



ACCESS

Arctic Climate Change
Economy and Society

2011-2015

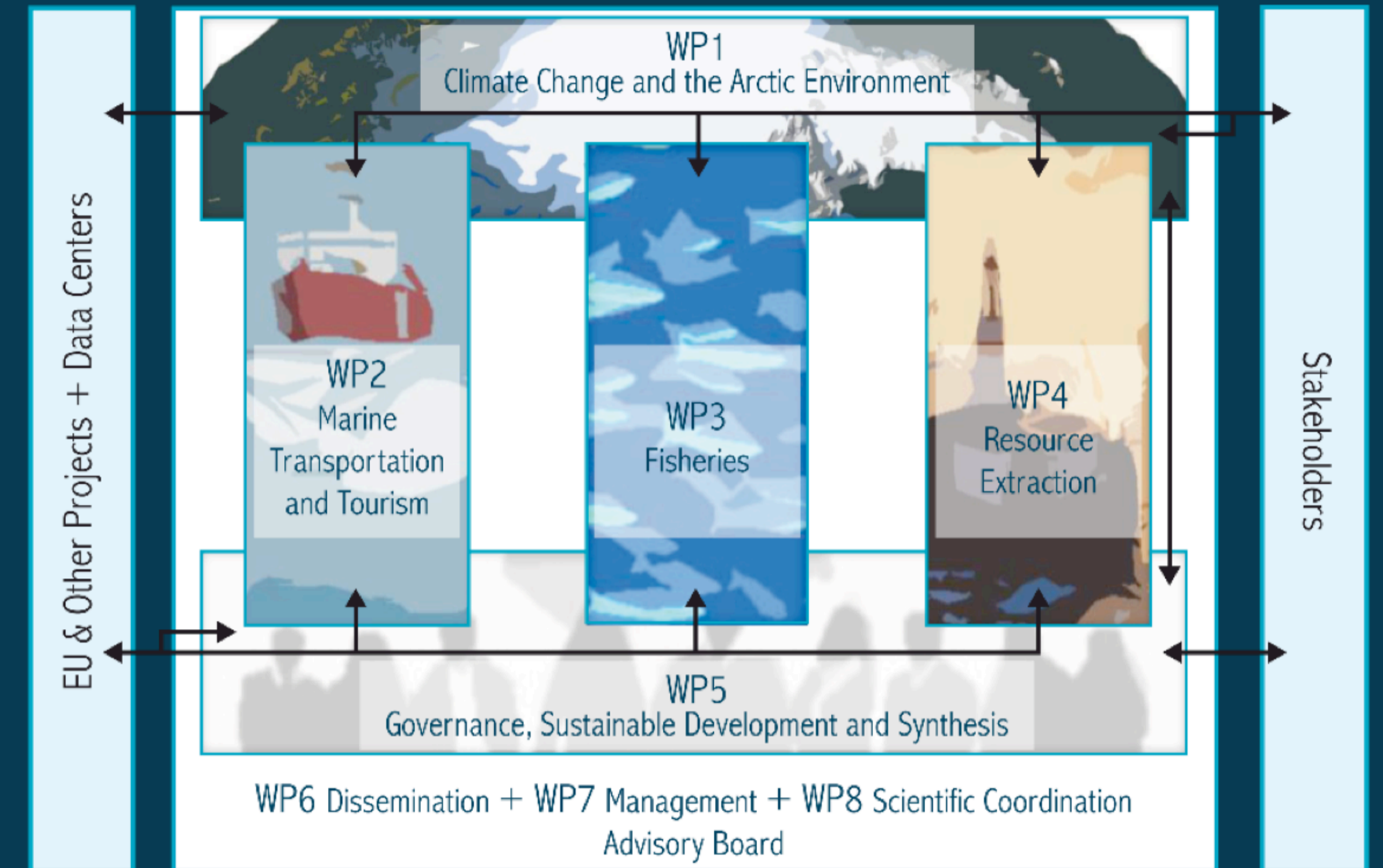


European Project supported within the Ocean of Tomorrow call of the European Commission Seventh Framework Programme

Climate change is strongly impacting both marine ecosystems and human activities in the Arctic, which in turn has important socio-economic implications for Europe and the rest of the world. ACCESS will evaluate the latest Arctic climate change scenarios to assess their impacts on marine transportation (including tourism), fisheries, marine mammals and the extraction of hydrocarbons in the Arctic for the next three decades with particular attention to environmental protection and sustainability. Understanding the socio-economic impacts of these changes on Arctic policy and governance are key areas of research within ACCESS. An open and inclusive forum will provide the opportunity to all stakeholders interested in the ACCESS consortium activities and crosscutting research, to interact with ACCESS partners.

