

BLUE ACTION



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Arctic Impact on Weather and Climate

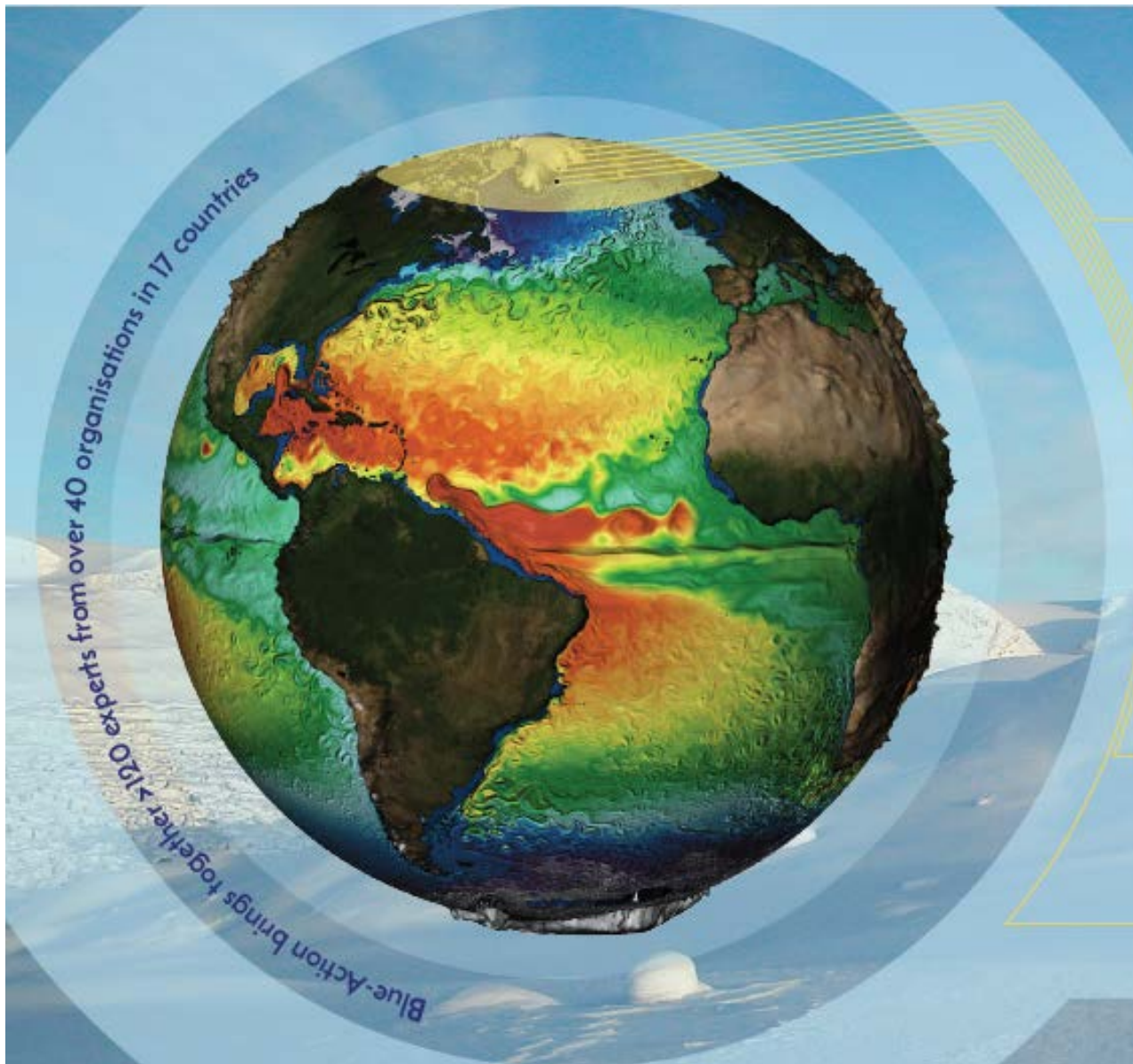
UNDERSTANDING
THE IMPACT OF A CHANGING ARCTIC
ON NORTHERN HEMISPHERE
WEATHER AND CLIMATE.

