



Information on the sea ice conditions in the Eurasian Arctic

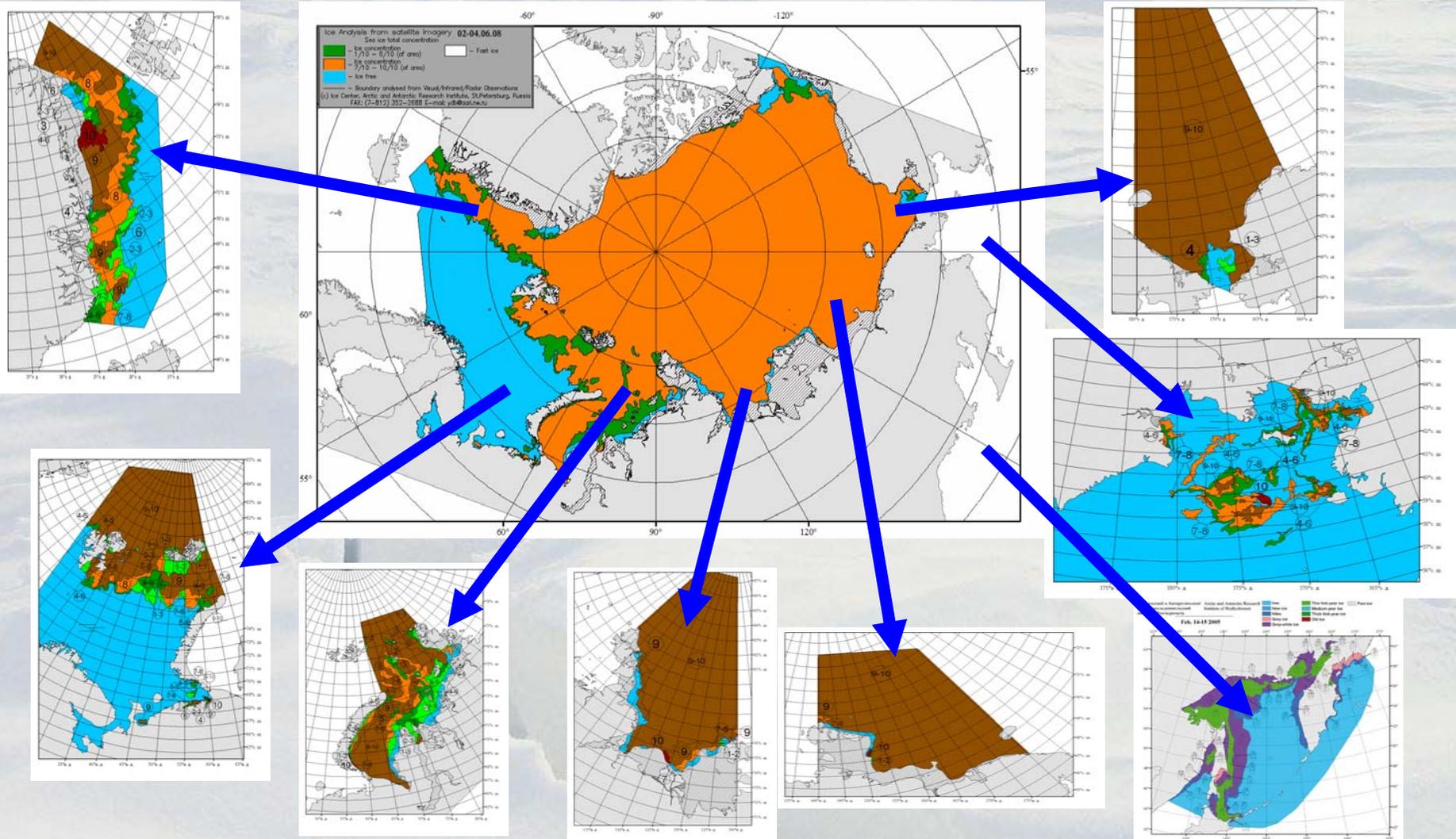
Vasily Smolyanitsky

head of laboratory of sea ice climate manuals

Arctic and Antarctic Research Institute

(based on “Changes in Ice Cover of the Eurasian Arctic Seas in relation to climate“ by Frolov, Gudkovich et al, 2008 and “Review of Hydrometeorological Conditions in 2007” by AARI, 2008)