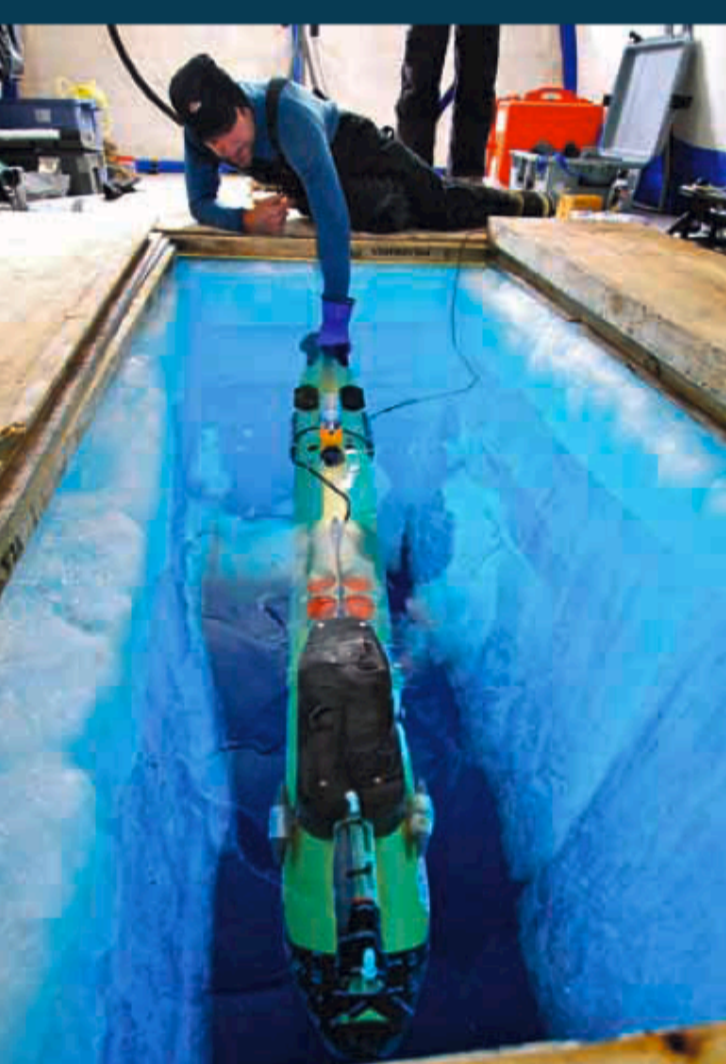
ACCESS is composed of 5 integrated working groups. These groups perform the interdisciplinary research needed to address societal, economic, ecosystem and policy consequences of current and projected climate change impacts in the Arctic Ocean by :

- Understanding the complex workings of the ocean-ice-atmosphere system within the Arctic Ocean through a combination of monitoring and modelling
- Assessing the opening of marine transportation in the Arctic Ocean north of Europe and Siberia, through the Canadian Archipelago and across the North Pole in the context of climate change.
- Examining Arctic fisheries, aquaculture and livelihoods in the context of climate change.
- Foreseeing the development of Arctic offshore oil and gas activities with respect to the harsh environment and in the context of possible climate change scenarios.
- Assessing the interplay of Arctic institutions, governance strategies and policy options with regard to Arctic states, indigenous peoples and global civil society in the context of climate change.



WP1 - The Arctic Environment in the Context of Climate Change

ACCESS WP1 dedicated to the Arctic environment in the context of climate change, is an overarching activity of the project. Quantification of the impacts of climate change on economic sectors such as fisheries, oil and gas extraction and marine transportation and the evaluation of associated risks, require a profound knowledge of the state and variability of the Arctic climate and weather systems.



