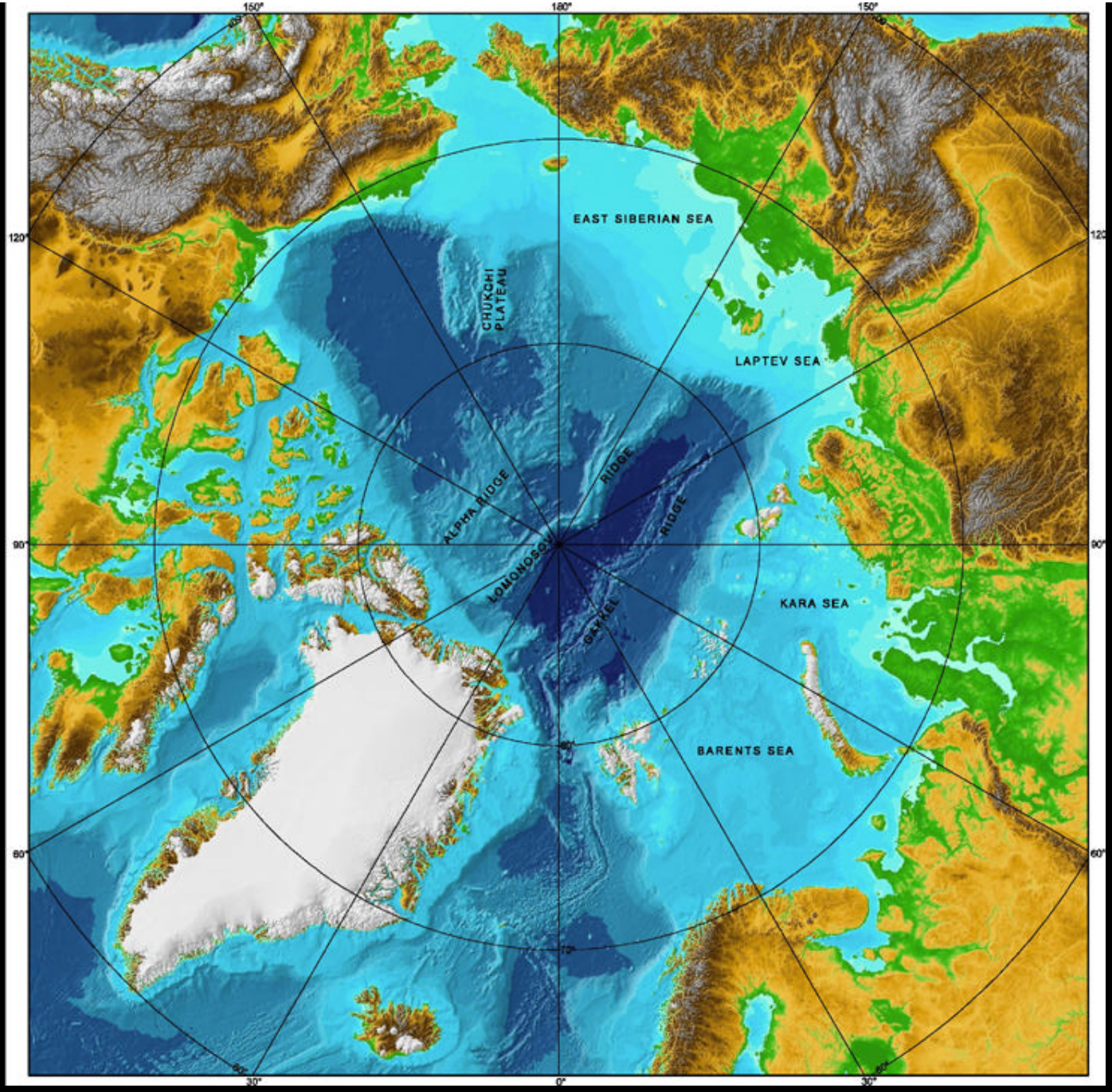
Hydrothermal Processes on the Gakkel Ridge

