Solid Earth Discuss., 6, C259–C260, 2014
www.solid-earth-discuss.net/6/C259/2014/

Solid Earth
Discussions
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Interactive comment on "Physicochemical changes in pyrogenic organic matter (biochar) after 15 months field-aging" *by* A. Mukherjee et al.

Anonymous Referee #2

Received and published: 13 April 2014

The paper addresses an interesting topic of research: how aging modifies the physico-chemical properties of biochar. Even if the aim of the study is relevant and the results could be worthy of publishing, the paper presents some important limitations:

The abstract and the introduction are a bit pretentious. The paper is presented as the "missing link" in biochar research. This is not in accordance with the actual results, which consequently leads the reader to disappointment. For instance, the last sentence of the introduction states: "The overarching goal of this project was to understand how biochar amendments of different types affect soil chemistry and thus, fertility and C sequestration over longer timescales and to identify the types of biochar which may be better suited to specific purposes or soil types", unfortunately, this generalist objective is not achieved with this study.

Some of the most important conclusions (highlighted in the abstract) are based on measurements without replication. Although there is a considerable number of analysis and some general trends could be discussed, the study is statistically weak. For instance, CEC, AEC and NMR analysis were only performed in one of the treatments (they lack experimental replication and only have analytical duplication).

The most important drawback is the lack of novelty of the results and conclusions that can be extracted from the paper. There are many hypotheses and speculations with no data to support those hypotheses. Moreover, a big part of the results have been already published somewhere else.

Interactive comment on Solid Earth Discuss., 6, 731, 2014.