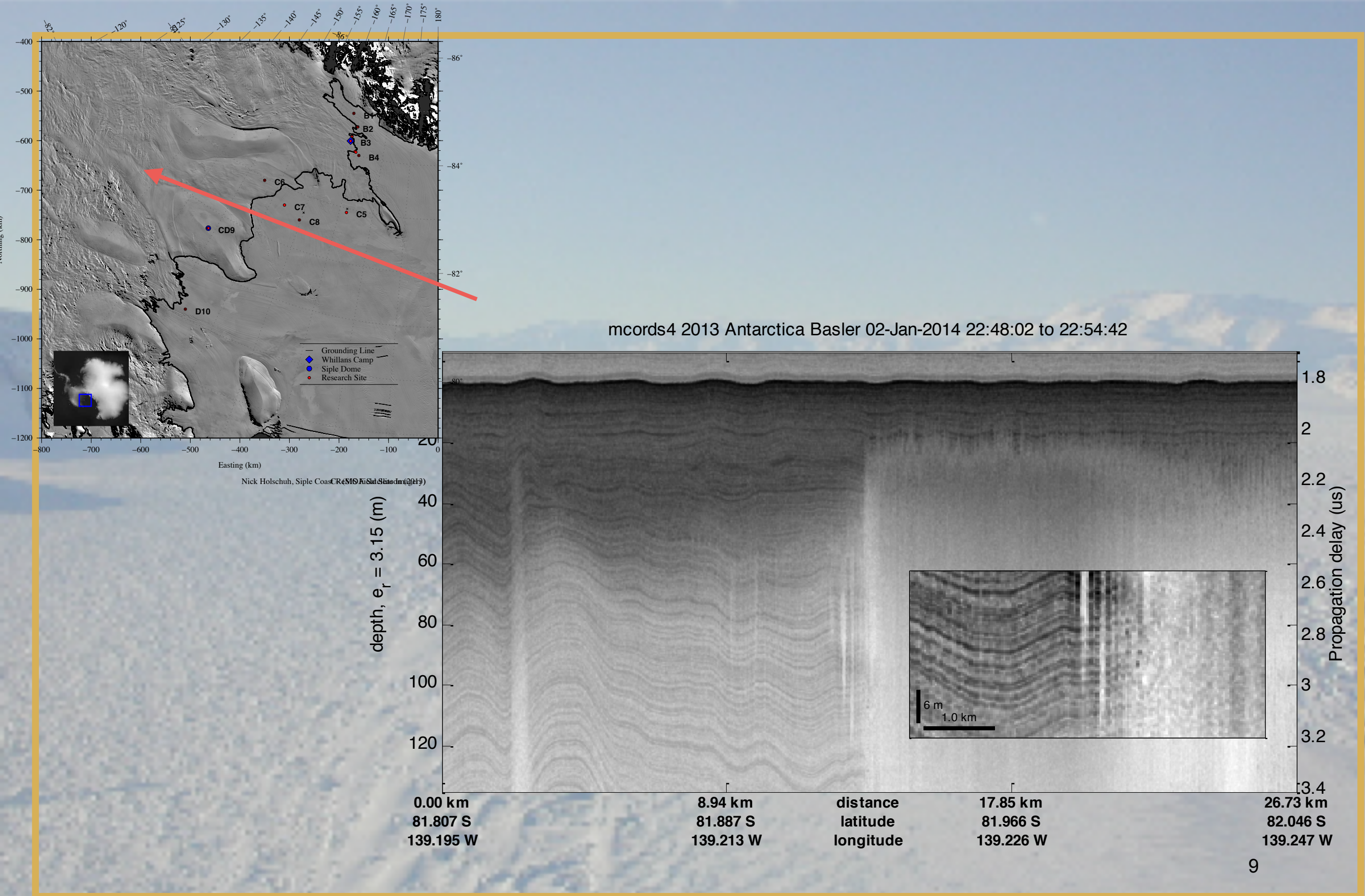


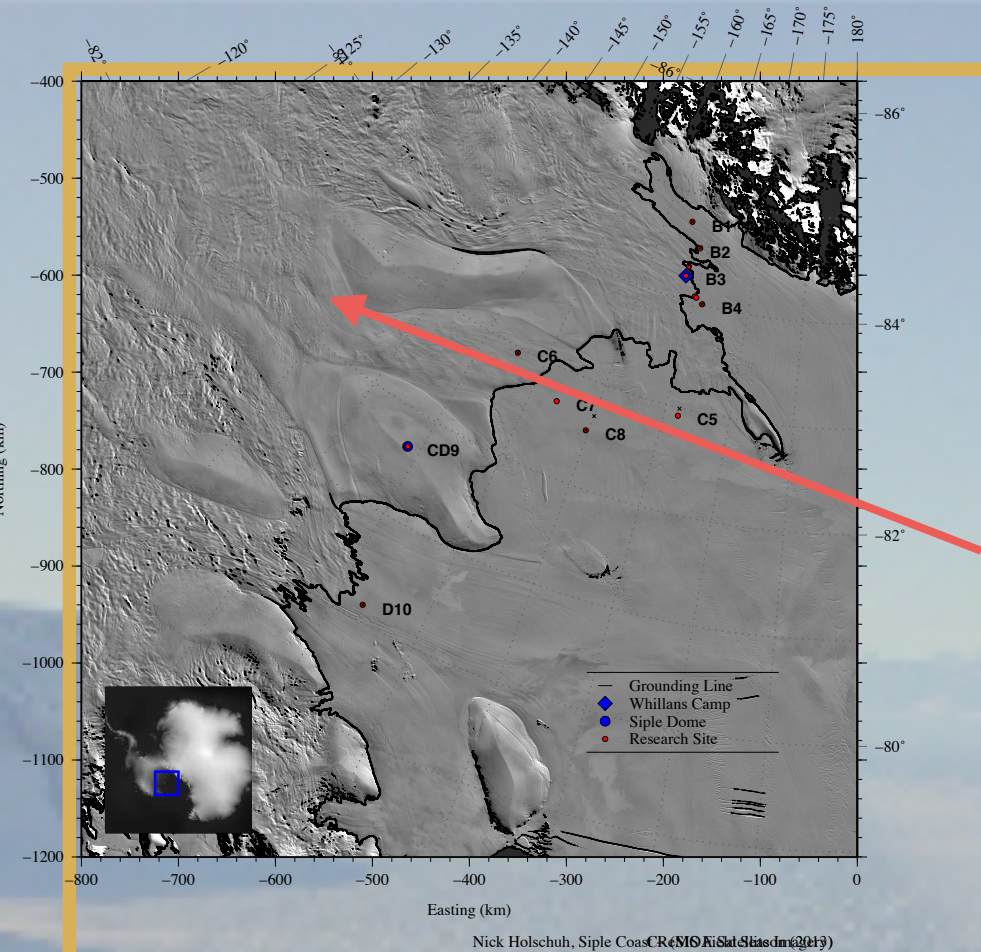
Cresis DC3 2013/14 coverage





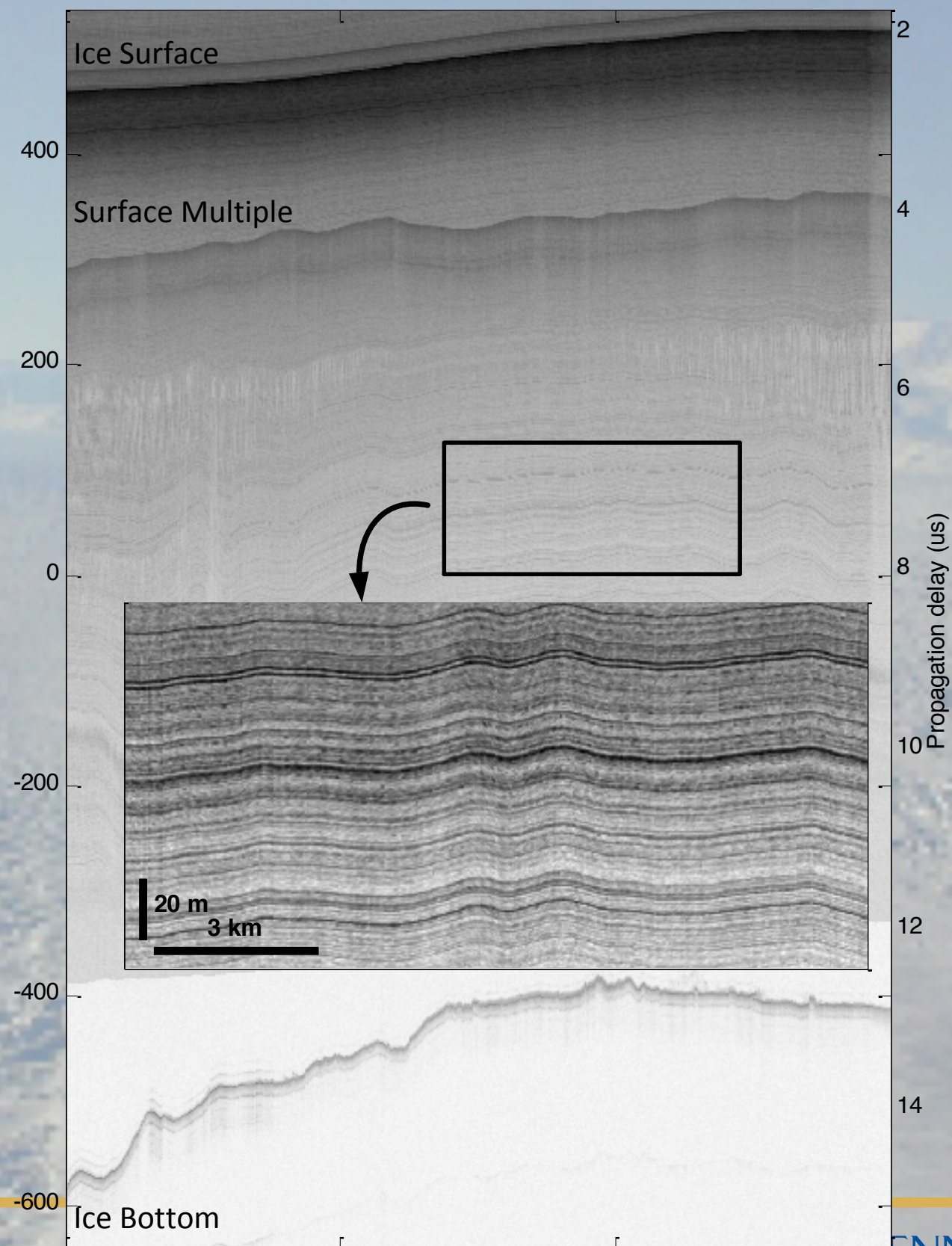
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mcords4 2013 Antarctica Basler 02-Jan-2014 21:59:40 to 22:12:17

WGS-84 Elevation, $e_r = 3.15$ (m)



