

## ITP 63 Overview

**Deployment Location:** 4/20/2012, 10:00 UTC at 83° 26.9'N, 115° 50.0'W

**Last Location:** 10/17/2013, 23:01 UTC at 82° 35.91' N, 100° 35.63' W

**Duration:** 546 days

**Distance Traveled:** 2561 km

**Number of profiles:** 2177 in 544 days

**Other instruments:** IMB 2011-M

ITP 63 was deployed on a 1.27 m thick ice floe in the Canada Basin at the Russian NP-39 drifting ice station. The ITP operated on a fast-sampling schedule of 4 one-way profiles between 7 and 510 m depth each day.

## ITP63 Deployment Operations

On April 20, 2012, ten days after ITP 56 was deployed from the Russian ice camp Barneo, ITP 63 with the same deployment apparatus and some of the same deployment team were transported by MI-8 helicopter on a long cold 4+ hour flight west to the Russian NP-39 drifting ice station for deployment. Due to the far distance, auxiliary fuel tanks were installed in the helicopter and a second MI-8 accompanied with supplies for the NP ice station. In fact, to reduce the weight of the instrument package for load and fuel considerations, the tether on this particular ITP was only 510 m long rather than the typical 790 m.

Upon arrival at the NP ice station, the team picked up 2 helpers from NP-39, transferred to the MI-8 with the ITP apparatus for the deployment, and headed out on a short flight to a large floe approximately 5 km from the camp. Nearly 1 m of snow on the floe made surveying the floe and hauling gear around difficult, but a spot with ice 1.27 m thick was selected. After unloading everything, the helicopter returned to camp, so to handle the cold temperatures (-10 to -15 °C) a warm tent was set up next to the deployment site to keep the profiler and laptop computers warm.

The deployment proceeded smoothly but was slowed by the cold so took about 4 hours to get the system deployed, and the profiler responding to the inductive modem test. Fifteen minutes later the MI-8 arrived on site, and the deployment team and apparatus were transported back to the ice station. After lunch and refueling of the helicopter, the team returned to Barneo on another 4+ hour flight, unloaded, and called it a long day.

## ITP63 Data Processing

The 2177 profiles that were recovered from the ITP were processed according to the procedures described in the ITP Updated Data Processing Procedures. The processing parameters are shown in the figures to the right. Buoy drift speeds were almost always less than 30 cm/s so the profiler covered the full extent of nearly every profile that it communicated to the surface package.

Some thermohaline staircases were present only during the beginning and other infrequent times during the time series, so that CTD lag corrections are mostly extrapolated. The quality of the CTD measurements was very consistent throughout the 1.5 year duration of the instrument.

## ITP63 Data Description

The ITP profiler was configured to operate on a fast-sampling schedule of 4 one-way profiles between 7 and 510 m depth each day. In the surface package, the GPS receiver was powered hourly to obtain locations hourly, and buoy temperature and battery voltage status were recorded.

From its deployment location by NP-39 north of the Canadian Archipelago at 83.5° N, ITP 63 drifted generally ENE from 115° to 85° W longitudes for the first 9 months, headed SSW for the next few winter months, then largely shifted within the region 82-83° N, 95-105° W for the remainder of its drift. The frequent CTD profiles were absent of any significant eddies and did not vary a great amount over time.

Nearly 1.5 years after deployment, with no apparent reason, the surface package of the ITP ceased communicating via Iridium in mid-October 2013.

The plots below are of the final, calibrated, edited data (as opposed to the raw data presented on the active instrument pages)..

ITP 63 data can also be found at the links below:

