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# **Submission Read Me**

**Submission title:** Arctic Observing Network (AON) observations from the 2011-2012 Beaufort shelf-edge mooring array.

# Summary:

Deployment dates: 13 October 2011 - 12 Oct, 2012 Deployment cruise: HLY1103 Recovery cruise: HLY1203 Mooring anchor position: 71 23.64 N 152 2.91 W, corrected bottom depth of 147 m Moored instrumentation deployed:

- 1. 300KHz Workhorse Acoustic Doppler Current Profiler (ADCP) by RDInstruments
- 2. Upward looking sonar (ULS) by ASL
- 3. Two SBE37-SM MicroCATs by Sea Bird Electronics (deep and shallow)
- 4. Coastal moored profiler (MMP) by McLane Research Laboratories, Inc.
- 5. 75KHz Workhorse Acoustic Doppler Current Profiler (ADCP) by RDInstruments
- 6. SBE53 Bottom Pressure Recorder (BPR) by Sea Bird Electronics

# **Description:**

This submission contains data collected as a part of the 2011-2012 Beaufort shelf-edge mooring array, which was designed to investigate the manner in which the continental shelves communicate with the interior Arctic basin. Funding was provided by the National Science Foundation.

This submission contains data from the BS3 mooring site, which has collected a consistent and detailed timeseries of physical oceanographic observations beginning in 2002 until present. Funding for this long-term data collection has been supported by the NSF Arctic Observing Network. More information on the AON project can be found at http://aon.whoi.edu/.

## Methods and final data:

## Mooring design and deployment

Scientific moorings are designed and fabricated at Woods Hole Oceanographic Institution. The BS3 mooring design, including intended instrumentation depths, is shown in Appendix A. The mooring and all instruments were designed to record physical oceanographic measurements for one year on the Beaufort shelf-edge, north of Alaska.

### Instrumentation

The BS3 mooring was designed to support data collection from (1) a 300KHz Workhorse Acoustic Doppler Current Profiler (ADCP) by RDInstruments, (2) an Upward looking sonar (ULS) by ASL, (3) two SBE37-SM MicroCATs by Sea Bird Electronics, (4) a Coastal moored profiler (MMP) by McLane Research Laboratories, Inc., (5) a 75KHz Workhorse Acoustic Doppler Current Profiler (ADCP) by RDInstruments, and (6) an SBE53 Bottom Pressure Recorder (BPR) by Sea Bird Electronics.

# 1. 300KHz Workhorse Acoustic Doppler Current Profiler (ADCP)

#### **Deployment summary:**

Duration: Oct 13, 2011 – Oct 12, 2012 Variables measured: zonal, meridional velocity Sensor information: 300 KHz WorkHorse ADCP by RDInstruments

# Data processing information:

Data processing follow methods detailed at

http://aon.whoi.edu/y2011to12/info.htm. ADCP data has been edited for outliers using error velocity, percent good, and correlation threshold criteria. Bad data points have been flagged. U and V velocity were corrected for magnetic variation. Microcat data was used for speed of sound correction and to check ADCP pressure.

# Final data file:

Final NetCDF data file: AON\_WH\_ADCP\_BS3\_2011\_2012.nc

All variables, units, processing levels, and additional meta data are described within file. NetCDF formatting follows the OceanSITES Data Format Reference Manual NetCDF Conventions and Reference Tables Version 1.3 January 12, 2015:

http://www.oceansites.org/docs/oceansites\_data\_format\_reference\_manual.pdf.

# 2. Upward looking sonar (ULS)

#### **Deployment summary:**

Duration: Oct 13, 2011 to Oct 12, 2012 Variables measured: ice draft, temperature, and pressure Sensor information: IPS4 serial # 1043

#### **Data processing information:**

Data processing follow methods detailed at

<u>http://aon.whoi.edu/y2011to12/info.htm</u>. Data processing methods are similar to those described in: <u>http://aon.whoi.edu/share/BGOS\_ULS.pdf</u>.

