

CRUISE REPORT
Cruise Number: LA-01-01

FOCI Number: None
Ship: CCGS Sir Wilfred Laurier

Area of Operation: Bering Sea and North Pacific Ocean

Itinerary: 7 Oct. 2001 Depart Nome, Alaska
11 Oct. 2001 Touch and Go inport in Dutch Harbor, Alaska
16 Oct. 2001 Arrive Dutch Harbor, Alaska

Participating Organizations:

NOAA-Pacific Marine Environmental Laboratory (PMEL)
NOAA-Alaska Fisheries Science Center (AFSC)
University of Alaska Fairbanks (UAF)

Chief Scientist: William Floering (PMEL/AFSC)

Participating Scientists:

Steve Smith (PMEL)
Dave Kachel (PMEL)
Carol DeWitt (PMEL)
Sara Thornton (UAF) 7-11 Oct.
Stacy Smith (UAF) 7-11 Oct.
Dave Wisegarver (PMEL) 11-16 Oct.

Vessel Assistants: Bon van Hardenberg
Doug Sieberg

Cruise Objectives:

Fisheries-Oceanography Coordinated Investigations (FOCI) is an effort by NOAA and associated academic scientists. At present, FOCI consists of a Shelikof Strait (western Gulf of Alaska) walleye Pollock project and a NOAA Coastal Ocean Program: Southeast Bering Sea Carrying Capacity. FOCI also supports associated projects, such as the Steller Sea Lion (SSL) Research Initiative, Arctic Research Initiative and U.S. GLOBEC that address scientific issues related to FOCI. FOCI's goal is to understand the effects of the abiotic and biotic variability on ecosystems of the North Pacific Ocean and Bering Sea in order to discern the physical and biological processes that determine recruitment variability of commercially valuable finfish and shellfish stocks in Alaskan waters.

Summary of Cruise:

Schedule changes initiated by *Sir Wilfred Laurier* delayed the ship's arrival in Nome, AK, and the start of this cruise by approximately one week. On 7 October, *Laurier's* helicopter ferried all equipment and personnel to the vessel and we departed Nome. On 9 October we arrived at

mooring Site 4 in the Bering Sea. A subsurface oceanographic instrumentation mooring was recovered, data downloaded and a similar mooring was redeployed at this location. One nutrient sampling meter (UAF) was recovered at this site. It appears this unit failed soon after deployment; there was a blown fuse on the battery pack, and none of the sampling standards were depleted. The deployed mooring at Site 4 has 14 instruments and is deployed in 72 meters of water. CTD casts were completed prior to recovery and after deployment of this mooring.

On 10 October we arrived at mooring Site 2, northeast of Dutch Harbor in the Bering Sea. A surface instrumentation mooring was recovered along with an ADCP mooring and two IRSC sediment trap moorings (UAF). Two CalVet 153-micron mesh plankton tows were completed at site 2 in support of the sediment traps. The nutrient meter recovered at site 2 came back without a battery pack. It appears the battery pack attachment hardware failed, and the weight of the loose battery pack broke the electrical cables. According to downloaded data, this instrument functioned from 16 May to 22 June. However, the quality of the sampled data is questionable for this deployment. A single sediment trap mooring (UAF) and an ADCP mooring were redeployed at this site. The surface mooring recovered at Site 2 was replaced with a sub-surface instrumentation mooring. CTD casts were taken prior to recovery and after deployment of these moorings, the water depth was approximately 72 meters.

Upon completion of our work at Site 2 *Sir Wilfred Laurier* steamed to Dutch Harbor to exchange members of the scientific party. On 11 Oct. Stacy Smith and Sarah Thornton from the University of Alaska, Fairbanks departed the ship and Dave Wisegarver of PMEL embarked. Equipment needed for the next segment of this cruise was loaded during this Dutch Harbor touch and go.

After Leaving Dutch Harbor *Laurier* traveled west along the north side of the Aleutian Islands to Seguam Pass. On 13 October a subsurface mooring was recovered and redeployed on the north side of Seguam Pass. That afternoon the 300-Khz ADCP mooring was recovered and redeployed on the south side Seguam Pass. CTD casts were completed prior to recovery and following deployment of these moorings. During the night a CTD transect was completed across Amukta pass, east of Seguam Pass. Three of the four 75-Khz ADCP moorings across Amukta Pass were recovered, downloaded and redeployed. Contact with the acoustic release on the forth mooring of this string (east side of the pass) was intermittent. We were able to locate the mooring and enable the release but ranging was inconsistent and the release command would not work. We made a number of attempts to circle the mooring searching for a reliable communication window but success was minimal.

The ocean bottom is very irregular in this area and it appears the mooring anchor/release settled into a hole shading the release by rocks and making communications with the release difficult. I am confident that this mooring can be recovered but it will take some time to position and hold the vessel on a location that allows communication between the hydrophone and the release. A vessel with a hull mounted acoustic transducer would speed up this search. Because cruise time was running short, this release was disabled and we continued working east.

Four Argos drifters were deployed in Amukta pass following each mooring deployments and at the mooring that would not release.

