



Satellite measurements of the temporal variations of atmospheric metal layer content

A. C. Aikin (1), J. M. Grebowsky (2), and J. Correira (1)

(1) The Catholic University of America, Washington, DC 20064 USA, (2) Code 695, Goddard Space Flight Center, Greenbelt, MD 20771 USA

(aikin@comcast.net)

Temporal changes in the vertical column contents of the most dominant meteoric metal species, Mg^+ , Mg , Fe^+ , Fe , and Si have been measured using the nadir-viewing Global Ozone Measuring Experiment (GOME) UV/VIS spectrometer on the ERS-2 satellite. Several years of data are available for analysis. Emphasis is placed on November, which encompasses the Leonid meteor shower period. ERS-2 orbits Earth 14 times per day at 795 km in a sun-synchronous orbit with an equatorial crossing time of 10:30 AM. A detailed comparison of 1996 and 2000 has been completed for $10^\circ N$ to $30^\circ N$ at all longitudes. Metals are more abundant in 2000 than in 1996. This may be the result of the increase in solar activity in 2000 relative to 1996, which is a time of solar sunspot minimum. The column content of Mg^+ and Fe^+ exceed their corresponding neutrals. This is a function of chemistry and ion transport to high altitudes. In abundance Fe and Fe^+ exceed Mg^+ and Mg for both 1996 and 2000 while Si is more abundant in 2000 than in 1996. During the Leonid showers in both 1996 and 2000 metals are enhanced but by no more than 10%. This order of enhancement is observed at other times so that the effect of showers on changing total metal content is small. These observations will be expanded to provide the global picture for the same periods.