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ARCTIC IN RAPID TRANSITION (ART) - A PAN-ARCTIC NETWORK INTEGRATING PAST, PRESENT AND FUTURE

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Arctic sea ice is declining rapidly, simplifying access to oil and gas resources, enabling trans-Arctic shipping, and shifting the distribution of harvestable resources. This has brought the Arctic Ocean to the top of national and international political agendas. Alarmingly, sea-ice reductions are taking place more rapidly than predicted in any global climate model. This persistent mismatch between observed and predicted patterns makes planning and mitigation activities in the Arctic region even more complicated. Therefore, 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. Arctic in Rapid Transition (ART; http://www.iarc.uaf.edu/en/ART/) is a pan-Arctic scientific Network developed and steered by early-career scientists, which aims at studying the impact of environmental changes on the Arctic marine ecosystem. ART has a focus on bridging time-scales by incorporating paleo-studies with modern observations and modelling, science disciplines and geographic regions to better understand past and present response of Arctic marine ecosystems to sea ice transitions and climate change and to improve our predictive capability of future scenarios. Initiated as a continuation of the International Conference on Arctic Research Planning II (ICARP II) Marine Roundtable initiated in 2008, ART transited to a new status by becoming an official IASC Network in 2013.
The first phase of ART (2010-2014) focuses on developing a formal network to bring together scientists working in different geographic and disciplinary areas who share a common interest in improving our understanding of Arctic change. The Second ART Science Workshop was held 21-24 October 2014 in Brest, France, in collaboration with the Association of Polar Early Career Scientists (APECS), the Permafrost Young Researchers Network (PYRN) and the European Institute for Marine Studies. During this international workshop entitled “Integrating spatial and temporal scales in the changing Arctic System: towards future research priorities” (ISTAS) research priorities from an early to mid-career perspective were drafted which will feed into the third International Conference on Arctic Research Planning (ICARP III) in Toyama, Japan in 2015. This workshop brought together about 70 early career, mid-career and senior scientists from different Arctic research areas including marine, cryosphere, atmosphere, terrestrial, and socio-economic topics to ensure knowledge transfer across generations and disciplines.
The second phase of ART (2014-2018) will be centered on active data collection, such as through the TRANSSIZ (Transitions in the Arctic Seasonal Sea Ice Zone) expedition, which is included in the cruise plan of the Germane RV ‘Polarstern’ in spring 2015. The final phase of ART will be a synthesis stage, so that the legacy of ART will be a coherent set of knowledge, which would feed into physical-biological models at various scales in order to develop more robust scenarios regarding the future state of Arctic coastal and marine ecosystems, their productive capacity, how they impact the dynamics of greenhouse gases, as well as their role in global processes.