

Main topics for long-term study on Arctic change related to 'climate line'



中國海洋大學

Ocean University of China



國家海洋局極地考察辦公室

Chinese Arctic and Antarctic Administration

極地海洋過程與全球海洋變化重點實驗室

Key Lab of Polar Oceanography and Global Ocean Change

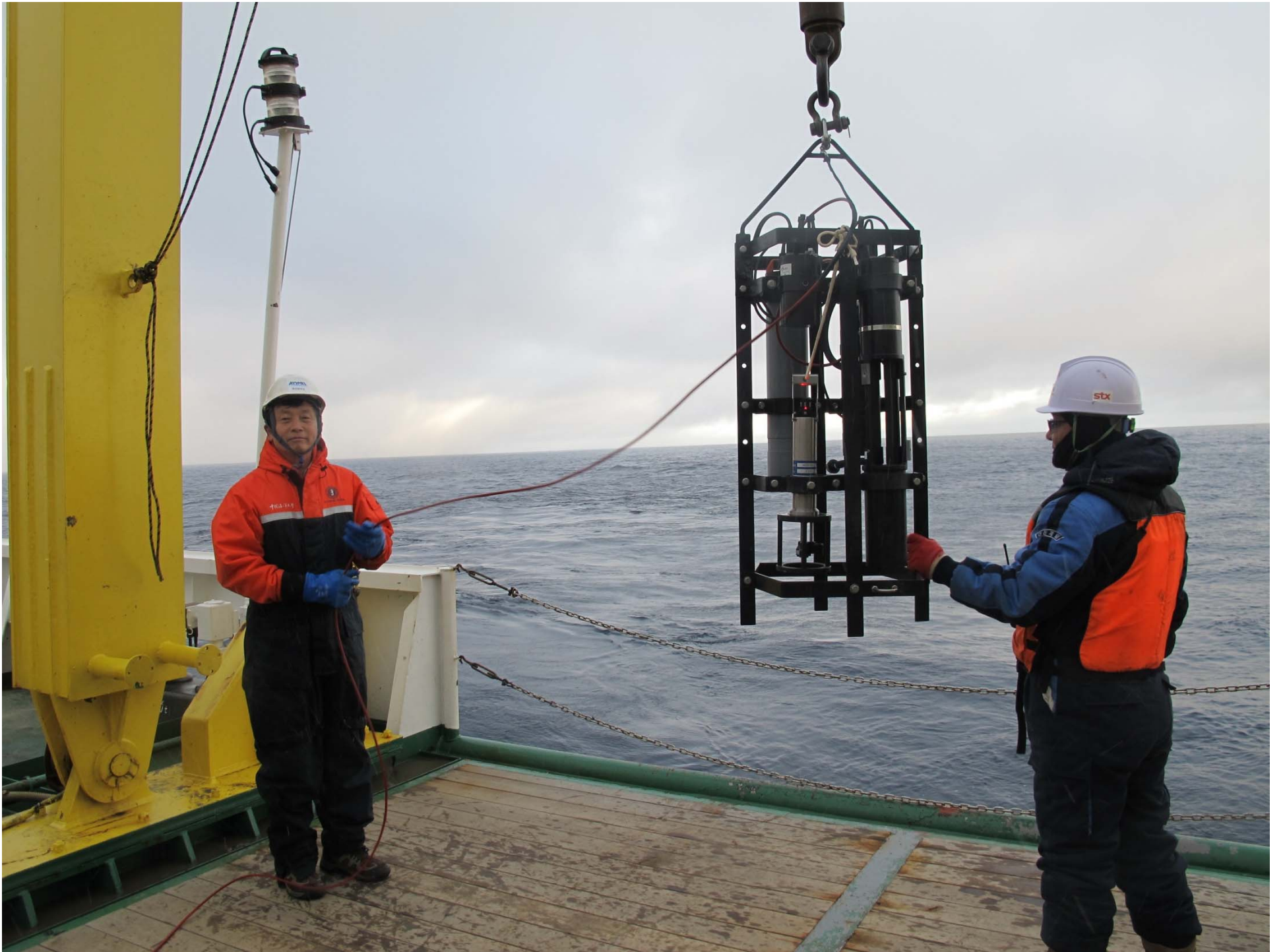


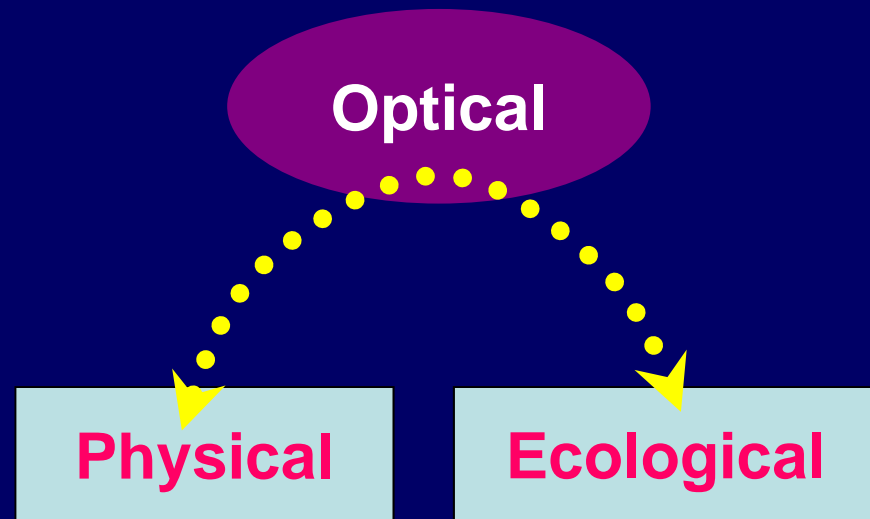
Jinping Zhao

Ocean University of China

Main topics in Arctic of OUC

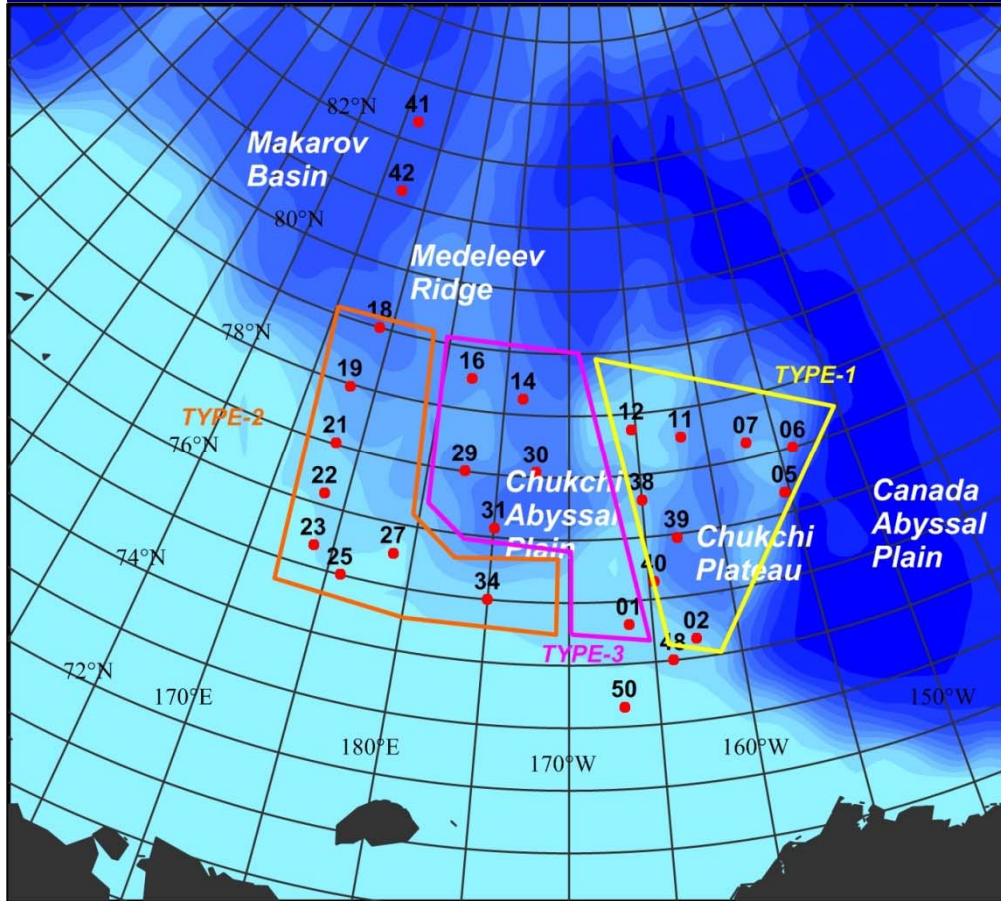
1. Sea ice physics and variation
2. Upper ocean dynamical processes
3. Air-ice-sea coupling
4. Climate effects of Arctic change
5. Impacts of Arctic to China climate



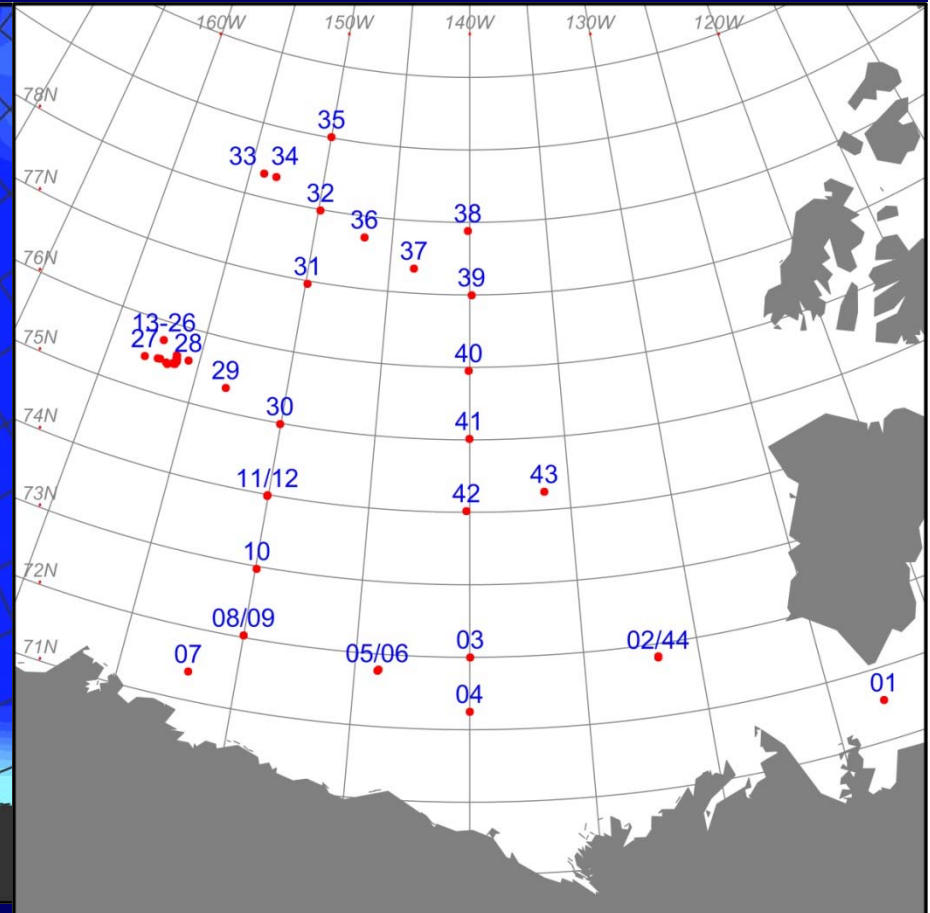


The purpose of the observation is to measure the optical property of ocean water and try to establish the connection between physical and ecological processes. Most locations are ice covered ocean, we need to remove the impact from the ice shading.

