

Bering Strait Moorings - Update and 2012 plans

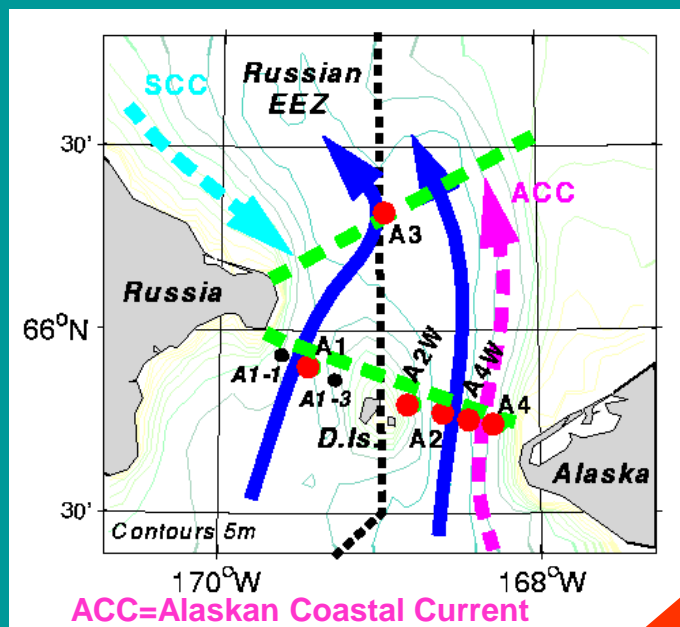
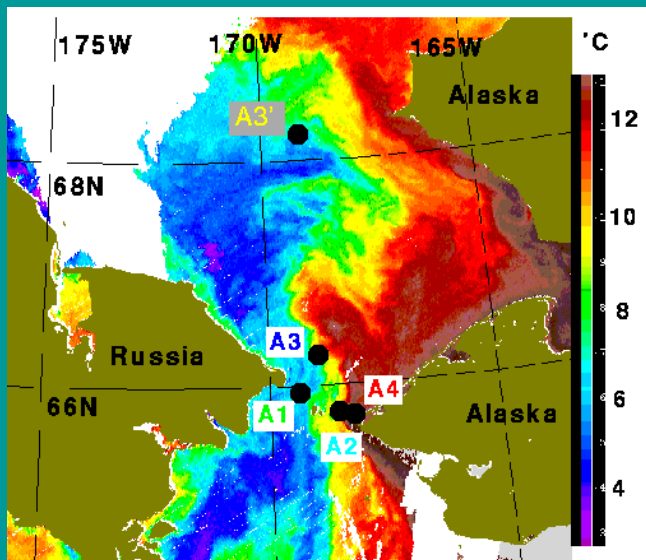


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Bering Strait Moorings



ACC=Alaskan Coastal Current

Since 1990
1-4 near-bottom moorings

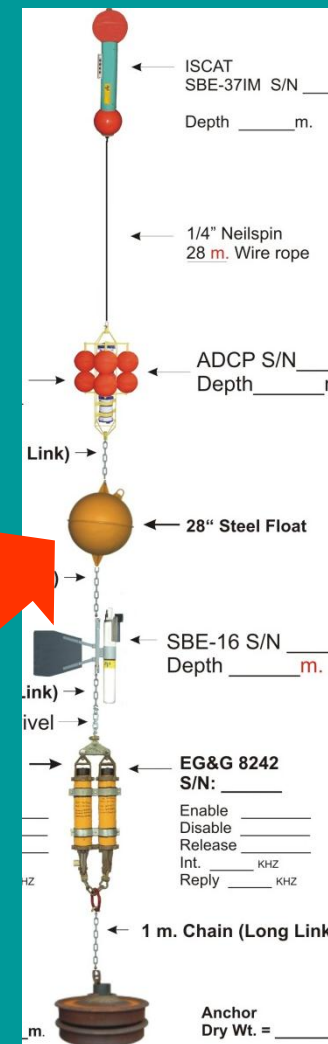
Since 2007
(*International Polar Year*)
8 moorings with upper and lower sensors

With

- Nutrient sensors – Terry Whitledge
- Whale Recorders – Kate Stafford and Carter Esch
- pH and pCO₂ sensors – Fred Prahl, OSU

