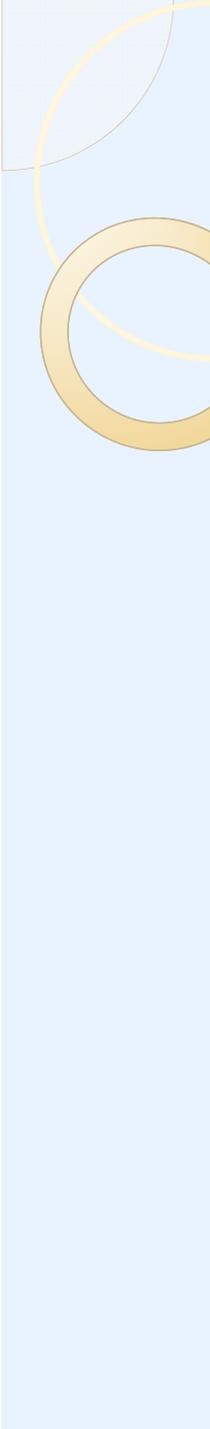


North Atlantic-Arctic Planning Workshop

Workshop Organizing Committee

Icarus Allen, Melanie Austen, Heather Benway,
Eileen Hofmann, Jeremy Mathis, Paty Matrai,
Dennis McGillicuddy, Mary Jane Perry, Mike Roman,
Mike St John





Presentation Outline

- Background on international efforts for joint funding and coordinated research
- Science - North Atlantic-Arctic system
- Highlights from recent scoping workshop for North Atlantic-Arctic research



Background

- EU-U.S. Joint Consultative Group Meeting on Science and Technology Cooperation – February 2013
 - Focus on developing the knowledge and technologies that can foster economic growth, create jobs and help solve shared challenges, such as in health, climate change and food security
 - Explored how to advance cooperation in transatlantic marine, maritime and Arctic research, as well as identifying links to transport research, health research and materials science