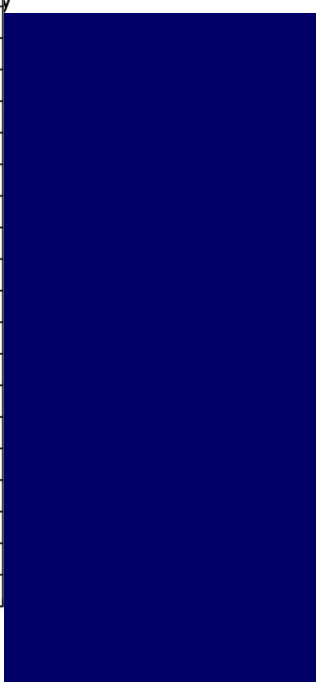
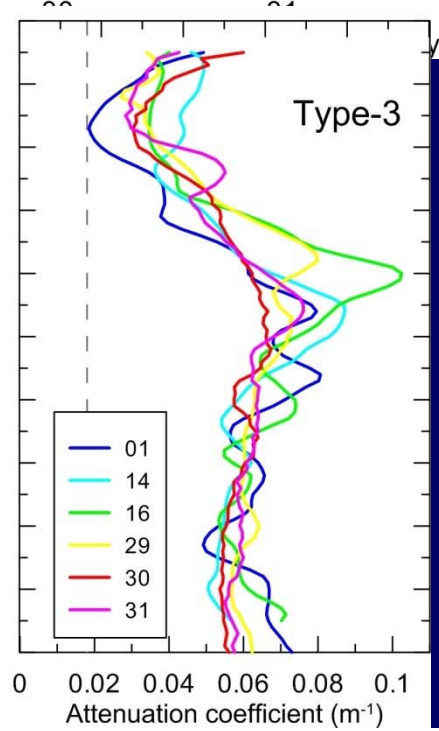
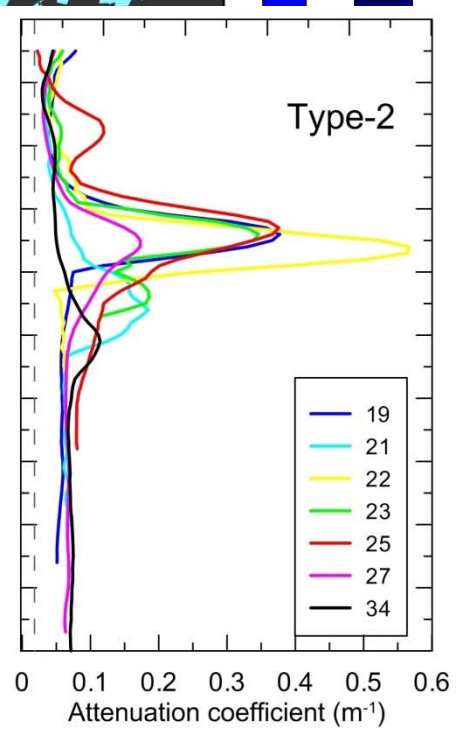
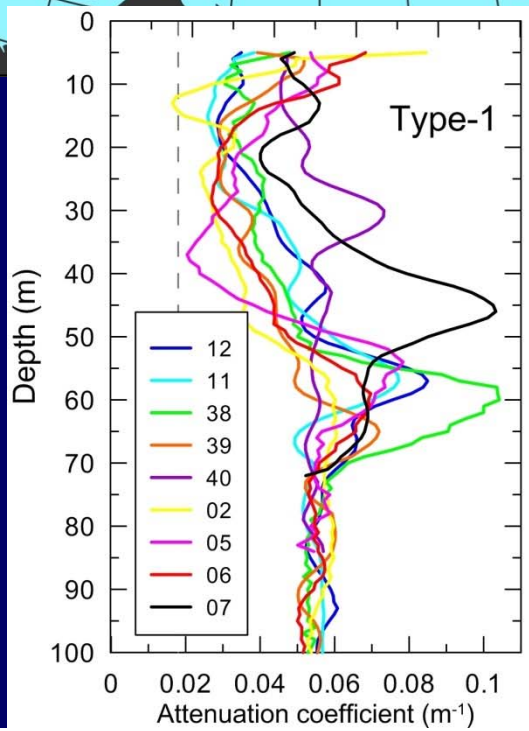
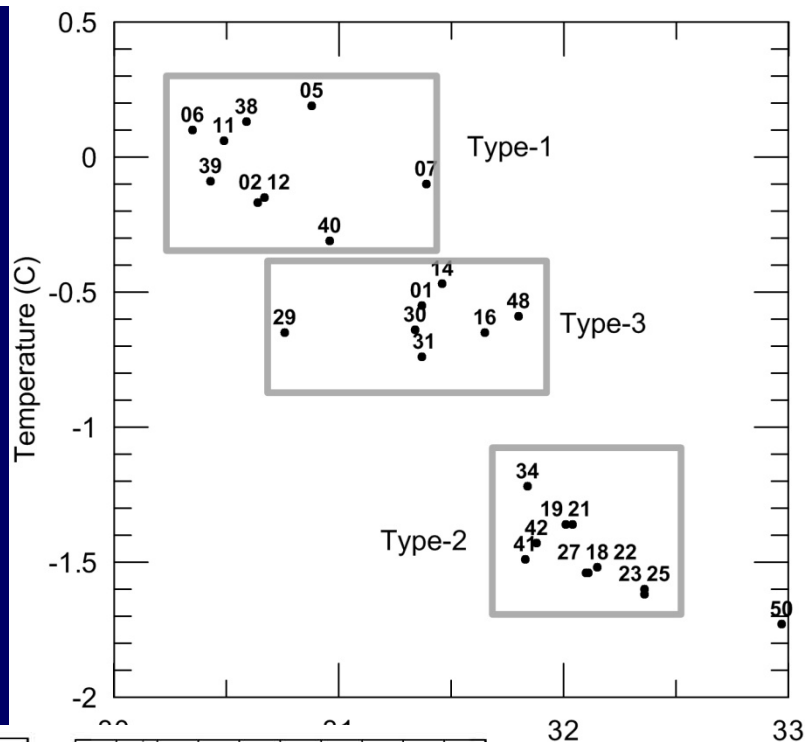
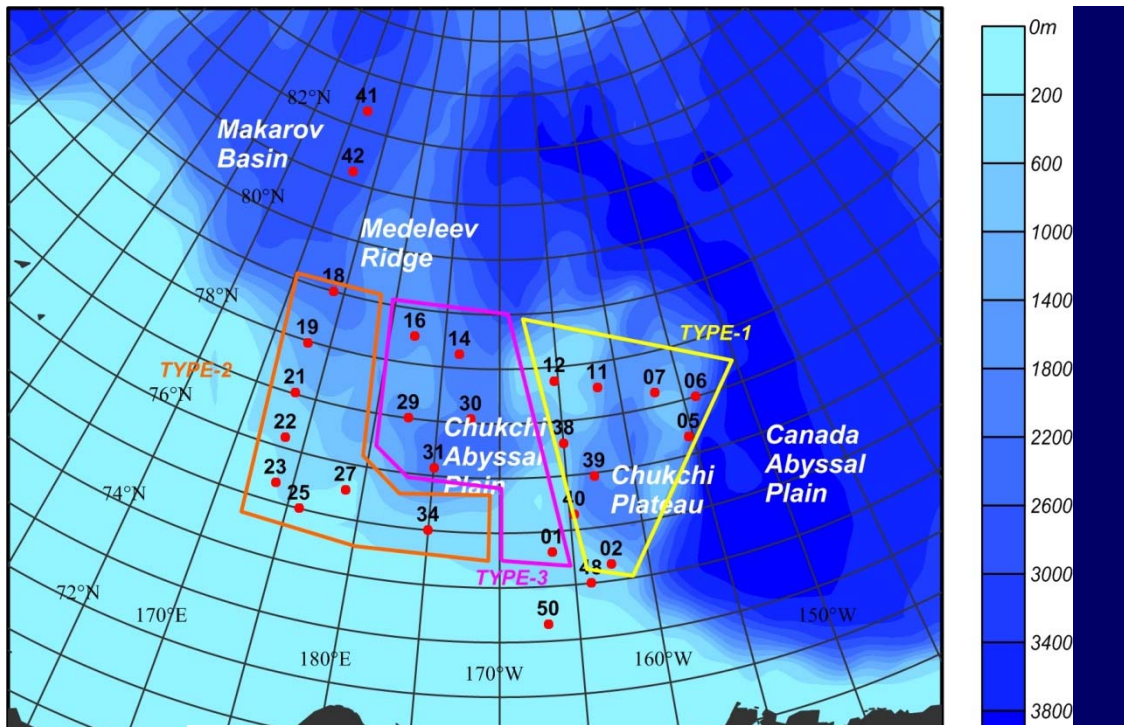
Optical properties in the 'climate line'

