Arctic and Antarctic Research Institute (AARI)

Key facts of AARI ice information systems for the last season 2010/2011

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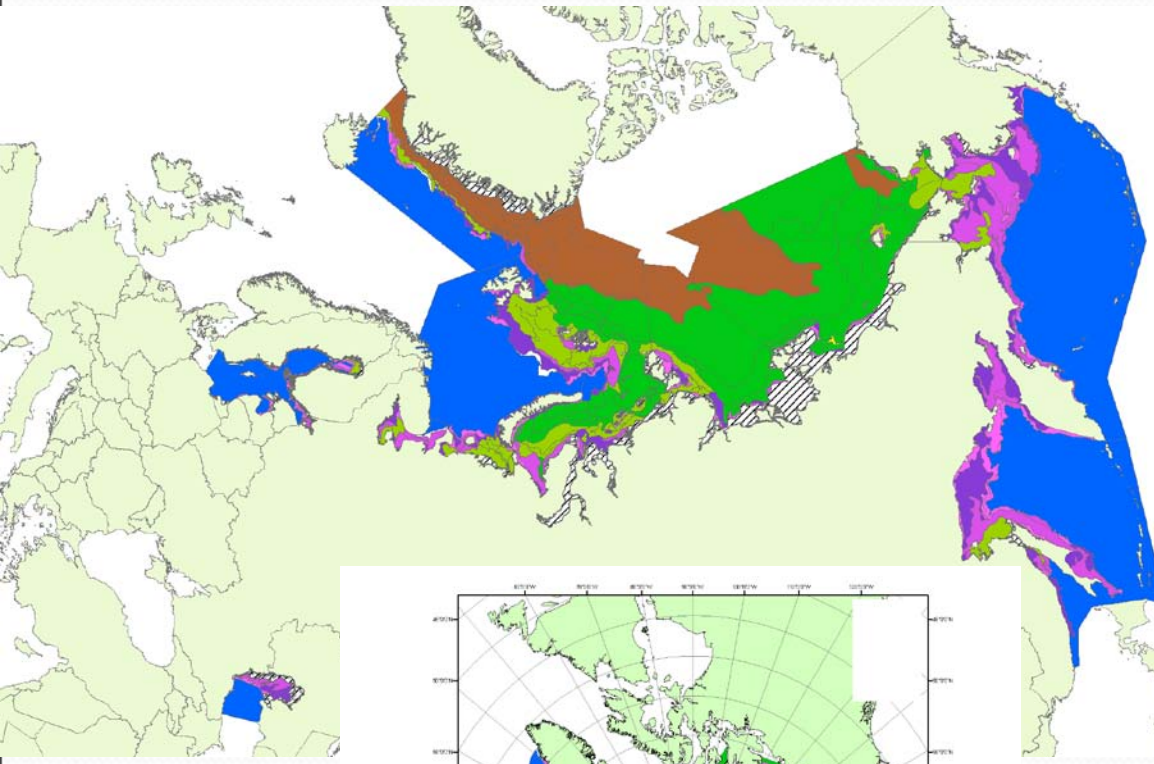
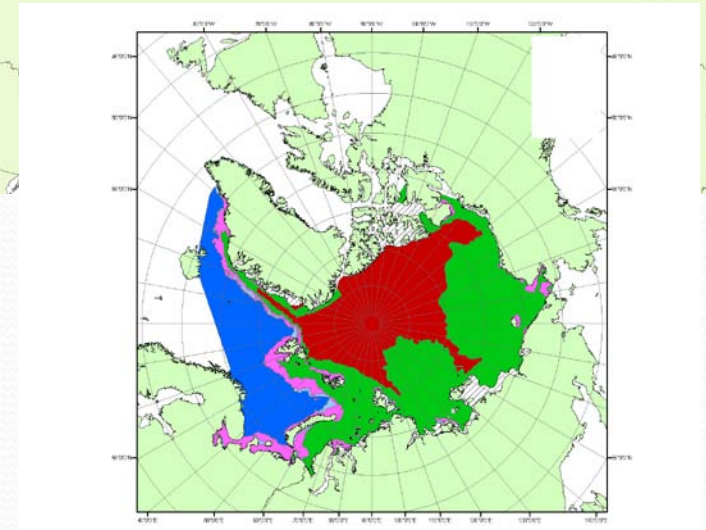
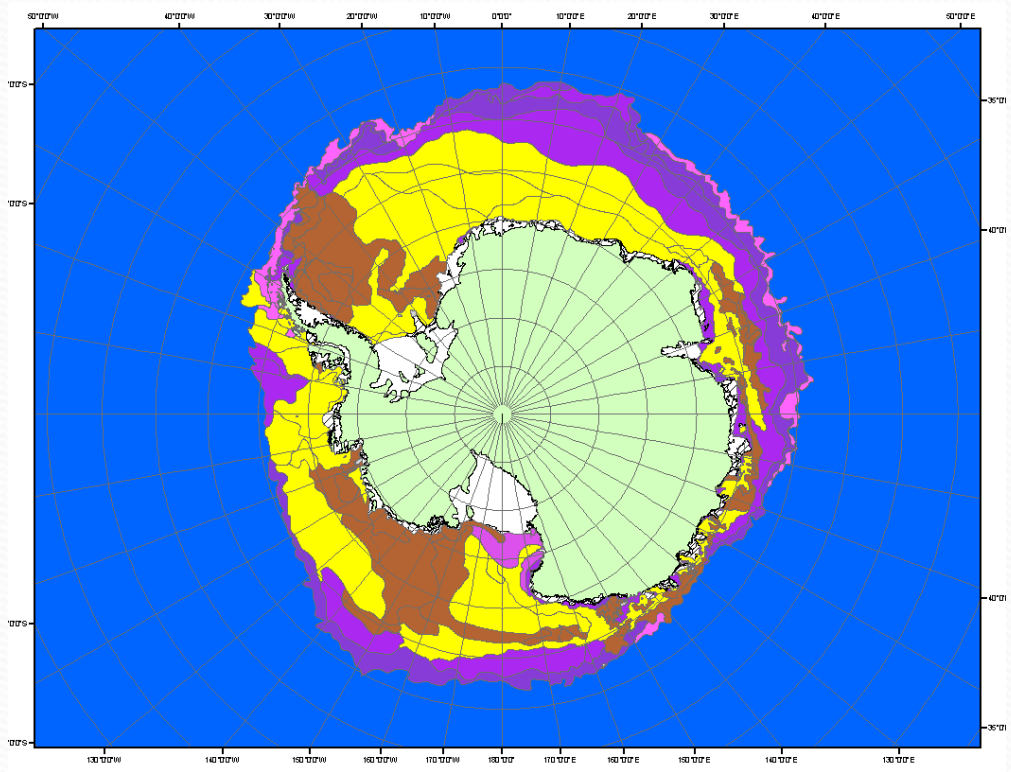
1. Organization – analyzed areas