Timothy M. Shank

Woods Hole Oceanographic Institution



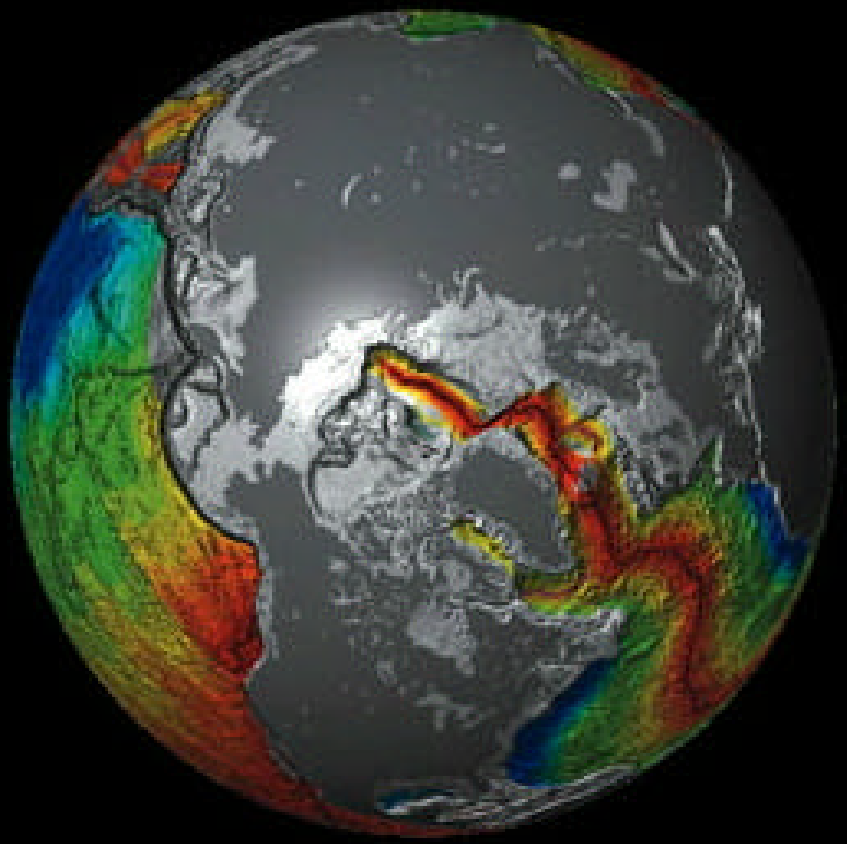
International Bathymetric Chart of the Arctic Ocean (IBCAO)

Shank #1

The Gakkel Ridge

- The slowest-spreading mid-ocean ridge on Earth (full rate 1.33 cm/year at its western end, near Greenland; 0.6 cm/year at the Laptev Sea shelf)