Background

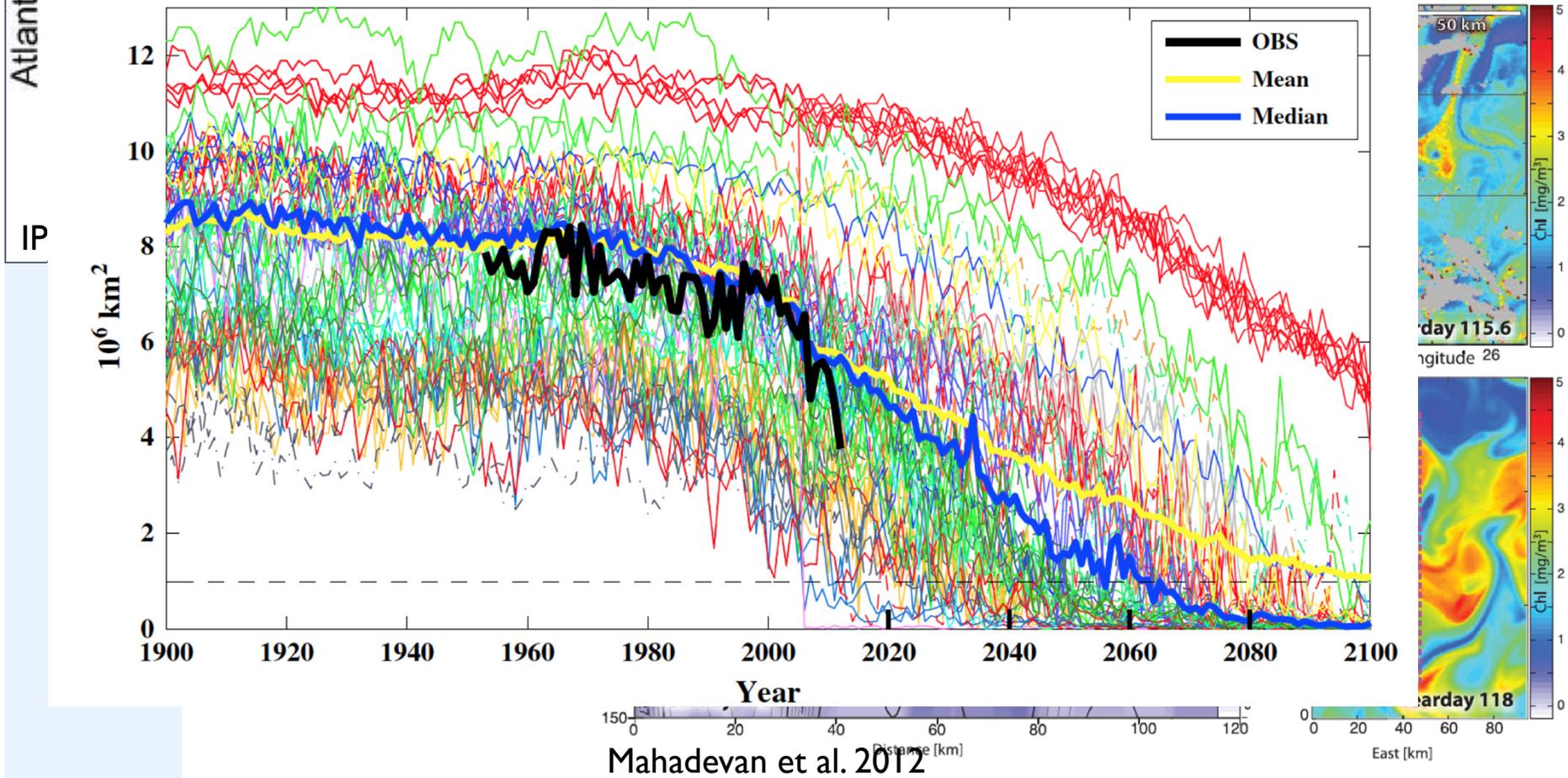
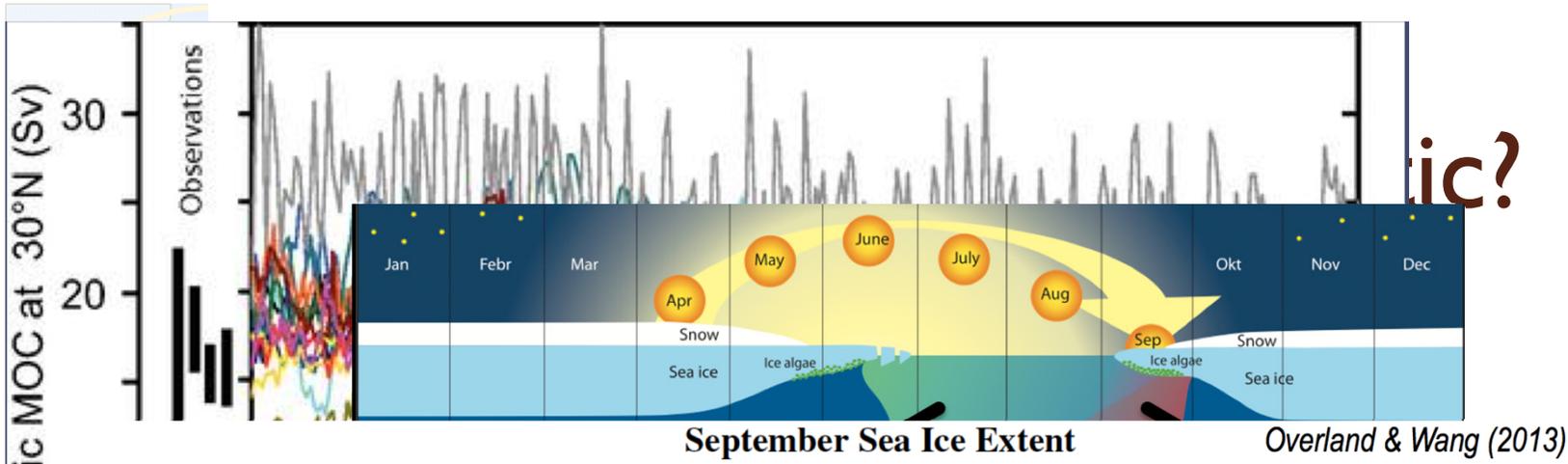
- Galway Statement on Atlantic Ocean Cooperation Signed May 2013
 - Agreement between US, European Union, Canada to join forces on Atlantic research
 - Goals - better understand the Arctic Ocean, promote the sustainable use of the Arctic Ocean, study the interplay between the Arctic Ocean, particularly change
 - Recognizes that Atlantic Ocean cooperation is more effective if coordinated

