

ARCTIC
NOAA's ARCTIC VISION and STRATEGY

NOAA- Roshydromet Arctic Observation Goals

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September 19, 2012



Topics of interest to NOAA *and* Roshydromet

Arctic Challenges

- Loss of sea ice
- Regional weather patterns
- Understanding and Predicting Arctic Climate System
- Increase in threats to coastal stability
- Marine transportation and offshore operations
- Marine ecosystems/biosphere
- Ocean acidification

Common Interests

- Sustainable management of natural resources
- Protection of the environmental and cultural heritage
- Scientific research

NOAA'S ARCTIC STRATEGY (2011)

- Forecast Sea Ice
- Strengthen Foundational Science to Understand and Detect Arctic Climate and Ecosystem Changes
- Improve Weather and Water Forecasts and Warnings
- Enhance International and National Partnerships
- Improve Stewardship and Management of Ocean and Coastal Resources in the Arctic
- Advance Resilient and Healthy Arctic Communities and Economies





Arctic Research in NOAA's Climate Program Office

Observing, understanding, and prediction of the Arctic where the environment is particularly sensitive to climate variability and change.

What is Produced:

- Initial suite of unique and multi-disciplinary observations for the Arctic region including Bering Strait/Chukchi Sea heat and biomass changes;
- Sea-ice drift and ice mass;
- Time series of essential climate variables at Atmospheric Observatories (e.g. TIKSI)
- International partnerships (Russia, Canada, Pacific Arctic Group)
- Annual assessment "Arctic Report Card"

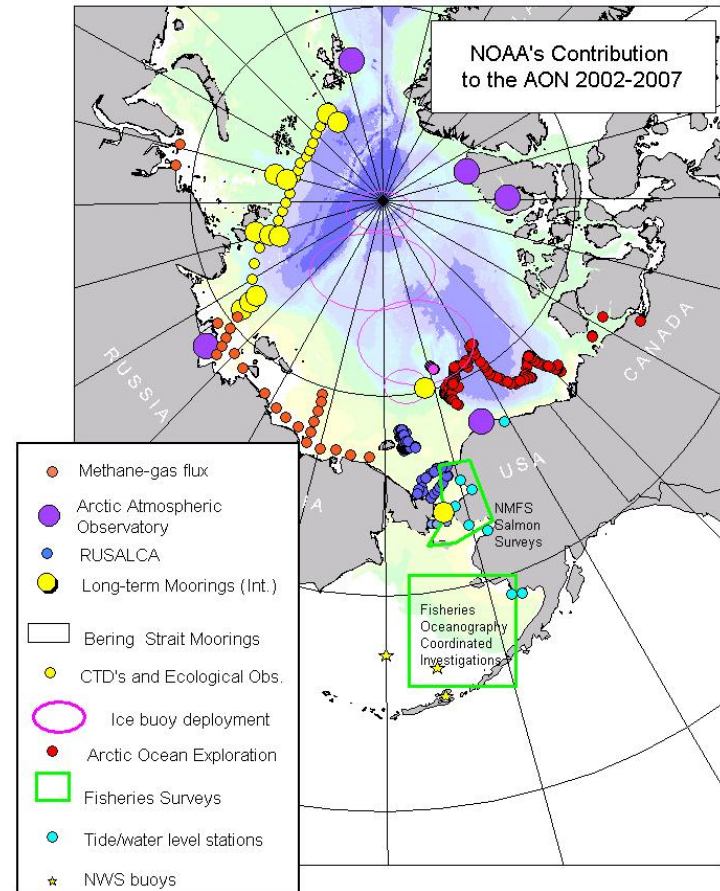
Recent Highlights:

- NOAA's Arctic Vision and Strategy Document
- Arctic Report Card (December is next issue)
- Sea-Ice Forecasting workshop and discussion
- Quadriennial RUSALCA cruise



