

## Changing Seas

### Workshop on effects of climate change on marine ecosystems

Science, monitoring and new initiatives

Workshop arranged by the Nordic Council of Ministers

## 9 - 10 March 2010

Venue & accommodation: Scandic Copenhagen, Vester Søgade 6, DK-1601 Copenhagen V  
<http://www.scandichotels.com/Hotels/Countries/Denmark/Copenhagen/Hotels/Scandic-Copenhagen/>

Day 1 – Tuesday 9 March		
10:00	Registration – coffee/tea	
10:30-10:35	Welcome	Stiig Markager, National Environmental Research Institute, Aarhus University, Denmark
10:35-10:45	Opening speech – Status for climate change and scenarios after COP15 with focus on the relevance to the marine environment	Caroline Dickson, Swedish EPA, Sweden
Session 1 – Emissions of greenhouse gasses, climate and hydrography in the future – Chair Stiig Markager, NERI		
<i>The session will set the scene for the rest of the workshop, e.g. scenarios for emissions and climate change and expected effects on the physical conditions in the sea</i>		
10:45-11:15	Likely scenarios for emissions and climate change in the region – after COP15	Jens Hesselbjerg, Danish Meteorological Institute, Denmark
11:15-11:35	Hindcasting and forecasting runoff and nutrient loadings: examples from Denmark and other regions	Brian Kronvang, National Environmental Research Institute, Aarhus University, Denmark
11:35-11:55	Impact of changing hydrography on biogeochemical cycles in future climates of the Baltic Sea	Markus Meier, Swedish Meteorological and Hydrological Institute (SMHI), Sweden
11:55-12:15	Sea ice	Leif Toudal Pedersen, Danish Meteorological Institute, Denmark
Group session – part 1		
12:15-12:45	<b>Assembly of groups</b> The three groups get together (names, scientific background, interests). Chair for the group. Presentation of questions.	The aim of this slot is that the members in the three groups get to know each other, find a room for the group and plan the work, e.g. to have lunch together and become aware of the questions before the lectures.
12:45-13:30	Lunch	

**Day 1 – Tuesday 9 March**

**Session 2 – Effects on productivity, biogeochemistry, eutrophication and fisheries – Chair Morten Hjorth, NERI**

13:30-14:00	Impacts of the oceans on climate change	Philip Reid, Marine Institute, University of Plymouth, U.K.
14:00-14:20	Primary production and biogeochemical cycles in the pelagic zone – effects of increasing temperature	Ulrich Sommer, Leibniz-Institut f. Meereswissenschaften, IFM-GEOMAR, Kiel, Germany
14:20-14:40	Might higher runoff lead to lower productivity in the Baltic Sea?	Johan Wikner, Umeå Marine Sciences Centre, Umeå University, Sweden
14:40-15:00	Kelp along the Norwegian coast	Kjell Magnus Norderhaug, Norwegian Institute for Water Research (NIVA), Norway
15:00-15:20	<i>Coffee/tea break</i>	
15:20-15:40	Climate change and eutrophication in the Baltic regions	Jørgen Hansen, National Environmental Research Institute, Aarhus University, Denmark
15:40-16:00	Climate and DOM in the Arctic Ocean	Colin Stedmon, National Environmental Research Institute, Aarhus University, Denmark
16:00-16:20	Effects of climate change on the marine food webs in the Arctic	Torkel Gissel Nielsen, DTU Aqua, National Institute of Aquatic Resources, Technical University of Denmark
16:20-16:40	Effects of climate change on food webs and fisheries in the Baltic Sea/North Sea	Brian MacKenzie, DTU Aqua, National Institute of Aquatic Resources, Technical University of Denmark
16:40-17:00	A climate change-induced weakening of the subpolar gyre would redistribute marine ecosystems in the North Atlantic	Hjálmar Hátún, Faroe Marine Research Institute (FAMRI), Faroe Islands
17:00-18:30	<i>Break</i>	
18:30-20:30	<i>Dinner</i>	
<b>Group session – part 2</b>		
20:30-21:30	Evaluation of the day in the three groups - informal	

Day 2 – Wednesday 10 March		
	<i>Breakfast</i>	
<b>Session 3 – Vulnerable species and acidification – Chair Jens Perus, NCM</b>		
09:00-09:20	Acidification – chemical aspects	Leif Anderson, University of Gothenburg, Sweden
09:20-09:40	Acidification – biological effects	Knut Yngve Børsheim, Institute of Marine Research, Norway
09:40-10:00	Impact of ocean acidification on marine organisms: Identifying life-cycle bottlenecks	Sam Dupont, University of Gothenburg, Sweden
10:00-10:20	Global change and biological invasions in the Nordic-Baltic area	Sergej Olenin, Klaipeda University, Lithuania
10:20-10:40	<i>Coffee/tea break</i>	
<b>Session 4 – Increased or changed human pressures in a warmer climate. Monitoring, indicators and management – Chair Sverker Evans, Swedish EPA</b>		
10:40-11:00	Management of eutrophication in a changing climate	Stiig Markager, National Environmental Research Institute, Aarhus University, Denmark
11:00-11:20	Effects of climate change on other press factors in the marine environment – contaminants	Katrine Borgå, Norwegian Institute of Water Research, Norway
11:20-11:40	Environmental consequences of the opening of new shipping lanes in the North Atlantic/Arctic region	Kristján Geirsson, Environment Agency of Iceland
<b>Session 5 – Group session – part 3 – Chair Sverker Evans, Swedish EPA</b>		
11:40-13:15	<b>Group discussions, one group for each of the three regions listed below:</b> Group 1 (red): The Arctic (Greenland coastal areas, Greenland Sea, Barents Sea, Arctic Ocean) Group 2 (green): The Baltic Sea (including estuaries) Group 3 (blue): The North Atlantic (The North Sea and Norwegian Sea)	Issues/questions to be discussed: 1. What are the major consequences/threats of a changing climate? 2. New or overlooked issues and new views on old issues? 3. Recommendations for monitoring or research activities – how do we design monitoring programs for changes which may take place over decades? Can models be used? If yes, how do we validate such models? 4. Recommendations for new research activities – what are the major gaps in our knowledge? 5. Can we assess the costs associated with climate change relating to marine systems? 6. Forming network aiming at future cooperation – funding possibilities? 7. Recommendations for management/politicians – is there anything that can be done to minimise damage to marine systems?
13:15-14:00	<i>Lunch</i>	
14:00-14:30	Presentation of outcome of group discussions	The Arctic region
14:30-15:00	Presentation of outcome of group discussions	The Baltic Sea region
15:00-15:30	Presentation of outcome of group discussions	The North Atlantic region
15:30-16:00	Final discussion – common ideas from the three regions?	
16:00	<b>Closing of the workshop</b>	