Steffen M. Olsen

EU-PolarNet General Assembly

Prague 3 April 2017

www.blue-action.eu



Coordination

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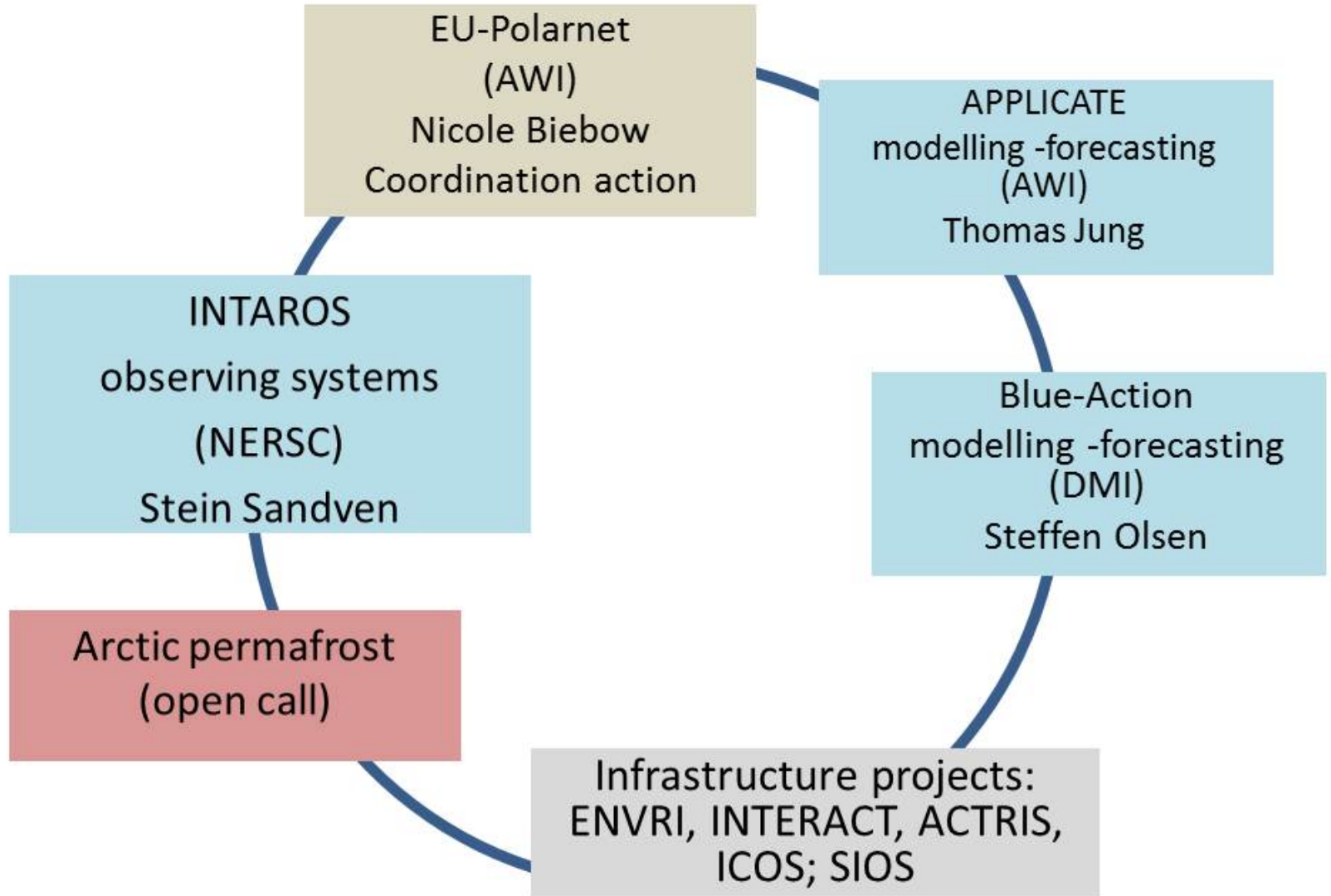
Daniela Matei
(MPI)

