



## Modelling Iodine Chemistry at the Dead Sea

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Iodine oxide (IO) has recently been detected at the Dead Sea with mixing ratios reaching up to 10 pmol/mol. IO has otherwise been detected at several coastal sites around the globe as well as in Antarctica. Our present understanding of iodine chemistry indicates that the precursors for IO are either iodocarbons, which are emitted by several types of algae, and molecular iodine which can be released from certain types of sea weeds and which is also produced abiotically in the ocean.

At the Dead Sea however, it is very unlikely that organic precursor compounds play a role in the iodine cycle due to the high salinity of the Dead Sea water.

We performed sensitivity studies with a 1D model (MISTRA) including gas- and aqueous phase chemistry in order to explain the measured IO mixing ratios at the Dead Sea. We explicitly calculate chemistry in the Dead Sea water as well as the exchange of halogen species between the Dead Sea and the overlaying atmosphere. We show that under the extreme conditions prevailing at the Dead Sea it is potentially possible to explain the observed iodine oxide mixing ratios by inorganic iodine chemistry and by considering the direct degassing of iodine species out of the water of the Dead Sea.