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Climate of the Past Discussions

Interactive comment on "Late Neolithic Mondsee Culture in Austria: living on lakes and living with flood risk?" *by* T. Swierczynski et al.

Anonymous Referee #2

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Referring to palaeohydrological events reconstructed from sedimentological studies of a deep core in Lake Mondsee (Austria), the paper by Swierczynski et al. attempts to document the ongoing debate whether the abandonment of Late Neolithic lake-dwellings at Lake Mondsee was caused by (1) unfavourable climatic conditioons, (2) a single catastrophic event linked to a tsumnami provoked by a rock fall, or (3) cultural factors. Taken as a whole, the paper presents an interesting contribution to the debate, and it is well structured. The chronology of the sediment sequence offers on a robust time scale based on both varve counting and radiocarbon dates, while sedimentological analyses offer a precise environmental context from sediment microfacies and XRF studies. The climatic conditions reconstructed from the Lake Mondsee deep core appear to be in general agreement with other palaeoenvironmental and palaeoclimatic records established in the Alps for the time window 7000-4000 cal BP.

However, the main difficulties in the section Discussion arise when comparing the environmental/climatic data collected from a deep core in Lake Mondsee with archaeological data collected from littoral archaeological sites. While the first ones are well-dated by a combination of varve counting and radiocarbon dates (uncertainty equivalent to $\pm$ 50 yr), the second ones are only dated by radiocarbon dates with considerable uncertainties. Thus, phase SPI began at 5594 $\pm$ 167 cal BP (i.e. 5761-5427 cal BP) and ended at ca 5369 $\pm$ 147 cal BP (i.e. 5516-5222 cal BP), while phase SPII began at ca 5167 $\pm$ 244 cal BP (i.e. 5411-4923 cal BP) and ended at ca 5003 $\pm$ 351 cal BP (i.e. 5354-4652 cal BP). In addition, on the basis of radioocarbon dates, the authors seem to assume a continuous multi-centennial long occupation during phases SPI and SPII. However, archaeological data collected on the Swiss Plateau and in eastern France and well-dated by tree-ring dates suggest that occupations of Neolithic villages correspond to relatively short decadal-scale time intervals, generally no more then one century (see for instance Die Schweiz from Palölithikum bis zum Mittelalter, vol 2, 1995, Verlag SGU Basel). What about possible interesting observations of stratigraphic sections examined in the littoral archaeological sites ? Do they show several archaeological layers suggesting distinct successive occupations ?

Consequently, the section Discussion should be seriously revised (minor/major revision) to take into account the considerable uncertainties in the chronology of archaeological data which prevent from a precise and direct comparison between environmental/climatic and archaeological data.

Additional remarks

Text Dates for periods defined or discussed in the text should be continuously expressed in the text by indication of first the oldest and then the youngest ages (for instance : 5600-5300 cal BP, instead of 5300-5600 cal BP). Introduction : page 3, line 13-14 : please, indicate the approximative chronology of the Mondsee culture. Section 3 : Page 5, line 22 ; please, add approximative dates for the Young to Final Neolithic ages Line 23 : idem for Mondsee culture Page 6, Line 17 : idem for Early to Middle

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Bronze ages Section 5 : page 12, line 12 : Swierczynski et al 2012 : a or b ? (see reference list). Section 6 : page 17, line 20 : Regarding the rockfall event and the possible associated tsunami, the authors should cite the paper by Girardclos et al. (2012, Nature Geoscience, about a well-dadted and quantified tsunami at Lake Geneva provoked by a rock fall).

Figures Figure 1 : please, indicate the names of sites shown by points 2 and 3. Figure 5 (caption) : FE 10 to FE 17, as defined by Swierczinsky et al. 2012 b, QSR ? Figure 6 : The tree-line data from Nicolussi et al. 2005 are not shown. Revise panels D,E and F and caption accordingly. Please, the beginning and the end of boxes corresponding to phases SPI and SPII should be represented not by vertical but by oblique lines to better (precisely) give evidence of the chronological uncertainties.

Interactive comment on Clim. Past Discuss., 8, 5893, 2012.