

## ***Interactive comment on “Radiative effects of ozone on the climate of a Snowball Earth” by J. Yang et al.***

**Y. Godderis (Editor)**

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Dear authors,

your contribution has been seen by two reviewers. Both of them address several comments which I interpret as a request for a minor revision.

Major point:

I recommend you to emphasize the uncertainties inherent to your study. I agree with both reviewer that other unknown factors (such as the CO<sub>2</sub> level, cloud radiative forcing, parameterization of the surface albedo) may potentially overwhelm any ozone effects on glaciation or deglaciation thresholds. As you already suggest in your answer to the reviewers, this should be clearly stated in the abstract and conclusion of your

C2283

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contribution.

Minor points: - I agree with reviewer 2 that the caption of fig 4 should be clarified. - The point addressed by reviewer 1 (Kasting) about the radiative effect of lowering ozone concentration is pertinent. The fact that the decrease in the net radiative forcing of the stratosphere on the troposphere dominates the heating of the troposphere by the UV flux is not obvious. From energy conservation point of view, the point is where is the energy going ? All the radiative flux not intercepted by the stratosphere may potentially warm the surface. In addition to the citations that you mention, can you give some insights into the physical reasons explaining why the cooling effect dominates ?

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Interactive comment on Clim. Past Discuss., 8, 3583, 2012.

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