Annual CTD sections

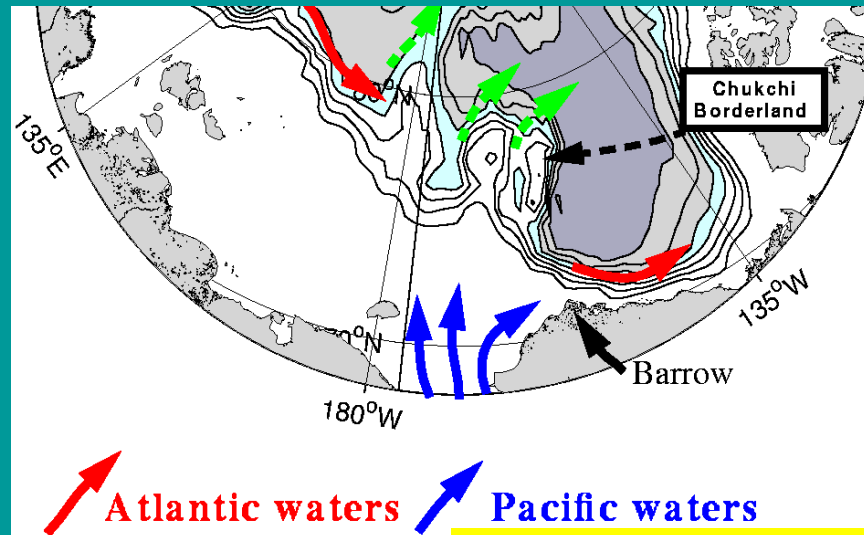
Your instrument here!!!!



The role of Pacific waters in the Arctic

Important for Marine Life
most nutrient-rich waters entering the Arctic

(Walsh et al, 1989)



Significant and variable part of Arctic Freshwater Budget
~ 1/3rd of Arctic freshwater input

(Wijffels et al, 1992;
Aagaard & Carmack, 1989; Woodgate & Aagaard, 2005)

Trigger for the seasonal melt-back of ice

In summer, source of near-surface heat to the Arctic

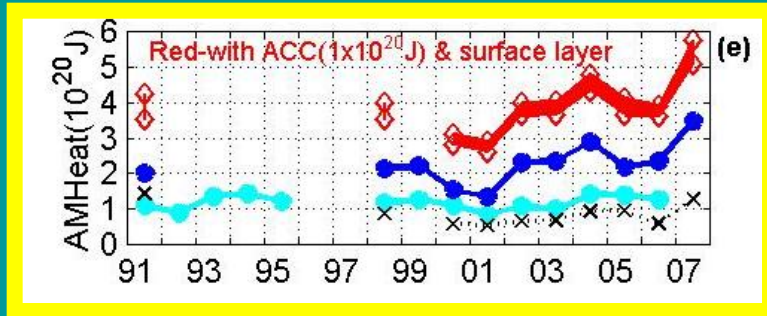
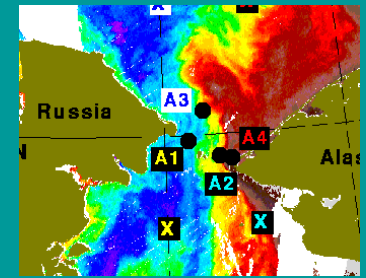
(Paquette & Bourke, 1981; Ahlnäs & Garrison, 1984, Woodgate et al, 2010)

Important for Arctic Stratification
In winter, form a cold (halocline) layer, which insulating ice from warm Atlantic waters beneath

(Shimada et al, 2001, Steele et al, 2004)

