

The Summary of Revision for the SE Manuscript No.: se-2016-37 R1.

Manuscript Title:

**Differences and influencing factors related to underground water carbon uptake
by karsts in the Houzhai Basin, southwestern China**

Thank you for reading and reviewing our manuscript. Your comments will definitely help us improve the manuscript to a higher scientific level. We revised our manuscript according to your comments and it contains all the changes to be visible. The points mentioned by the reviewers will be discussed below. We added some contents in blue and deleted some contents using revision mode in Word. Besides, some small revisions we made were not showed in Word.

Please see specific amendments in the revised manuscript.

Our reply note as follows:

Comment 1: Runoff and chemical weathering were considered in this article, but what about the temperature, plants, aquatic organism, etc. At least, the factors should be explained in the introduction section.

Reply1: The reviewer's opinion is very professional. Temperature, vegetation and aquatic organisms have important effects on the karst carbon sink, especially the carbon sequestration by aquatic organisms is the focus of the current research. Due to the limitation of data acquisition time and data acquisition means, our current calculation cannot well reflect the temperature, especially the effects of aquatic organisms on watershed carbon sequestration. Therefore, we added some related contents in the introduction according to the reviewer's comment.

Please see specific amendments in the revised manuscript.

(Line 49-56, Page 2);

(Line 66-79, Page 2-3);

(Line 102-104, Page 3).

Comment 2: Flow and ion concentration change and its effects on carbon sink, but hydrodynamic condition that control the contact time of water-rock, may have more important influence on the carbon sink. So the results of the article should be deep analyze.

Reply 2: As the reviewer's comment, the water-rock contact time and temperature may have an important influence on carbon sink, however, we cannot obtain relevant data due to the limitation of our observation conditions. But we also

attempt to add some contents in discussion part. Besides, the spatial resolution of the data we used is not compatible with the requirements, which is the direction we need to pay attention to in the future. At the same time, we follow the reviewer's comments and strengthen the discussion of the results in the manuscript.

Please see specific amendments in the revised manuscript.

(Line 181-182 and Line 185-192, Page 6) ;

(Line 197-199 and Line 205, Page 7);

(Line 223, Page 8);

(Line 240-242, Page 9).

(Line 247-252, Page 10).

(Line 263-266, Page 10).

(Line 330-335, Page 12-13).

(Line 337-339, Page 13).

(Line 360-368, Page 13).

Comment 3: The quality of the ms is poor in English express. I strongly suggest the authors to polish the English. There are many professional editing services.

Reply 3: According to the reviewer's comments, we asked the professional editing institutions to polish the manuscript.

Attached please find the documentary evidence of article polishing.