

# Multibeam mapping reveal past collapse of the Pine Island Bay Ice Shelf, West Antarctica

New results from Oden Southern Ocean Expedition 2009/10 (OSO0910)

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## **OSO0910 Marine Geology and Geophysics Team**

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Markus Karasti, Coring Technician, Stockholm University

### **Additional contributions**

Julian A. Dowdeswell, University of Cambridge

Richard Alley, Pennsylvania State University

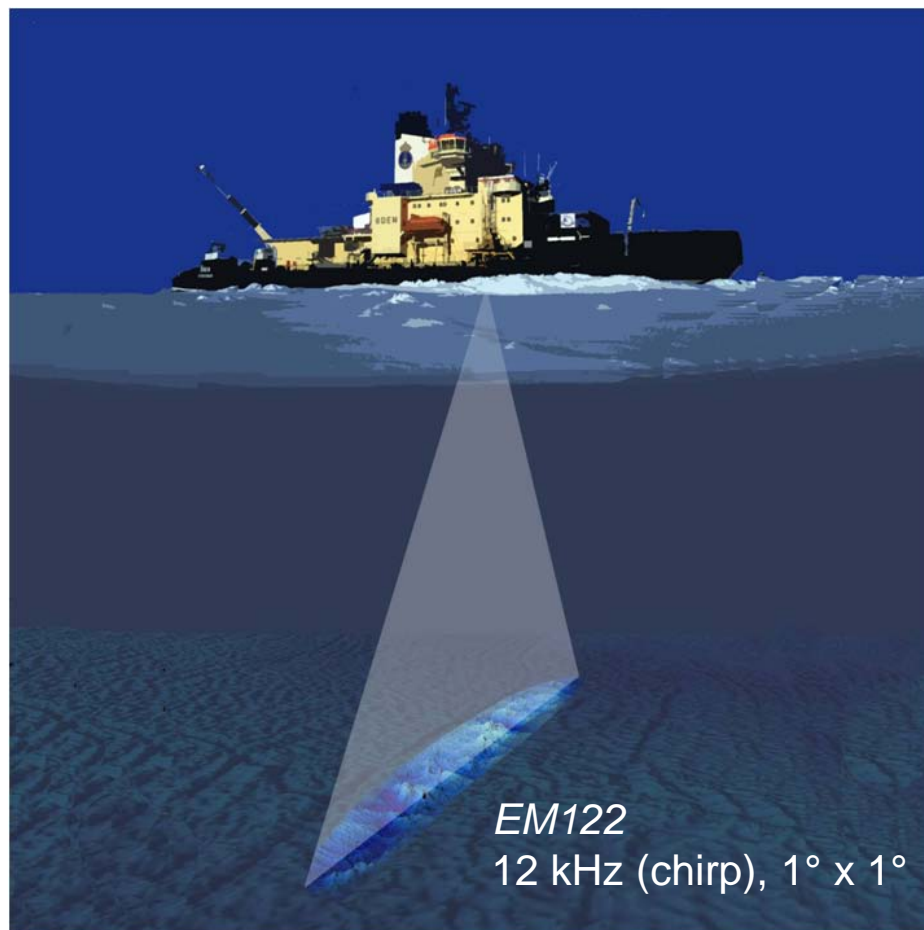
Sridhar Anandakrishnan, Pennsylvania State University

# Oden mapping capabilities

**Multibeam:** Kongsberg EM122, 12 kHz  $1^\circ \times 1^\circ$

**Chirp subbottom profiler:** Kongsberg SPB120, 2.5-7 kHz  $3^\circ \times 3^\circ$

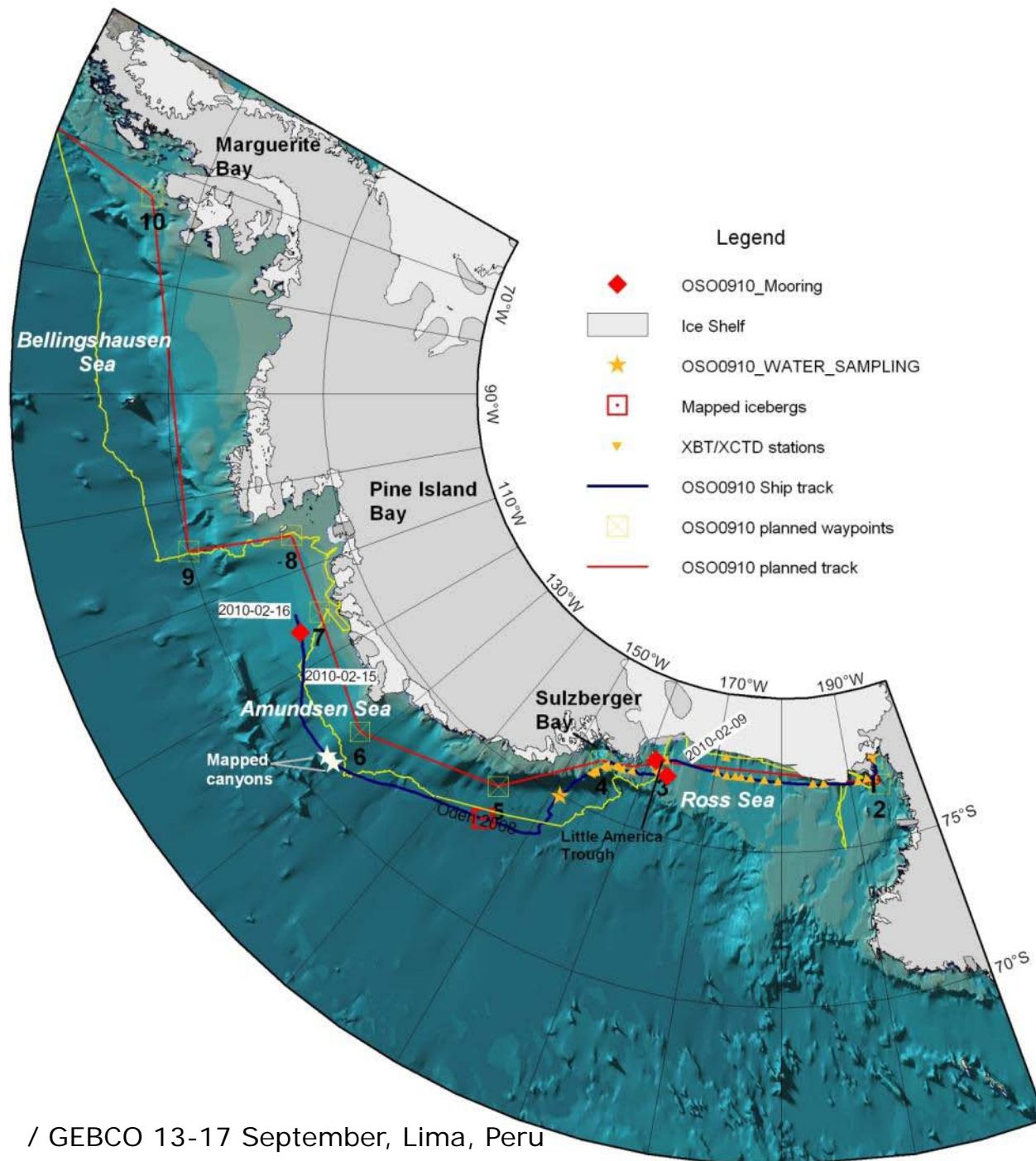
The system was financed by Knut and Alice Wallenberg Foundation, Swedish Research Council and the Swedish Maritime Administration.

