



Global modelling of NO_x emissions from snow

G. D. Carver (1), E. W. Wolff (2), A. E. Jones (2)

(1) Centre for Atmospheric Science, University of Cambridge, UK. (2) British Antarctic Survey, Cambridge, UK (Glenn.Carver@atm.ch.cam.ac.uk / Fax: +44 1223 763823)

Recent measurements from Antarctica and other regions have demonstrated that NO_x is produced photochemically within snowpacks and then released to the overlying atmosphere. Such a release is likely to be an important source of NO_x in snow covered regions, particularly those remote from anthropogenic sources. Given the extent of snow fields globally, NO_x emissions from snow may also provide a significant additional global source of NO_x. We report here on numerical simulations run in a 3D chemical transport model (p-TOMCAT) aimed at assessing the significance of snowpack emissions of NO_x on the global troposphere and snow covered regions. The model has a detailed tropospheric chemistry into which NO_x emissions based on observed snow cover have been included. Estimates of nitrate concentration in the snow are also used in determining the emissions.

We present results from a number of multi-annual integrations designed to assess the impact and sensitivity, both globally and regionally, to snowpack NO_x emissions.