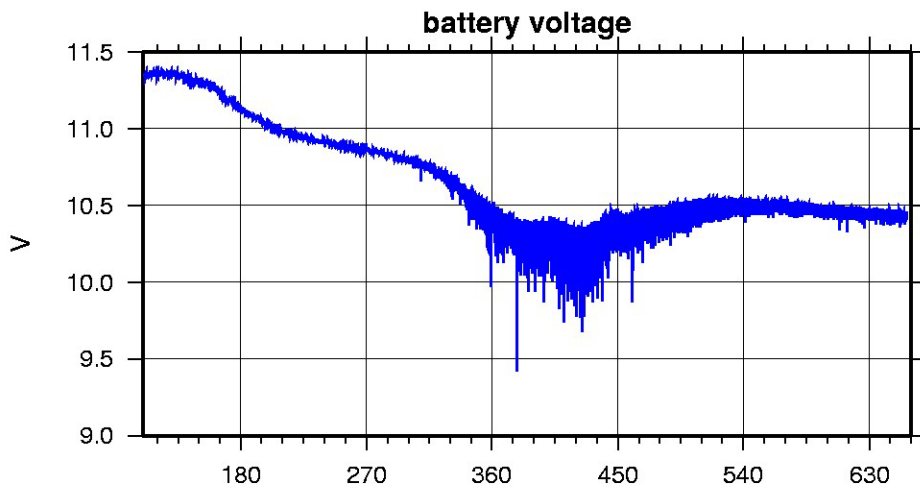
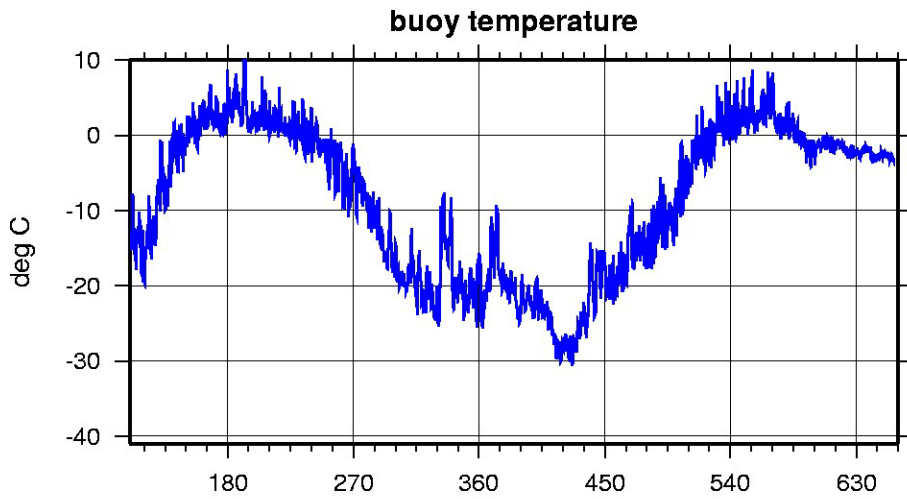
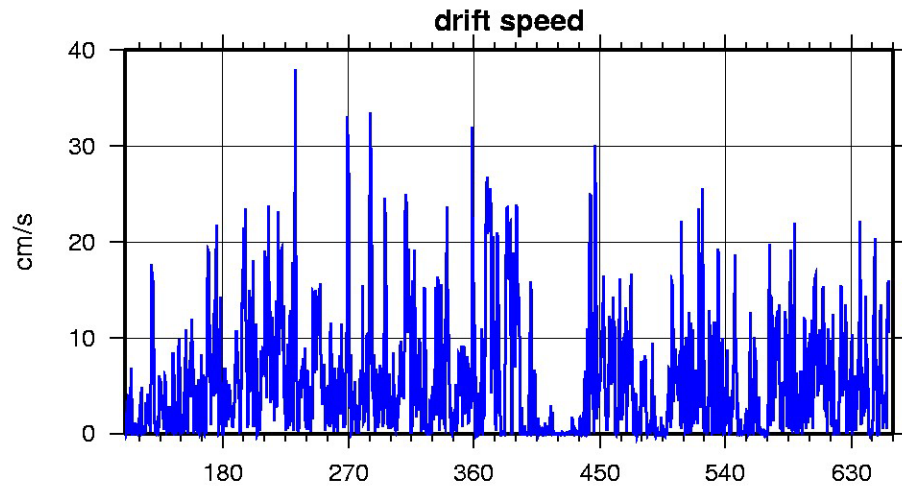
Level II hourly buoy location data in ASCII format: [itp63rawlocs.dat](#)

Level III 1-Hz processed profile data in MATLAB format: [itp63cormat.tar.Z](#) or [itp63cormat.zip](#)

Level III 1-db bin-averaged processed profile data in MATLAB format: [itp63final.mat](#)