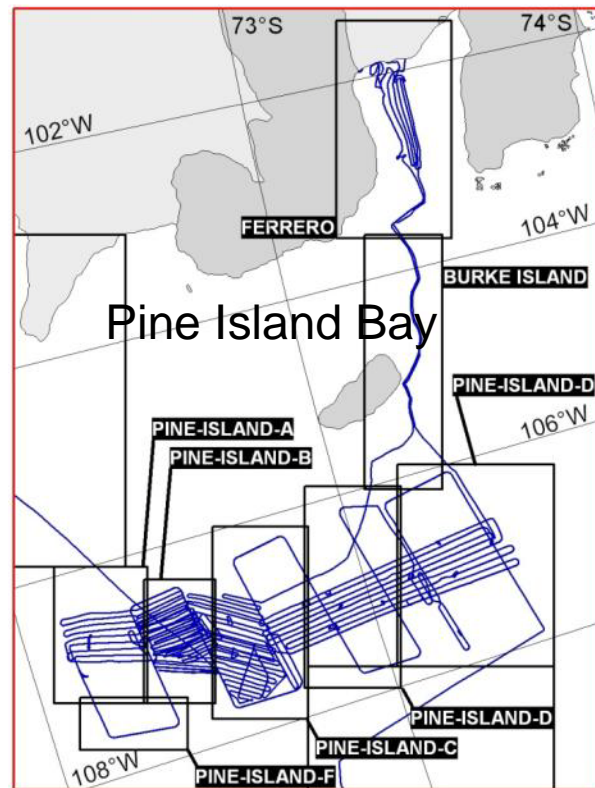
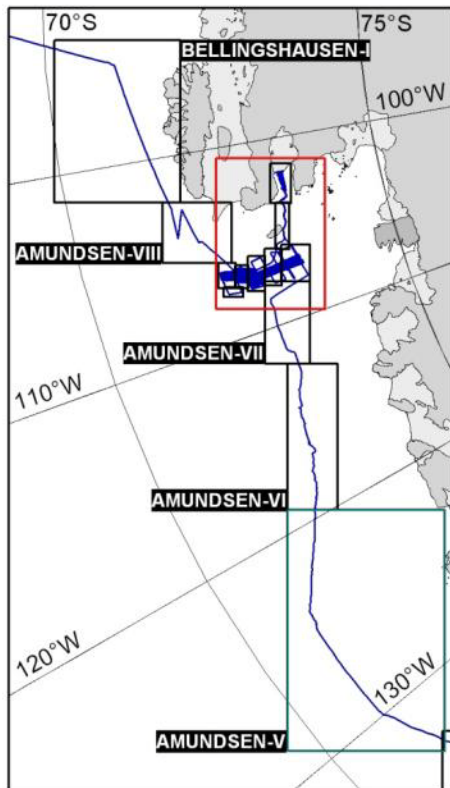
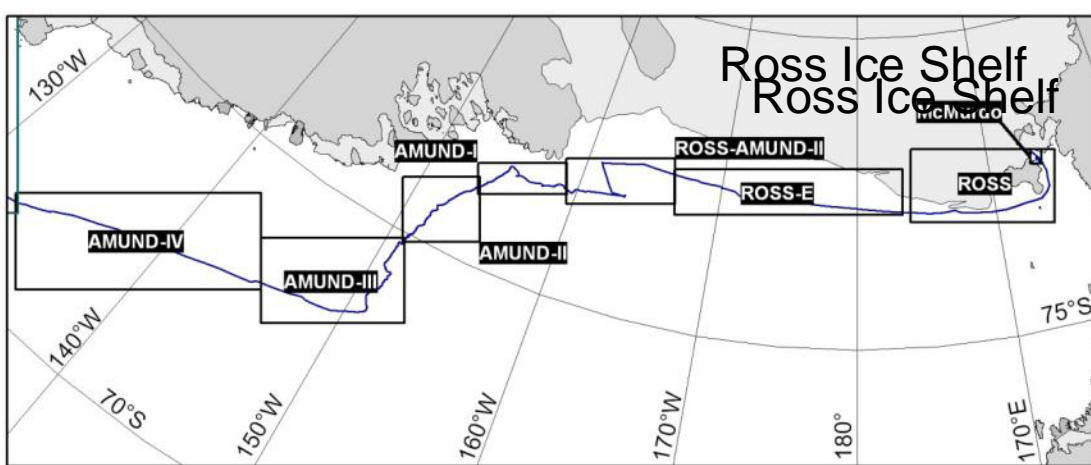


