Welcome

ARCUS Arctic Research Seminar Series

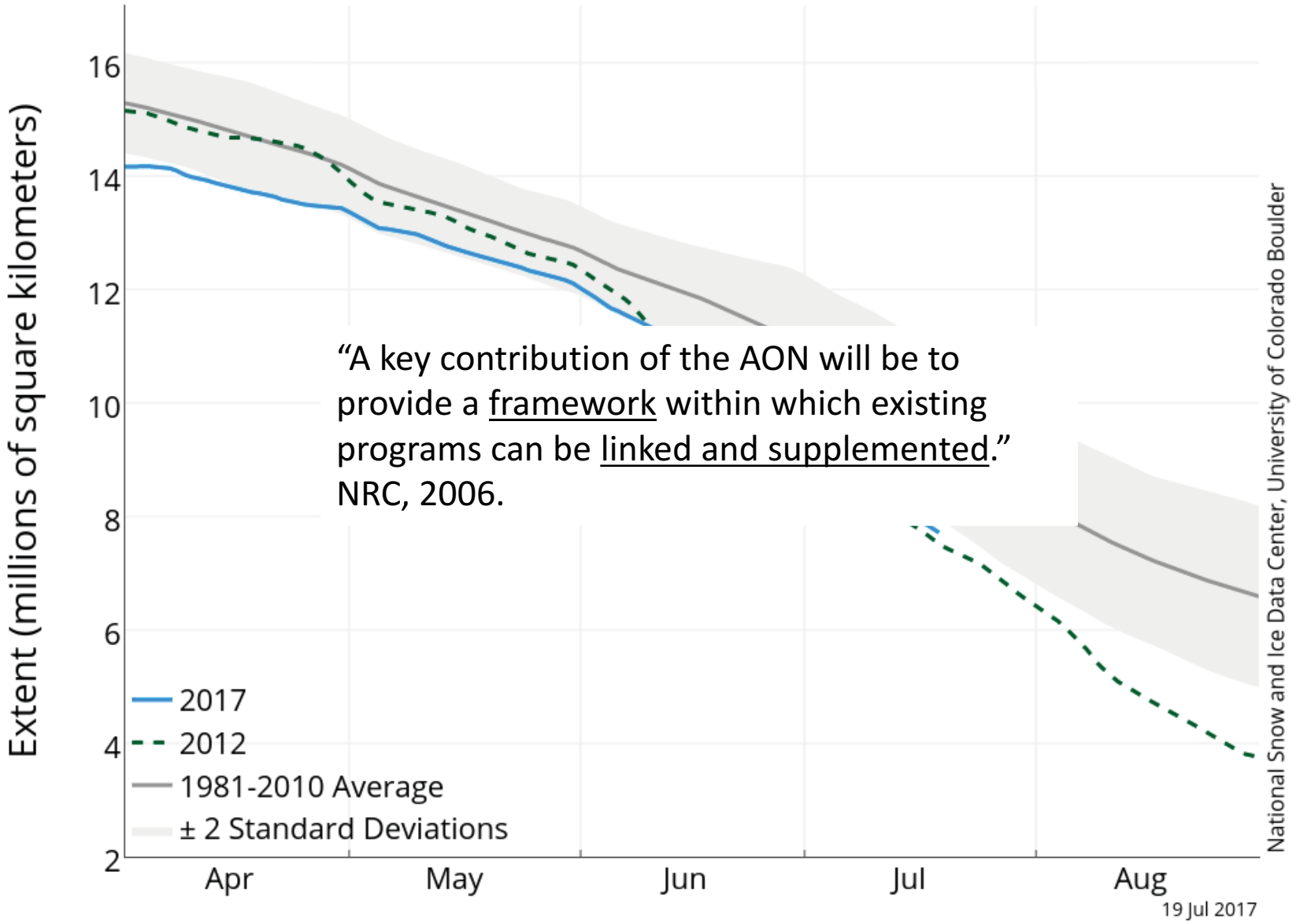
"The US Arctic Observing Network – Mobilizing Interagency Observing Actions in an Era of Rapid Change"