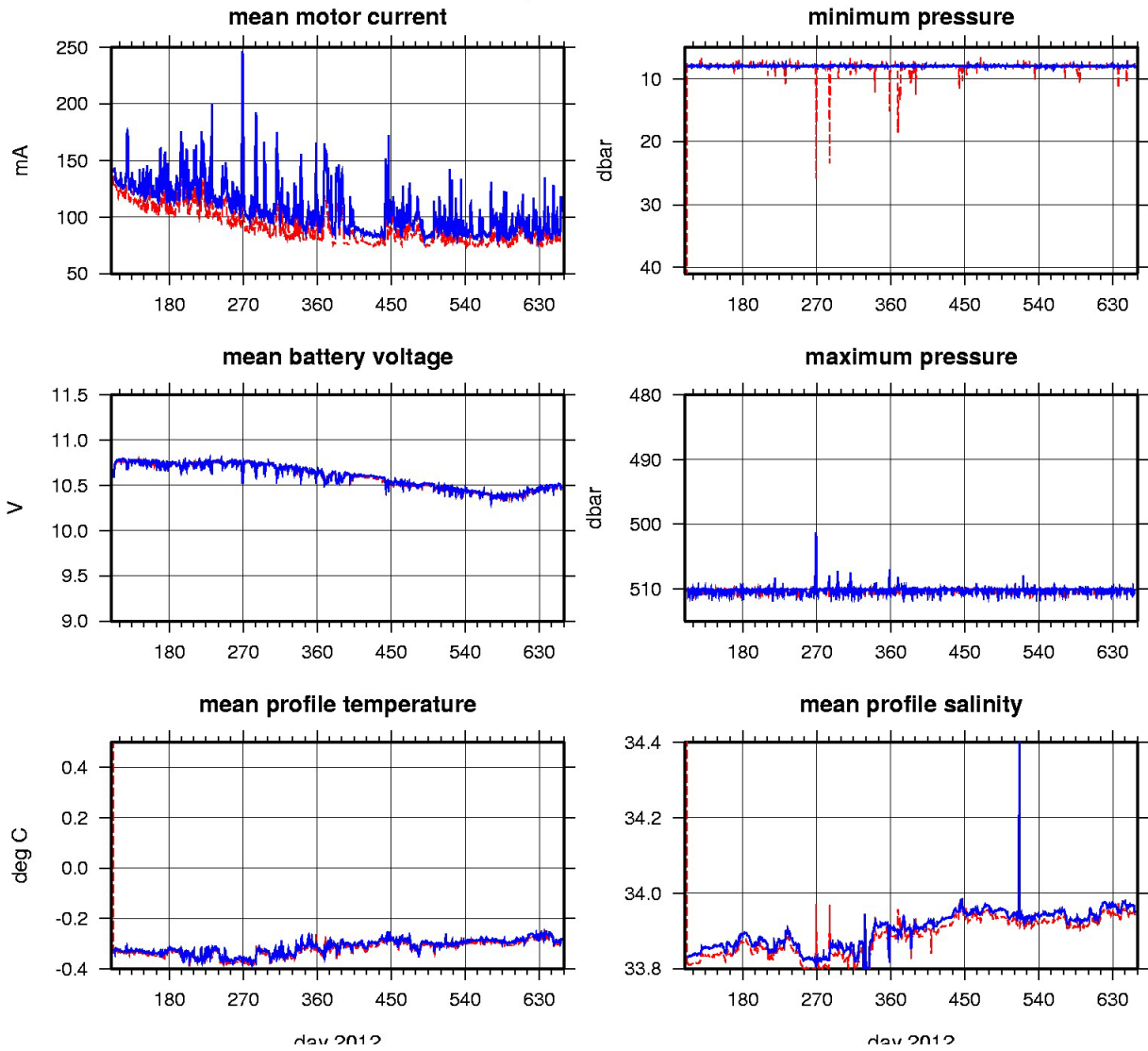
Level III 1-db bin-averaged processed profile data in ASCII format: [itp63final.tar.Z](#) or [itp63final.zip](#)