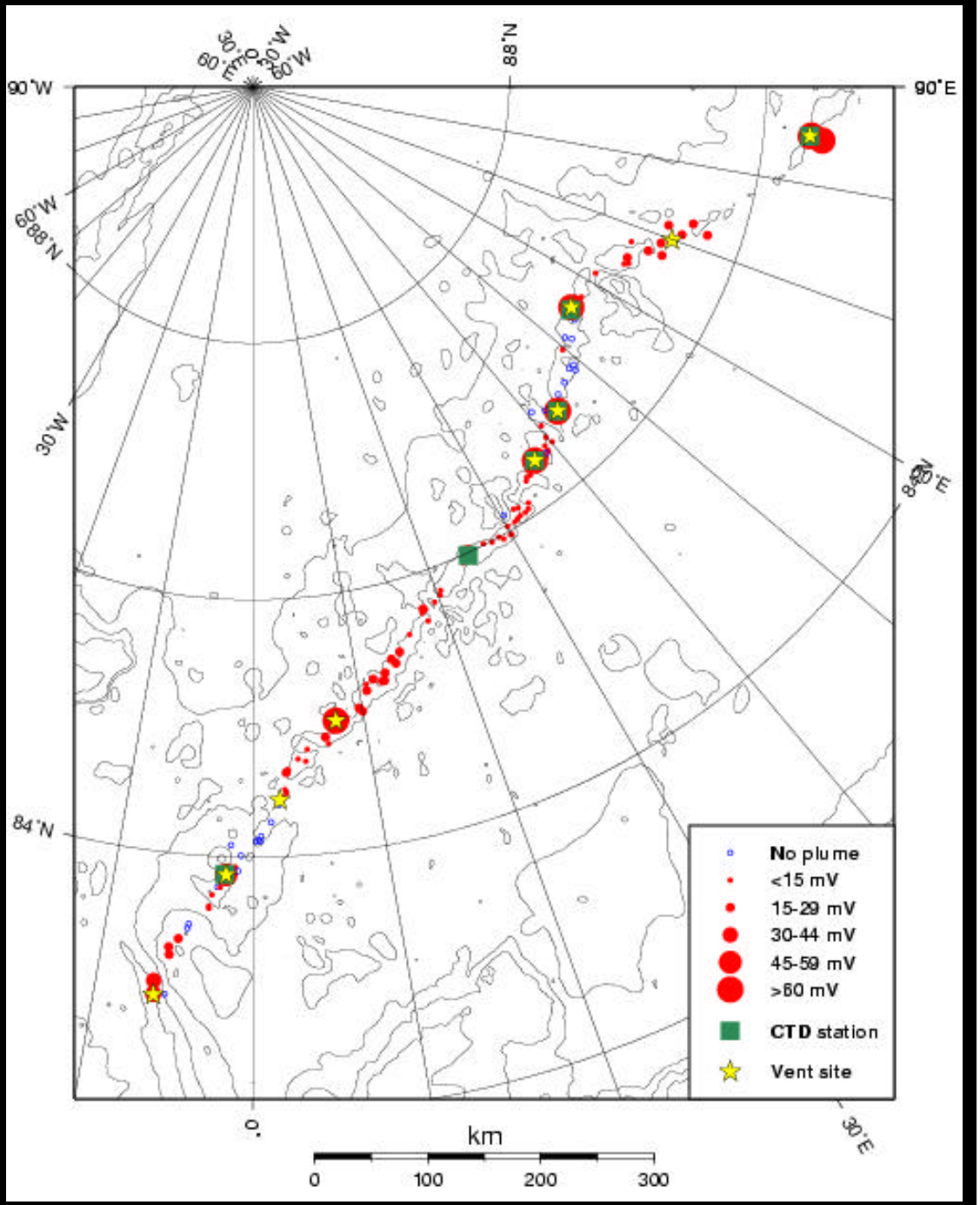
- Geographically and oceanographically isolated from other mid-ocean ridges



