

Additional US 2014 Cruise Plans

Jacqueline M. Grebmeier, PAG Chair

Chesapeake Biological Laboratory

University of Maryland Center for Environmental Science, Solomons, MD, USA

PAG Meeting

April 6-7, 2014

Arctic Science Summit Week

Helsinki, Finland



<http://pag.arcticportal.org>

2014 PAG and DBO Field Season: Sampling Contributors-DRAFT (updates pending PAG meeting April 2014)

Region Key: DBO1=So. St. Lawrence Is., DBO2=Chirikov Basin, DBO3=So Chukchi Sea, DBO4=NE Chukchi Sea, DBO5=Barrow Canyon.

Dates (Port calls)	Ship	DBO Region	Projects	PAG contact	Chief Scientist
May 13-June 19 (Dutch-Dutch)	Healy	?3 or 5	Under-ice and open water blooms in the Chukchi Sea	Robert Pickart rpickart@whoi.edu	Kevin Arrigo arrigo@stanford.edu
July 3 (Nome-Nome)	TBD?	3	Bering Strait Mooring Project/AON?	Rebecca Woodgate woodgate@apl.washington.edu	Rebecca Woodgate woodgate@apl.washington.edu
July (Anadyr-Anadyr)	Khromov	3	RUSALCA Bering Strait mooring	Kathy.Crane@noaa.gov Phyllis.Stabeno@noaa.gov	Kathy.Crane@noaa.gov
July 4-25 (Victoria, BC-Barrow)	Sir Wilfrid Laurier	1,2,3,4,5; + moorings at 1, 3	C30/DBO, plus JAMSTEC DBO moorings	Jackie Grebmeier jgrebmei@umces.edu ; Takashi Kikuchi takashik@jamstec.go.jp	Svein Vagle Svein.Vagle@dfo-mpo.gc.ca
July 4-29-August 15 (Dutch-Barrow)	Healy	5 (TBD)	AON	Robert Pickart rpickart@whoi.edu	Robert Pickart rpickart@whoi.edu
August-Sept (Nome-Nome)	Araon	3	Korean Expedition (KOPRI)	Sung-Ho Khang shkang@kopri.re.kr	Sung-Ho Khang shkang@kopri.re.kr
August-Sept (Barrow-Barrow)	Annika Marie	5	AON	Carin Ashjian cashjian@whoi.edu	Carin Ashjian cashjian@whoi.edu
August -Sept	Aquila?	1,3, 5	ARCWEST	Jeff.Napp@noaa.gov Sue.Moore@noaa.gov	Catherine.Berchok@noaa.gov Phyllis.Stabeno@noaa.gov
August-October	Westward Wind	4	CSESP	Tom Weingartner weingart@ims.uaf.edu	Bob Day bday@abrinc.com John Burns jburnssr@gci.net
August-September	Bristol or Alaska Explorer	1 and/or2	Arctic Eis	Ed.Farley@noaa.gov	Franz Mueter mueter@alaska.edu
September-October	Mirai	3,5	JAMSTEC	Takashi Kikuchi takashik@jamstec.go.jp	Shigeto Nishino nishinos@jamstec.go.jp
September-Oct	Louis S St-Laurent	-	JOIS	Bill Williams Bill.Williams@dfo-mpo.gc.ca	Bill Williams Bill.Williams@dfo-mpo.gc.ca

Projects Key: AON=US Arctic Observing Network; ARCWEST = Arctic Whale Ecology Study; COMIDA=Chukchi Offshore Monitoring in Drilling Area; CSESP=Chukchi Sea Environmental Studies Program; C30=Canada's Three Oceans; JAMSTEC= Japan Agency for Marine-Earth Science and Technology; KOPRI = Korea Polar Research Institute.

HEALY 2014

Lee Cooper, University of
Maryland Center for
Environmental Sciences,
and Chair, Arctic Icebreaker
Coordinating Committee
cooper@umces.edu

THREE CRUISES DATES ARE APPROXIMATE PER HOMELAND SECURITY
<http://www.icefloe.net>

CRUISE 1, MAY-JUNE ARRIGO/PICKART/PEROVICH
CHUKCHI SEA EARLY UNDERICE BLOOMS

CRUISE 2, JULY PICKART CHUKCHI SEA
MOORING RECOVERY AND REDEPLOYMENT

CRUISE 3, AUGUST CHUKCHI SEA
UNDERWAY NOISE TESTING

Study of Under-ice (Phytoplankton) Blooms in the Chukchi Ecosystem (SUBICE)

USCG *Healy* (HLY1401)

