

## ITP44 Overview

Deployment Location: 10/9/2010, 01:15 UTC at 75° 51.6'N, 134° 39.7'W

Last Location: 8/22/2011, 23:00 UTC at 76° 57.7' N, 160° 45.5' W

Duration: 318 days

Distance Traveled: 3205 km

Number of profiles: 0 in 1 day

Other instruments: none

ITP 44 was deployed on a 1.5 m thick ice floe in the Beaufort Sea as part of the Beaufort Gyre Observing System (BGOS) during the JOIS 2010 cruise on the CCGS Louis S. St. Laurent. The ITP included a prototype MAVS current sensor and was scheduled to operate on a pattern profiling schedule including 2 one-way profiles between 7 and 760 m depth each day. However, communications between the underwater and surface unit failed after the first partial down profile, presumably due to a hardware problem with the inductive modem circuit.

## ITP44 Deployment Operations

The final ITP deployment for JOIS 2010 was a prototype with a current probe with stabilizing fins which required a 24" diameter hole to be drilled through the floe. Time was running out on the cruise to find a decent ice floe for the deployment, as the ship was heading south, and would soon be out of the perennial ice zone. The days were also becoming increasingly shorter and the weather more winter-like.

Consequently, the deployment team had to settle for a relatively tiny floe that was only 1.55 m thick. A portable hot water drill ring apparatus was used to melt through the floe, after some difficulty with frozen hoses in the sub-zero ( $< -5^{\circ}$  C) conditions. The ice core was removed by cutting up the core with a chainsaw. The remainder of the deployment proceeded as usual, finishing with the surface flotation collar effectively corking the 2-foot hole. The backhauling of deployment apparatus and personnel was quickened due to the approaching darkness and bursts of snowfall.

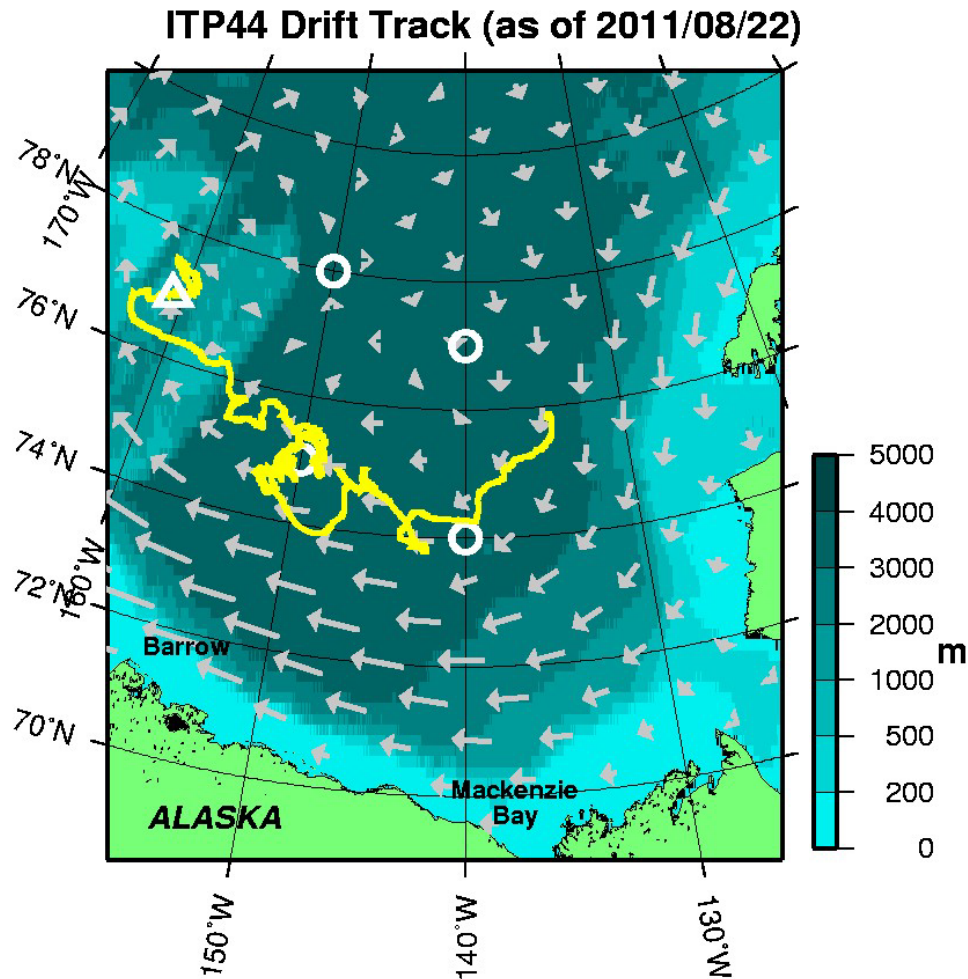
## ITP44 Data Description

The ITP profiler was configured to operate with a pattern profiling schedule, but communications between the underwater and surface unit failed after the first partial down profile. In the surface package, the GPS receiver was powered hourly to obtain locations, and buoy temperature and battery voltage status were recorded. The transmitted status information indicated that the profiler was likely operating until January 11, 2011 as the tone detector in the surface package was awakened on schedule by the profiler until that date. It is likely that one of

the inductive modems failed, or the tether could have been damaged prohibiting the transfer of data between the units. The ITP drifted generally westward until August 22, 2011 when the surface package ceased Iridium transmissions.

