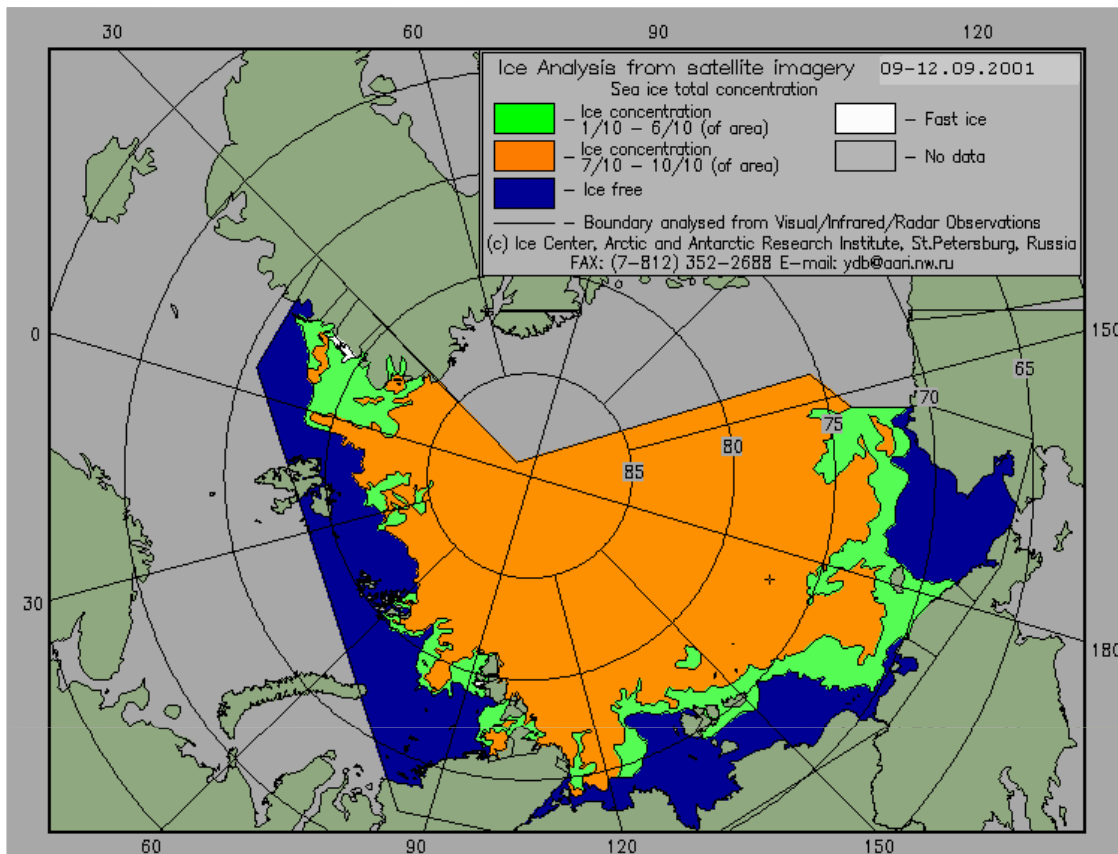


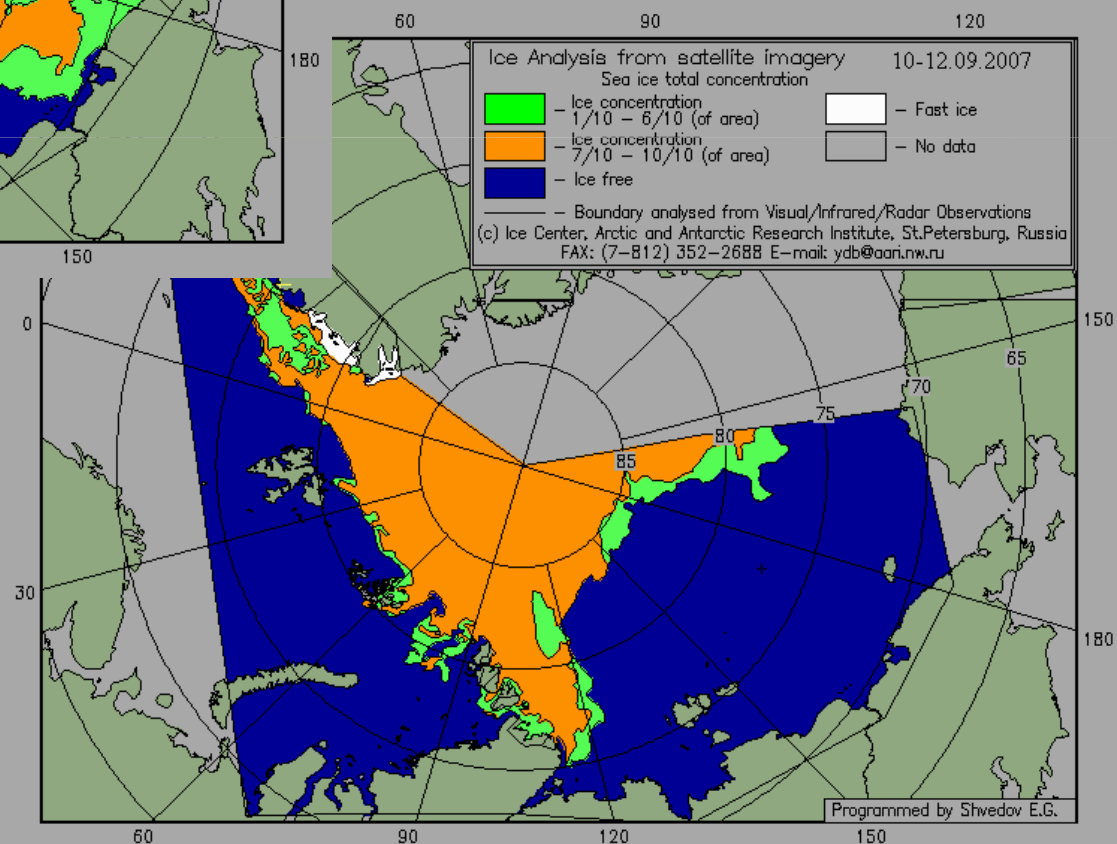
Recent Russian marine research activities in the Arctic Ocean

