**Biogeosciences
Discussions**

Interactive
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Interactive comment on "Spatial and seasonal variability of heterotrophic and autotrophic soil respiration in a winter wheat stand" *by* N. Prolingheuer et al.

Anonymous Referee #3

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This manuscript reports soil respiration and its partitioning in a winter wheat plot. As the authors pointed out, understanding autotrophic and heterotrophic components of soil respiration is crucial for constructing global carbon cycle models. However, this manuscript does not provide much new contribution to this challenging area.

A simple small trenching (piping) approach is used to separate soil respiration. To derive autotrophic respiration, one has to assume heterotrophic respiration remains the same in the trenched (50 cm collar) as the control area (7 cm collar). My major concern on the methodology is that 1) changes in soil water contents resulting from the 50 cm collars, and 2) changes in heterotrophic respiration resulting from the absence

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of fresh carbon supplies from roots (root exudates) with 50 cm collars. The authors have shown the difference in soil water content inside the two types of collars, but how this difference in soil water resulting in difference in heterotrophic respiration is not clear to me. This causes errors in deriving autotrophic respiration. Root exudates induced errors are more difficult to address than the water induced errors. But thorough discussion should be presented. Without discussion of the difference in heterotrophic respiration in these two treatments, the temporal and spatial variability of autotrophic respiration become less plausible.

Interactive comment on Biogeosciences Discuss., 7, 9137, 2010.