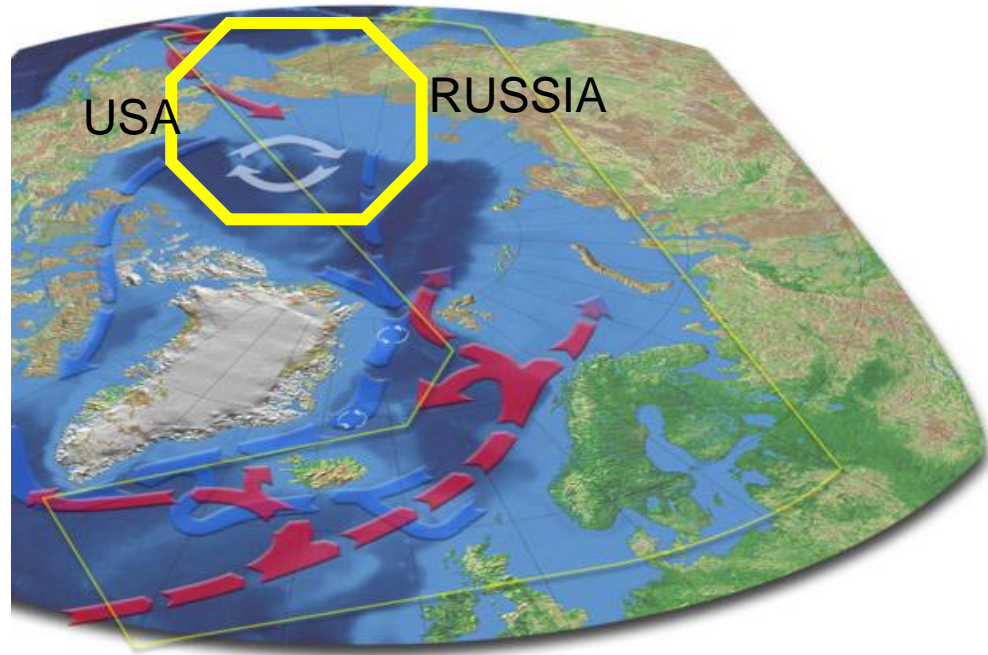
NOAA funded Arctic Research, (2002-2007)

- Atmospheric Observatories (Roshydromet-NOAA)
- Ocean Observations in Pacific Arctic-Bering Strait (AARI-NOAA)
- NABOS (AARI-NOAA)

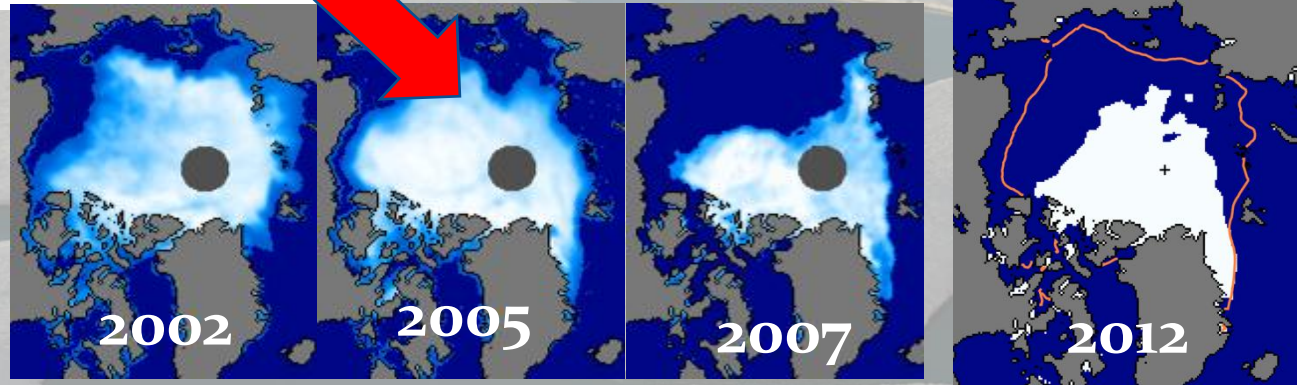


Pacific Arctic Climate-Sea Ice 2004-present

- Observations where Arctic sea ice is reducing rapidly
- Regional physics and ecosystem response to change
- NOAA-Roshydromet Arctic collaboration
- Bering Strait fresh water, heat, and nutrient fluxes (AARI-NOAA)



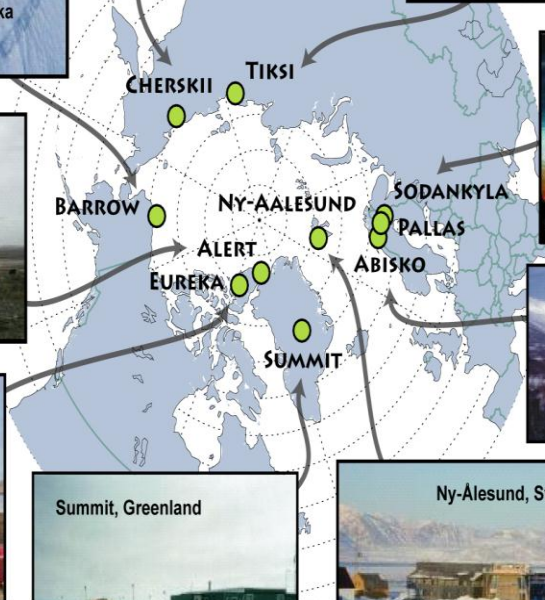
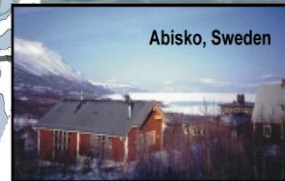
Bering Strait
Heat Triggers Ice
Melt: Increase of
2 to 6 x 10²⁰ J/yr