21 July 2017

Presented by Sandra Starkweather
NOAA/U.S. Arctic Observing Network

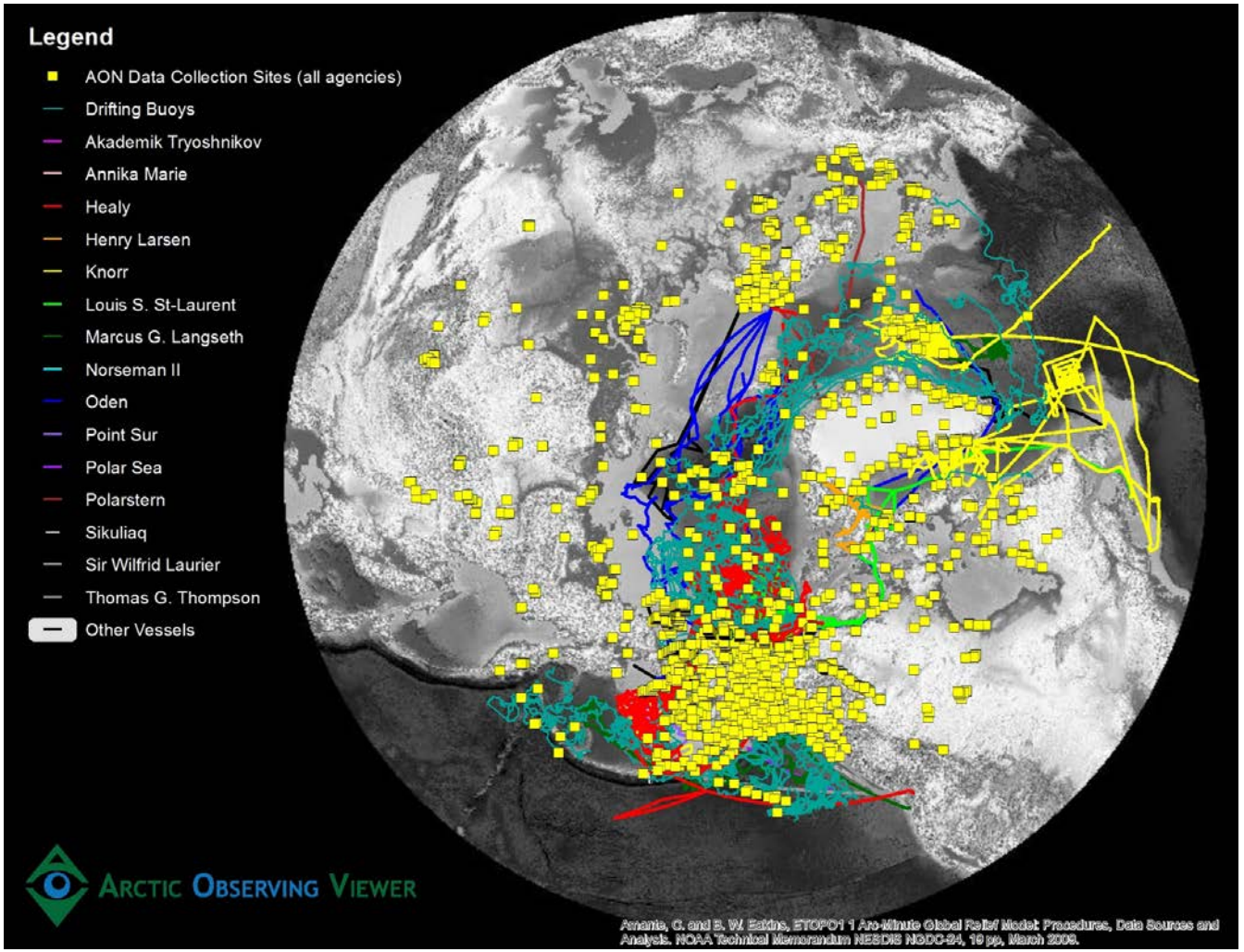
@metaarctic

#arcuswebinars



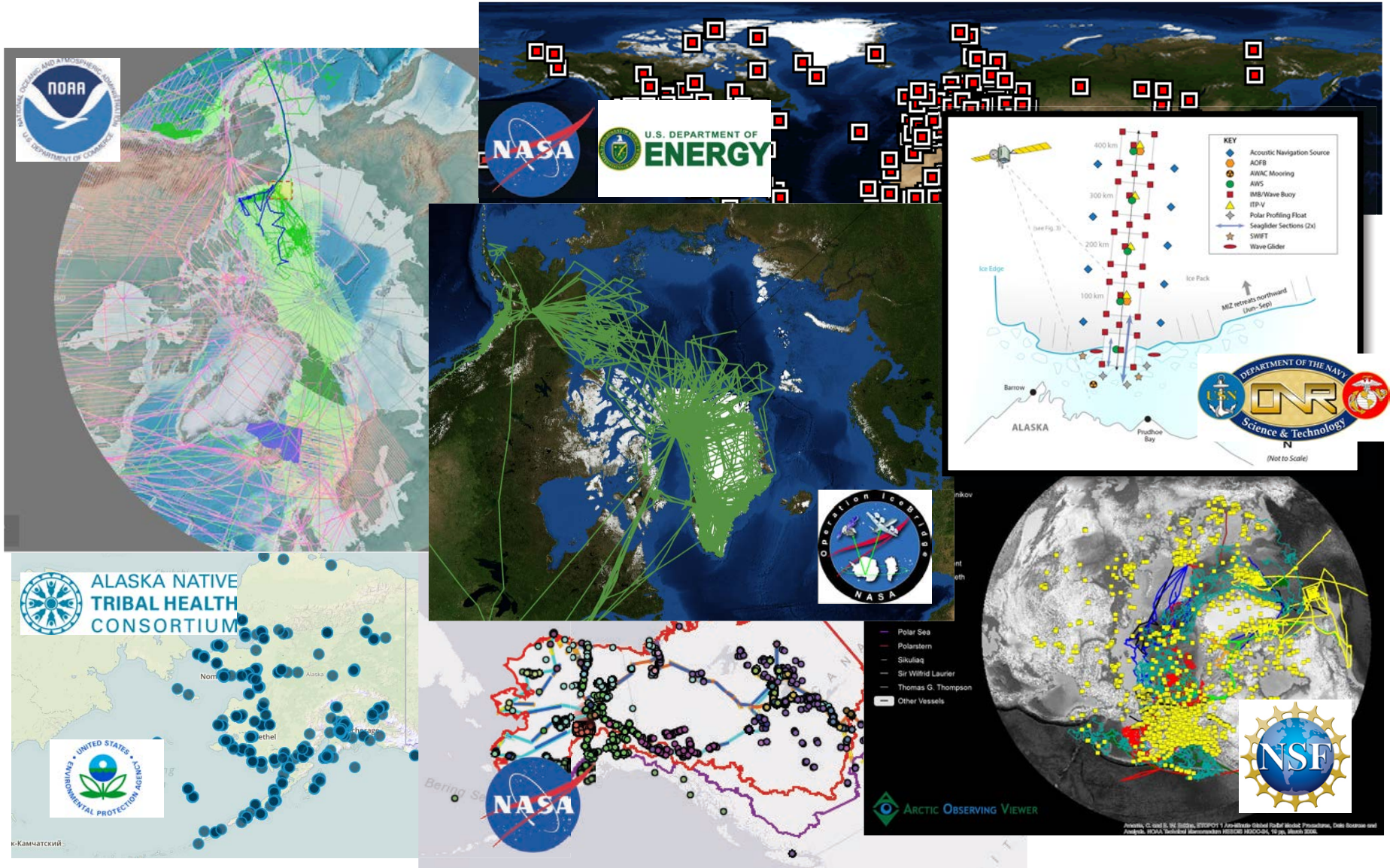
"A key contribution of the AON will be to provide a framework within which existing programs can be linked and supplemented." NRC, 2006.

US Arctic Observing

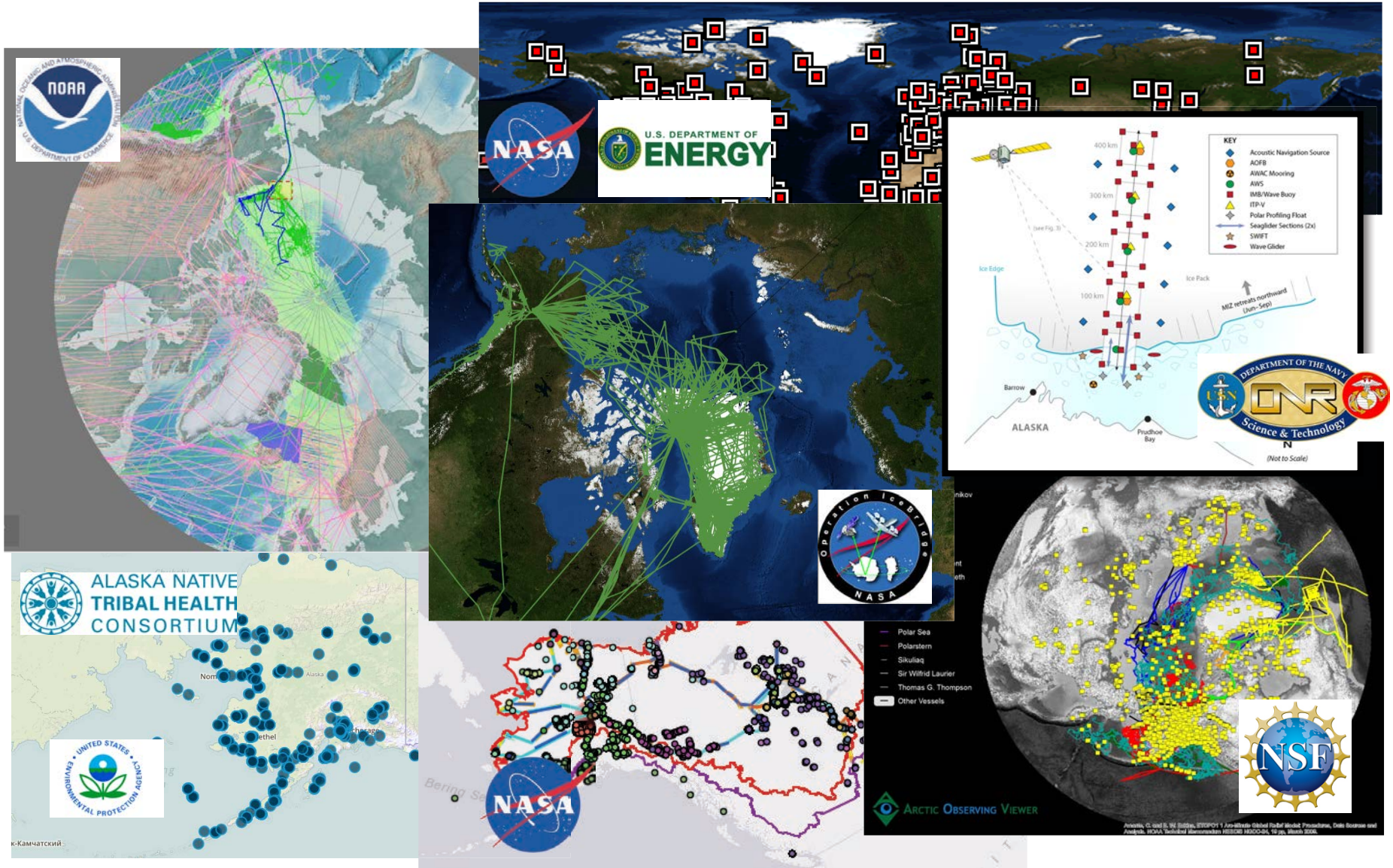


http://www.arcticobservingviewer.org/

US Arctic Observing



US Arctic Observing ~~Network~~



What would an interagency US AON make possible?