# ITP63 Buoy Status (as of 2013/10/17)

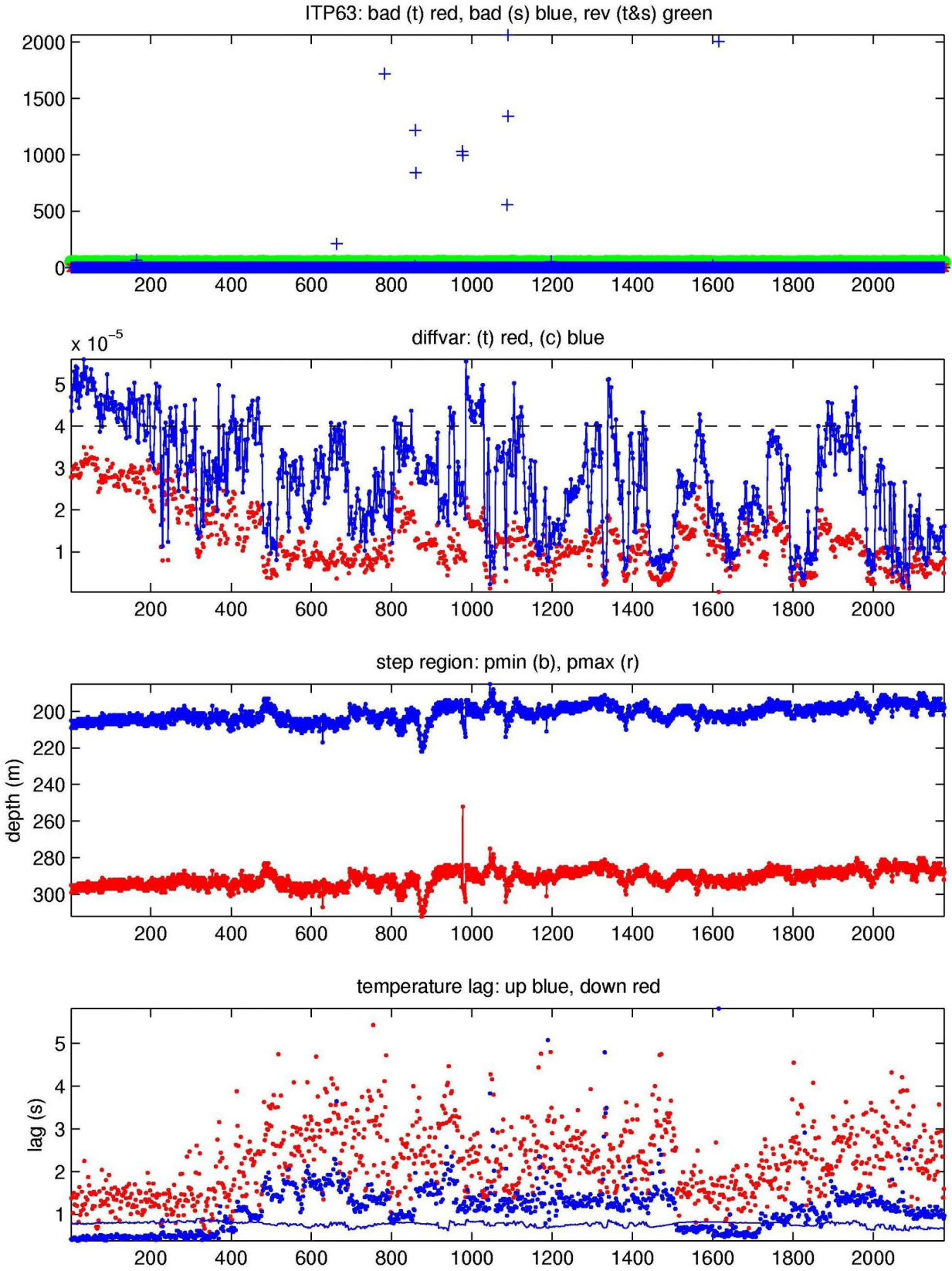


# ITP63 Profiler Status (up to profile 2177)

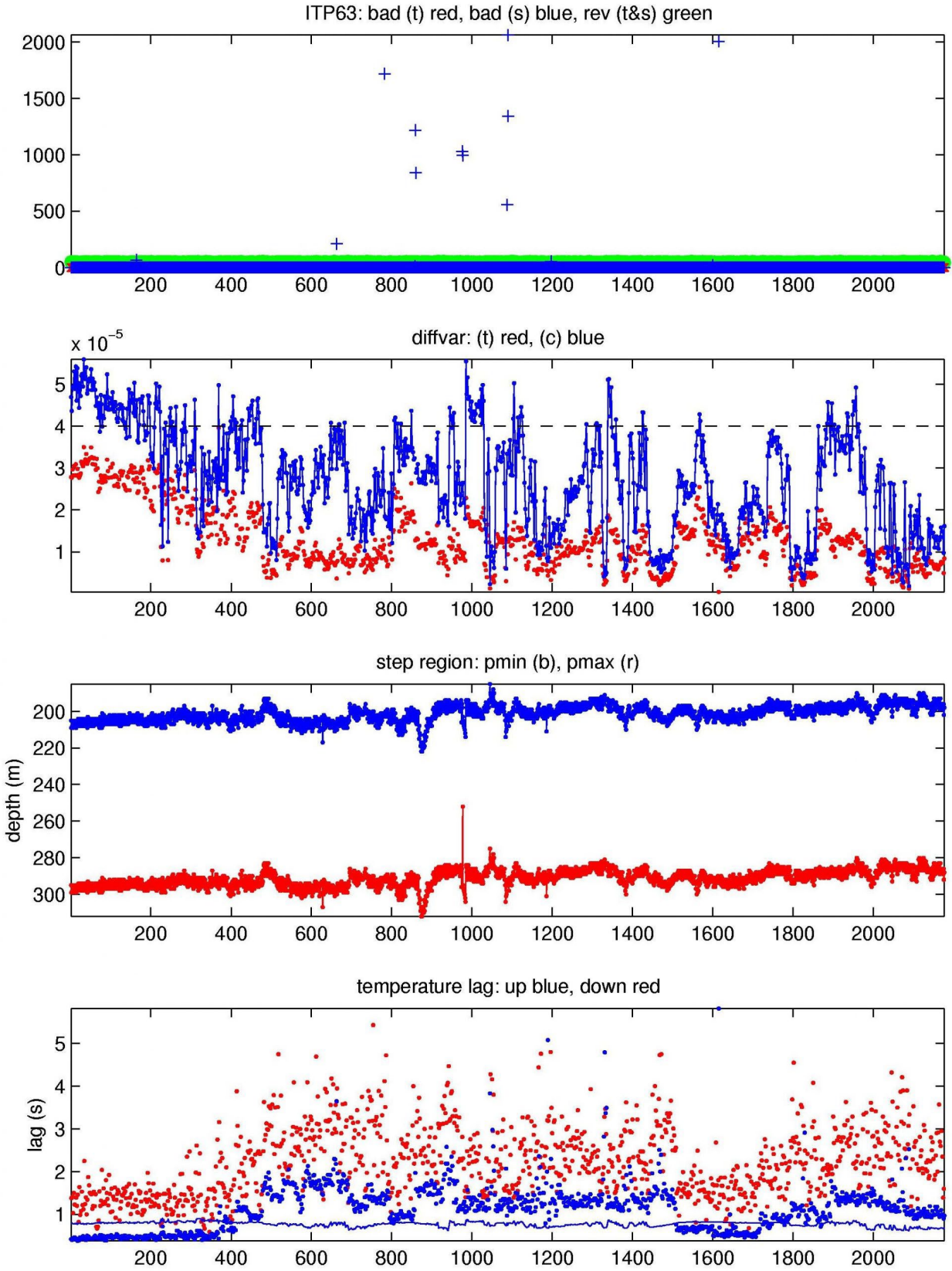
*up solid, down dashed*



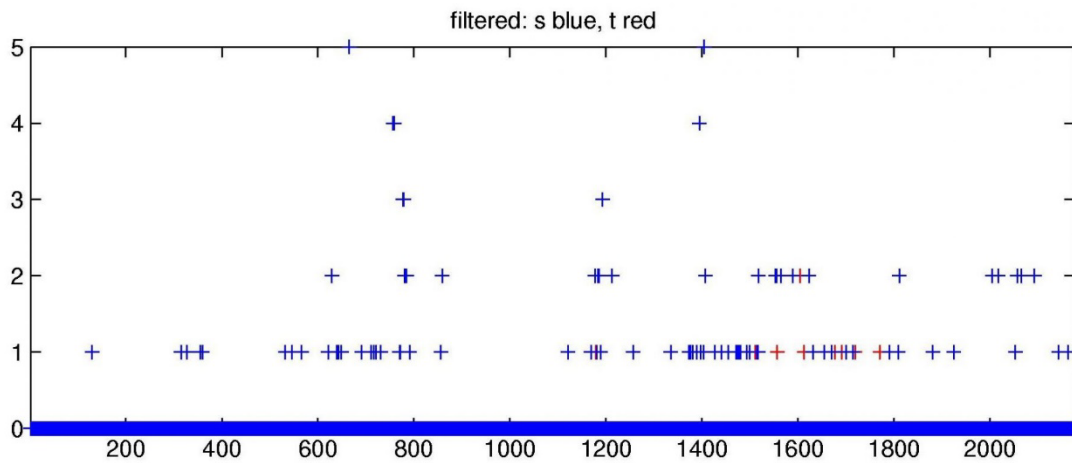
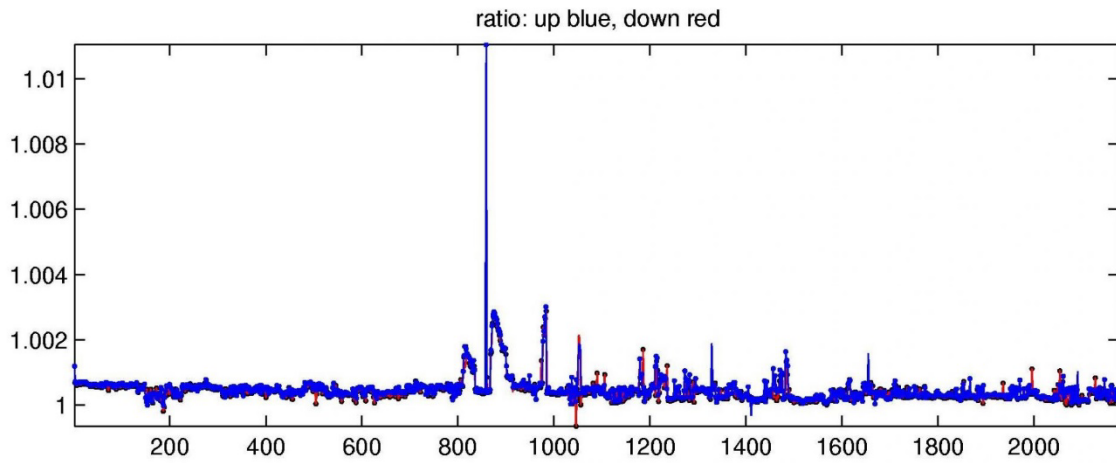
