

CRUISE REPORT

Sir Wilfred Laurier

July 2004

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Scientists boarded Canadian Coast Guard ship *Sir Wilfred Laurier* on the evening of July 8th in Kodiak Alaska. The Chief Scientist for the cruise was Dr. Jackie Grebmeier, and the Canadian Chief Scientist was Bon Van Hardenberg. PMEL/FOCI participated on the cruise as a piggy-back project to deploy 2 subsurface moorings and release one drifter near St. Mathew Island, and recover and deploy one subsurface mooring and release a satellite drifter near St. Laurence Island in the Bering Sea. The ship departed Kodiak the morning of July 9th, working its way toward Barrow conducting CTD casts, Bongo tows, bottom sample grabs, and bottom core sampling. This is the 7th year Dr. Grebmeier has lead this cruise.

At 0017 hours (GMT), 15 July 2004, subsurface oceanographic instrumentation mooring 04-BS-5A was deployed at 59 degrees 53.842 minutes north, 171 degrees 42.190 minutes west in 72 meters of water. This mooring has three microcats, one fluorometer, and 10 temperature recorders at depths ranging from 11 meters to 67 meters. A Benthos acoustic release (serial number 982) was deployed with this mooring.

Approximately one quarter mile from the above location a 300 Khz ADCP mooring was deployed at 0103 hours, 15 July, 2004. This mooring (04-BSP-5A) was deployed in 72 meters of water at location 59 degrees 53.878 minutes north and 171 degrees 42.636 minutes west. The top of the upward looking ADCP unit is at 65 meters. A Benthos release (serial number 1062) was deployed with this mooring.

Following the two mooring deployments a CTD cast was conducted approximately one quarter mile from mooring 04-BS-5A. Triplicate water samples at 12 meters depth (the

depth of the mooring fluorometer) were collected and analyzed onboard for chlorophyll concentration. The CTD acquisition computer froze up during this cast. The down-cast is file 024-BSP-5A, the up-cast and bottle file is 024-BSM-5AUP.

As we steamed away from this station, one ARGOS satellite tracked drifter buoy with a 40 meter drogue was released. Drifter number 43706 was deployed at 0223 hours at position 59 degrees 54.291 minutes north and 171 degrees 42.820 minutes west.

At approximately 2200 hours on July 15th we arrived at mooring site 03-STL-1A. In anticipation of a mooring recovery a CTD cast (027-STL-1A) was completed along with triplicate chlorophyll samples at the mooring fluorometer depth of 16 meters. This mooring, deployed in 2003, was designed for 75 meters water depth but deployed in 80 meters of water. No adjustments were made to the mooring prior to deployment so all instrumentation depths are assumed to be 5 meters deeper than originally planned.

Numerous attempts were made with two different Edge Tech deck sets and transducers to wake up and communicate with the acoustic release on mooring 03-STL-1A (EG&G release No. 804201) After all attempts to communicate with this release failed, we steamed north looking for 75 meters depth to deploy the new STL mooring number 04-STL-1A. After traveling 6.5 miles the bottom was still 78 meters and showed no signs of decreasing. The decision was made to place the new mooring at this location. The mooring was designed for 75 meters depth, to adjust for the 78 meters water depth 2.5 meters of chain was added above the bottom temperature sensor. The mooring was deployed in 78 meters of water, but once deployed the top float was only 18 feet below the surface, a depth possibly too shallow to survive a year of weather and ice. Fortunately the calm weather enabled us to lasso the top float and partially recover the mooring. A 1.75 meter of stainless chain above the top RCM9 current meter was replaced with a .5 meter piece of stainless steel chain. A 1.5 meter piece of chain below the nitrate meter was removed. This modification shortened the overall mooring length by 2.75 meters leaving the top float at roughly 26 feet below the surface which is very near to the original design depth.

The cause of the discrepancy between water depth and mooring length is unknown at this time but either the mooring was longer than specified or there is an error in the depth soundings.

On 16 July 2004 at 0238 hours mooring 04-STL-1A was re-deployed in 78 meters of water at location 62 degrees 11.657 minutes north and 174 degrees 51.338 minutes west. Approximately one quarter mile from the deployed mooring, a CTD cast (028-04STL-1A) was completed. Triplicate chlorophyll samples were taken at the mooring fluorometer depths of 11 meters and 28 meters. Nutrient samples were taken at 18 meters, the depth of the mooring nitrate meter.

One ARGOS satellite tracked drifter buoy was deployed as we steamed from this station. ARGOS drifter number 43705 was released on 16 July 2004 at 0328 hours at location 62 degrees 11.35 minutes north and 174 degrees 51.58 minutes west.