Bering Strait Heat Flux

Woodgate et al, 2010



Heat flux relative to -1.9°C , Errors ~ 0.1 Sv, 10^{20} J

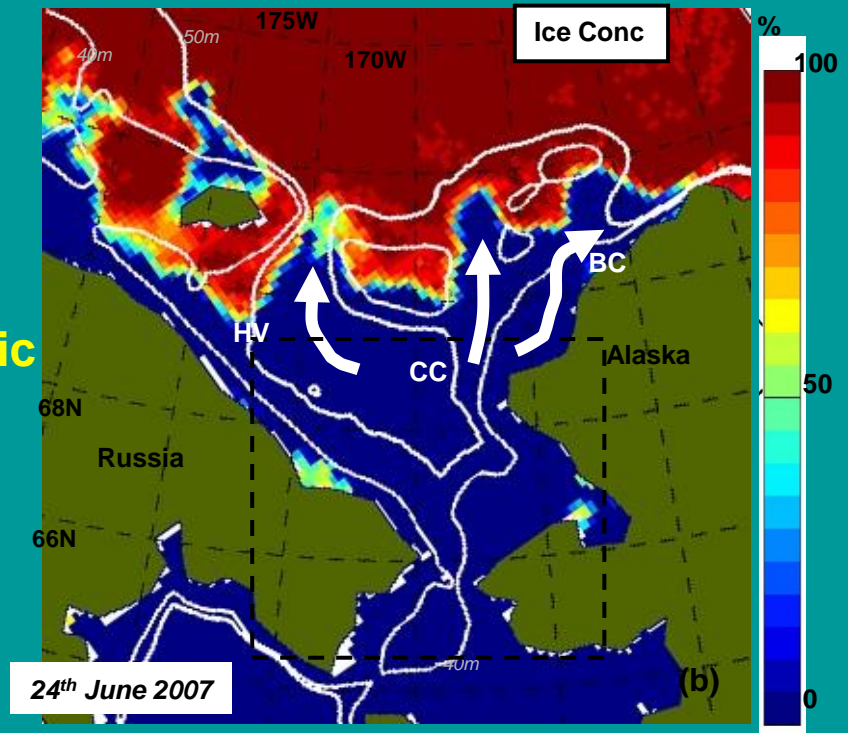
Acts as a trigger for sea-ice melt

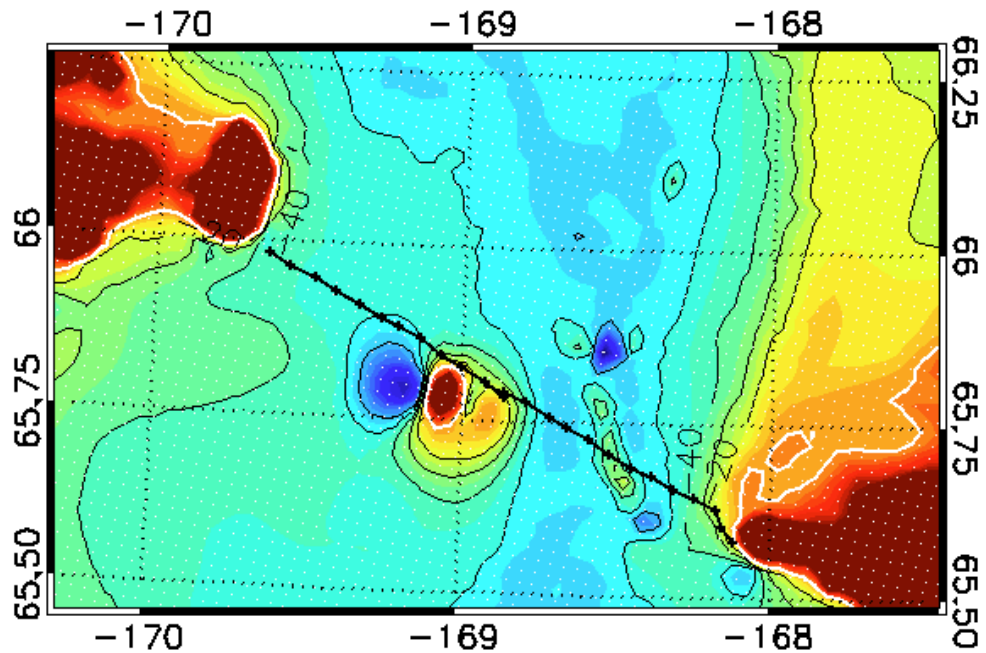
Large enough to be significant in the Arctic

- 2007 could melt the difference between the 2006 and 2007 Sept ice extents
- greater than solar input to Chukchi
- $1/3^{\text{rd}}$ of Fram Strait heat

Found over half the Arctic Ocean as subsurface temperature max

Highly variable
(2007=twice 2001)





