

An aerial photograph of a submarine on the ice surface of the Arctic Ocean. The submarine is dark and has a conning tower with a mast. Several people are visible on the ice near the submarine. The ice is cracked and has a yellow line drawn on it. The sun is low in the sky, creating long shadows.

SCICEX XCTD update

SCICEX Timeline

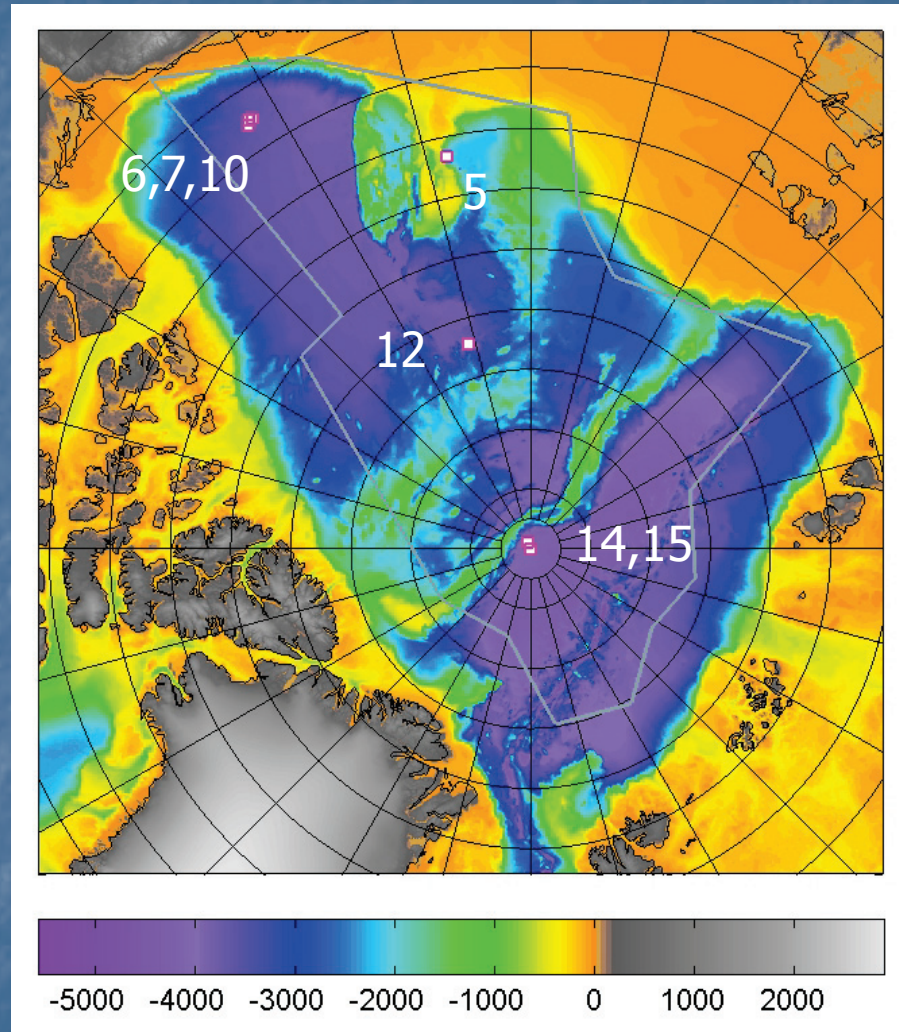
New Results

Where are we relative to this time last year?

SCICEX XCTD Timeline

- Dedicated Science Cruises 1995-1999
 - ~ 100 analog XCTDs per cruise
 - ~ 85-90% success rate
 - crucial data on changing Arctic Ocean conditions
- Science Accommodation Cruises
 - digital XCTDs
 - higher failure rate
 - noisy
- **2008**
 - Sippican: known source of XCTD failures ('timeout circuit')
- **2009**
 - SAC Science Plan in preparation
 - XCTD test at ICEX-09
 - Results:
 - T, S, Z quality acceptable
 - complete failure to reach design depth
 - 'success' rate fairly high
- **2010**
 - Sippican identifies source of XCTD failures to achieve design depth
 - XCTD open water test by ASL (4 of 16 probes)
 - Results: inconclusive
- **2011**
 - 12 probes tested at ICEX-11
 - 8 pass pre-launch tests (i.e. are launched)
 - 7 return data
 - 5 return data to design depth (1100 m)

