Hello Scientists,

Thank you for coming out and doing science on the NOAA Ship Bell M. Shimada. We hope it was a pleasant experience for you. The contents of the hard drives and DVD are listed below. Please don’t hesitate to contact us for further explanations of the data or how it was collected. It was a sincere pleasure sailing with all of you, and we hope to see you again on a future cruise.

Many thanks,

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Cruise Disc

1. **Instrument Calibrations** – Current calibration forms for our instruments. As you know, the EK60 calibration was unsuccessful at the beginning of this leg.
2. **Shimada Instrument Locations**– A CAD image of the port side of the ship sighting sensor locations as well as different intakes, outputs, and other things on the hull that might be of interest.
3. **Letter Transmitting Data** – this document is signed by the Chief Scientist confirming that they have received the disc and are responsible for distribution of data (blank copy).
4. **SCS Data**: All SCS data from leg 1 including event data and all sensor messages.

**CalCOFI Specifics:**

The SCS event that was run in the chem. lab can be found in SCS data under **EVENT DATA**. The event log for all operations was called **CalCOFI 2012 Leg1 ST.**  The event has multiple logs associated with it because of some changes made during the steam out to the first station.

SCS Events in General:

The SCS data is in NMEA comma delimited format. NMEA definitions can be found by Google-ing the NMEA code ($MXGLL).

Occasionally you will see $DERIV. These are SCS derived sensors, calculations made from other sensors. For example, true wind is calculated in SCS using relative wind and ship position. This data string starts with a $DERIV code. The first value in this code is the output and the values after that are the factors used in the calculation. You may see sensors with the title Base Derivative. Sensors with this title are used to calculate another useable value. Look for the derived sensor and use that value instead of the base derivative. For example, the Shaft outputs data in a Milliamps code. SCS then calculates actual Shaft RPM from this value. The Milliamps code is the base derivative, and actual Shaft RPM is the derived sensor. The base derivatives and their derived sensors are generally in the same folder within SCS.

If a sensor stops logging for any reason, you may see that SCS records the last known value over and over for all eternity or at least the next 30 seconds. Please be cautious of this when processing data.

**SCS organizes the raw data in folders. More than one sensor can be logged to a folder. Some definitions/acronyms worth knowing when looking at the SCS raw data folders that pertain to this cruise:**

**Centerboard Position and Draft**– this file contains raw data regarding the position of the centerboard. 12.60 means the centerboard is Retracted. 18.20 means the centerboard is Lowered. 15.68 means the centerboard is in Intermediate position. The centerboard was in the intermediate position during the entire cruise, which is 1.3m below the hull. Because the average draft is approx 5.8 meters, the depth of the transducers were 7.1 meters below the surface of the water. The draft at the beginning of this leg, however, was recorded at 6.1 m, indicating that the initial centerboard depth was 7.4m.

**EK60** – Single Beam Sonar – Software outputs depth below transducer (not depth below surface!) for each of the 3 transducers that were recorded to SCS for this cruise; 38, 120, and 200 kHz .. The 18 and 70 kHz transducers were producing data for your acoustics team, but were not connected to SCS. Most of the data sent to SCS did not reflect the true bottom depth, particularly when we were at stations deeper than 400m.

**ES60-Bridge Single Beam Sonar** – Controlled by the bridge officers, the ES60 is triggered not to interfere with the EK60. Only the 50 kHz transducer was outputting data to SCS, but the transducer was only turned on when the wardroom wanted another depth readout during shallow locations.When the sonar can’t find the bottom, it commonly outputs 0.00, so you may see this value frequently.

**Event Data** – contains any event data (the button pushes and continuously recorded files) run during the cruise.

**Gyro** – There are two gyros, each recording to its own file, Gyro 1, and Gyro 2. The file titled Gyro-HEHDT-MainFeed contains the value from whichever gyro is in use at the time, so these values may be from either Gyro 1, or Gyro 2, but is what the bridge officers used at the time to navigate. Gyro 2 was the principle gyro used on this cruise. Gyro 3 does not exist.

**ME70** – Multibeam Sonar – SCS records a single Depth Below Transducer output from the ME70.

**Nav Doppler Speed Log**– This is the Navigational Doppler, also referred to as the speed log, controlled from the bridge. It is turned on during some shallow stations, and off during Acoustic transects, as it interferes with the EK60. The file contains depth and keel offset of the hull mounted sensor, water temperature, and water/bottom speed data.

**POSMV** – heave pitch and roll data

**Radiometer** – Data from the radiometer mounted on top of the port side trawl tower. (See Shimada Blackline drawing for reference.)

**SAMOS –** data recorded in 2 minute averages and sent to Florida State University as part of nation-wide QA data program. Feel free to ignore this data.

**SavedGISTracklines** – Default folder created by SCS.

**Sci-GPS** – The GPS used for all SCS and scientific data collection.

**Sea Temp – reference only** – the ship has three Furuno temperature sensors mounted on the starboard side of the hull, high, mid, and low. (See Shimada Blackline drawing for reference.) The middle sea temperature data feed was turned off for this cruise due to error messages. These thermometers are not scientific grade, and should be used only as a reference. For accurate Sea Surface Temperature, use the SBE 38 hull mounted temperature probe located in the folder Seawater System – TSG and SeaTemp True, file TSG21-SeaSurfTempSalinitySountVelocMessage. This file is tab delimited, and sea temp is the last value.

**Seawater System – Flowmeter** – this is the flowmeter for the entire seawater system (TSG, Fluorometer.) It is mounted in the bow thruster room, just after the seawater intake, and just before the SBE 38 temperature sensor. **Seawater System – SCUFA fluorometer** – this is the raw value output from the continuously sampling Turner Fluorometer as part of the seawater system.

**Seawater System – TSG & SeaTemp True** – This folder contains data from both the TSG SBE 21, which includes the SBE 38 sea surface temperature sensor, and the Micro TSG SBE 45. The file TSG21-SBE38\_SeaSurface Temp-F-Message is a derived sensor that converts sea surface temp data from C to F. The first value in the data string is F, the second value is C. Please note that the pump for the sea water system was turned on and off, depending on the sea state, beginning on 04/04/12 at 18:40 GMT. The system began running continuously again on 04/06/12.

**Shaft RPM** – just that, Shaft Revolutions per minute. Shaft output is a milliamps code. Actual Shaft RPM is in the file Shaft-RPM-Message.

**Wind & Weather Suite** – This folder contains data for Air Temp, Barometric Pressure, Relative Humidity, Calculated True Wind, and Relative Wind from three different wind birds. The main wind bird used for scientific data is the FWD Jack Staff. Other wind birds are mounted on the flying mast, and labeled PortMast and StbdMast. This folder also contains a derived sensor that averages the true wind speed and direction from the FWD Jack Staff over a 2 minute time period.

**Again, after reviewing this and the cruise information on this disc, feel free to contact us with questions, comments, suggestions.**