

## **Seasonal Sea Ice as a source of organo-halogens during Polar night**

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The release of bromine from snow and sea ice surfaces has mainly been attributed to the reaction of hypobromous acid with bromide at acidic conditions to form  $\text{Br}_2$ . Little attention has been given to the role of volatile halogenated organic compounds (organo-halogens) in the formation of reactive halogen species in the atmosphere during bromine explosion events.

The load of organo-halogens was studied during a winter expedition to the Weddell Sea in June to August 2013. These compounds are emitted from the different compartments of the cryosphere to the atmosphere where they are photolysed to  $\text{BrO}$  and  $\text{IO}$ , which are involved in the degradation of ozone.

We will present results that show the importance of organo-halogens formed during polar winter. In newly formed ice, in contrast to summer sea ice, the concentration of organo-bromine was found at levels as high as  $\text{nM}$ . These high concentrations were reflected both in frost flowers and in the sea-snow interface. Moreover, air measurements revealed high loads of organo-bromine over the sea ice.

The situation was similar for iodinated compounds. Interestingly, the precursors of  $\text{IO}$ , mainly diiodomethane, could be measured in sea ice and snow, most probably due to the low light levels.