- ❑ Weekly review analysis:
  - Arctic Ocean
- ❑ Weekly analysis regional:
  - Greenland, Eurasian Arctic seas, Bering, Sea of Okhotsk, NE Japan Sea
  - Baltic Sea
  - Caspian Sea
  - From 2010 – Black and Azov Seas
- ❑ Daily marine safety:
  - Ice edge for METAREAs XX-XXI
- ❑ Twice daily tactical:
  - Sakhalin waters

1. Organization –analyzed areas



- Bi-monthly (11-15 & 27-31) sectoral:
- Atlantic, Indian and Pacific sectors

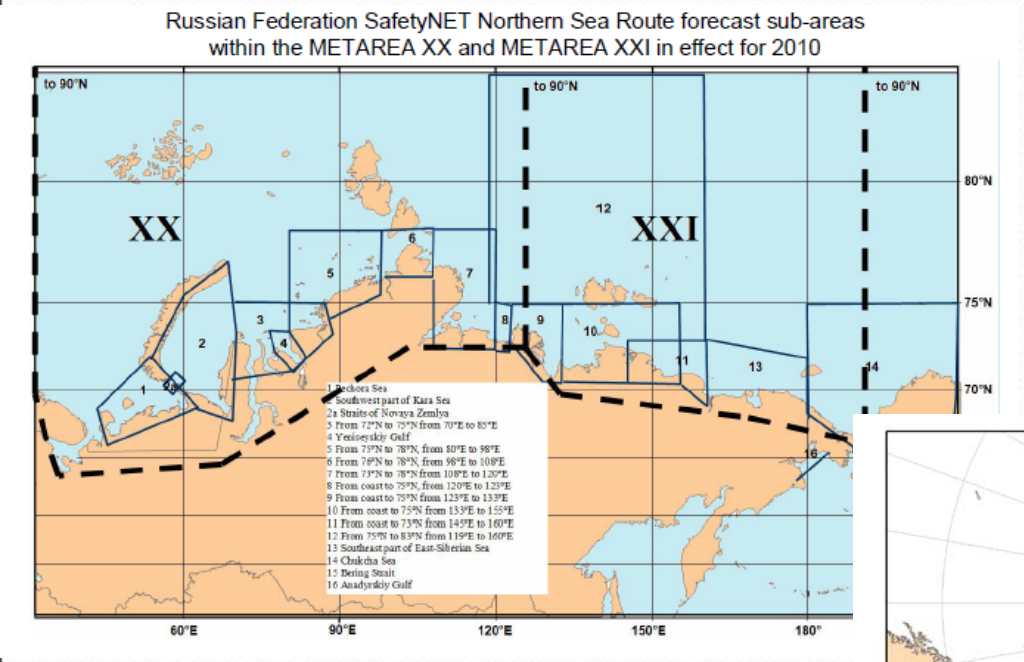
1. Organization – staff

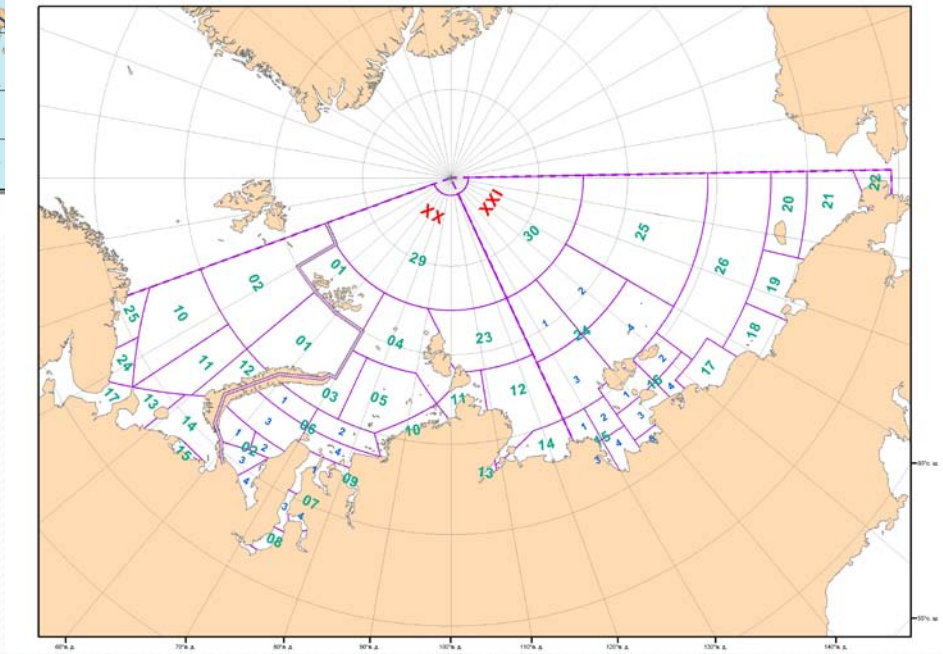
- Operational activity is concentrated in the Center for Ice and Hydrometeorological information – the main AARI operational department
- Total staff – 50 specialists including
  - Ice analysts – 16 experts, including:
    - Antarctic – 4
  - Meteorological analysis – 7
  - Forecasts – 4
  - Hydrological analysis and forecasts – 3
  - Radio service and WMO GTS node – 8
  - IT - 7

