SIZONet Mooring Metadata 2009-2010 deployment

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Data located on the CADIS data portal of the Arctic Observing Network
http://www.aoncadis.org

The Seasonal Ice Zone Observing Network (SIZONet) has maintained two moorings underneath the sea ice near Barrow since 2009. One mooring is located approximately 5km directly offshore from the town of Barrow in around 40 m of water, while the other is located approximately 20 km offshore southwest of Barrow in around 50 m of water. For precise locations of the moorings, please refer to the mooring configuration diagram for the appropriate deployment year (below).

The following instruments are found on each mooring (note that not all instruments are present on every mooring):

1) Seabird Electronics (SBE) 37 conductivity-temperature recorder
2) Seabird Electronics (SBE) 39 temperature-pressure recorder
3) RDI Workhorse Sentinel Acoustic Doppler Current Profiler (ADCP)

The data from the SBE37 and SBE39 instruments are contained in comma-delimited ASCII files (.csv). The ADCP files are in RDI binary format downloaded from the instrument (.000).

All datafiles are named according to the following format:

SIZOyyyy-yy_INSTRUMENT_serialnumber_location.ext

where: yyyy-yy indicates the calendar years in which the instrument was deployed and retrieved (e.g. 2009-10)

INSTRUMENT indicates the type of instrument that acquired the data (e.g. ADCP or SBE37)

serialnumber indicates the serial number of the instrument (e.g. 774)
location describes whether the instrument was deployed nearshore or offshore
ext is the filename extension (e.g. .csv or .000)

Metadata for SIZONet moorings deployed 3 Aug 2009 & recovered 3 Aug 2010

For ADCP, temperature/conductivity (TC) and temperature/pressure (TP) datasets.

The ADCP filenames are of the form RDI_NNN_[off][near]shore.000, where NNN is the serial number of the instrument and [off] or [near] indicates which mooring the instrument was on.

The CT and TP filenames are of the form:
brwNNNN-yyyymmdd.asc, where NNNN is the serial number of the instrument and yyyymmdd gives the date the data were last converted in ASCII form

There were two moorings, each of which had the following instruments (from top down)

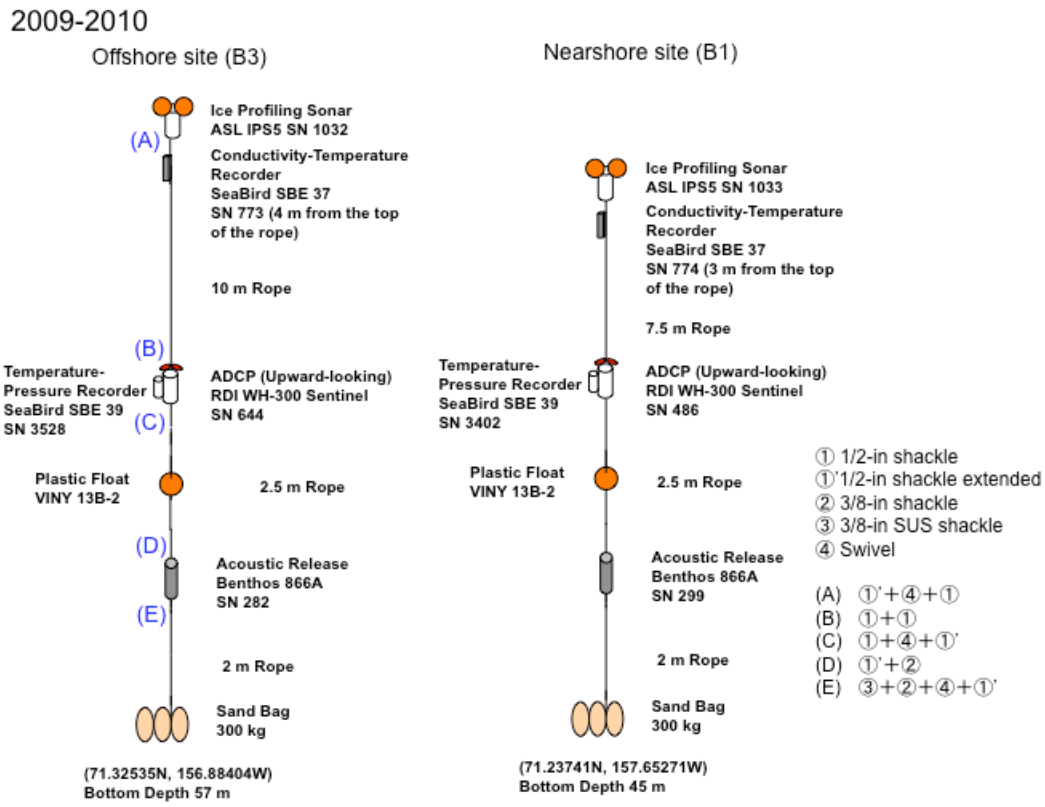
1) Seabird Electronics (SBE) 37 conductivity-temperature recorder
2) Seabird Electronics (SBE) 39 temperature-pressure recorder
3) RDI Workhorse Sentinel Acoustic Doppler Current Profiler (ADCP)