Non-EU Partners

- USA
- Canada
- Russia
- China
- Korea



The 'Arctic Cluster'

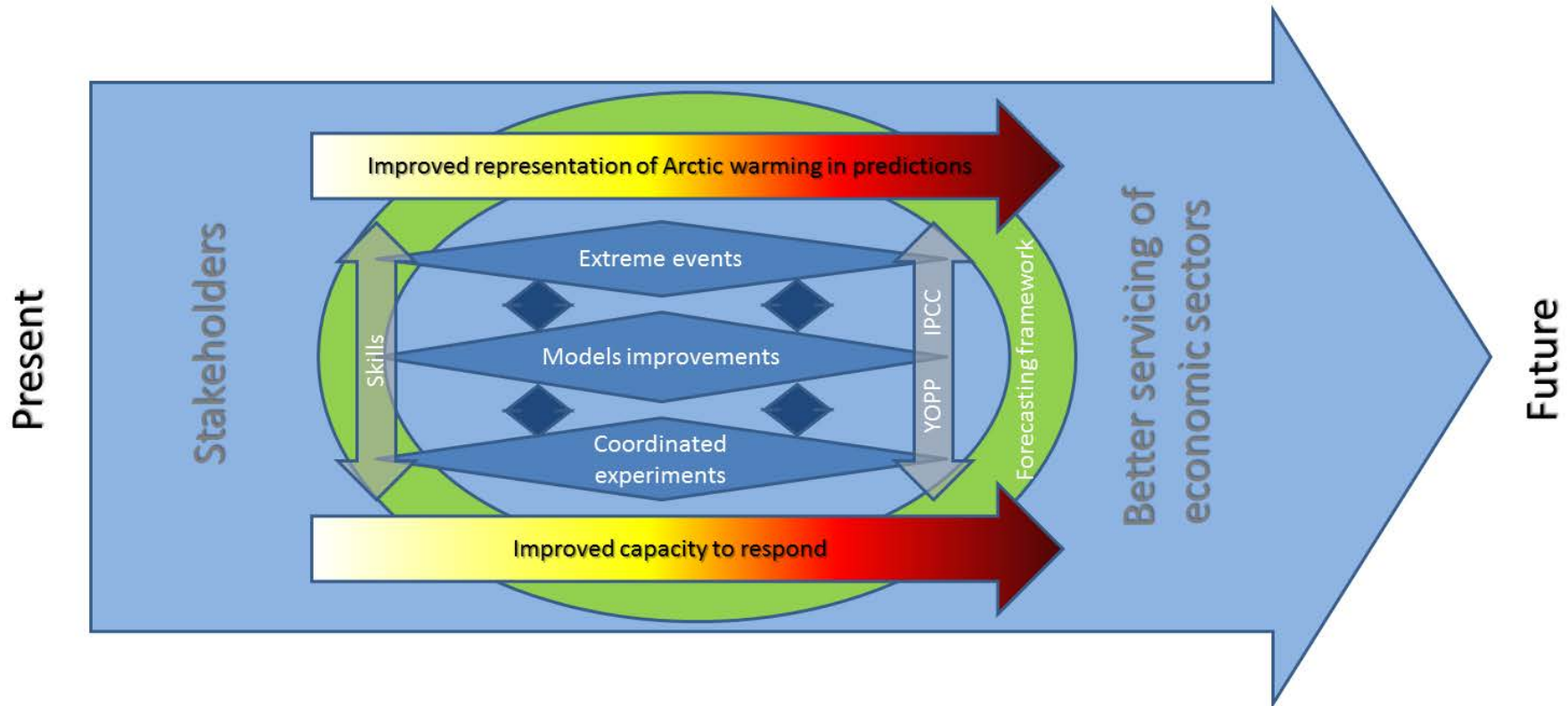


Why?