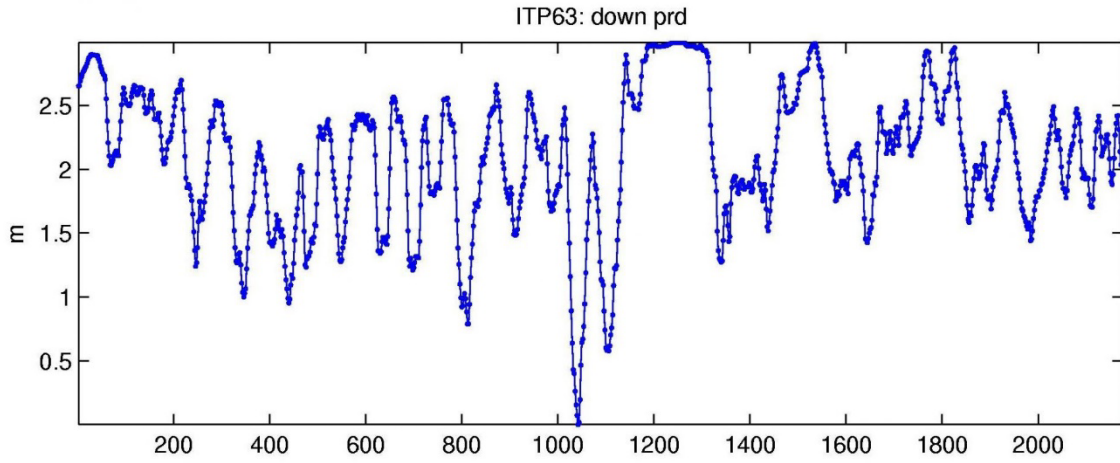
ITP Profiling Engineering Data



Top: number of bad points removed, Middle: variance of vertical difference of temperature and salinity in step region for up-going profiles, Bottom: temperature lag.

