

Lamont– Doherty Earth Observatory  
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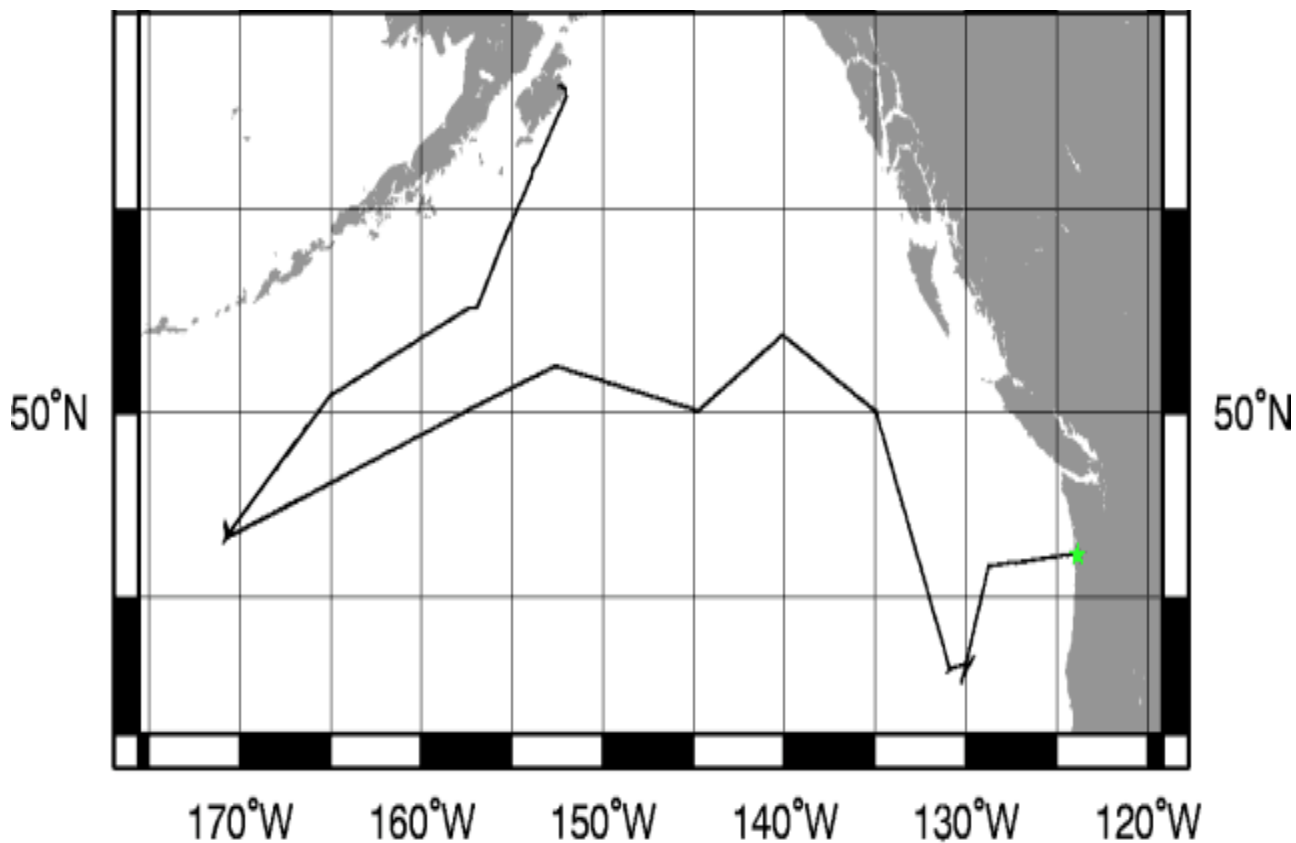
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## R/V Maurice Ewing Data Reduction Summary

EW–0206 Kodiak – Astoria

Date	Julian Date	Time	Port
June 14, 2002	165/2002	18:32:19	Kodiak, Alaska
July 2, 2002	183/2002	08:02:00	Astoria, Oregon



**GMT** 2002 Jul 3 01:00:51 TO DATE

# Project Summary

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## *DESCRIPTION*

### **EW0206: Deep Ocean Assessment and Reporting of Tsunami's**

The DART project was conceived to provide deep-ocean bottom pressure measurements in real\_time for the early detection of tsunamis, for assessing and forecasting the threat to coastal communities, and to reduce the frequency of costly evacuations due to false alarms.