# Can a collapsed ice shelf leave imprints in the seafloor?









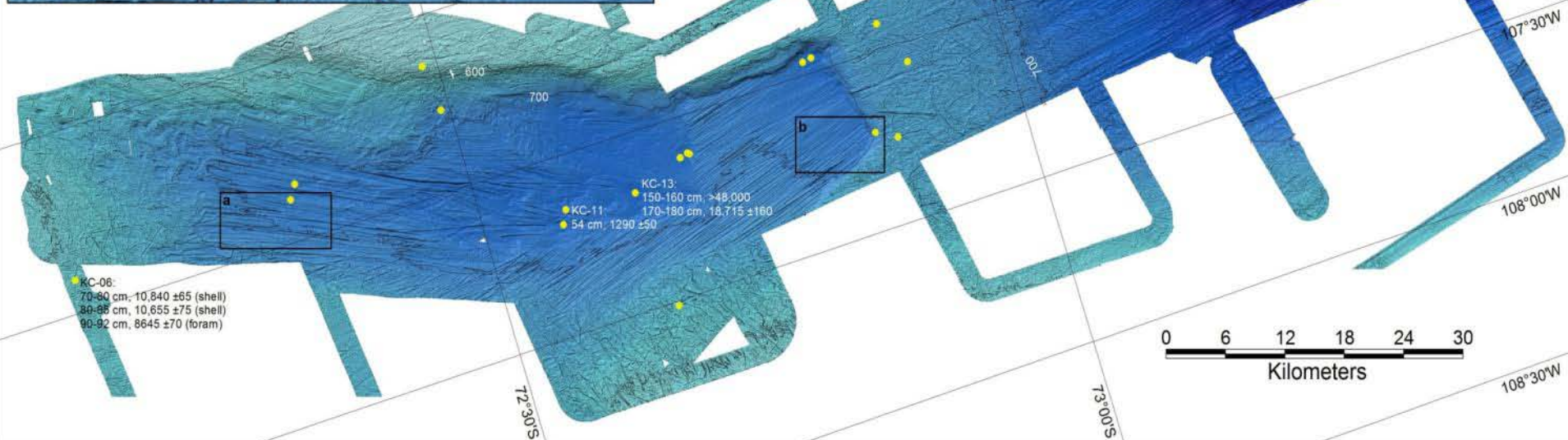
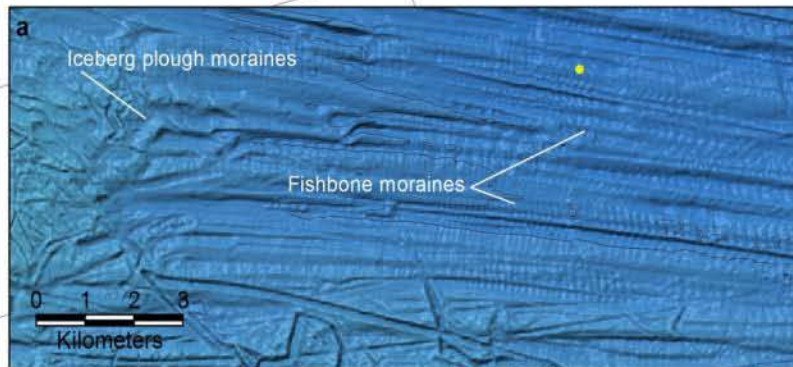
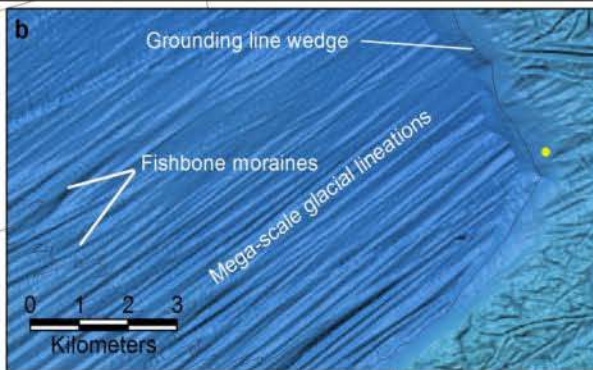


## Pine Island Bay Central Trough

Multibeam swath bathymetry collected during the  
*Oden Southern Ocean Expedition 2010 (OSO0910)*  
with Swedish icebreaker *Oden*

Multibeam system: Kongsberg EM122, 1°x1°

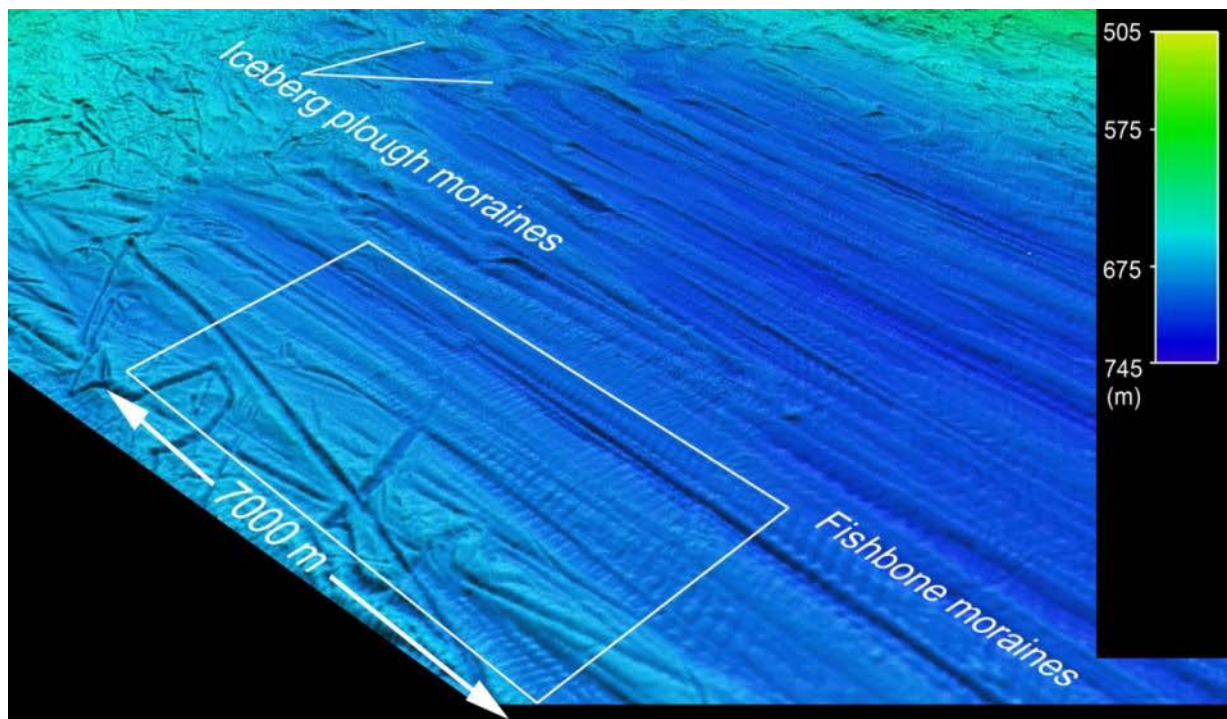
Map projection: Polar stereographic, true scale 71°S  
Horizontal datum: WGS 84  
Vertical datum: Mean Sea Level