Lead Scientists: Kevin Arrigo (arrigo@stanford.edu, phone: 650 723-3599), Robert Pickart (rpickart@whoi.edu, phone: 508 289-2858), and Don Perovich (donald.k.perovich@usace.army.mil, phone: 603 646-4255)

Phytoplankton are microscopic plants that grow both in open water and under sea ice. Since plants require light to grow, we seek to understand how phytoplankton are able to grow in the low light beneath the ice and how their abundance might be responding to recent losses in sea ice and snow cover. Phytoplankton are important because they lie at the base of the food web and provide organic carbon that, through zooplankton such as copepods and krill, ultimately supports populations of fish, seabirds, and marine mammals. Changes in biological productivity /phytoplankton growth in Arctic waters have been surprisingly large over the last decade and we would like to understand these changes in better detail.

To do this, we have been funded by the National Science Foundation to conduct a research cruise on the icebreaker USCGC *Healy* from May 13-June 23, 2014, sailing from and returning to Dutch Harbor. Our primary operational area is in the ice-covered waters of the Chukchi Sea, from the Bering Strait northward, focusing particularly on the northern Chukchi where blooms of phytoplankton under the ice have been observed before. We plan to measure water temperature, salinity, and other properties using instruments on board the *Healy*. In addition, we will sample sea ice, focusing on its optical properties and its ability to harbor phytoplankton that are important to the Arctic marine food web.



We realize that the timing of this cruise could possibly conflict with whaling and other subsistence hunting activities. During our transit north, we will remain near the US/Russia border (or possibly we will transit through Russian waters). Our primary study area (oval area on map) lies ~50 miles from shore. We plan to have a local participant on board the ship who will be communicating daily with local communities to assess whether there are other actions we can take to ensure that we do not interfere with local whale hunting. All data collected by the project, including locations sampled, will be available shortly after the cruise on a website at Stanford University (<http://icy.stanford.edu/SUBICE>).



HEALY 2014

NEW REQUEST TO SAIL FORM (ON A
NOT TO INTERFERE WITH FUNDED
SCIENCE BASIS)

<http://icefloe.net/non-science-request-sail-healy-0>

Hello North Slope Residents:

We are conducting a study in the Chukchi Sea called ARCWEST which will help us better understand where whales spend their time in relation to food, ocean conditions, and oil and gas activities.



Research Vessel:
To Be Determined

(please see map on back)

Arctic Whale Ecology Study (ARCWEST)

Approximate Cruise Dates: August 20, 2013* (Nome) – September 12, 2012 *(Nome)

*Tentative dates, could be up to 5 days earlier



Research Goals:

- Study the movements of humpback, fin, and gray whales in the Northeast Chukchi Sea using *satellite tagging*.
- Determine where bowhead, gray, fin and humpback whales are in the Northeast Chukchi Sea using shipboard observations, seasonal and year-round acoustic recorders.
- Study movement of krill and nutrients from the Bering Strait to the Barrow Canyon.
- Monitor changes in the marine ecosystem through time.
- Learn how whales respond to changes in climate and human activities.



Principal Investigators:

