

ITP 20 Overview

Deployment Location: 8/8/2008, 21:00 UTC at 77° 59.2'N, 139° 56.1'W

Last Location: 2/18/2009, 23:00 UTC at 74° 19.7' N, 143° 20.1' W

Duration: 194 days

Distance Traveled: 2176 km

Number of profiles: none

Other instruments: AOFB 16, IMB 2008-F, SIMBA B

ITP20 was deployed on a 3.4 m thick ice floe in the Beaufort Sea as part of the Beaufort Gyre Observing System (BGOS) during the JOIS 2008 cruise on the *CCGS Louis S. St. Laurent*. On the same icefloe, a Scottish Association for Marine Science (SAMS) Ice Mass Balance Array (SIMBA B), a Naval Postgraduate School Arctic Ocean Flux Buoy (AOFB 16), and a US Army Cold Regions Research and Engineering Laboratory (CRREL) Ice Mass Balance Buoy (IMB 2008-F) were also installed. The ITP included a prototype bio-optical sensor package (PAR, turbidity, fluorescence and CDOM) with dissolved oxygen and was on a delayed pattern sampling schedule that did not begin before the surface package ceased communicating only 6 months after deployment.

ITP20 Deployment Operations

On this day, decent ice conditions were needed to install a mega-buoy cluster of ITP (with prototype bio-sensor package), AOFB, IMB, and the first SAMS ice mass balance buoy. Typical for the weather this cruise, the conditions were overcast with low ceiling limiting helicopter distances. However, after only 20 minutes in the air, a multiyear icefloe is landed on, dilled, and selected for the deployment site. Back on board the *Louis St. Laurent* just after 9 AM, the actual flight operations began at 10:30 AM with the first transfer of passengers and cargo to the ice. In addition to the installation of the autonomous buoys, other scientists measure ice properties and sample cores along transects across the 3.4-3.8 m thick floe. By noon, the AOFB flux package was in the water, and then the thermistor string and wind generator were installed. Meanwhile the IMB and SIMBA buoys assembled and deployed at separate locations on the icefloe. The ITP was installed in the afternoon, work on the ice was completed by 5 PM, and the last participants were returned from the ice an hour later just as the evening fog really began to settle in.

ITP20 Data Description

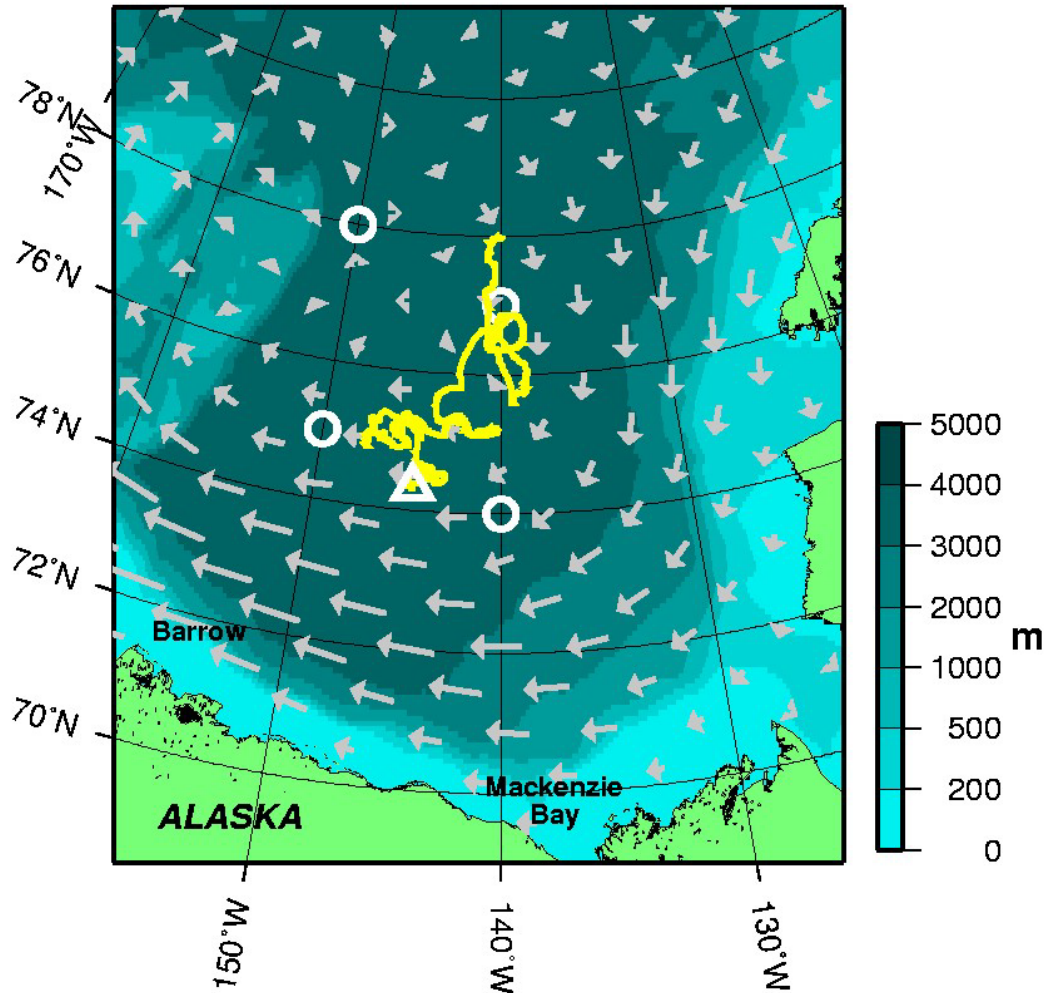
The ITP profiler was configured to operate with a pattern profiling sampling schedule but due to a programming error the instrument start was delayed. In the surface package, the GPS receiver was powered hourly to obtain locations, and buoy temperature and battery voltage status were

recorded. After only 194 days of reliable operation and data telemetry on a seemingly robust ice floe (and shortly before the profiler would have started sampling), the surface package ceased transmitting GPS locations and status.