Area of the Arctic sea ice cover monitored by the AARI of Roshydromet

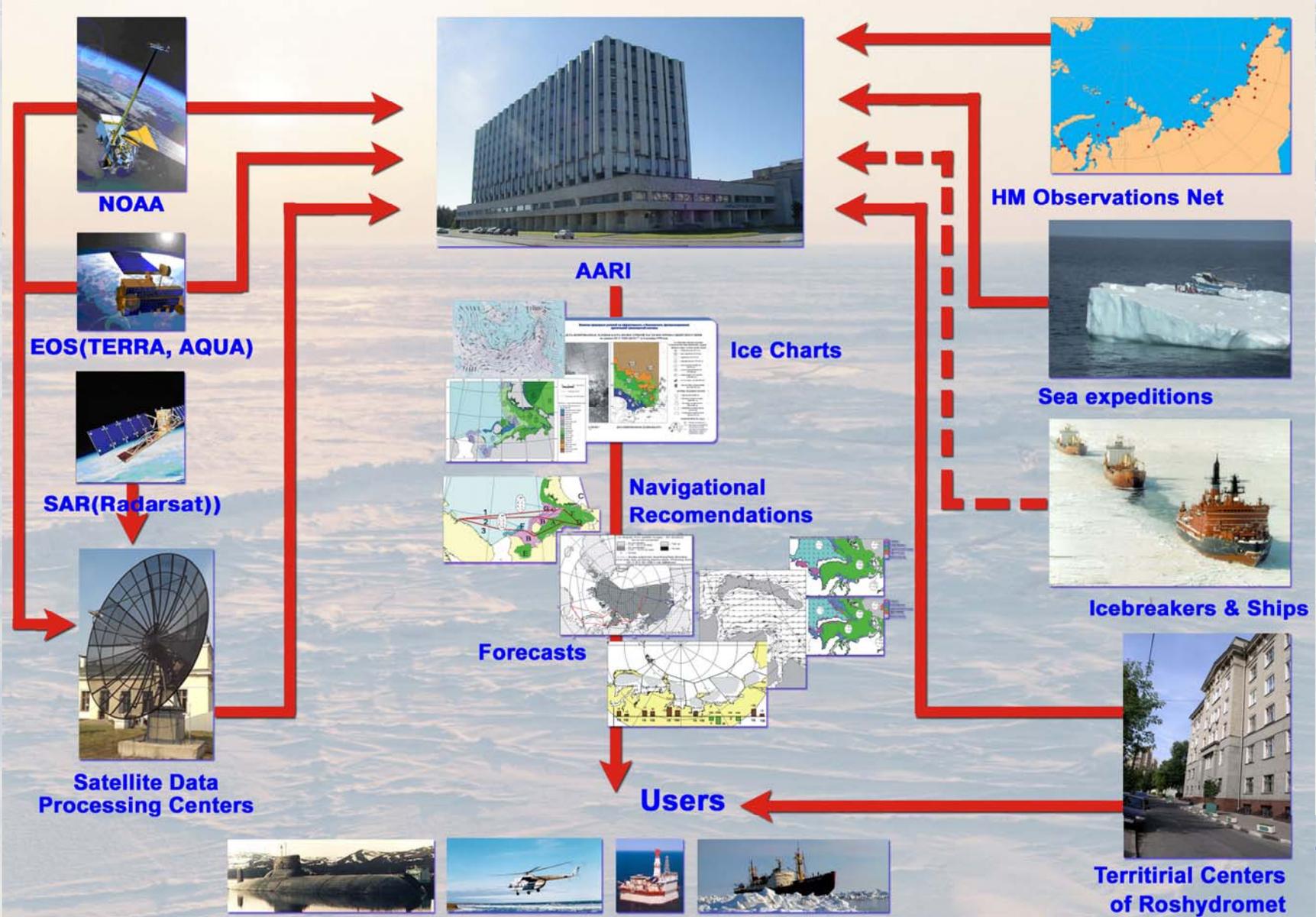


Development of the AARI sea ice information system and prime observational sources

- Delayed mode monthly scale reports from the hunting and cargo vessels from late 19th century
- Routine daily and weekly reports on sea ice conditions from a network of polar coastal stations from 1920s
- Routine aerial ice mapping: manual (1932-1992) and instrumental (1951-1992)
- Reports from manned North Pole drifting stations: 1937, 1951-1991, 2003...
- DARMS auto-stations (1953-1972) and IABP buoys (1979...)
- In 1986 a new ice informational system launched in AARI in a test mode and in 1989 in a routine mode based on Meteor/COSMOS/NOAA/EOS etc vis/ir/microwave sat imagery



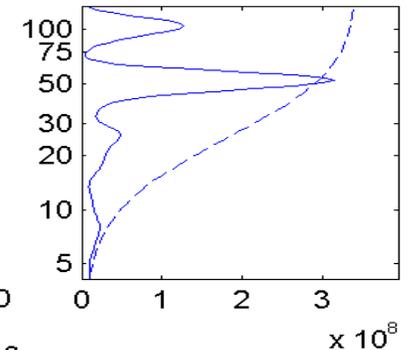
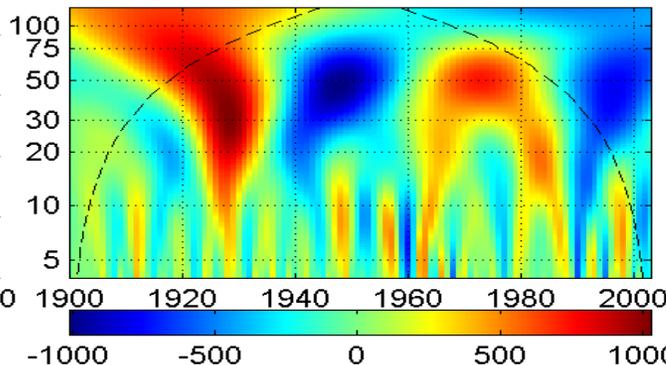
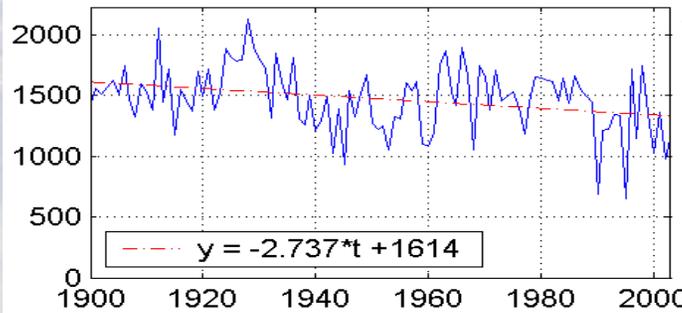
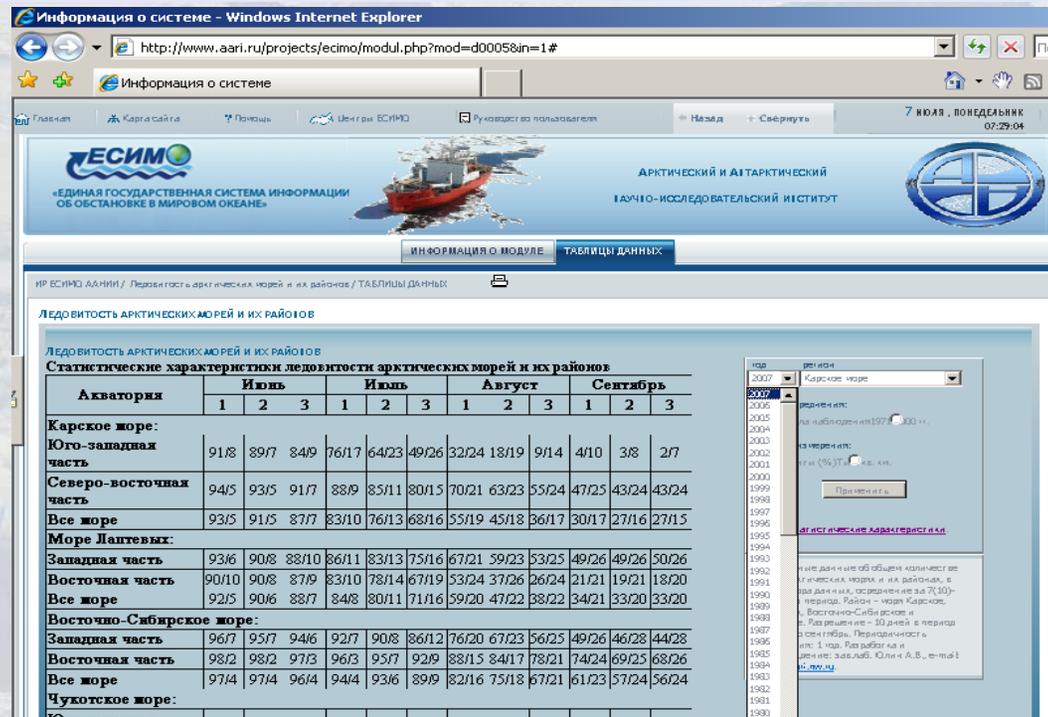
Information Exchange within the AARI ice information system



