Arctic Change: A need for multi-sector collaboration

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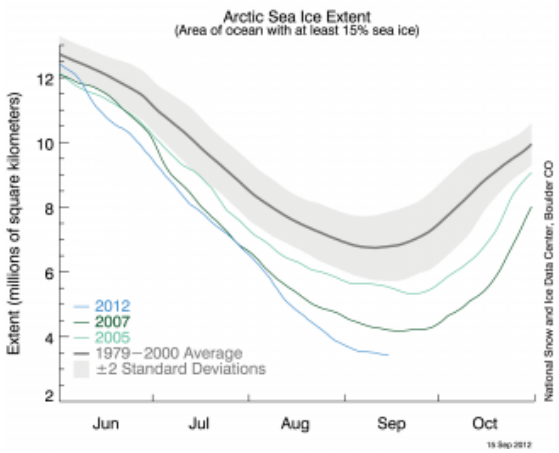
Overview

- Summary of sea ice change
- Impacts of sea ice loss on different sectors
- Need for a holistic view
- Highlight two programmes

The top of the world is changing…



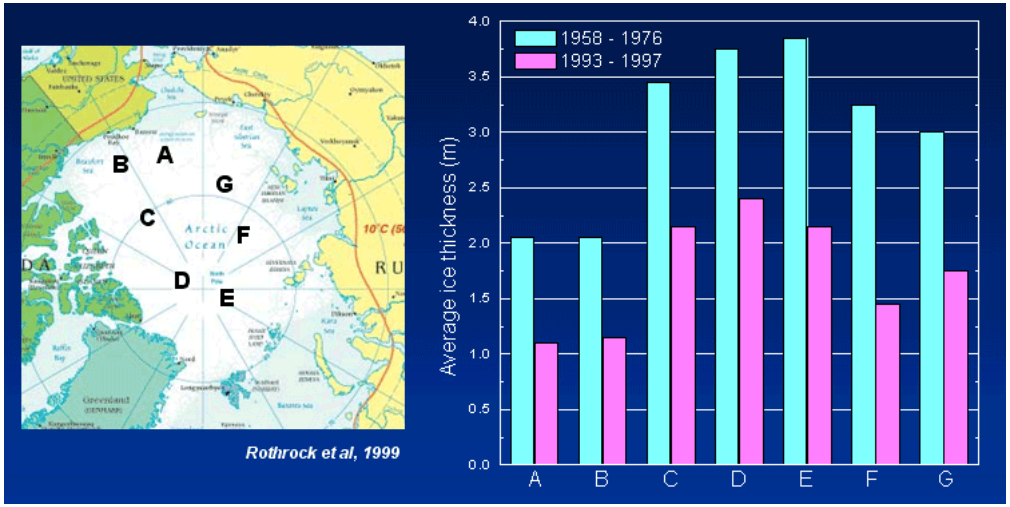
****Reduction of over 50% in summer sea ice extent since the 1970s.**

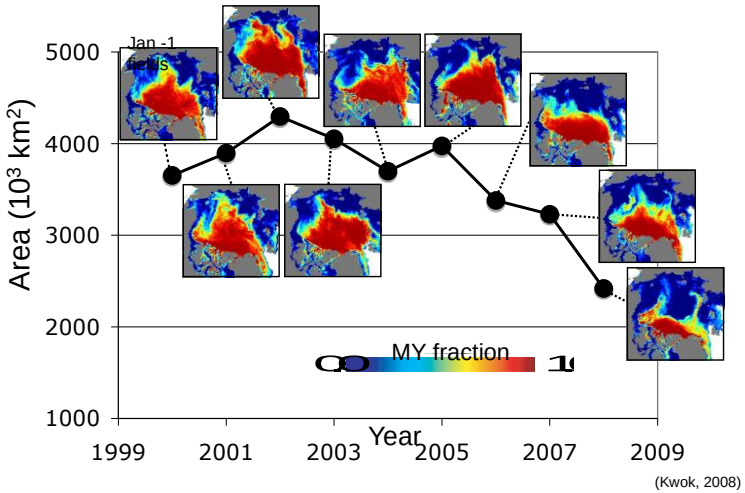
- 7 million km^2 in the 1970s
- 4.2 million km^2 in 2007
- 3.4 million km^2 in 2012

****Reduction over 40% in thickness**

****Regime shift: from a multi-year ice dominated regime to a first-year regime**

http://imb.crrel.usace.army.mil/change.htm





(Kwok, 2008)

Multifaceted impacts….