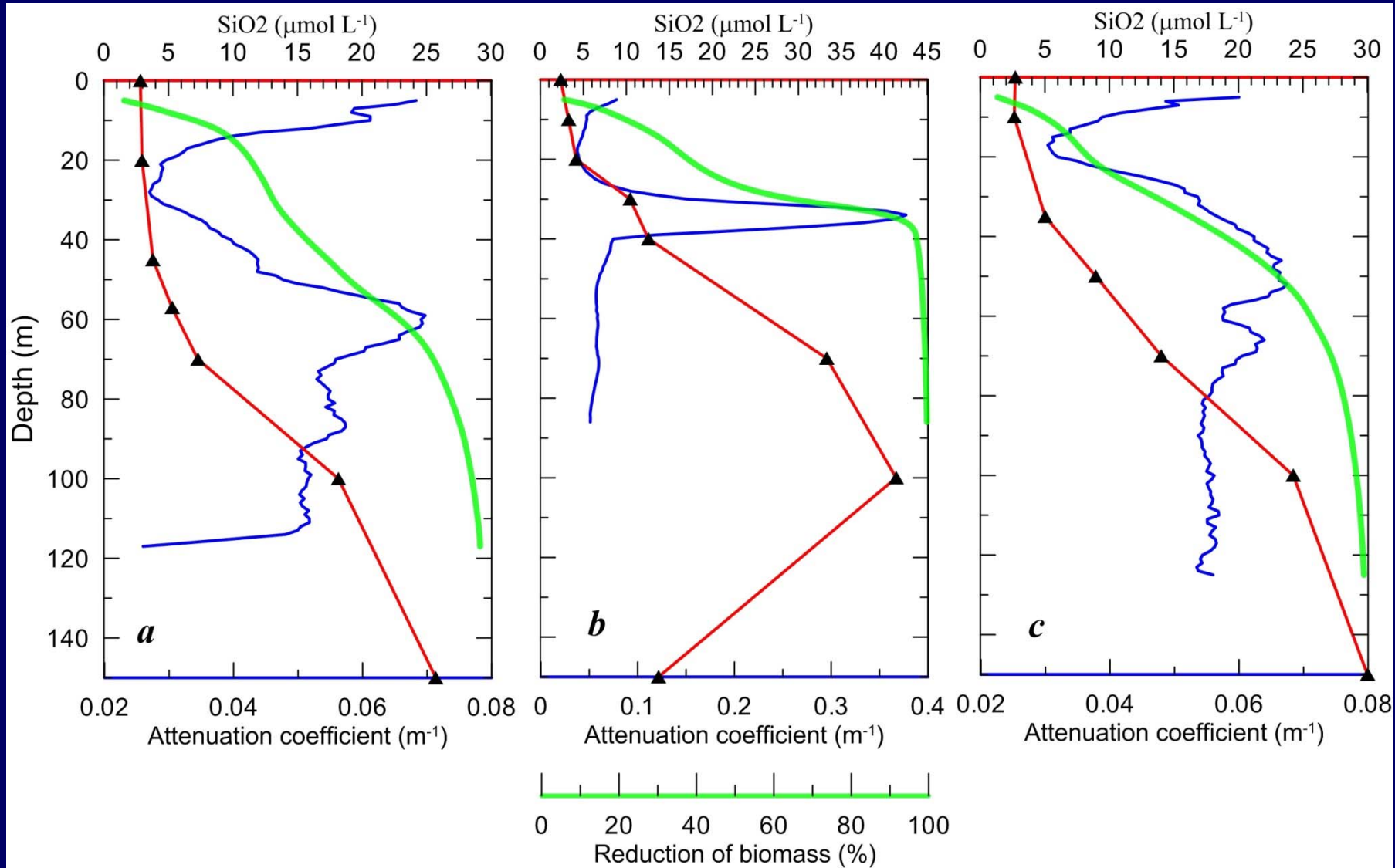


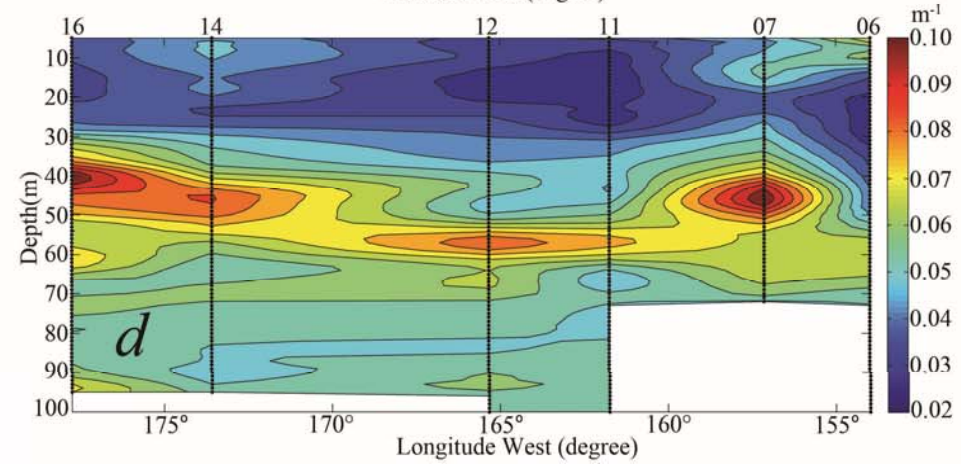
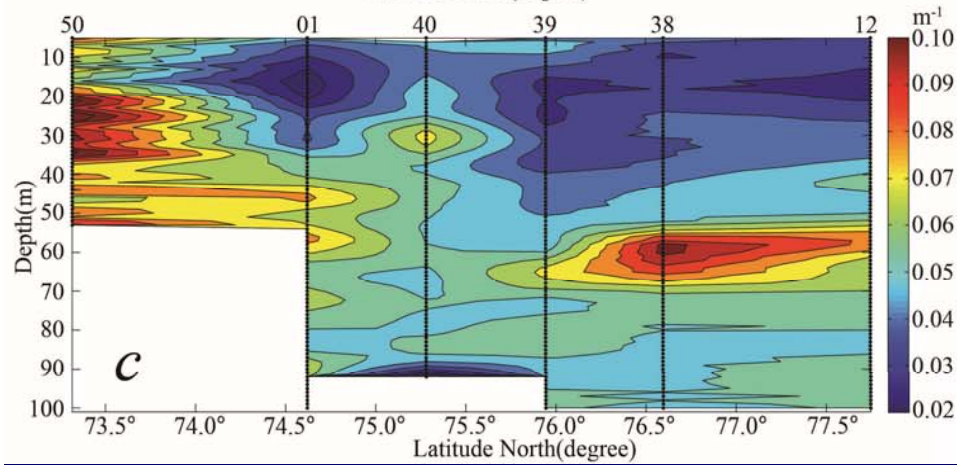
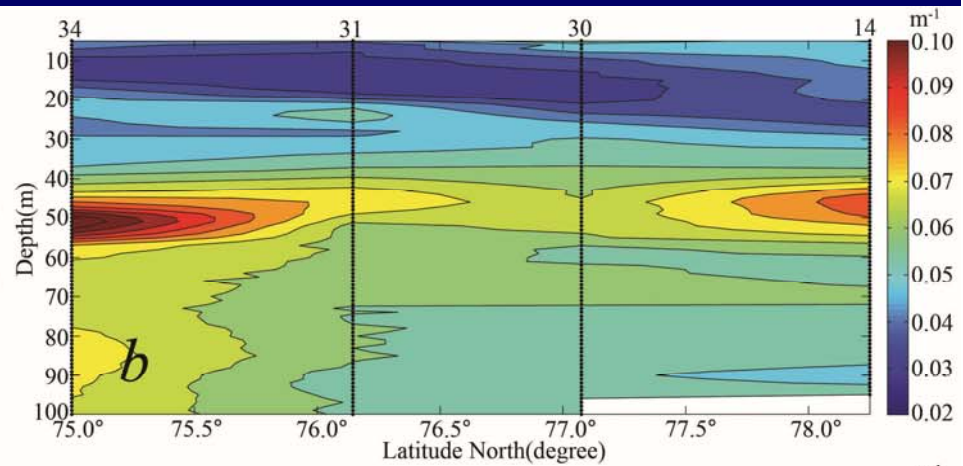
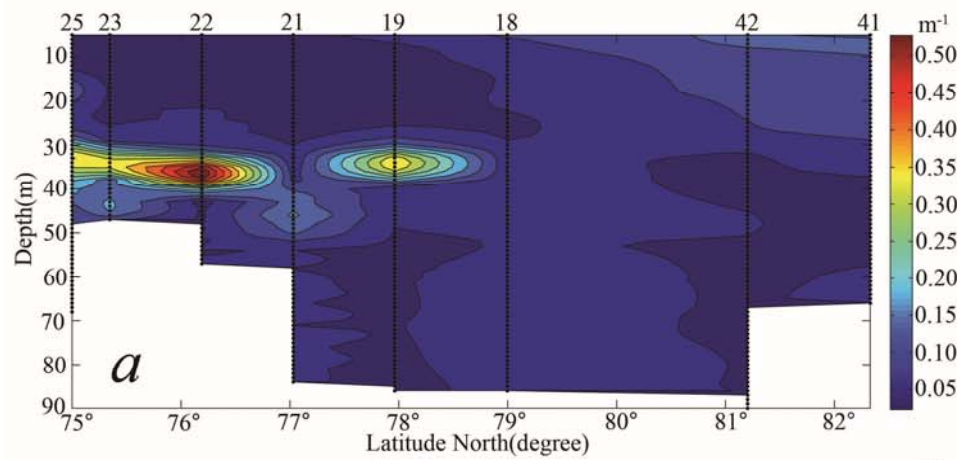
Araon 2012 cruise

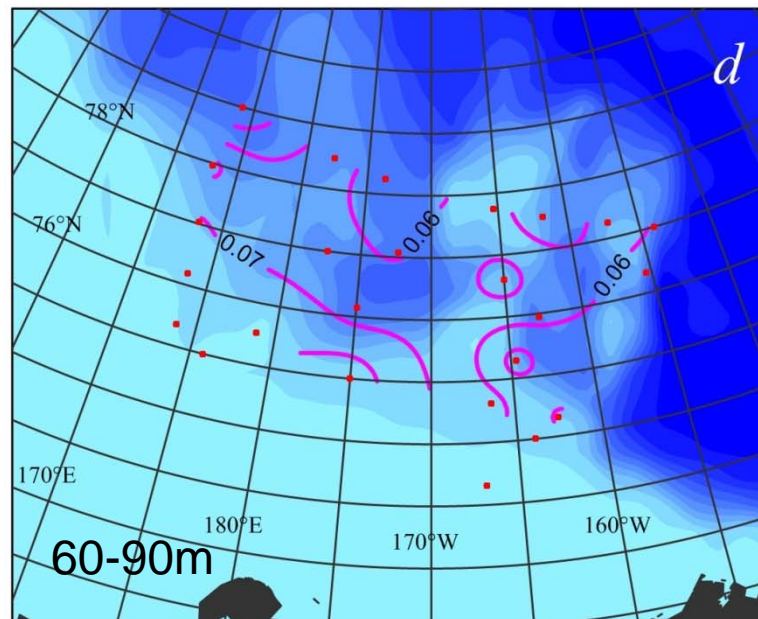
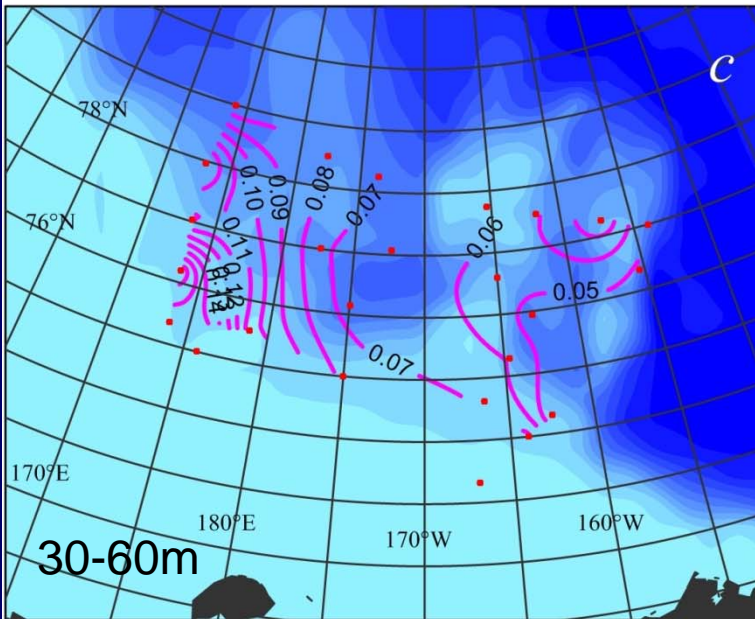
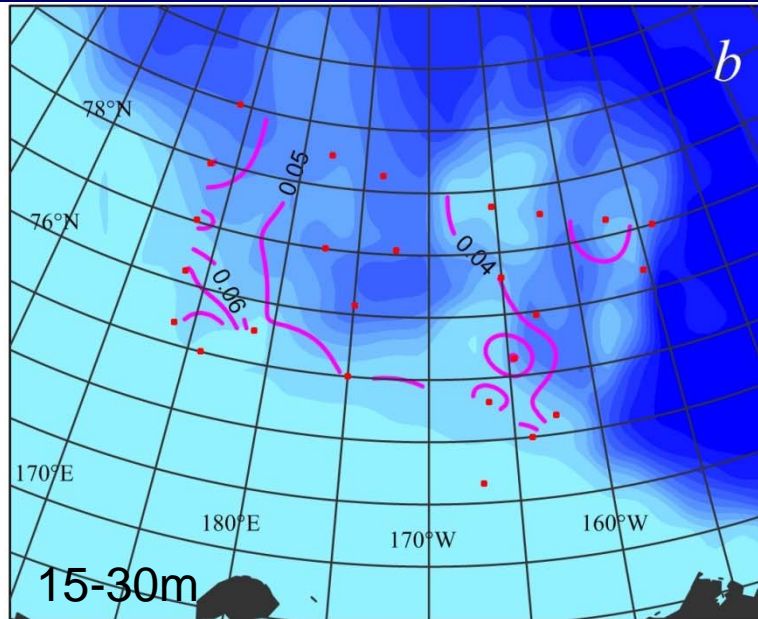
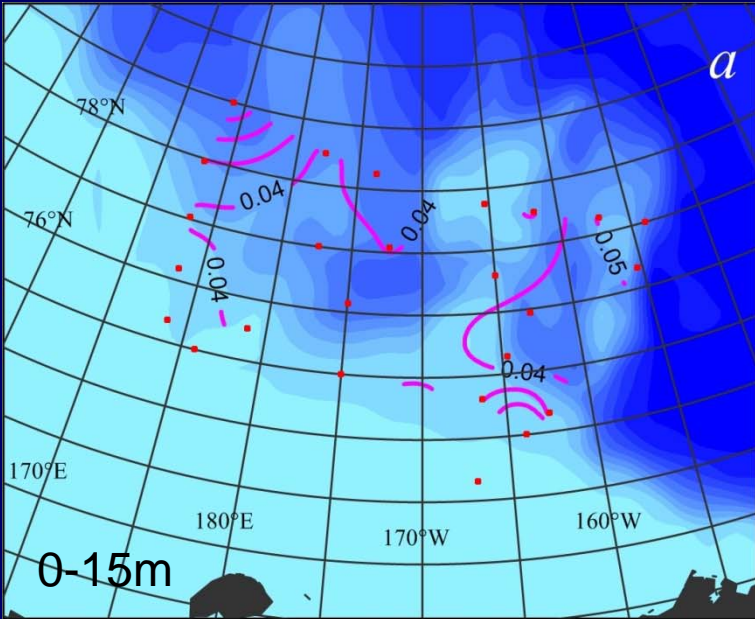