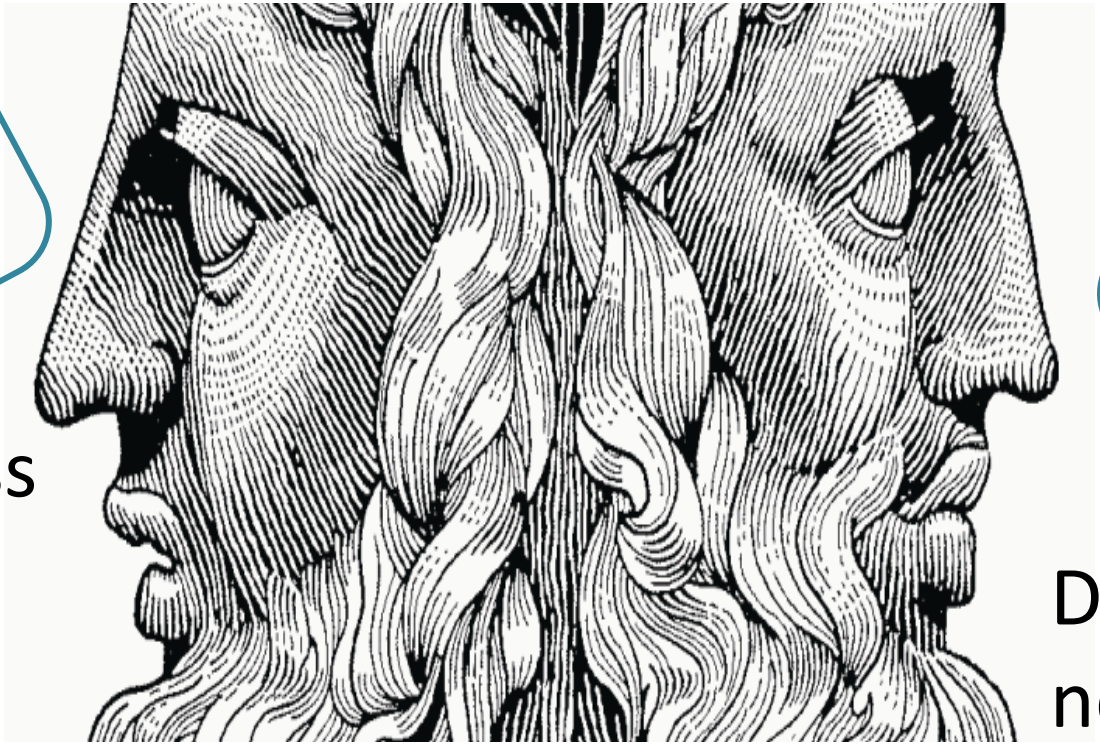
- Create interoperability across independent efforts through harmonizing, blending and integration;
- Address complexity across systems that don't care about agency mandates;
- Engage a diversity of stakeholders and use case scenarios to maximize the value of each observation;
- Establish vision for future observing and improve international coordination.

US AON

Backward Problem: Forward Problem

US AON Tasks

Work across existing networks and programs



AON Frame work

Design the network of the future

How is US AON organized?

US AON and IARPC

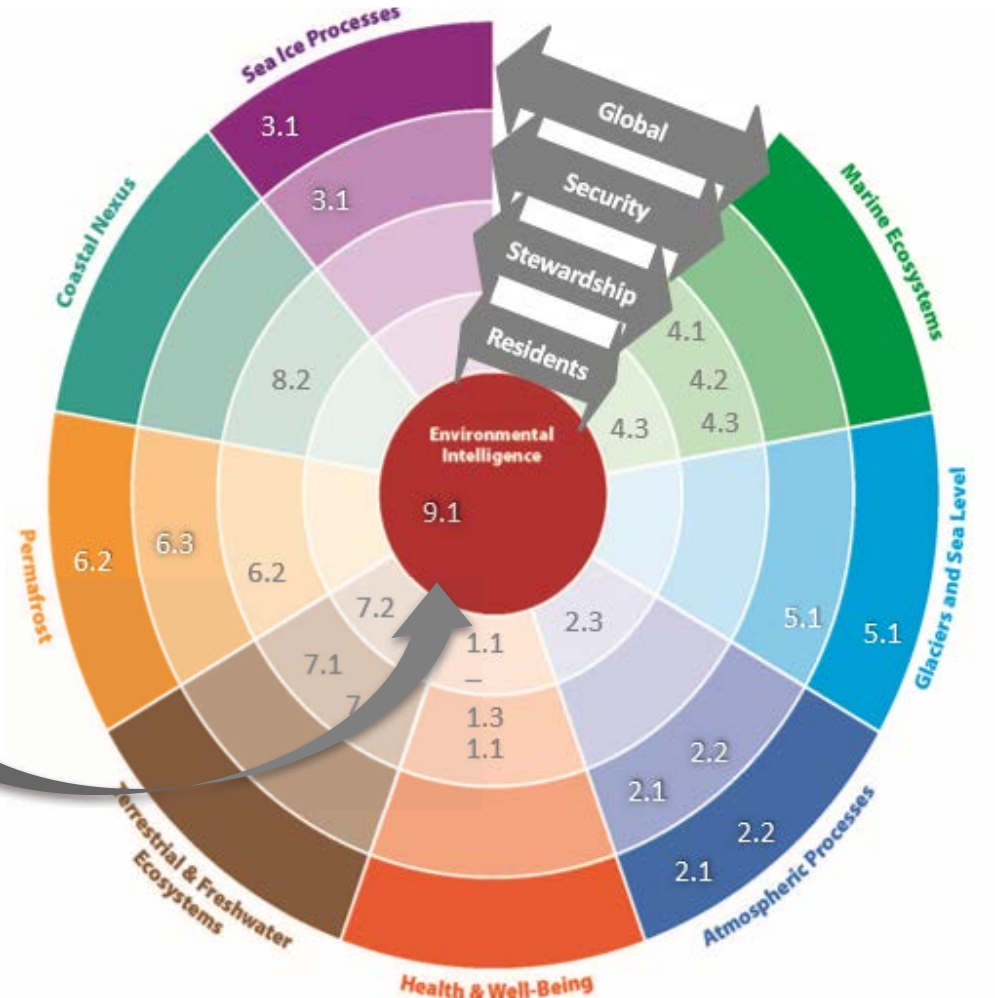
Interagency Arctic Research Policy Committee | Executive Director, Martin Jeffries

NSF (Chair), USDA, DOC, DOD, DOE, HHS, DHS, DOI, DOS, DOT, EPA, MMC, NASA, OMB, OSTP, SI

IARPC was created by Congress with the mandate to coordinate Federal Arctic Research.

IARPC Produces the Arctic Research Plan to guide these efforts. This diagram depicts the 9 Goals of *Arctic Research Plan 2017-2021*