Specific Objectives

- Provide projections and estimates of uncertainties for developments during the next several decades
- Provide information on the status and changes of the Arctic sea ice, atmospheric circulation and ocean state
- Assess the anthropogenic and natural causes of air pollution, acidification and climate change in the Arctic
- Improve sea ice representation and increase atmospheric model resolution in climate models for the Arctic
- Plan for optimized observational systems and assess short-term forecasting capabilities in the Arctic



WP4 - Resource Extraction



Specific Objectives

- Analyse the socio-economic impacts of Arctic resource extraction on markets, economies and on European policy objectives
- Assess the technologies available to safely extract energy resources and identify technological gaps that hinder Arctic development under present and future conditions
- Assess the existing rescue and evacuation vessels and identify Arctic requirements
- Assess the risks of resource extraction regarding oil spill response in ice-covered waters under present and future conditions and provide options for the design of an observing system tailored for safer resource extraction
- Assess resource extraction related pressures on air quality, state of the environment, and noise pollution, as well as the identification of ecologically vulnerable areas within the Arctic Ocean

The combination of the melting of the Arctic sea-ice, the economical and political attractiveness of non-renewable resources, especially offshore hydrocarbons and the safe and efficient extraction of these resources, still pose many challenges. It is the main objective of ACCESS WP4 to provide a detailed assessment of the opportunities and multiple risks of hydrocarbons extraction in the Arctic Ocean and to analyze the socio-economic impacts of this activity on European and world markets and societies.



WP2 - Marine Transportation Including Tourism

The reduced ice conditions in the Arctic and the starting activities of European shipping companies in using the northern sea route between Europe and East Asia as well as shipping resources out of the Arctic, are reasons for ACCESS WP2 to investigate and define the necessary actions for a broader implementation of marine transportation and tourism in the Arctic with respect to economic opportunities and the protection of the sensitive environment.



Photo: Christian Bonfils, NRC

Specific Objectives

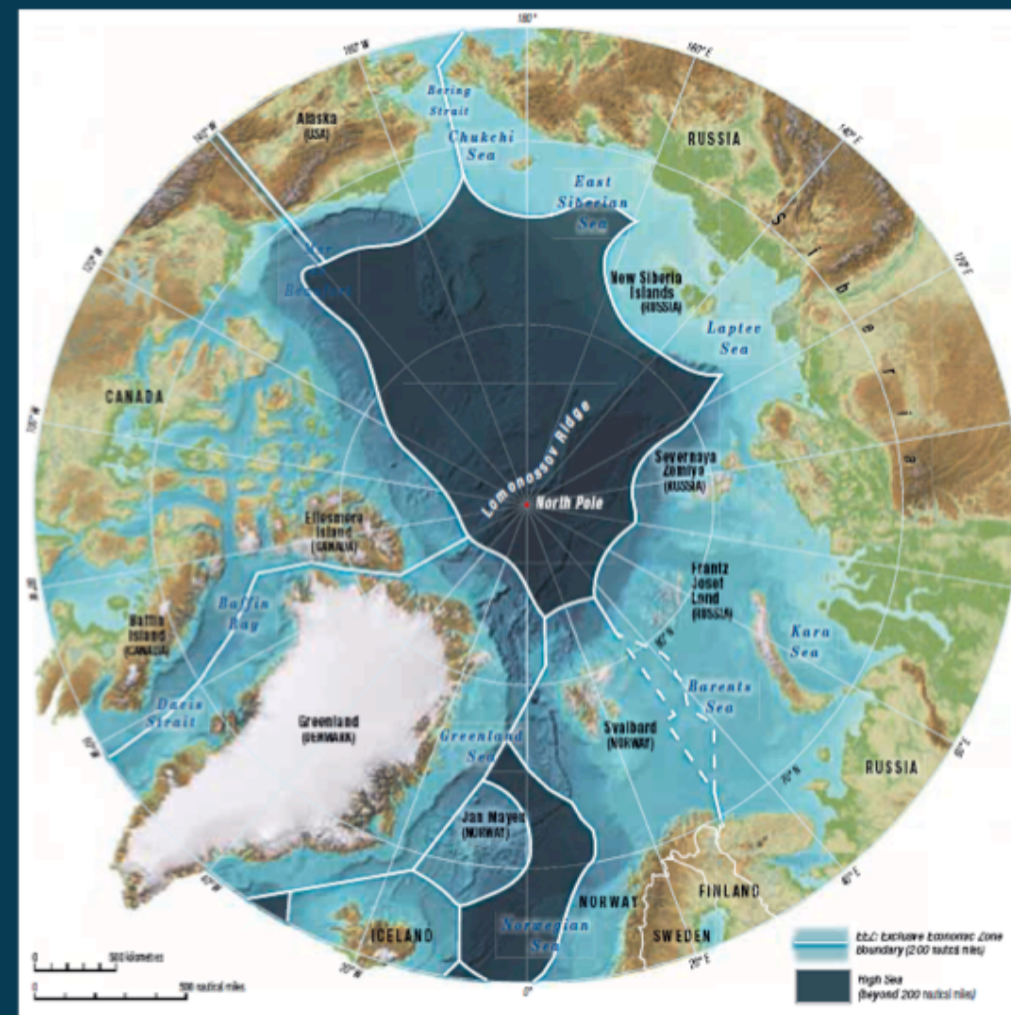
- Quantify the impact of Climate Change on Arctic Shipping
- Evaluate rules and regulations and identify infrastructure needs for increased Arctic Shipping
- Quantify pollution in the Arctic Ocean by increased shipping
- Identify possible improvements of safety and economy by Arctic shipping
- Assess socio-economic costs and benefits of Arctic transport and tourism
- Identify options for governance and indicators for sustainable development of Arctic shipping and tourism