Arctic Climate Observatories

IASOA

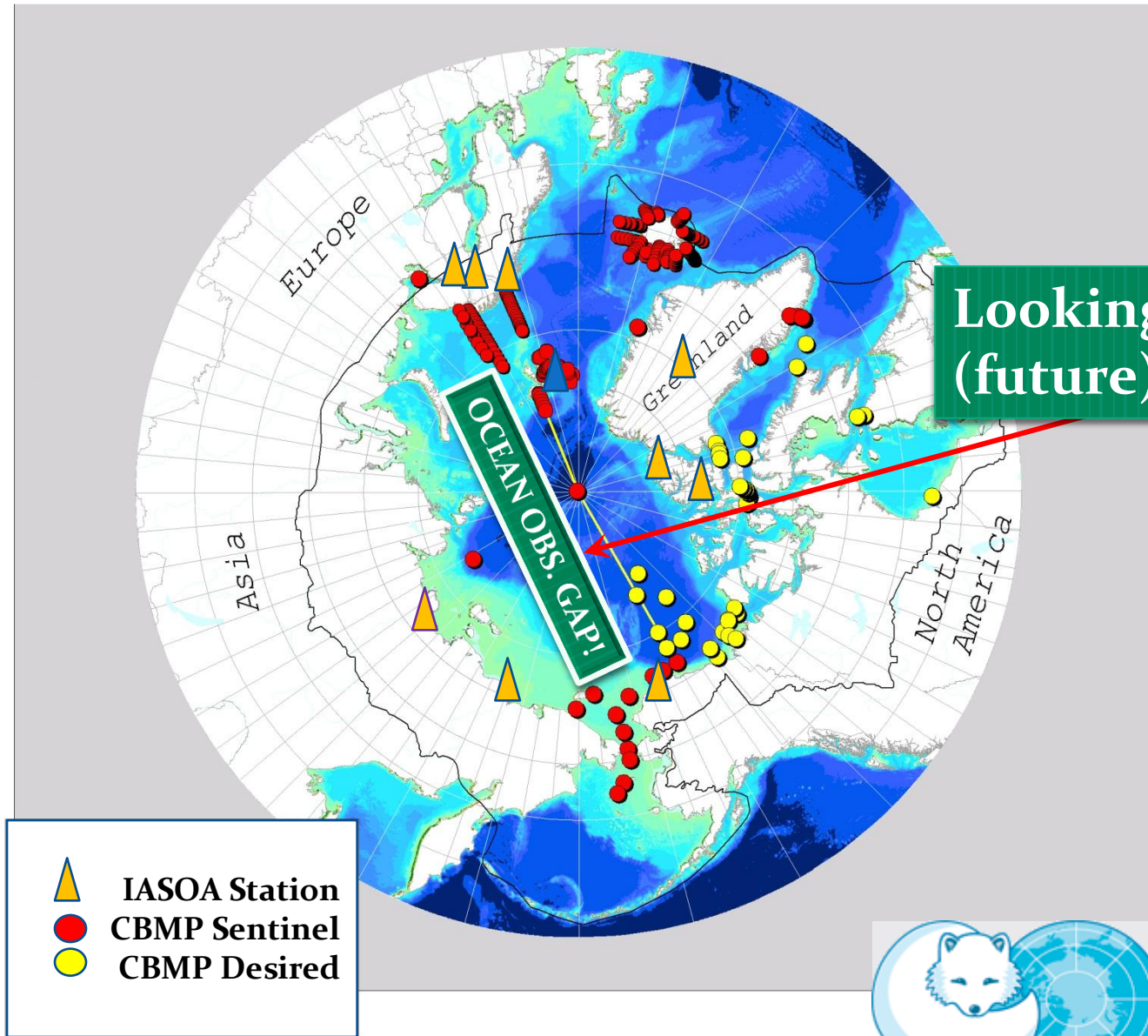
- How do clouds, aerosols and atmospheric chemistry interact to force the Pan-Arctic surface energy balances and albedo-temperature feedbacks?
- What are the relative roles of tropospheric dynamics and stratospheric linkages in controlling the Arctic surface variability?
- What portion of the recent changes in the Arctic weather and climate can be attributed to increases in anthropogenic sources?
- How does the Arctic atmosphere interact with the rest of the Arctic (marine, cryospheric and terrestrial) system?