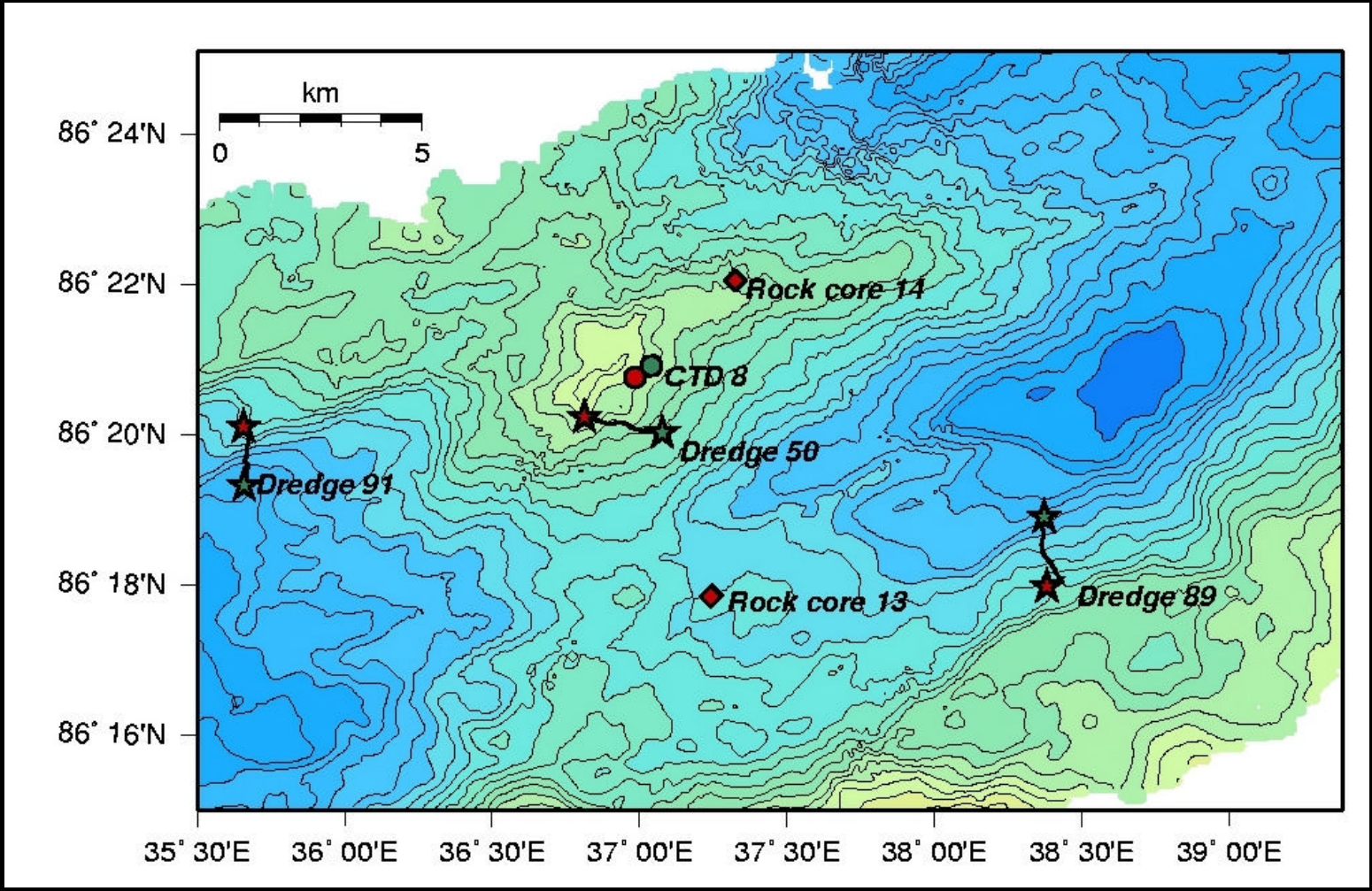
AMORE Summary

- 145 MAPR profiles
  - 118 (82%) with light scattering peaks
  - 53 have corresponding temperature anomalies
- Nine vent sites located to within ~2-5 km (yellow stars)
- At least one vent site every 100 km

