

GROUND LEVEL EVENTS AND CONSEQUENCES FOR STRATOSPHERIC CHEMISTRY

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It is known that large solar particle events modify the stratospheric chemistry in polar regions. The concentration of e.g. polar ozone was reduced by a significant amount (e.g. SAGE II measurements) in the middle atmosphere for a longer period after the September/October 1989 events. We combine spacecraft and neutron monitor observations of energetic protons for the recent ground level events (GLEs) on July 14, 2000, April 15, 2001, and April 18, 2001 to determine ionization height profiles in the atmosphere due to Coulomb interaction. These profiles serve as an input for the TOMCAT off-line chemical transport model used to calculate the generation of NO_x and HO_x and their effects on the ozone mixing ratio. The events and their consequences for atmospheric composition will be compared to the September/October 1989 GLE.