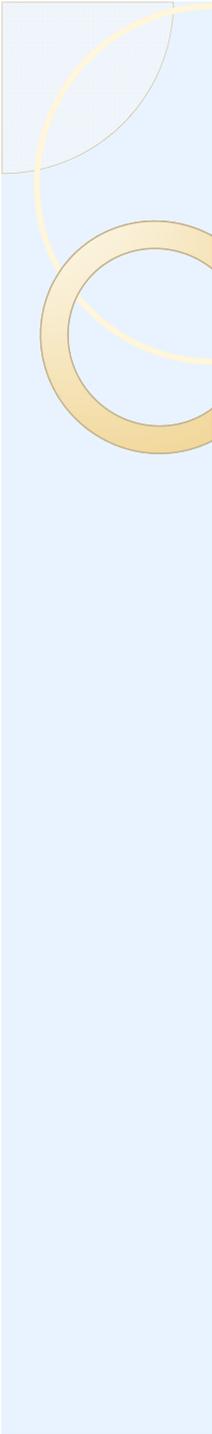


Background

- Euro-Basin 2010-2014 – focus on North Atlantic - planning next phase of research
- OCB 2013 workshop summer NSF expressed interest in a North Atlantic-Arctic initiative
- Proposal to develop workshop for joint US, Canada, EU effort in North Atlantic-Arctic began summer 2013
- Workshop convened April 2014





