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***Interactive comment on* “Comparison between eddy covariance and automatic chamber techniques for measuring net ecosystem exchange of carbon dioxide in cotton and wheat fields” by K. Wang et al.**

Anonymous Referee #1

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General comments: Although it is unfortunate that AC dataset has long-term data missing periods, and that the authors did not measure energy balance closure at the study site for assessing a systematic uncertainty, comparison between EC and AC fluxes of CO₂ exchange on the seasonal (for wheat) and the annual scale (for cotton) is valuable and therefore worth publishing.

Specific comments: My only concern is that the discussion on changes in SOC seems to be out of the scope of the present paper, and I wonder this paragraph is unnecessary for this paper. It is generally interesting to compare the obtained annual fluxes with

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estimates by independent methods, but in the present paper, only insufficient data and information are provided for the comparison. For instance, it is not shown when and how the authors measured the amount of harvested and incorporated biomass (above-ground residue and the roots) of cotton and their carbon contents, and how much their uncertainty ranges. Definition of the conversion efficiency from incorporated residue to soil organic carbon and its uncertainty range are also not clear. Is the efficiency defined for the first year after incorporation? Do we need to multiply the amount of incorporated carbon by the conversion efficiency to compare with the annual fluxes? Further, only a little evidence or information is shown for the discussion in the latter half of the paragraph.

Technical comments: 1) P8476, L21-23. Further explanation is needed how to estimate the detection limits. 2) P8477, L2-4. F should be Fac 3) P8477, L6. Is rho really CO2 density? 4) P8478, L2-3. How big was the coefficient c? 5) P8487, L21. "(Table 1)" should be removed.

Interactive comment on Biogeosciences Discuss., 10, 8467, 2013.

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