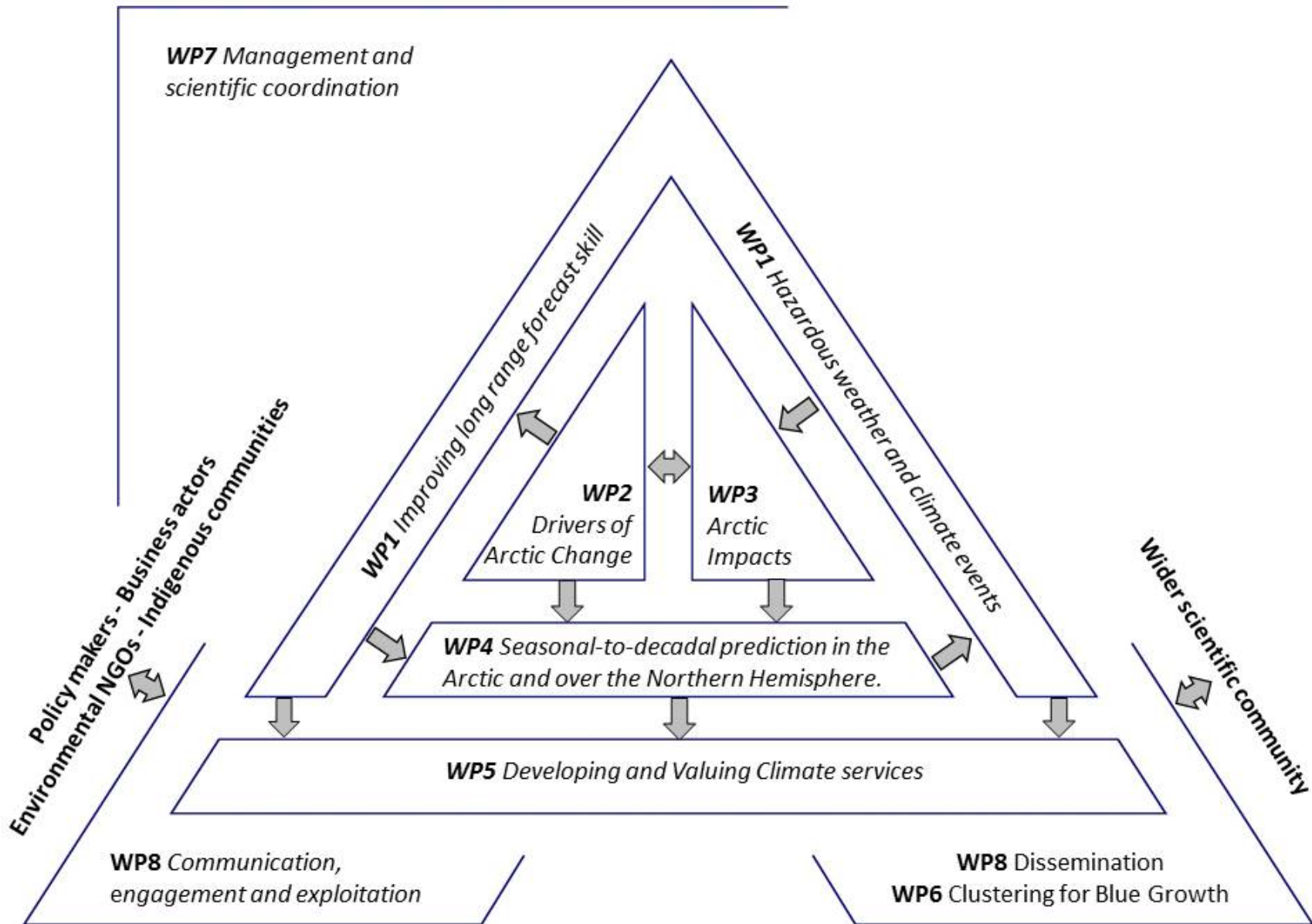
- To actively improve our ability to describe, model, and predict Arctic climate change and its impact on Northern Hemisphere climate.
- To develop new methods to characterise climate conditions where hazardous weather system forms across the Northern Hemisphere and establish their link to Arctic climate change.
- To enable robust and reliable forecasting and deliver better predictions at sub-seasonal to decadal scales.

How?

