

Advancing Predictability of Sea Ice: Phase 2 of the Sea Ice Prediction Network (**SIPN2**)

- **Multi-prong approach spanning from theoretical to user-inspired research, building on SIPN:**

1. Dynamical & Statistical methods, oceanic heat & Pacific sector climate variability
2. Evaluate of SIO forecast methods
3. Develop new observation-based products to improve sea-ice predictions
4. Evaluate the socio-economic value of sea-ice predictions based on stakeholder product needs
5. Evolve network SIO forecasts and further develop network activities.

SIPN Accomplishments In Brief

- Since 2014, we have organized the SIO, collecting and synthesizing Outlooks
- Collect and analyze full fields
- Provide a curated website of observational fields for initializing and evaluating sea ice prediction
- Organize coordinated experiments among network forecasters to test sensitivity to sea ice thickness and influence of post processing
- Led about over a dozen peer-reviewed papers about SIPN activities and insights about improved observations to constrain forecasts

[C. Bitz]

SIPN Accomplishments In Brief

- Create teams of collaborators for network activities
- Develop new metrics for evaluation
- Run webinars about SIPN activities
- Organize the annual Polar Prediction Workshops
- Host annual meetings at AGU
- Present at conferences and meetings about SIPN

Sea ice variability is increasing*

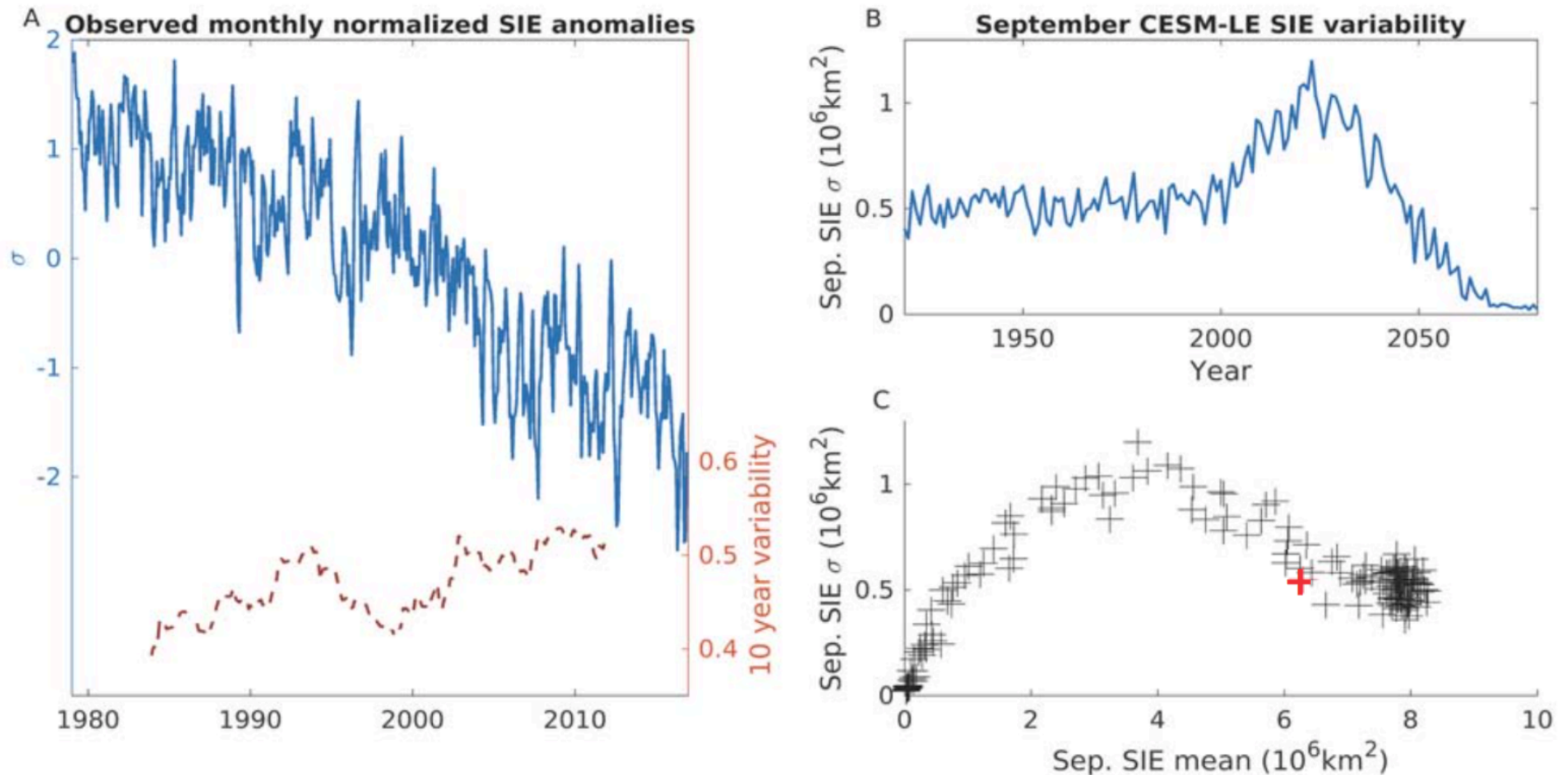


Figure 2 A) Monthly standardized sea-ice extent (SIE) anomalies 1979-2016 from observations (blue) and running 10-year variability of normalized anomalies (orange), B) September SIE variability across all CESM Large Ensemble (CESM-LE) members over 1921-2080 and, C) September sea-ice variability as a function of ensemble-mean September SIE in the CESM-LE (black crosses) and observations (red cross).

[E Blanchard-Wrigglesworth]



SIPN2 team



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Hajo Eicken, Sea ice

Joseph Little, Economist

John Walsh, Climate

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**Helen Wiggins (co-PI) &
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Human dimensions of
climate**

SIPN2 team



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Extended SIPN2 team, in-kind support



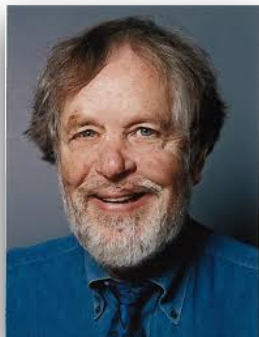
Walt Meier, NSIDC
U Colorado, Sea
ice, **NASA**



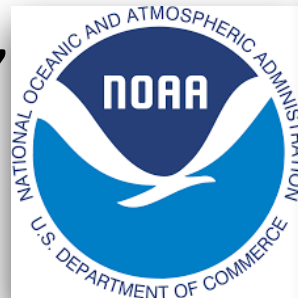
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European Union