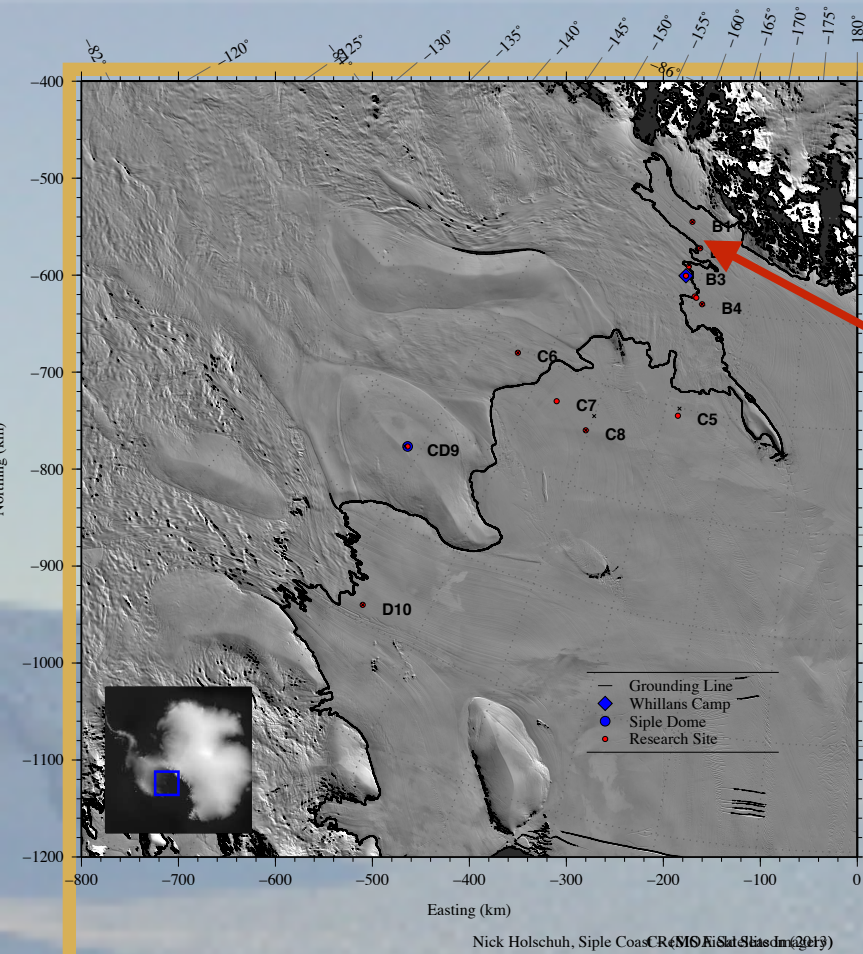
0.00 km
83.190 S
143.276 W

17.06 km
83.080 S
142.396 W

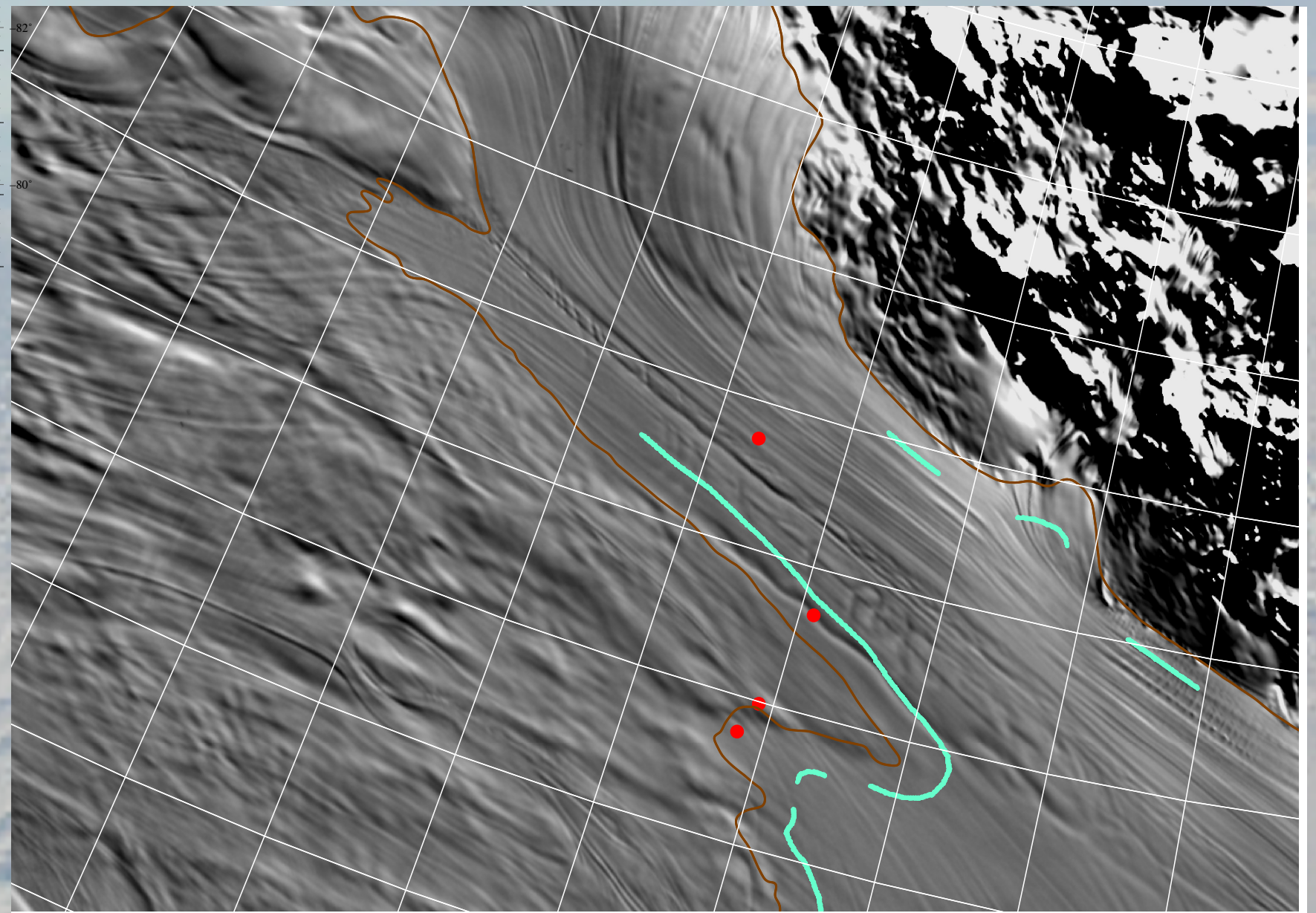
