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Atmospheric Chemistry and Physics Discussions

# *Interactive comment on* "Metal concentrations in the upper atmosphere during meteor showers" *by* J. Correira et al.

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We would like to thank Anonymous Referee 1 and Anonymous Referee 2 for their kind feedback and helpful criticisms.

The two typos noted by Referee 1 will be corrected. Referee 1 also makes a good point about the lifetimes of atomic metals in the MLT and to address this we will add the following (italicized) at pg 18716, line 10:

"... due to meteor showers. *Given that the lifetime of atomic metals in the MLT is about 6-10 days (Plane, 2004), a perturbation of this magnitude is not likely to produce a large increase in the column density and the deposited metals are simply averaged in with the existing metal layer deposited during the previous 6-10 days*. Furthermore,



there appears ..."

and will include the cited reference in the bibliography.

Referee 2: Our previous paper, Correira et al. (GRL, 2008), includes a brief discussion about MLT metal chemistry but we have avoided the complexities of metal chemistry in this paper in order to focus on observed changes in metal column densities during meteor showers. As noted in the introduction, while it is often accepted that meteor showers do not have a strong influence on the upper atmosphere, modeling studies, radar scatter and lidar observations have at times suggested otherwise. Furthermore, Grebowsky and Aikin note in section 8.2.5 of Meteors in the Earth's Atmosphere that sounding rocket measurements taken near meteor shower peaks have showed $\sim$ a factor of 2 increase in positive ion density. Given the sometimes contradictory assumptions and observations of the connection between meteor showers and the upper atmosphere we felt that focusing on observations was the best way to approach the GOME dataset in this paper. We plan to address atmospheric metal chemistry vis-à-vis seasonal variations in future work.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 18705, 2009.