The plots below are of the final location and status data.

Level II hourly buoy location data in ASCII format: itp20rawlocs.dat

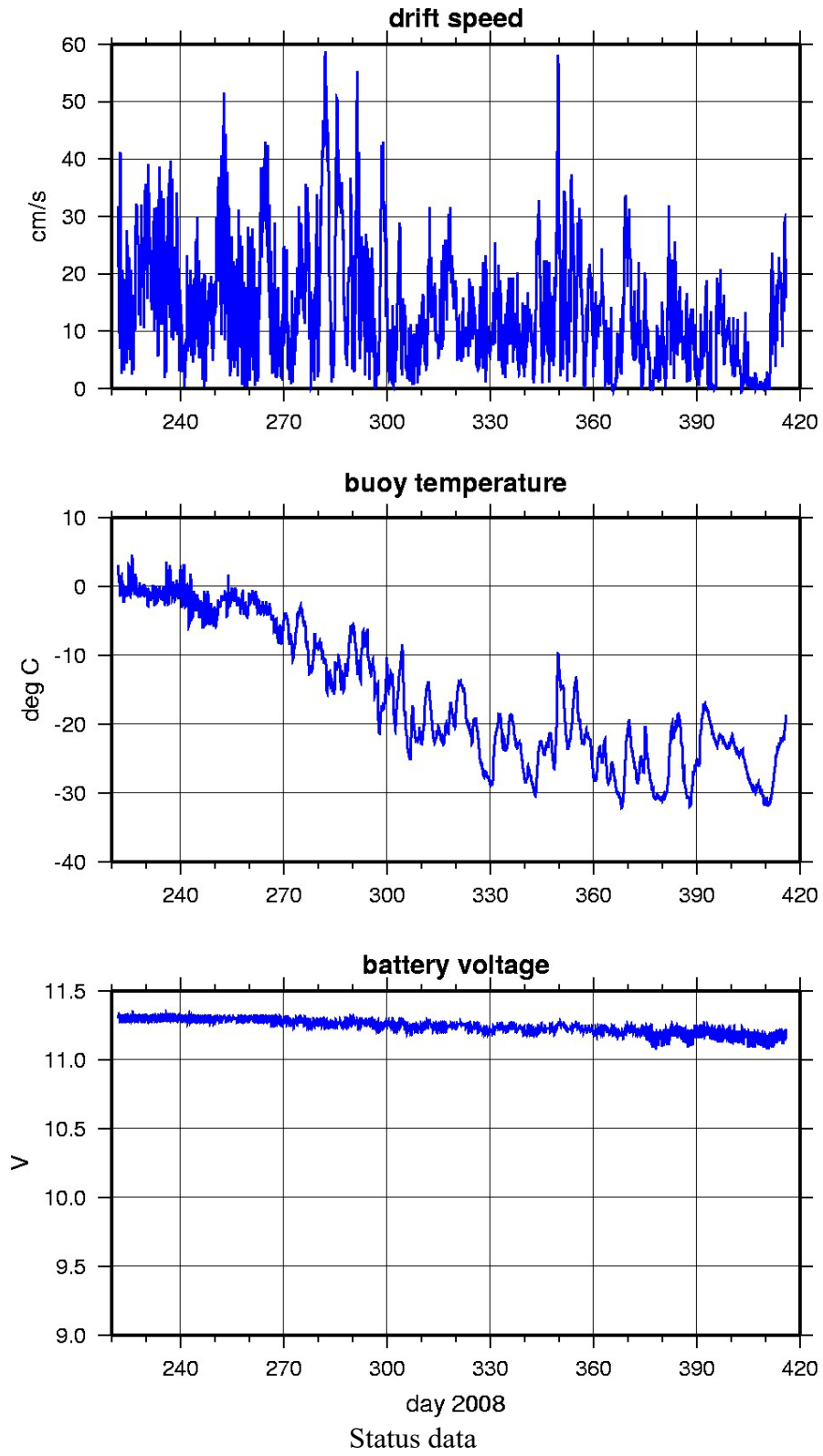
ITP20 Drift Track (as of 2009/02/18)



**ITP drift (yellow line) and latest location (triangle),
BGOS moorings (white circles) and annual ice drift from
IABP (grey vectors) on IBCAO bathymetry (shading).**

Plot of buoy locations.

ITP20 Buoy Status (as of 2009/02/18)





The AOFB is the first instrument installed, and the deployment apparatus is immediately moved to the ITP deployment site. (Photo by Rick Krishfield)



The ice based observatory consisting of SIMBA (left), AOFB (far), ITP 20 (near), and IMB (right) was deployed on a seemingly robust >3m thick ice floe. (Photo by Rick Krishfield)