IBCAO Bathymetry Issues

IBCAO Bathymetry with RUSALCA CTD line

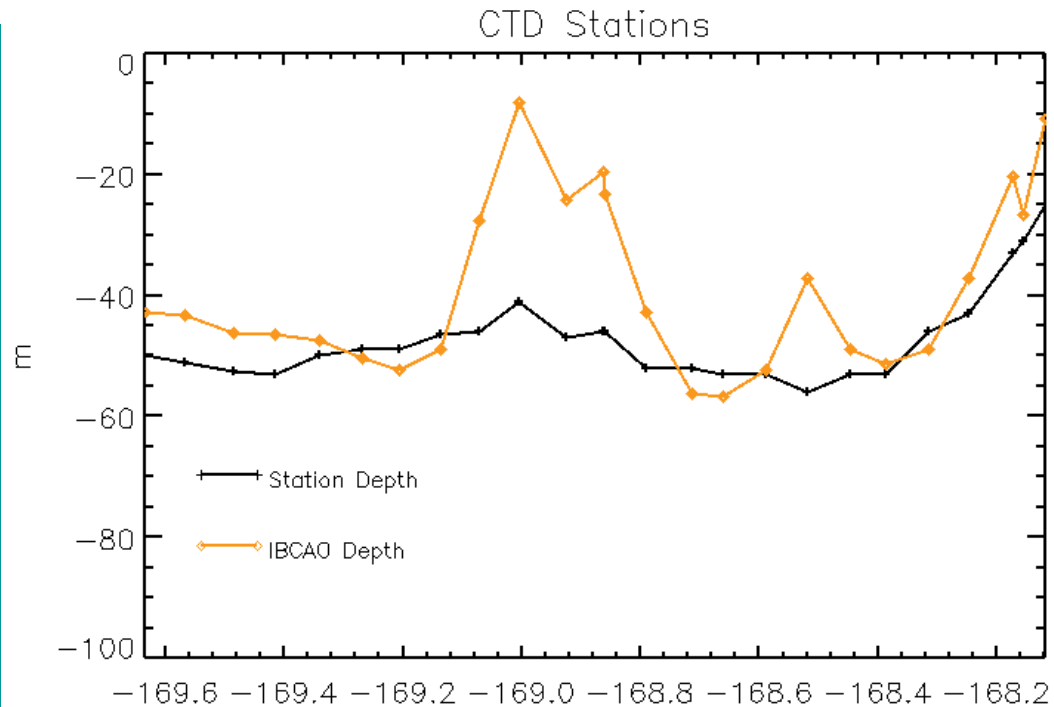
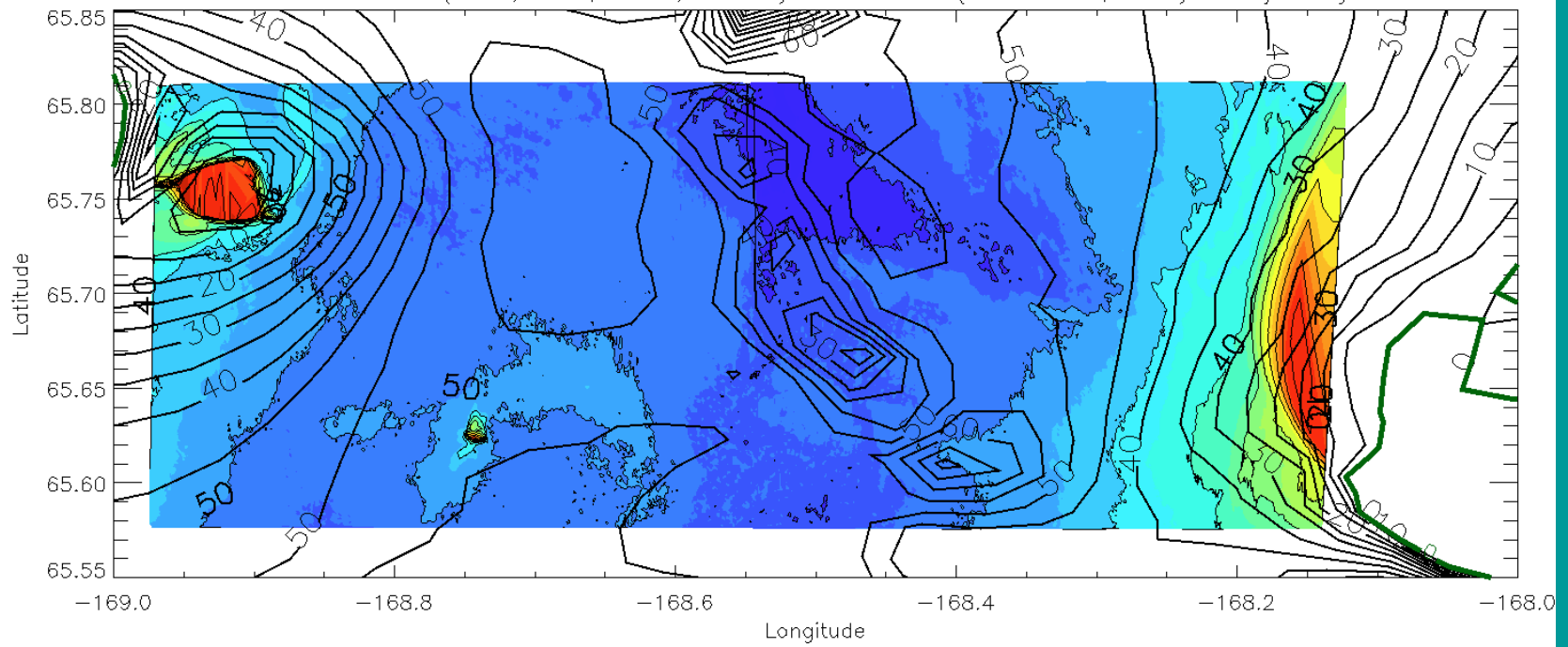