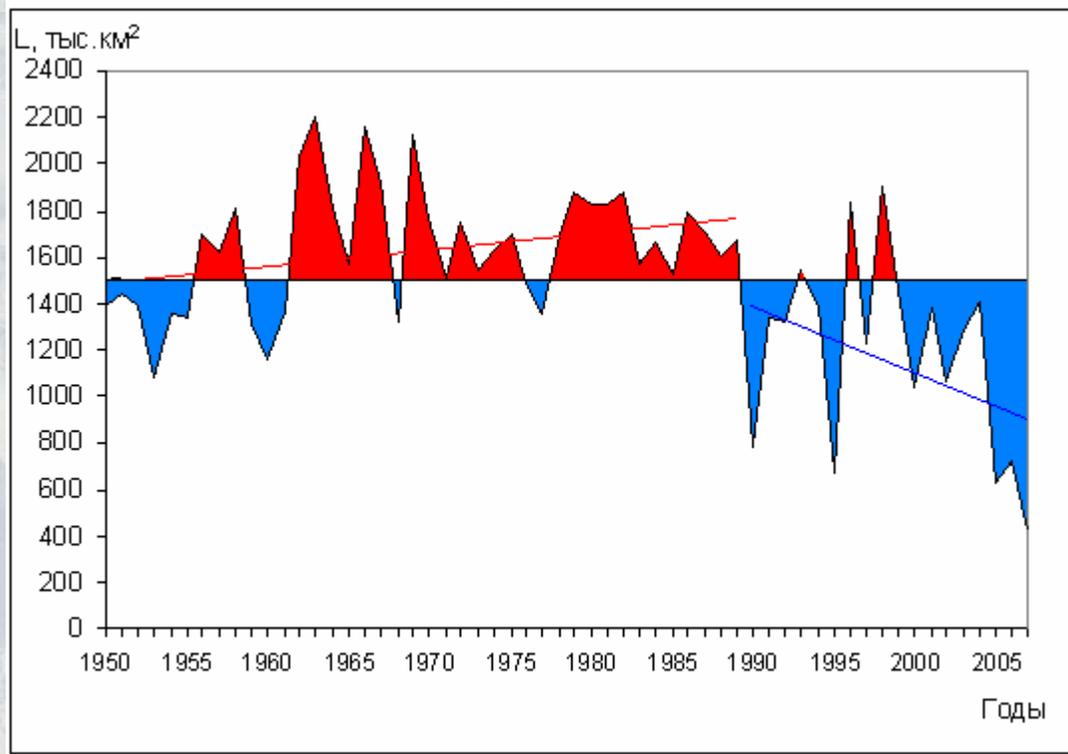
Sea ice parameters - monitoring and climatology

- 1) Ice extent/area and area of ice massifs for Greenland....Chukchi Seas from 1900s (obs, charts)
- 2) Ice total concentration, polynyas, old/FY/new stages of ice development, fast ice propagation, stages of melting, surface topography from 1933 (charts)
- 3) Ice phenomena - dates of first/stable formation, melting, disappearance from 1920s (coastal stations)
- 4) Level ice thickness at coastal stations
- 5) Ice drift trajectories and patterns (from NP/DARMS/IABP from 1937)
- 6) Ice/snow properties measurements in a point of NP drifting stations and expeditions

Ice extent/area/area of ice massifs



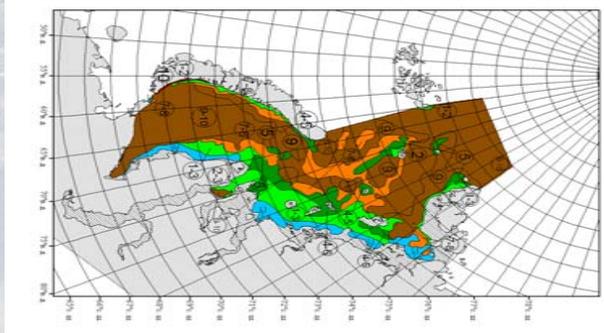
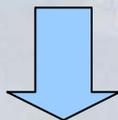
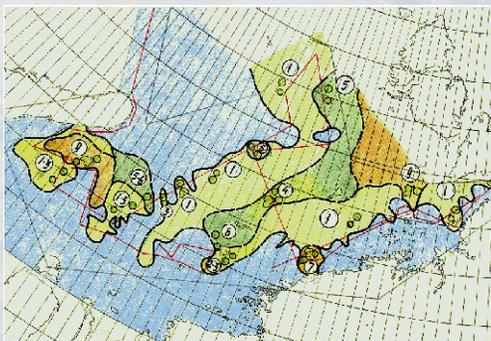
Ice extent/area – annual climatology