Suggestions

- Revisit and update science questions that motivated Tiksi
- Congratulations on establishing Tiksi
 - Now the hard work of “sustaining” this international resource must begin,
 - Important to establish a very good data set others will want to exploit (focus on completing current observing strategy before adding completely new observations),
 - It’s never too soon to begin communicating beyond Tiksi community (e.g. to research, modeling, and satellite communities who will help respond to the questions)...a publication in WMO or BAMS may be helpful

Arctic Council Endorsed Observing Networks



Looking ahead
(future)

- ▲ IASOA Station
- CBMP Sentinel
- CBMP Desired



ARCTIC COUNCIL

IASOA and CBMP Stations

FUTURE GAP Observations: Roshydromet and NOAA Proposal in 2010

Activity Under the Memorandum of Agreement Between Roshydromet and NOAA

Structure, variability and heat transport of Atlantic Water in the Arctic Ocean and interaction with Pacific waters-sea ice response

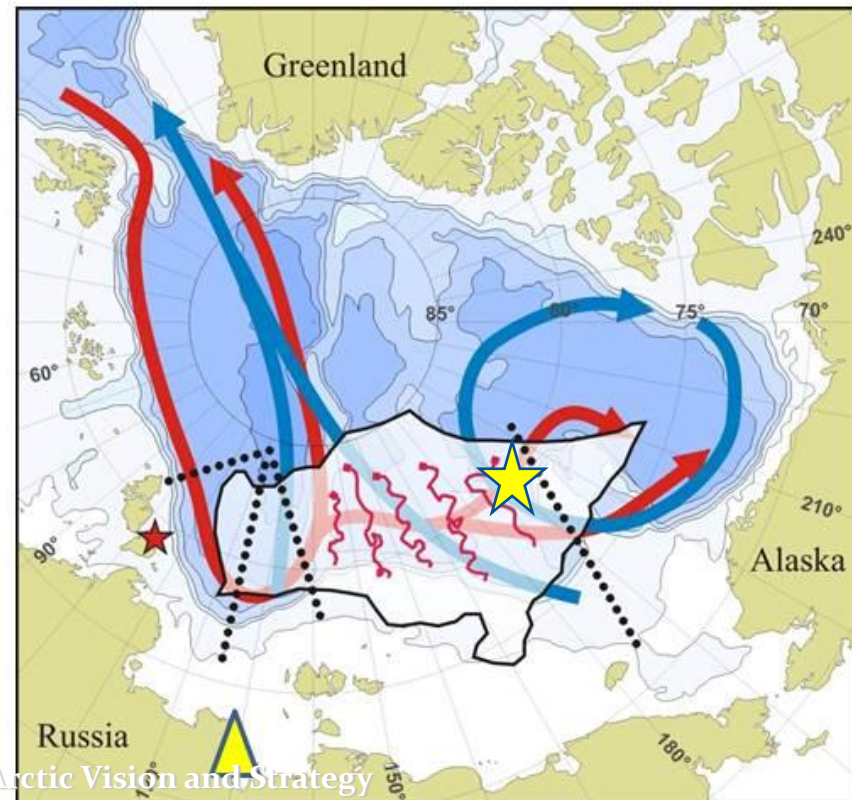
proposed Roshydromet-NOAA OBS: (1) locations of mooring lines /CTD sections are shown by black dots; (2) red squiggles - expected trajectories of the ITP floats; (3) position of land station, which is planned to be installed on cape Baranovo - marked by red star; (4) highlighted area, circled by thick black line, demonstrates the region of extreme ice loss in summer 2007; (5) blue and red arrows depict general pattern of surface currents and AW flow respectively 6) Yellow Triangle is the Tiksi Observatory



Possible Drift Station

NOAA's Arctic Vision and Strategy

(V&S)



Thank You!

SPACEBO!