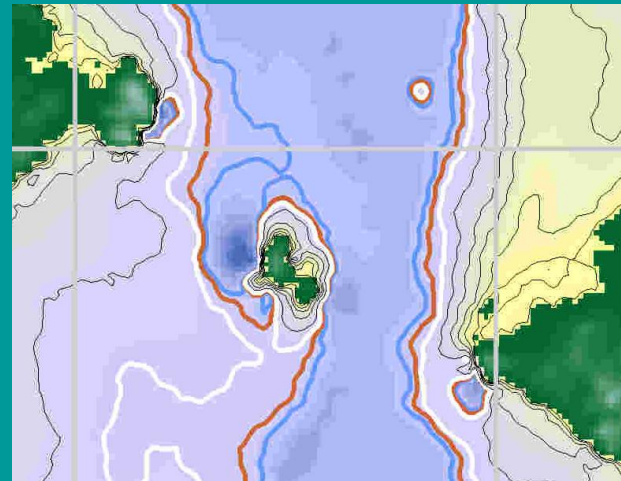
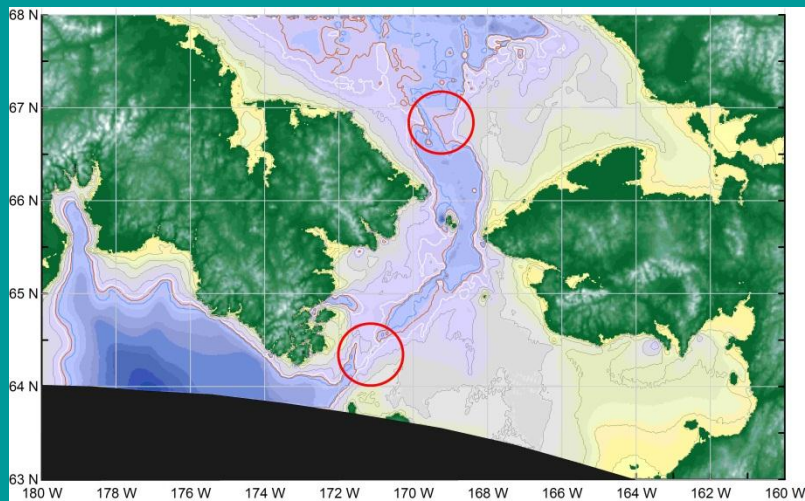
Figure from Ron Lindsay