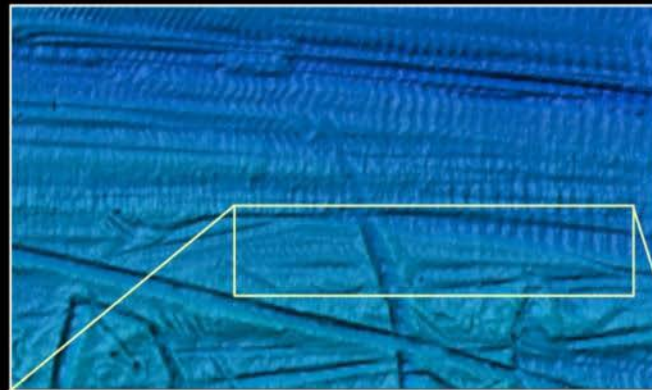




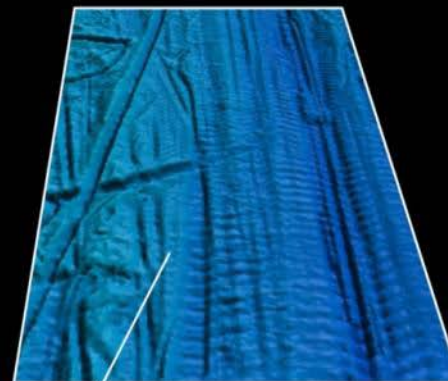
Stockholms  
universitet



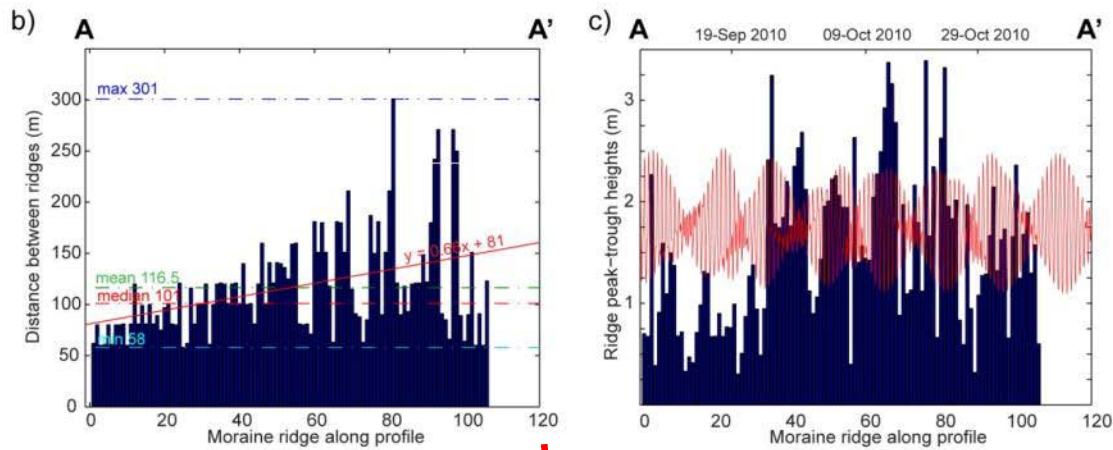
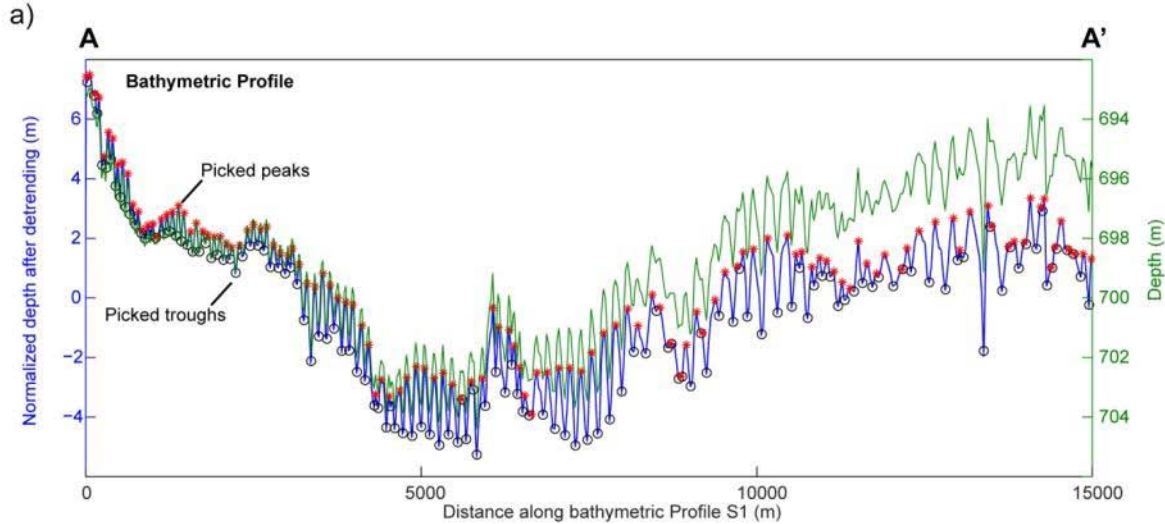
Top-view



