**Biogeosciences
Discussions**

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Comment

Interactive comment on "Soils apart from equilibrium – consequences for soil carbon balance modelling" by T. Wutzler and M. Reichstein

T. Wutzler and M. Reichstein

We want to thank the editor for its friendly comments and for pointing out some of the obstacles in language. We will take care of the notes in a revised version of the paper. Here we already address two questions of the referee.

The referee asked what are the effects of applying litter inputs that are not averaged across the rotation cycle. Applying non-averaged litter inputs would add additional increases and decreases for carbons stocks of single stands at decadal time scale. The development of carbon stocks with average litter inputs represents the trend (moving average over time) across the more time-variing stocks. This can also be viewed as the mean carbon stock across many stands of different ages growing at otherwise the

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same conditions, i.e. a chronosequence.

The referee asked what are the consequences for sites that have been severely disturbed more recently than a century ago. We note, that neither the equilibrium nor the relaxed equilibrium assumption, which was used in our study, is applicable for sites with more recent (less than a century ago) disturbances. The consequences of simulating these sites with the equilibrium assumption are probably more severe than for sites with disturbances longer ago. In order to simulate such sites, the initial state of the stocks of all the pools has to be estimated. There are recent advances in reflectance methods to achieve this (Couteaux et al., 2003). Zimmermann et al.(2006) related fractions of grassland soil carbon that were distinguised chemically to the carbon pools used in the Roth-C model. These pools then could be classified quite well by analysing reflectance spectra.

Couteaux, M. M., Berg, B., and Rovira, P.: Near infrared reflectance spectroscopy for determination of organic matter fractions including microbial biomass in coniferous forest soils, Soil Biology & Biochemistry, 35, 1587-1600, 2003. Zimmermann, M., Leifeld, J., and Fuhrer, J.: Quantifying soil organic carbon fractions by infrared-spectroscopy, Submitted to: Soil Biology and Biochemistry, 2006.

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