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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Will climate change increase ozone depletion from low-energy-electron precipitation?" *by* A. J. G. Baumgaertner et al.

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We thank the referee for his valuable comments, which are addressed below.

1 Specific comments

1. "Meridional circulation changes": See the comment by referee #2 and the corresponding reply. The gravity wave scheme accounts for filtering of gravity waves by the background wind, and as such meridional circulation changes should re-

sult. We will attempt to diagnose meridional circulation (MLT circulation) changes as good as possible for the revised manuscript.

2. "Net flux into stratosphere": We will provide some analysis of vortex characteristics in the simulations and attempt to diagnose the differences in the flux of NOx into the stratosphere.

3. "SSW frequency": The model does generate SSWs in the NH, but a proper statistical analysis is not possible from the limited number of years available here. We will provide a brief discussion on this subject in the revised manuscript.

4. "Northern hemisphere": We will include a discussion of the effects in the Northern Hemisphere as requested.

5. "inverse EEP effect from ClONO2": Halogen loading was not modified between the present day and year-2100 simulations in order to avoid mixing of the effects. While this is an interesting question, since only marginal amounts of EEP NOx reach the lower stratosphere we do not think that this "inverse" EEP effect plays an important role.

6. "circulation changes": As requested by all referees we will extend this discussion by using additional tracers.

2 Minor comments

1. We will improve the contour line choice as requested.

2. Thanks for pointing that out.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 9895, 2010.