ICEX-11 XCTD Locations



ICEX-11 XCTDs for comparison with APLIS and NPEO CTDs

Event No.	XCTD File Name	Time of Launch (Z)				Ship's Depth (m)	Latitude	Longitude	Probe S/N	Probe Test OK	Post Launch Data Received	XCTD Termination Depth (m)
		Date	Month	Year	Time							
1	CU_00005	04	Dec	2010	0511		West Coast		10058892	Y	Y	628.9
2	CU_00006	05	Dec	2010	0106		West Coast		10058893	Y	Y	1087.9
3		05	Dec	2010			West Coast		10058875	N		
4		05	Dec	2011			West Coast		10058874	N		
5	XCTD 05	14	Mar	2011	0640	125	76 - 38.6 N	168 - 00.6 W	10058869	Y	Y	1100.1
6	XCTD 06	16	Mar	2011	0503	125	72 - 58.2 N	147 - 05.3 W	10058867	Y	Y	1100.1
7	XCTD 07	24	Mar	2011	2022	107	73 - 05.4 N	146 - 17.1 W	10058866	Y	Y	533.6
8		27	Mar	2011	0430	107			10058864	N		
9		27	Mar	2011	0519	107			10058868	Y	N	
10	XCTD 10	27	Mar	2011	0538	107	72 - 58.0 N	146 - 41.0 W	10058863	Y	Y	1100.1
11		31	Mar	2011	1618	93			10058872	N		
12	XCTD 12	31	Mar	2011	1645	93	82 - 49.9 N	163 - 00.5 W	10058862	Y	Y	1100.1
13		01	Apr	2011	2240	107			10058873	N		
14	XCTD 14	01	Apr	2011	2312	107	89 - 59.2 N	024 - 30.1 W	10058865	Y	Y	1100.1
15	XCTD 15	03	Apr	2011	0607	93	89 - 45.0 N	156 - 32.0 W	10058870	Y	Y	204.6
16		06	Apr	2011	0445	93			10058871	N		

In proximity to:

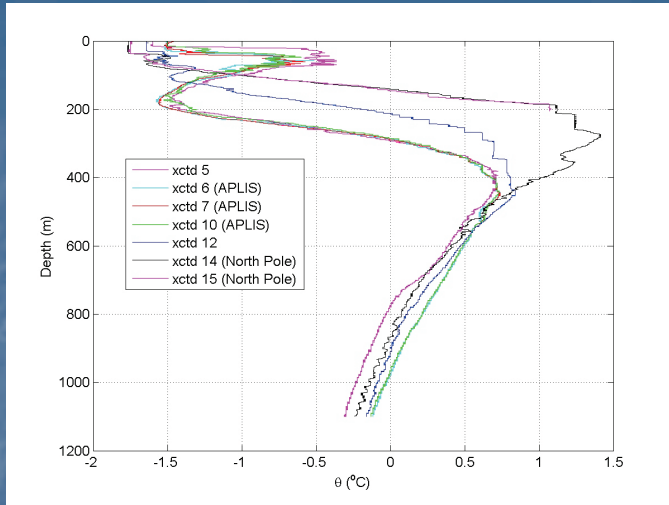
} APLIS

NPEO

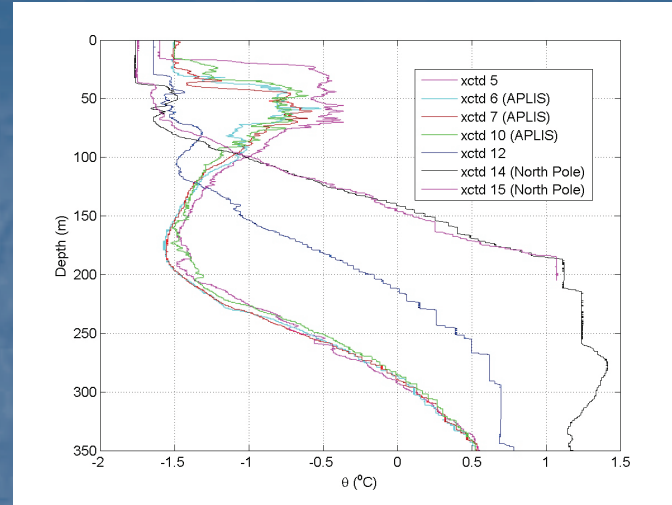
APLIS CTDs by ASL

NPEO CTD by Jamie Morison, APL

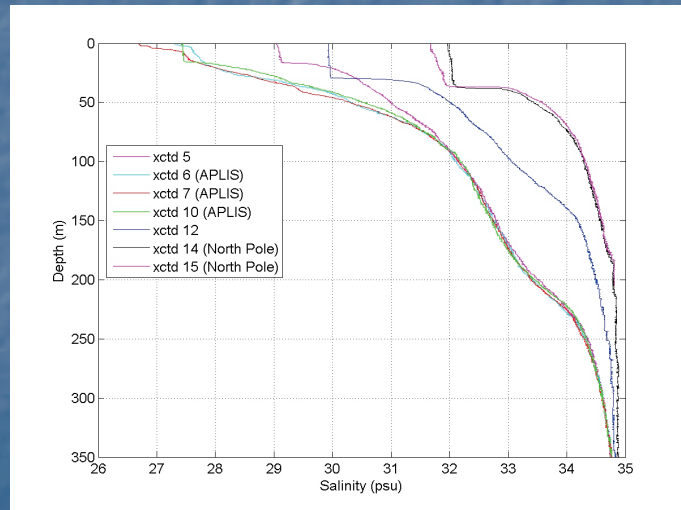
7 successful XCTD profiles



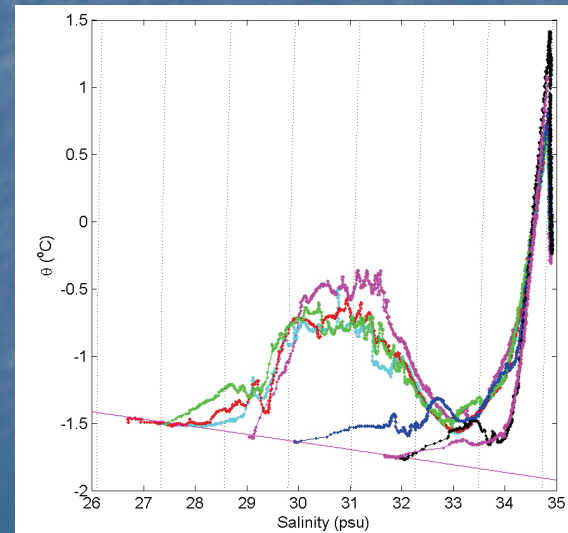
Temperature to 1100 m