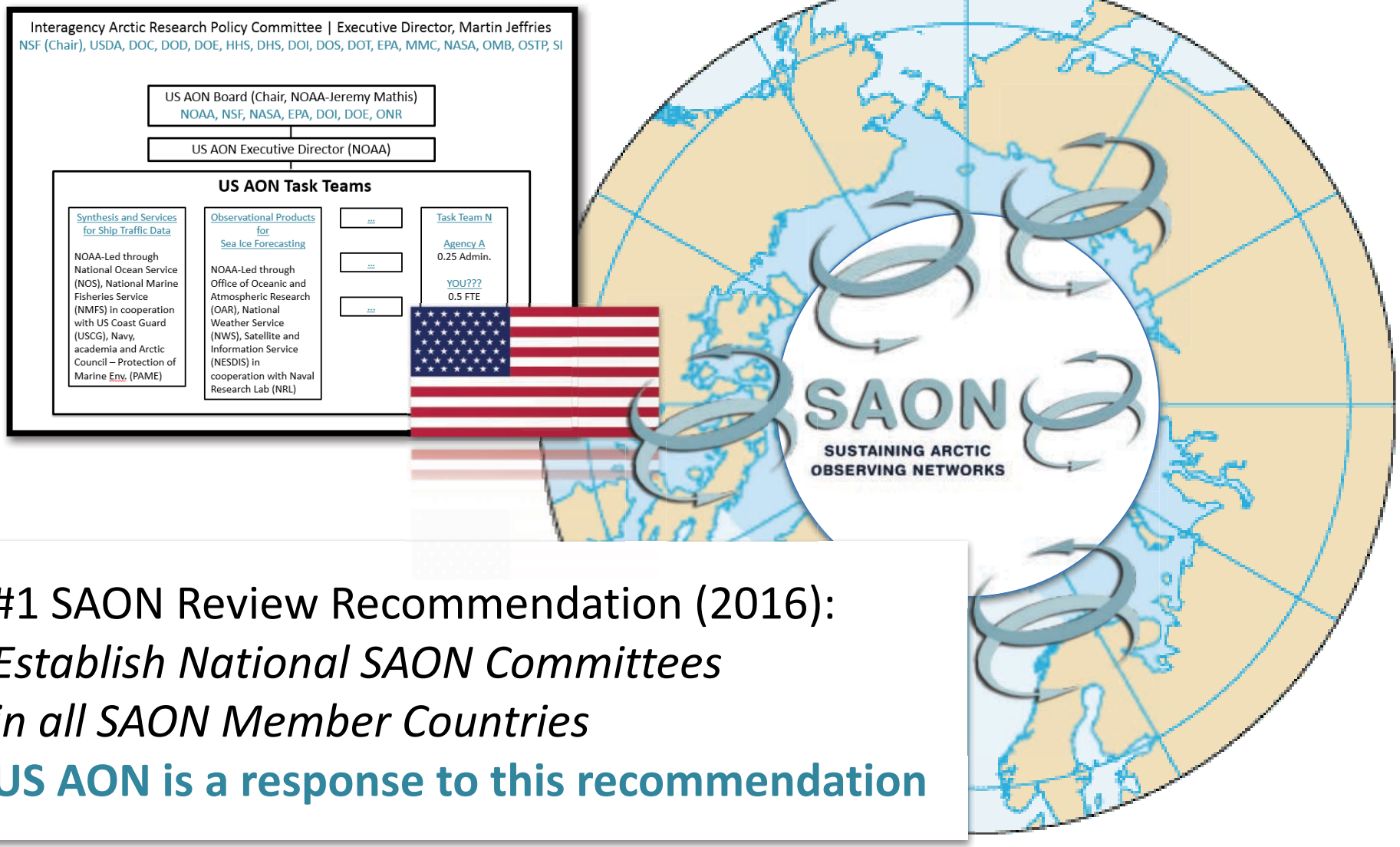
16 Research Objectives have strong ties to sustained and networked Arctic observations.



US AON *is* Sustained Observing

- US AON Board [NOAA, NSF, NASA, EPA, DOI, DOE, ONR] is convening to provide guidance on US AON Tasks and to advance a strategic AON Framework;
- US AON Exec. Dir. is directly tasked with fostering US AON Tasks and advancing AON Framework in coordination with Agency Researchers and Outside Partners;
- US AON works through IARPC Observing Team (AOSST) to identify opportunities and to communicate progress.

SAON: US AON Relationship



#1 SAON Review Recommendation (2016):
Establish National SAON Committees in all SAON Member Countries
US AON is a response to this recommendation

US AON

Backward Problem

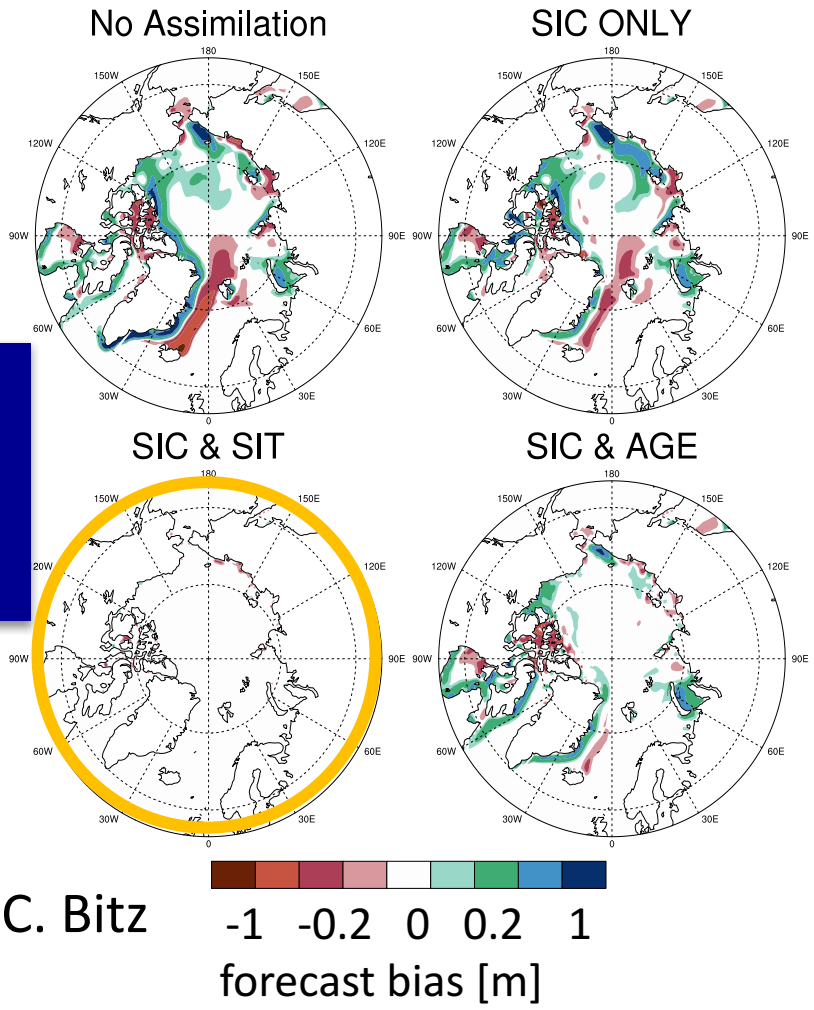
US AON Tasks

Work across existing networks and programs

- Add resources and direction to recommended efforts poised to deliver valuable products & services;
- Advance utilization of design-oriented analysis and coordinate guidance from modeling groups*;*
- Support data & information discovery and interoperability *across agencies.*

US AON Task: Towards an Operational, Multi-Sensor Sea Ice Thickness (SIT) Product

– Need: An operational sea ice thickness product for forecast models has been identified as a critical advancement for *sea ice forecasting*.

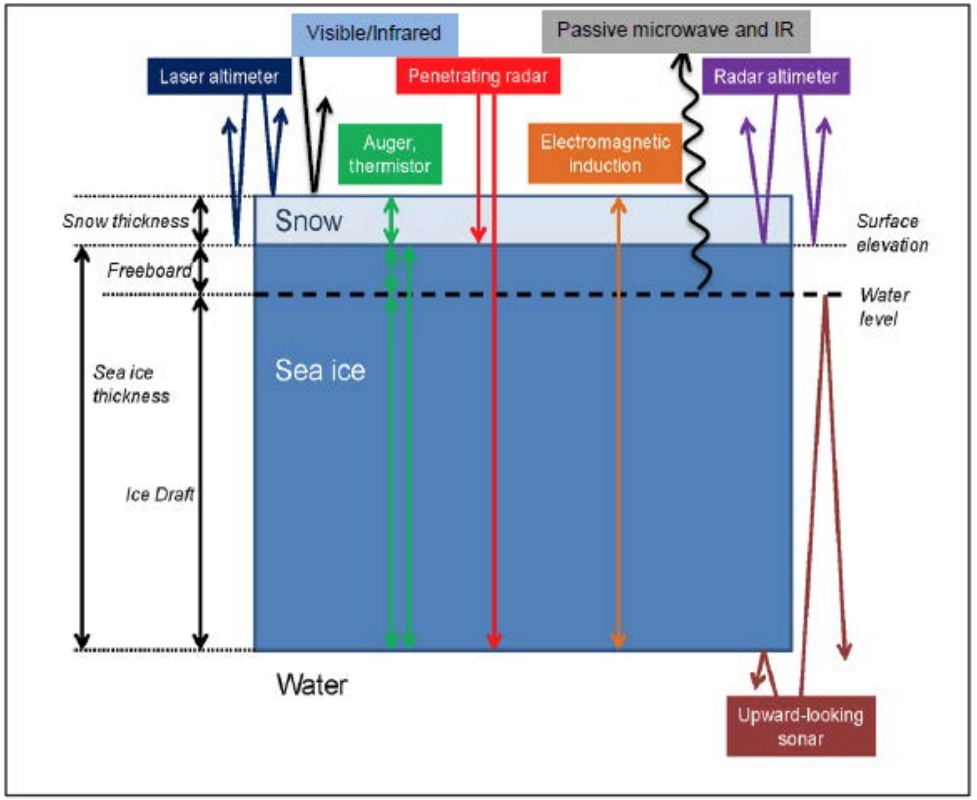


Assimilating SIT virtually eliminates the forecast bias

Courtesy, C. Bitz

US AON Task: Towards an Operational, Multi-Sensor Sea Ice Thickness (SIT) Product