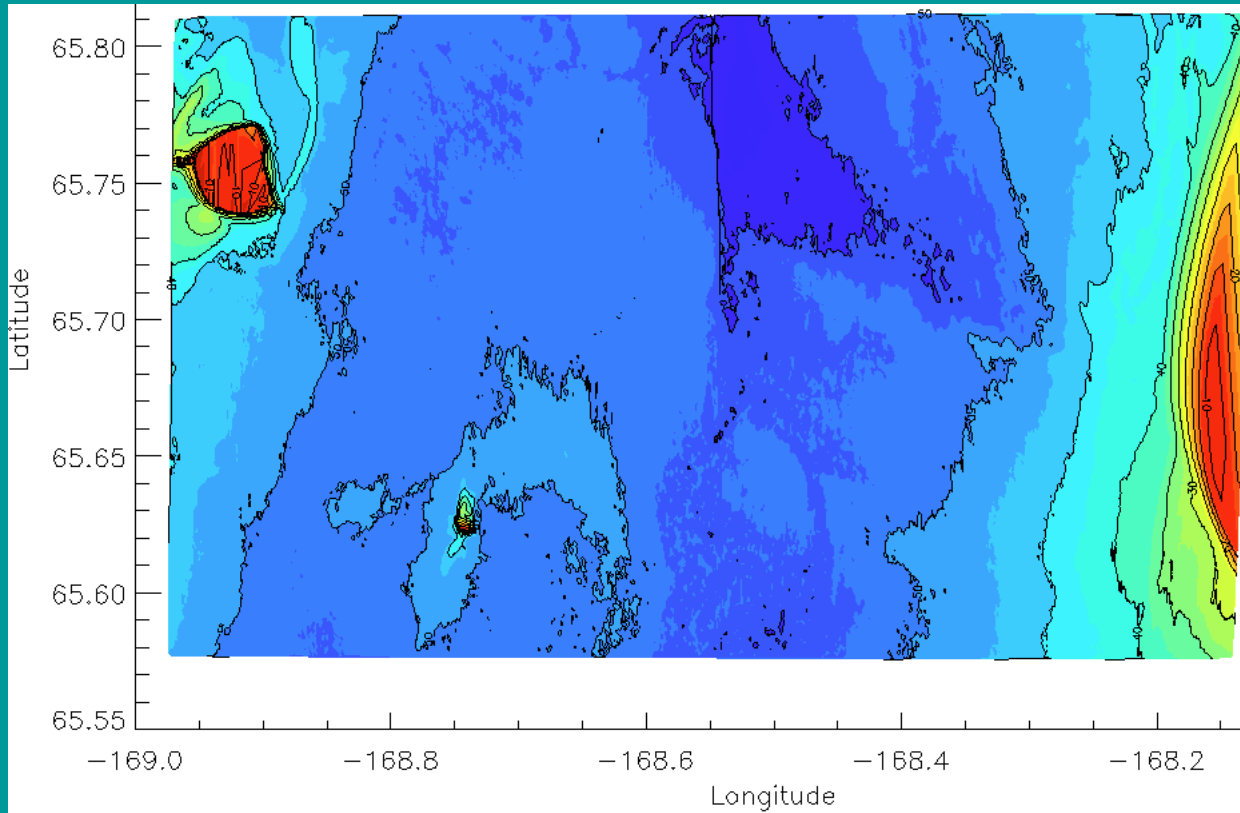
NOAA 2011 (lines, 5 m; color, 2.5 m) and IBCAO (thick lines, 5 m) Bathymetry



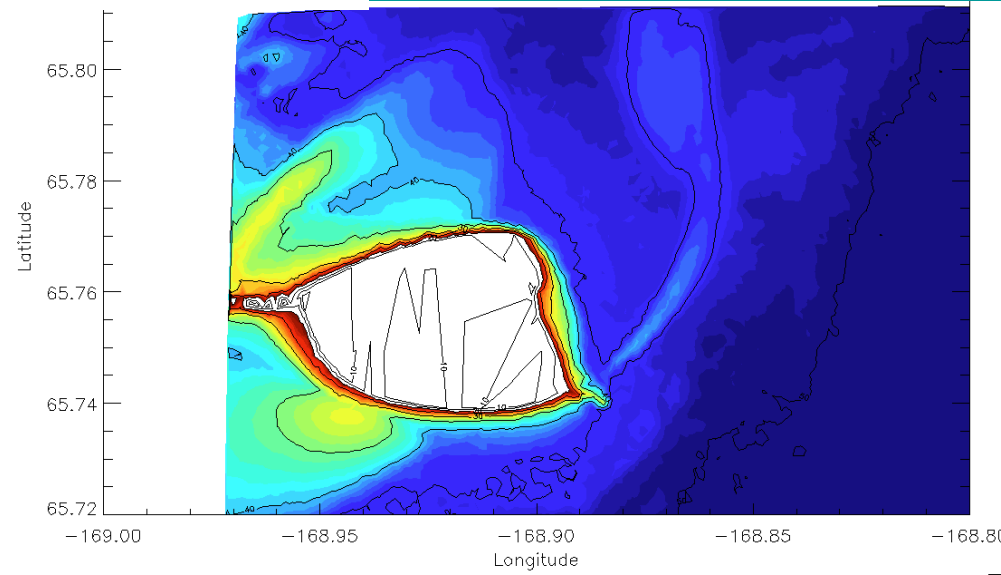
Above: Comparison of IBCAO with NOAA 2011 Bathymetry data from Kathy Crane. Plot by Ron Lindsay