- Through synthesising observations, assessing model performance, designing and performing coordinated multi-model sensitivity experiments, developing innovative bias reduction and initialization strategies.



Project Structure

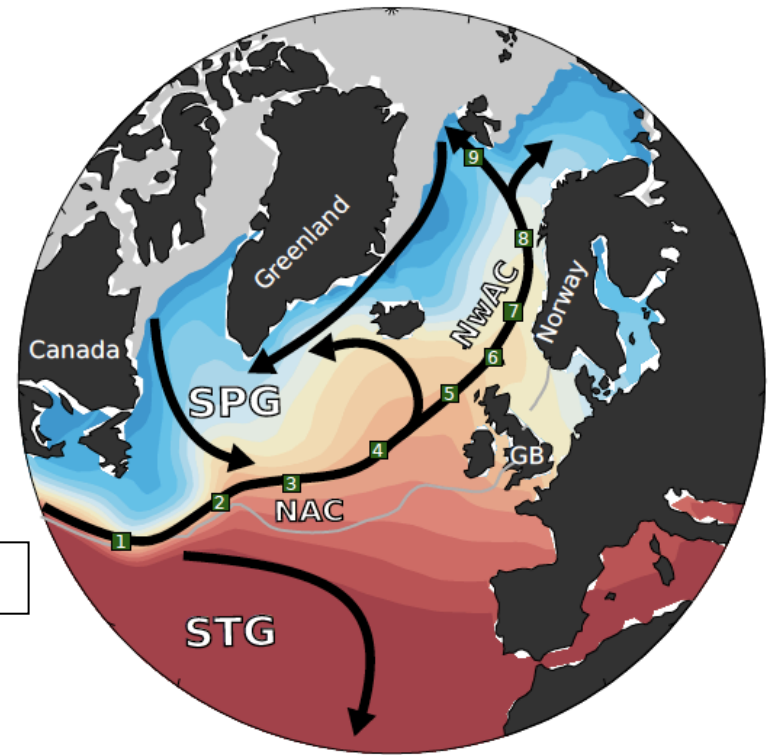


Specific Outputs and Outcomes

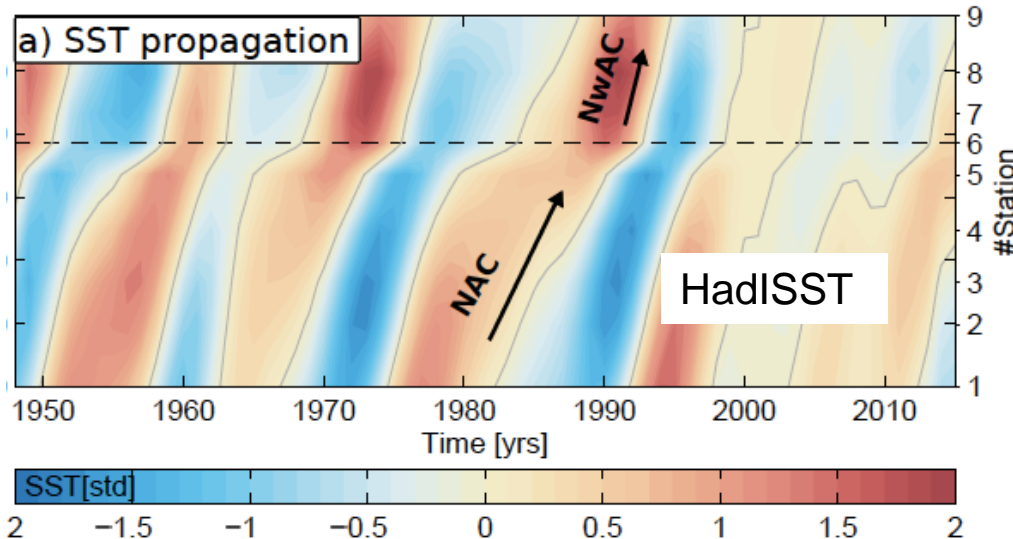
- Co-design a series of case studies with organisations and industries that rely on accurate weather and climate forecasting
- To apply new modelling techniques to cutting-edge climate services
- Embed scientific developments and improved model capacity within international programmes including Copernicus C3S, IPCC AR6 and PPP-YOPP