distance
latitude
longitude

34.08 km
82.969 S
141.538 W

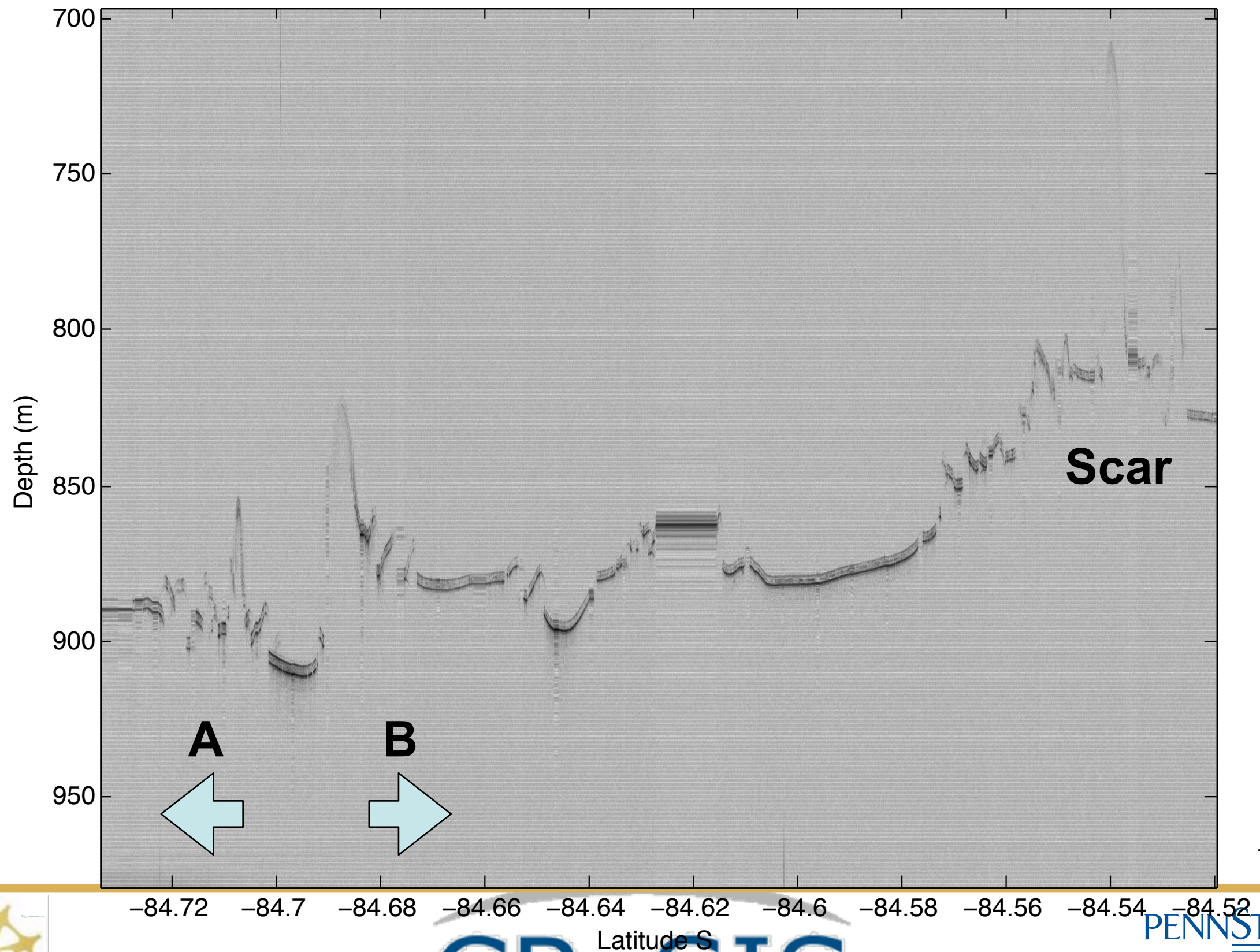
51.11 km
