

## ***Interactive comment on “Last-glacial to postglacial climate formation in the continental interior inferred from multi-proxy records of Lake Hovsgol, Mongolia” by K. Minoura et al.***

**Anonymous Referee #2**

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A large set of data is presented from a lake sediment record in Mongolia which could be of interest for paleoclimate reconstruction due to the scarcity of data from this region. However, the structure of the paper is rather confusing and it is very difficult (partly impossible) to follow the main lines of argumentation. For example, some interpretation on lake level changes are already presented in the introduction chapter (lines 18-19), results from the Baikal record are discussed in the 'Materials' chapter (lines 16-18), while important information on the length of the cores is missing. The discussion chapter is not at all structured and there are several jumps between topics/proxies. In addition, the main figure presenting all proxies is The main figure of the paper (Fig 3) is much too small and hardly readable.

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More importantly, there are major weaknesses in the chronology and interpretation:

**Age model:** Although it is clearly stated that the authors have no accurate information about the reservoir effect (p 398, lines 25-26), they assume it was small (p 399, line 3) based on some speculation only on the water circulation. Besides the fact that I don't see the connection to reservoir ages, The assumption of small reservoir ages is proven wrong by the surface sediment ages from 2 cores which varied between 710 and 2482 cal yrs BP. This clearly indicates great uncertainties about reservoir ages. Further information on the kind of dated material is also missing. In my opinion the entire chronology is dodgy (see also Fig. 3 showing very different age models for the three cores). It certainly does not allow to seriously discuss time lags between cores from different parts of the basin (see page 401, lines 17-19).

**Interpretation:** The main problem appears to be with the  $^{18}\text{O}$  data from ostracods, which are interpreted as decreasing water temperatures and changes in the source region (page 401, lines 10-12), while evaporation is excluded without giving a convincing argument. Moreover, this even absolutely contradicts the statement in the introduction chapter (p387, lines 10-11) that 'evaporation is a major cause of water loss in the basin; nearly 90% of rainfall is lost to evaporation'. I was astonished on this argumentation line and consider the entire isotope interpretation as not trustworthy.

Besides the missing structure in the paper, these major problems with the age model and interpretation of isotope data are the main reasons for me to NOT recommend this paper for publication.

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