Below: As per Melling et al 2008, IBCAO (??) map of the strait



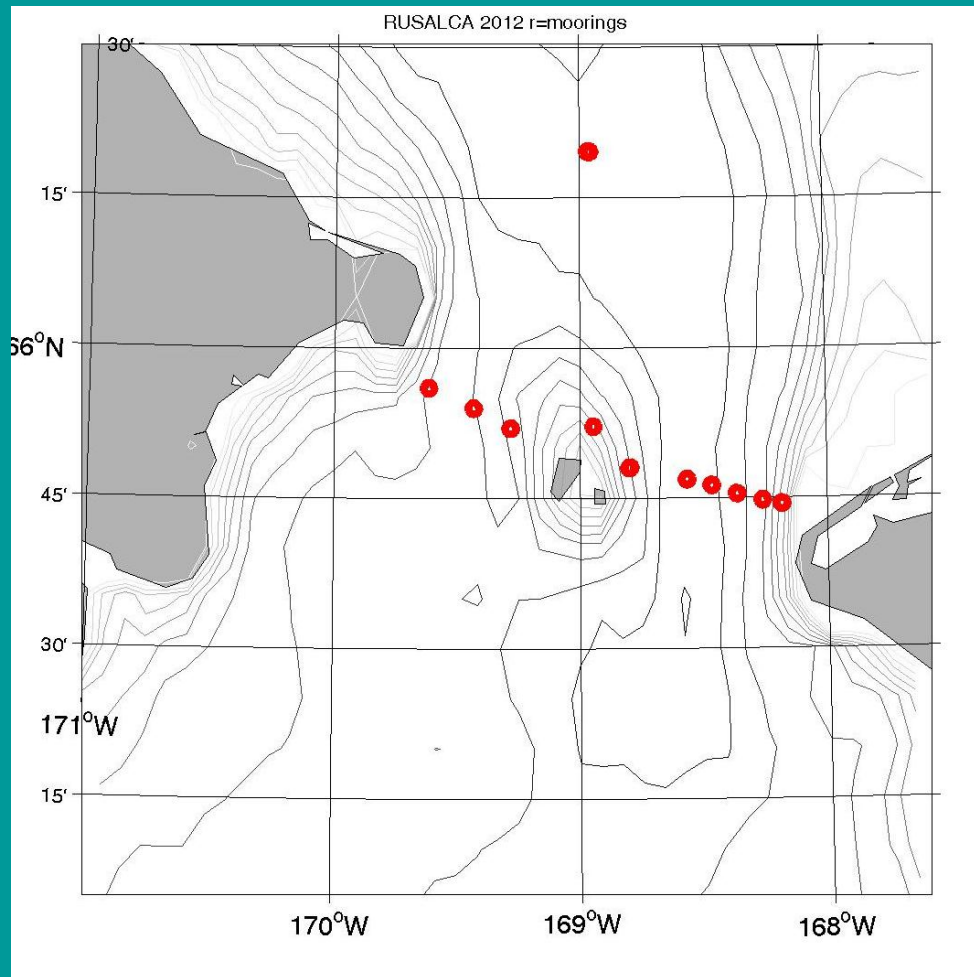


Above:
Eastern Bering Strait Bathymetry,
plotted by Ron Lindsay, from
NOAA mapping survey (data via
Kathy Crane, Fall 2011)
Right: Detail around Little Diomede



RUSALCA 2012 - Khromov

10th – 22nd
July 2012
Nome to Nome
*(including on and
off load)*



11 moorings to recover
(3 likely by dragging)

8 moorings to deploy
**- Including BPG, Nutrients,
Whale, pCO₂**