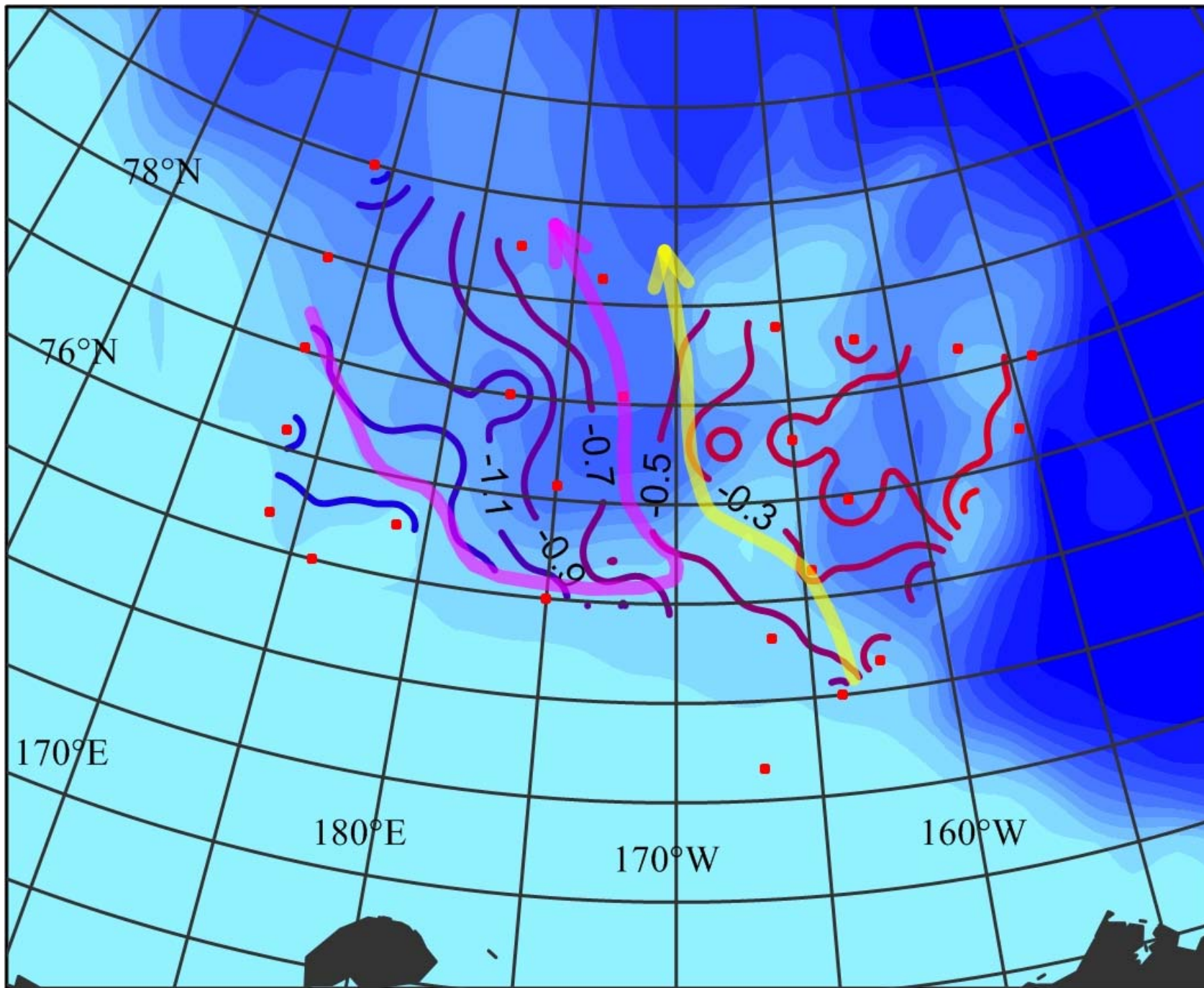
LSSL 2006 cruise

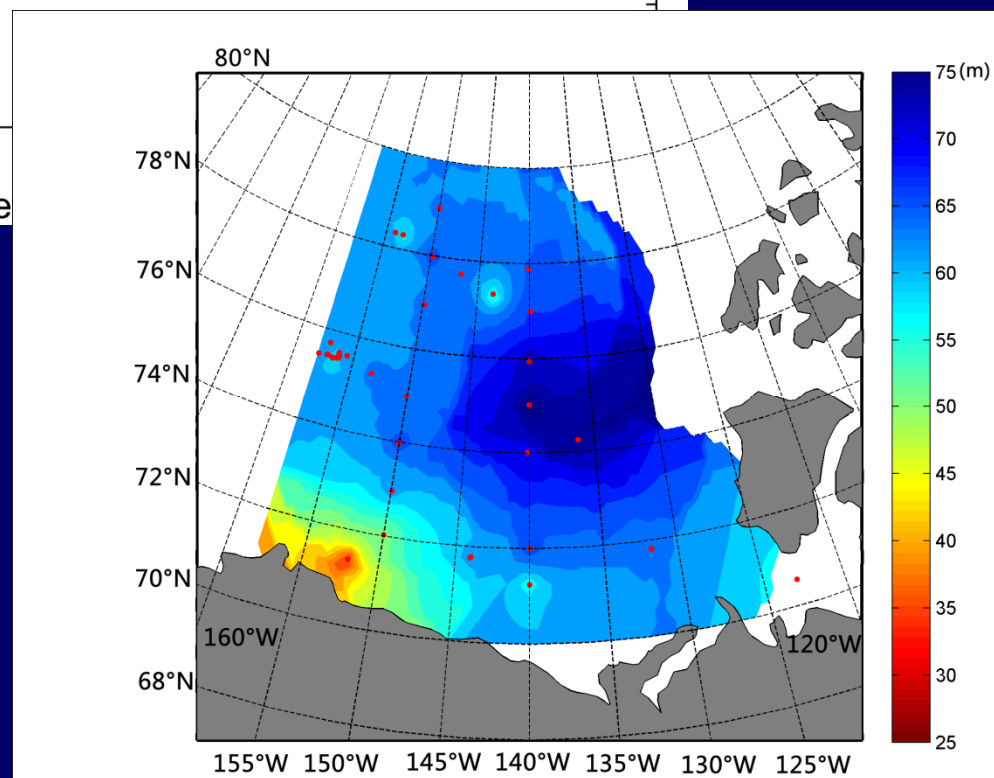
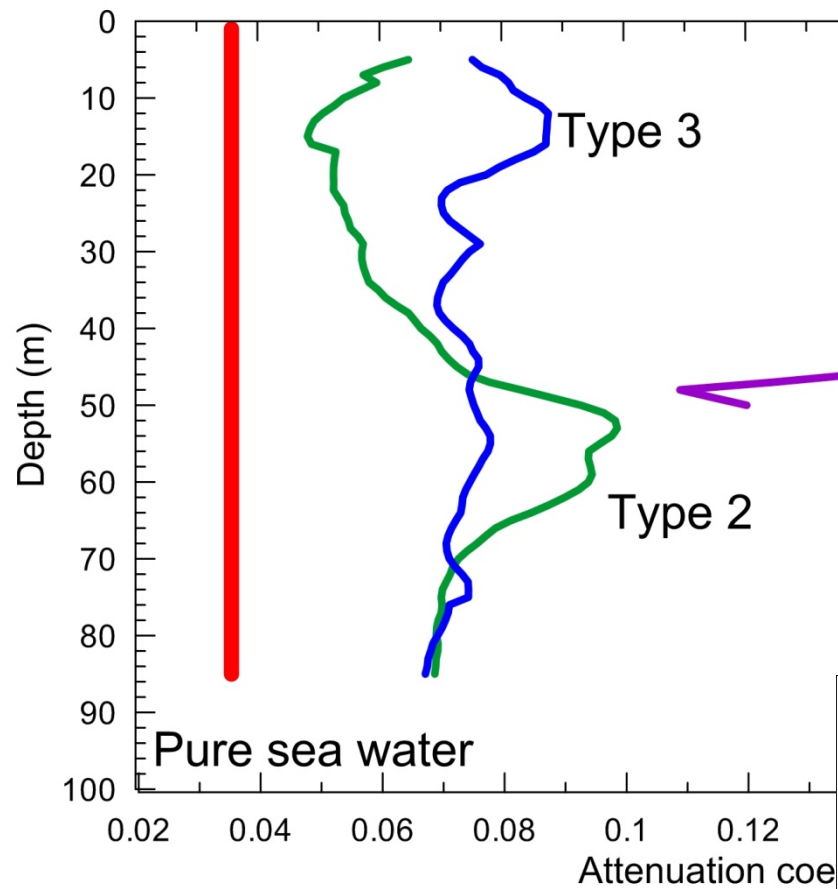


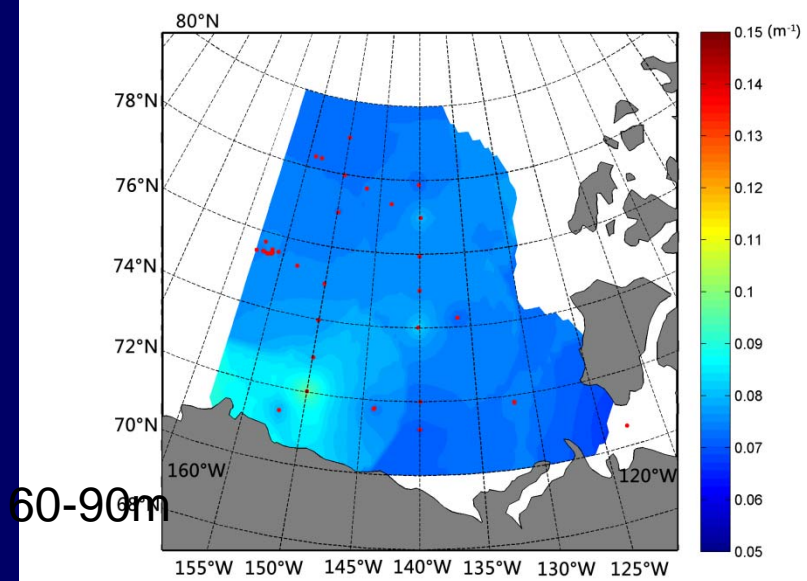
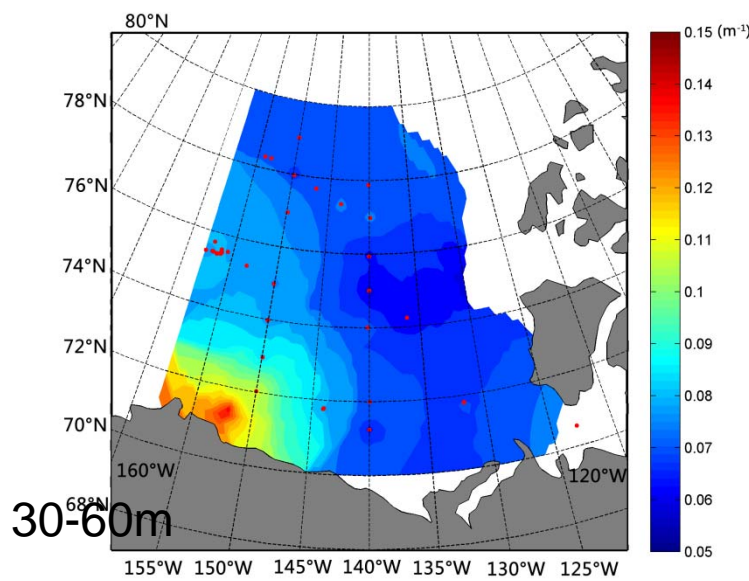
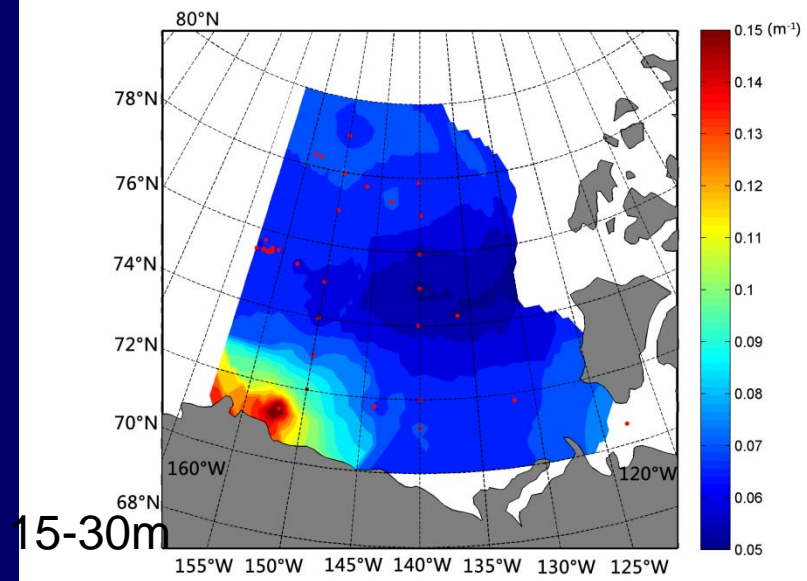
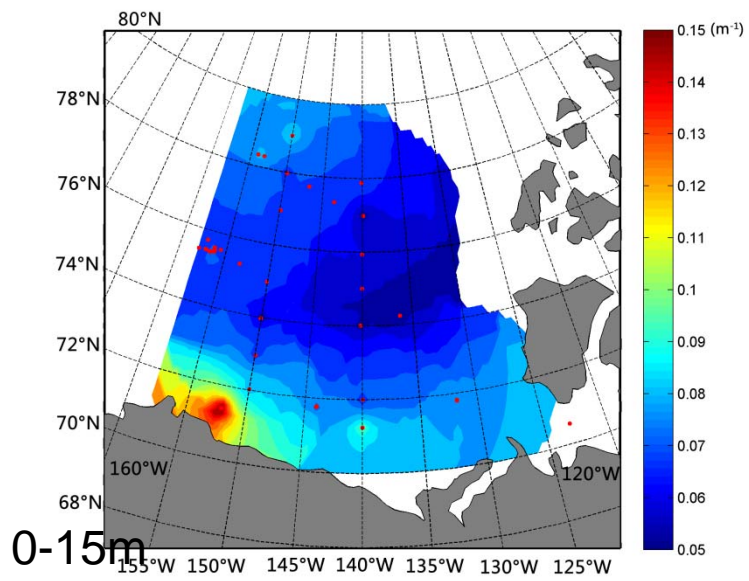