WP5 - Governance, Sustainable Development and Synthesis

Specific sectors of maritime shipping and tourism, fisheries and oil and gas extraction will be assessed for shortfalls, conflicts and lacunae in current regulations. ACCESS WP5 will propose strategic options and elements of integrated governance policy in line with future sustainable development of the Arctic region. Such strategies will help to define the gaps, overlaps and inefficiencies in current institutions, as well as contribute to addressing regional, national and international stewardship challenges.

Water Column: EEZ and the High seas area within the Arctic



Sources: IBBU - UNCLCS - IBCAO



Sea Floor: potential Continental Shelf boundaries within the Arctic

Specific Objectives

- Examine regulatory framework related to the ACCESS sectors and review expected long-term climate change impacts
- Develop strategic options for national and international parties to maintain stable and effective Arctic governance
- Evaluate governance options in respect of indigenous peoples and other stakeholders and end-users
- Assist a programme of sustainable development in the region using marine spatial planning and ecosystem based management

WP3- Fisheries



Purse seiner in Barents Sea

ACCESS WP3 is devoted to the socio-economic impacts Arctic climate change might have on the fisheries and aquaculture industries, human beings and societies depending on these industries and on marine mammals. The sensitivity of ecosystems' response to essential climate variables are under scrutiny, for which knowledge on physical constraints is essential.



Arctic aquaculture

Specific Objectives

- Quantify climate change impacts on fishing due to biological and regulatory constraints
- Review climate change effects on aquaculture, including socio-ecological feedbacks
- Assess climate change effects on in- and output markets of the fishing industry
- Elucidate economic actors' behavioral responses to ecosystem changes and policy interventions
- Map the distribution of marine mammal populations and assess the influence from climate change

The Ocean of Tomorrow Call (ACCESS, VECTORS, ECO2)

Under UPMC leadership and involving 27 partners from 10 countries, the ACCESS project (Arctic Climate Change, Economy and Society) was selected in response to the first call 'The Ocean of Tomorrow' of the EU 7th Framework Programme Research and Development (FP7-OCEAN-2010) under Transport, Food, Agriculture and Fisheries, Energy, Environment, Socio-economic sciences and Humanities supervision. The objective of the call is to build the knowledge for a sustainable growth of sea-based activities a) by improving understanding of marine ecosystems' response to a combination of natural and anthropogenic factors and b) by providing a scientific foundation for feasible, sustainable management measures supporting policies and possible related technologies. The strategy highlights the importance of integration between established marine and maritime research disciplines, in order to reinforce excellence in science and to reconcile the growth of sea-based activities with environmental sustainability. The cross-thematic 'ocean of tomorrow' calls seek to implement this commitment. Maritime transport, tourism, offshore energy, resource extraction, coastal development, fisheries and aquaculture may have a major impact on the marine environment. The European Union has taken up this challenge and established a new integrated maritime policy, of which the Communication "A European Strategy for Marine and Maritime Research" (COM (2008) 534) is a fundamental part.