Rear-view

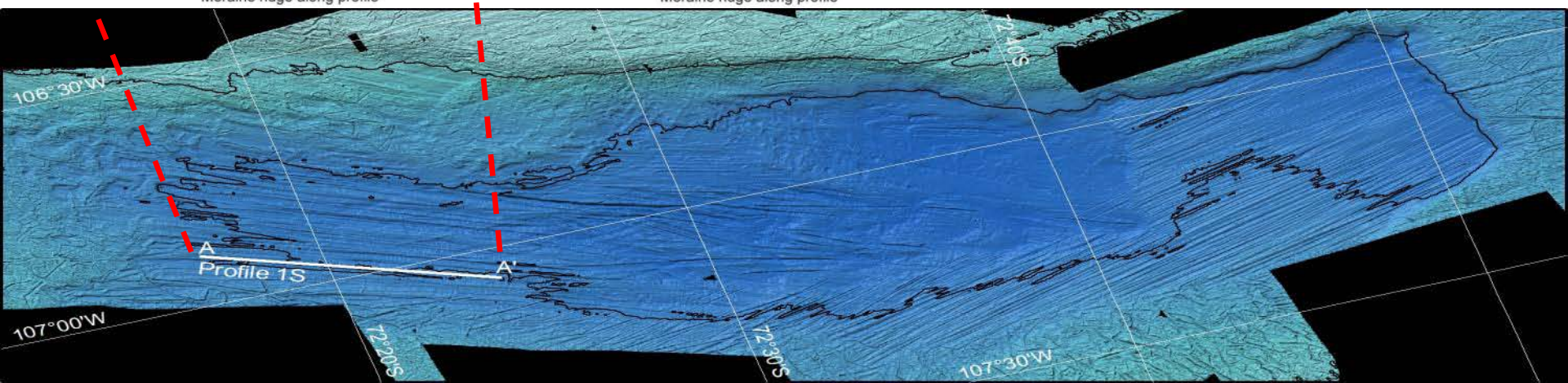


Fishbone moraines with different  
orientation in cross-cutting furrow

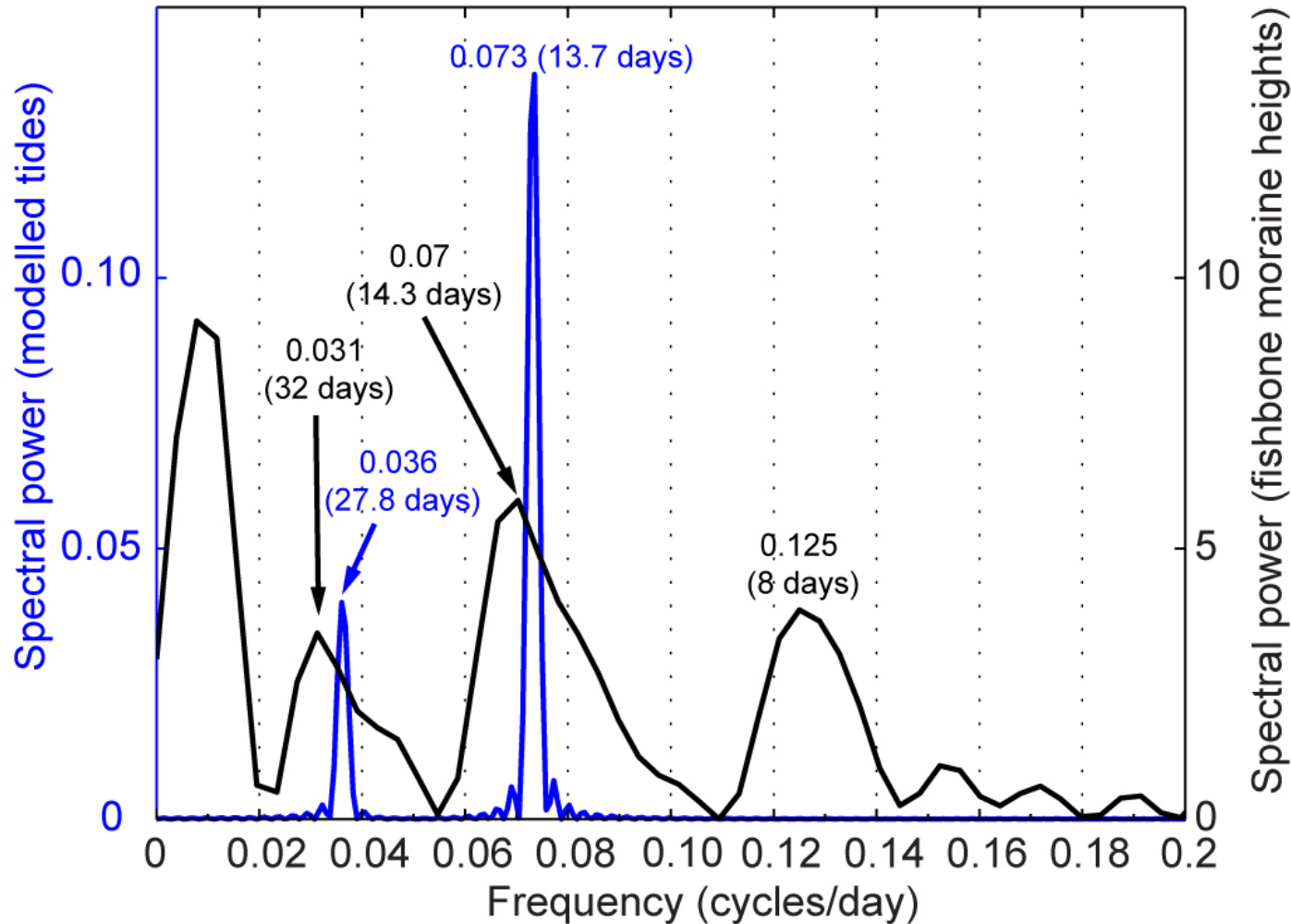


## Analyses of bathymetric profile A-A'

*Jakobsson, Anderson et al., in review, Nature Geoscience*

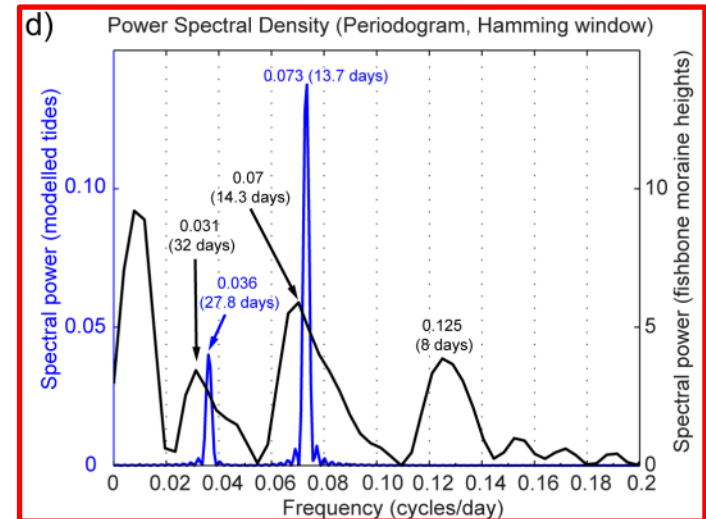
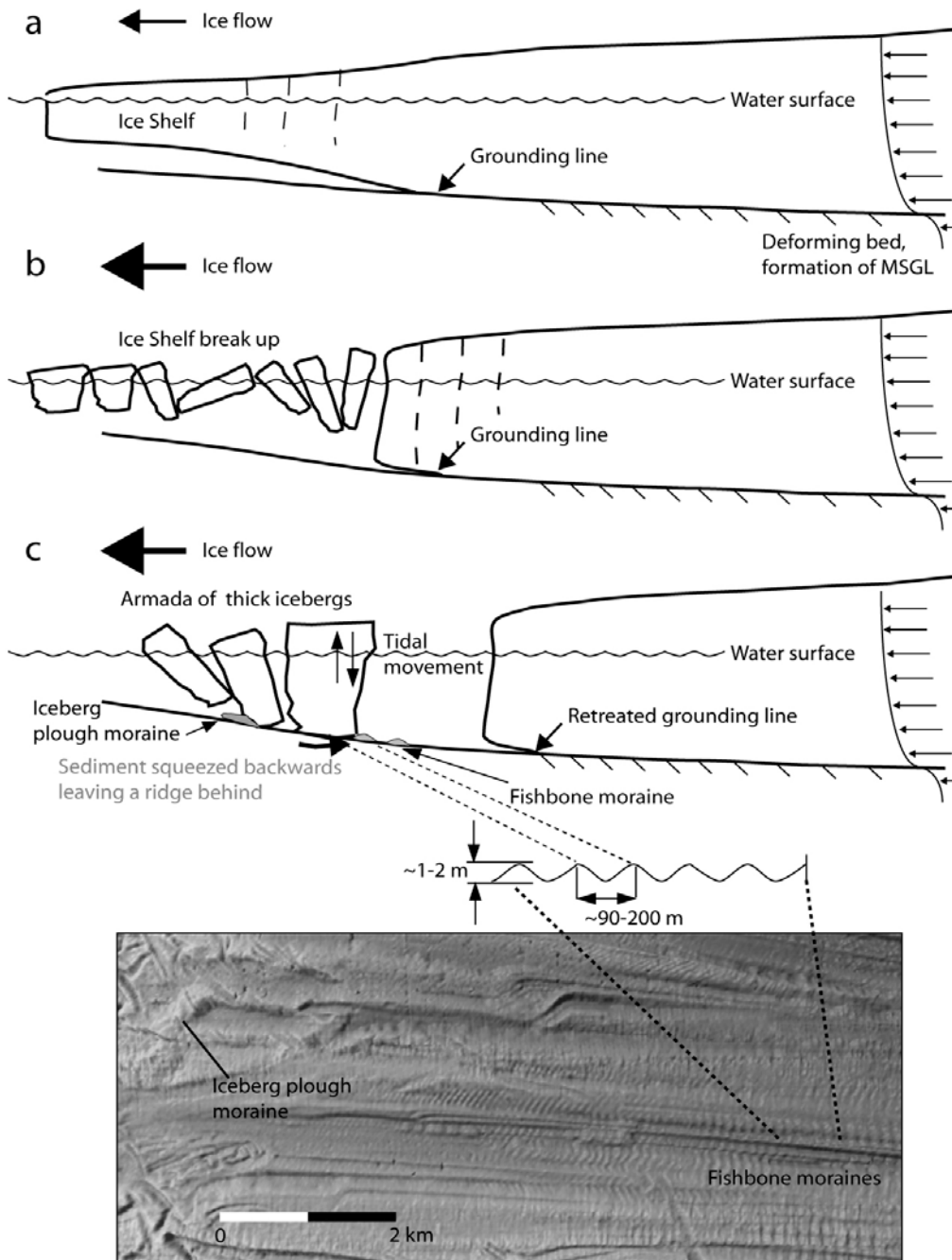