*Arctic and Antarctic Research Institute
Saint-Petersburg, Russia*

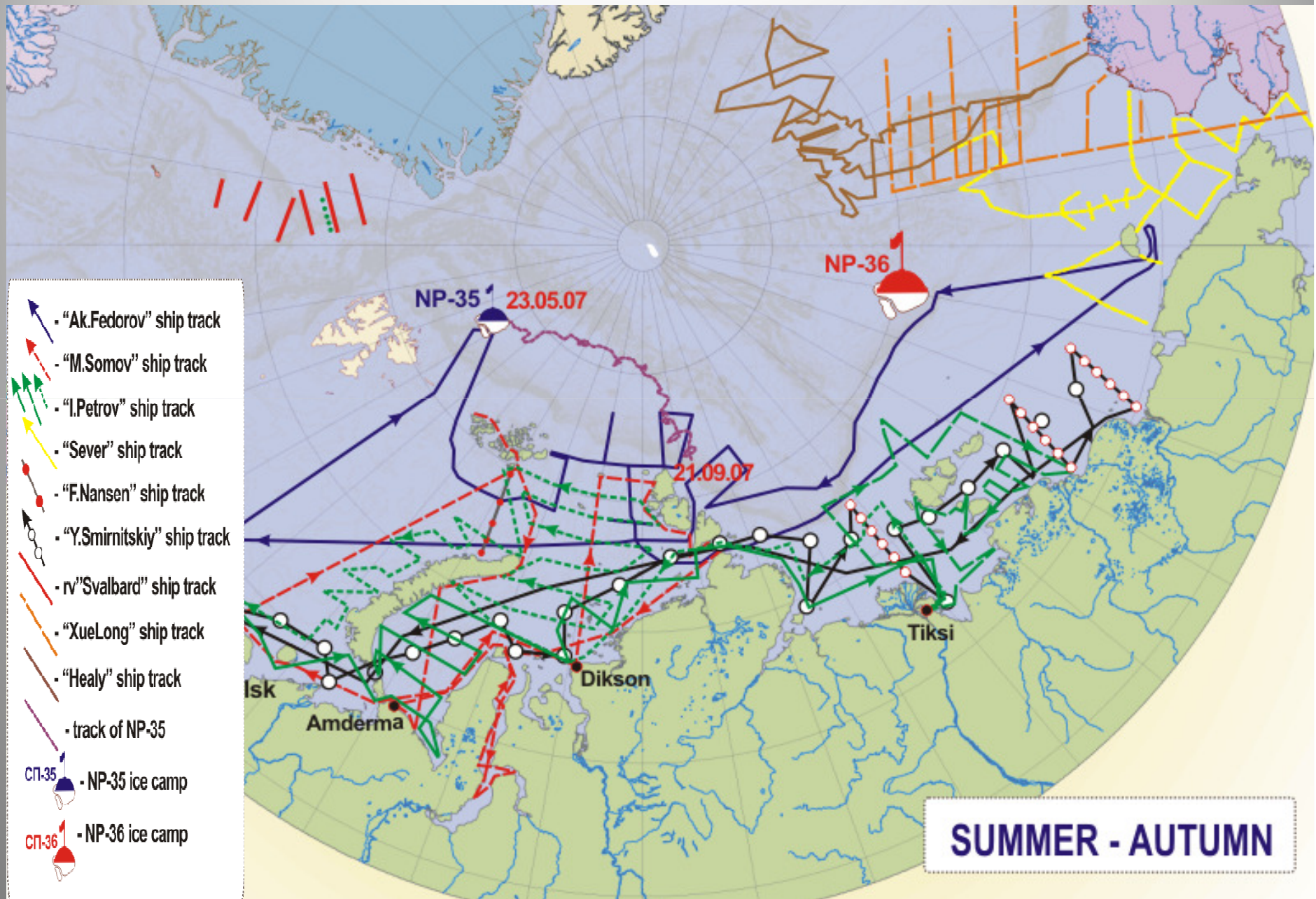


There were significant changes in the Arctic at the last decades: substantial growth of the frequency and the intensity of the cyclones accompanied by rise in the air temperature.

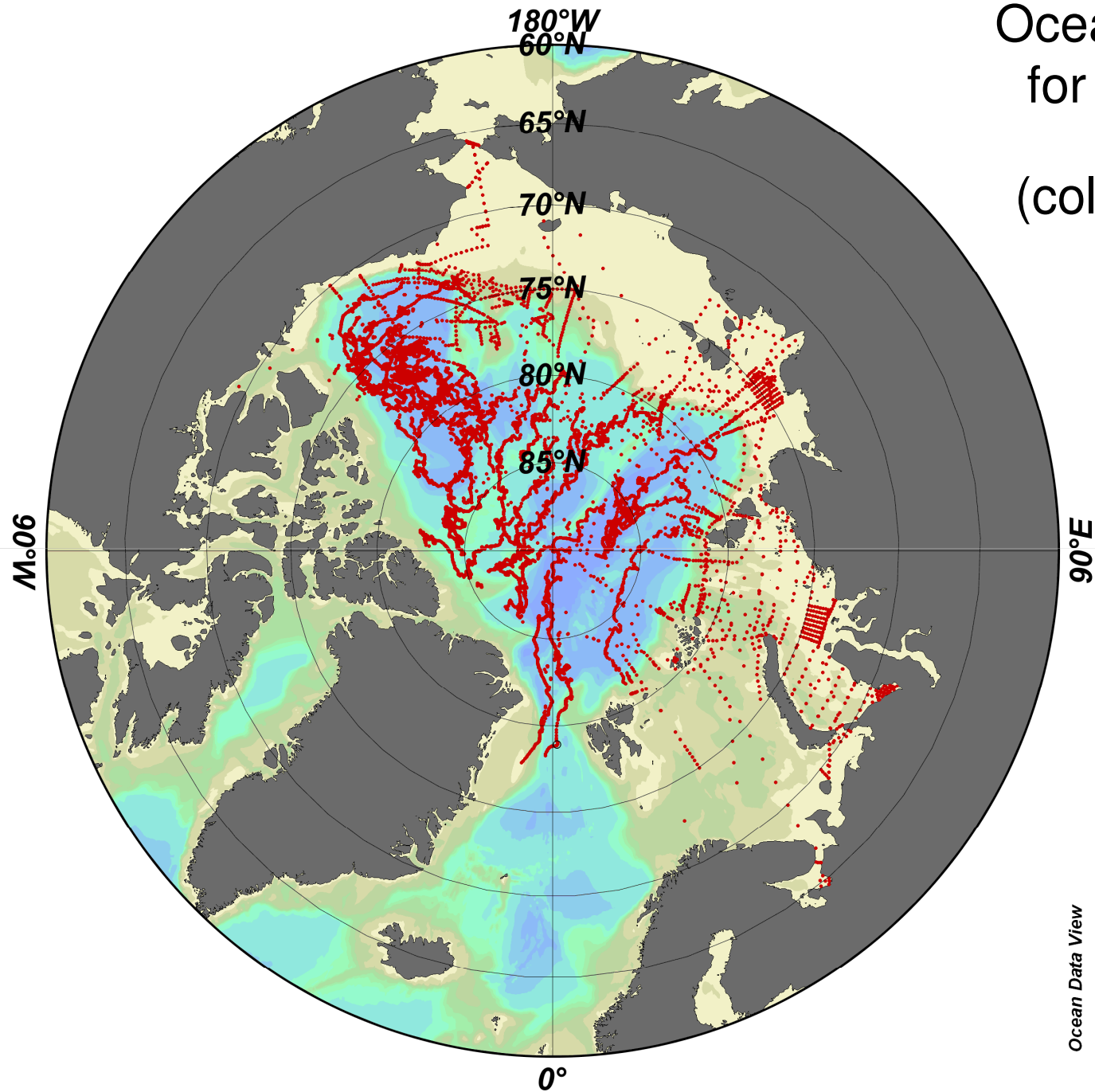
The intensification of the cyclonic component of a polar vorticity and the rise in the air temperature has led to decrease of the ice thickness and to reduction of the ice cover. The climate changes have caused essential changes in thermohaline structures of the Arctic Ocean waters.