Oceanic anomalies of predictive potential

- 55% of variance explained
- Propagation speed: 3 cm/s
- Period: 14 years
- Similar propagation characteristics for salinity and tracers imply ocean circulation



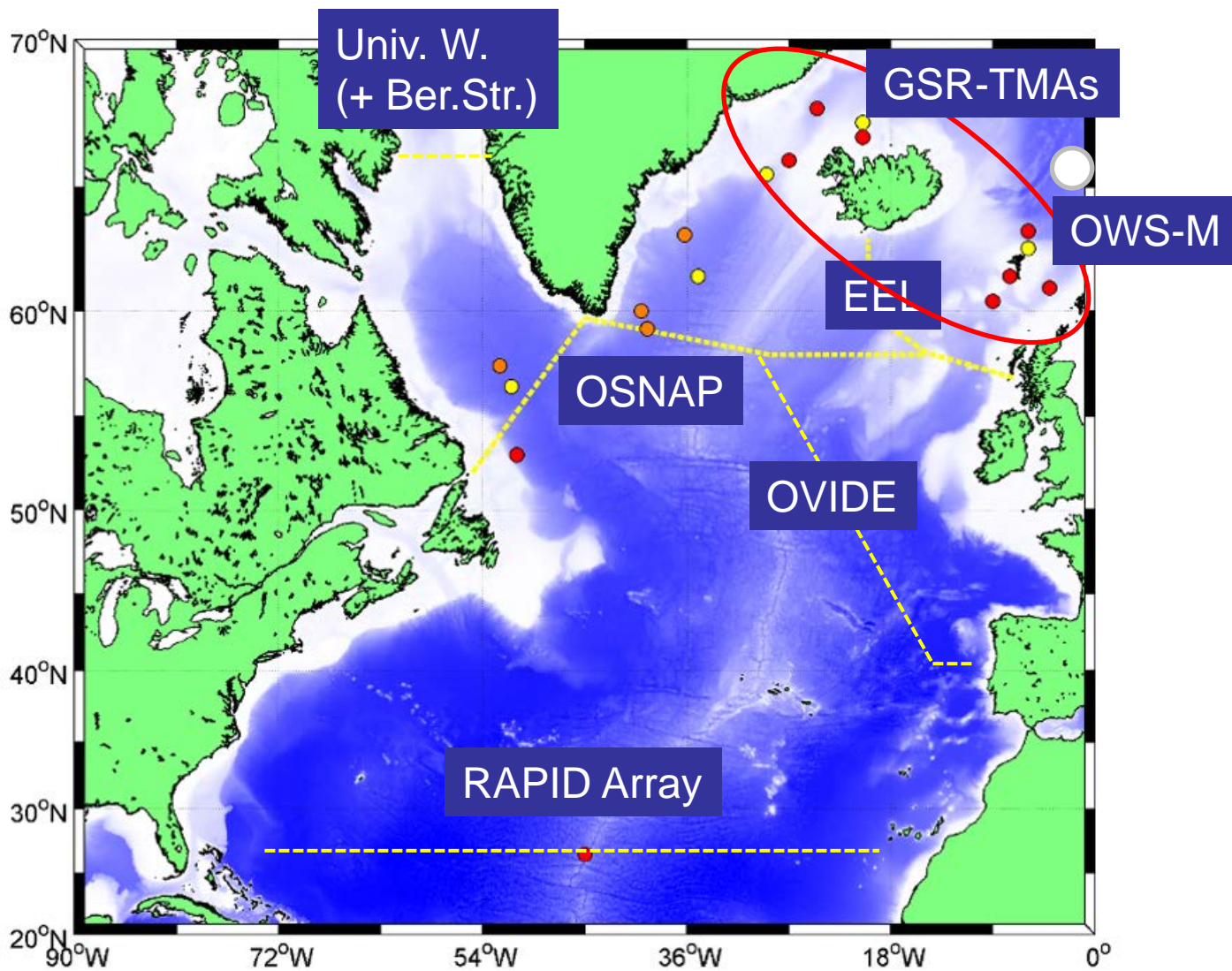
Complex EOF on 5-year low-pass filtered data