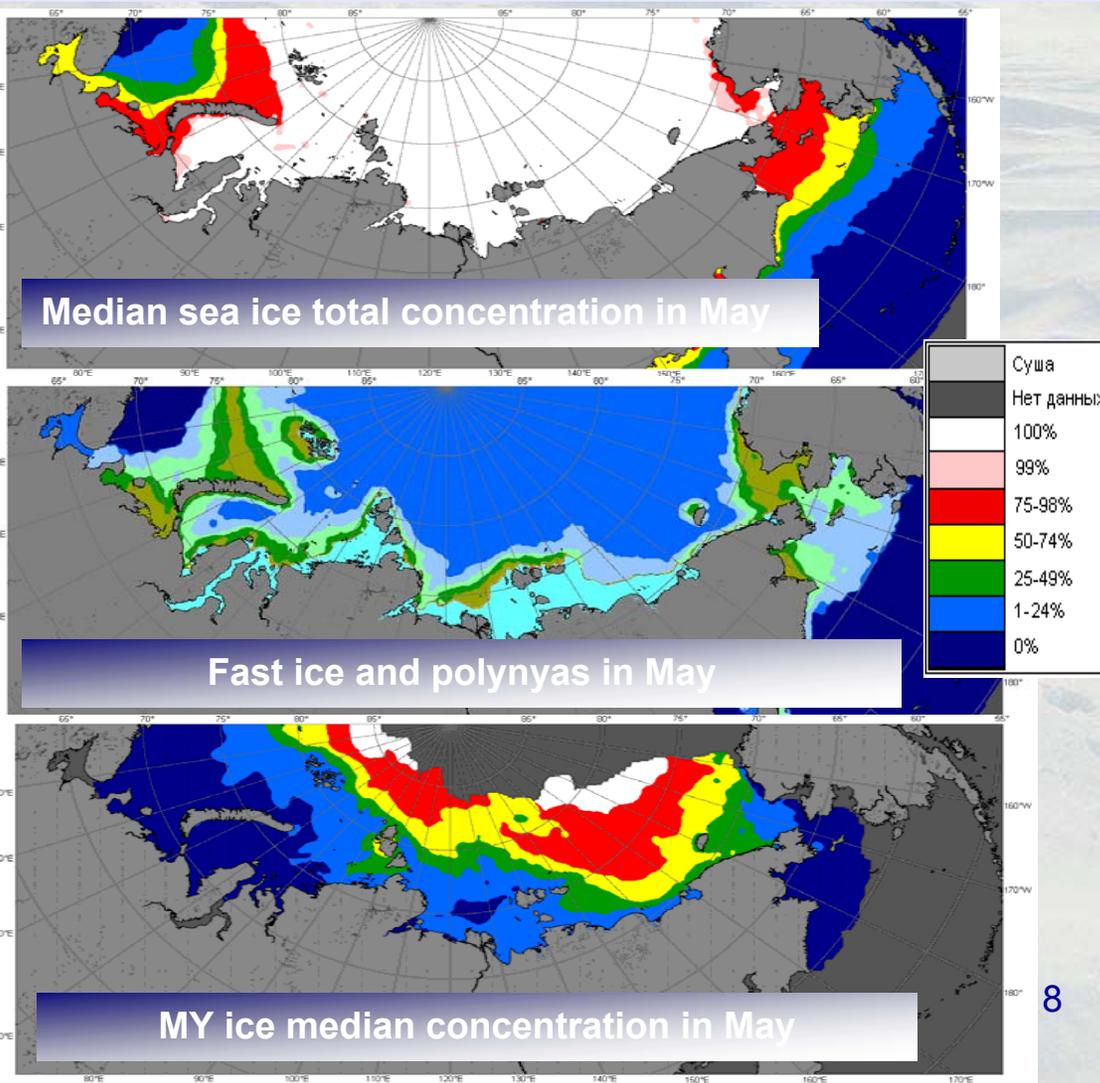
Changes in the Eurasian Arctic sea ice extent in August for 1950-2007

Sea ice total concentration, polynyas, MY/FY/new stages of ice development, fast ice – climatology from 1933 (charts)