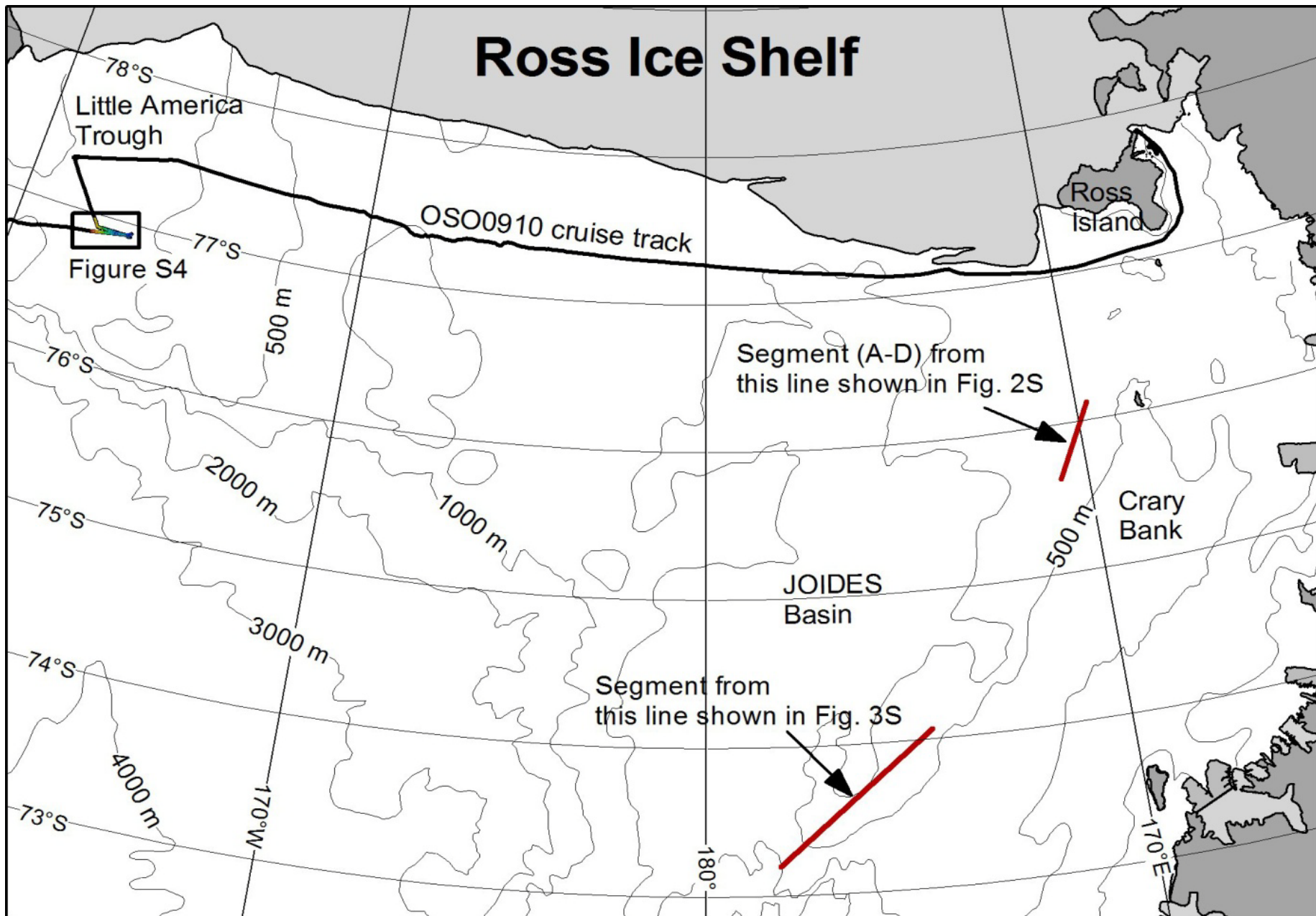
d) Power Spectral Density (Periodogram, Hamming window)