1. Organization – GMDSS

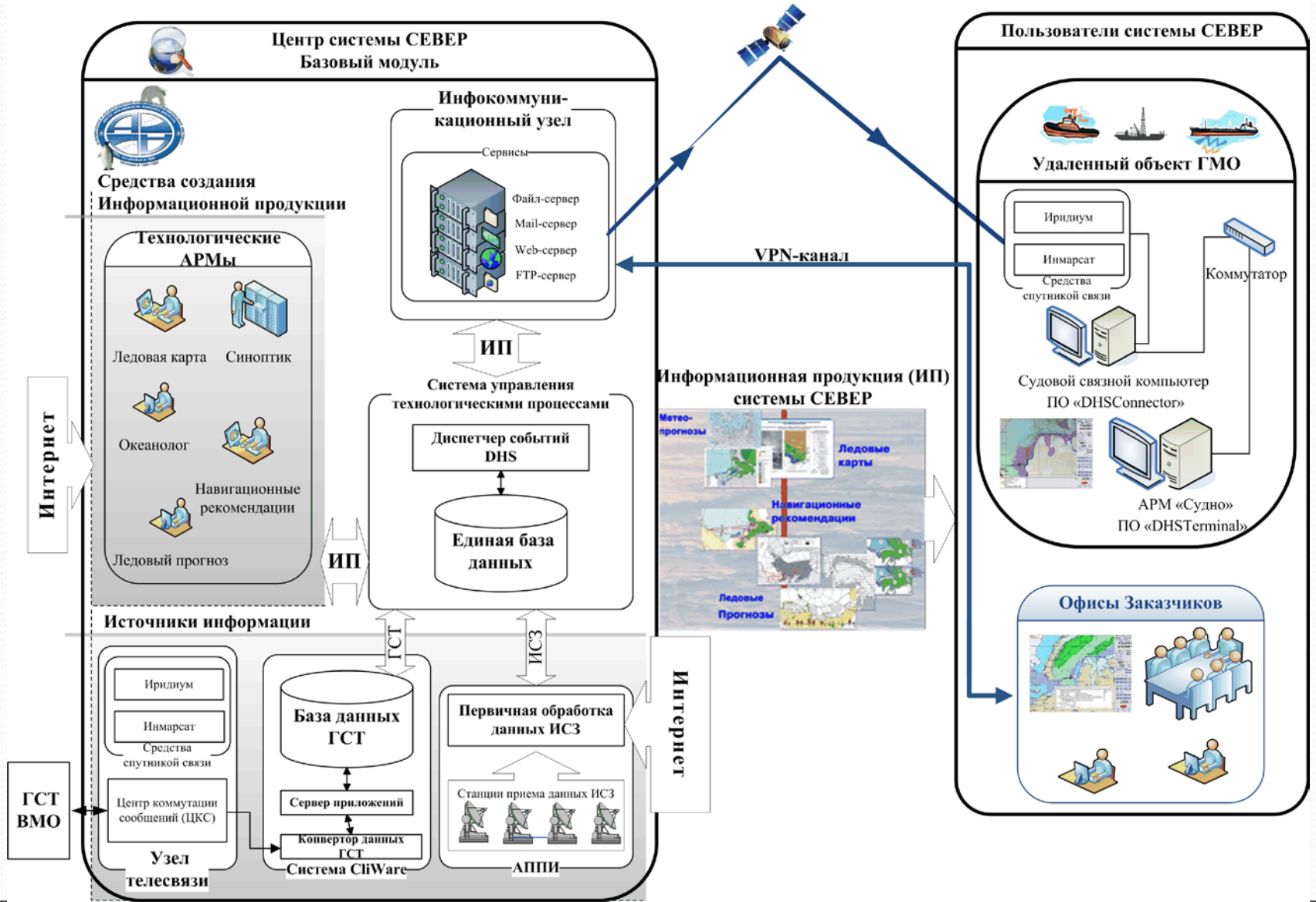
- Roshydromet is the Preparation Service for METAREA XX and METAREA XXI.
- The Hydrographic Enterprise of the Russian Federal Agency of Marine and River Transport is the designated Preparation Service for associated NAVAREAs XX and XXI and the Issuing service both for METAREAs and NAVAREAs XX and XXI.
- Since 2001 AARI of Roshydromet is leading and coordinating the preparation of weather and ice Marine Safety Information (MSI) for the SafetyNET network for the Arctic Ocean Northern Sea Route areas (west region and east region)
- SafetyNET broadcast service consists of two broadcasts per day (meteorological bulletin) at 0600 UTC and 1800 UTC.
- Ice information (bulletin) till 2010 was prepared and issued three times a week (Monday, Wednesday and Friday) at 1800UTC.
- In 2011 ice bulletin will be prepared daily and issued separately or included into meteorological bulletin at 1800UTC