- Need: An operational sea ice thickness product for forecast models has been identified as a critical advancement for *sea ice forecasting*.
- Challenge: There is currently no single observing technology that provides comprehensive, real-time sea ice thickness;

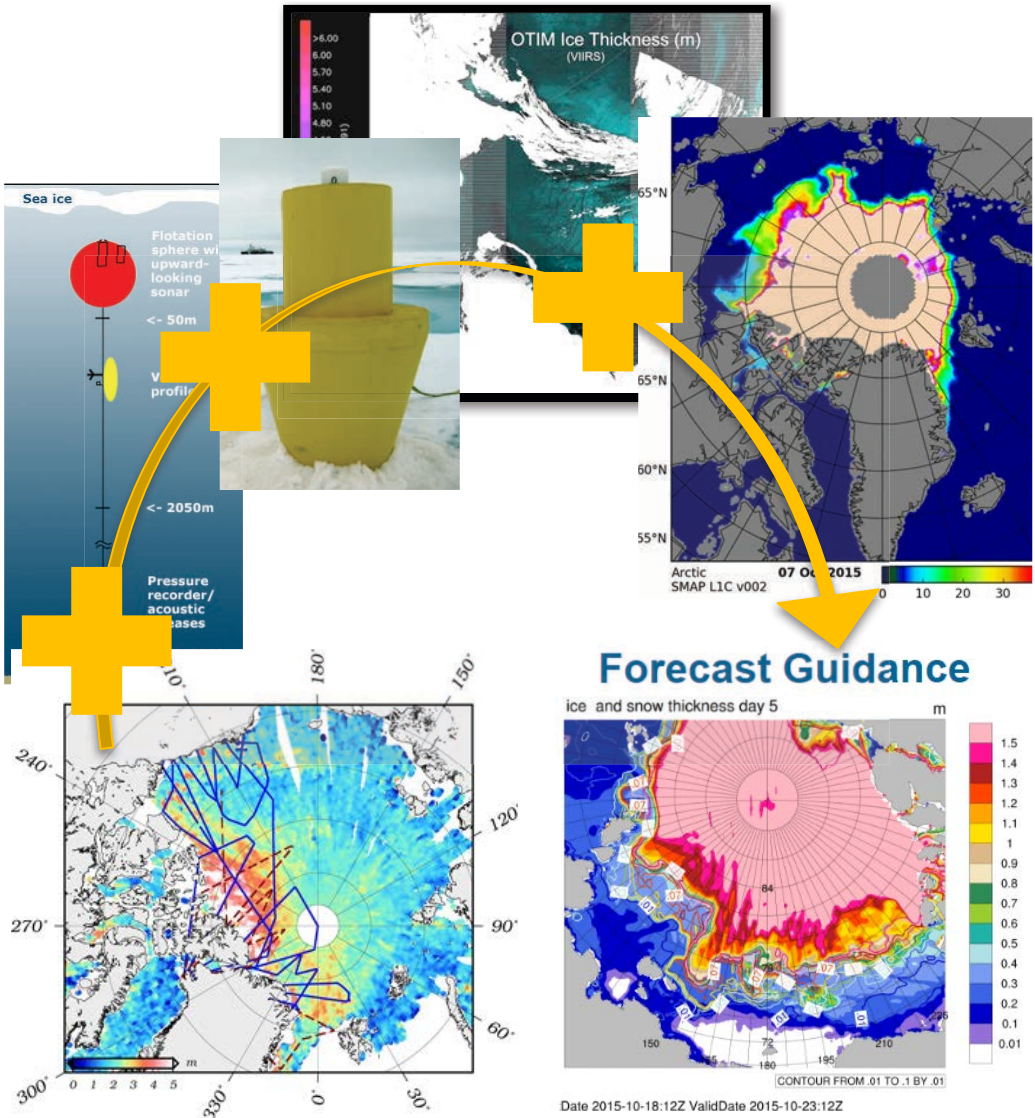


(adapted from Meier et al., 2014)

European Space Agency

US AON Task: Towards an Operational, Multi-Sensor Sea Ice Thickness (SIT) Product

- Need: An operational sea ice thickness product for forecast models has been identified as a critical advancement for *sea ice forecasting*.
- Challenge: There is currently no single observing technology that provides comprehensive, real-time sea ice thickness;
- US AON Task Approach: Assemble an interdisciplinary task team comprised of experts from each technology, model developers and operational ice centers to develop fit-for purpose, multi-sensor product(s).



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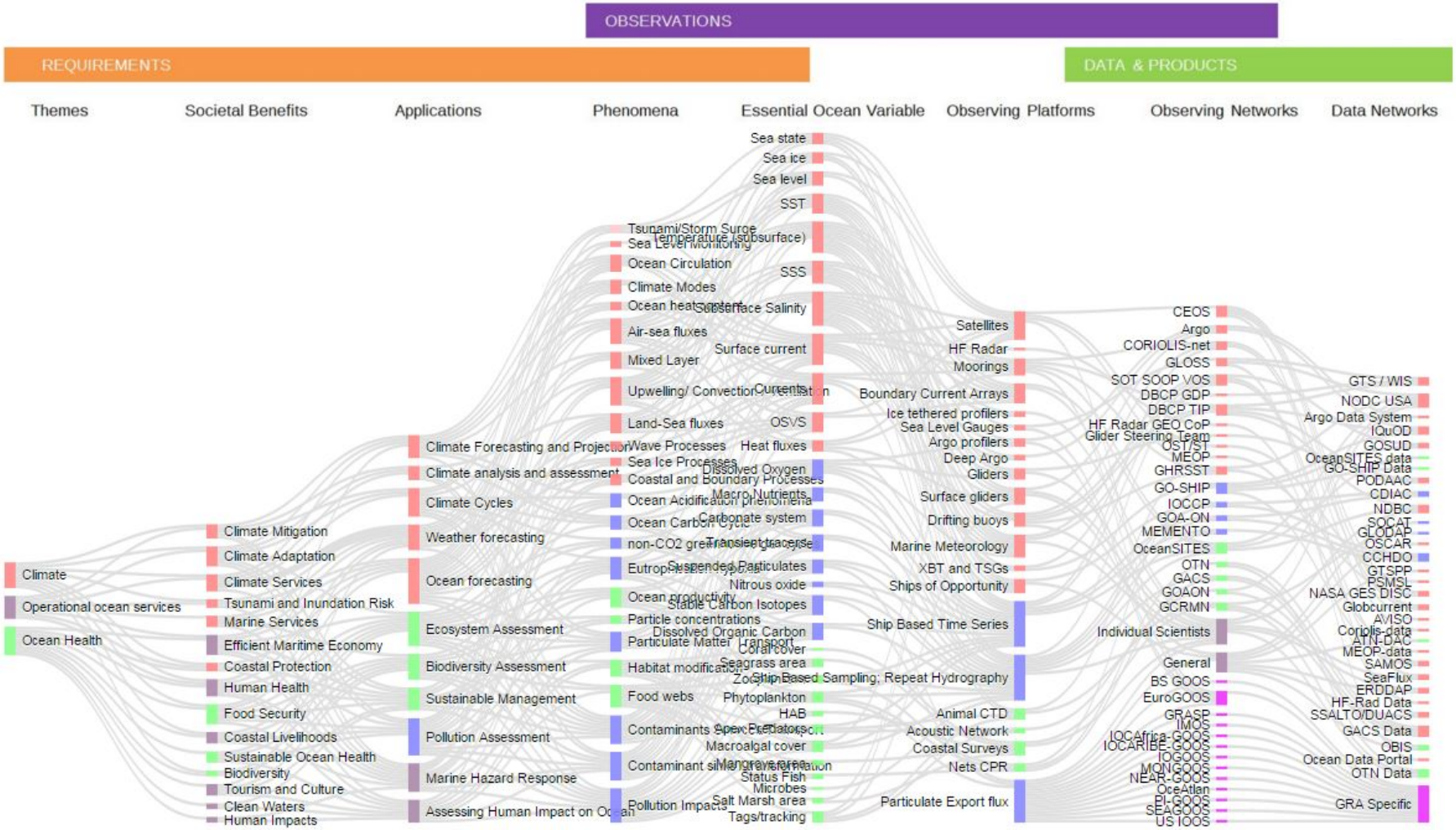
Forward Problem

- Define Arctic-Specific Societal Benefits to Weigh Impacts;
- Convene Authoritative Expert Bodies to Assess the Technology (Feasibility) of Observing Systems;
- Identify Essential Variables.