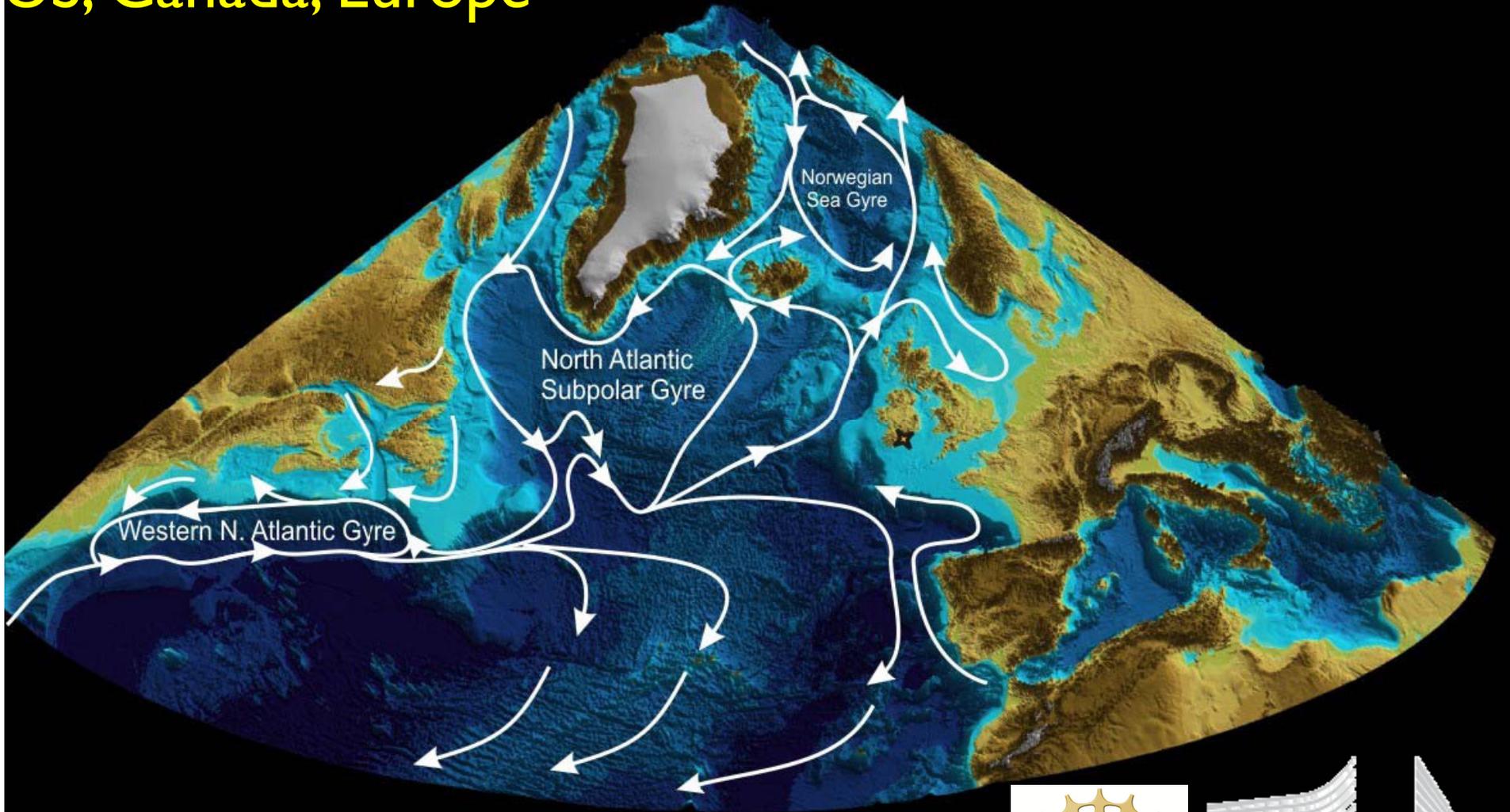


Planned and Existing Programs

- OSNAP – Overturning in the Subpolar North Atlantic Program (US, UK, Germany, Netherlands, France, Canada)
- US and UK RAPID/Mocha Monitoring Array
- Euro-BASIN, EU Blue Growth, Horizon 2020
- Numerous Canadian programs
- **EX**port **P**rocesses in the **O**cean from **R**emote **S**ensing (EXPORTS)
- Arctic-COLORS NASA Scoping Activity
- Arctic productivity round robin

