



## Implementation of polar ice emissions of iodine in a global chemistry climate model

Alfonso Saiz-Lopez (1), Antia Carmona-Balea (1), Caterina Juan-Vicente (1), Carlos A. Cuevas (1), Douglas E. Kinnison (2), and Jean-Francois Lamarque (2)

(1) Consejo Superior de Investigaciones Científicas (CSIC), Institute of Physical Chemistry Rocasolano, Madrid, Spain (a.saiz@csic.es), (2) Atmospheric Chemistry Observations and Modelling, NCAR, Boulder, CO 80301, USA.

The sources of the large iodine monoxide (IO) concentrations measured in coastal Antarctica remain unknown. In this work polar iodine emissions have been included in the global chemistry-climate model CAM-Chem. The implementation is based on three recent suggested mechanisms: i) release of iodine through the equilibrium  $\text{HOI} + \text{I} \rightleftharpoons \text{I}_2 + \text{H}_2\text{O}$  from sea-ice algae and subsequent diffusion through brine channels to accumulate in the brine layer; ii) photolysis of iodate frozen salts, and iii) emission of gaseous iodine from the production of triiodide ( $\text{I}_3^-$ ) via iodide oxidation in frozen solution. The results are compared to ground- ship- and satellite-based observations of IO in the Antarctic troposphere.