AON Frame work

Design the network of the future

Framework for Ocean Observing (GOOS) Essential Ocean Variables



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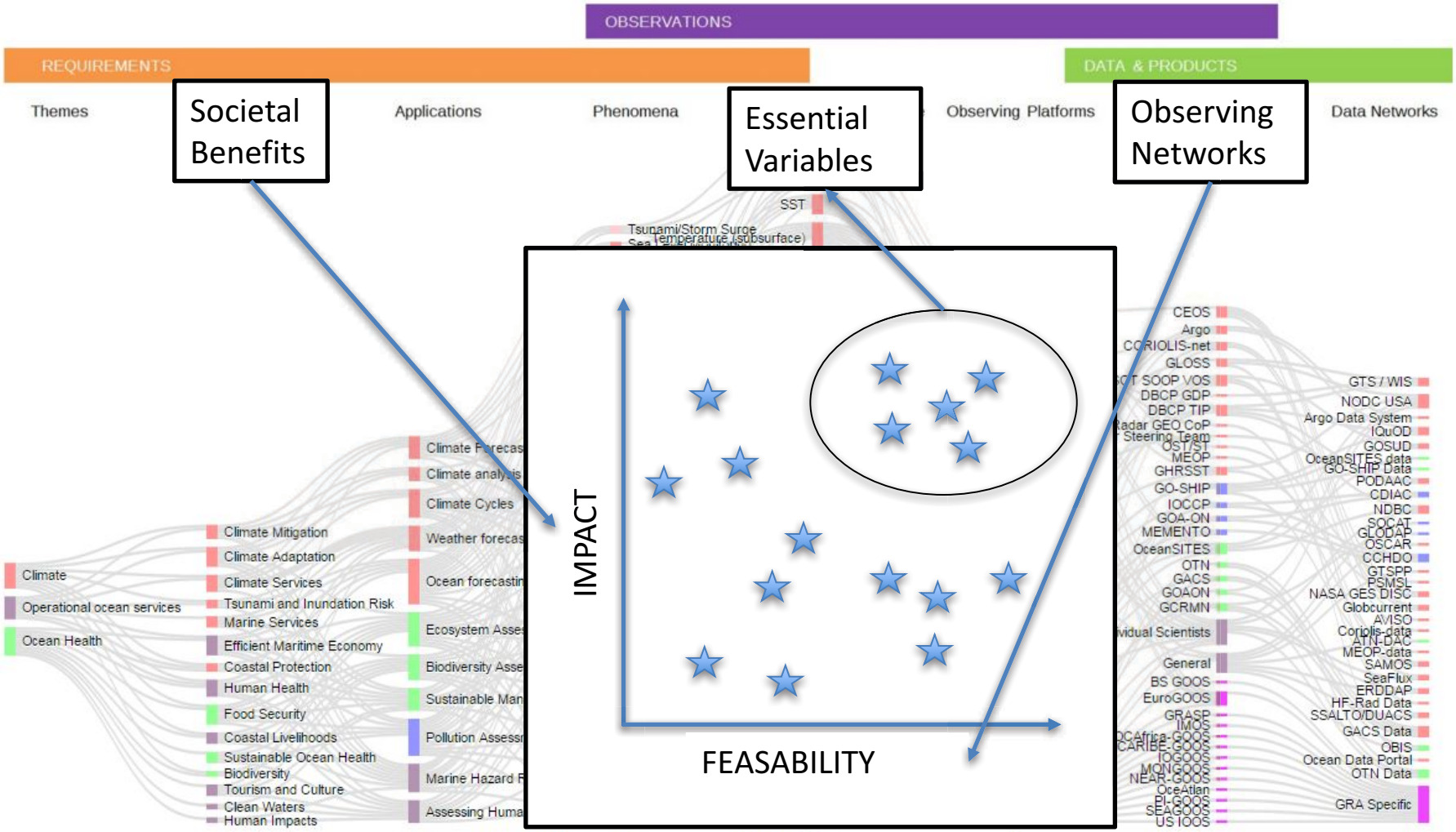