The configurations of the moorings and serial numbers of the instruments are shown in the illustration below.

The offshore mooring was located at 71.23741N 156.6571W, in approximately 50m of water.
The nearshore mooring was located at 71.32535N 156.88404W, in approximately 40m of water.

The ADCP (.000) files are in RDI binary format downloaded from the instrument.

The SBE files (.asc) are simple ASCII files with descriptive headers that provide basic configuration information.



SIZONet Mooring deployment August 2009

In August 2009, two Hokkaido University moorings, consisting of a Teledyne Sentinel WH-300 ADCP, a Seabird SBE 37 conductivity temperature recorder and a ASL IPS5 Doppler-Ice Profiling Sonar were deployed off Barrow, Alaska (see Figure below for mooring diagram).

The bottom weights consisted of 3 bags filled with gravel to total 300kg, sufficient to hold the mooring in place for a 1.5 m/s current (based on Tom Weingartner's assessment for current speeds and using mooring design program; note that rope lengths differ).

Deployment took place from Nigiqpaq, the NSB DWM workboat. A Thern davit purchased by UAF was used to deploy the mooring. With gravel bags deployed over the side and held in place just below waterline by a securing line, then the mooring was deployed from top to bottom. Finally, the securing line was released to have the gravel bags slip through and sink. The mooring position is taken at the position where the gravel bag was released.

The position for the B1 mooring was determined in consultation with several whaling captains and ice experts in Barrow (Eugene Brower, Joe Leavitt, Harry Brower) to capture ice processes just upstream of the point where an important shorefast ice

promontory builds up during winter that the whalers rely on, and where in late spring danger of break-out events is particularly high. The other constraint on the position was that it had to be in the radar footprint at a depth considered safe with respect to ice impact (top of the mooring is now at around 30 m) but not inside the landfast ice edge.

The position for the B3 mooring was selected such that there would be no or minimal coastal effects for the analysis of SSM/I and AMSR-E passive microwave data. The site also is located in a position where there is frequent occurrence of open water or thin ice during offshore ice movement.

Mooring B1

The mooring was deployed Wednesday evening during very calm weather. Boat driver was Craig George with Jenna taking photos of deployment.

Deployment time: 4 August 2009; 8:37pm ADT

Location:
71.32535 N
156.88404 W
Water depth: 45 m
Location is ca. 5 km offshore. NB: The mooring position was taken based on the time stamp of the camera that took the photo of the deployment. The position keyed into the GPS after the deployment, about 6 minutes later, was 71.32575 N, 156.87999 W.

Retrieval of mooring
The mooring was retrieved on July 28, 2010 at ca. 5pm with boat driver Robert John Brower. Seas were very calm and it was sunny. After several failed attempts to communicate with the mooring at around 3pm, we proceeded to mooring site B3. On the way back, we executed a search pattern starting about 500 m upstream of the mooring site. At one point an acoustic response signal from the mooring release may have been detected but it was not clear whether this was not merely noise. After half an hour of searching, it was decided to trigger the release of the mooring. The mooring surfaced within a hundred meters or so of the target location.

Mooring B3

The mooring was deployed Friday afternoon, after strong winds had veered from NE to southerly directions early in the morning, leaving 4 to 5 ft swells but no whitecaps due to protection from the coast. Friday was the only time window suitable for deployment between Thursday 5 Aug and early the following week. Boat drivers were Harry Brower Jr. and Ambrose Leavitt.

Deployment time: 7 August 2:48 pm ADT

Location:
71.23741 N
157.65271 W
Water depth: 57 m
Location is ca. 23 km offshore

Retrieval of mooring
The mooring was retrieved on July 28, 2010 at ca. 4pm with boat driver Robert John Brower. Seas were very calm and it was sunny. Communication was immediately established above the mooring site and the mooring surfaced approximately 100 m behind the boat.