



The Arctic in Rapid Transition (ART) Initiative: Integrating priorities for Arctic Marine Science over the next decade

Carolyn Wegner (1), Alexandre Forest (2), Matthias Forwick (3), Karen Frey (4), Jeremy T. Mathis (5), Christine Michel (6), Anna Nikolopoulos (7), Matt O'Regan (8), and Marit Reigstad (9)

(1) IFM-GEOMAR, 24148 Kiel, Germany, cwegner@ifm-geomar.de, (2) INRS Eau Terre Environment, Université du Québec, Québec, G1K9A9, Canada, (3) Department of Geology, University of Tromsø, N-9037 Tromsø, Norway, (4) Graduate School of Geography, Clark University, Worcester, MA 01610, USA, (5) Chemical Oceanography, University of Alaska Fairbanks, Fairbanks, AK 99775-7220, USA, (6) Freshwater Institute, Fisheries and Oceans Canada, Winnipeg Manitoba, R3T2N6, Canada, (7) AquaBiota Water Research, SE-114 18 Stockholm, Sweden, (8) School of Earth and Ocean Sciences, Cardiff University, Cardiff, CF 10 3YE, United Kingdom, (9) Department of Arctic and Marine Biology, University of Tromsø, N-9037 Tromsø, Norway

The Arctic is undergoing rapid environmental and economic transformations. Recent climate warming, which is simplifying access to oil and gas resources, enabling trans-Arctic shipping, and shifting the distribution of harvestable resources, has brought the Arctic Ocean to the top of national and international political agendas. Scientific knowledge of the present status of the Arctic Ocean and the process-based understanding of the mechanics of change are urgently needed to make useful predictions of future conditions throughout the Arctic region. These are required to plan for the consequences of climate change. A step towards improving our capacity to predict future Arctic change was undertaken with the Second International Conference on Arctic Research Planning (ICARP II) meetings in 2005 and 2006, which brought together scientists, policymakers, research managers, Arctic residents, and other stakeholders interested in the future of the Arctic region. The Arctic in Rapid Transition (ART) Initiative developed out of the synthesis of the several resulting ICARP II science plans specific to the marine environment. This process started in October 2008 and has been driven by early career scientists. The ART Initiative is an integrative, international, multi-disciplinary, long-term pan-Arctic network to study changes and feedbacks with respect to physical characteristics and biogeochemical cycles in the Arctic Ocean in a state of rapid transition and its impact on the biological production. The first ART workshop was held in Fairbanks, Alaska, in November 2009 with 58 participants from 9 countries. Workshop discussions and reports were used to develop a science plan that integrates, updates, and develops priorities for Arctic Marine Science over the next decade. The science plan was accepted and approved by the International Arctic Science Committee (IASC) Marine Group, the former Arctic Ocean Science Board. The second ART workshop was held in Winnipeg, Canada, in October 2010 with 20 participants from 7 countries to develop the implementation plan. Our focus within the ART Initiative will be to bridge gaps in knowledge not only across disciplinary boundaries (e.g., biology, geochemistry, geology, meteorology, physical oceanography), but also across geographic (e.g., international boundaries, shelves, margins, and the central Arctic Ocean) and temporal boundaries (e.g., palaeo/geologic records, current process observations, and future modeling studies). This approach of the ART Initiative will provide a means to better understand and predict change, particularly the consequences for biological productivity, and ultimate responses in the Arctic Ocean system. More information about the ART Initiative can be found at <http://aosb.arcticportal.org/art.html>.