

Characterization of the Circulation on the Continental Shelf Areas of the Northeast Chukchi and Western Beaufort Seas

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May 26 2016

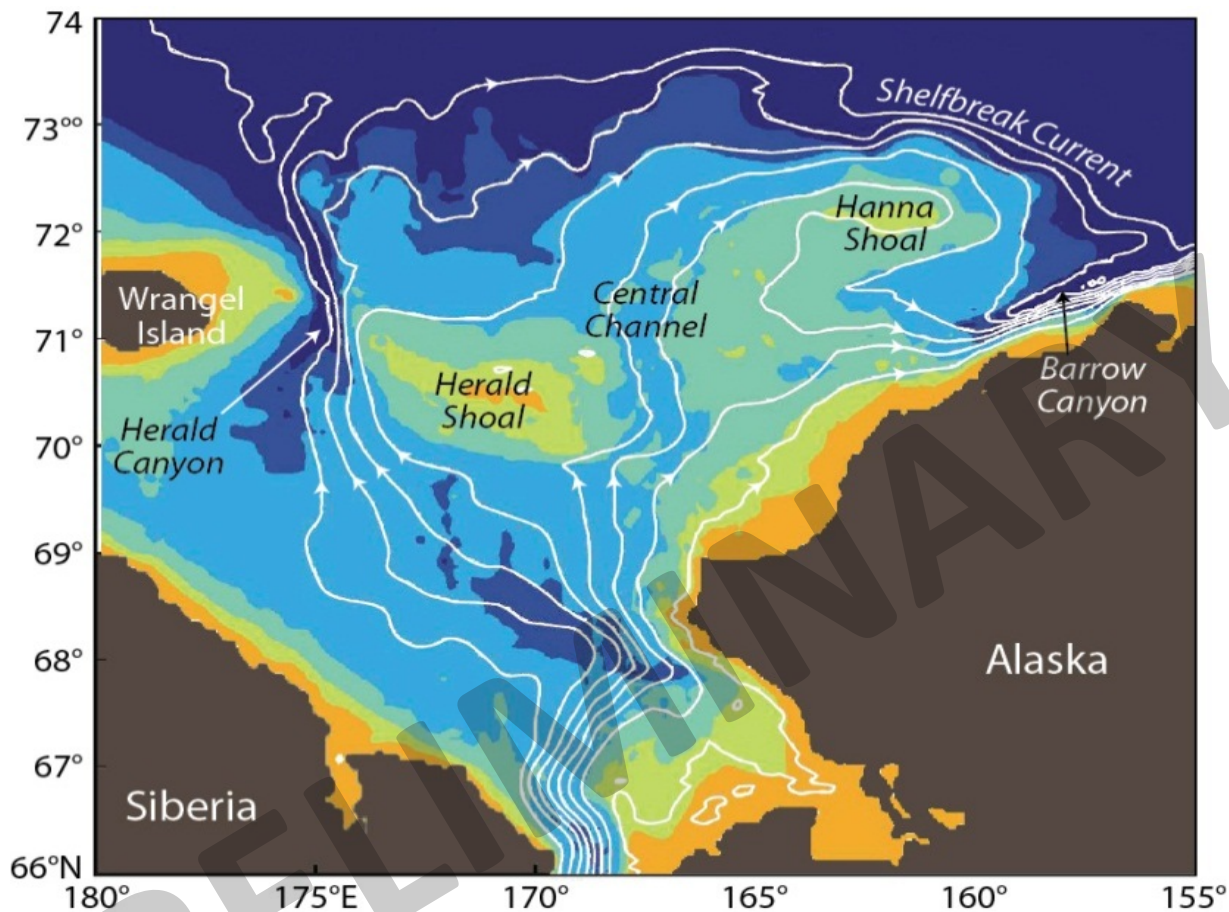
BOEM, Anchorage, Alaska

GOAL:

" . . . improved understanding of the physical oceanography of the northeastern Chukchi shelf and exchanges between the Chukchi/Beaufort shelves and the adjacent basin."