Kara Sea ice chart for July 1930

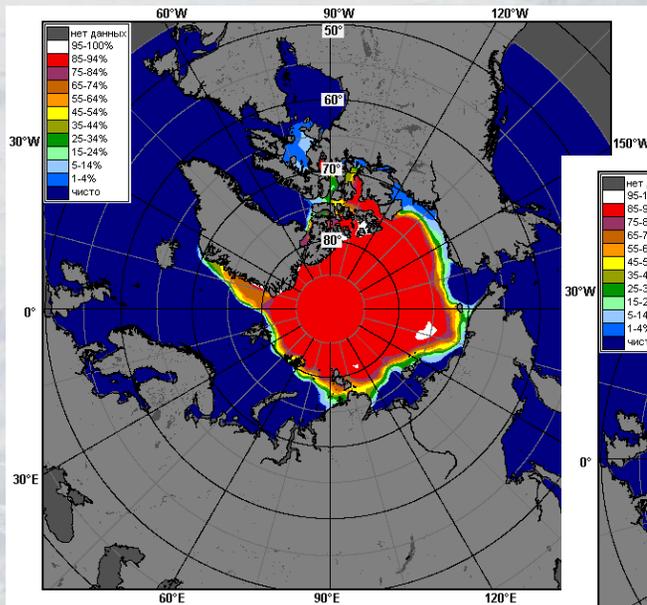


Kara Sea ice chart for June 2008

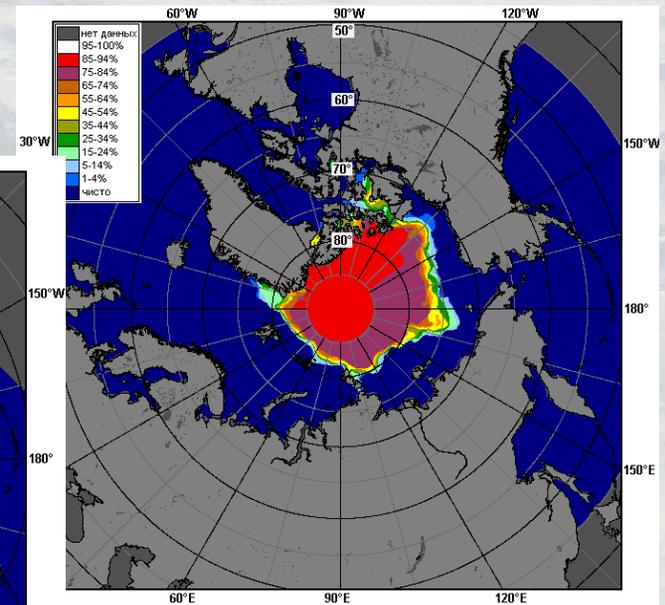
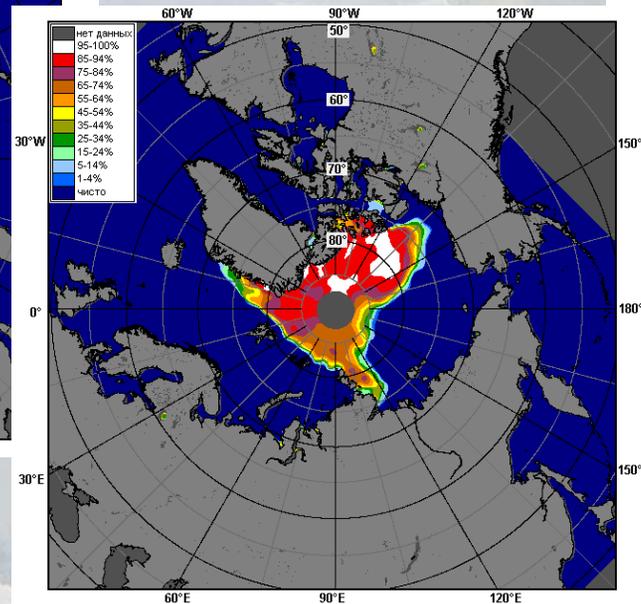


Sea ice total concentration – monitoring from 1933...2008 (charts)

Robust mean sea ice total concentration in September

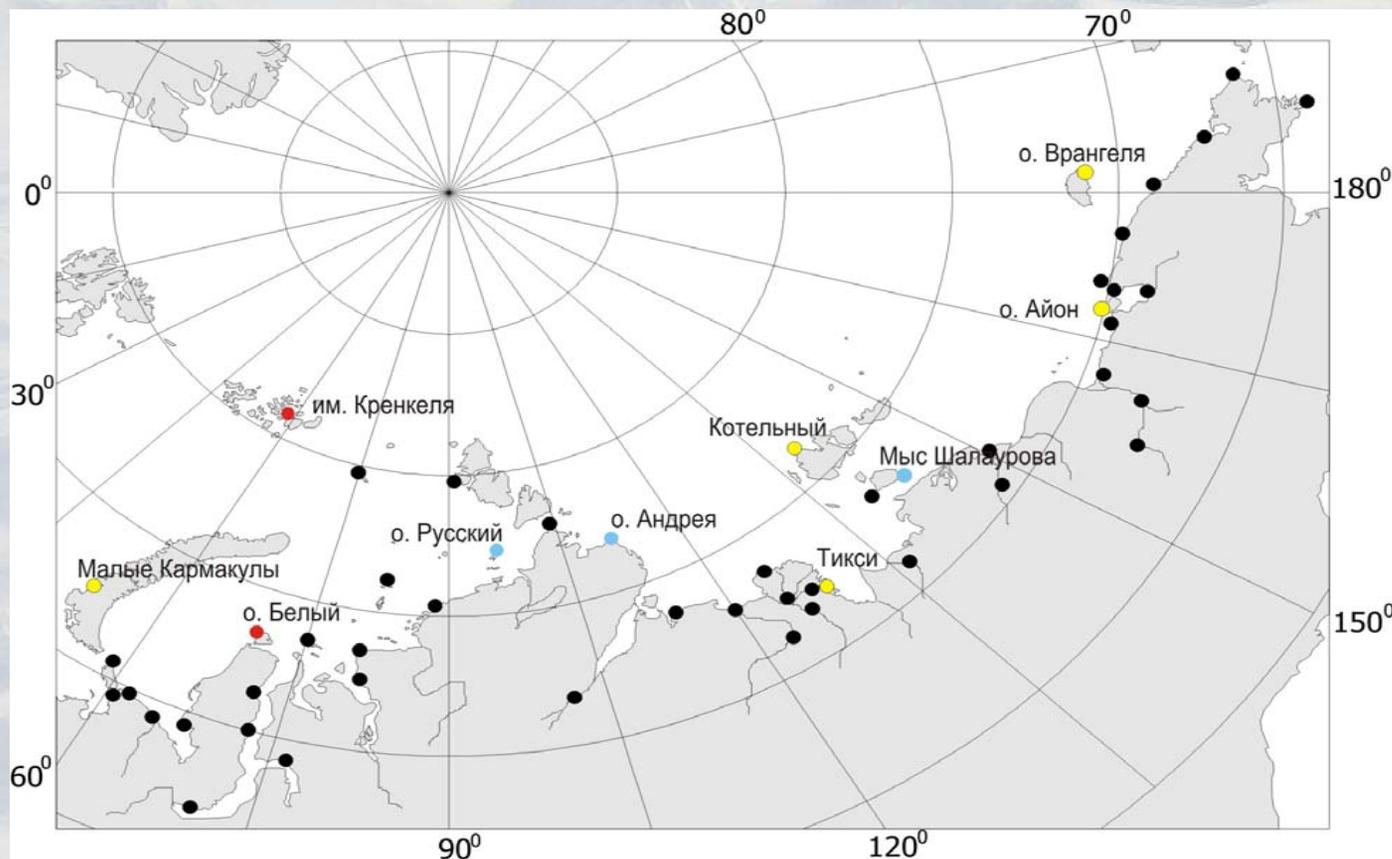


5% quantile sea ice total concentration in September



Robust mean sea ice total concentration in Sep'07

Schema of polar coastal stations in the Eurasian Arctic



Ice phenomena - dates of first/stable formation, melting, disappearance from 1920s (coastal stations)

