



**NOAA Teacher at Sea**  
**David Altizio**  
**Onboard NOAA Ship *Fairweather***  
**May 17 – May 27, 2010**

**NOAA teacher at Sea: David Altizio**

NOAA ship *Fairweather*

Mission: Hydrographic survey

Geographical Area of Cruise: SE Alaska,  
from Petersburg, AK to Seattle, WA

Dates: Wednesday, May 19 and Thursday, May 20

**Weather Data from the Bridge**

Position: Customhouse Cove

Position: Behm Canal

Time: 0800 on 5/19

Latitude: 55° 05.97' N

Longitude: 131° 13.8' W

Clouds: Overcast

Visibility: 10 miles

Winds: 6 knots from the SE

Waves: Less than one foot

Dry Bulb Temperature: 13.0°C

Wet Bulb Temperature: 12.5°C

Barometric Pressure: 1010.5 mb

Tides (in feet):

High @ 0447 of 14.6

Low @ 1128 of -0.7

High @ 1802 of 13.2

Low @ 2349 of 4.0

Sunrise: 0429

Sunset: 2055

**Science and Technology Log**

On Wednesday, May 19, I was able to go out on a small boat launch. Four such boats were deployed from the *Fairweather* that morning. They all use 400 kilohertz multi-beam sonar to map the bottom of the channels we are currently in, near Ketchikan, AK. This type of SONAR sends out 512 beams/ping of sound, and is most effective in shallow water. The area or swath that can be scanned at anytime is about 5 times the depth of



**Me on a small boat (launch) to survey the bottom of channels around**

Time: 0800 on 5/20

Latitude: 55°17.77' N

Longitude: 130°58.03' W

Clouds: Mostly Cloudy

Visibility: 10 miles

Winds: 14 knots from the SW

Waves: Less than one foot

Dry Bulb Temperature: 12.5°C

Wet Bulb Temperature: 10.5°C

Barometric Pressure: 999.9 mb

Tides (in feet):

High @ 0558 of 14.0

Low @ 1233 of 0.2

High @ 1909 of 13.9

Sunrise: 0418

Sunset: 2102



**Me operating the multi-beam sonar on the small boat launch**

the water. Therefore in shallow water the swath is much narrower and in deeper water the swath is much wider. Most of the work today on all of the launches was filling in small areas in the chart in which data was missing or not dense enough to complete the project. These areas are referred to as “holidays”, because they are areas where previous survey launches have been through the area and the data was not good enough. Some possible reasons for this could be that they are areas where acoustic noise was picked up by the multi-beam SONAR, or where shadows were cast from the surface bedrock or boulders on the bottom of the channels. The area that we surveyed first is called Cascade Inlet.



**Me on a small boat (launch) pulling the CTD sampler back onto the boat**

Not only did I get to use the computers on board to operate the SONAR and collect data, I was also able to deploy an instrument called a CTD that measures the conductivity, temperature and density of the water. This is very important because the speed of sound in water changes depending on the water's temperature, density, and conductivity. For example, the top layer of the water is typically a little warmer, less dense, and less salty than deeper water due to influences from rain and inputs from rivers. When using SONAR you must know all of these factors in order to understand the speed at which sound waves will travel through the water. The sound waves will travel faster in cold deeper water, and the computer models take this into account before finalizing a chart. Ideally when

using the CTD the sample must be taken at a depth that is greater than any spot you have surveyed so as to have a complete profile of these factors.

In the afternoon we spent most of our time performing shoreline verification of small features around an area called Hog Rocks that have been previously identified. Here we used GPS (Global Positioning Satellites), latitude and longitude, azimuth bearings, elevation, and photos. As the name implies we were visiting small features to double check their exact location and exact heights.

On Thursday, May 20 I was scheduled to go out on a launch boat again but things did not go accordingly. There was a problem with the Davit, a mechanical crane that picks the 7 ton, 28 foot survey launch off the decks of the *Fairweather* and deploys them into the water. Since I was unable to go out and scan shallow water from the launch, I stayed on the *Fairweather* to scan and plot deeper water (approximately 400 meters) in and around Behm Canal. From the plot room of the ship I helped operate the computer, by starting and stopping the collection of data. In addition to filling in “holidays” we also mapped some cross lines. Cross lines are lines that run perpendicular to the main channel and are a means of verifying previous scans or quality control.



**Example of shoreline features near Hog Rocks that we were verifying from the launch boats**



Me, in the plot room on the *Fairweather*, collecting data.



While at port, a picture showing the Davit, that picks up the launch boats to deploy them

### Personal Log

I can't say that the launch on May 19 was fun, but it was very cool and interesting. One thing no one told me was that after the morning rain was over that the sun would come out and it would reach almost 60 degrees, and that I should have brought sunscreen and a hat: warmer than it was in NY on this day. I now know for future launch days. I am usually going to be scheduled on a different launch team, doing slightly different tasks each day.

For now I just finished dinner, and yes it was very good again. In the meantime I am awaiting a debriefing of the day's launches, and then hang out until bed. Before going to bed I went up to the highest deck on the *Fairweather*, called the flying bridge and watched one of the most beautiful sunsets unfold in front of my eyes.

What else, is on my mind.....Well SE Alaska is ridiculously beautiful, this coming from someone who has traveled a lot and used to work in the Grand Canyon. All over the place there is something new to see. I am still waiting for major whale sightings. Tuesday night before bed I caught a glimpse of some tails of a few porpoises (similar to dolphins), and Wednesday morning at the safety meeting on the stern of the boat (back) I sort of saw a whale surface for a moment. On Thursday, again at the safety meeting on the stern, a few of us saw a humpback whale at a distance breach the water a few times.



Sunset on the *Fairweather* on May 19



Bald eagle taking off on May 19 from a shoreline feature we were verifying