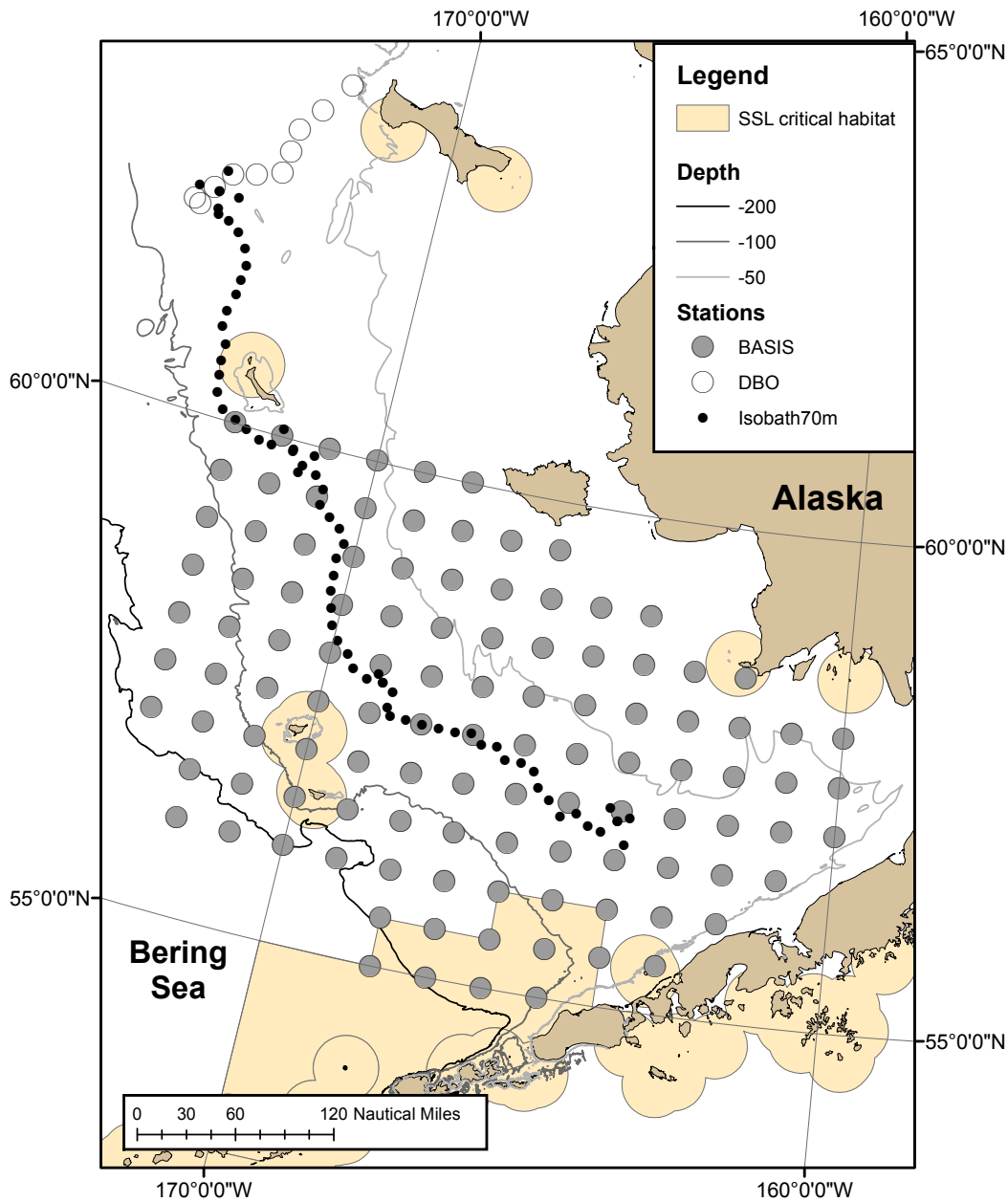
Nancy Friday, Catherine Berchok, Jeffrey Napp, and Alex Zerbini,
Alaska Fisheries Science Center, NOAA, Seattle, WA

Phyllis Stabeno, Pacific Marine Environmental Lab., NOAA, Seattle, WA



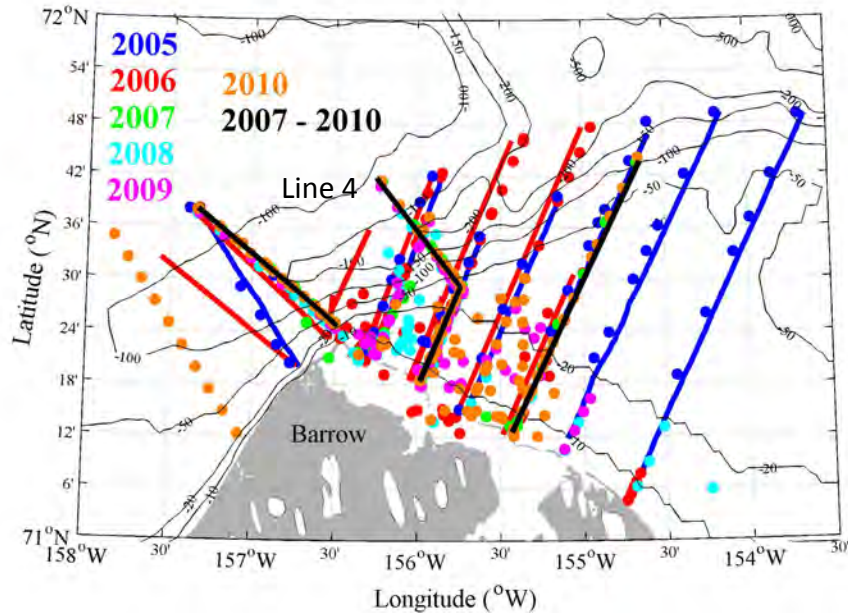
If questions, contact: Nancy.Friday@noaa.gov 206.526.6266

Among many things, we will study krill and other important whale foods to determine where they occur and why.