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

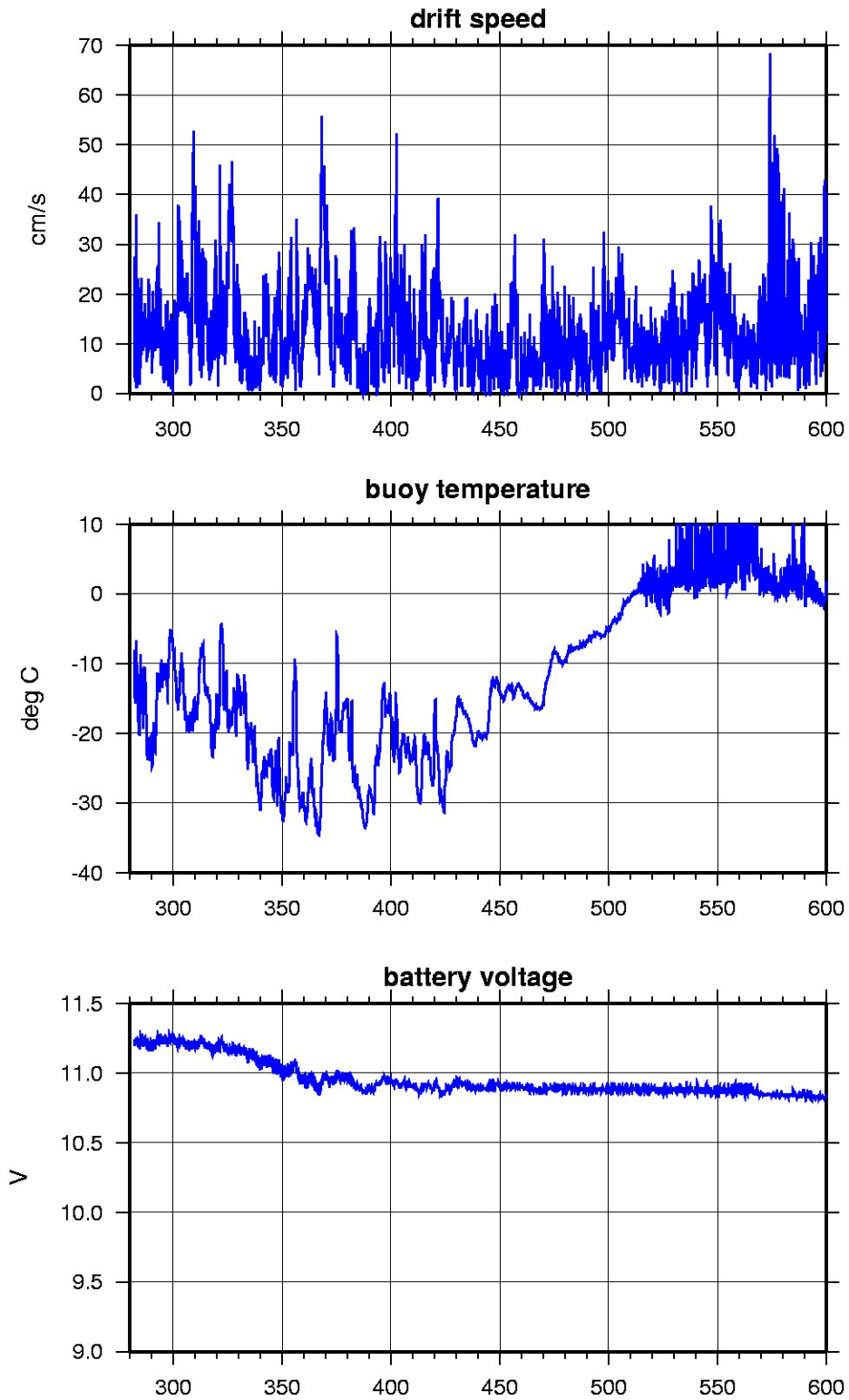
Level II hourly buoy location data in ASCII format: itp44rawlocs.dat



**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.

# ITP44 Buoy Status (as of 2011/08/22)



day 2010  
Status data.



ITP 44 surface package effectively corks the 2 foot diameter hole in the ice required for the deployment of the MAVS profiler. (Rick Krishfield)



Water is supplied to the hot drill through the augered 4" diameter hole in the center. After the core is drilled, the 4" hole is also used to pass a toggle under the ice to lift the core for removal. (Kazu Tateyama)



From the deck of the Louis, one can barely make out profiler being lowered through the hole in the ice. (Bill Williams)