Answer to comments of reviewer #1

The introduction should more clearly state the objectives of the study. It remains someC1 HESSD Interactive comment Printer-friendly version Discussion paper what unclear what exactly was the aim(s) of the research

Ok, this was clarified in the text (P2L26)

P1L27 dramatically => considerably/significantly

Ok, this was changed

P3L1 If traditional corrections have been applied – what are then untraditional models? To my knowledge the review by Han and Plummer lists nearly every correction that was published for 14C.

Ok, this was changed

P3L28 To be more clear please add: “according to the stoichiometry of Eq. (1)

Ok, this was changed

End of the introduction: The authors clearly state what they did but not so clearly why. I encourage the authors first to formulate one/some objectives of the study and afterwards mention briefly the applied methods.

A paragraph, which states the main objectives of our study was added (P4L19)

P6L10 Any modifications to the cap to make it “gas tight” or the standard blue color Duran bottle caps?

We used standard blue colour Duran bottle caps with inlay rings which provide gas tightness.

P6L20 Please mention the pore size (0.45µm?) and procedure for filtering to distinguish between DOC and TOC.

Ok

P6L29 How was the sample extracted from the 1L Schott bottle since contact with atmospheric CO2 might alter the δ13C of the sample.

The sample was extracted from the 1L schott bottle with a gasthight syringe in a glove bag filled with N2 and added to the vials via a butyl rubber septum.

P8L1 pmC => pMC ? (you might also use pmC but be consistent throughout the text); check also on eq. (5), P9L22 etc.

Ok

P8L21 here you might simply refer to eq. (4) ?
Ok

P8L22 Please be more precise here. Do you mean that the error is the precision of the analysis sequence (e.g. based on the repeated analysis of a control or drift sample)?

Ok

P12L1 note that this is the Cambridge half-life time. A (activity) and t (time) should be italic characters.

Ok

P13L2 How can you report a value with two digits if your precision is ±0.3‰ (P7L7)? Also, if your s.d. is ±0.19‰ it does make any sense to report a value of -11.66±0.19‰ Please change to (-11.7±0.2)‰ . Also check numbers in other lines here.

Ok

P13L7 For pMC the same applies as for the precision of δ13C. How can you report a value of 62.23±7.01 pmC? Your s.d. is by far larger than your reported value. I strongly suggest changing these values to (62±7) and (13.4±0.5) pMC. Same applies for DOC (section 3.3) and

Ok

P15L28 change in preparation to unpublished (might be subject to change latter in the production process)

OK

P16L12ff Did the authors measure 3H activities in their samples? This might provide some more information of the presence of young waters (i.e. younger than 60 years).

3H was not measured, but it is planned in future.

Table 1
Units are missing (‰ vs V-PDB and pMC) from the first line. See my comments for Table 1 and also my comment on reporting a value with a rather large uncertainty (P13L2). It simply makes no sense to report a value of (65.16±4.03) => change to (65±4) or (65.2±4.0).

Ok

Table 2 Units are missing (‰ vs V-PDB and pMC) from the first line. See my comments for Table 1 and also my comment on reporting a value with a rather large uncertainty (P13L2). It simply makes no sense to report a value of (65.16±4.03) => change to (65±4) or (65.2±4.0).

Ok

See my comments in units above. Provide a citation for Tamers and F&G or at least mention in the Table captions that these are explained in the review by Han and Plummer.

Ok

Figures* Figs. 2, 3, 6 and 7: Data points are hard to distinguish if the plot close or over each other. I suggest using a thin black line for the circles. In Fig 7 reduce symbol size and use open circles instead of filled black to improve readability.

Figures will be kept as they are

Fig 6b and 6c - What is the unit of DIC on x-axis? - Figure caption of 6b is wrong: The caption states that 14C is plotted vs 1/DIC but y-axis is labeled δ13C. - Figure caption of 6c is wrong: The caption states that δ13C is plotted vs 1/DIC but C4 HESSD Interactive comment Printer-friendly version Discussion paper y-axis is labeled pmC. Note that δ13C is not a concentration.

Ok

Answer to comments of reviewer #2

Comment 2: The geological setting of the area is precisely described in the paper of Kohlhepp et al., which is cited several times in our manuscript. The reader is referred to this paper in order to get a better insight to the geological setting of our study site. We think therefore that it is not necessary to include a geological map to our manuscript.

Comment 3: We discussed the potential impact of land use on DIC isotopes in our aquifer (P19L23ff). However, our conclusions remain somewhat hypothetical, because of a lack of data. More data, like 3H measurements would help, because they could give more information about the content of young waters in aquifers with low 14C values. However, such measurements could not be conducted in our study and remain a task for the future investigations.