

General comments

This study reported the construction of the modern pollen dataset in eastern and central Tibetan Plateau by collecting samples from 117 lakes and pools between elevations of 3720 and 5170 m a.s.l., which compensate for the geographical data gap in the region. Precipitation is found to be the main climatic determinant of pollen spatial distribution, by interpolating the pollen dataset against a robust modern meteorological dataset. The capability of the pollen dataset in reconstructing past climate is then tested and verified using two deep lake sediment cores.

The topic is important for the climate and environmental reconstruction for Tibetan and beyond. However, the study, in its current layout, requires certain revision before it could be considered for publication in this journal. My main comments are:

Specific comments

1. Please provide a general framework of the reconstruction analysis. For example, please provide brief justification of how the pollen species of present climate conditions can be used in past climate reconstruction, especially for the Holocene and earlier climate.
2. Regarding "Sample collection": I do not quite understand the criteria of lake selection (Line 83-86) mean exactly. In particular, how does the choice of small and unnamed lakes or pools reduce the influence of long-distance pollen transport? Did the authors mean they reduced the sampling distance by including 117 small lakes and pools?
3. Regarding "Data processing": the authors did not mention the time period of the CMFD data they used for analysis. Does it include the entire period of Jan 1979 to Dec 2018?
4. What time frame does the 2cm surface pollen sample represent? Was it more or less uniform across all sample sites? Does the time frame comparable to the CMFD observation?
5. The information in Figure 2 is difficult to extract, and it is rarely referred to and therefore illustrated in the text.
6. The same applies to Figure 3. The results should be illustrated in more detail. For example, how were the pollens classified as wet-indicator vs. drought-indicator (Line 198-201)? By their locations (positive vs. negative) in Axis 1? What do the two arrows for temperatures indicate?

Technical corrections

1. Please provide information for the color bars in Figure 2.
2. Please still provide the full name of the three climate variables, together with their symbols, in the caption of Figure 3.
3. Please explain why certain pollen's name are in italic while the others remain normal.
4. Please consider separate the statistics of the geographic and climate parameters from those of the pollen data, either within Table 1, or using two tables.
5. The language could be further polished, for example in Line 201-202, to avoid

possible confusion or ambiguity.

6. Please use mm/yr or mm/a as unit for precipitation.