82.860 S
140.675 W



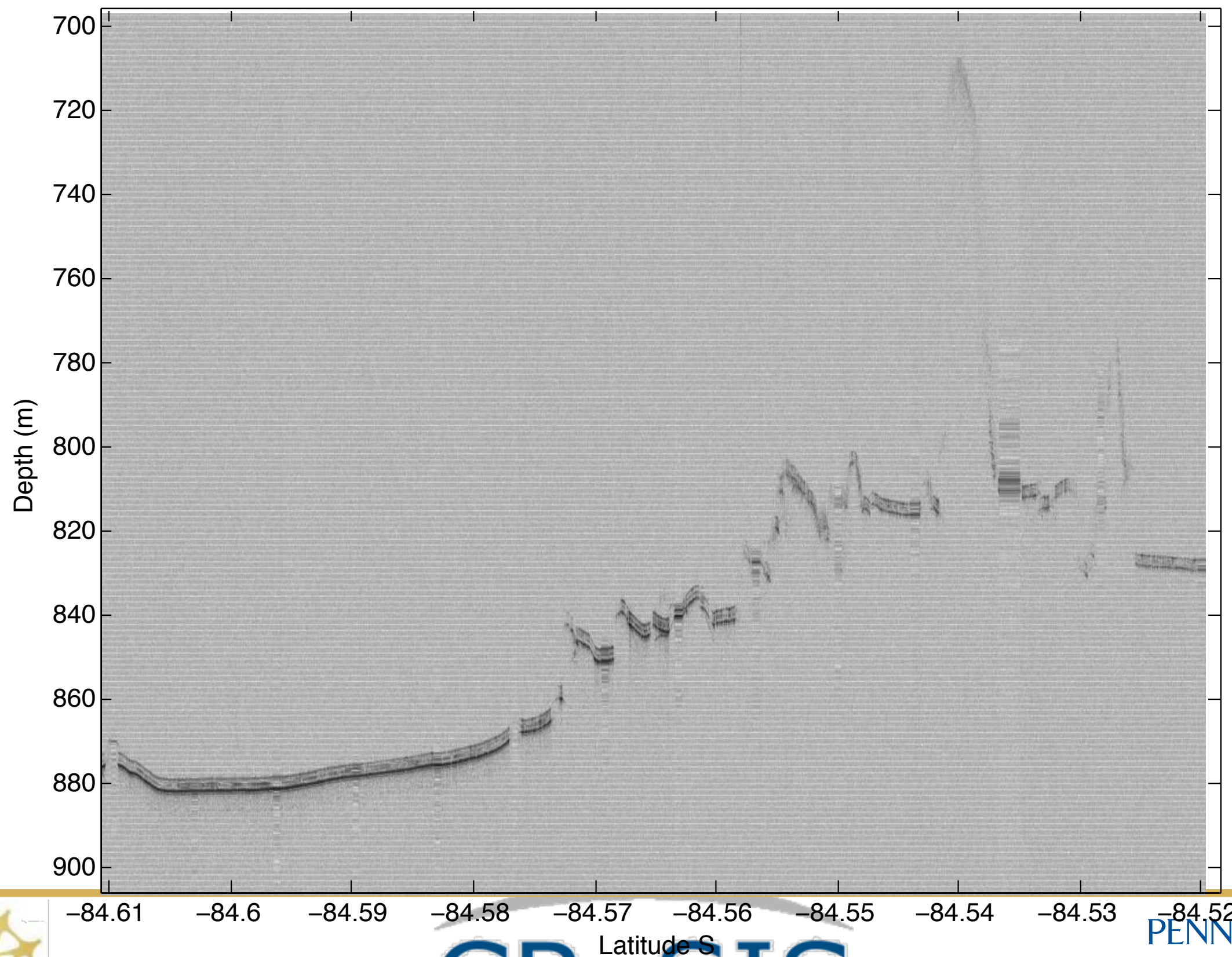
Nick Holschuh, Siple Coast CRISM Radar Team (2013)