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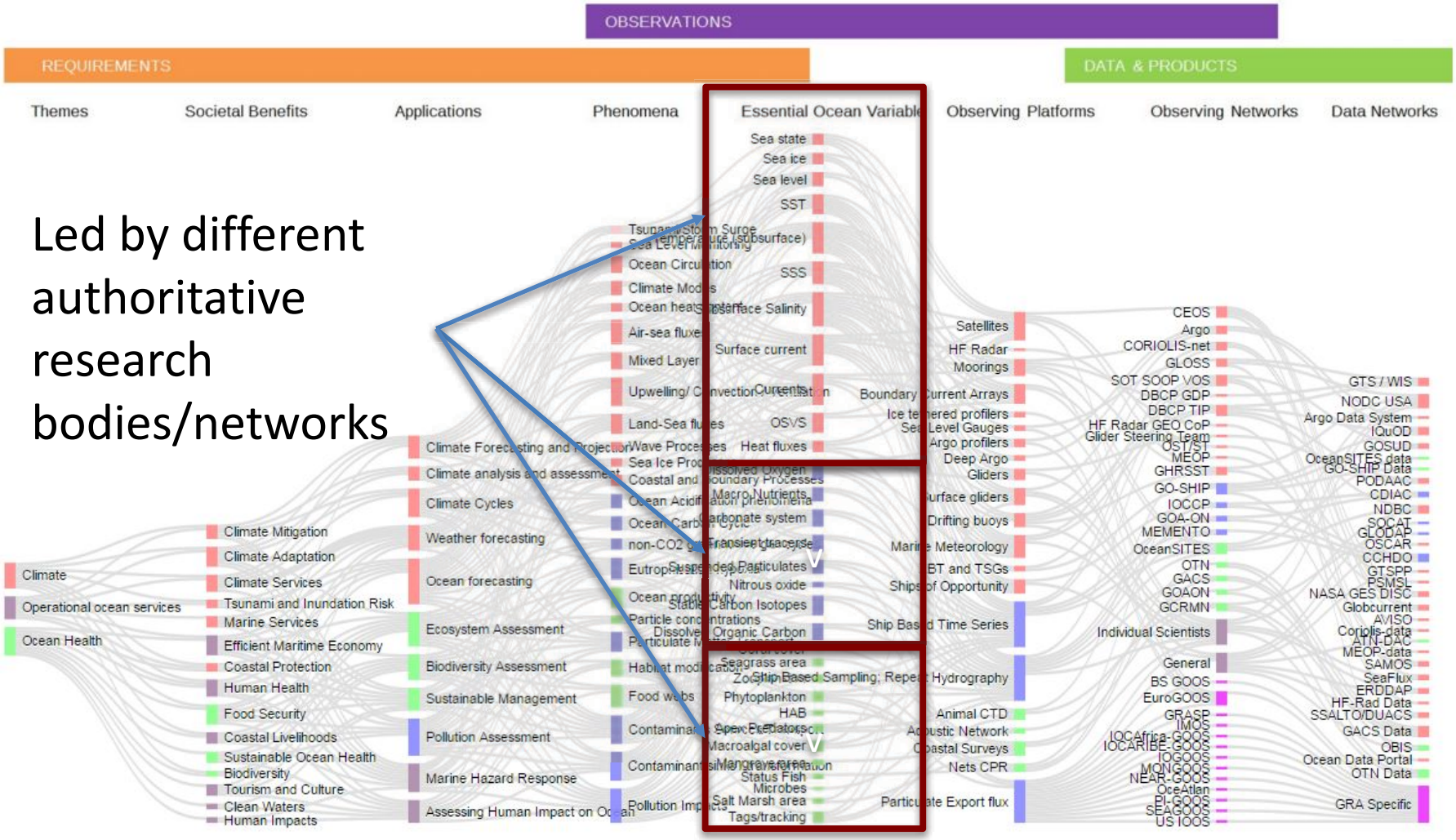
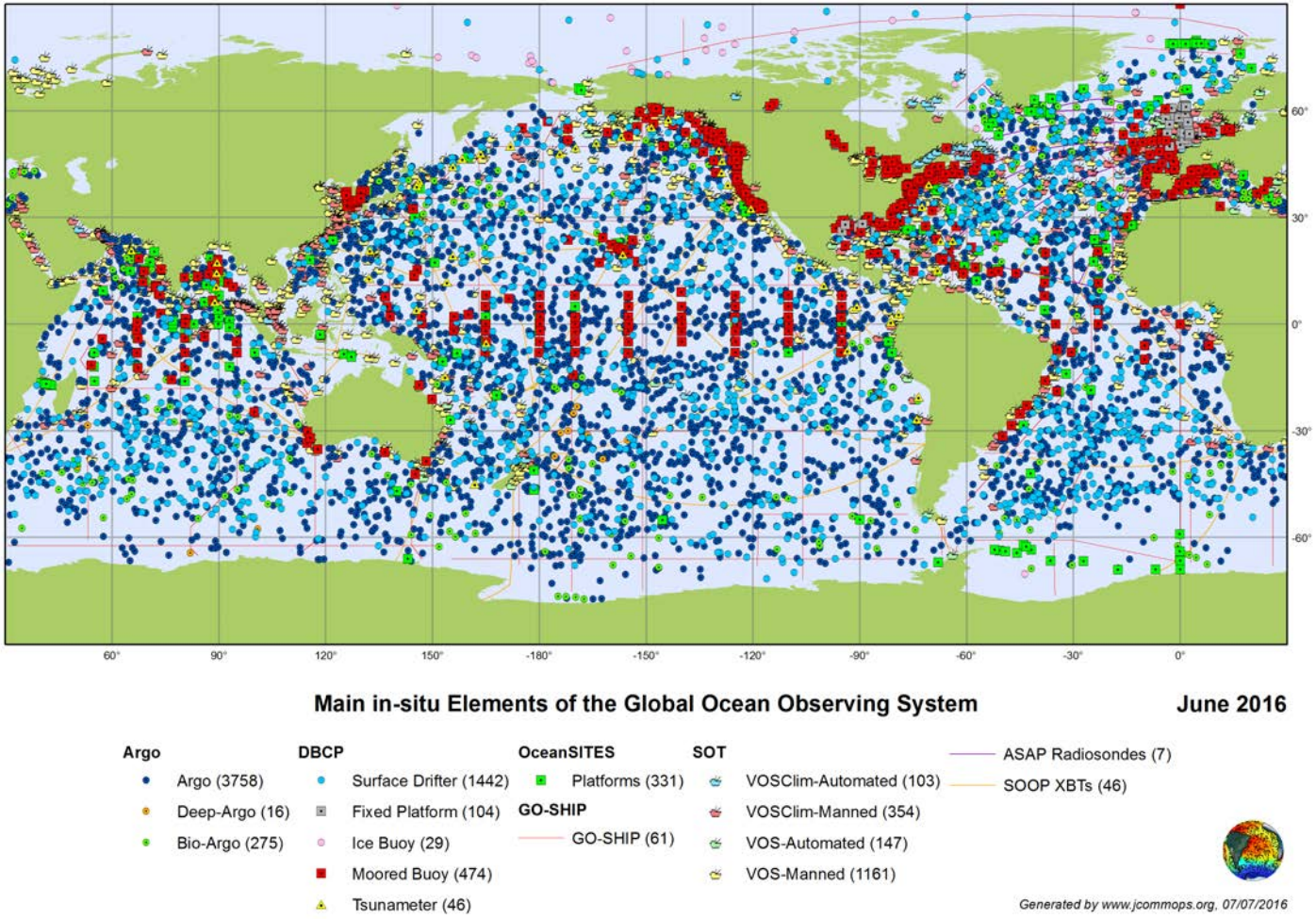
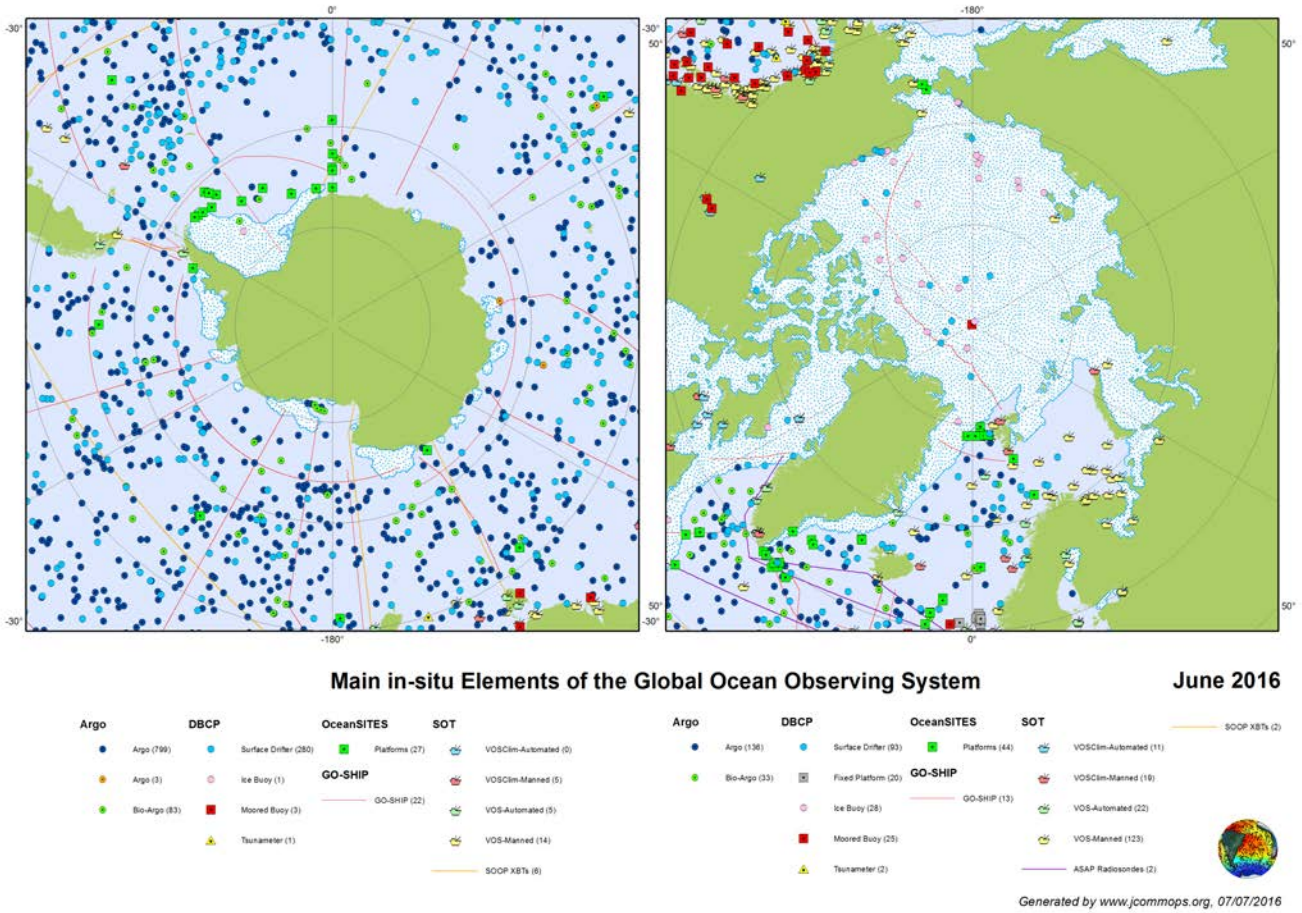