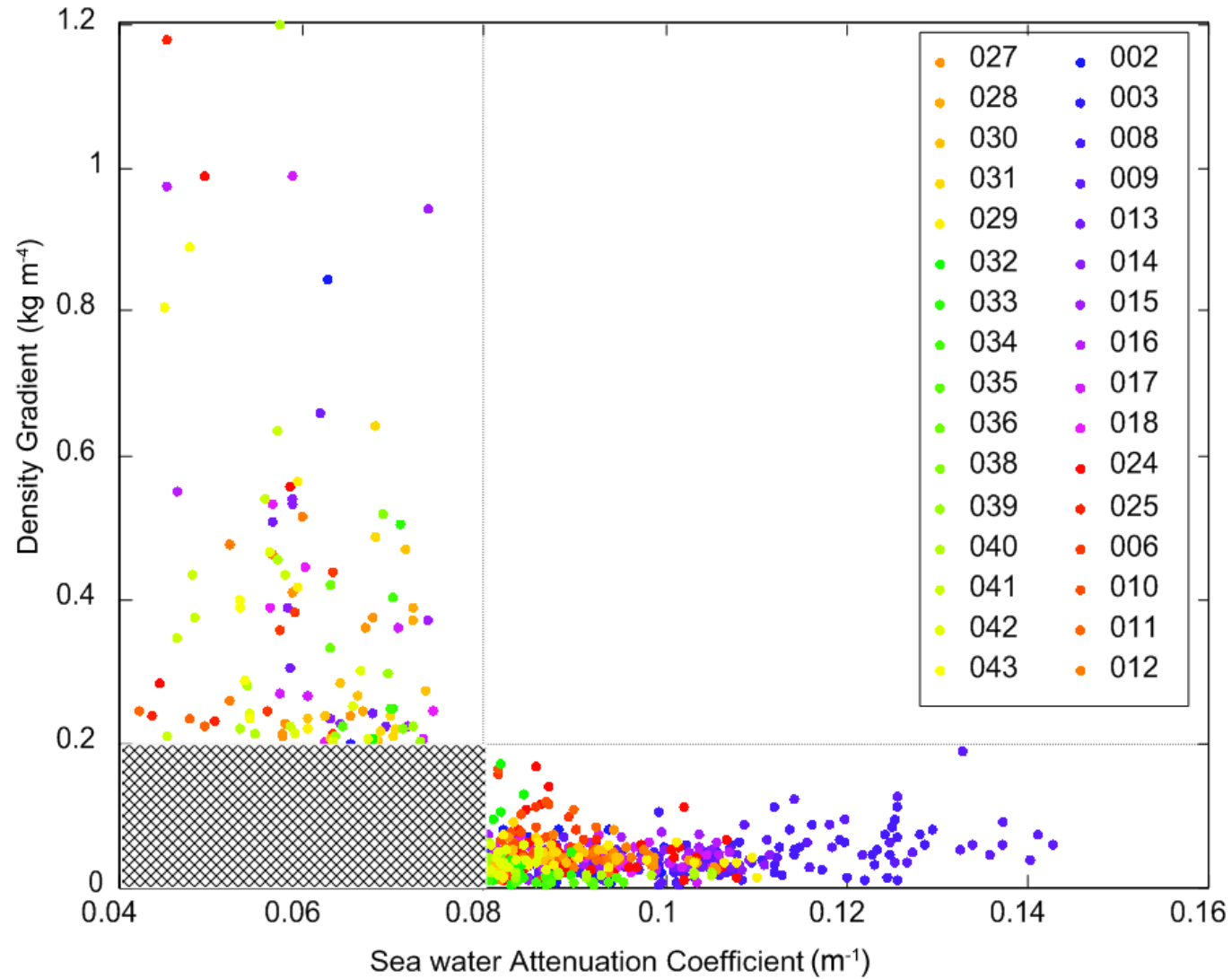


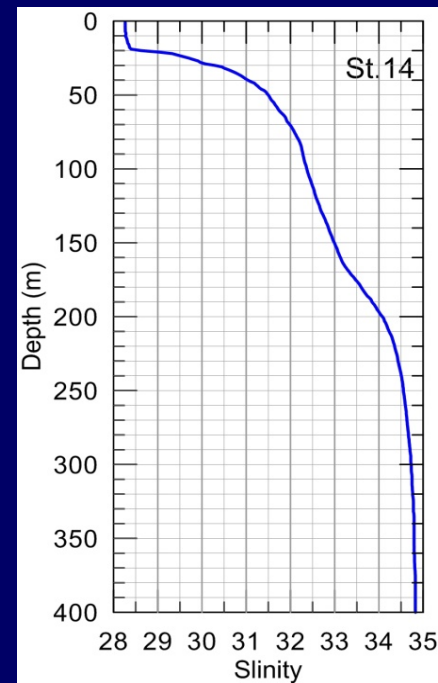
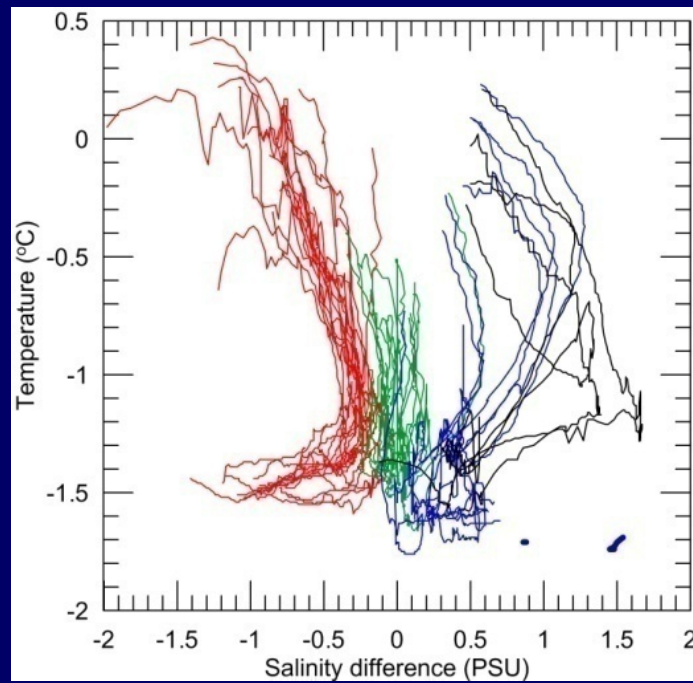
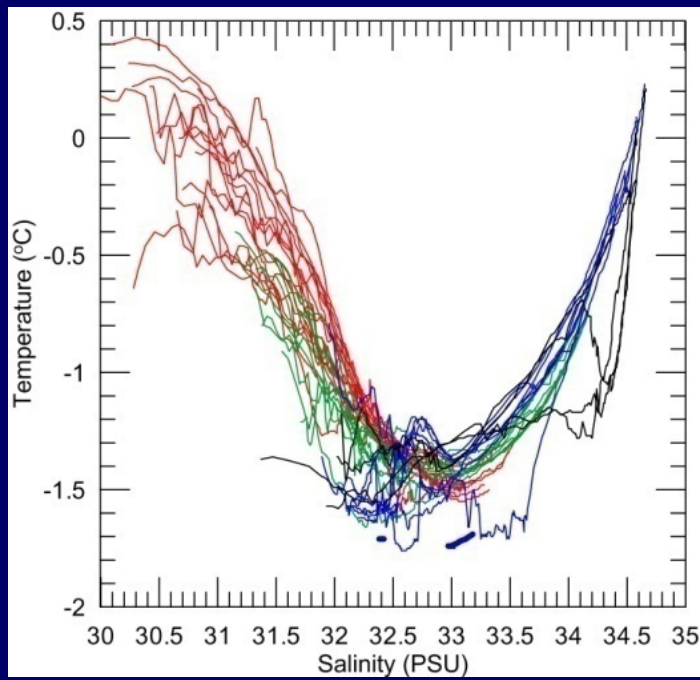


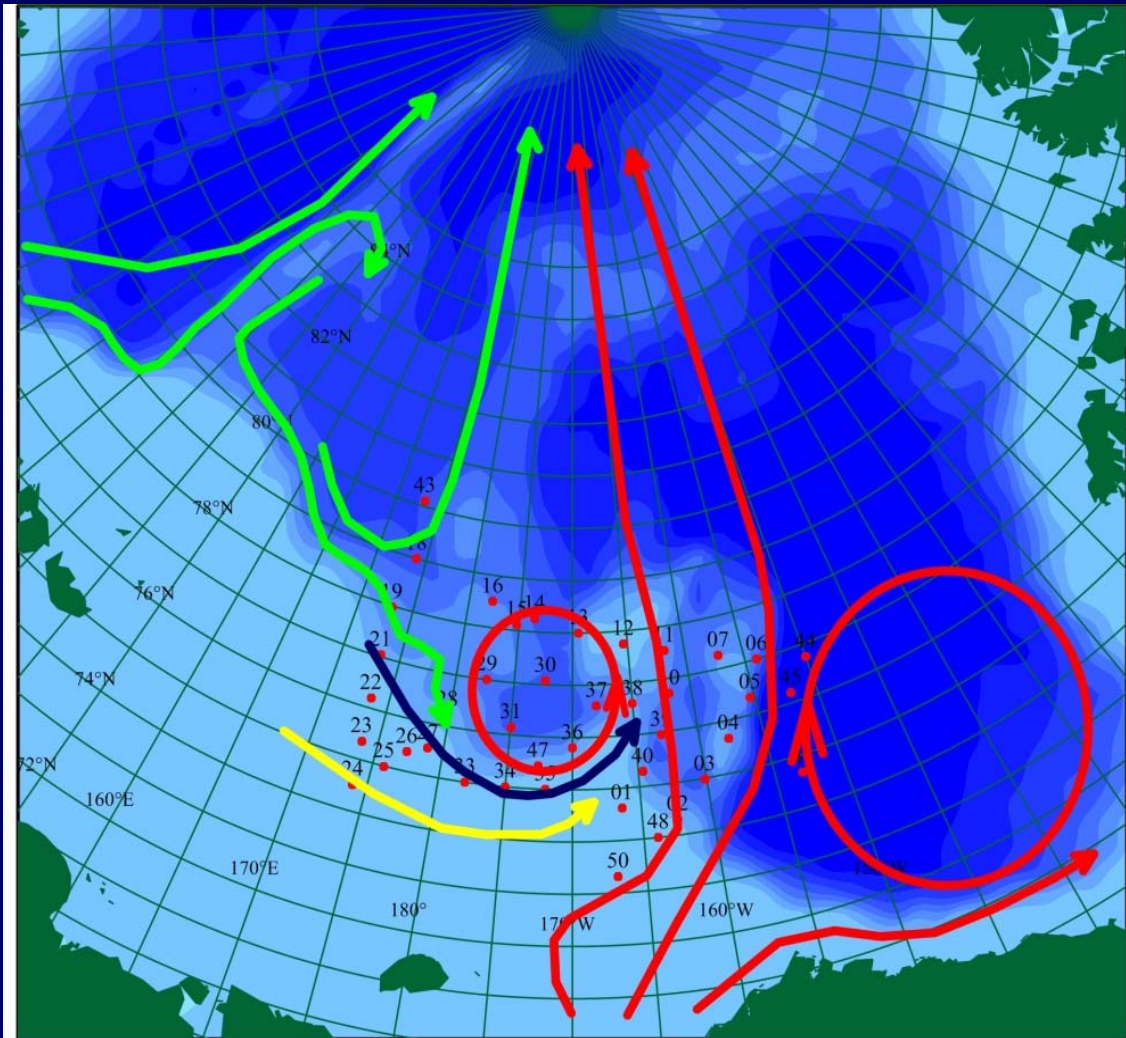




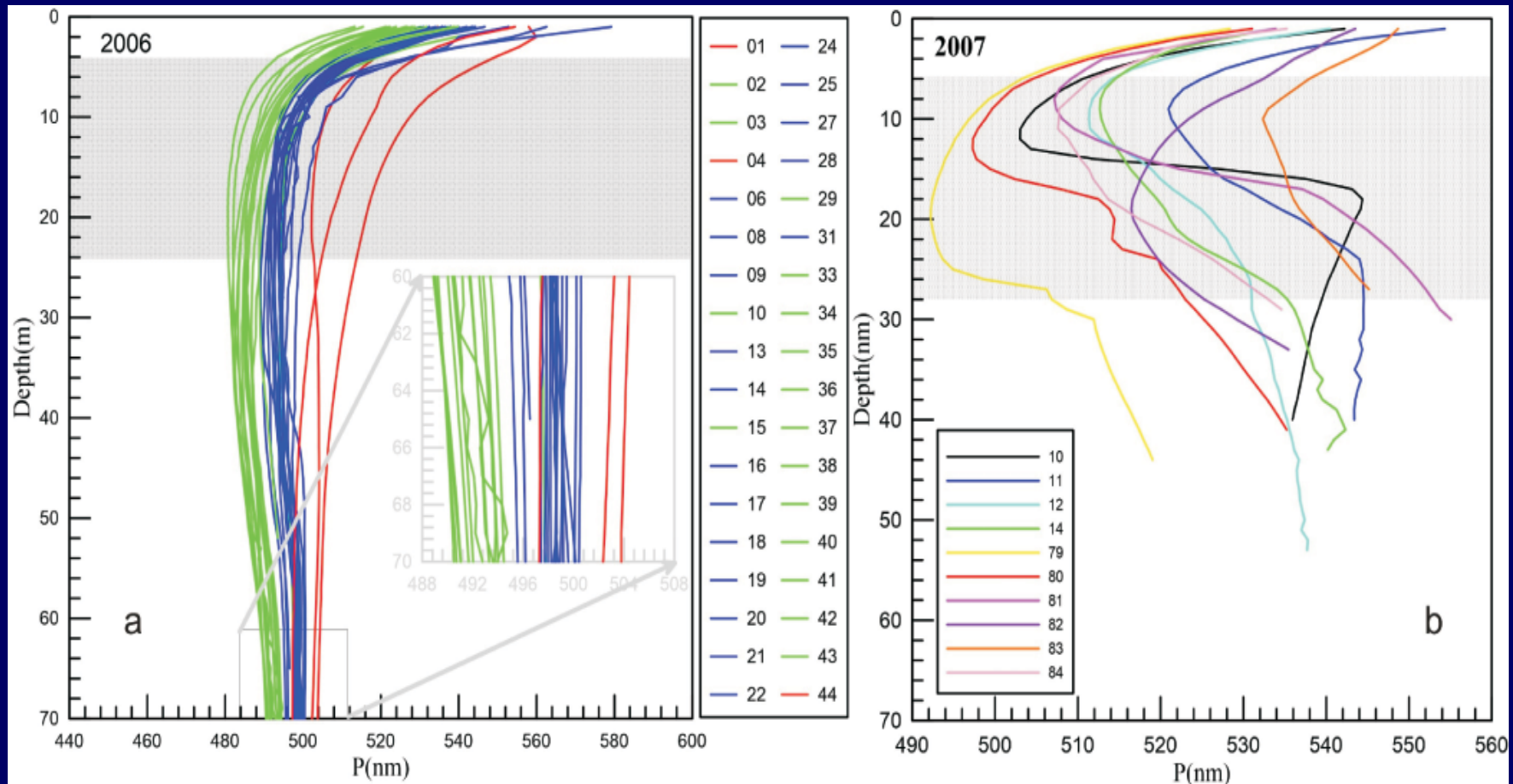
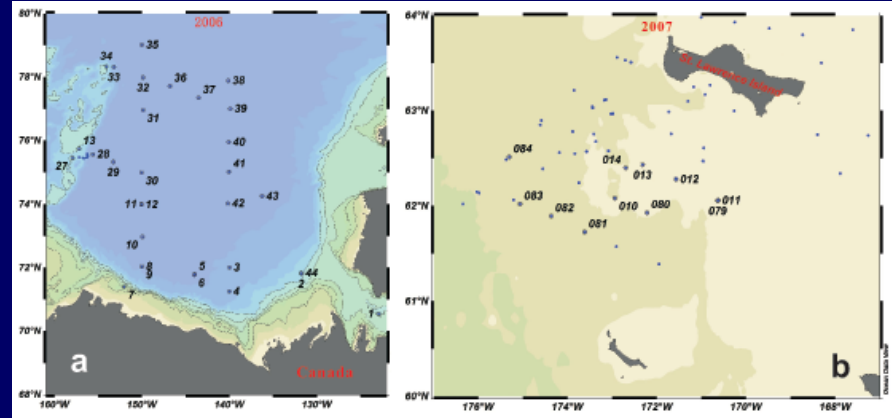
Detached attenuation-stratification in summertime