The ship returned to the deployment location of 03-STL-1A. Five attempts were made to snag the unresponsive mooring with wire and grapple hooks. The drag winch had roughly 230 meters of wire on the drum so the diameter of our drag circle was limited. Prior to and following the dragging operations, *Laurier* drove slowly over the plotted mooring deployment location. There were no signs of the mooring floats on the ships sounder.

It appears this mooring has moved off station or the release has failed. Near bottom temperature from the CTD data is -1.3 degrees. This concluded the mooring operations for this cruise.

Mr. Floering disembarked *Sir Wilfred Laurier* on 21 July 2004 and flew to Seattle on July 22nd. An 8011A deck unit, tools and raingear were sent to Kodiak for mooring recovery work on F/V *Big Valley*. The Peck and Hale and gravity release were sent back to Seattle along with the PMEL 8011 deck unit that failed in the field. A few empty equipment boxes, 2 mooring spools, a wooden footlocker 10 old tires and a 48 inch plastic tote are still aboard *Sir Wilfred Laurier*. A CD with the CTD cast files are in the cruise folder.

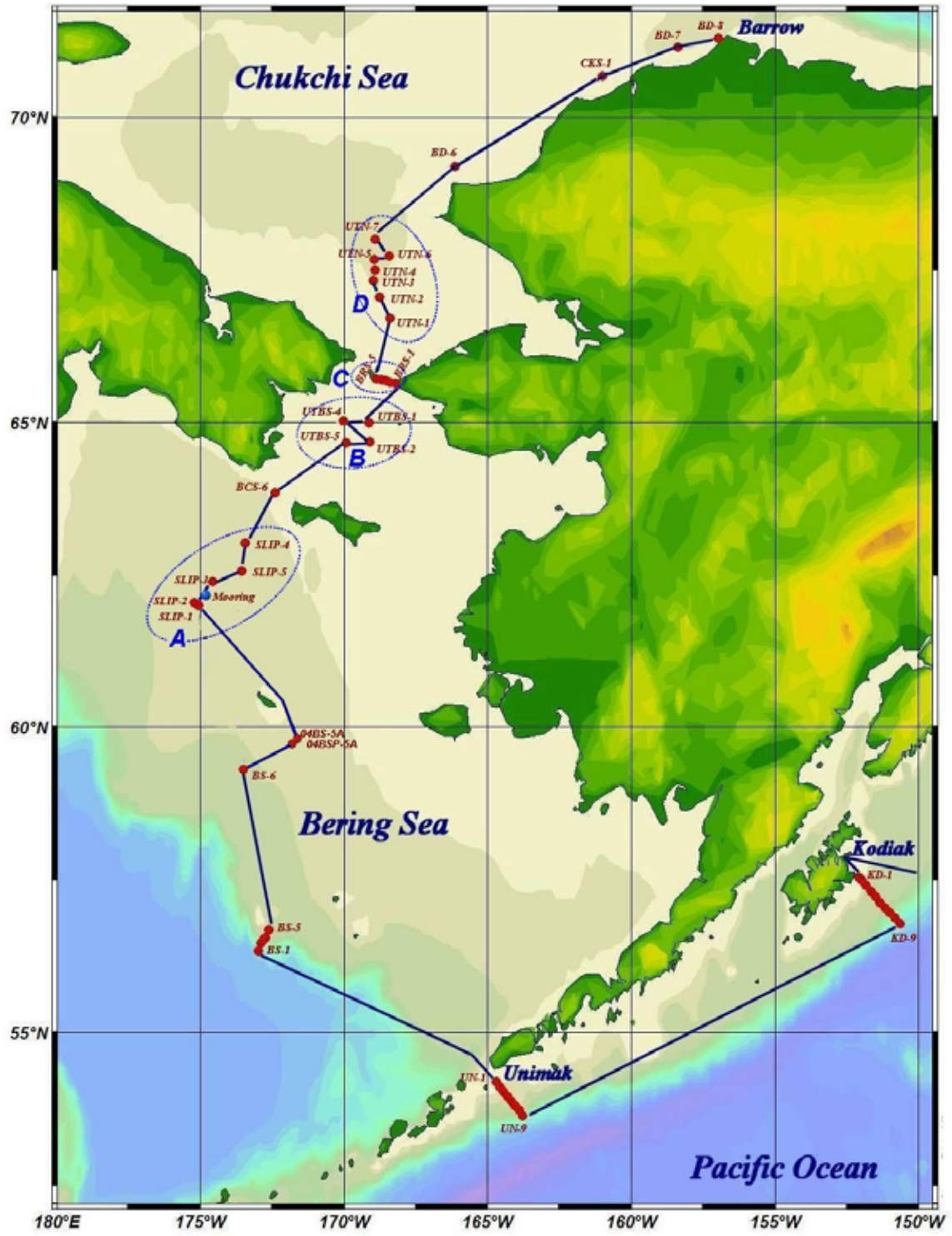


Figure 1- Cruise Track