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Reactive nitrogen chemistry in surface snow during the OASIS spring campaign 2009 at Barrow, AK

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It is well known that nitrate in snow is transformed into nitrogen oxides under the influence of solar radiation. However, this process involves multiple physico-chemical steps. One important reactive intermediate is nitrite. To investigate the transformation of nitrate in the snow, we collected surface snow samples every 2 hours for a 36-hour period during the OASIS spring campaign 2009 at Barrow, AK. The samples were analyzed for the compounds nitrate, nitrite, and hydrogen peroxide. Photolysis rates of these compounds in the surface snow were calculated using radiative transfer modeling. We used the photolysis rates to calculate production and destruction rates for nitrite indicating that observed concentrations were significantly higher than expected from simple photostationary state calculation. Under these conditions, nitrite can also constitute an important source of OH radicals in the snow besides the photolysis of hydrogen peroxide and nitrate.

Please list some keywords

Nitrate - nitrite - Barrow 2009

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