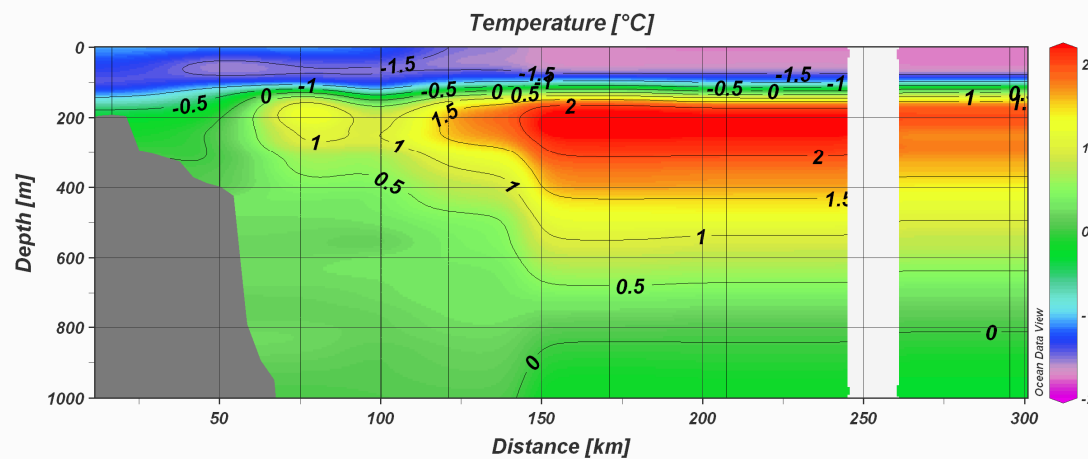
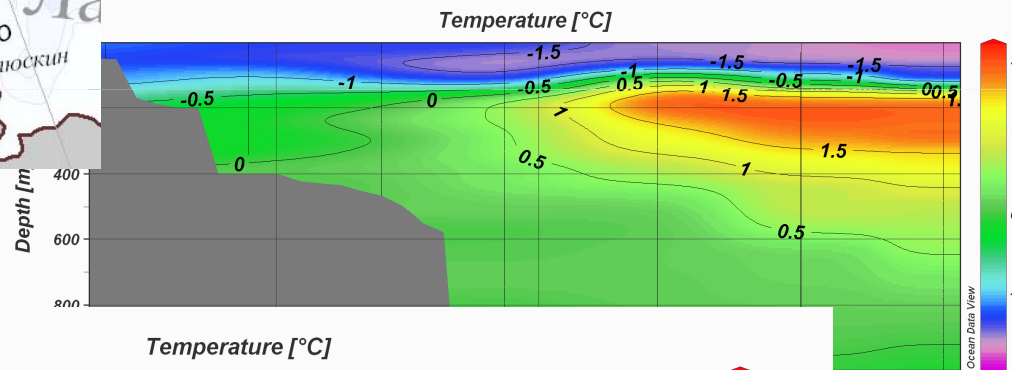
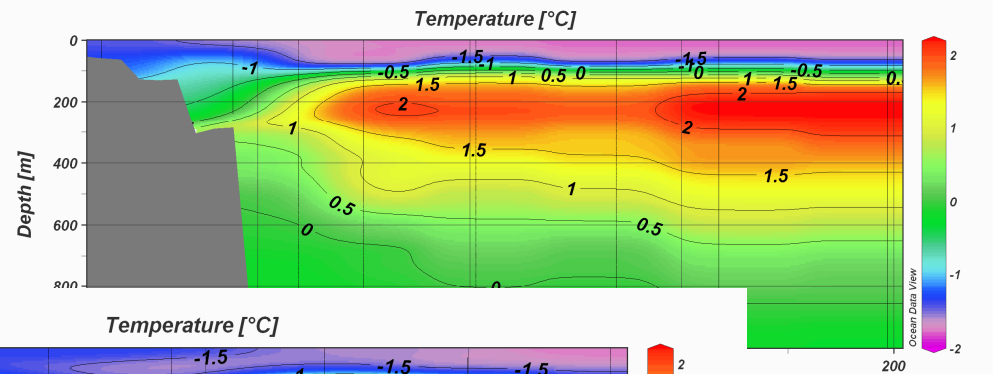
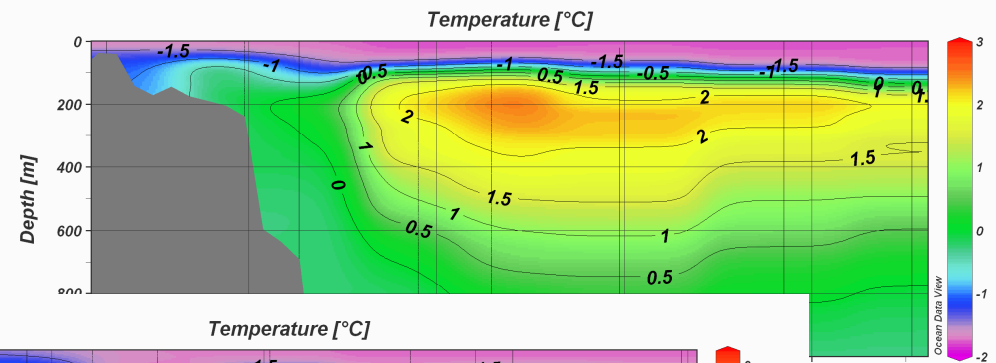
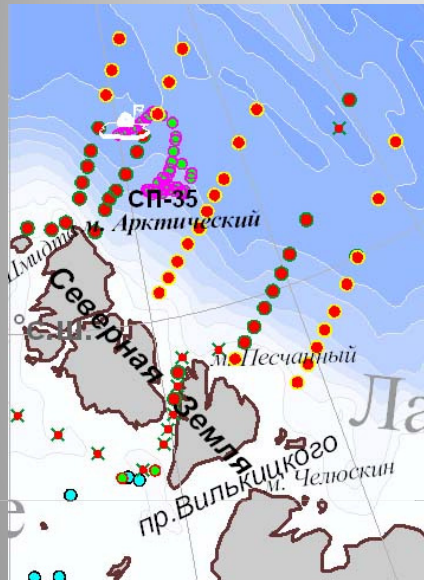
Marine activities in the Arctic ocean in 2008



