

Referee #1 (D. Mildenhall)

1. General comments:

As I am not an expert in the geological, paleontological and palaeoclimatic history of China I have concentrated on the more editorial type details in this paper that require fixing before the paper can be recommended for publication. The science and logic behind the paper has not been examined in any detail as the paper needs to be edited into better English before such reviews can be made so that it is clear what the authors are meaning. I appreciate that the authors are writing in a foreign language and so I have tried to remedy this in the attached tracked. docx file of the paper. I stress that to bring it up to publication standard even further work will be required as the conversion of the pdf to a .docxfile has caused conversion and additional formatting problems in the text, and I have concentrated only on the more obvious inconsistencies. Furthermore I worry about a paper that is so completely dependent on previously published data without the authors reviewing the work on which their paper is based. This is particularly the case for Core F2 where the authors do not know the number of samples and in which no detailed pollen analyses were apparently carried out or published and as far as I can tell the core does not really in the interval between the two prime cores they discuss.

The paper seems to be mainly a review paper using existing published data to formulate a climatic history. In this I am not sure that the sampling detail is sufficient and I worry about the fact that so much information that the paper requires to make it a coherent whole is referred to by reference to other papers but without any summary of their conclusions being given. For example, the stratigraphy is presented as though there is continued sedimentation from 18 Ma to the present day and I find that hard to believe. For example, the data that seems to be available bridging the gap between cores KC-1 and SG-3 appears virtually non-existent or at the very most unusable. For example, there is little or no discussion about dispersal of pollen which could make all the difference to the interpretation; and some of the comments in the following list need attending to. I recommend that this paper be thoroughly checked for its English and then resubmitted with some additional comments.

Response: Thank you very much for your patient and valuable suggestions, which are very helpful for improving our paper. We have thoroughly revised our paper according to your suggestions. Your comments or suggestions are considered and answered below; see the text for

the details. After major revisions, the new manuscript has been edited by GeoEditing (a company specialising in English language editing for Earth Scientists: please see <http://www.geoediting.co.uk/>) to bring it up to publication standard. We think our new manuscript is now logical and readable. Although this paper is mainly dependent on previously published data, it is the first time that the proper statistical analysis and combination have been used to discuss such long-term (since 18 Ma) climate pattern and driving forces, making it a timely and worthwhile contribution (please see lines 112-117). The pollen data from Core F2 have been deleted from the compiled results due to the lack of detail, but they are cited as one of possible evidences when discussing the climate pattern during 5-3.1 Ma (please see lines 382-386). After compiling results from the statistical analysis, climate records and tectonic uplifts, we are now more sure that this paper is important for understanding the long-term (18-0 Ma) inner Asian climatic trends, and their relationships with the global cooling, the Tibetan Plateau uplifts and the monsoon.

2. These comments mainly reinforce comments made on the attached. docx file.

2.1 P. 1486: The last phrase of the abstract “that the Tibetan Plateau uplift also contributed in contrast to the East Asian summer monsoon” seems to lack something. A contrast is mentioned as existing but no comment is made as to what this contrast is. The abstract is meant to be read independently of the paper and this comment should either be deleted or expanded.

Response: Yes, ‘Abstract’ is modified, we want to show the vegetation and climate patterns during the late Cenozoic (last 18 million years) western Qaidam Basin are primarily a result of the global cooling, with the Tibetan Plateau uplift and East Asian summer monsoon having contributions of lesser importance (please see [lines 27-29 in Abstract](#), [lines 237-369 in Discussion](#)).

2.2 P. 1489: Surely the authors can determine the number of samples examined?

Response: The content of Core F2 is deleted from the compiled result due to no details of the sample number and age control, which is only cited at ‘5.4 Aridification during 5-3.1 Ma’ at [lines 379-383](#).

2.3 It is not clear whether the pollen sums of the two principal cores are the same. If so it should

be stated; if not then Fig. 3 will need to be emended.

Response: The pollen sums of the Core KC-1 and Core SG-3 are almost same, please see the details in the related papers ([Miao et al., 2011](#); [Cai et al., 2012](#)) and in line 99.

2.4 P. 1490: *Nitraria* is show in Fig. 3 to markedly decrease not increase with time between the two major cores.

Response: Yes, corrected.

2.5 P. 1490: There is no such thing as a “Podocarpus climate”. Do you mean mesothermal conditions?

Response: Yes, corrected.

2.6 P. 1490-1: I assume that in each case you mean “less precipitation” than the previous taxa require – say so.

Response: Yes, corrected.

2.7 P. 1490 and elsewhere: There is confusion throughout the text as to “taxa” and “pollen”. For example on p. 1490 there is talk about taxa increasing when there is no evidence of that presented in the paper. The pollen does increase but that does not necessarily mean an increase in taxa. Similar statements are made with respect to conifers, herbs, etc.

Response: Yes, all changed.

2.8 P. 1506: In Fig. 3 delete “arbors” and insert trees. For the subdivision of the pollen types use “trees” and “Shrubs and Herbs”. Also change “arbors” to “trees” in Fig. 5c (p. 1508).

Response: Yes, all changed.

2.9 P. 1497: Ensure that all the references are presented in the style recommended by the journal.

Response: Yes, all checked.

2.10 Note that Ding et al., 1998 is missing from references (should this be Ding et al. 1992 which

is correctly referenced but not in text?) and delete Garziona et al., 2005 and Wu et al., 2008 from references as they are not referred to in the text.

Response: Yes, all done.