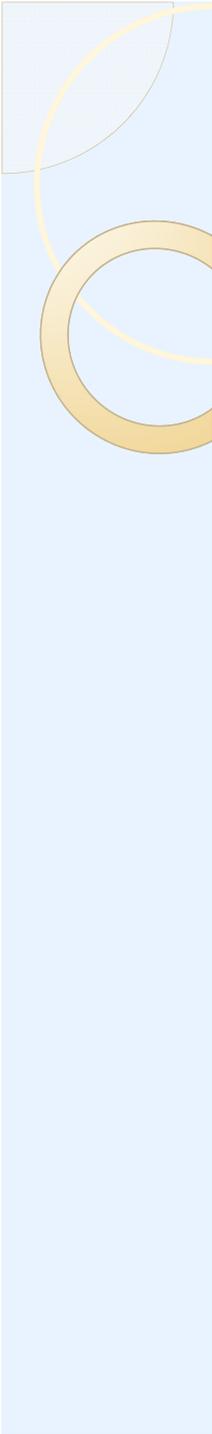
North Atlantic-Arctic Workshop

US, Canada, Europe



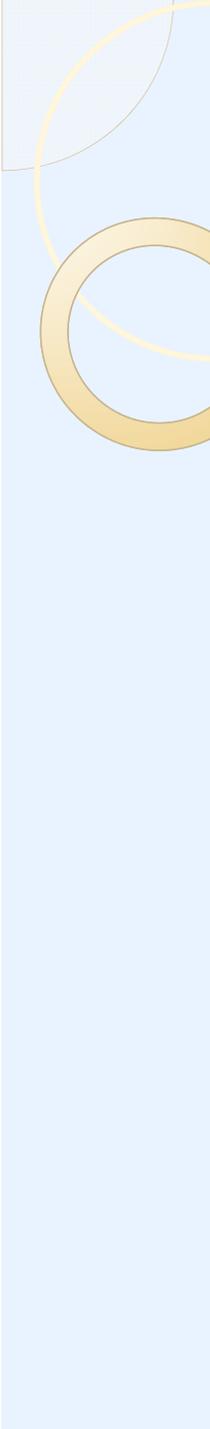
EURO-BASIN
BASIN SCALE ANALYSIS, SYNTHESIS AND INTEGRATION





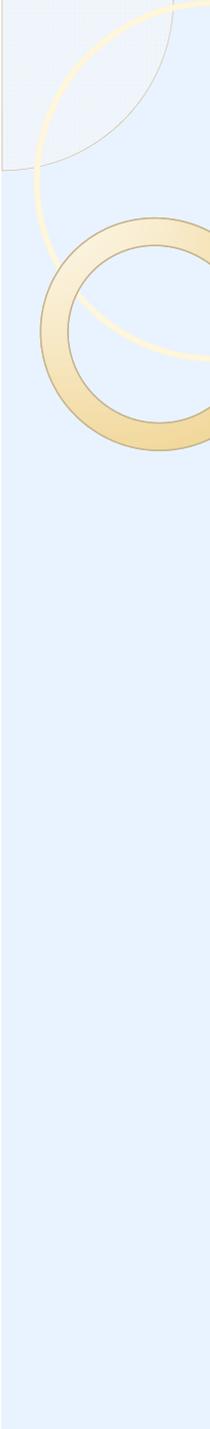
Workshop Scientific Themes

- **Gateways:** Implications of warming, freshening, and more open Arctic-North Atlantic gateways for circulation, biogeochemical cycling, and marine ecosystems
- **Circulation:** Role of large-scale (e.g. AMOC) versus meso- to sub-mesoscale processes (e.g. eddies, fronts) in different parts of the Atlantic-Arctic system and feedbacks to biogeochemistry and ecosystem structure and function
- **Spring bloom dynamics:** Interactions between physical, biogeochemical, and ecological processes involved in the initiation, evolution, and termination of the spring bloom and associated sensitivities to climate and circulation changes



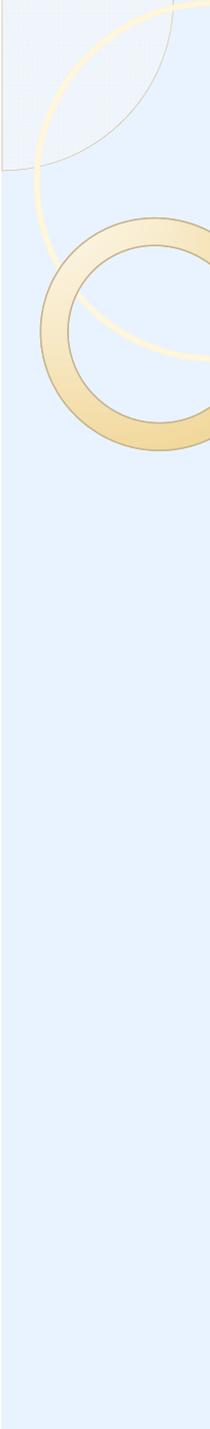
Workshop Scientific Themes

- **Sustainable fisheries:** Collective impacts of fishing pressures, climate, and ocean circulation changes on key North Atlantic fisheries, including the lower trophic levels that support them
- **Marine ecosystem health:** Sensitivity of marine biodiversity and ecosystem resilience to climate and circulation changes
- **Prediction:** Development, validation, and application of advanced earth system models to predict future changes and inform decision-making
- **New Knowledge**
- **Translation of new knowledge into advice**