Oceanographic data
for the period IPY
2007/08
(collected in AARI)

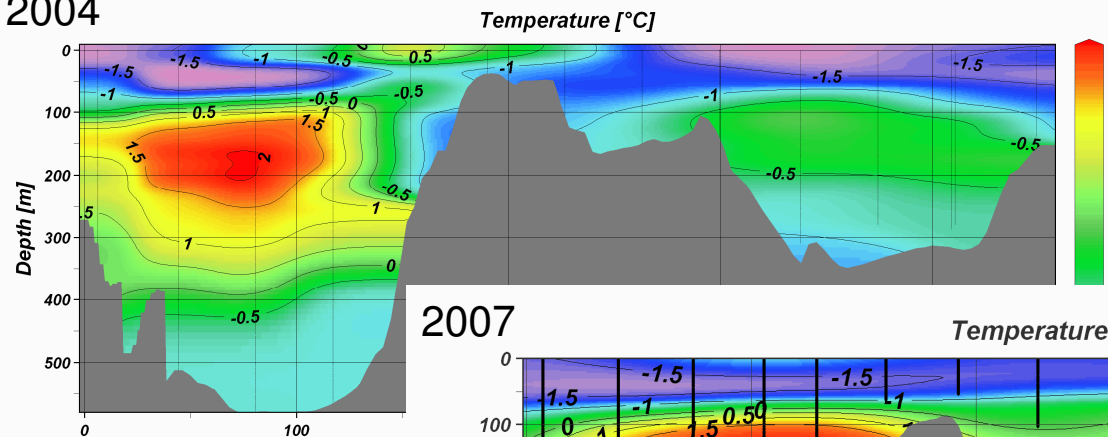


Shape and temperature variability on “Severnaya Zemlya” polygon 2008

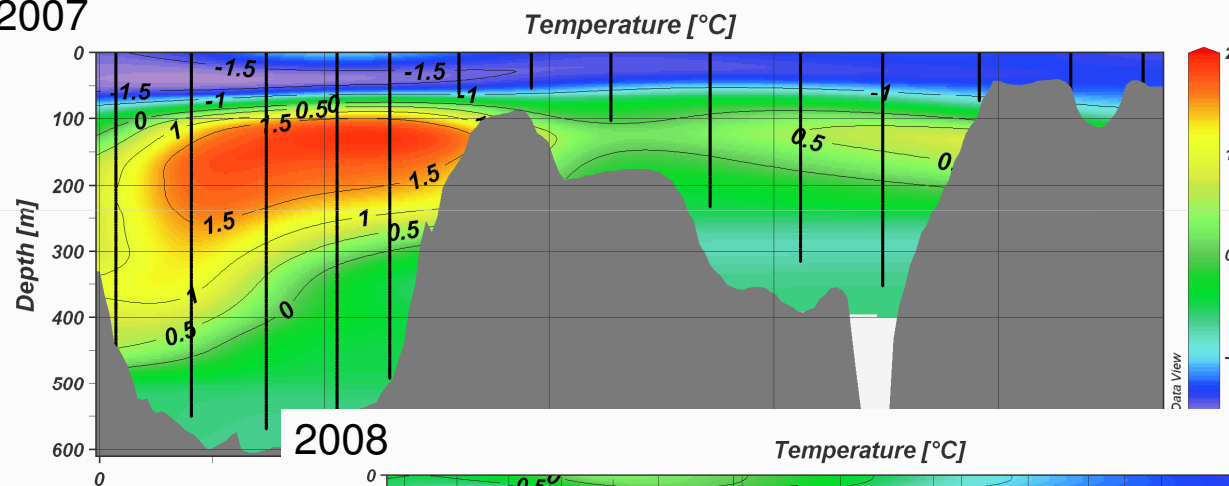


Water temperature transection Franz-Josef Land – Severnaya Zemlya

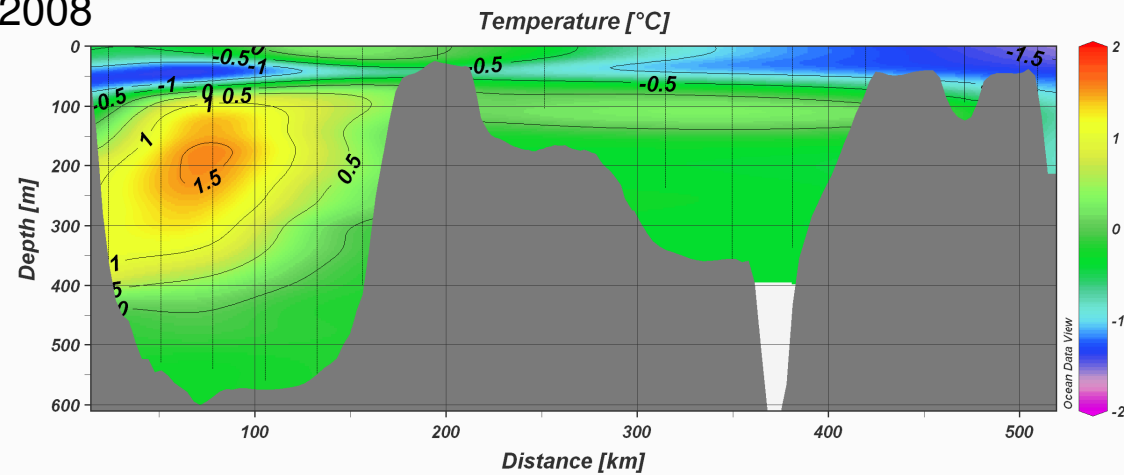
2004



2007



2008



In the Result of the Oceanographic Research Work it has been determined:

water temperature in the core of the Atlantic Waters in the Arctic Ocean has increased for 0,5°C, and the layer thickness has increased for 100-150 meters predominantly at the expense of depth increase of Atlantic water propagation. There were no significant changes in the state of the Atlantic waters in the eastern part of the Arctic Basin;

significant freshening of the surface layer is observed practically everywhere; it is perhaps connected with intensive melting of ice cover, increase of atmospheric precipitation and increase of river runoff;

ice free vast water areas of the marginal seas and the Arctic Basin happened in the summer of 2007; in the result of it, the surface layer in the northern part of the East-Siberian and Chukchi seas, usually covered with ice, has warmed for 5-7°C. Therefore, significant heat storage has formed in the marginal seas and the Arctic Basin.

