

Interactive comment on “Volcano impacts on climate and biogeochemistry in a coupled carbon-climate model” by D. Rothenberg et al.

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I read with interest the paper by Rothenberg et al. that describes the carbon cycle response to volcanic eruptions using the NCAR CCSM3. The authors compare the modeled carbon cycle response to volcanic eruptions with earlier studies of Jones and Cox (2001) and Brovkin et al. (2010), as well as with available observational-based data.

We recently published a paper in Biogeosciences (2011) entitled “Sensitivity of atmospheric CO₂ and climate to explosive volcanic eruptions”, where we describe the sensitivity (magnitude and timescale) of the land and ocean carbon cycle response to the size of volcanic eruptions. For this study, we used the precursor NCAR model CSM1.4-carbon. The authors may not be aware of this paper. However, it would be

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very interesting to know why the NCAR CCSM3 shows a very small terrestrial carbon cycle response after the Pinatubo, whereas the CSM1.4-carbon model shows a much larger terrestrial response, despite the fact that both models show similar (at least in sign) temperature and precipitation responses over South America, and both models seem to have a relative small climate feedback onto carbon.

It would be great if you could include some information/discussion on this.

Interactive comment on Earth Syst. Dynam. Discuss., 3, 279, 2012.

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