

Interactive comment on “The seasonal cycle of the greenhouse gas balance of a continental tundra site in the Indigirka lowlands, NE Siberia” by M. K. van der Molen et al.

Anonymous Referee #2

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1. Paper is extensive and compiles plenty of descriptive information on the studied field site: soils, geology, climate, vegetation, etc. Another advantage is application of powerful measuring technique for gas fluxes: micromet tower, soil chambers and leaf cuvette.

2. Unfortunately time series for gas fluxes were very short: during three years (2004–2006) chambers and towers were erected and run no longer than several days in Jul–Aug. It is understandable from logistic point of view: too risky to keep expensive instruments in the Arctic wilderness. But I would try to cover the warm and transient (spring, fall) periods at least with chambers. By the way, chambers were too small: 10 cm diam

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will not cover even medium size individual vascular plants (sedges, bushes) and metal frame should severely damage roots and soil resulting in abnormal flux. My personal experience is that the newly installed chambers always display 'atypical' and irregular behavior first 2-5 days, we prefer to discarded first data point in time series as artifacts, but this work was entirely build on a single-term measurements! I would not take them seriously. They are unreliable and mostly meaningless.

3. It does not mean that first sketchy data should not be published. Yes, publish and discuss them in appropriate careful way! The main my disappointment was caused by dreadful disparity between the modest amount of available observational data (several days per year during three year) and grand scale of global/regional extrapolation. Such extrapolation as well as brave attempts to simulate mathematically and find mechanistic interpretation for each obtained number is wasting of time!

4. Specific comment about soil biology. Discussion on some biological issues (photosynthesis - root exudation - aerobic and anaerobic microbial activity at above and below zero temperatures) was done incorrectly. For instance, Ryvkina et al, 2000 and Panikov, Sizova, 2006 did not study methanogens. I strongly recommend to read papers (at least summary) before citing.

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