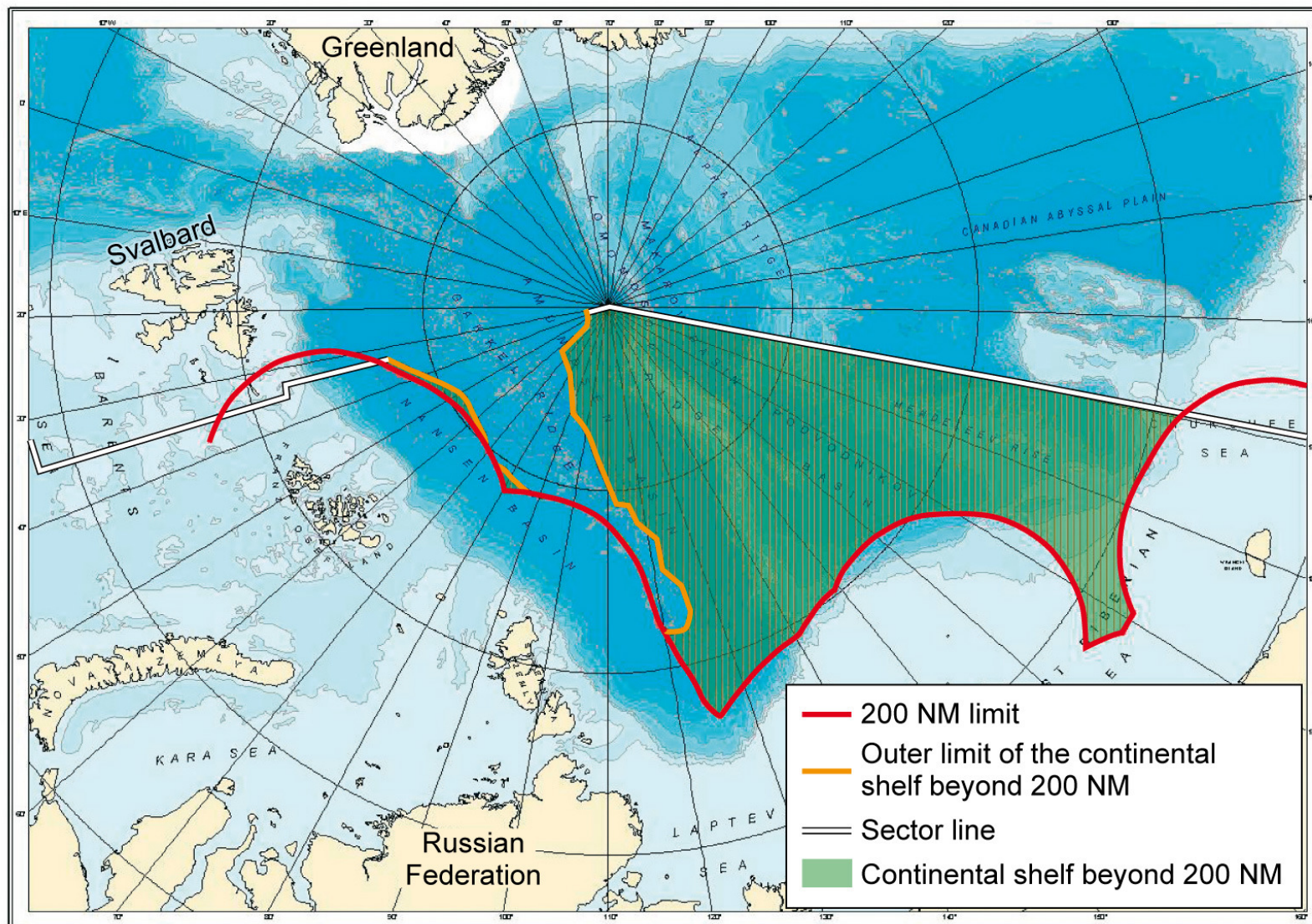
Main results are published in the “Review of hydro-meteorological processes in the Arctic Ocean”, St.Petersburg, 2008.

http://www.aari.ru/resources/m0035/gm_review_2008_2.pdf

;http://www.aari.ru/resources/m0035/gm_review_2008_1.pdf

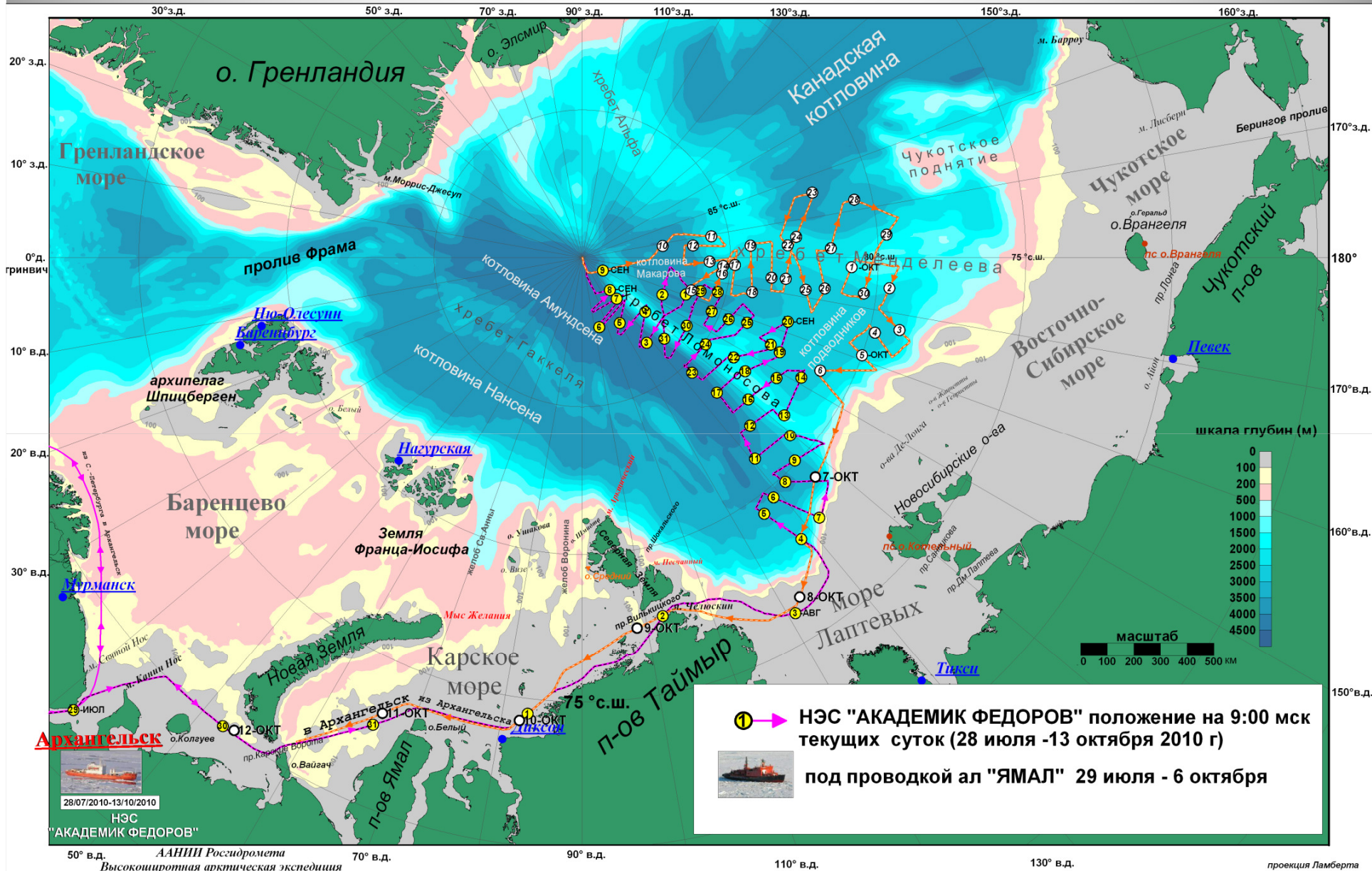
http://www.aari.ru/resources/m0035/gm_review_2007.pdf

