

Interactive comment on “Can a reduction of solar irradiance counteract CO₂-induced climate change? – Results from four Earth system models” by H. Schmidt et al.

Anonymous Referee #1

Received and published: 3 February 2012

This is an excellent paper and should be published after addressing the following issues. It reports the first results from GeoMIP and is an important contribution to our understanding of the effects of proposed geoengineering.

1. Fig. 3 is wrong. It repeats the surface temperature figure rather than showing latent heat.
2. One of the important issues is whether the Northern Hemisphere (NH) summer monsoon will be affected, but the paper reports only annual average results. The discussion of the spatial distribution of the precipitation responses is hampered because the seasonal cycle is ignored, and because precipitation has a strong seasonal cycle

C2

in so many regions of the world, especially in low latitudes. I would like the authors to add at least one figure shown NH summer precipitation response (G1-piControl). It would also be interesting to see the corresponding sea level pressure and temperature maps. I realize that this makes the paper longer, but it is one of the most important questions, and should be addressed here.

3. I like the map figures in general, using shades of blue for negative numbers and warm colors for positive ones, and the idea of shading regions where all the models agree on the sign, but using contours where they don't. However, it is virtually impossible to understand the values of the contours by their colors, as they are so close to each other in color in many cases. Also, even if we could match the color of the contour to the color bar, what value is the contour, since the color bar is a range? Please add numerical contour labels to many of them, so the reader can understand their values.

4. The GeoMIP protocol is for three ensemble members for each model run, but I saw no mention of this in the paper. Are the results from one run for each model or an ensemble of three runs? Please make this clear.

5. There are a number of other minor comments in the attached annotated manuscript.

Please also note the supplement to this comment:

<http://www.earth-syst-dynam-discuss.net/3/C2/2012/esdd-3-C2-2012-supplement.pdf>

Interactive comment on Earth Syst. Dynam. Discuss., 3, 31, 2012.

C3