- **Indigenous communities**
  - Loss of traditional way of life
- **Coastal changes**
  - Coastal erosion due to enhanced wave energy
- **Environmental pressures**
  - Loss of habitat/species
  - Increase in ocean acidification
  - Change in ocean properties

Multifaceted impacts….

- **Climate**
  - Global links, for example changes in atmospheric circulation linked to heat and drought to the US and cold stormy weather to Europe

- **Industry**
  - Shipping, oil/gas, minerals, fisheries, tourism…

- **Economics**
  - UK Stern Review on the Economics of Climate Change (2006). £3.68 trillion
  - What is the cost of Arctic change?

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27 February 2012 Last updated at 20:05

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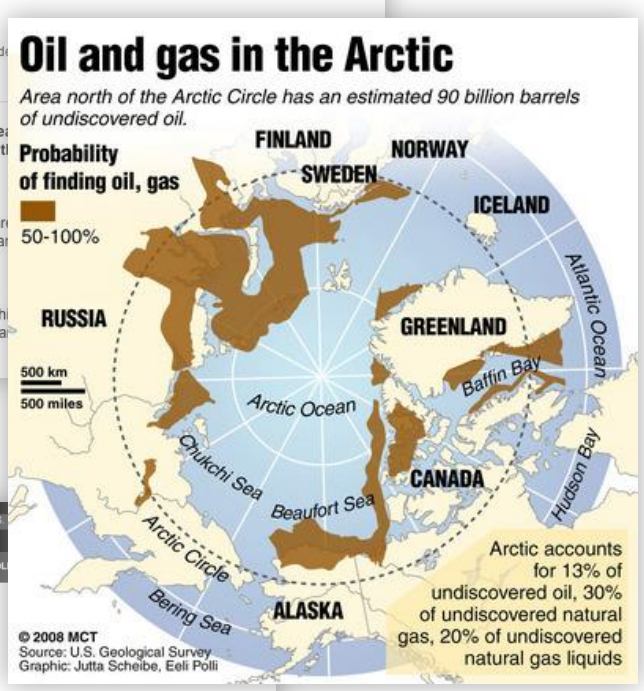
Melting Arctic link to cold, snowy UK winters

By Richard Black
Environment correspond

The progressive shrinking of Arctic sea is bringing colder, snowier winters to t UK and other areas of Europe, North America and China, a study shows.

As global temperatures have risen, the ar Arctic Ocean covered by ice in summer ar autumn has been falling.

Writing in **Proceedings of the National Academy of Sciences (PNAS)**, a US/Ch based team show this affects the jet strea and brings cold, snowy weather.



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Arctic methane release could cost economy $60 trillion -study

Wed Jul 24, 2013 9:09am EDT

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* Reservoir of methane under East Siberian Sea

* Release could accelerate ice melting, global warming

* Risks include extreme weather, poorer health, lower crop output

By Nina Chestney

LONDON, July 24 (Reuters) - A release of methane in the Arctic could speed the melting of sea ice and climate change with a cost to the global economy of up to $60 trillion over coming decades, according to a paper published in the journal Nature.

Joined up thinking

How can we better understand the impacts of Arctic Change?

A **Multisectorial** approach is needed

- Incredibly complex
- No one country has the expertise
- Expensive
- Engagement and dissemination activities to a diverse range of stakeholders

Policy-makers, industry and the public must have the most up-to-date and robust science available on Arctic change and its socio-economic consequences.

Evidence-based decision-making is fundamental to ensure that informed policy decisions can be reached.

