

Theme Session L

Hydrographic processes, circulation, and water mass formation in the polar and subpolar basins

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Polar and subpolar basins of the ocean are critically important for regulating the Earth's climate and ecosystems. Recent studies in physical oceanography and ecology have been focused on water mass formation, circulation, and climatic variability on either side of the Polar front and exchanges across it. The role that each of the Sub-arctic basins, including the Labrador, Irminger, Iceland, Norwegian, and Barents seas and the Iceland Basin, plays in the regional climate and ecosystem is characterized by a combination of its specific features and processes that are common, shared, or parallel.

Considerable multinational efforts have been continuing the observational and modelling investigations of these seas and the wider region since the end of WOCE field work 15 years ago. At the same time, extensive interannual to decadal changes have been reported in hydrophysical and hydrobiological conditions around the Subpolar Gyre and in the Arctic.

Of equal interest to the session are: transformation of Atlantic waters as they spread into the higher latitudes; production rates, transformation, and fate of the intermediate and deep water masses originating in the polar and subpolar basins; variability in transports of volume, heat, freshwater and tracers; linkages between physical processes and biological activity; and forcing mechanisms driving variability, ranging from seasonal to climate scales.

Presentations on large-scale exchanges between the Arctic and the subpolar North Atlantic, transfer and transformation of the ocean climate signals passing from the Arctic and Subpolar North Atlantic to the lower latitudes, and on various aspects of integration of observations and models are highly appreciated.