



## **Ozone Loss in Arctic and Antarctic Winters in 2004 from ACE Measurements**

J.-J. Jin (1), K. Semeniuk (1), A. I. Jonsson (1), S. R. Beagley (1), J. C. McConnell (1), T. Sobieraj (1), C. Boone (2), K. A. Walker (2), P. F. Bernath (2), C. P. Rinsland (3), and D. Murtagh (4)

(1) Department of Earth and Space Science and Engineering, York University, Toronto, Canada, (2) Department of Chemistry, University of Waterloo, Waterloo, Canada, (3) NASA Langley Research Center, Mail Stop 401A. Hampton, U.S.A., (4) Department of Radio and Space Science, Chalmers University of Technology, Göteborg, Sweden

The Atmospheric Chemistry Experiment (ACE) is a Canadian satellite mission (SCISAT-1) for remote sensing of the Earth's atmosphere which was launched on 12 August 2003 with a primary mission to study polar ozone loss in the winter and spring seasons. We have used a combination of box modelling, 3D climate runs and correlation analysis to study the ozone loss in the Arctic winter of 2003/2004 in February through March. Correlations between methane (CH<sub>4</sub>) and ozone (O<sub>3</sub>) show the chemical ozone loss between 10 ~ 25 km was negligible. This can be attributed to the exceptional meteorological conditions in the Arctic winter 2003/2004. The low stratospheric Arctic vortex was disrupted by a major warming beginning from mid-January 2004. However, an extraordinarily strong upper stratospheric vortex obtained from January to March 2004 with exceptionally cold temperatures. Our analysis shows there was 1 ~ 2 ppmv chemical O<sub>3</sub> loss at around 25 ~ 35 km from February to March, 2004 and also ozone loss at upper regions due to enhanced NO<sub>x</sub> from SPE-related precipitation. Using both ACE-FTS and SMR data we have also investigated ozone loss in the Antarctic spring of 2004. We find that there is severe depletion of HCl with a concomitant formation of ClO observed both by the SMR and ACE. We will present results on the consistency of the ozone loss estimated by correlation studies and by chemical budget analysis.