

Revision reply

Editor comment

Your manuscript may be acceptable now for publication. However, your abstract still needs improvement:

1.) 'However, the contribution of GOC to total soil OC varies depending on the type of bedrock. As yet, no far studies have investigated the contribution of GOC derived from different terrestrial sedimentary rocks to soil OC content' should be changed to 'The contribution of GOC to total soil OC may vary depending on the type of bedrock. However, no studies have been carried out to investigate.....'

- Was changed accordingly

2.) Please add a more detailed description of what was done to the abstract - this refers in particular to the analyses of the 1m depth intervals and your calculation of the geogenic and biogenic components in particular, the references used to calculate both. What is your definition of recent carbon?

- We added more detailed information about the analysed depth intervals and the calculation of biogenic and geogenic components to the abstract. We changed the sentence in l. 23 (Marked-up manuscript) to:

“In order to fill this knowledge gap, 10-m long sediment cores from three sites recovered from Pleistocene Loess, Miocene Sand and Triassic Red Sandstone were analysed in 1 m depth intervals and the amount of GOC calculated based on ^{14}C measurements”

We further changed the sentence in l. 26:

“The biogenic component relates to OC that entered the sediments from plant sources since soil development started.”

And added a detailed description in l. 28:

“Assuming an average age for this biogenic component ranging from 1,000-4,000 years BP we calculated average amounts of GOC in the sediments starting at 1.5 m depth based on measured ^{14}C ages. The median amount of GOC in the sediments was then taken and its proportion of soil mass (g GOC per kg^{-1} fine soil) calculated in the soil profile.”

3.) In addition, in the conclusion a short description of your approach including its underlying hypotheses should be stated. 'This approach' is not enough as it is not understandable what 'this' refers to.

- We added two sentences at the beginning of the conclusion to define the aim of our study and describe our approach:

“In this study the amount of GOC in sediments and in the soil was analysed by radiocarbon dating. The aim was to find out if GOC from different terrestrial sediments can have an influence on soil OC stocks.”

39 4.) 'Subsoil' should also be redefined here shortly.

40 - We added the definition for subsoils defined in our study in l. 618:

41 “These amounts allowed for contributions from GOC of between 10-30 % in subsoils, defined here as
42 soil horizons ranging from 0.3 to 1.5 m depth.”

43 5.) 'Thus, even sediments with comparatively low amounts of OC were also able to demonstrate the
44 large contribution of GOC'. This sentence needs to be reformulated or deleted - it is not clear what is
45 means and why it is important here.

46 - Sentence was deleted