B1B2 2014-01-19

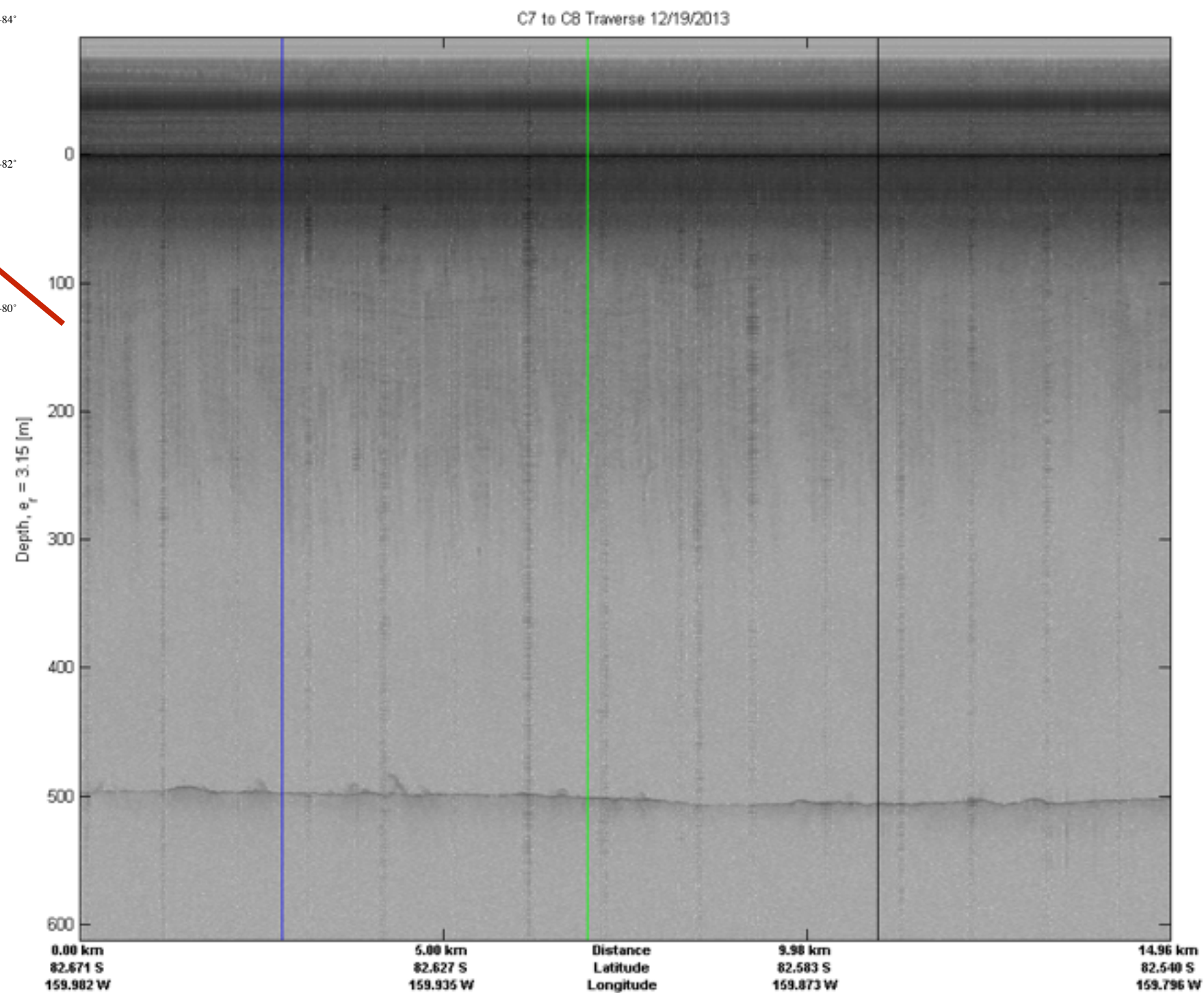
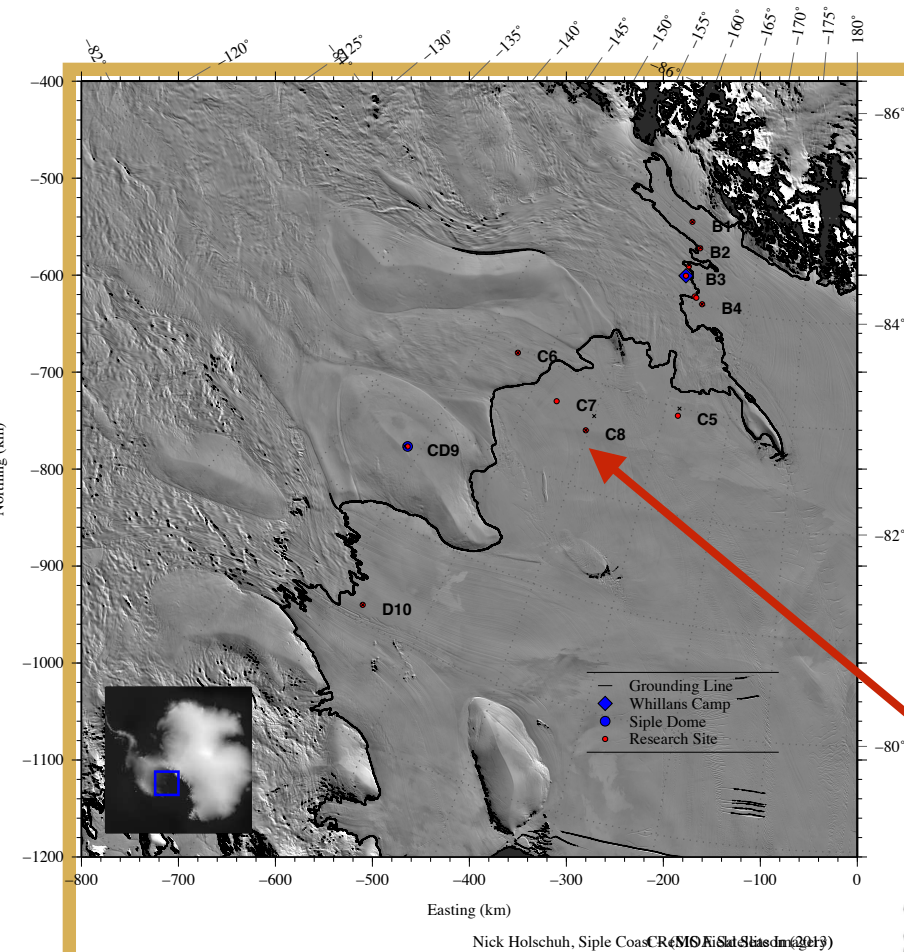


