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### ATMOSPHERIC FORCING OF TRANSPORT OF POLAR WATER AND SEA ICE OVER THE NORTH ICELANDIC SHELF

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The Marine Working Group of IASC defines it's area of interest as the Arctic Ocean and the sub-arctic seas. Iceland lies about 2600 km from the North Pole which is  $\frac{1}{4}$  of the distance from the pole to the equator. The nearest point in the Arctic Ocean lies 1500 km from Iceland. However the main outflow of water and sea ice from the Arctic Ocean flows along Greenland's east coast and passes very close to Iceland, which is why the Arctic Ocean can be said to be Iceland's next door neighbor. This is one of the avenues through which the Arctic Ocean sends a climate signal to the rest of the world. According to current measurements it takes the Polar water and sea ice from the Arctic Ocean only a few months to be transported, mostly undisturbed, to Denmark Strait and thus variations in the outflow from the Arctic Ocean are quickly felt in Iceland. The magnitude of this flow is variable and in the years 1965-1970 increased flow of sea ice and other freshwater caused a widespread cooling in the whole North Atlantic, the Great Salinity Anomaly (GSA). The area occupied by the outflow from the Arctic Ocean around Denmark Strait and quite far north of the Strait is seasonally ice covered and could as such shed some light on biological processes occurring in seasonally ice covered waters in the Arctic Ocean. The extent to which the flow of low salinity Polar water and ice affects Icelandic waters, the ecosystem and climate, especially north of the country, depends on the atmospheric forcing as will be discussed based on current meter measurements maintained since 1994 of the flow of Polar- and Atlantic water along the north Icelandic shelf. In the recent decade there has been an accumulation of freshwater in the Arctic Ocean and it contains now an excess of freshwater that is comparable with that of the GSA. It is of great importance to understand the processes in the Arctic Ocean that lead to this kind of anomaly as well as its consequences for the sub-arctic seas and the North Atlantic. The research challenges for attaining the required knowledge will be considered.