Onarheim et al., Skillful prediction of Barents Sea ice cover. *GRL*, 2015

Arthun and Eldevik, On Anomalous Ocean Heat Transport toward the Arctic and Associated Climate Predictability. *J. Clim.*, 2016

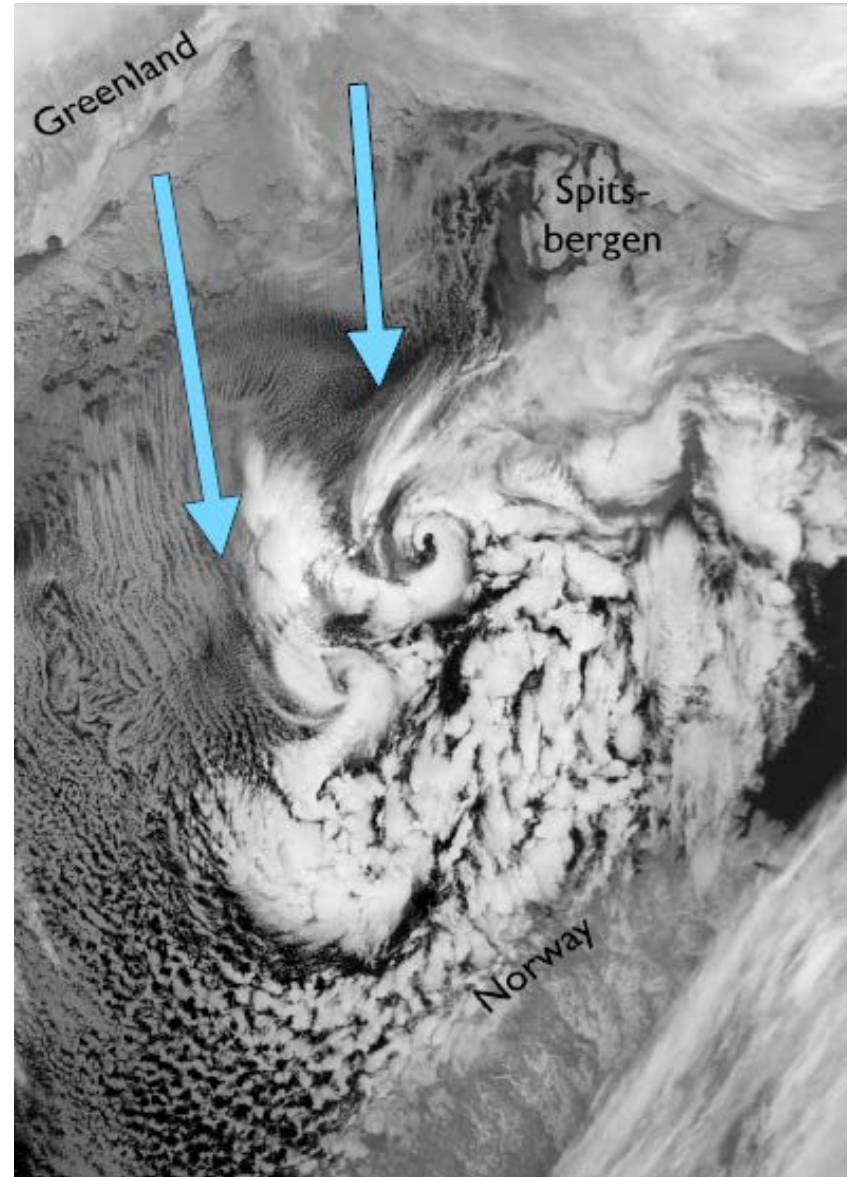
Connected Ocean Observatories



Extreme Arctic Marine Weather

We cannot forecast individual polar lows more than a couple of days in advance.

But maybe we can forecast the environment in which they form?