Led by different authoritative research bodies/networks

Success story for collaborative observing; diverse & utilized



But even a powerful approach can struggle in the Arctic



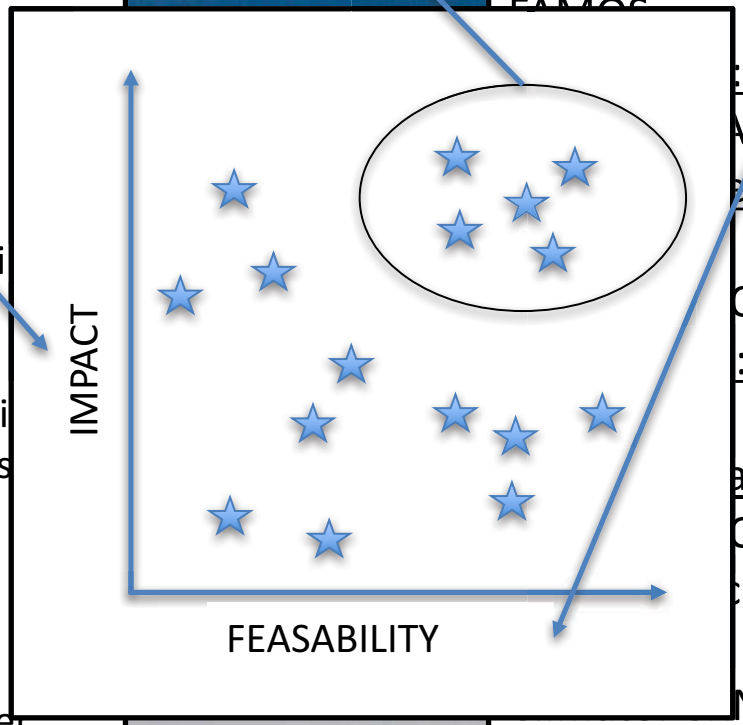
The Arctic is Different

Societal Benefits

Example from STPI/SAON - Arctic Observing Framework

1. Disaster Preparedness
2. Environmental Quality
3. Food Security
4. Fundamental Understandi
Arctic Systems
5. Human Health
6. Infrastructure and Operati
7. Marine and Coastal Ecosys
and Processes
8. Natural Resources
9. Resilient Communities
10. Sociocultural Services
11. Terrestrial and Freshwate
Ecosystems and Processes
12. Weather and Climate

Essential Arctic Variables



Observing Networks, Large Programs

Ocean: GOOS, AOOS, IOOS,

GCW, GTN-G, GTN-P,
ALM, PCN, IABP
: GAW, IASOA, DOE-

O, PAG
: LEO, EYES NORTH,

ators: ArcticFROST
CBMP, TEON, ABOVE,

N, TEON

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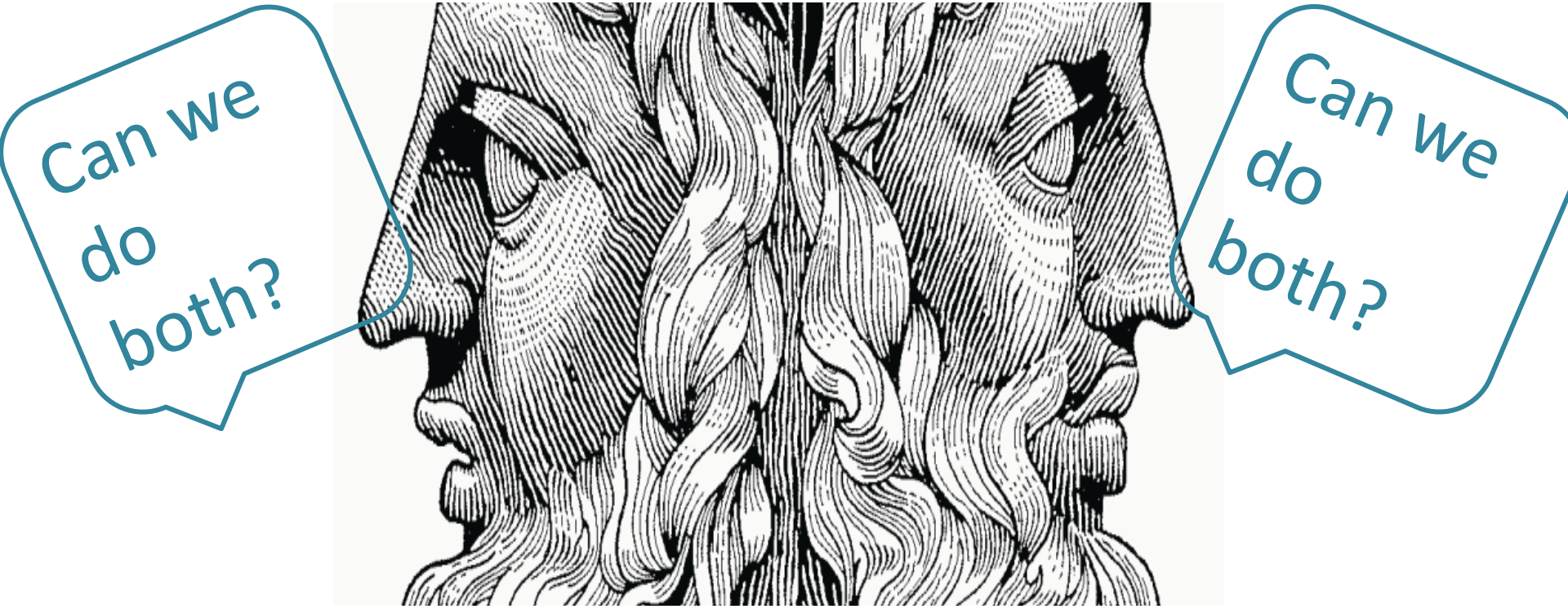
Backward Problem: Forward Problem



Employ “Stratics”
= Strategy + Tactics

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Backward Problem: Forward Problem

ARCTIC OBSERVING SUMMIT AOS 2018

AOS 2018 - Davos, Switzerland

Learn More

AOS 2018 - Davos, Switzerland

Arctic Observing Summit 2018 - Save the date!

Learn More

SEARCH

Arctic Observing News

The first **synthesis documents** to guide AOS discussions have been uploaded **here**!

AOS 2016 **white papers** and **poster abstracts now available**!

AOS 2013 white papers now published online in ***Arctic*** Volume 68 (Supp.1) 2015 and as hardcopy.

3 Relevant AGU Sessions

The Role and Impact of a Pan-Arctic Observing Network in Delivering Societal Benefits (PA035)

Description: https://agu.confex.com/agu/fm17/preliminaryview.cgi/Session26759

Foundations for Sustained Arctic Observing: Connecting Observational Networks to Societal Benefit (C012)

Description: https://agu.confex.com/agu/fm17/preliminaryview.cgi/Session27058

Indicators of Arctic Climate Variability and Change (C018)

Description: https://agu.confex.com/agu/fm17/preliminaryview.cgi/Session27233

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Too chaotic? Still have questions?

Sandy.starkweather@noaa.gov

@metaarctic

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Thank You!

- Please visit ARCUS online to find:
  - ARCUS Seminar Series recordings: https://goo.gl/Wymkd7
  - Sea Ice experts in the Directory of Arctic Researchers: https://goo.gl/NKmXz2
  - Sea Ice Outlook reports for 2017: https://goo.gl/NGqBFU
  - Opportunities to participate in ARCUS' Defend Arctic Research campaign: https://goo.gl/aagB5s

- Please consider becoming an ARCUS member! https://goo.gl/u4662D

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Value criteria for US AON Tasks

Observations become more **valuable** when more people **use** them.

ACCESSIBLE | RELEVANT | MULTI-PURPOSE