

Interactive comment on “On the available evidence for the temperature dependence of soil organic carbon” by W. Knorr et al.

Anonymous Referee #4

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General comments This is a reply to the discussion papers by Reichstein et al. and Fang et al. which raise important concerns about the conclusions drawn in an earlier paper by Knorr et al. (2005). The issue, i.e. the temperature sensitivity of different SOM pools, is important and a critical discussion of the ‘available evidence’ is useful. In the present paper the authors defend their approach used earlier. However, the general reader finds little additional support. Much has to do with what one believes (e.g. pg 754, line 2).

Specific comments This reply to the concerns raised by Reichstein et al. and Fang et al. is an attempt to question the validity of their critical arguments, and it defends the approach and assumptions used in Knorr et al. (2005). The authors do not question the possibility that stereochemical differences exist between different pools, but they argue that the use of the most simple model (with fixed A) is still valid because the

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model could become self-contradictory, without giving any evidence that this is in fact possible. Similarly, the argument by Reichstein et al., i.e. that adding random noise to synthetic data leads to the same result, is questioned, but not strong argument against it is presented. The reader is left with the two views from which he can choose what to believe would be more appropriate. Clearly, Knorr et al. disagree with the arguments by Reichstein et al. and Fang et al. and sustain their original conclusions, but without giving much further supportive evidence. In my view, this is a highly academic discussion, and unless additional data from experiments specifically designed to address the question of temperature sensitivities, for instance by testing the different fractions after suitable separation, it seems to be a matter of believe. This reply cannot convincingly argue against the points raised by Reichstein et al. and Fang et al. To make the article more useful, the authors could propose some ways forward to overcome the need for assumptions and to address more directly the question of temperature sensitivity of SOM pools in relation to their chemical properties.

Interactive comment on Biogeosciences Discussions, 2, 749, 2005.

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2, S389–S390, 2005

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