Warm Ocean – Cold Air

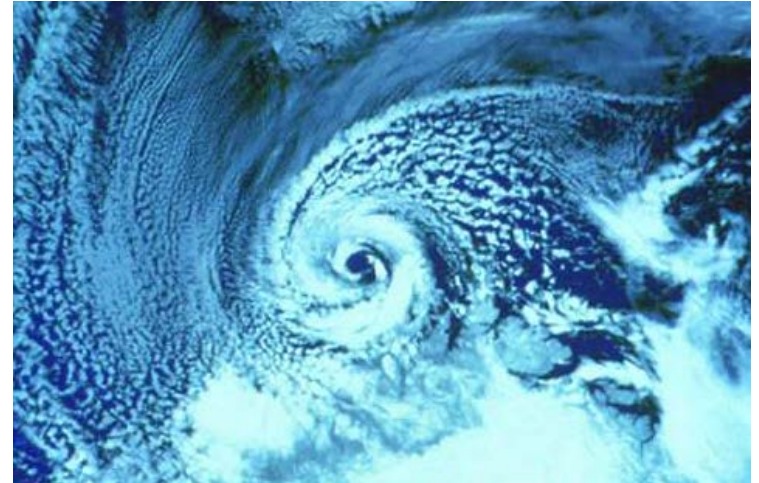
Extreme Arctic Marine Weather

Test dynamical models to see if marine cold air outbreaks can be forecast, and on what time scales (10–100 days)

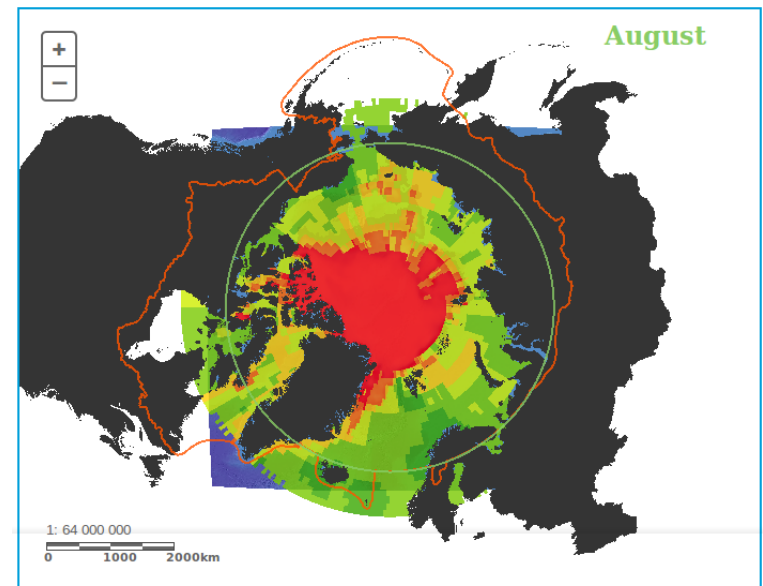
Combine dynamical forecasts with empirical forecasts of northward-propagating SST anomalies and sea ice extent

Integrate these forecasts into a tool for risk management in the Arctic

Polar Low in Barents Sea



Safety Risk Map



WP8 Communication, Dissemination, Engagement & Exploitation

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Objectives:

- Foster the capacity of key stakeholders to adapt and respond to climate change
- Boost economic growth
- Transfer knowledge to a wide range of stakeholders

Tasks:

- Provide effective communication
- Promote the project and disseminate its findings
- Protect the IP and foster its exploitation
- Improve the professional skills and competencies
- Engage at policy-making level





Clustering activities

- collaboration with EU-PolarNet

Thematic workshops on open research questions

Co-creation of polar white papers – the EU-PolarNet workshop in Madrid this September?

Joint side-events

- COP 23, 6-17 November, Bonn
- UN Ocean Conference, 5-9 June 2017, New York (Arctic event)
- Arctic Circle October 13-15 October 2017, Reykjavik
- Arctic Change 2017, December 11-15, Quebec

Sharing experience regarding the interaction with end users

Knowledge transfer on training activities for students and early career scientists.

Dissemination beyond the partnership





Contact us

 @BG10Blueaction

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