

ICARP III Activity - Reporting Template



Title of activity ...Towards a seasonally ice covered Arctic Ocean		
Type of activity ...Workshop	Date ...20/10-21/10, 2014	Place ...Woods Hole Oceanographic Institute
Main organizer(s) (name and/or organization) and additional partners ...Bert Rudels FMI & MWG/AOSB of IASC, additional support from WHOI, FMI & the EU project NAACLIM (contract no: 3086299)		
<p>Abstract¹</p> <p>... October 20 and 21 the workshop: "Towards a seasonal ice covered Arctic ocean" was held in the Carriage House at Woods Hole Oceanographic Institution (WHOI). The workshop was one of the many IASC ICARPIII initiatives launched to prepare for the upcoming ICARPIII conference in Toyama, Japan 2015. The workshop was held adjacent to the Forum of Arctic Modelling and Observational Syntheses (FAMOS) annual meeting in Woods Hole and was co-sponsored by WHOI, the Finnish Meteorological Institute (FMI) and the EU project NAACLIM.</p> <p>The workshop was a spinoff of a previous IASC Marine Working Group (MWG) workshop: "Internal Mixing Processes in the Arctic Ocean" held before the FAMOS annual meeting in Woods Hole in October 2013. The consequences of an Arctic Ocean with a seasonal, not perennial, ice cover were there identified as a theme worthy of further investigations. MWG funds dedicated to a follow up of the Mixing workshop were therefore used as additional support for this year's workshop. Forty invited participants attended the workshop, eighteen offered travel support from IASC.</p> <p>The background for the workshop was the observed changes in the Arctic Ocean ice cover, which has drastically diminished during recent decades. The minimum ice extent in fall has decreased and the mean thickness has been reduced. Climate models also show that the arrival of a seasonal ice cover could occur by mid-century, perhaps earlier. Whether the present trend is irreversible or not, the fact remains that an almost ice free Arctic Ocean in summer is a real possibility in a not too distant future.</p> <p>The key parameter dominating most processes in the Arctic Ocean is the stability caused by net precipitation and excessive continental runoff. It is the reason why the Arctic Ocean presently is permanently ice covered. How would the stability be affected with only a seasonal ice cover? How would the physical processes active in the Arctic Ocean, and the interactions between sea ice, ocean and atmosphere change? What would be the effects on the uptake of CO₂ and of the resulting ocean acidification, and on the biological communities and the ecology of the Arctic Ocean?</p> <p>Four overarching themes were identified, and different aspects of these themes were introduced by selected speakers and followed by questions and discussions. The four themes were:</p> <p><i>Processes in the Arctic Ocean:</i></p> <p>Why do we have an ice cover in the Arctic Ocean and what could a change to a seasonal ice cover imply?</p> <p>Freshwater sources and mechanisms of Polar Surface water, and their prospects with loss of summer ice cover.</p> <p>Mixing and entrainment in the surface layer.</p>		

¹ Provide a short summary of the activity

Impact of sea ice retreat on shelf and shelf break mixing and exchange processes.

Effects on biological processes and co system

Will the Arctic primary productivity go up, stay the same or go down?

Why are the marginal ice zones more productive?

What will be the effects on the energy flow in the upper trophic levels?

Connections with lower latitudes

Why do we have Polar (Arctic) amplification?

Driving mechanism and constraints for the exchange flow through Fram Strait.

Fate of the Atlantic water in the Arctic Ocean.

How to proceed

What observational strategies are needed to answer these questions?

Modeling requirements for studying Arctic physical and biogeochemical states and interactions.

After each theme a general discussion lead by two-three chair persons was connecting the different topics within the themes. The workshop then ended with a summary discussion addressing what to do next.

The primary goal was to stimulate discussions and in this respect the workshop was a success with discussions extended into coffee and lunch breaks. Some of the established contacts and discussions might well lead to future joint research efforts. However, only one immediate goal was specifically promoted – to submit abstracts and to participate in the ICARPIII conference in Toyama next year. The hope is also that the topics examined in the workshop could, by example, improve and guide future research and lead to better understanding of Arctic Ocean processes in the following ten years.

Main contributions to ICARP III² in terms of the ICARP III priorities³

...Initiating new and deepening existing co-operations to identify and address Arctic science prerogatives for the next decade. Promoting attendance and contributions to the upcoming ICARPIII conference in Toyama 2015.

² List a few key statements (findings, priorities, recommendations) that you would like to see reflected in the overarching ICARP III products

³ ICARP III priorities:

- identify Arctic science priorities for the next decade
- coordinate various Arctic research agendas
- inform policy makers, people who live in or near the Arctic and the global community
- build constructive relationships between producers and users of knowledge