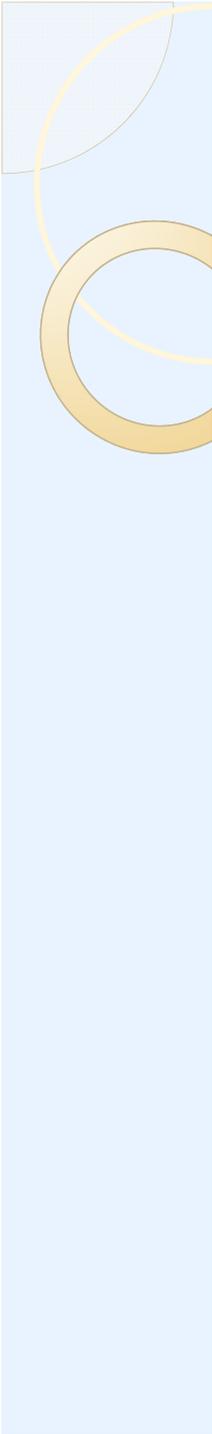
Overarching Questions

- Physical Circulation and Climate
- Shelf-Ocean Interactions
- Food Web Dynamics and Community Structure
- Linking of Social and Natural Science
 - Two-way interactions between human pressure and the North Atlantic-Arctic coupled marine system services feeding back to human well-being, in the context of management of a natural resource



Cross-Cutting Research Themes

- Changing biogeographic distribution of fish stocks/species
- Storage of anthropogenic carbon
- Sustainable delivery of ecosystem and climatic regulation services in the changing coupled North Atlantic-Arctic system
- Cryosphere and riverine input effects



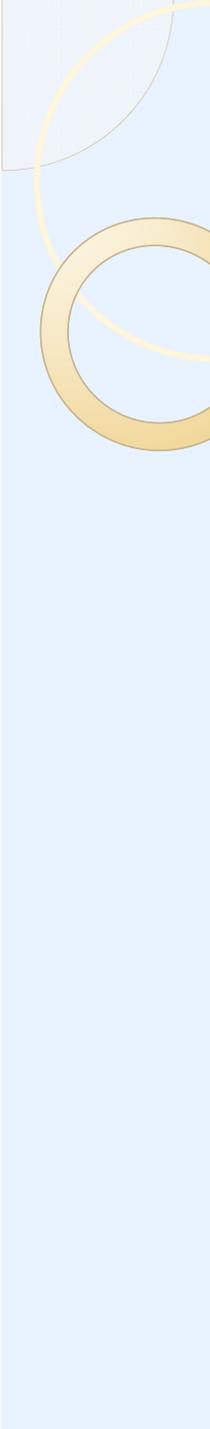
Future Plans

- Meeting report submitted to EOS
- North Atlantic-Arctic session at 2014 OCB summer workshop
- Workshop report being drafted and near-final report should be available by late summer with final report by end of year
- Workshop report will be available to community for comments
- EU Blue Growth – focus on Atlantic, 20M euro, proposals due in June 2015 with field work in 2016/17; Horizon 2020
- Update from NSF about plans at this workshop



Outlook

- Many changes occurring in international science
- Recognition at many levels for need for collaborative, coordinated, interdisciplinary science programs
- Opportunities for international collaborative research are increasing but continued discussion between funding agencies and scientists is needed
- Website for North Atlantic-Arctic Program http://www.whoi.edu/website/NAtl_Arctic/



North Atlantic-Arctic Session

- Overview presentations on
 - Physical circulation and climate
 - AMOC, mesoscale circulation processes, sea ice, North Atlantic-Arctic exchanges
 - Marine ecosystems and biogeochemistry
 - ecosystem responses to climate change, bloom composition and vertical fluxes, Arctic primary production and climate changes, Arctic and North Atlantic ocean acidification
- Panel discussion
- Poster session