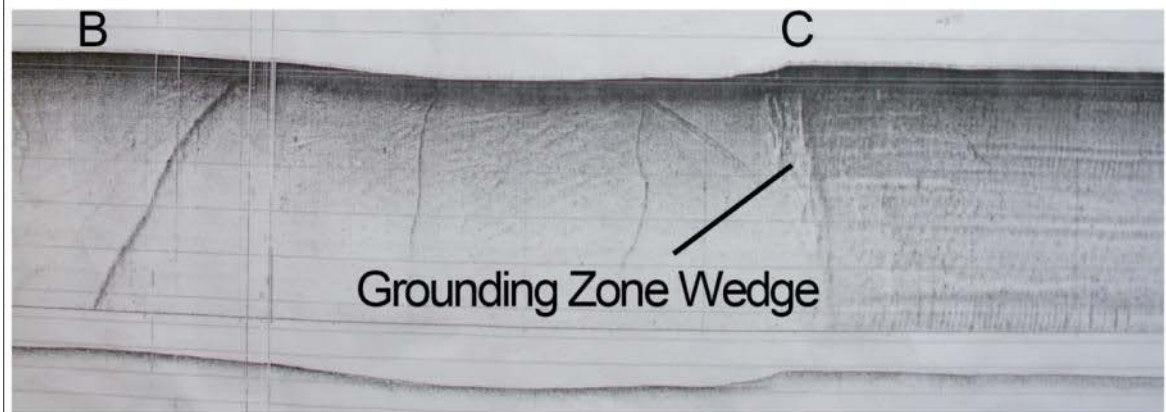
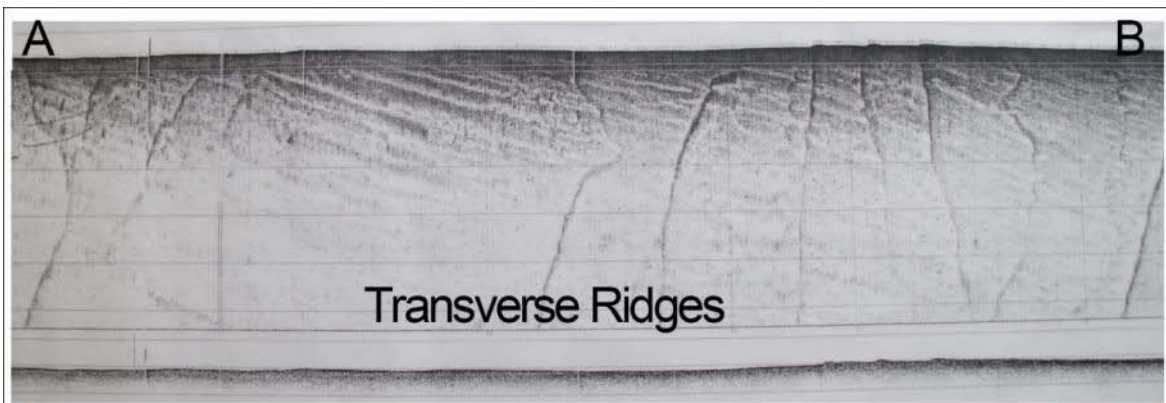
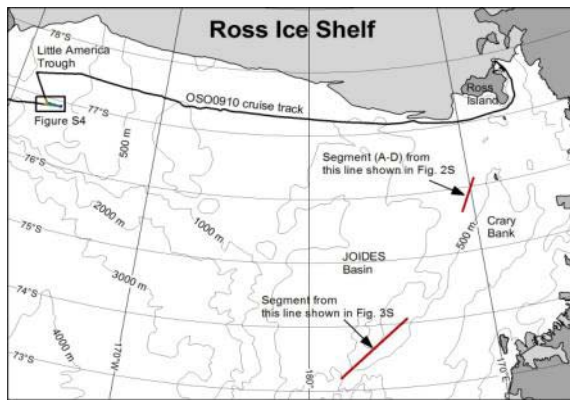


*Jakobsson, Anderson, et al., in review, Nature Geoscience*

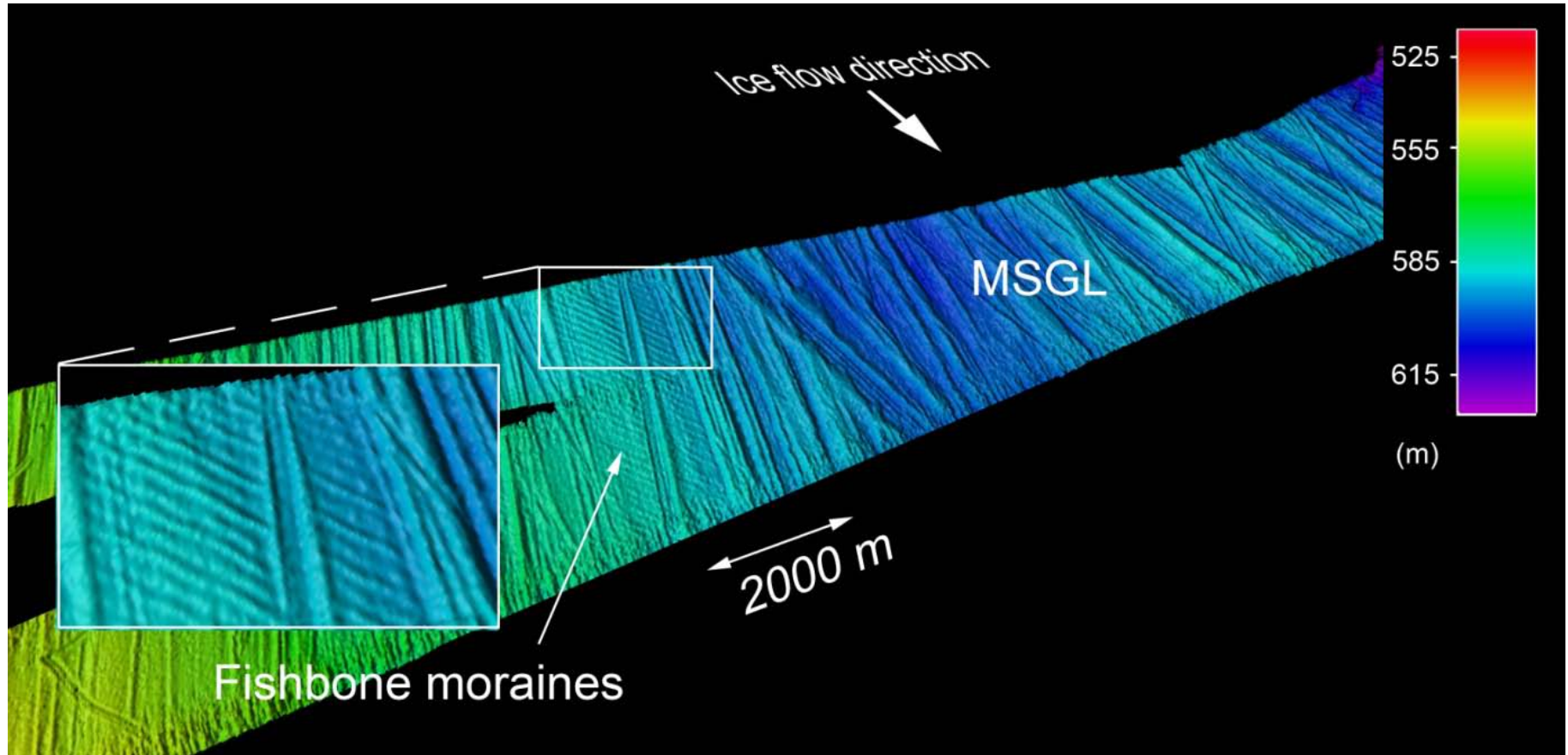
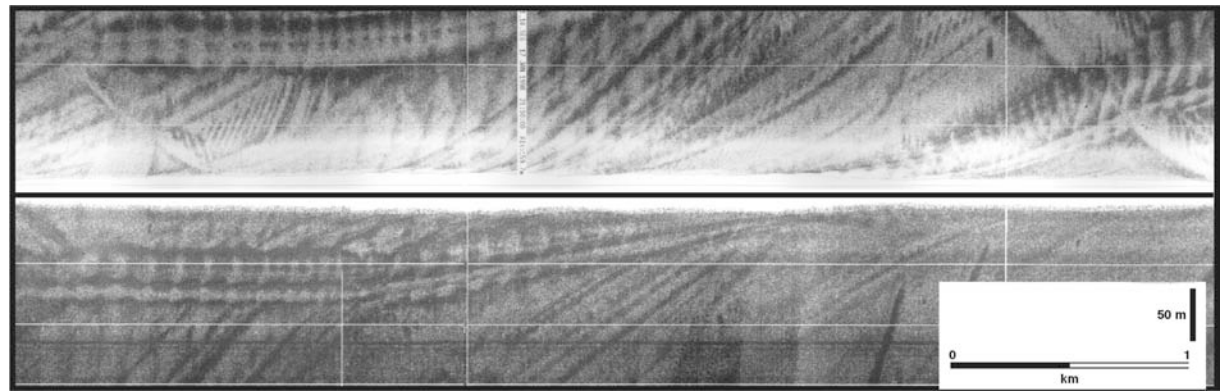
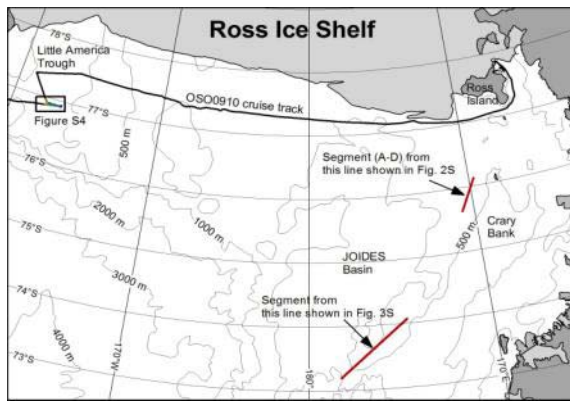
2010-09-24 / GEBCO 13-17 September, Lima, Peru