Информация о системе - Windows Internet Explorer

http://www.aari.ru/projects/ecimo/modul.php?mod=d0005&in=1#

Информация о системе

7 ИЮЛЯ, ПОНЕДЕЛЬНИК 07:29:04

ЕСИМО «ЕДИНАЯ ГОСУДАРСТВЕННАЯ СИСТЕМА ИНФОРМАЦИИ ОБ ОБСТАНОВКЕ В МИРОВОМ ОКЕАНЕ»

АРКТИЧЕСКИЙ И АНТАРКТИЧЕСКИЙ ГИДРО-ИССЛЕДОВАТЕЛЬСКИЙ ИНСТИТУТ

ИНФОРМАЦИЯ О МОДУЛЕ ТАБЛИЦЫ ДАННЫХ

ИР ЕСИМО ААНИИ / Ледовитость арктических морей и их районов / ТАБЛИЦЫ ДАННЫХ

Ледовитость АРКТИЧЕСКИХ МОРЕЙ И ИХ РАЙОНОВ

Ледовитость АРКТИЧЕСКИХ МОРЕЙ И ИХ РАЙОНОВ

Статистические характеристики ледовитости арктических морей и их районов

Акватория	Июнь			Июль			Август			Сентябрь		
	1	2	3	1	2	3	1	2	3	1	2	3
Карское море:												
Юго-западная часть	91/8	89/7	84/9	76/17	64/23	49/26	32/24	18/19	9/14	4/10	3/8	2/7
Северо-восточная часть	94/5	93/5	91/7	88/9	85/11	80/15	70/21	63/23	55/24	47/25	43/24	43/24
Все море	93/5	91/5	87/7	83/10	76/13	68/16	55/19	45/18	36/17	30/17	27/16	27/15
Море Лаптевых:												
Западная часть	93/6	90/8	88/10	86/11	83/13	75/16	67/21	59/23	53/25	49/26	49/26	50/26
Восточная часть	90/10	90/8	87/9	83/10	78/14	67/19	53/24	37/26	26/24	21/21	19/21	18/20
Все море	92/5	90/6	88/7	84/8	80/11	71/16	59/20	47/22	38/22	34/21	33/20	33/20
Восточно-Сибирское море:												
Западная часть	96/7	95/7	94/6	92/7	90/8	86/12	76/20	67/23	56/25	49/26	46/28	44/28
Восточная часть	98/2	98/2	97/3	96/3	95/7	92/9	88/15	84/17	78/21	74/24	69/25	68/26
Все море	97/4	97/4	96/4	94/4	93/6	89/9	82/16	75/18	67/21	61/23	57/24	56/24
Чукотское море:												
Юго-западная часть	90/10	80/15	71/16	60/17	50/16	40/16	32/15	27/16	22/16	18/17	16/18	15/18
Все море	87/11	79/13	69/14	59/12	50/11	42/12	35/14	30/15	22/14	18/15	17/16	15/16

год: 2007 регион: Карское море

единица: мм

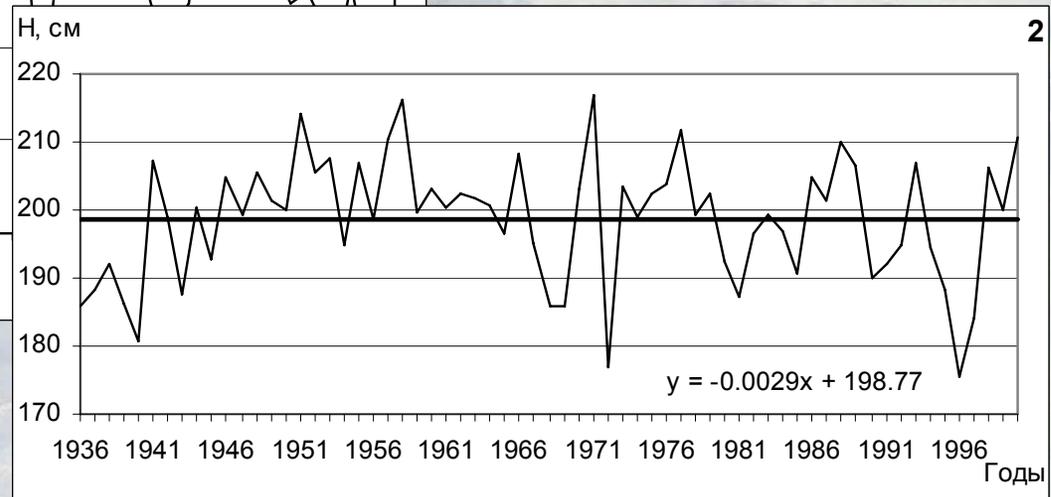
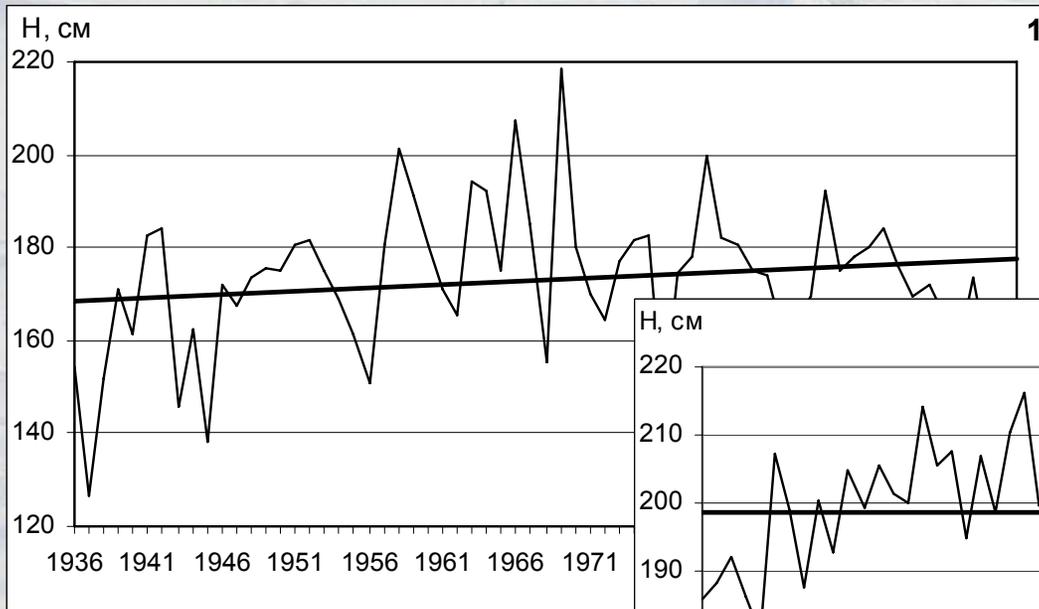
измерения: мм