**NOAA Fall survey-
SE Bering Sea and
DBO1 (northern
Bering Sea)
-courtesy Ed Farley,
Auke Bay**

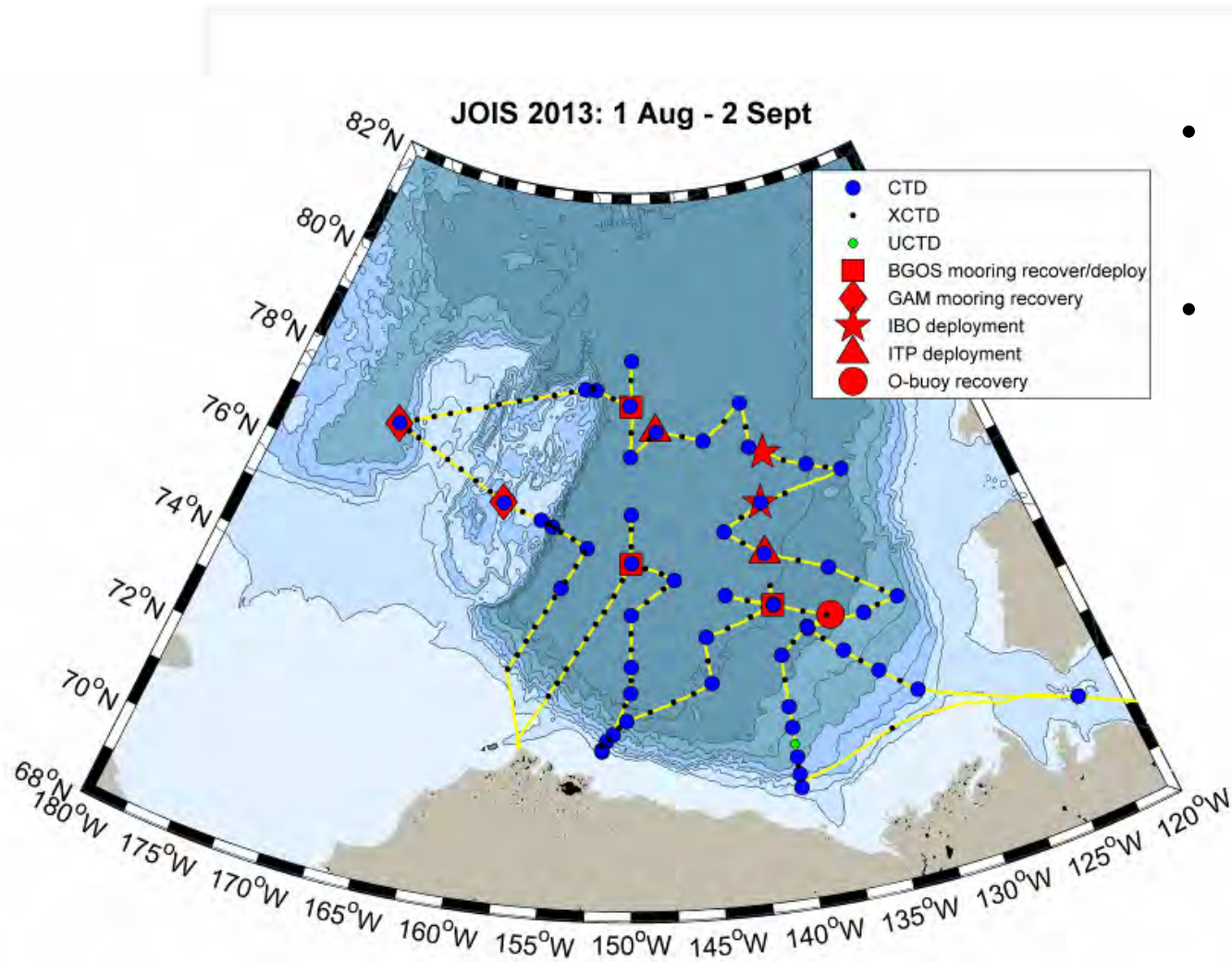
AON Sampling from *R/V Annika Marie*



- Oceanographic sampling using the 43' *R/V Annika Marie* from mid-August to mid-September 2005-2012
- DBO sampling in 2010 and 2011, too much ice in 2012, plan 2013
- Ring net equipped with 150 μ m mesh net, sampling from 0-near bottom
- We are able to sample an additional station inshore (11 stations) on the DBO transect
- Other cruises have sampled zooplankton (e.g., CHAOZ 2011-2012)

[Carin Ashjian (WHOI)]

Joint Ocean Ice Study (Canada-US-International on CGCS Louis S. St.-Laurent)



- Sea ice observation, hydrography & water sampling
- Mooring recoveries & deployments

[contacts: Bill Williams/IOS Canada and Andrey Proshutinsky/WHOI]