1. GMDSS schemas in 2010 and 2011





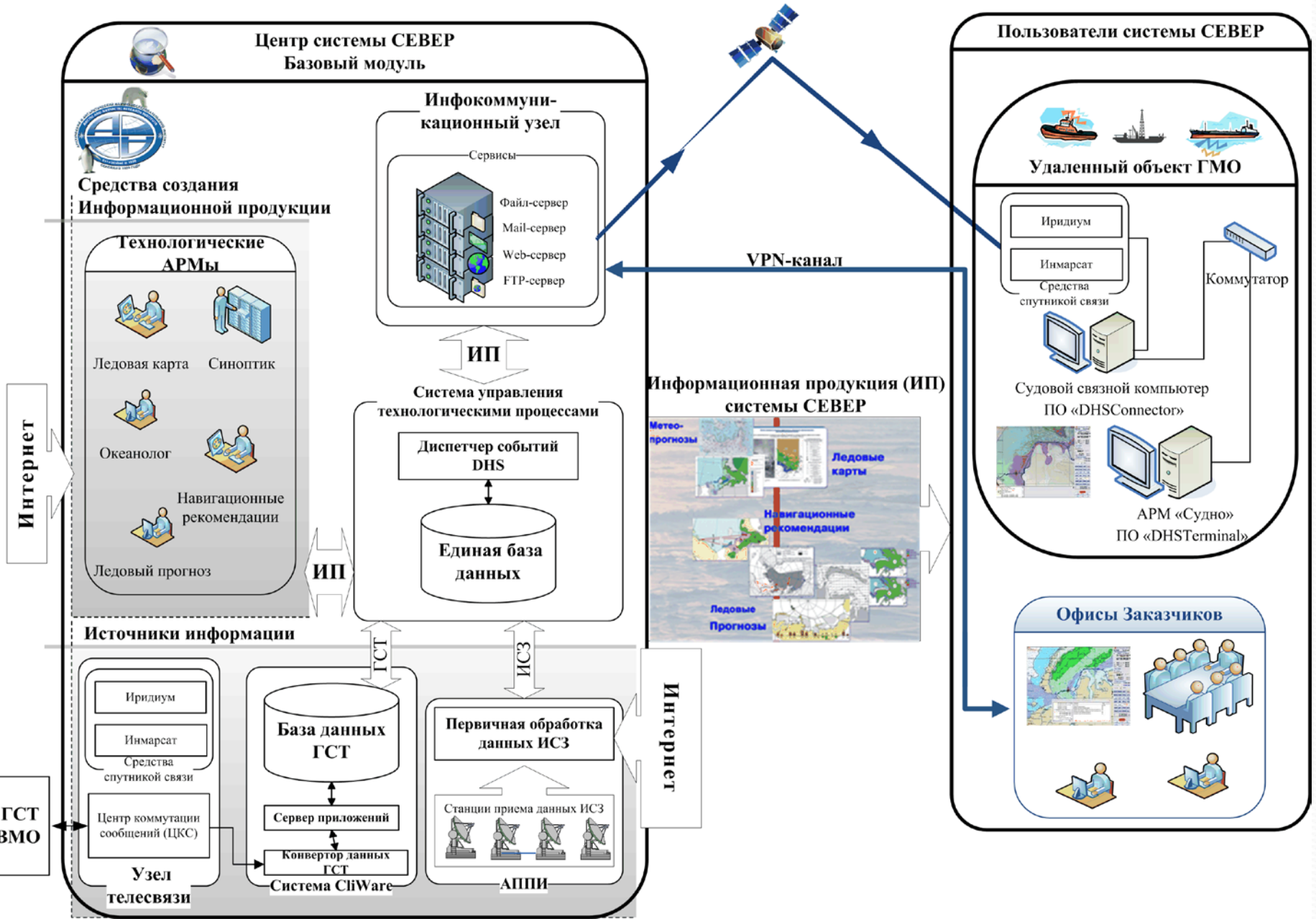
2. General schema of information system and data flows