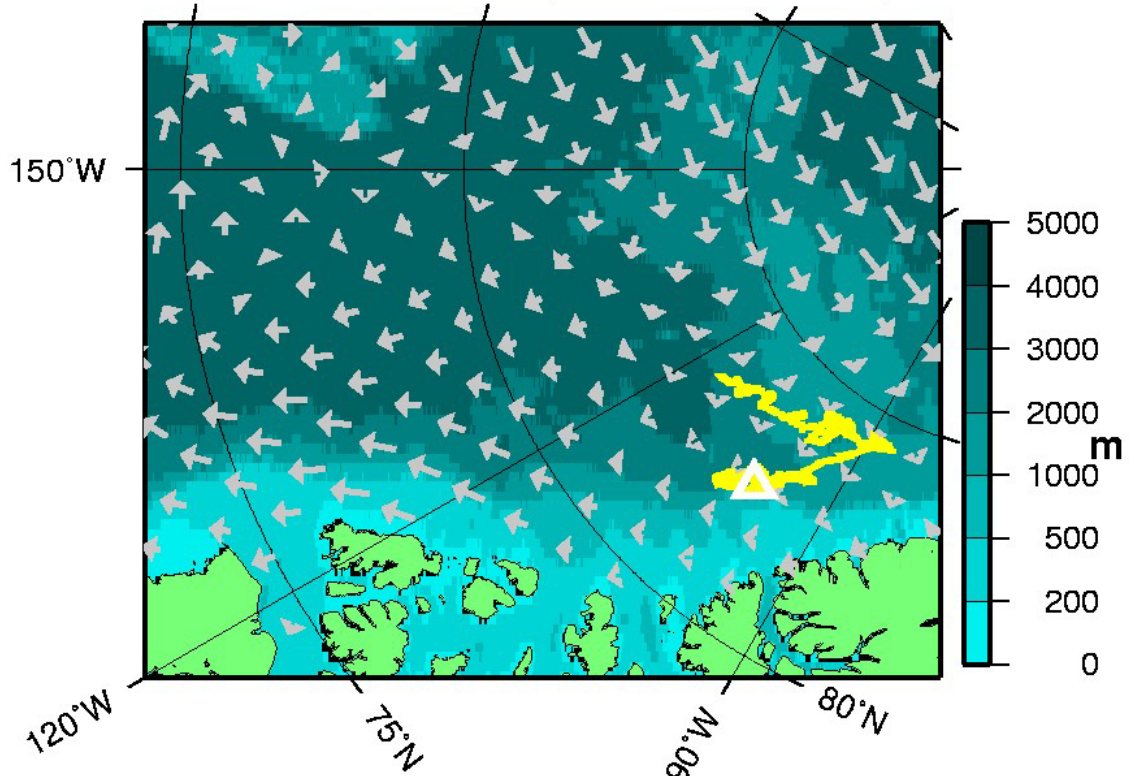


Top: number of bad points removed, Middle: variance of vertical difference of temperature and salinity in step region for up-going profiles, Bottom: temperature lag.



Top: down pressure deviation correction, Middle: salinity ratio adjustment, Bottom: Number of filtered spikes.