New Aspects of SIPN2

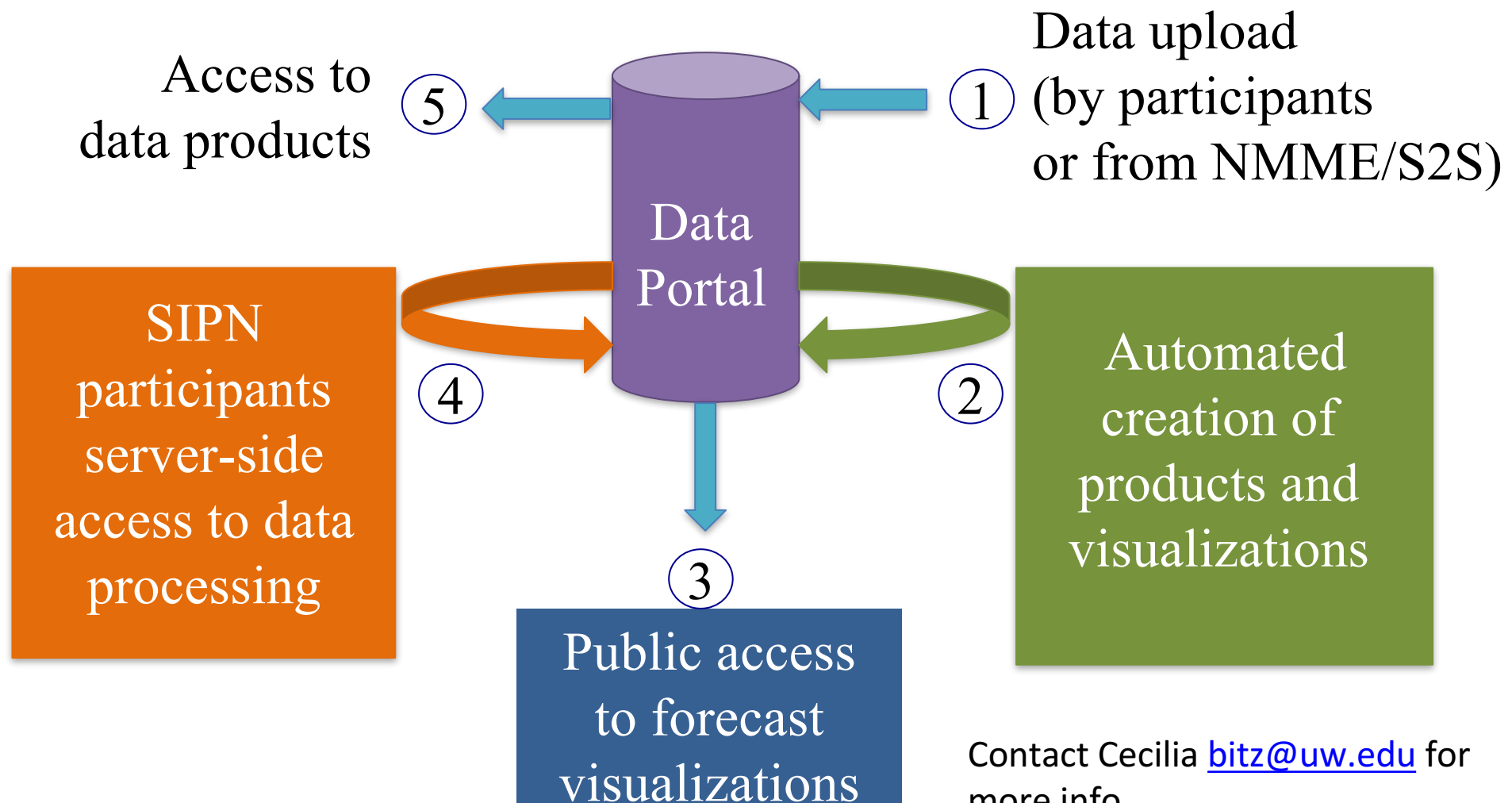
- Perfect model experiments to investigate the role of **oceanic heat** on the limits of subseasonal-to-seasonal (S2S) sea-ice predictability
- Evaluate the **economic value** of sea ice forecasts for Alaska maritime industry, obtain guidance on improved products and targeted observations
- Applying the potential of predictive power from **complex systems research**
- Identify role of **regional processes in the Pacific** sector for pan-Arctic change

Data Portal for SIPN Forecasts

- Full Fields
- 0 to 12 month Range
- Year round



Five phases of development in 2018-2019



Contact Cecilia bitz@uw.edu for more info

Why collaborate?

- More groups participating in the SIO -> **better statistics, deeper understanding** of the problem
- See where **your results fit** in relation to the community's
- Design **your own** new SIO product or experiment! (*e.g., regional forecast, fixed initial thickness, etc.*)
- It will soon be much easier: **SIPN data portal** will make it much easier to collaborate
- Join network to **strengthen the bridge** between observations & modeling
- Join discussions and networking on **stakeholder-focus activities** with AK shipping/maritime industry

Additional Announcements

- Spring 2018 ICEX ice camp as opportunity to explore utility of freeze-up/winter predictions for operational support.
- James Doyle – THINICE
- Arctic Sea Ice Prediction Stakeholders Workshop at Arctic Frontiers Conference - Tromso, Norway: 22 January 2018
- Other announcements?

THINICE is a field campaign proposal to identify mechanisms that offer predictability of Arctic cyclones and their two-way interactions with sea ice and midlatitudes