EU Arctic Programme: ACCESS

Arctic Climate Change, Economy and Society project

http://www.access-eu.org

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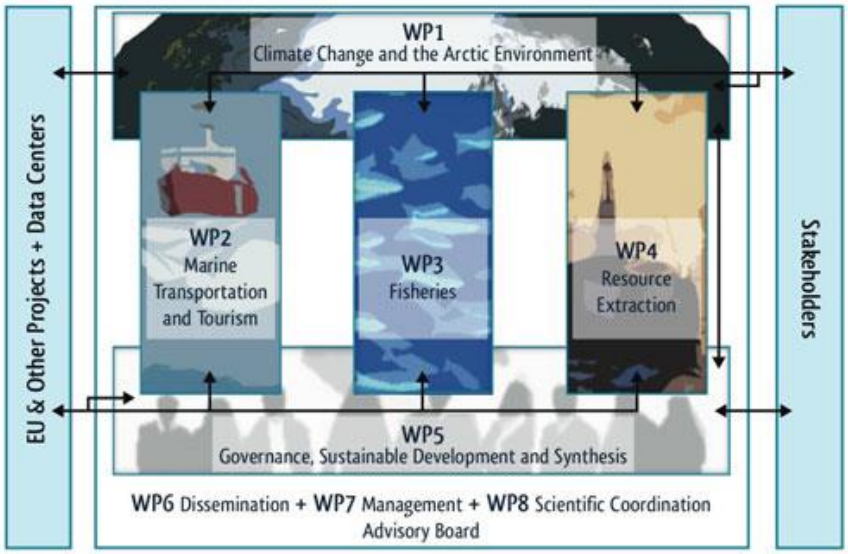

Key facts

- 27 institutions participating
- 9 European Union countries and Russia
- More than 80 researchers
- Project budget: 11 millions
- Project duration: 4 years (2011-2015)

Ocean of Tomorrow call of the European Commission Seventh Framework Programme

603887

EU Arctic Programme: ICE-ARC

Ice, Climate, and Economics:- Arctic Research on Change

http://www.ice-arc.eu

Co-ordinator: Jeremy Wilkinson

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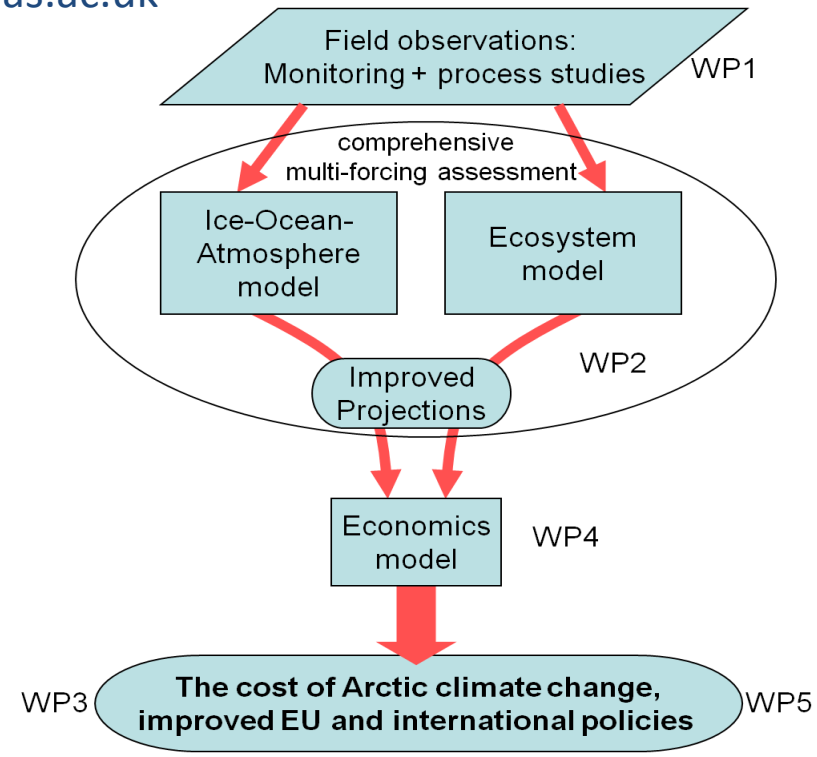
Key facts

- 21 institutions participating
- 11 European Union countries and Russia
- Project budget: €12 millions
- Project duration: 4 years (2014 - 2017)



Four interconnected objectives:

① Reduce uncertainties in Arctic marine climate predictions.

② Elucidate the impact Arctic marine change has on the ecosystem and human communities.

③ Understand the global socio-economic impact of Arctic marine change.

④ Provide concrete evidence-based policy measures in response to change in the Arctic marine system.

ENV.2013.6.1-1- Climate-related ocean processes and combined impacts of multiple stressors on the marine environment.

http://ec.europa.eu/research/bioeconomy/pdf/arctic_research_funded_by_the_research_and_innovation_eu_en.pdf

Summary

- Sea ice is changing.
- Influences many sectors beyond climate.
- Holistic international approach is needed.
- Better understanding of the costs and uncertainties of Arctic Change (positive and negative) .

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