Temperature in upper 350 m

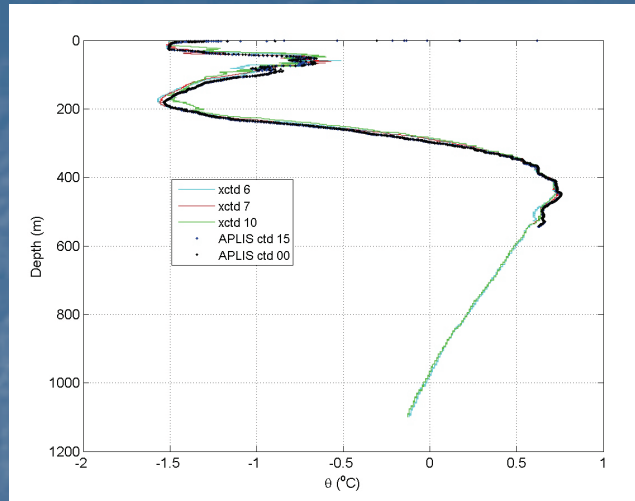


Salinity in upper 350 m

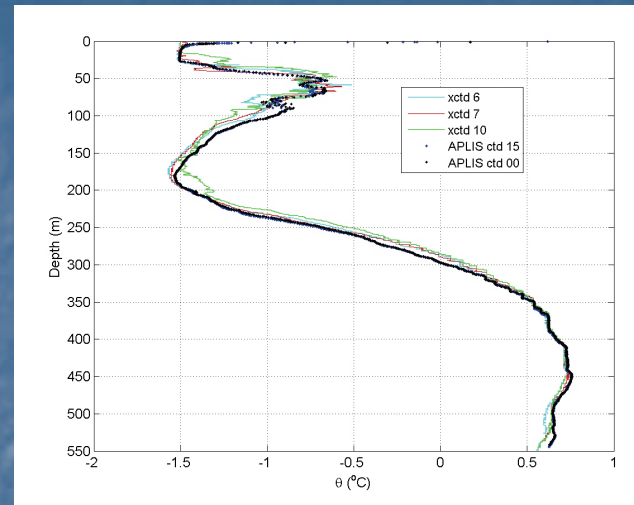


T/S relationship

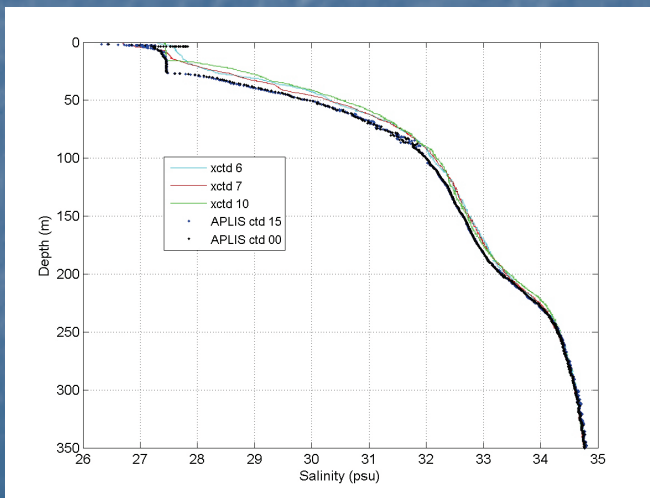
3 XCTD profiles and 2 CTD profiles from the APLIS ice camp area