APPROACH:

Examine specific objectives via fieldwork and retrospective analyses and through partnerships:

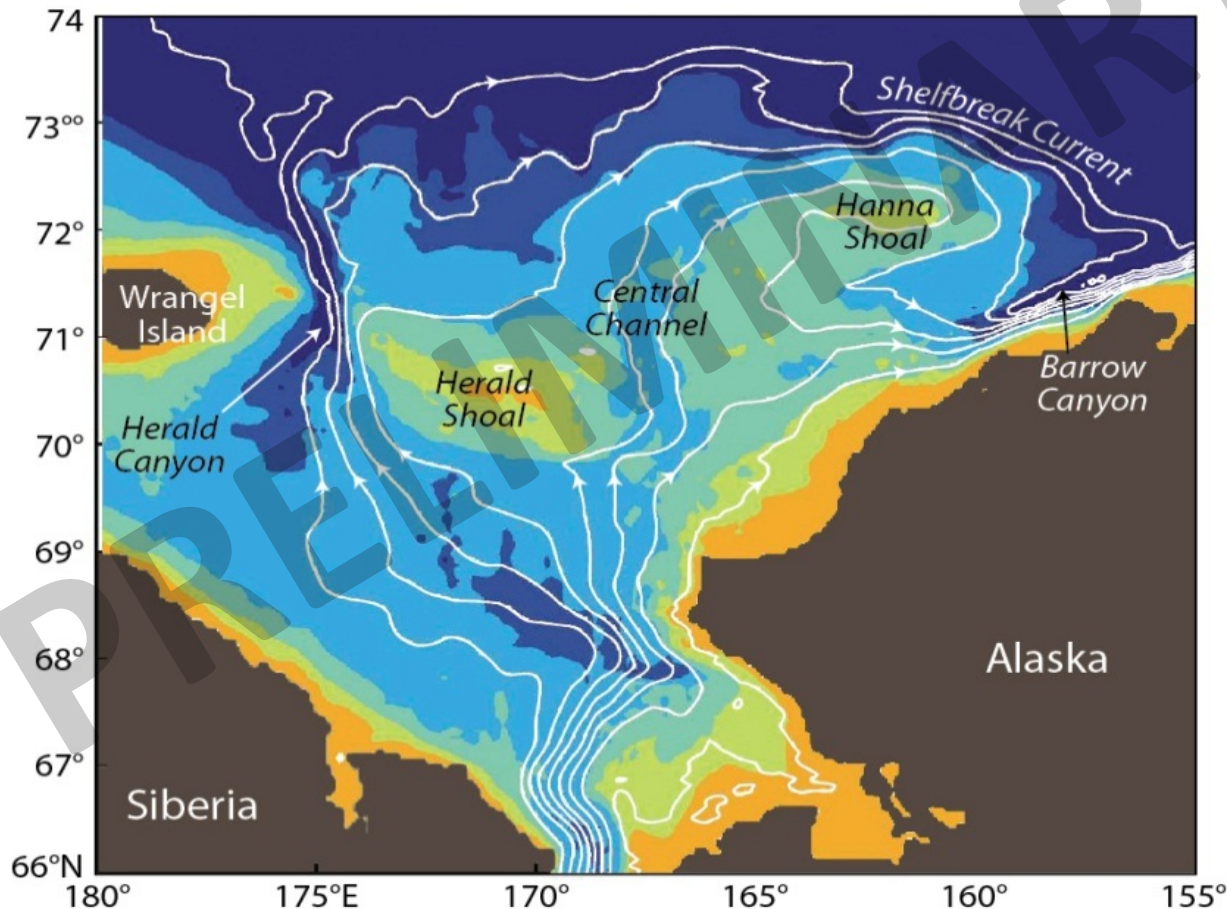


(Spall, 2007)