2. General particulars for satellite imagery

- Satellite imagery include information received at the AARI receiving station (NRT NOAA, MODIS TERRA westward of 90-100E), provided by SCANEX (Moscow) or other providers via Internet
- Imagery include
  - daily orbits of NOAA AVHRR (November - March), MODIS (April - October) – ~12-20 per day
  - ENVISAT GMM and WSM mosaics and single orbits – ~15 per day
  - RADARSAT on request, typically 1 every 2-3 days
- Analysis is done mostly in ArcGIS 8…9 with ScanMagic (Scanex) and ENVI (ITT) used for imagery transformations

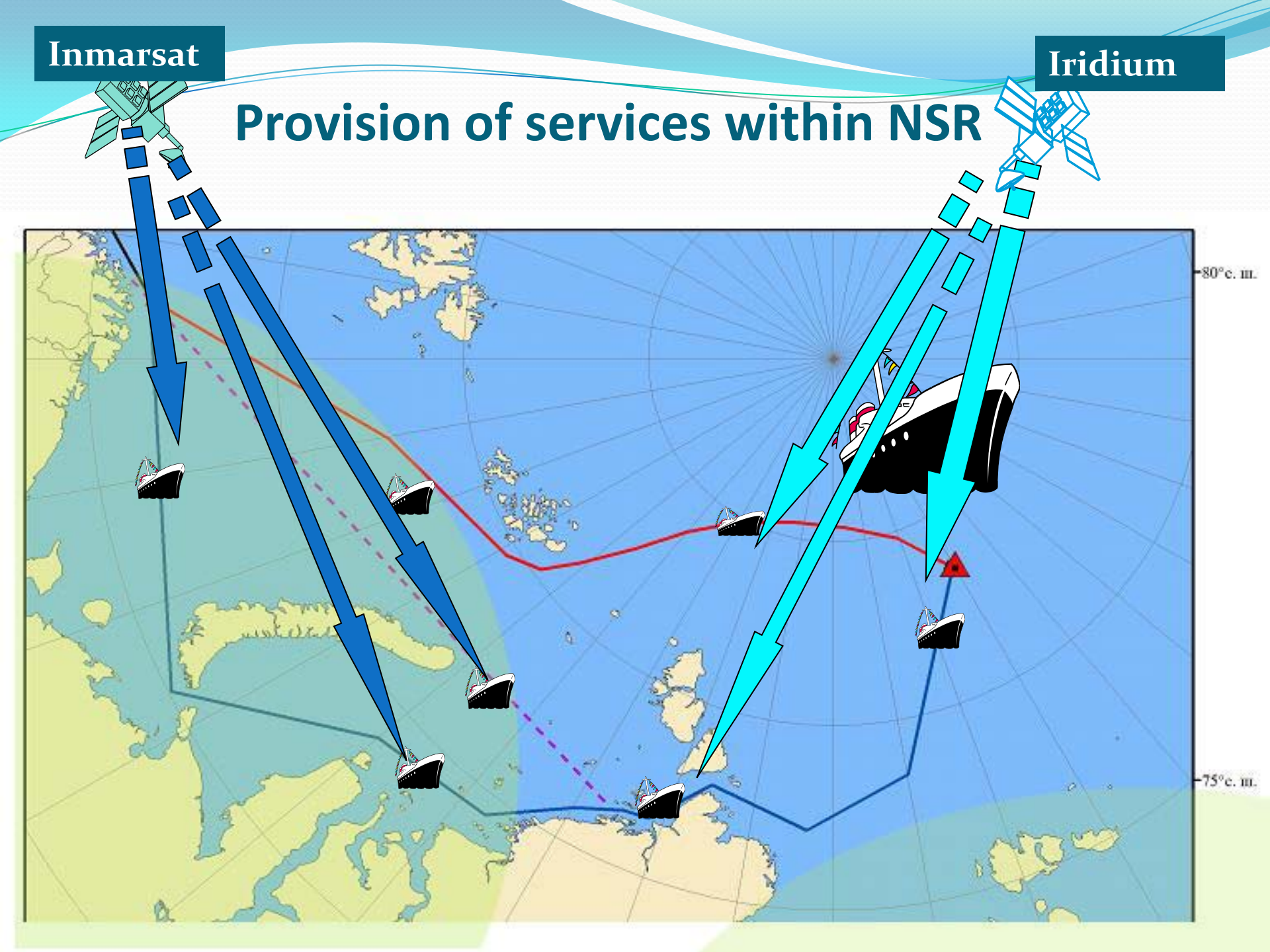
AARI operational system SEVER (summer'10)