(V&S)

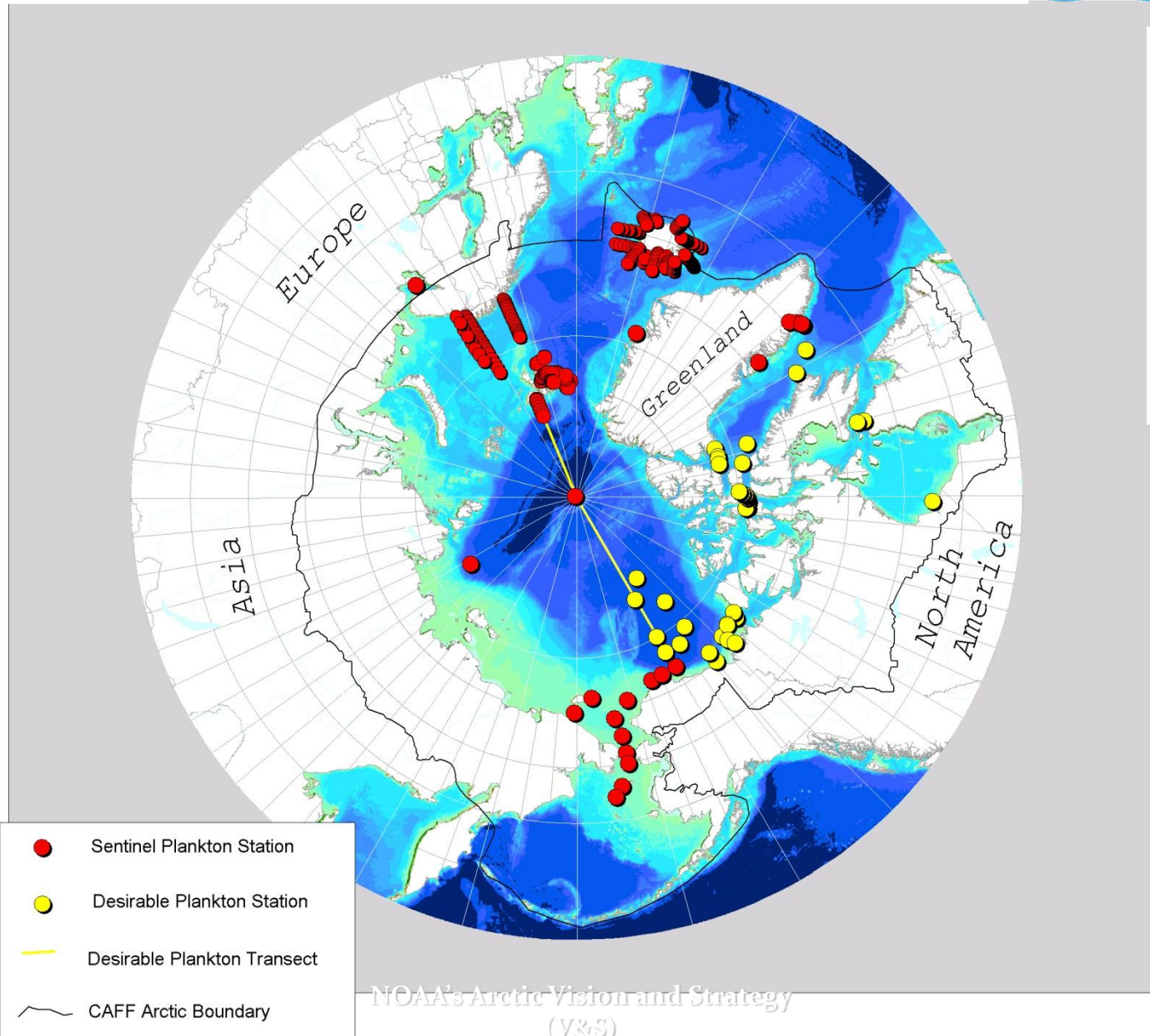
Extra slides



NOAA's Arctic Vision and Strategy
(V&S)



Arctic Council Endorsed Observing Networks



NOAA-Roshydromet 2010 Workshop Themes

- Arctic Ocean Climatology for the Period of the International Polar Year . (This activity has been funded and is about half way finished. depiction of the state of the Arctic Ocean during the IPY. UAF (Gleb Panteleev) and AARI (Sergey Kirilov) are the principal investigators)
- Outstanding Issues Regarding Climate Feedbacks and Impacts
- Building Understanding of Seasonal to Decadal Variability of the Central Arctic
- Structure, Variability, and Heat Transport of Atlantic Water in the Arctic Ocean and Interaction with Pacific Water- Sea Ice Change