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Photolysis rates of nitrate, hydrogen peroxide and nitrite in Arctic and Antarctic snows: A field and modelling study

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Photolysis of chemicals within snowpacks can produce radical species that initiate oxidation reactions within the snowpack and may be responsible for chemical fluxes from the snowpack.

Photolysis rate coefficients as a function of solar zenith angle, snowpack depth and snowpack layer structure are reported using a radiative-transfer model constrained by field measurements of the solar reflectivity and light penetration depth measurements from the Arctic (Barrow) and Antarctic (DOME C). Photolysis rate coefficients and production rates are reported for photolysis of nitrate and hydrogen peroxide to produce OH radicals and nitrogen dioxide. Work will also be presented demonstrating the danger and significant error of not considering photochemistry at depth within the snowpacks. The effect of snow layering on photolysis rate and production rates will be shown for the Antarctic snowpack.

Please list some keywords

photolysis photochemistry nitrate hydroxyl OH radical radiative transfer modelling

Primary author: Dr KING, Martin (Royal Holloway University of London)

Co-authors: Mr MACARTHUR, Alasdair (NERC FSF, Edinburgh, Uk); Prof. ANASTASIO, Cort (University of California, Davis); Dr VOISIN, Didier (LGGE, France); Dr DOMINE, Florent (LGGE, France); Dr PICARD, Ghislain (LGGE, France); Dr JACOBI, Hans-Werner (LGGE, France); Dr BEINE, Harry (University of California, Davis); Ms REAY, Holly (RHUL); Dr ERBLAND, J (LGGE, France); Dr FRANCE, James (RHUL); Dr SAVARINO, Joel (LGGE, France); Dr LEE-TAYLOR, Julia (UCAR, Boulder, USA); Dr FREY, Markus (British Antarctic Survey)

Presenter: Dr KING, Martin (Royal Holloway University of London)

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