3. Output products

- Ice charts particulars:
  - Produced in ArcGIS 8.1 environment using a special “Ice Analyst” module
  - Archived in both AARI internal format and SIGRID3
  - Delivered to customers in DKart .dcf, S-57 or plain graphics
  - GEOGCS["GCS_WGS_1984",DATUM["D_WGS_1984",SPHEROID["WGS_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]]
- Other binary products include
  - Output from numerical ice dynamic – thermodynamic models like diagnostic and prognostic (up to 7 days in advance) gridded fields of ice total concentration, thickness, dynamic parameters, including ice pressure
  - Output from numerical coupled ice – ocean – atmosphere models, including surface currents, ice drift, elevation
  - Main formats are compressed ASCII and binary plain grids and grapgics
- GMDSS information include
  - Plain text meteorological SafetyNET bulletins (METAREAs XX-XXI) and NAVTEX bulleting (coastal Barents and SW Kara Seas) at 06 and 18 UTC
  - Plain text ice SafetyNET bulletins (METAREAs XX-XXI) at 18 UTC

Provision of services within NSR



4. Briefs for short-term numerical and longer period forecasts and forecasts methods

- Diagnostic and forecast patterns (0..+6d) of ice drift, surface currents and sea level elevation in the Arctic Ocean based on AARI hydrodynamic model with viscous ice rheology,
- Diagnostic and forecast patterns (0..+6d) of the evolution of ice cover in Barents and Kara Seas (total concentration, stages of ice development, hummocks concentration and level of compacting) based on AARI thermo hydrodynamic with elastic viscous-plastic ice rheology,
- Diagnosis and forecast charts (00...+72h with 6-h interval) for winds, wave significant height and direction and ice accretion for open water areas in the Eurasian Arctic Seas based on AARI spectral parametric wave model
- Seasonal (March, May, July) empirical forecasts of general conditions of navigation in the Eurasian Arctic (ice extent by seas, ice massifs, ice thickness, ice phenomena)

5. Regular publications

a) The quarterly and yearly bulletin Review of the hydrometeorological processes in the Arctic Ocean (in Russian);
b) Bulletin “Long-term forecast of the ice conditions in the Arctic seas”: 3 bulletins are published per year in the end March, June and August (in Russian);
c) The quarterly bulletin State of the Antarctic Environment (in Russian and English);
d) Trudi AANII (AARI Transactions): irregular two to three volumes are published per year (in Russian);
e) Problemi Arktiki i Antarktiki (Problems of the Arctic and Antarctic): two volumes are published per year (in Russian);
f) Proceedings of IPY and Polar bulletin (quaterly)
g) Irregular express information, informational bulletins of the Russian Antarctic expedition, monographs

6. Contact information

Operational information

- http://www.aari.ru (main page)
- http://www.aari.ru/projects/ecimo/modul.php?mod=d0015&in=1 (weekly ice charts)
- http://www.aari.ru/projects/ecimo/ModuleLoad.php?mod=d0004&in=1 (weekly detailed ice charts)
- http://www.aari.ru/projects/ecimo/index.php?im=101 (prognostic products)
- http://www.aari.ru/projects/ecimo/ModuleLoad.php?mod=d0011&in=1 (synoptic bulletin)

Historical material

- http://wdc.aari.ru/datasets (main page)
- http://wdc.aari.ru/datasets/d0004 (AARI regional charts in SIGRID3)
- http://wdc.aari.ru/datasets/d0015 (AARI review charts in SIGRID3)

GMDSS information

http:// ftp://gmdss.aari.ru (GMDSS met and ice bulletins and supportive data)

E-mail: gmdss <at> aari.ru

Thank you for attention

Questions ?