### Final data file:

Final NetCDF data file: AON\_ULS\_BS3\_2011\_2012.nc

All variables, units, processing levels, and additional meta data are described within file. NetCDF formatting follows the OceanSITES Data Format Reference Manual NetCDF Conventions and Reference Tables Version 1.3 January 12, 2015:

http://www.oceansites.org/docs/oceansites\_data\_format\_reference\_manual.pdf.

#### 3. Shallow and Deep Microcats "SBE37"

#### Shallow deployment summary:

Duration: Oct 13, 2011 to Oct 12, 2012 Variables measured: temperature, conductivity, and pressure Sensor information: SBE37-SM V 2.2a

### **Deep deployment summary:**

Duration: Oct 13, 2011 to Oct 12, 2012 Variables measured: temperature, conductivity, and pressure Sensor information: SBE37-SM V 2.3b

### **Data processing:**

As per manufacturer recommendation, laboratory sensor calibrations were determined for pressure, temperature, and conductivity sensors prior to deployment. These calibrations were applied to the raw data. Clock drift was removed from the record.

### Final data file:

Final NetCDF data file shallow: AON\_2133\_mcat\_BS3\_2011\_2012.nc Final NetCDF data file deep: AON\_2136\_mcat\_BS3\_2011\_2012.nc All variables, units, processing levels, and additional meta data are described within file. NetCDF formatting follows the OceanSITES Data Format Reference Manual NetCDF Conventions and Reference Tables Version 1.3 January 12, 2015:

http://www.oceansites.org/docs/oceansites\_data\_format\_reference\_manual.pdf.

#### 4. Coastal Moored Profiler (CMP)

## **Deployment summary:**

Duration: Oct 22, 2011 to Oct 12, 2012 Variables measured: pressure, temperature, conductivity Sensor information: CMP is a WHOI-developed instrument similar to the McLane MMP.

#### Data processing information:

Raw data were converted to physical values, profiles were spike edited, lag adjusted, and pressure binned. Data processing follow methods detailed at <a href="http://aon.whoi.edu/y2011to12/info.htm">http://aon.whoi.edu/y2011to12/info.htm</a>.

### Final data file:

Final NetCDF data file: AON CMP BS3 2011 2012.nc

All variables, units, processing levels, and additional meta data are described within file. NetCDF formatting follows the OceanSITES Data Format Reference Manual NetCDF Conventions and Reference Tables Version 1.3 January 12, 2015:

http://www.oceansites.org/docs/oceansites\_data\_format\_reference\_manual.pdf.

# 5. 75KHz Acoustic Doppler Current Profiler (ADCP)

## **Deployment summary:**

Duration: Oct 13, 2011 to Oct 12, 2012 Variables measured: zonal, meridional velocity Sensor information: 75 KHz LongRanger ADCP by RDInstruments

### **Data processing information:**

Data processing follow methods detailed at <u>http://aon.whoi.edu/</u>. ADCP data has been edited for outliers using error velocity, percent good, and correlation threshold criteria. Bad data points have been flagged. U and V velocity were corrected for magnetic variation. Microcat data was used for speed of sound correction and to check ADCP pressure.

#### Final data file:

Final NetCDF data file: AON LR ADCP BS3 2011 2012.nc

All variables, units, processing levels, and additional meta data are described within file. NetCDF formatting follows the OceanSITES Data Format Reference Manual NetCDF Conventions and Reference Tables Version 1.3 January 12, 2015:

http://www.oceansites.org/docs/oceansites\_data\_format\_reference\_manual.pdf.

# 6. SBE53 Bottom Pressure Recorder (BPR) "SBE53"

**Deployment summary:** Duration: Oct 13, 2011 to Oct 12, 2012 Variables measured: pressure, temperature

# **Data processing:**

As per manufacturer recommendation, laboratory sensor calibrations were determined for pressure and temperature prior to deployment. These calibrations were applied to the raw data.

# Final data file:

Final NetCDF data file: AON\_BPR\_BS3\_2011\_2012.nc

All variables, units, processing levels, and additional meta data are described within file. NetCDF formatting follows the OceanSITES Data Format Reference Manual NetCDF Conventions and Reference Tables Version 1.3 January 12, 2015:

http://www.oceansites.org/docs/oceansites data format reference manual.pdf.

# Appendix A: BS3 mooring diagram