DART station locations have been chosen to detect tsunami's generated by earthquakes in the Alaska-Aleutian Subduction Zone, in the Cascadia Subduction Zone, and off the coasts of Kamchatka and South America; regions with known destructive tsunami generating potential. At these stations, deep-ocean bottom pressure measurements are acoustically transmitted from a Bottom Pressure Recorder (BPR) to a surface buoy. The data are then sent to shore-based receivers through a satellite communications link. Quality control checks are performed on these data which are then displayed on the World Wide Web, which can be found at <http://tsunami.pmel.noaa.gov:88/examples/jsp/wavewatcher/rtdart.jsp>.

### **Cruise Objectives:**

The primary objective of Cruise EW0206 is the recovery and deployment of Deep-ocean Assessment and Reporting of Tsunamis (DART) moorings in support of the NOAA Real Time Tsunami Warning system. At each of five (5) established support of the NOAA Real Time Tsunami Warning system. At each of five (5) established sites, surface moorings will be serviced and the bottom anchored instrument package will be recovered and redeployed. In addition of the primary objective of the cruise, five (5) Haruphone moorings will be recovered and redeployed for acoustic monitoring in the North Pacific.

# Cruise Members

## Science Party

Scott Stalin	Chief Scientist	<a href="mailto:Scott.E.Stalin@noaa.gov">Scott.E.Stalin@noaa.gov</a>
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## Ship's Science

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# Cruise Notes

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All data in this report is logged using GMT time and Julian days in order to avoid confusion with local time changes.

## Time

The Datum time clock hung at the beginning of julian day 176 and subsequently fed the data logging system incorrect time for about two hours. The clock was reset at ~0225.

## Hydrosweep

On julian day 174, Chris and I noticed the DS-2 display chronically and spuriously skewing the multibeam swath to both port and starboard. Subsequent inspection of the raw data confirmed the aliasing of the heading. Despite our most concerted troubleshooting efforts, the problem remains uncorrected.

# Data Logging

The R/V Maurice Ewing data logging system is run on a Sparc Ultra Enterprise Server. Attached are 48 serial ports via 3 16-port Digi International SCSI Terminal Servers. Generally, all data logged by the Ewing Data Acquisition System (DAS) is time stamped with the CPU time of the server, and broadcast to the Ewing network using UDP packet broadcasts. The CPU time of the server is synchronized once every half hour to a Datum UTC gps time clock.

GPS times are also time-tagged with cpu time, although the time of the GPS position is from the GPS fix itself.

The following tables describe the data instruments which performed logging during this cruise. The tables associated with the instruments describe logging periods and data losses for that instrument.

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## Time Reference

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### Datum StarTime 9390-1000

**logging interval:** 30 minutes  
**file id:** tr2

Used as the CPU synchronization clock. This clock is polled once every half hour to synchronize the CPU clock of the data logger to UTC time. The logger (octopus) is responsible for updating the times of the other CPUs.

*Interruptions greater than 30 minutes are displayed in the following table*

Log Date	LogDate	Comment
2002+165:18:50:29.727		Logging officially started
2002+178:09:27:29.736	2002+179:00:12:29.739	Data Interruption
2002+183:15:12:29.743		Logging officially ends

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## GPS Receivers

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GPS data is usually logged at 10 second intervals. The NMEA strings GPGGA and GPVTG are logged for position, speed, and heading fixes. This data was logged constantly throughout the cruise.

The Tasmon GPS was the primary GPS for this cruise.

### Trimble Tasmon P/Y Code Receiver

**logging interval:** 10 seconds  
**file id:** gp1

The Tasmon is the primary GPS receiver for the Ewing Logging system and the primary GPS for Spectra fixes. The accuracy is around 15 meters. There were no interruptions during this

cruise.