All mentioned facts of extreme changes observed in the Arctic Basin in 2007-2008 motivate us continuing the monitoring programs in the Arctic Ocean during International Polar Decade

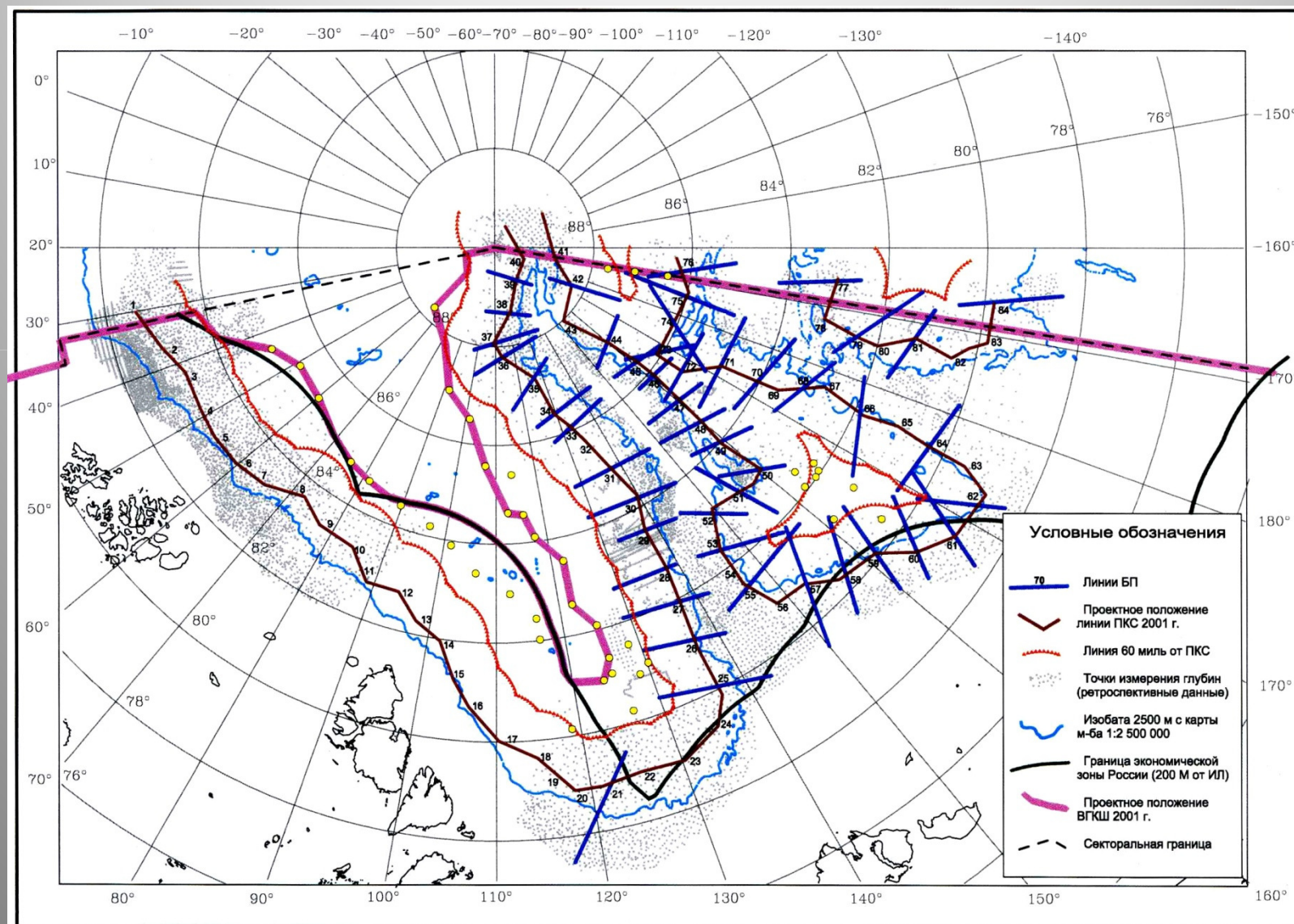


Submission by the **Russian Federation** in 2001 – CLCS recommended a revised submission in 2002 – additional field work is ongoing – no deadline.

ROUTE of RV «AKADEMIK FEODOROV» IN "SHELF - 2010"