Edmonds et al., in press



37 East

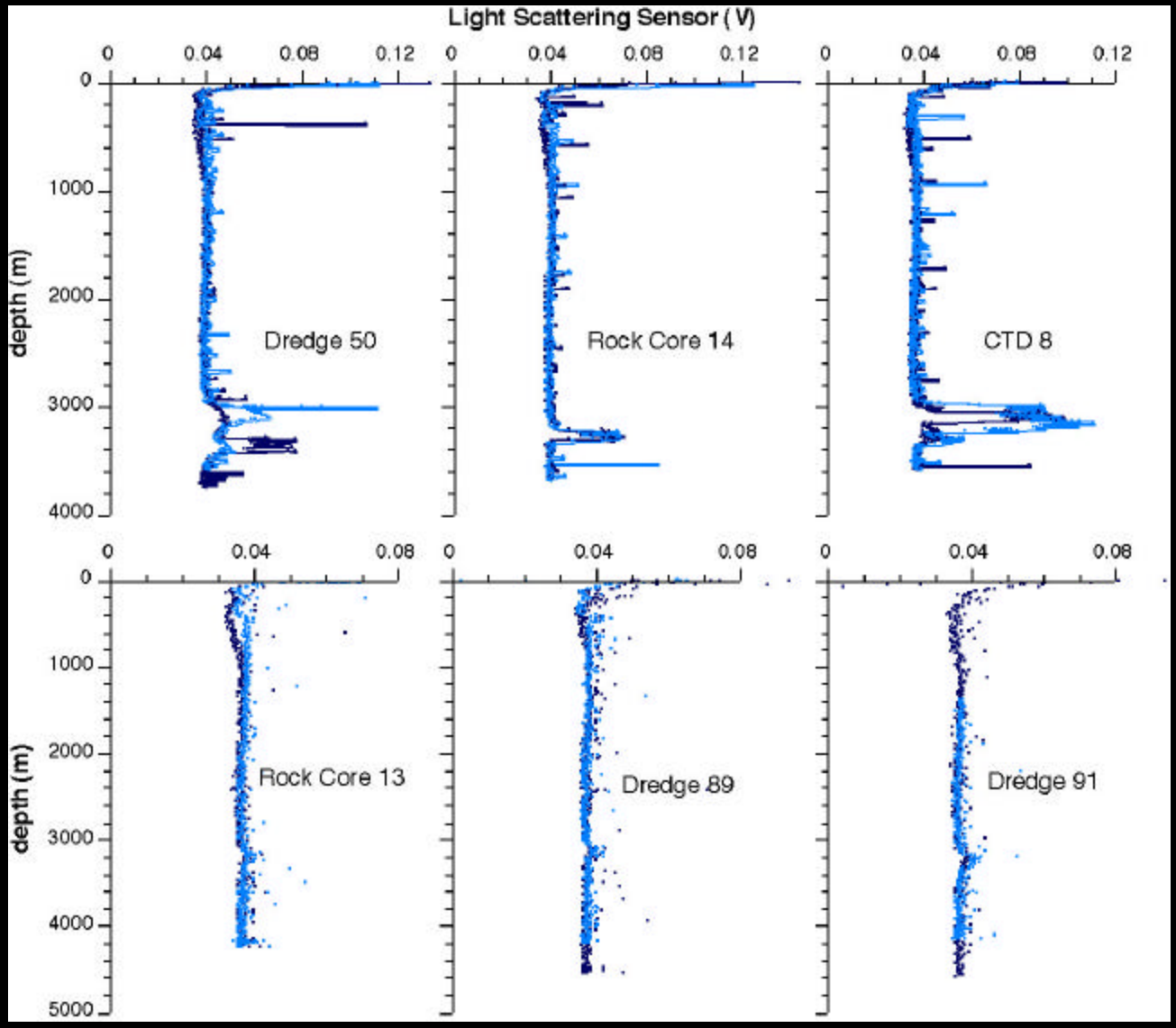


AMORE bathymetry and station locations (D= dredge, RC= rock core) at 37°E site. Red symbols indicate the start of the dredge track; green symbols indicate the end (100m contours).

