

## Theme Session Q

### Physical and biological consequences of North Atlantic circulation patterns

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**Conveners: Ken Drinkwater, Norway ([ken.drinkwater@imr.no](mailto:ken.drinkwater@imr.no)), Cesar Gonzalez-Pola, Spain ([cesar.pola@gi.ieo.es](mailto:cesar.pola@gi.ieo.es)), Ólafur S. Ástþórsson, Iceland ([osa@hafro.is](mailto:osa@hafro.is)), and Seth Danielson (PICES, USA)**

The circulation plays a crucial role in determining the physical and biological characteristics of the North Atlantic as well as its adjacent oceans. The circulation is highly conditioned by several distinct water mass sources and their subsequent spreading patterns, interchanges among the large-scale subpolar and subtropical gyres, and exchanges with the Arctic. These processes have important consequences for heat, freshwater and nutrient transport, which are often far reaching. For example, the world's energy budget is regulated owing to the existence of the meridional overturning cell in the North Atlantic. The currents and their variability also affect the ecology, including changes in species distribution, recruitment (abundance), phenology, production and/or metabolic rates. The main goals of the theme session are to quantify these advective processes and highlight their impacts. We are also interested in how they may differ under future climate change. Papers that examine (1) the exchange rates between the Arctic and Subarctic and the fate of transported physical, chemical and biological properties and (2) subtropical to subpolar connectivity including the formation and renewal of modal waters, Mediterranean Water formation and spreading, transformation of intermediate and deep water masses originating at higher latitudes and processes involving subtropical-subpolar interchanges such as large-scale oceanic gyres and eastern boundary poleward flows will be considered. While the focus of (1) is mainly upon the Atlantic sector, papers are also welcome on the effects of advection on the physical and biological properties from the Pacific sector. This session is co-sponsored by ESSAS (Ecosystem Studies of Subarctic Seas), the Working Group on Oceanic Hydrography, and SICCME.