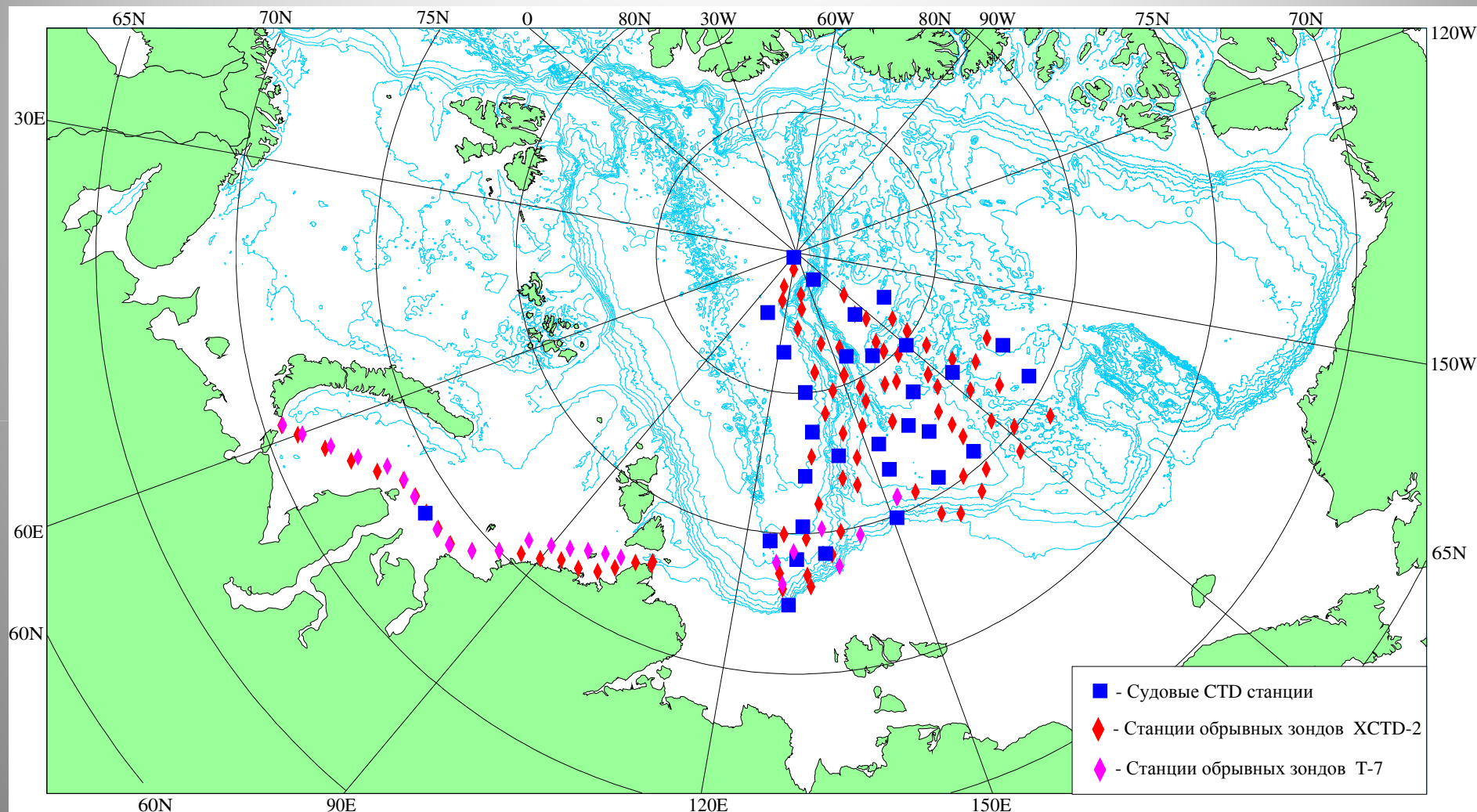
“Schelf-2010” bottom depth measurements



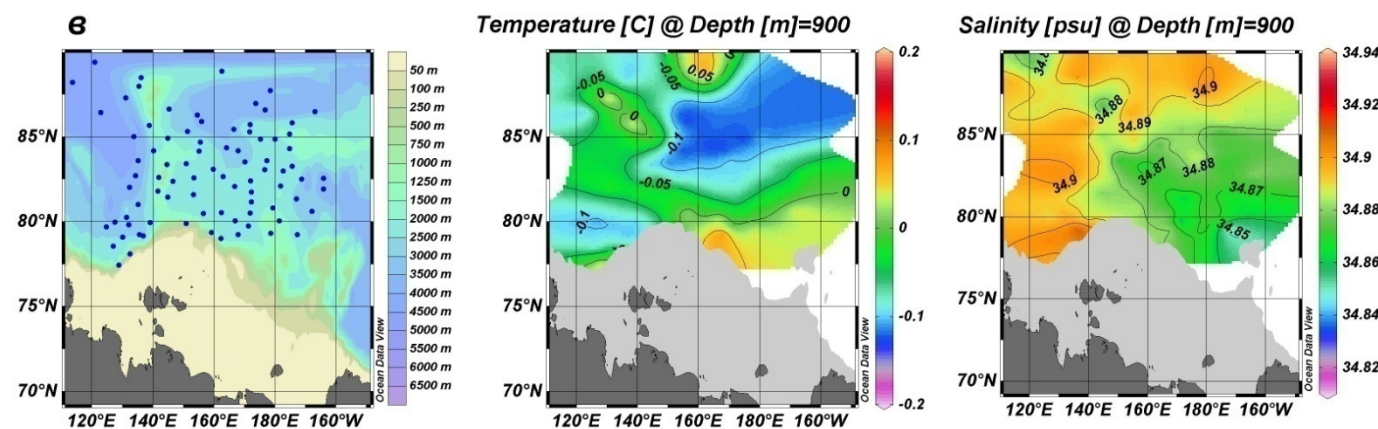
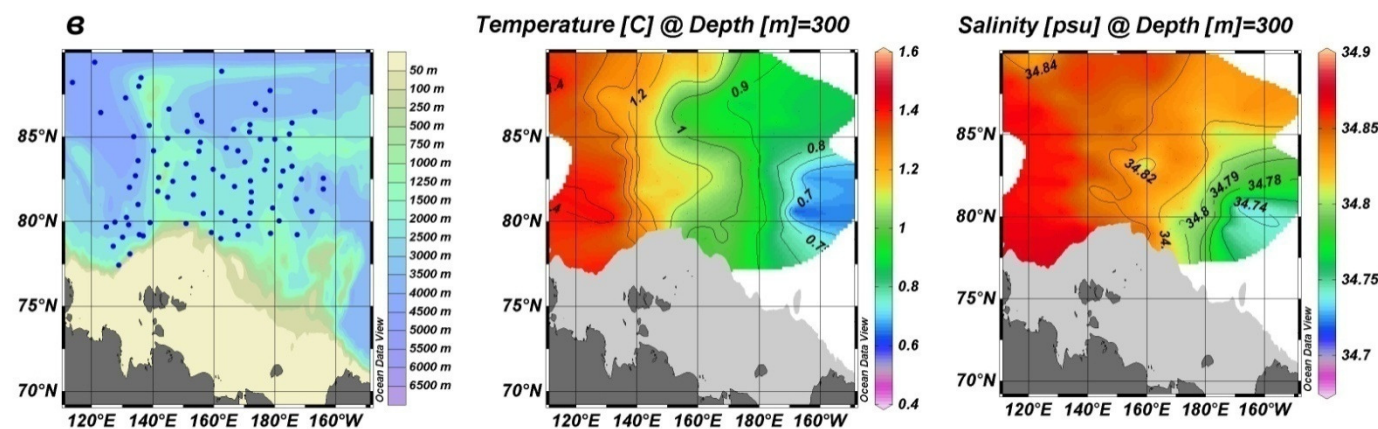
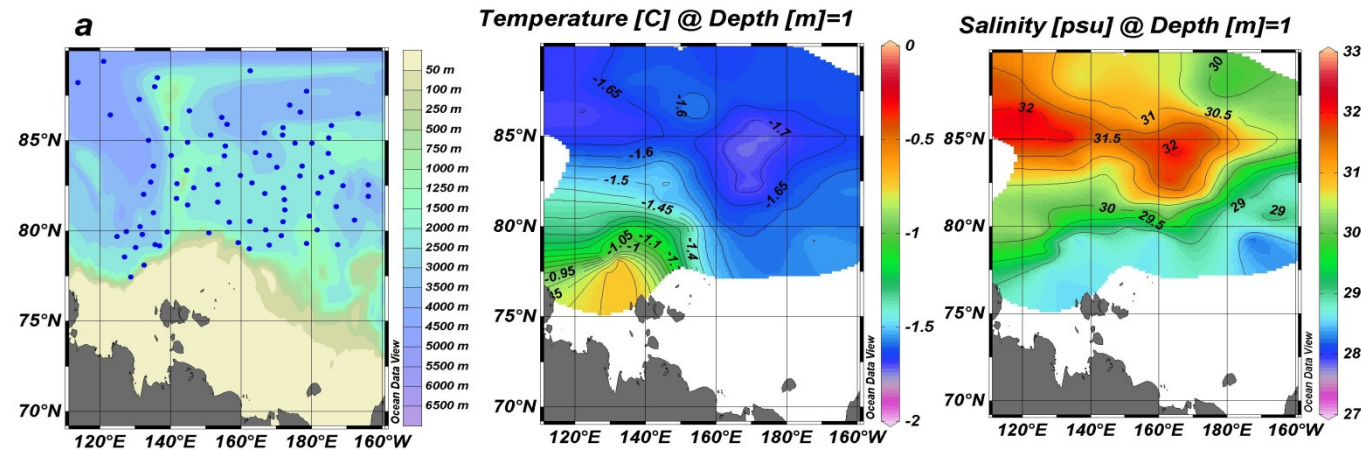
Scientific researches of expedition "Shelf - 2010" were carried out on the following disciplines:

- *physical oceanography and marine chemistry;*
- *processes of interaction in system “atmosphere – sea ice – ocean upper layer”;*
- *gases in atmosphere;*
- *sea ice;*

Position of oceanographic stations in expedition "Shelf - 2010" onboard RV "Akademik Fedorov"



are executed 149 oceanographic stations, from them 30 with use of a ship CTD-profiler, 92 stations with use expendable XCTD2-sondes and 27 stations with use expendable XBT7-sondes



Spatial distribution of a water temperature and salinity on horizons of 1 m, 300 m, 900 m

New research and supply vessel for Antarctica “Akademik Treshnikov”



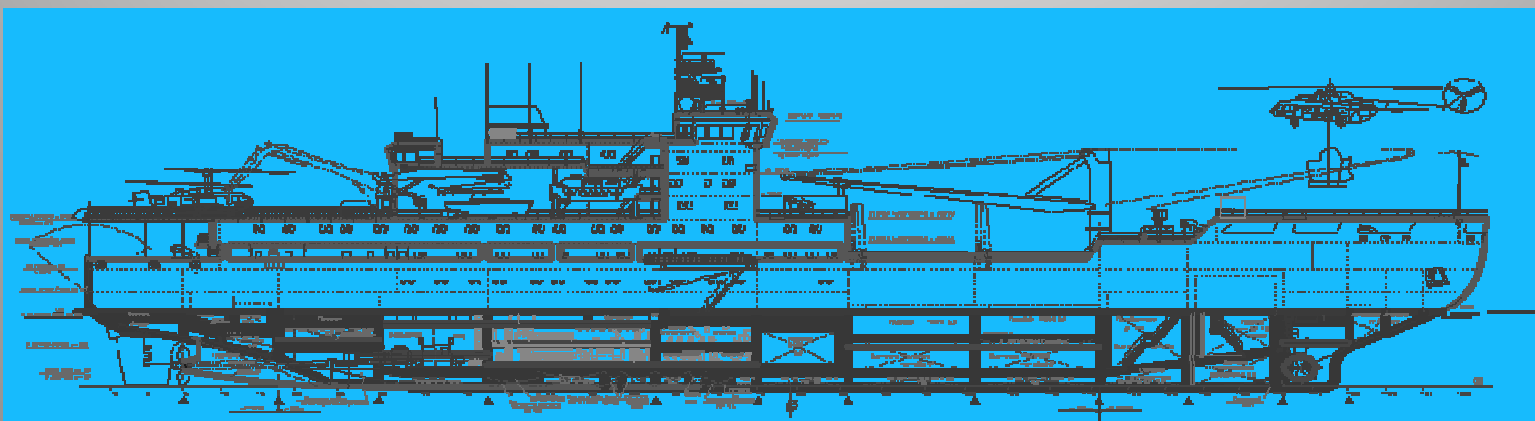
Length max – 133.57м;

Width max – 23м;

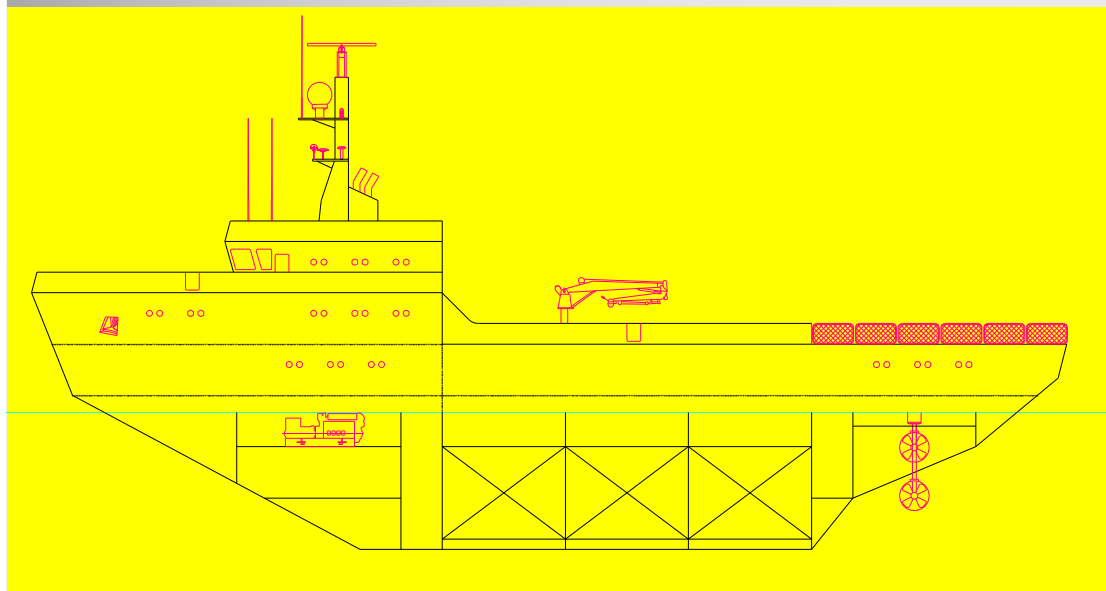
Board height – 13.5м;

Draft (in total displacement)– 8.5м;

Total displacement – 16900т.



Advanced platform pontoon type for drifting research in the Arctic Ocean



Displacement (τ)	4500
Length (m)	60
Width (m)	20
Board height (m)	12
Draft (m)	8
Power ($\kappa B\tau$)	825

Crew - 9
Research team up to 24
Helicopter deck
Moonpool
Large capacity tanks and holds
Stowable propeller unit



THANK YOU FOR ATTENTION