



## **Increased Atlantic water intrusion and related changes in Kongsfjorden, an Arctic fjord**

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Kongsfjorden, an open fjord in the north-west coast of Spitsbergen (Svalbard archipelago) in the Arctic region undergoes seasonal shift between Arctic and Atlantic characteristics with prominent physical as well as biogeochemical implications. The Atlantic waters reaches Kongsfjorden through the West Spitsbergen Current (WSC) and this Atlantic water in the WSC has shown considerable warming in the past decades. The observational data shows an interannual increase in the intrusion of Atlantic waters and resultant variability in the watermasses in Kongsfjorden during the summer/fall of 2011 to 2014. An earlier intrusion of Atlantic waters and a progressive warming of the fjord over the last four years show a corresponding decrease in the summer chlorophyll biomass and the winter time ice formation. Another feature noted was a sharp decline in the freshwater volume in Kongsfjorden over the years. The remote sensing data during the same period shows an increased northward surface advection of warm waters along the West Spitsbergen Current to the Arctic region that is relevant for the ice formation and can have larger physical as well as biochemical implications.