Печать

статистические характеристики

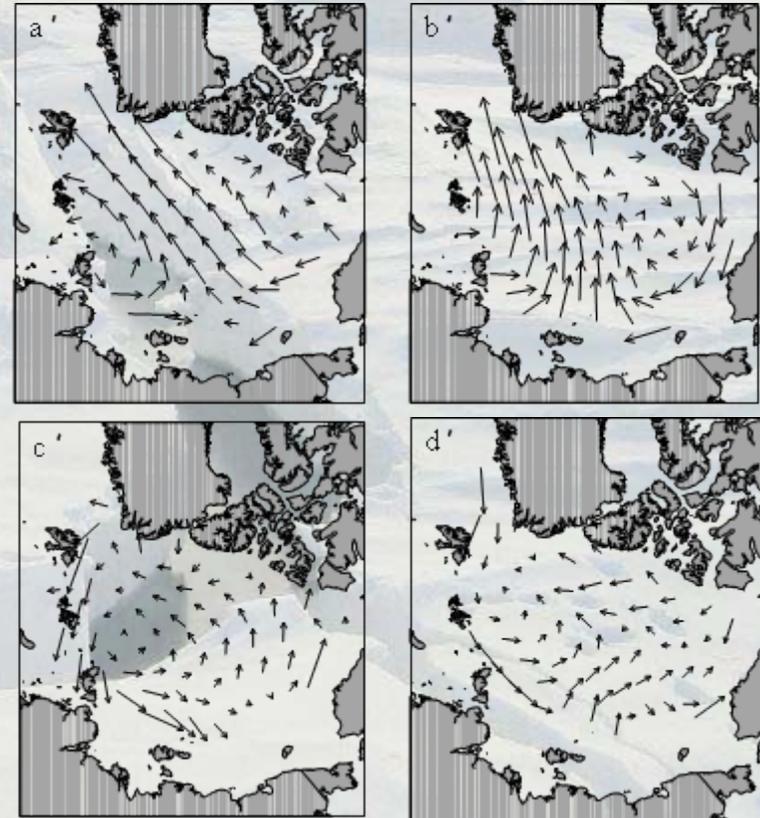
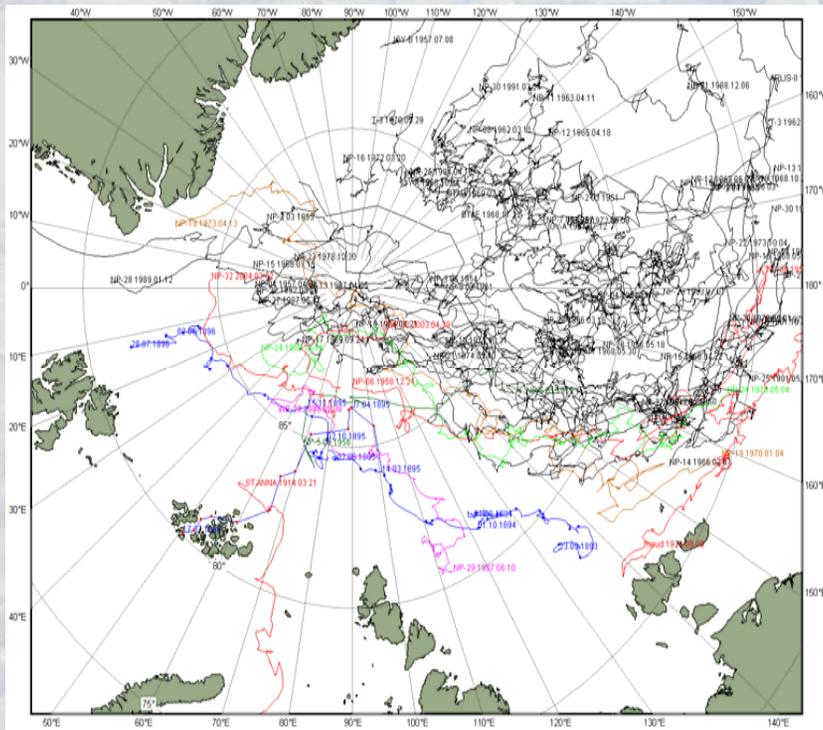
данные об объеме количества ледовитости арктических морей и их районов, в среднем за 7(10)-летний период. Район - море Карское, Восточно-Сибирское и Лаптевых - 30 дней в период с сентября. Периодичность: 1 год. Разработчик и дистрибутор: зав.лаб. Юлини А.В., e-mail: yulini@yandex.ru