The Canadian scientists deployed a subsurface instrumentation mooring a few miles south of Amukta Pass. Following this deployment *Sir Wilfred Laurier* traveled east along the south side of the Aleutian Islands to an area southwest of Akutan Pass and a depth of 1500 meters. On a line heading northeast to Akutan pass we deployed a series of 3 Argos drifter buoys. On the south side of Akutan pass we recovered, downloaded the data and redeployed a subsurface mooring. On the north side of Akutan pass a 300-Khz ADCP mooring was recovered, downloaded and redeployed. Again, CTD casts were completed prior to recovery and following redeployment at these two mooring sites. Upon completion of the north Akutan pass mooring work *Sir Wilfred Laurier* steamed to Dutch Harbor. The scientific party offloaded all the equipment and disembarked the vessel on 16 Oct., 2001.

CTD Casts: 18

Argos Drifters Deployed: 7

Plankton Tows: 2

Acknowledgements:

We would like to thank Bon van Hardenberg (*Sir Wilfred Laurier* Chief Science Consultant) and Doug Sieberg (mooring technician) for their assistance with CTD casts, mooring operations and vessel liaison. We also thank those officers and crew members of *Sir Wilfred Laurier* who made every effort to assist us in completing our intended objectives. As always, the PMEL representatives from Climate, Engineering and OERD2 performed all duties in a proficient and professional manner, as did our associates from the University of Alaska Fairbanks.

Comments and Considerations:

At the request of *Sir Wilfred Laurier*, the beginning of this cruise was delayed beyond one week. As a result of this delay, some of the data that would have been presented at scheduled meetings were not available. This delay also had an impact on those people with commitments to sail on other vessels following this cruise.

If *Sir Wilfred Laurier* becomes a regularly used PMEL platform, installing a hull-mounted acoustic release transducer would speed up operations considerably. Having to stop the ship and hold station while hanging a portable transducer over the side is a time consuming operation.

This delay is especially evident if there is a need to search for a mooring, if the weather is poor, or if strong currents hamper the ship's ability to maintain station. *Sir Wilfred Laurier* is scheduled to be in dry dock in March and April of 2002. Bon van Hardenberg of Canada DOS has requested a hull-mounted transducer be installed at this time.

The portable cargo container mounted on the forward work deck is a must for completing mooring operations. It would be prohibitively inconvenient to accomplish all the equipment set-up and downloading in the shop area below the work deck if the cargo container was not available.

To meet the total sea day requirements, the *Sir Wilfred Laurier* is manned by two completely separate crews. As you might expect, there are some differences in how operations are conducted depending on which crew is aboard. The ship's logs are not necessarily available to the scientific party and are not a reliable source for keeping records of mooring, CTD and drifter positions. Prior to the start of the cruise a request should be made asking that the deck officers maintain a second scientific log with date, times, positions, depth and weather information for each scientific station.

An SCS computer system, similar to those found on NOAA ships was installed on *Sir Wilfred Laurier* last year. Presently there are few sensors integrated into the SCS data collection system, but the Chief Science officer mentioned that additional sensors may be installed soon.

Sir Wilfred Laurier has a diesel electric propulsion system with an average cruising speed on one generator of 10 to 10.5 knots. Adding a second generator increases the cruising speed 2-3 knots but nearly doubles the fuel consumption. Since there were several lengthy runs during this cruise (from Nome to Dutch Harbor to Sequam Pass and back to Dutch Harbor), time was saved by running 2 generators and increasing the cruising speed. There was some reluctance by the Captain to put the second generator on line, and there ensued a number of discussions concerning the increased fuel consumption and what our contract was paying for. It would be in everyone's best interest to address the fuel consumption/cruising speed issue specifically in the cruise instructions, so the expectations of both parties are understood in advance of the sailing date.

Attachments:

1. Mooring and drifter release positions.
Note: CTD casts completed at the mooring locations.
2. 2-page station plot.

Table 1. Mooring and drifter release positions.

Note: CTD casts completed at the mooring locations.

Location / Activity	N. Lat	W. Long	Depth
Nome	64 32.0	165 30.0	
BS-2B	56 52.862	164 03.553	72M
BSP-2B	56 51.954	164 02.603	72M
BSST-2C	56 51.944	164 02.948	72M
BS-4B	57 51.112	168 52.201	71M
Dutch H.	53 55.0	166 18.0	
01-SM	52 15.99	172 45.00	154 M
01-SMP	52 07.996	172 25.008	162M
AMP-1	52 26.003	171 27.039	not recovered
AMP-2	52 24.975	171 39.932	459M
AMP-3	52 24.003	171 55.078	310M
AMP-4	52 22.915	172 07.055	362M
4 Argos drifters deployed across Amukta Pass			
3 Argos drifters deployed on a line south of Akutan Pass	53 03.3	166 46.6	
Drifter	53.055	166.787	
Drifter	53.102	166.772	
Drifter	53.087	166.787	
01-AKP	53 56.022	165 54.998	91M
01-AKP	54 04.019	166 17.830	75M
Dutch H.	53 55.0	166 18.0	

Figure 1. Page 1 of 2-page station plot.



Figure2. Page 2 of 2-page station plot.