*Interruptions greater than 10 minutes are displayed in the following table*

Log Date	LogDate	Comment
2002+165:15:35:28.982		Logging officially started
2002+183:15:21:01.462		Logging officially ends

#### **Trimble NT200D**

**logging interval:** 10 seconds  
**file id:** gp2

The Trimble is the secondary receiver for GPS data. Data is logged at 10 second intervals and is also used as an input to Spectra, although it is weighed at a lower value than the Tasmon receiver.

*Interruptions greater than 10 minutes are displayed in the following table*

Log Date	LogDate	Comment
2002+165:15:36:04.834		Logging officially started
2002+176:02:18:25.332	2002+176:02:29:57.798	Data Interruption
2002+176:10:32:43.900	2002+176:10:53:54.041	Data Interruption
2002+180:06:32:45.199	2002+180:07:15:11.710	Data Interruption
2002+183:15:21:02.091		Logging Ends

## **Speed and Heading**

#### **Furuno CI-30 Dual Axis Speed Log** **Sperry MK-27 Gyro**

**logging interval:** 6 seconds  
**file id:** fu

The Furuno and Gyro are combined to output speed, heading and course information to a raw Furuno file, as well as an NMEA VDVHW signal used as an input to various systems including steering and Spectra.

*Interruptions greater than 30 minutes are displayed in the following table*

Log Date	Log Date	Comment
2002+165:15:36:48.618		Official start date
2002+183:15:21:02.742		Official end date

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## Bathymetry

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### Krupp Atlas Hydrosweep-DS2

**logging interval:** variable based on water depth  
**file id:** hb (centerbeam), hs (swath)

The hydrosweep full swath data is continuously logged for every cruise, and centerbeam data is extracted and processed separately. The centerbeam operates at a logging frequency dependent on the water depth.

The DS2 was routinely paused to prevent acoustic interference with DART mooring instruments. Those periods will not be included in the following log as the transducer well draught (5.51 meters) is falsely reported as the centerbeam.

The full swath data is not routinely processed, but can be processed with the MB-System software which can be downloaded for free. For instructions, use the website:  
<http://www.ideo.columbia.edu/MB-System>.

MBSYSTEM, version 5.0beta3 is necessary to process data after June 1, 2001.

*Interruptions greater than 10 minutes are displayed in the following table*

Log Date	LogDate	Comment
2002+165:15:43:40		Official start logging
2002+176:04:46:07	2002+176:05:02:40	Data Interruption
2002+176:20:35:36	2002+176:21:10:59	Data Interruption
2002+177:02:53:55	2002+177:03:05:09	Data Interruption
2002+177:08:30:09	2002+177:09:21:47	Data Interruption
2002+177:18:35:08	2002+177:18:45:50	Data Interruption
2002+178:09:21:41	2002+178:09:48:18	Data Interruption
2002+178:10:36:47	2002+178:11:15:57	Data Interruption
2002+179:02:53:23	2002+179:03:08:29	Data Interruption
2002+180:09:21:49	2002+180:09:41:20	Data Interruption
2002+180:20:18:17	2002+180:20:34:05	Data Interruption
2002+181:03:46:39	2002+181:08:13:02	Data Interruption
2002+182:08:18:04	2002+182:08:36:30	Data Interruption
2002+182:12:42:43	2002+182:12:58:42	Data Interruption
2002+183:00:17:49	2002+183:00:29:19	Data Interruption
2002+183:01:13:28	2002+183:01:24:15	Data Interruption
2002+183:04:30:46	2002+183:04:52:18	Data Interruption
2002+183:07:53:37	2002+183:08:08:32	Data Interruption
2002+183:09:05:55	2002+183:09:19:44	Data Interruption
2002+183:11:40:15	2002+183:14:53:00	Data Interruption
2002+183:15:20:20		Official end logging



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## Weather Station

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### RM Young Precision Meteorological Instruments, 26700 series

**logging interval:** 1 minute

**file id:** wx

The weather station is used to log wind speed, direction, air temperature, and barometric pressure. We log this information at 1-minute intervals.