Level ice thickness at coastal stations



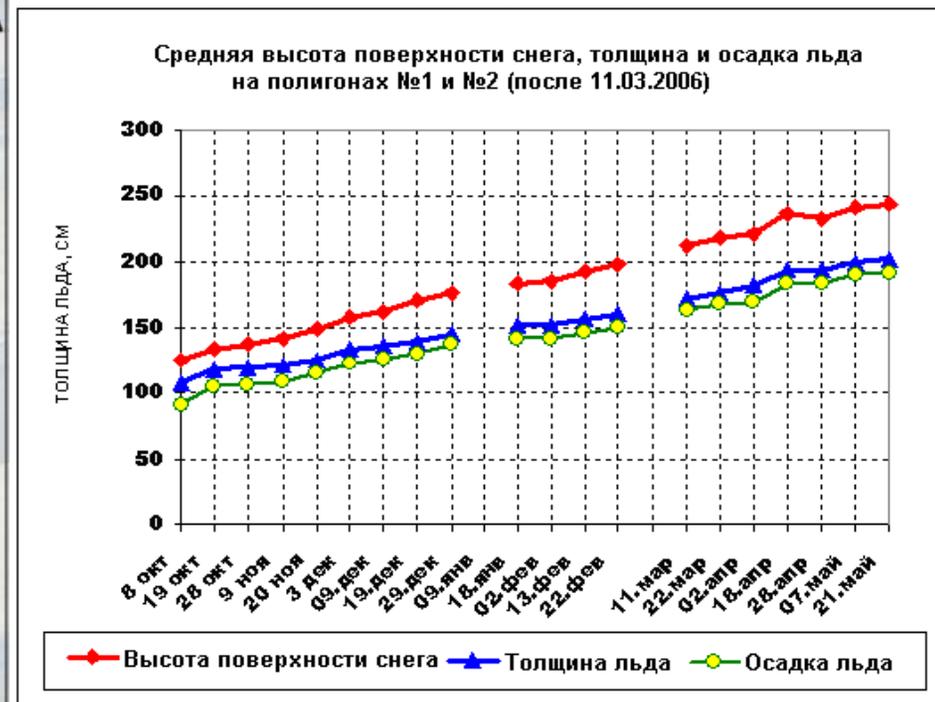
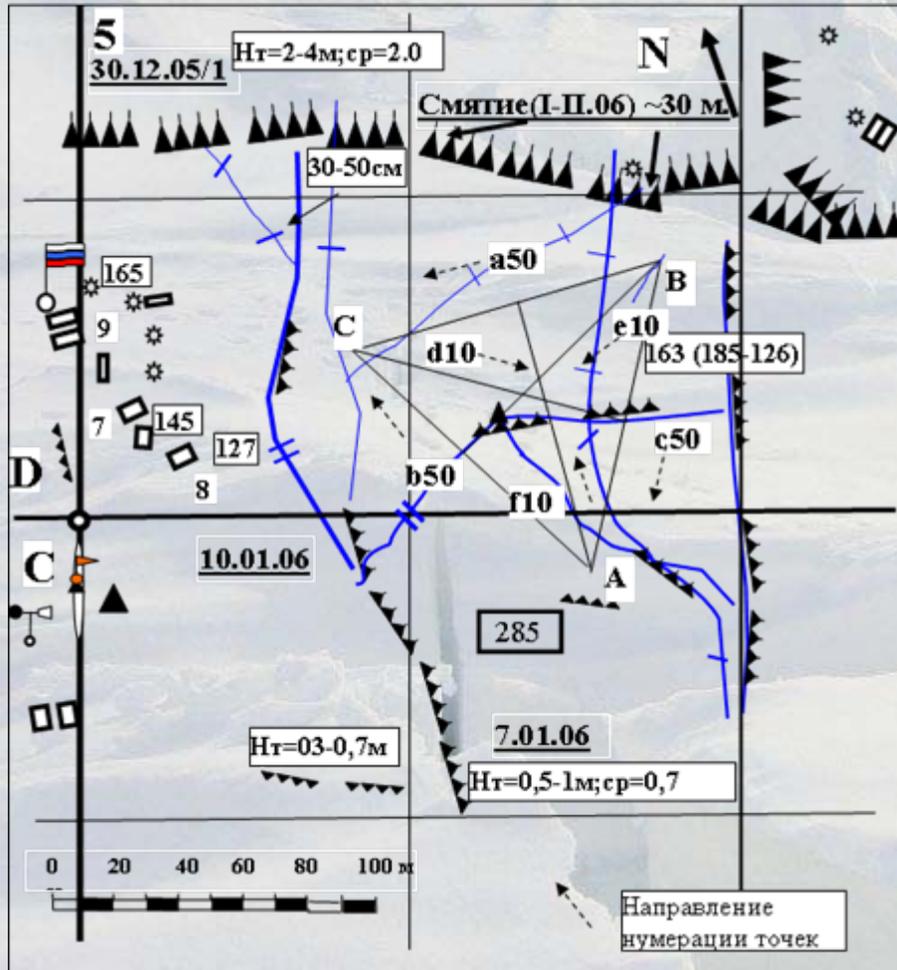
Maximum level ice thickness variations grouped for the coastal stations for Kara (upper) and Laptevs-Chukchi Seas (lower) for the period 1936-2000 (Frolov, Gudkovich et al., 2007)

NP stations drift trajectories (from 1937) and ice drift climatology (NP+DARMS+IABP)



- NP stations trajectories and mean ice drift vectors for the summer (a) and winter (b) seasons during the warm epoch and difference between the mean ice drift vectors between the warm and cold epochs for the summer (c) and winter (d) seasons (Frolov, Gudkovich et al, 2007)

Measurements of sea ice properties on NP-32.... drifting stations



Schema of on NP-34 station in Feb'06

Ice profiles for Oct'05 – May'06