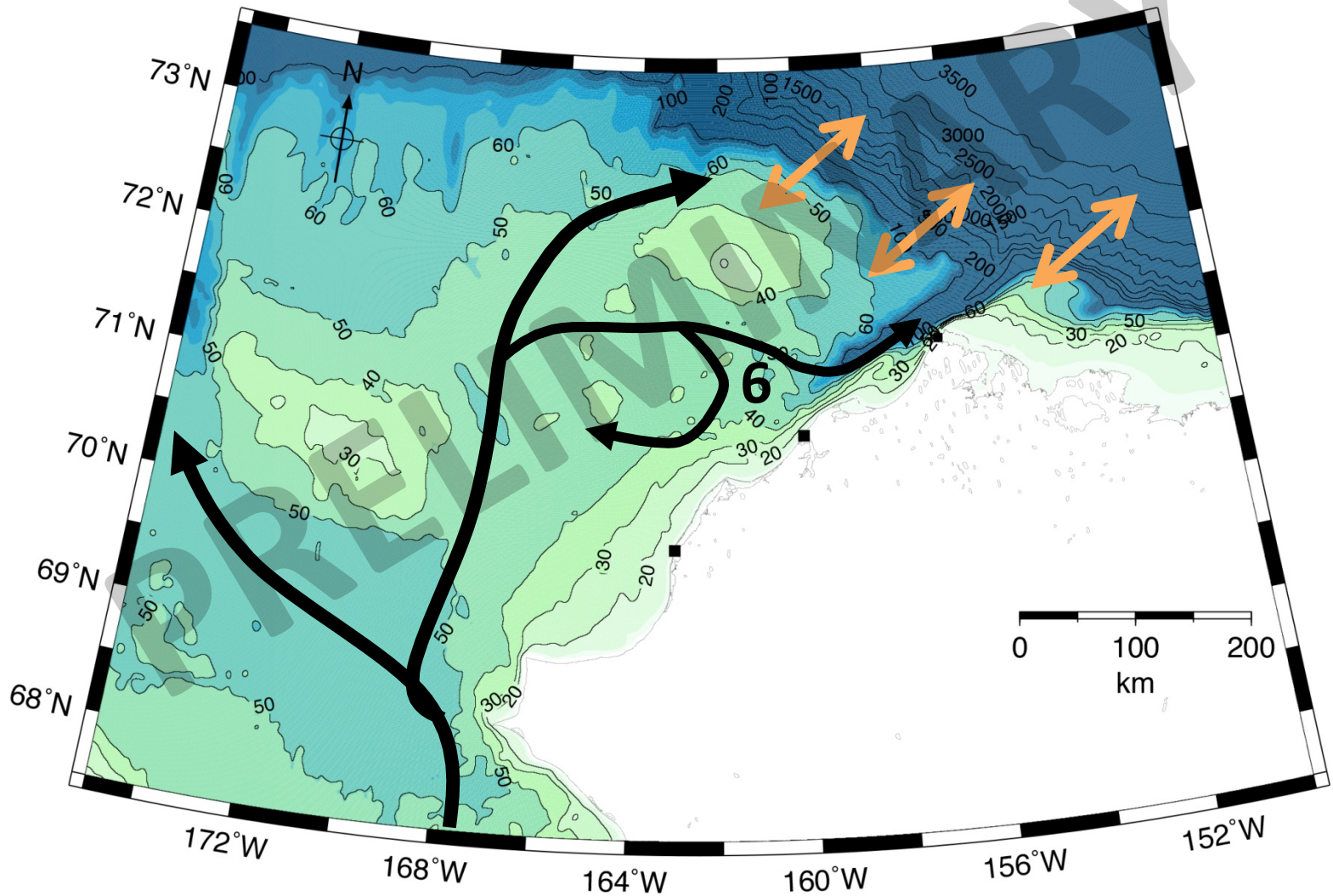
Specific Objectives:

1. Where & when does the subsurface and surface (~1 m) circulation coincide flow.
2. Strength, persistence, and variability of the model-predicted clockwise circulation around Hanna Shoal.
3. Mass transport contributions to Barrow Canyon from Hanna Shoal and the central Chukchi Sea shelf.

4. Circulation connections between the Chukchi shelf, Barrow Canyon, and the Chukchi/Beaufort shelfbreaks, and
5. Spatial and temporal variability in these connections



6. What are the conditions and frequency of occurrence of the "divergent mode" that occurs in the Wainwright-Pt. Lay region
7. Mesoscale processes that affect exchanges
8. Momentum balances where possible.



Partnerships (logistics and observations)

High-Frequency Radars (HFR) and Remote Power Modules (RPM):
Alaska Coastal Impact Assistance Program, Dept. Homeland Security (DHS) and Alaska Ocean Observing System (AOOS).

Point Lay, Wainwright, and Barrow and Cully, Olgoonik, and Ukpeagvik Native corporations.

Gliders: AOOS, North Pacific Research Board (NPRB).

Year-round subsurface oceanographic moorings

(ADCP, IPS, T/C: ~60 mooring-years 2008 - 2015):

National Science Foundation (NSF), WHOI (4), UAF (1), BOEM-COMIDA (6), AOOS (1), Chukchi Sea Environmental Studies Program (3 - 10; CSESP: oil industry).

Shiptime: (hydrographic surveys, mooring deployments & recoveries of up to 20 - 80 days/year): NSF, BOEM-COMIDA, BOEM-ARCTREX, CSESP.

Satellite-tracked Drifters:

North Slope Borough-Shell Program: ~250), ARCTREX

Partnerships (Data Sharing)

Japan Agency for Marine Earth Science and Technology (JAMSTEC) data from moorings at the mouth of Barrow Canyon.

NOAA's Russian-American Long Term Census of the Arctic (RUSALCA) program funded by NOAA (Bering Strait and western Chukchi Sea).

The International Distributed Biological Observatory (DBO), a partnership with the Pacific Arctic Group. Opportunistic collection of measurements at critical locations in the Chukchi Sea (depending on ship schedules and availability).

Northwest Arctic Borough-Shell (drifter data)