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Dear editor and reviewers,

Thank you very much for your valuable and encouraging comments to revise and resubmit our paper [Vegetation and fire anomalies during the last ~70 ka in the Ili Basin, Central Asia]. We have completely revised the paper and hope that it meets with your and reviewers' approval. We followed most of the reviewers' suggestions, especially two sections ('4.2.2 Taphonomic effect' and '4.2.3 Sedimentation process effect') and two new figures (Figures 8 and 9) are added in order to make the discussion clear. Our responses to the reviewers' comments are underlined. The language of our manuscript was helped to be improved by native English-speaker GeoEditing Company again. Here we show every correction after our revision as "marked manuscript" in order to easily identify the places of changes. Line numbers as remarked by the reviewers in the original manuscript are named firstly. Line numbers named in our comments to the reviewers' remarks refer to the marked manuscript. Then the revised manuscript is also submitted.

Thank you again for re-considering this manuscript.

Sincerely yours,

**Yunfa Miao**

**Yougui Song**

**Yue Li**

**Shengli Yang**

**Yun Li**

**Reviewer #2:**

The main issue is that the interpretations and conclusions are only partly supported by the pollen and microcharcoal results. The conclusion that the main vegetation change occurring at 36 ka is to be attributed to increased local fire activity caused by human activity remains speculative at this point, without direct archaeological evidences. Specific questions that might help to re-focus the discussions (thus conclusions and the title) are:

1) Are there any anthropogenic indicators present in the palynological records?

**Response:** [Thanks for your question. No special palynological morphologies have been found in our study.](#)

2) What is the reason for the increase in the sedimentation rates during the interval ~47.5-41 ka (Fig.2)? More dust supply from the Westerlies? I do see an increase in the grain size in your Nileke section record. How does it influence the pollen and microcharcoal records?

**Response:** [Another good question. We think the obvious increase in sedimentation rates during 47.5-36 ka may have been due to rich fine materials exposed on the banks of the river, if the dating is reliable. Another possibility is that the human activities lead to environmental degradation, causing the high rates. In either case, the Westerlies would not have played the key role. Besides the mean values of grain-size shown in Figure 6, a series of detailed distributions of grain-size have been added as Figure 8, revealing no obvious changes in any size fraction at 41 ka ago or 36 ka ago. That is, the changes in microcharcoal assemblages are asynchronous to those in grain size. If the grain-size changes in dust particles are mainly driven by the wind velocity, the microcharcoal assemblages must have had little influence by the wind.](#)

3) You say that "no anomalies occurred during 41-36 ka" (line 238, Fig. 6 caption), but what is then the peak between ~41-39 ka evident in your records (Fig.6)?. I do see indication of a slight increase of aridity in the Ice Core Gulia from the Tibetan Plateau after 36 ka, which is in agreement with the increased fire occurrence indicated by your

records (Fig.6).

**Response:** Sorry for my mistake, this sentence has been deleted. Please also see the last question raised by Reviewer #1.

Minor comments:

In the caption of Figure 1 it is better to indicate the names of the wind systems shown with the arrows.

**Response:** Yes, the full names of the wind systems have been added into the caption.

Figures. 3 and 4 could be a bit bigger.

**Response:** Yes, Figures 3 has been enlarged and Figure 4 redrawn. Both look clearer now.

Figure 6 must be bigger to allow an easier proxy comparison. It would be helpful to add an horizontal line indicating 47.5 ka (also if is not a CONISS division).

**Response:** Yes, both have been enlarged for clarity.

Figure 5 needs a more complete caption with a bit more explanation. The reader will understand why curves are oranges /blue just in the discussion.

**Response:** The colours and caption have been revised.

The paragraph of lines 218- 226 is very important to understand all the discussion probably you can move it before, in section 4.

**Response:** Yes, it is a good question. However we think it is still better to keep it here as part of our logic.

Technical corrections:

1) "-e" is missing in "Nilke" line 90, caption Fig.1,

**Response:** Yes, added.

2) line 179, Asteracea"-e" is missing.

**Response:** [Yes, added.](#)

3) line 190, caption Fig. 5, R:... "round" is missing.

**Response:** [Yes, added.](#)

4) a verb is missing in the sentence from line 255 and line 257 (section 4.2).

**Response:** [After consideration, this sentence is deleted in revised text, please see Lines 294-295.](#)

5) within references: something is probably missing at reference "Conard NJ (2008)" line 383.

**Response:** [Yes, added.](#)

6) double reference for Song YG, Chen XL, Qian LB et al. 2014, Quaternary Int.

**Response:** [Yes, deleted.](#)