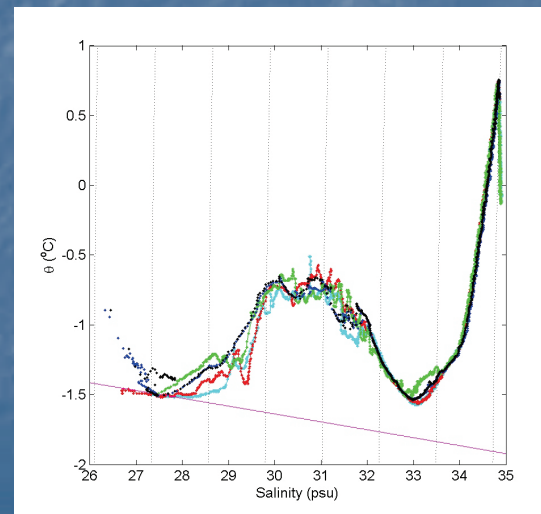
Temperature to 1100 m



Temperature to 550 m

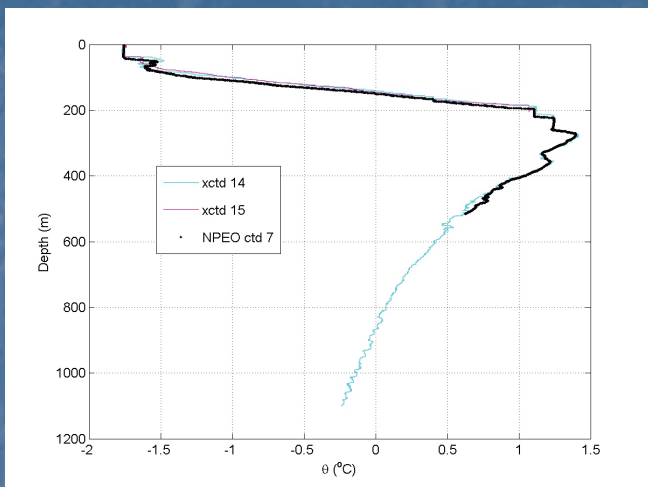


Salinity to 350 m

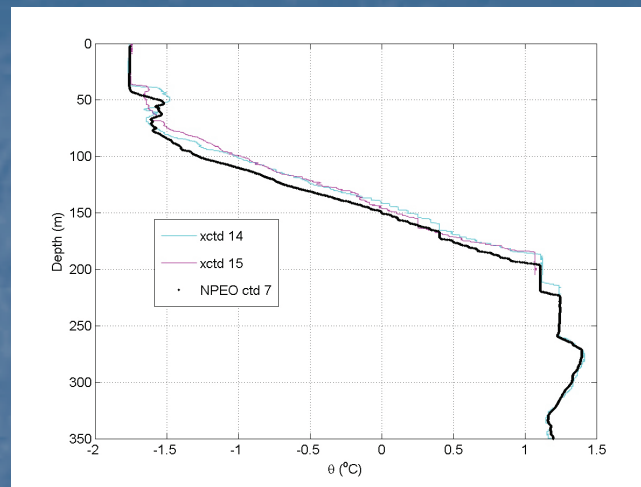


T/S relationship

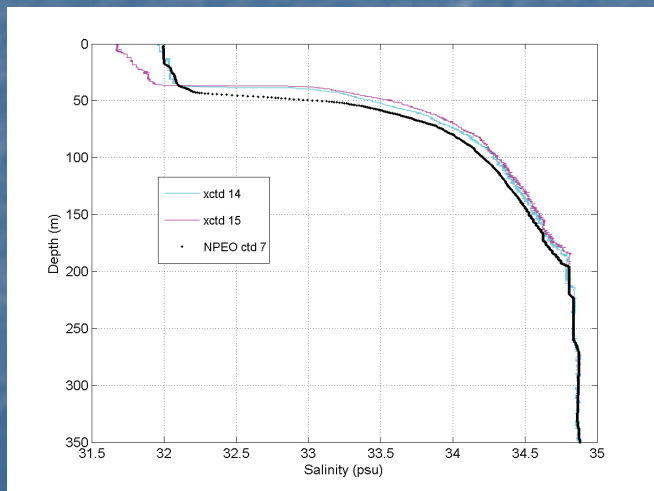
2 XCTD profiles and 1 CTD profile near the North Pole



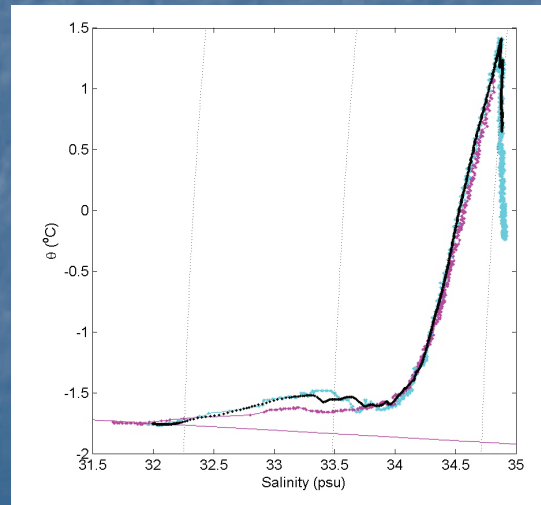
Temperature to 1100 m



Temperature to 350 m



Salinity to 350 m



T/S relationship

SCICEX SAM XCTD sampling

- What's next?

- Continue XCTD test deployments (12) in ICEX-11

- Follow Science Plan recommendations
- Ensure use of correct software
- Follow-up on XCTD noise and first-depth issues

How did we do?

Not really

Still some confusion

Took a backseat to Other issues

- ONR proposal for SAM sampling in 2012-2013

- Assume ICEX-13? Hope for 2014