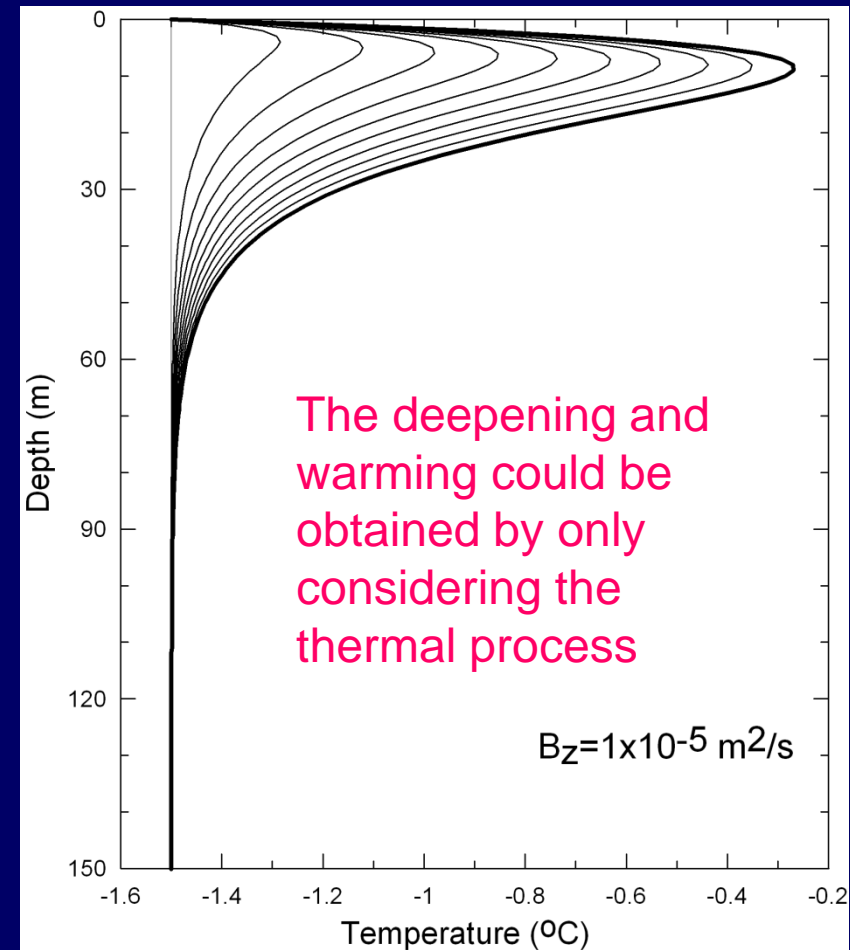
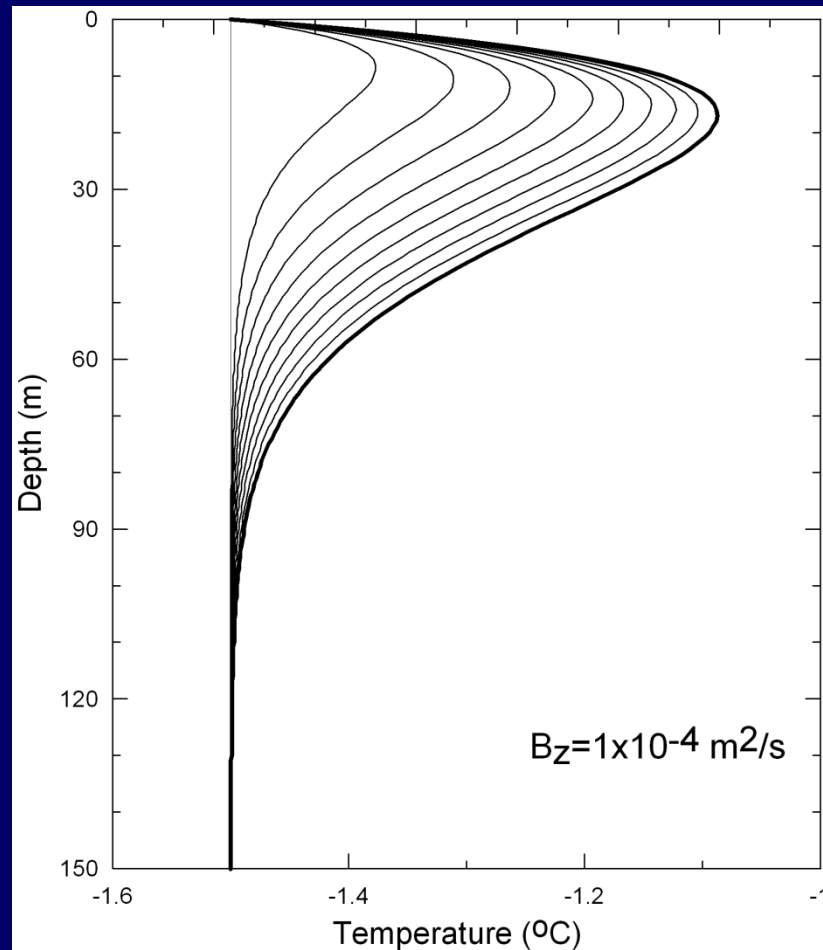




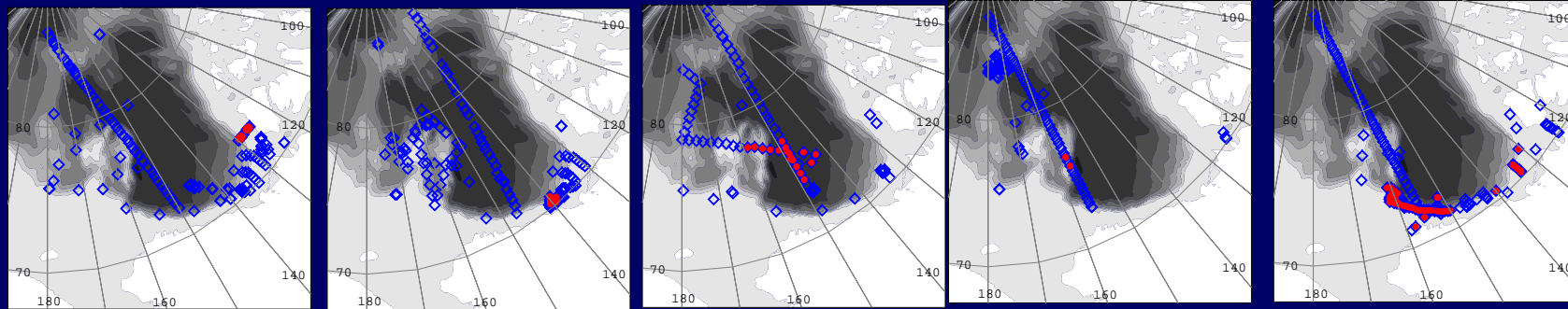
Principle wavelength



Deepening of the NSTM with different thermal diffusive coefficient



Spatial distribution of NSTM during 1993- 2010



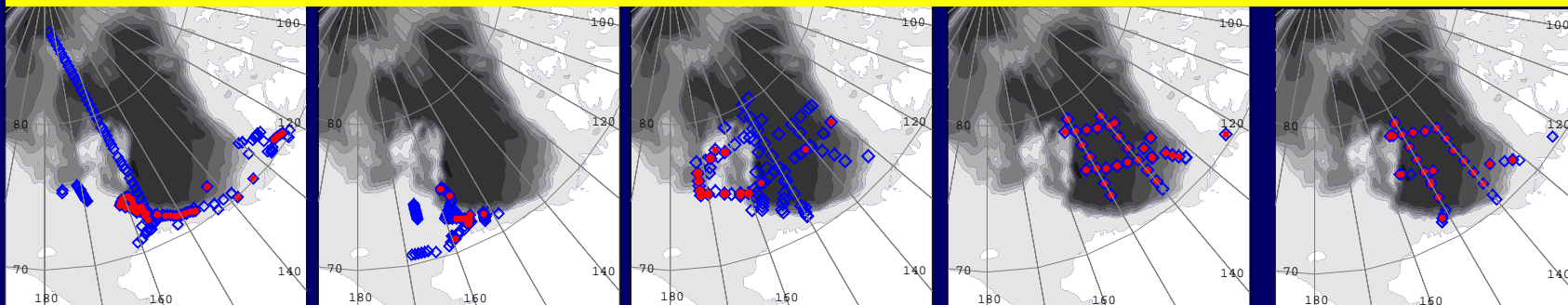
1995

1996

1997

1998

1999



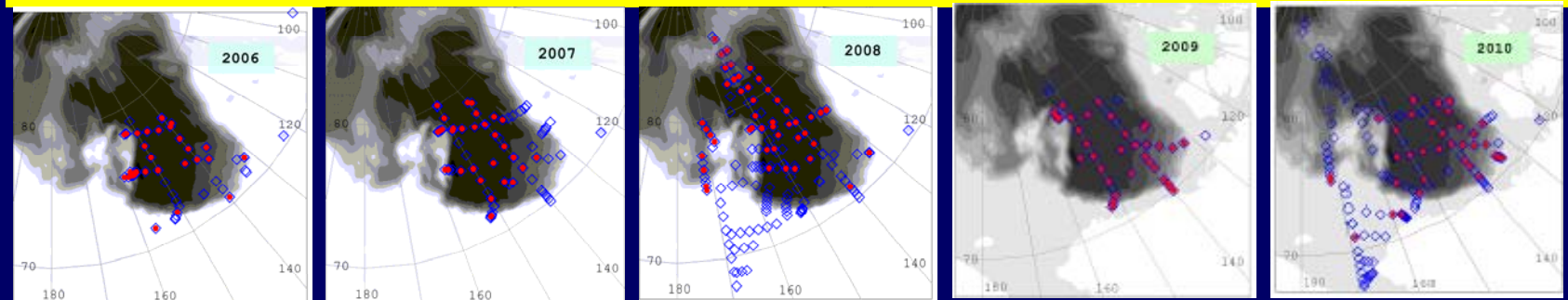
2000

2002

2003

2004

2005



2006

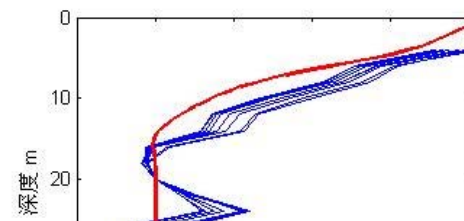
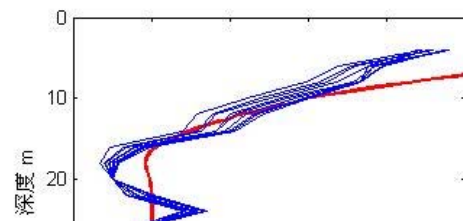
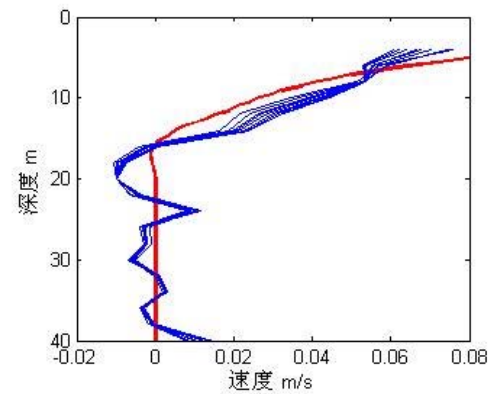
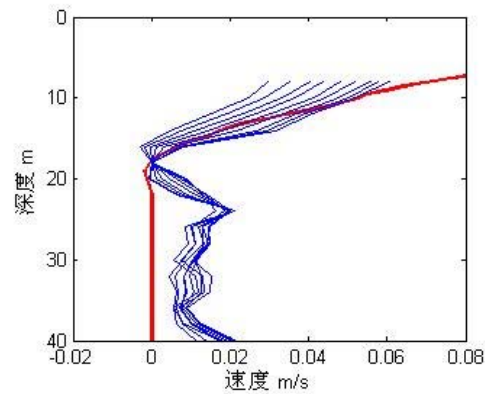
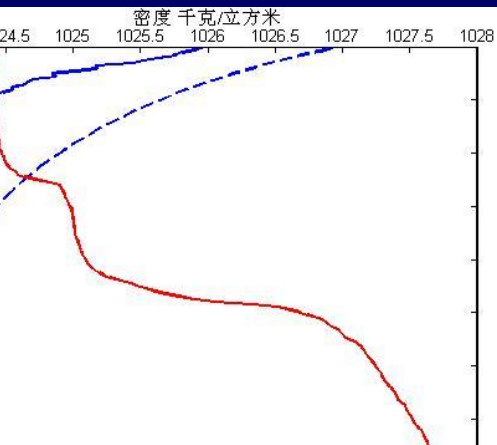
2007