Log Date	LogDate	Comment
2002+165:15:38:54.629		Official start logging
2002+176:04:40:00.622	2002+176:05:02:00.562	Data Interruption
2002+178:09:02:00.662	2002+178:09:46:19.713	Data Interruption
2002+183:15:21:00.556		Official end logging

# File Formats

For all formats, a – in the time field means an invalid value for some reason.

## Raw Furuno Log

fu.s

This data has been smoothed and output 1 fix per minute.

<u>CPU Time Stamp</u>	<u>Track</u>	<u>Speed</u>	<u>Hdg</u>	<u>Gyro</u>
2000+166:00:01:53.091	-	4.4	140.5	148.3

## Hydrosweep Centerbeam

hb.n

Hydrosweep data merged with navigation

<u>CPU Time Stamp</u>	<u>Latitude</u>	<u>Centerbeam Longitude</u>	<u>Depth</u>
2000+074:09:55:00.000	N 13 6.6206	W 59 39.3908	134.9

## Merged Data

m

<u>CPU Time Stamp</u>	<u>Latitude</u>	<u>Longitude</u>	<u>GPS Used</u>	<u>Set</u>	<u>Drift</u>	<u>Depth</u>
2000+200:12:25:00.000	N 45 54.1583	W 42 47.1770	gp1	0.0	0.0	

## Navigation File

n

<u>CPU Time Stamp</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Used</u>	<u>Set</u>	<u>Drift</u>
2000+074:00:03:00.000	N 13 6.2214	W 59 37.9399	gp1	0.0	0.0

## Datum Time

ts2.r

<u>CPU Time</u>	<u>Datum Time</u>	<u>Time Reference</u>
2001+069:00:15:29.727	069 00 15 29.378	datum

## Raw GPS

gp(12).d

Raw GPS is in NMEA Format.

## Meteorological Data

wx

<u>CPU Time Stamp</u>	<u>True Spd</u>	<u>Dir</u>
2001+045:00:00:00.967	7.8	22

<u>Bird1: Speed</u>	<u>Direction</u>	<u>Bird 2 Speed</u>	<u>Direction</u>										
<u>Inst</u>	<u>60sA</u>	<u>60mA</u>	<u>60sM</u>	<u>Inst</u>	<u>60sA</u>	<u>60mA</u>	<u>Inst</u>	<u>60sA</u>	<u>60mA</u>	<u>Inst</u>	<u>60sA</u>	<u>60mA</u>	
7.8	6.6	8.5	16.8	277	291	5	0.0	0.0	0.0	0.0	0	0	0

Temperature				Humidity			Barometer
Inst	60mA	60mm	60mM	Inst	60mm	60mM	
15.0	14.2	14.3	15.1	92	90	93	1027.5
Inst:		Current					
60sA:		60 second average					
60mA:		60 minute average					
60sM:		60 second maximum					
60mm:		60 minute minimum					
60mM:		60 minute maximum					

## Merged Meteorological Data

mmet

WX, CT merged with Nav at 1 minute fixes

date	time	lat	lon	gpu	head	spd
2001+244:00:00:00.000		12.14071	44.98469	gp1	10.2	83.0

tws	twd	temp	hum	press
26.5	228.0	30.6	87.0	1000.8

gpu = gps unit in use

head = ship's heading

spd = ship's speed in knots

tws = true wind speed

twd = true wind direction

temp = air temp (celcius)

hum = relative humidity (%)

press= pressure in mb

ct = sea temp from the C-keel sensor (to tenths of a degree)

# Tape Contents

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## EW0206

ew0206.pdf	This document
ew0206.cdf	NetCDF database file of this cruise
ew0206.cdf_nav	NetCDF database file of this cruise' navigation
configs	Ewing data system configuration files
docs/	File Formats, Spectra manuals
plots/	Multibeam and satellite gravimetry waypoint plots
processed/	Processed datafiles merged with navigation
trackplots/	daily cruise track plots ( <i>postscript</i> )
raw/	Raw data directly from logger
reduction/	Reduced data files
clean/	daily processing directory, includes daily postscript plots of the data.