### ITP63 Drift Track (as of 2013/10/17)



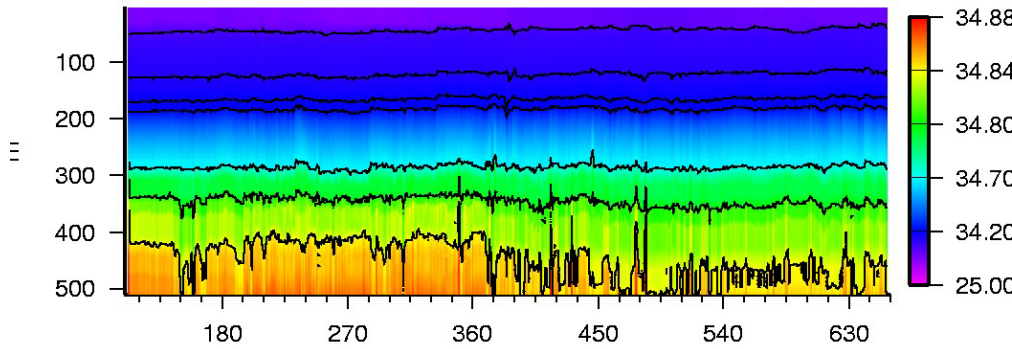
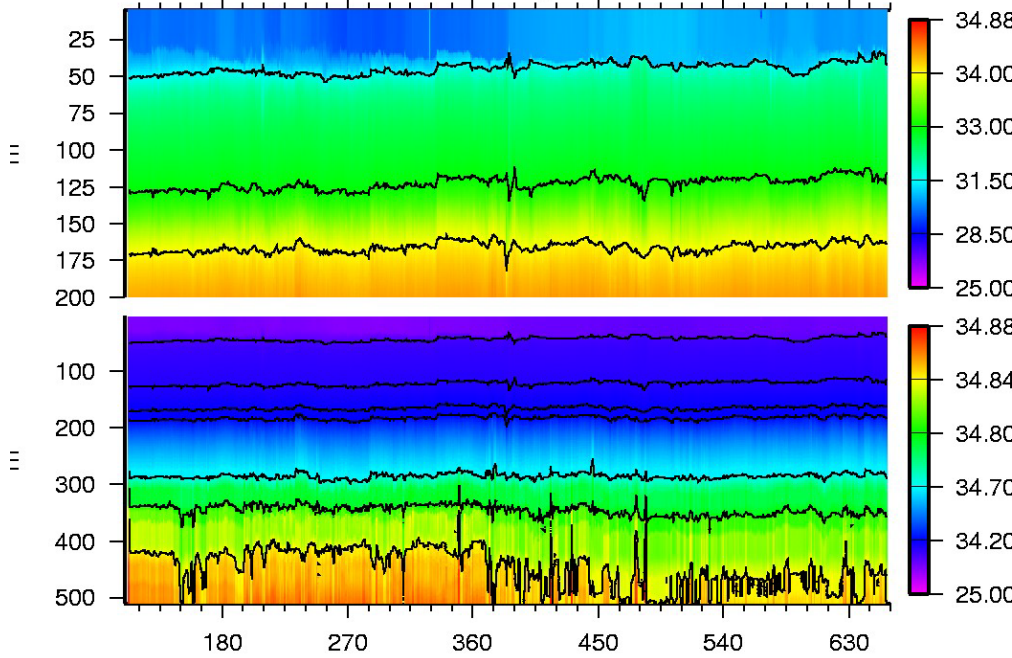
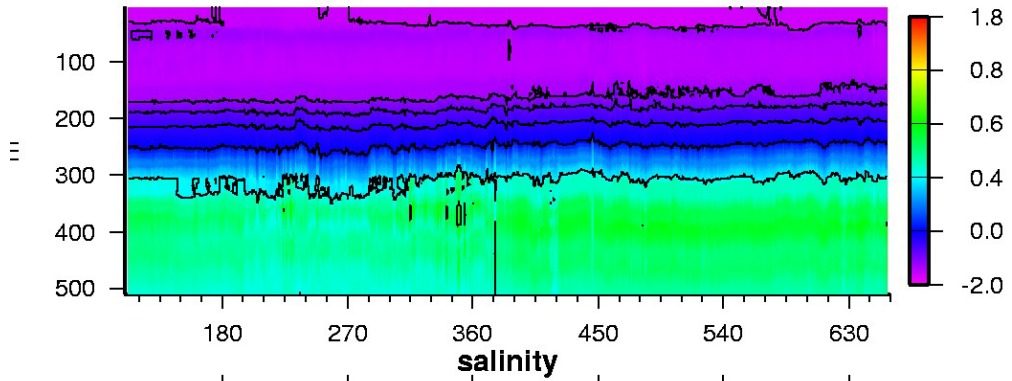
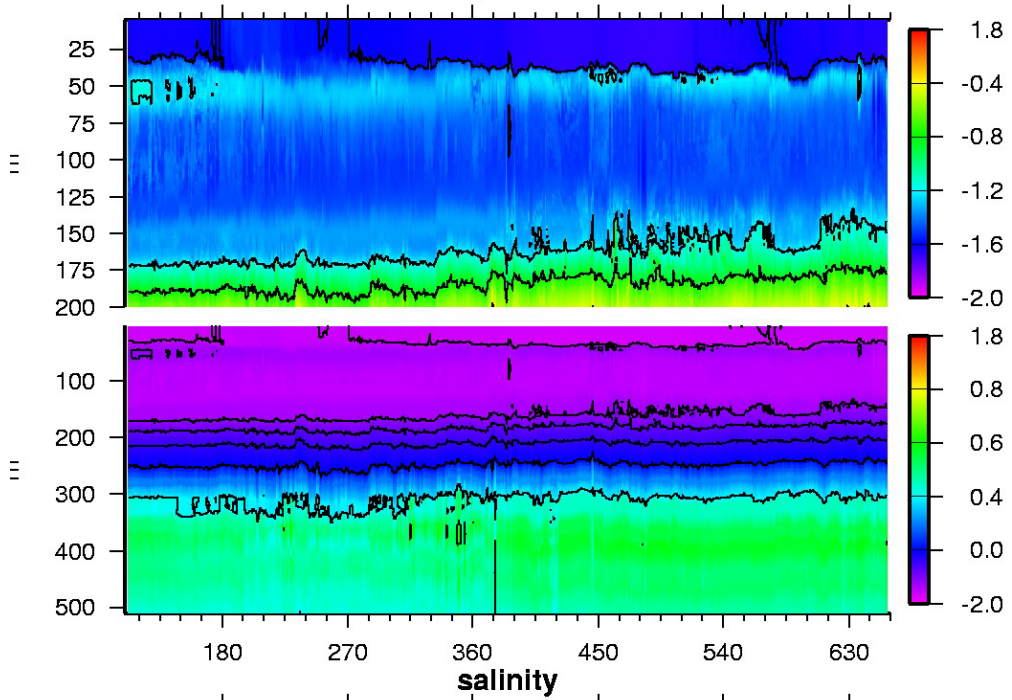
**ITP drift (yellow line) and latest location (triangle),  
and annual ice drift from IABP (grey vectors) on  
IBCAO bathymetry (shading).**

Plot of buoy locations.