2008

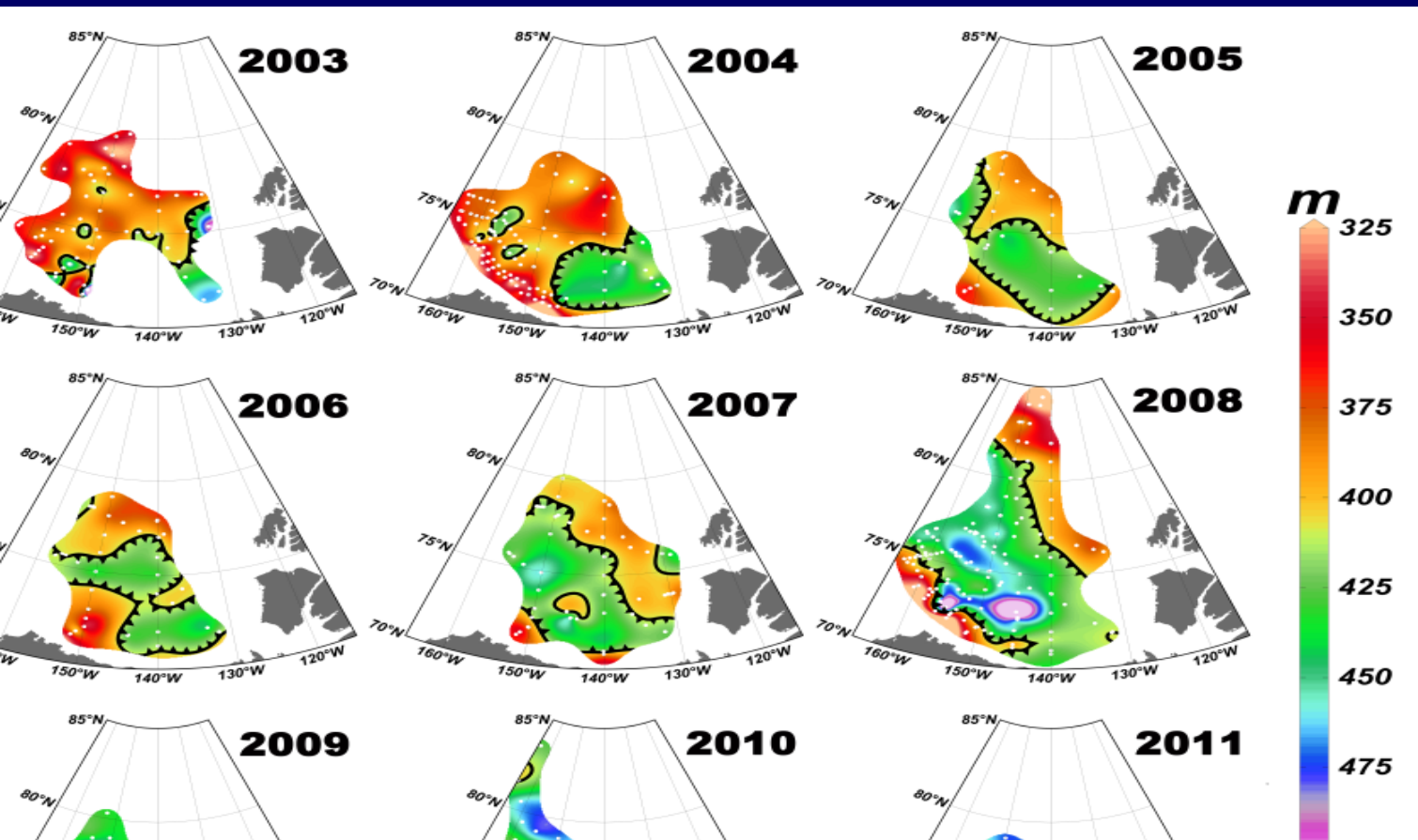
2009

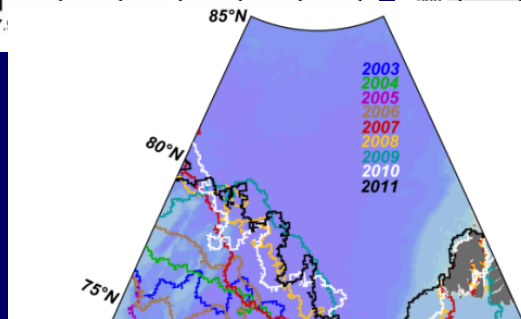
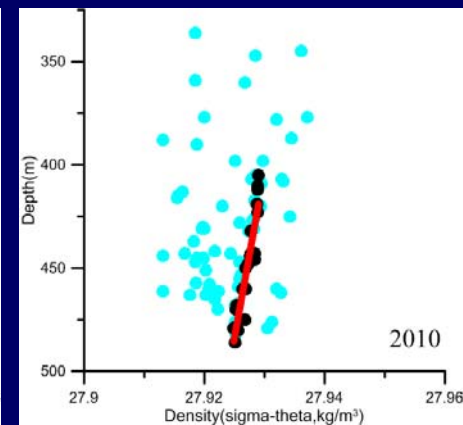
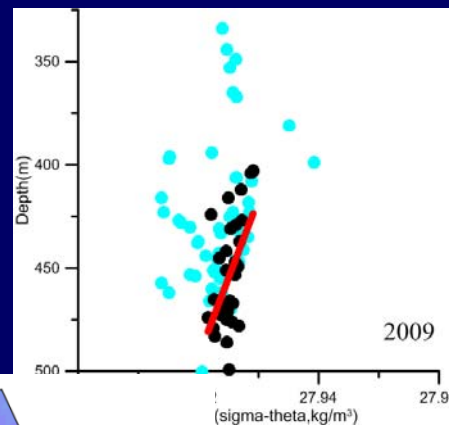
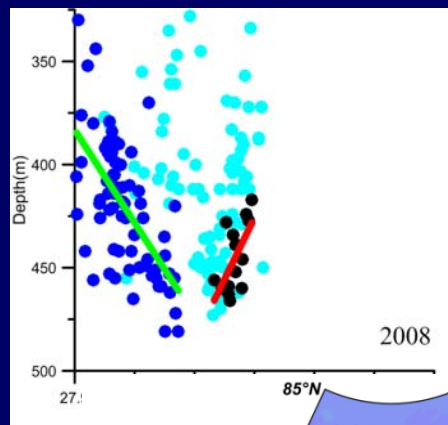
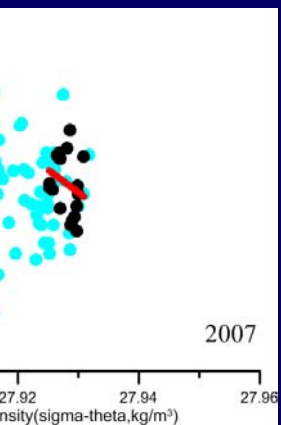
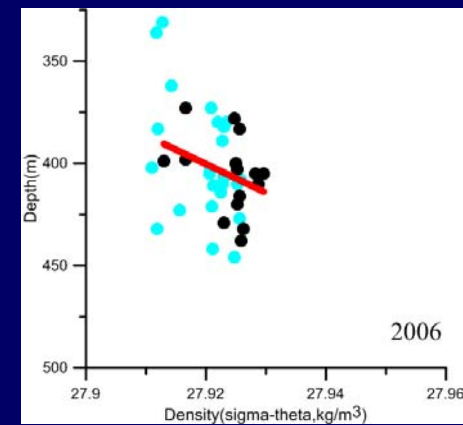
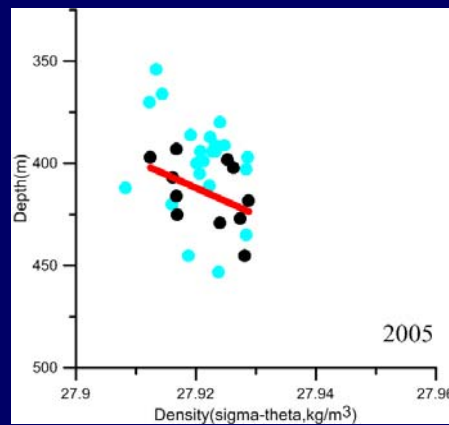
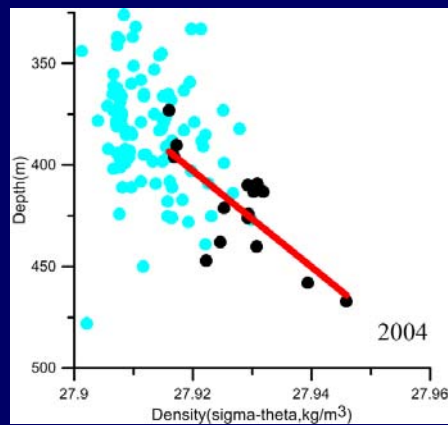
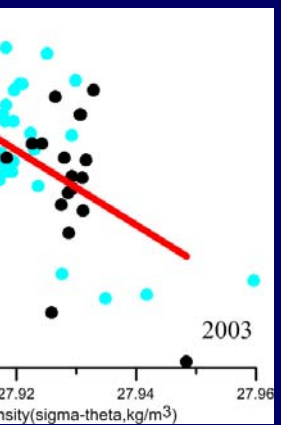
2010