Edmonds et al., in press

Shank #7

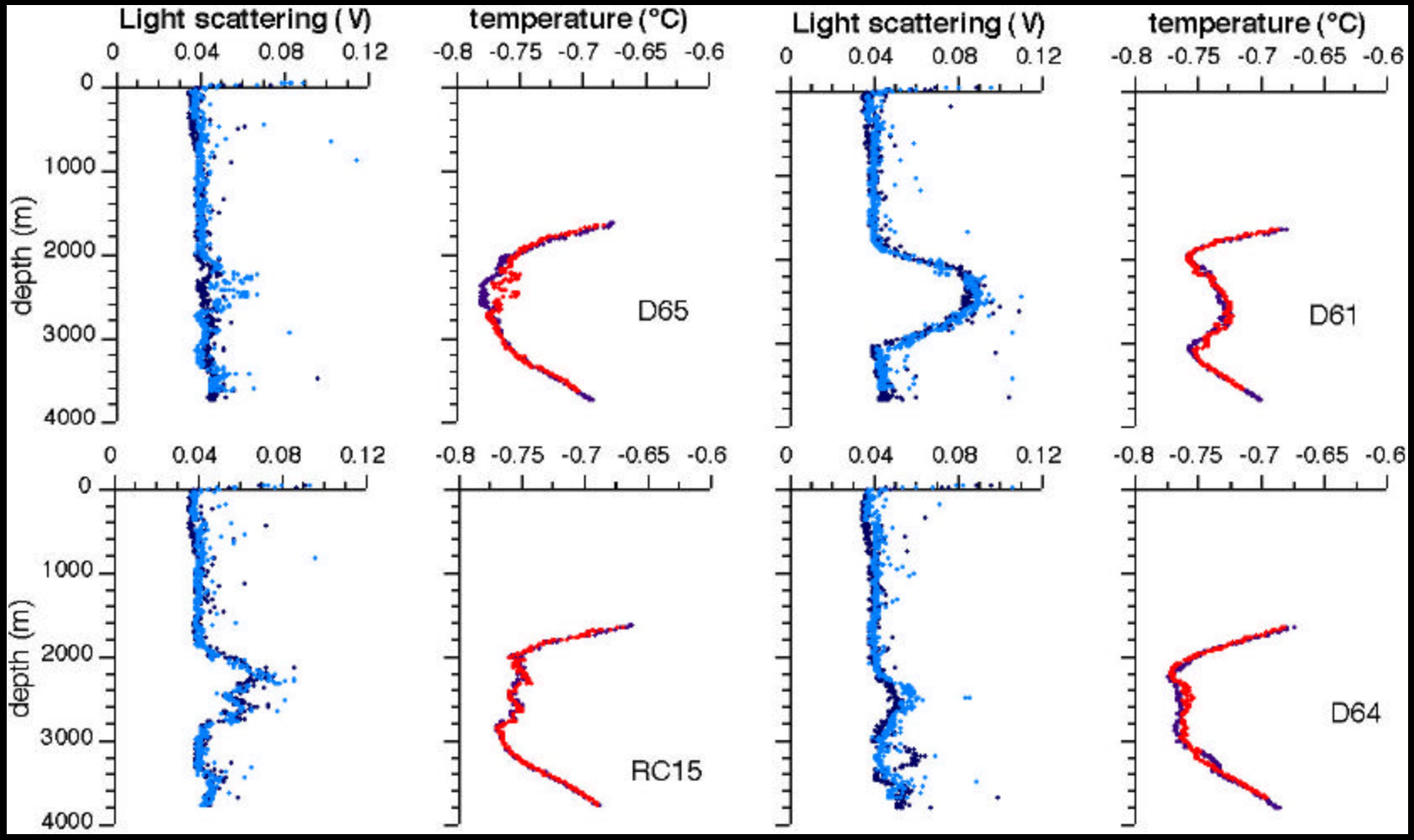
MAPR profiles -- 37 E



Edmonds et al., in press

Shank #8

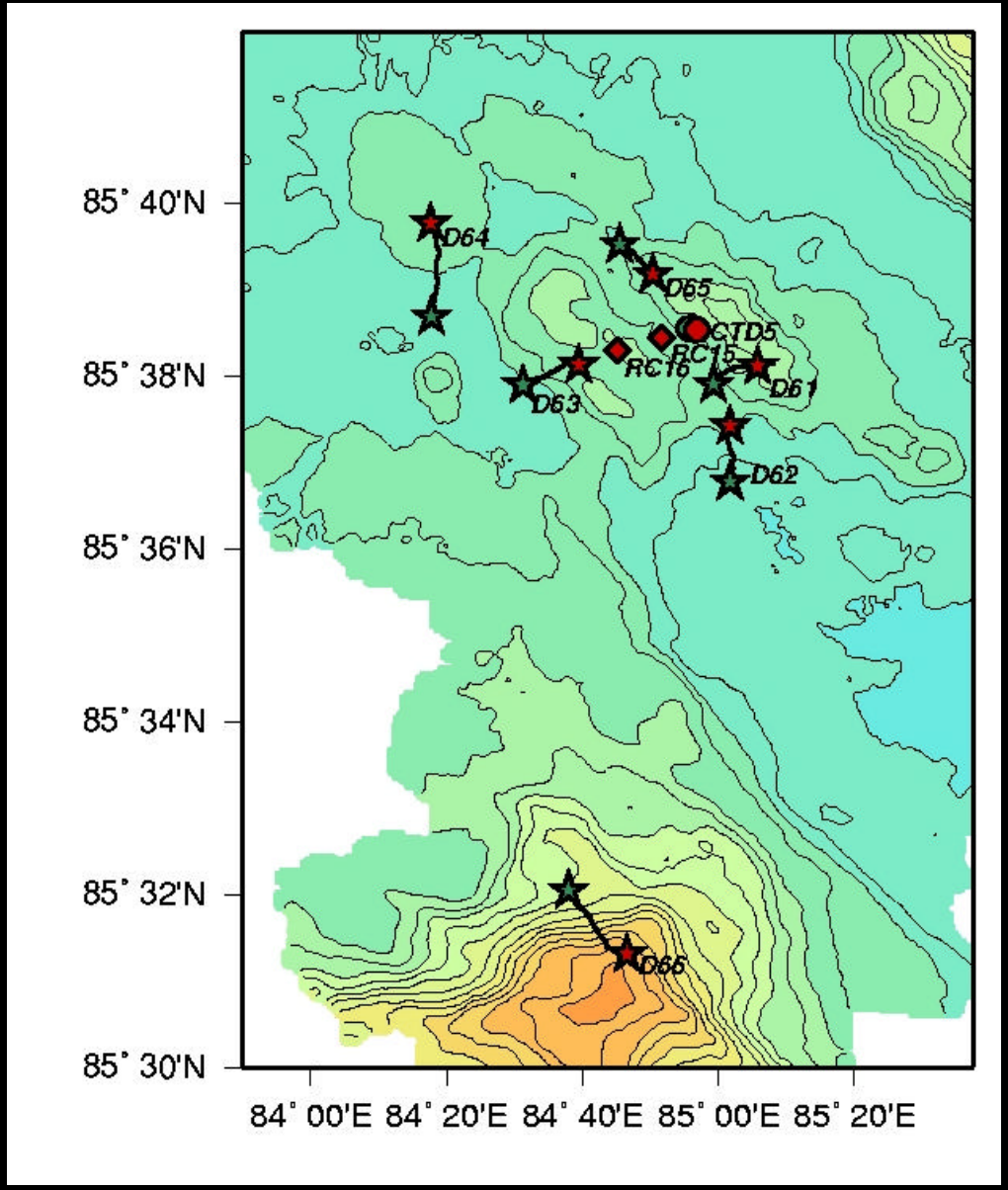
MAPR data at 85 E



Edmonds et al., in press