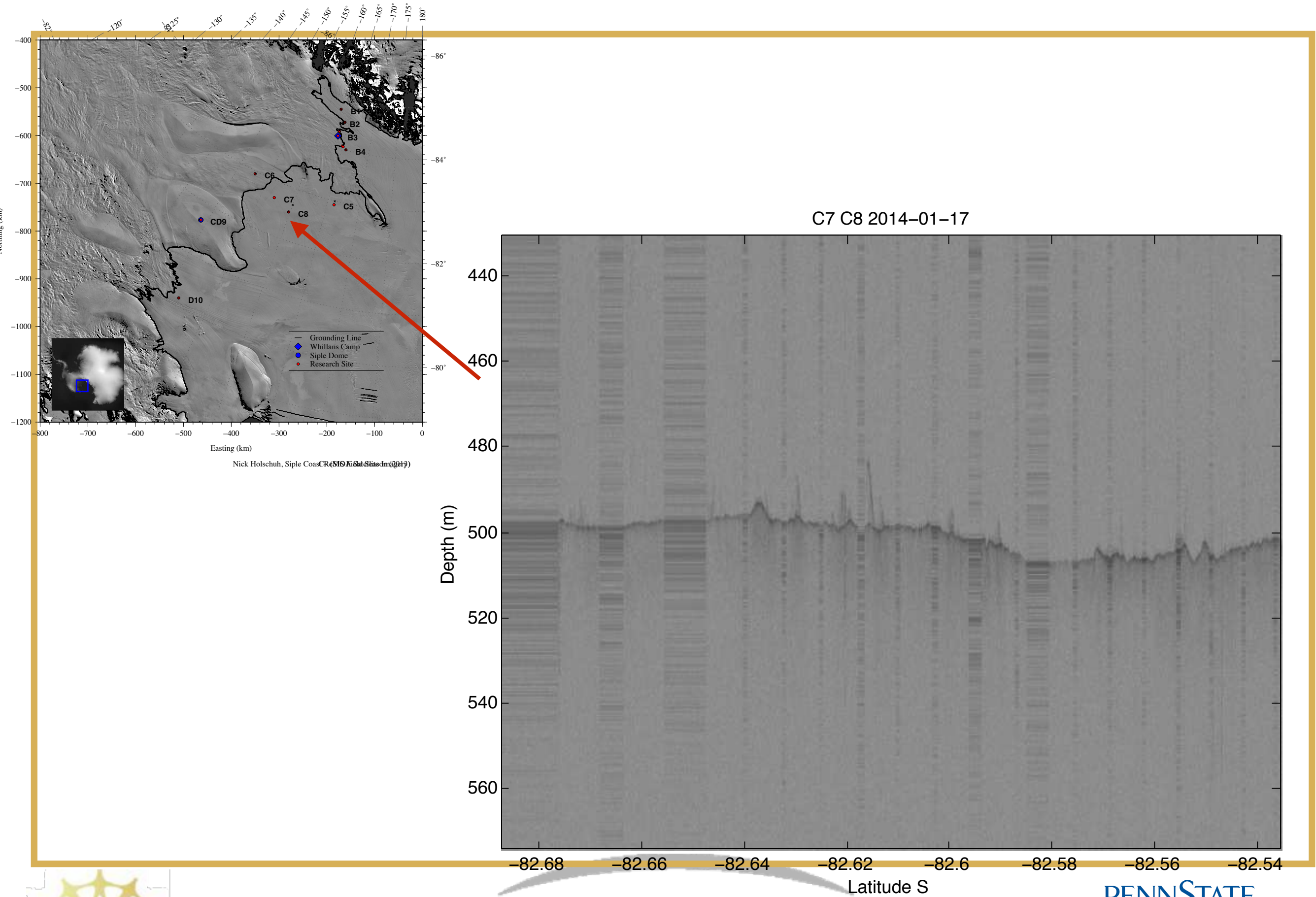
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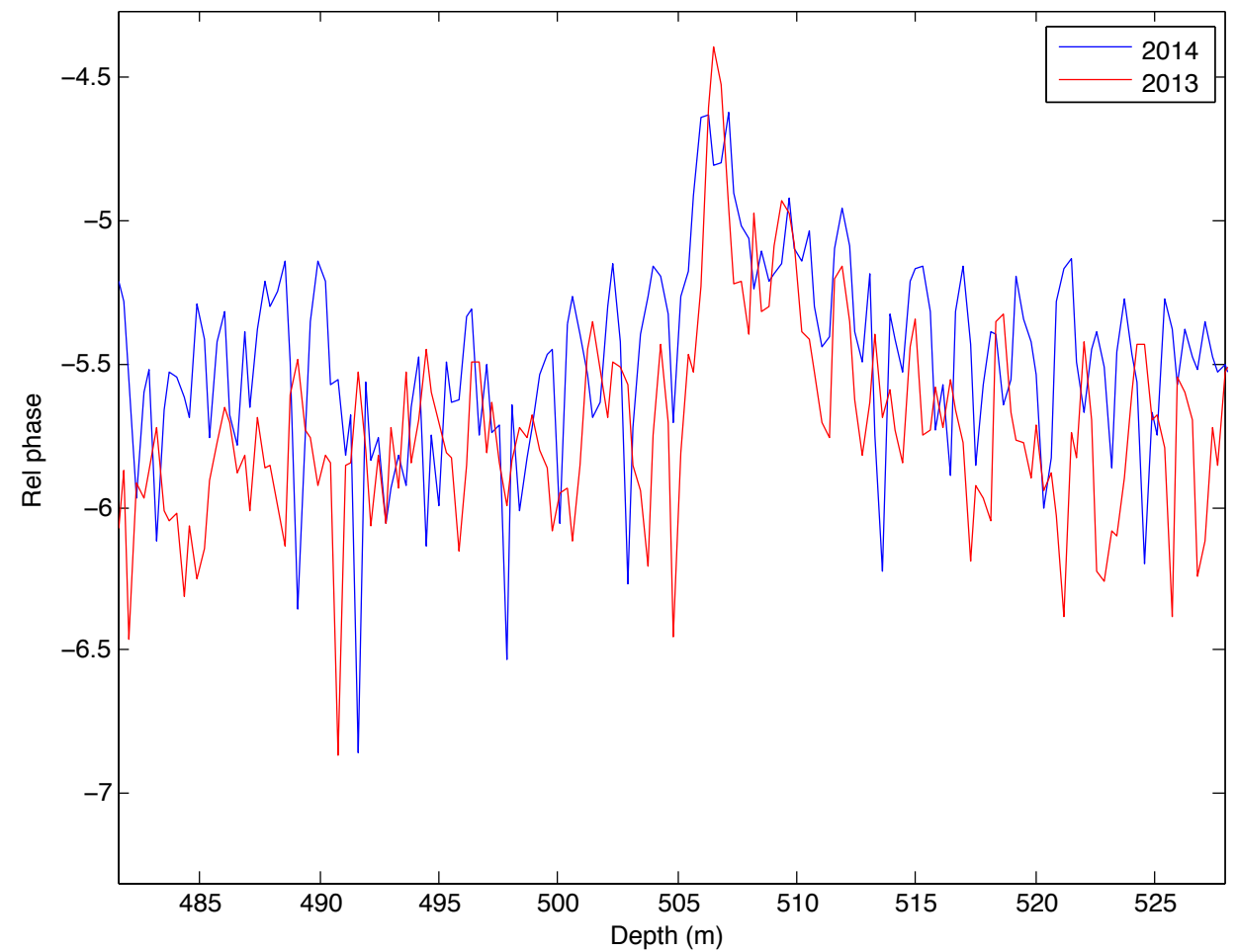
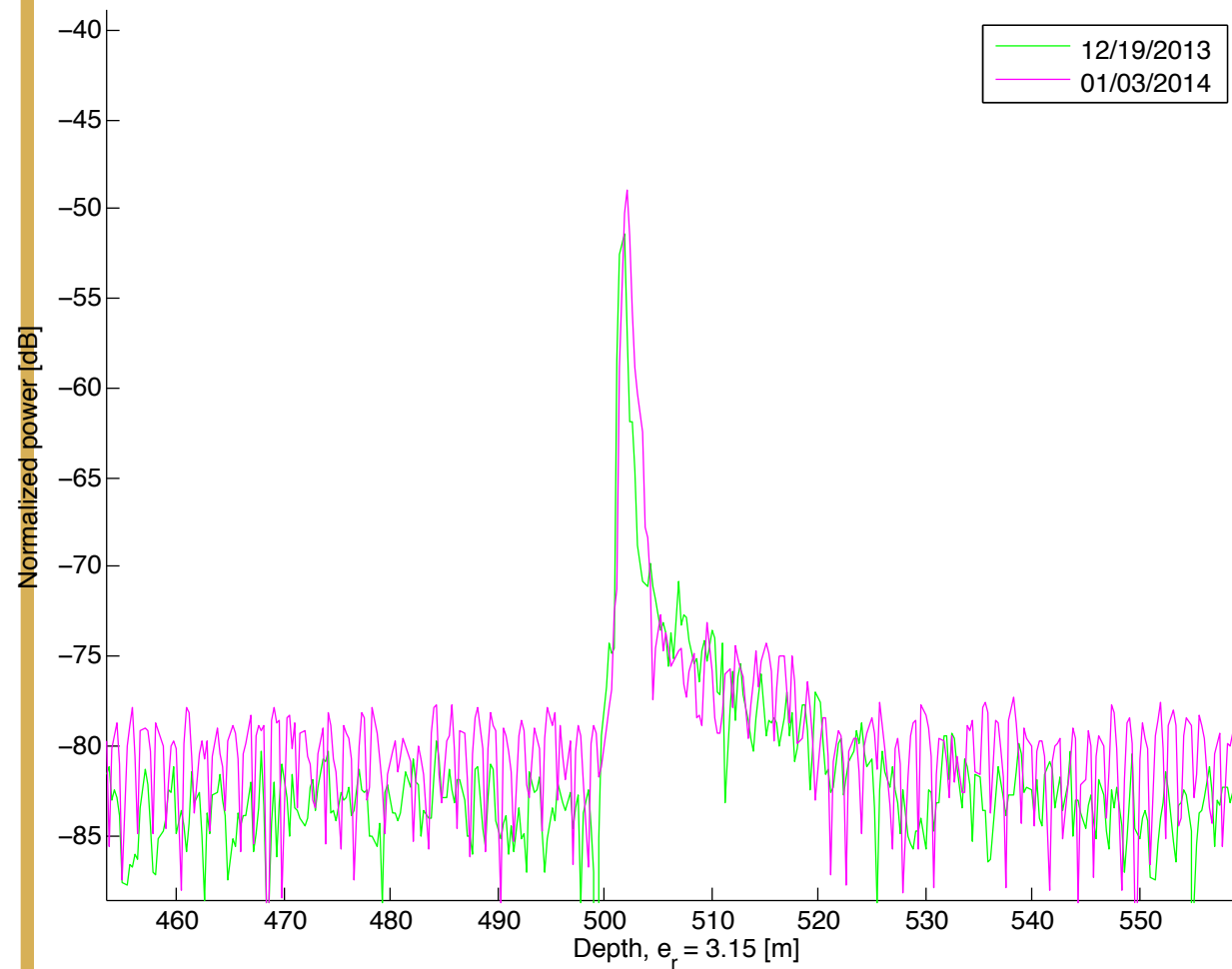
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Repeatable



Phased-array phase radar

- Broadband, high power
 - 1 km of ice shelf
 - Array processing will increase gain
- Array of 6 receivers, 2 transmitters
 - swath processing (AGU?)
- Phase stability
 - cm repeatability

Thanks

- NSF OPP and STC (Sci & Tech Ctr)
- NY Air Nat. Guard
- Kenn Borek Air
- Ant. Support Assoc.