

Interactive comment on “Towards a better representation of the solar cycle in general circulation models” by K. M. Nissen et al.

K. M. Nissen et al.

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Reply to Referee #3:

General comments:

Please see author's comment "general comment"

Specific comments:

p.49, L16-17: We have repeated all calculations for this paper and no longer reduce the heating rates by the amount of energy stored as chemical energy. See also our general comments.

p.49, L18-19: If FUBRad is coupled to the Fouquart and Bonnel radiation scheme in the troposphere, we calculate the tropospheric albedo (incoming radiation at upper-

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most Fouquart and Bonnel radiation-level divided by outgoing radiation at uppermost Fouquart and Bonnel radiation-level). This is used as input for backscattering in the Chappuis and Huggins bands.

p.49, L23: We have included details on the coupling of FUBRad with the Fouquart and Bonnel radiation code in the text.

p. 51 L7-9: We have repeated the validation calculations using input fields recommended by CCMVal also used in section 4. The text in the paper has been specified accordingly.

p. 51, L10-11: See answer to p. 51 L7-9. This change also removes the addressed inconsistency. We have included profiles for additional atmospheric conditions in the validation.

p. 53 L4: We now show the SW heating rate differences for the Equator.

p. 61 Fig. 2 and p.64, Fig. 5: The vertical axis is in approximate altitude. This has been clarified for all figures.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 45, 2007.

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