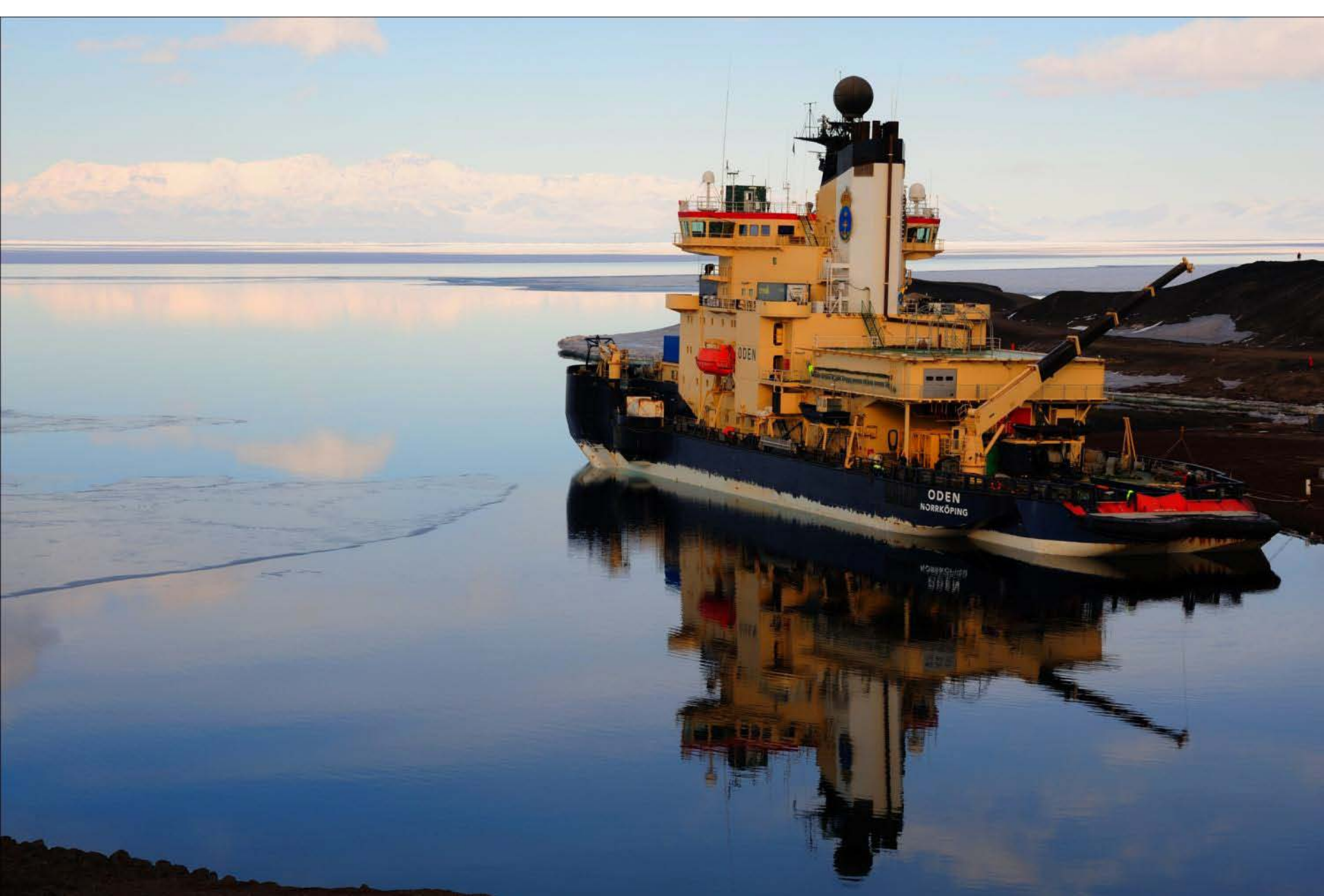






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Thanks for listening!