# ITP63 Up Profile Contours (to profile 2177)

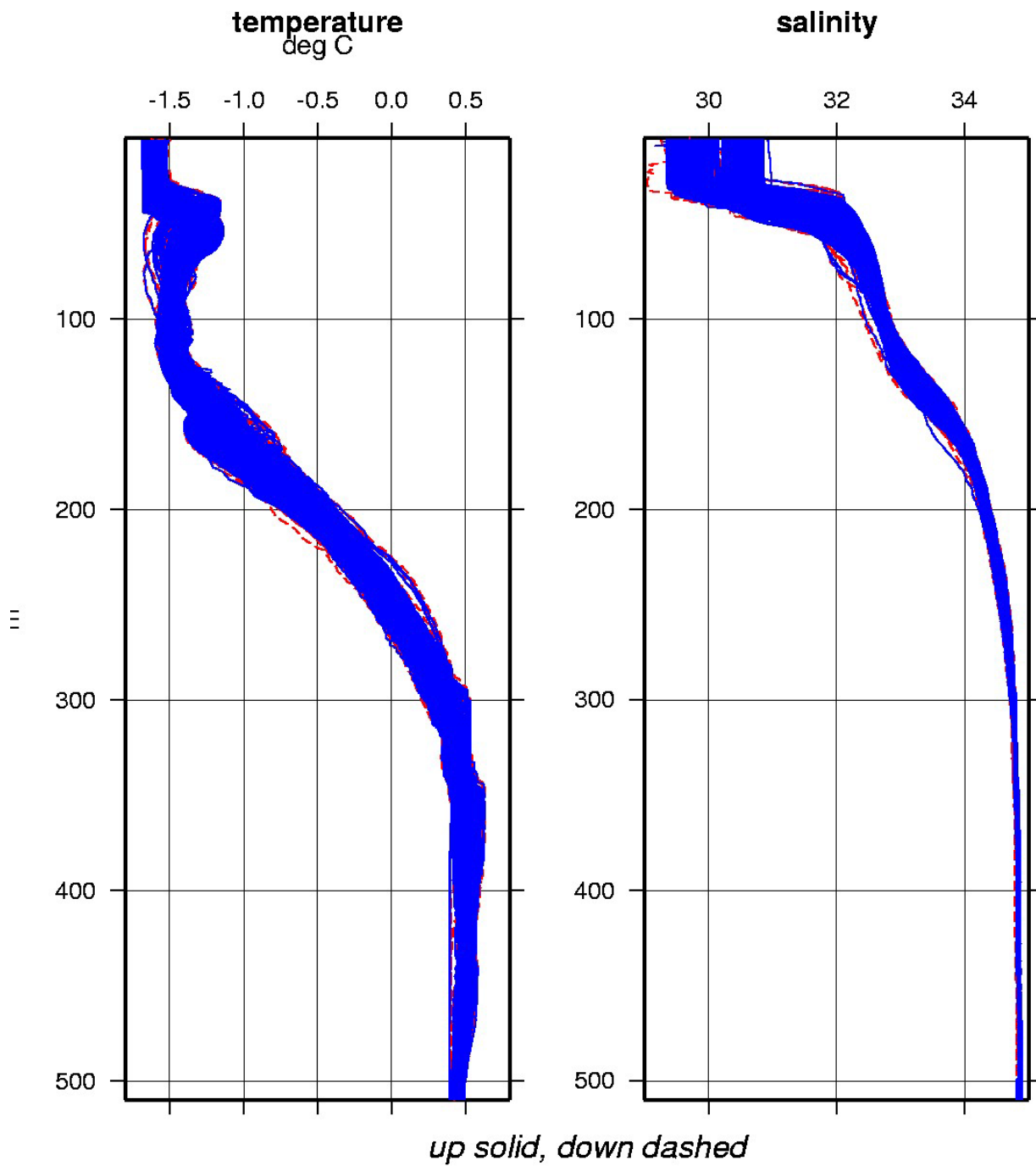
temperature



day 2012

ITP63 temperature and salinity contours.

### All ITP63 Profiles (up to profile 2177)



Composite plot of ITP temperature and salinity contours.



ITP 63 as deployed ~5 km from the Russian NP-39 ice station in April 2012. (Photo by Steve Lambert)



Preparing to depart NP-39 to deploy ITP 63. (Photo by John Kemp).