ACCESS CONSORTIUM



1. UNIVERSITE PIERRE ET MARIE CURIE (UPMC)
4, place Jussieu, 75252 Paris Cedex 05 France
Laboratoire d'Océanographie et du Climat: Expérimentation et Approche Numérique (LOCEAN)
Jean-Claude Gascard : gascard@locean-ipsl.univ.fr
Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS)
Kathy Law : kathy.law@latmos.ipsl.fr
Laboratoire d'Océanographie de Villefranche (LOV)
Martin Doble : martin.doble@obs-vlfr.fr
2. Ocean Atmosphere Systems GmbH [OASys]
Lerchenstraße 28a, 22767 Hamburg, Germany
Michael Karcher : michael@oasys-research.de
3. Natural Environment Research Council [NERC]
Polaris House, North Star Avenue, Swindon SN2 1EU, UK
Lindsay Parson : lmp@nc.soton.ac.uk
4. Kiel Institute for the World Economy [IfW]
Hindenburgufer 66, 24105 Kiel, Germany
Katrin Rehndanz : katrin.rehndanz@ifw-kiel.de
5. The Chancellor, Masters, and Scholars of the University of Cambridge [UCAM]
Old Schools, Trinity Lane, Cambridge, CB2 1TN
Peter Wadhams : p.wadhams@clamp.cam.ac.uk
6. Alfred Wegener Institute for Polar and Marine Research [AWI]
Am Handelshafen 12, 27570 Bremerhaven, Germany
Rüdiger Gerdes : Ruediger.Gerdes@awi.de
7. JS Consultant [USC]
Alter Achterkamp 74B, Grosshansdorf, 22927 Germany
Joachim Schwarz : schwarz.gmt@t-online.de
8. Nofima marin AS [NOFIMA]
Muninbakken 9-13, Tromsø 9291, Norway
John Isaksen : john.isaksen@nofima.no
9. The Hamburgische Schiffbau-Versuchsanstalt GmbH [HSVA]
Bramfelder Str. 164, 22305 Hamburg, Germany
Peter Jochmann : jochmann@hsva.de
10. Norwegian Polar Institute [NPI]
Hjalmar Johannsens 14, Tromsø 9296 Norway
Sebastian Gerland : gerland@npolar.no
11. Meteorologisk institutt [METNO]
P.O. Box 43, Blindern, NO-0313 OSLO, Norway
Harald Schyberg : harald.schyberg@met.no
12. FastOpt GmbH [FastOpt]
Lerchenstraße 28a, 22767 Hamburg, Germany
Thomas Kaminski : thomas.kaminski@fastopt.com
13. Scottish Association for Marine Science [SAMS]
Scottish marine Institute, Dumbeg Oban, PA37 1QA, UK
Jeremy Wilkinson : jpw28@sams.ac.uk
14. The Beijer Institute of Ecological Economics, Royal Swedish Academy of Sciences [BEJER]
Lilla Frescati väg 4, Box 50005, 10405 Stockholm Sweden
Anne-Sophie Crépin : asc@bejer.kva.se
15. P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences [SIO]
Nakhimovskiy Ave. 36, Moscow, 117997, Russian Federation
Sergey Pisarev : pisarev@ocean.ru
16. IMPAC Offshore Engineering [IMPAC]
5 Hohe Bleichen, 20354 Hamburg, Germany
Joachim Berger : joe.berger@impac.de
17. Universitat Politècnica de Catalunya [UPC]
Jordi Girona, 31, 08034 Barcelona-Spain
Michel André : michel.andre@upc.edu
18. The Deutsches Zentrum für Luft- und Raumfahrt [DLR]
Linder Höhe, 51147 Cologne, Germany
Dr. Hans Schlager : hans.schlager@dlr.de
19. State Research Center Arctic and Antarctic Research Institute [AARI]
Bering Street 38, Saint Petersburg, 199397, Russian Federation
Igor Ashik : ashik@aari.nw.ru
20. The Economic and Social Research Institute [ESRI]
Whitaker Square, Sir John Rogerson's Quay, Dublin, 2, Ireland
Richard Tol : richard.tol@esri.ie
21. Arctic Centre University of Lapland [UoL]
Yliopistonkatu, E Wing 3 RF Floor 8, Rovaniemi, 96101 Finland
Anna Stammer-Gossmann : anna.stammergossmann@ulapland.fi
22. SINTEF Fisheries and Aquaculture [SINTEF F&A]
Brattørkalla 17B, Trondheim, 7065, Norway
Dag Slagstad : dag.slagstad@sintef.no
23. Center for International and Environmental Research [CICERO]
Gaustadalléen 21, Oslo, 0349, Norway
Jan S. Fuglestad : j.s.fuglestad@cicero.uio.no
24. Stiftelsen SINTEF [SINTEF]
Strindheim 4, Trondheim, 7465, Norway
Mark Reed : mark.reed@sintef.no
25. Energiewirtschaftliches Institut an der Universität zu Köln [EWI]
Yoggelanger Straße 321, 50827 Köln, Germany
Christian Growitsch : christian.growitsch@uni-koeln.de
26. Le Centre Polaire [LCP]
6 rue Arme Moré, 75013 Paris, France
Laurent Mayst : lmayst@lecentrepolaire.com
27. Nordic Bulk Carriers [NBC]
Tuborg Havnvej 19, DK-2900 Hellerup, Denmark
Christian Bonfils : cb@nordic-bulk.com