Thinning of Ekman layer in upper Arctic



Deepening and extending of Atlantic water

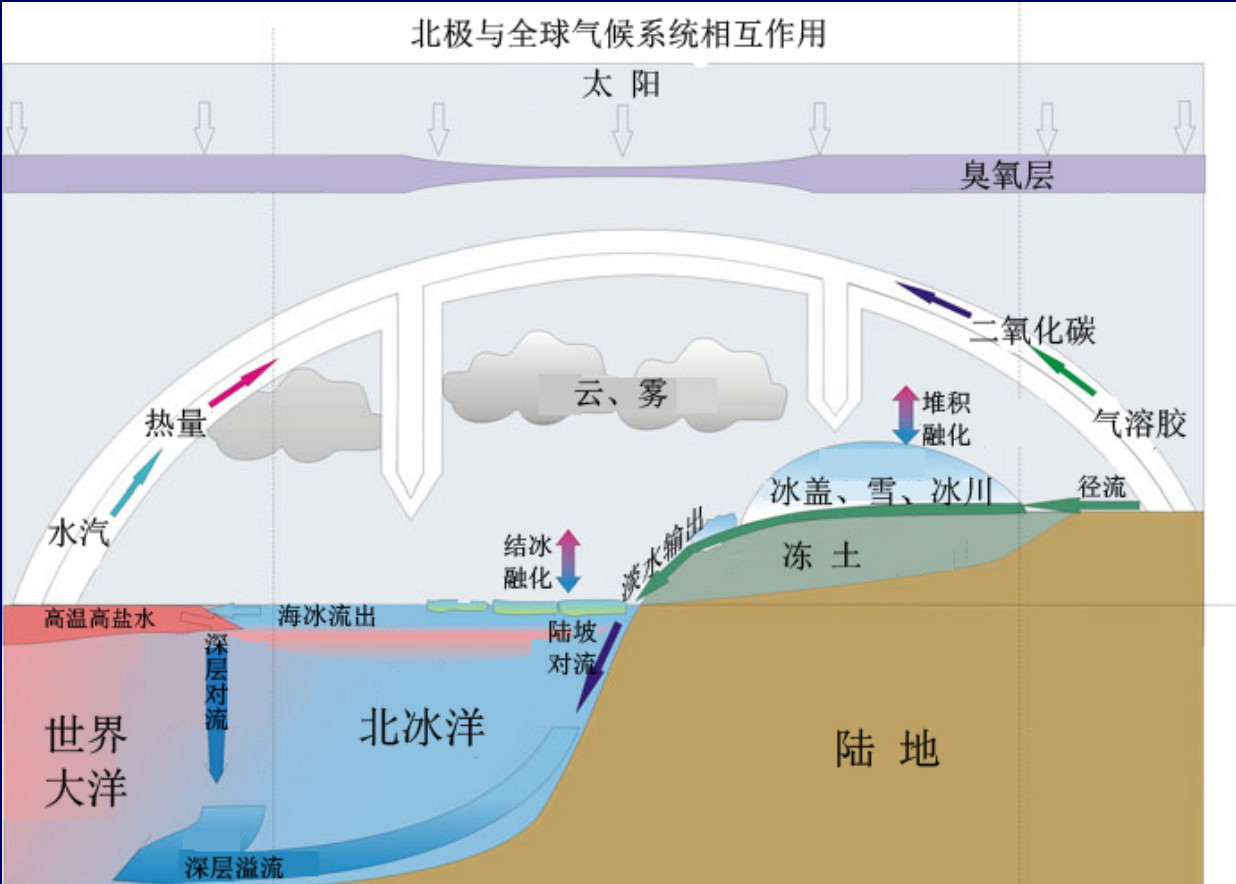


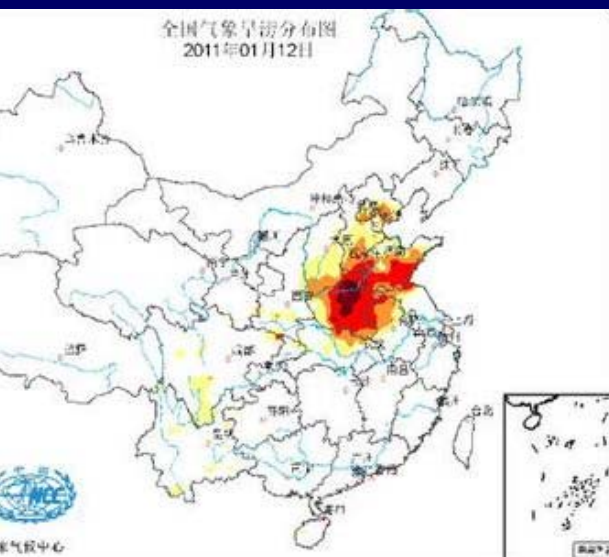


Main funding of Ocean University of China

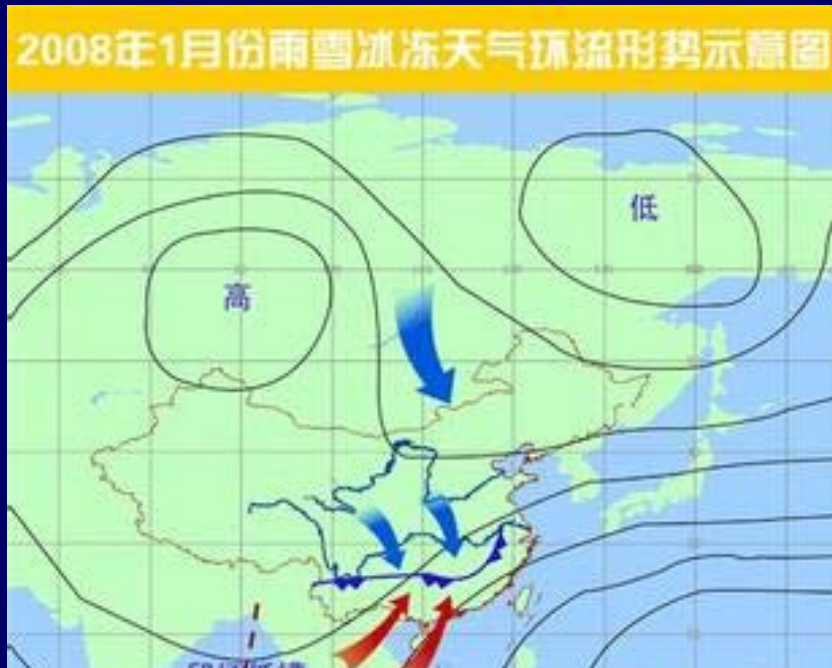
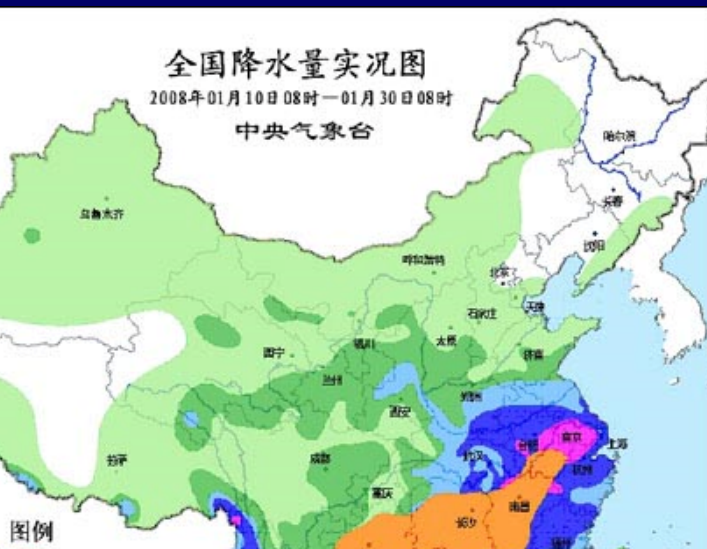
	Projects	by
	Exploration and assessment for Arctic and Antarctic environment	CAAA
	Mechanism of Arctic Amplification and its global climate effects caused by Arctic sea ice retreat	MOST
	Coupling variation of Arctic sea ice with upper ocean circulation and its effect on climate	C-NSF
	Arctic Fog Variability in a Warming Arctic and Its	Belmont

Impact of Arctic change on global climate



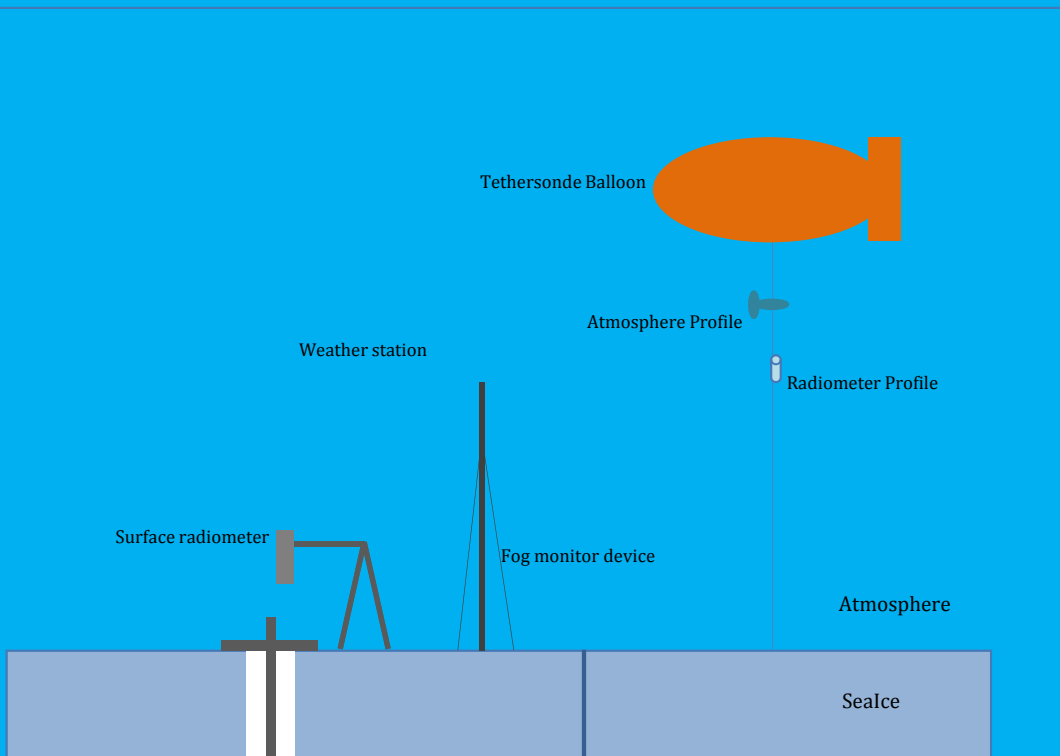


Frozen rain in southern China and draught in northern China in 2008 and 2011



Belmont Forum

Arctic Fog Variability in a Warming Arctic and Its Impact on Maritime Human Activities

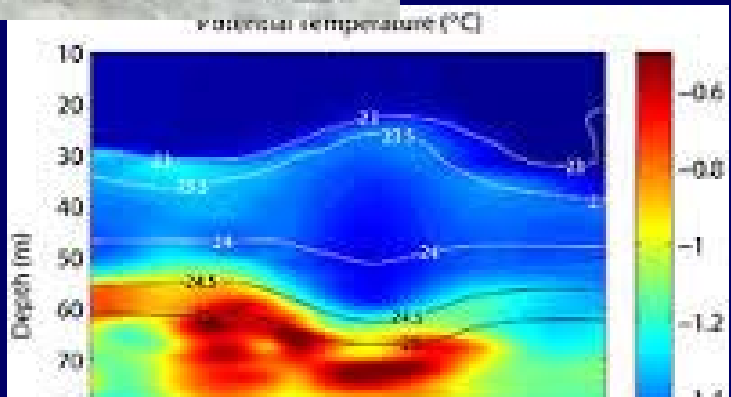
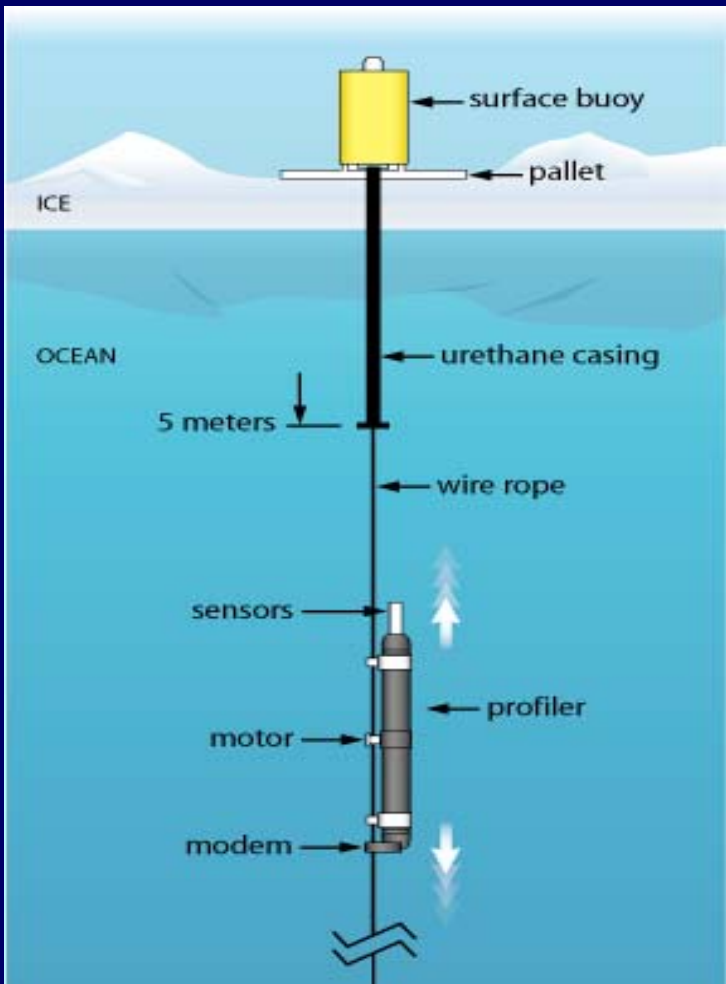




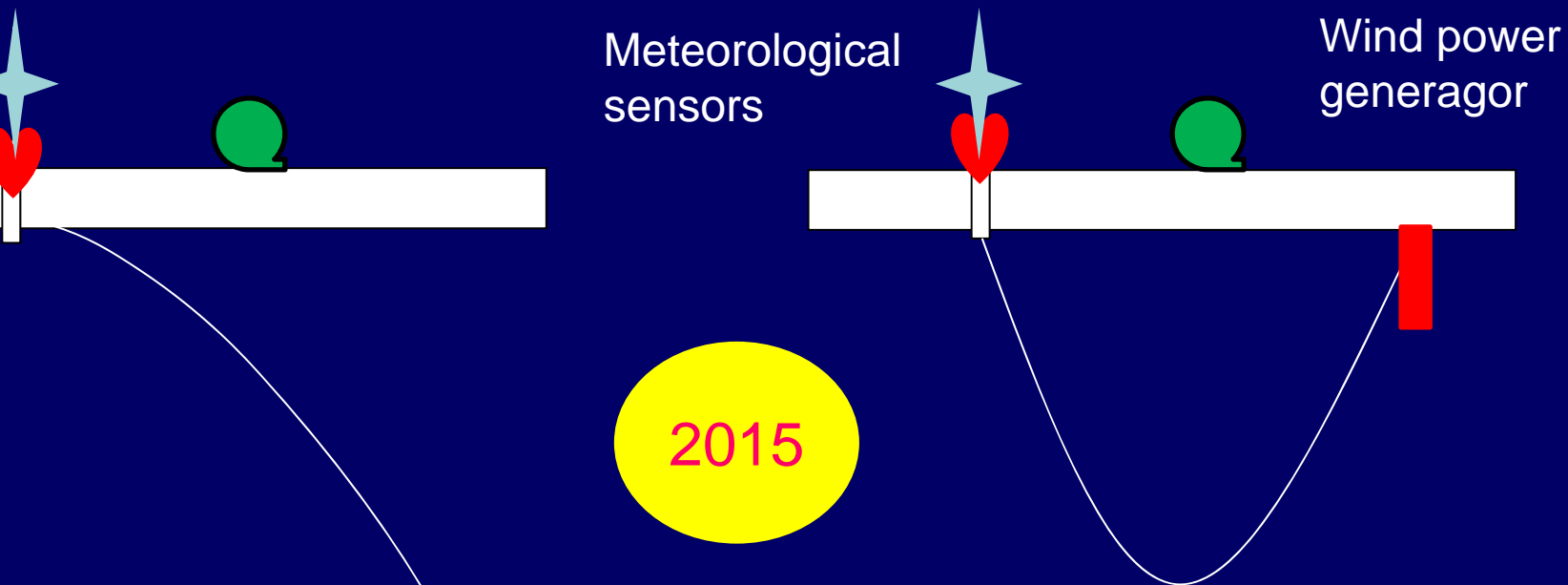
ITP deployment collaborated to WHOI



2014



4. ITP for upper ocean---- a tailed buoy



Cable length: 120 m

109 m for drifting speed of 0.1 m/sec

65 m for drifting speed of 0.5 m/sec

1.4 times per day

2015-2019 Potential Arctic cruises

