

Svalbard: a gateway for pollutants into the Arctic

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Svalbard is the mildest and wettest region in the Arctic. This is popularly attributed to influences from the tail end of the oceanic transport of Gulf Stream waters. Surface ocean currents are wind driven and the pathway of the waters towards the archipelago are forced by atmospheric flow and geographic circumstances. Both the atmosphere and the oceans are thus transporting mass and energy towards the Arctic across, over and around Svalbard. AMAP has estimated that 50% of atmospheric pollutant transport into the Arctic occurs near Svalbard. Oceanic pollutant transport around Svalbard into the Arctic is undoubtedly vastly influential for the state of the Arctic Ocean. Monitoring of pollutants and climate change in Svalbard is therefore of profound importance for assessing ongoing, and future change, in the whole Arctic. The transport pathways have seasonal variations, which influences the timing, quantities and types of pollutants that arrive in the Arctic. This talk will present examples showing both the development of our understanding and present limits of understanding for both chemically active and passive pollutants. Perspectives will be given for the influence of climate change in the region for the continued transport and transformation of pollutants. As climate change alters the atmospheric conditions and wind patterns, we can anticipate numerous changes in how the classic and emerging pollutants may behave in the Arctic. The need for continued monitoring and further development of observation systems in the Arctic and Svalbard in particular are more relevant than ever.