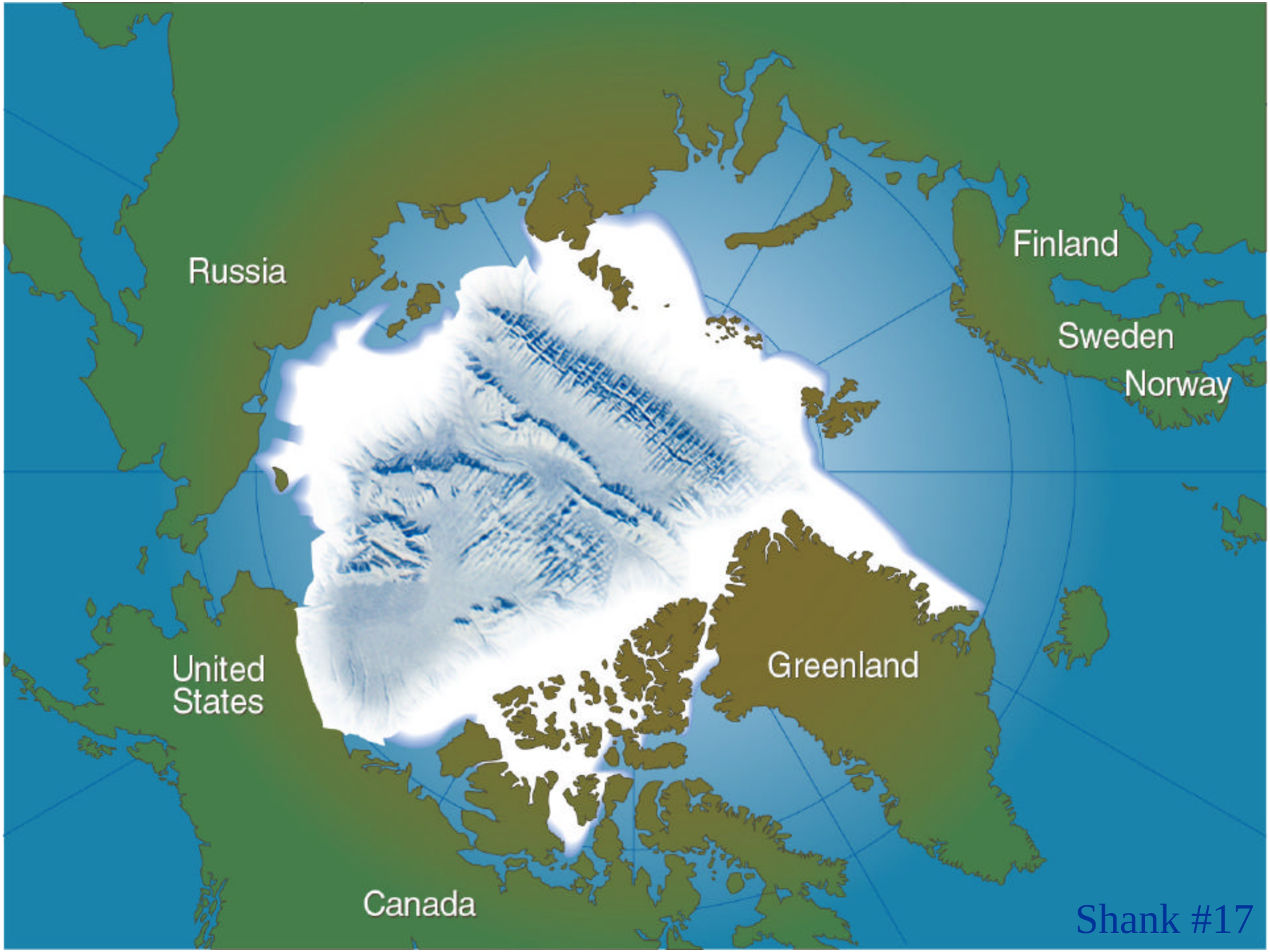
85 East

- Previous studies (Müller & Jokat, 2000; Tolstoy et al., 2001) showed that there had been a seismic swarm here in early 1999
- Sidescan data from a SCICEX cruise a few months later suggest there may also have been a volcanic eruption (Edwards et al., 2001)



Strongest plume anomalies near CTD5 and D61

Edmonds et al., in press


Russia
Finland
Sweden
Norway
United States
Greenland
Canada

Shank #17

C.A. Linder

Shank #18