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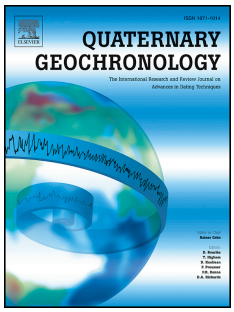

Comparative post-IR IRSL ($pIRIR_{290}$) K-feldspar age estimates for Qinghai Lake highstands: A comment

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Comparative post-IR IRSL ($pIRIR_{290}$) K-feldspar age estimates for Qinghai Lake highstands: a comment

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Abstract

Using a post-IR IRSL ($pIRIR_{290}$) K-feldspar luminescence dating method Long et al. (2018) suggest the highest exposed shoreline features of Qinghai Lake date to early MIS 3. This age estimate is in conflict with a host of quartz and post-IR IRSL ($pIRIR_{290}$) K-feldspar luminescence age estimates suggesting lake highstands in other basins, which like Qinghai Lake are also fed by Qilian Mountains precipitation, date to MIS 5. We think the apparent conflict may be due to the use of different average water content estimates. Depending on whether estimates of 10-20% are used, many samples can date to anywhere from late MIS 5 to early MIS 3. It thus becomes critical that better ways to estimate water content must be developed before OSL chronologies can be used for understanding lake histories, and by extension, climatic change.

Keywords: Optically Stimulated Luminescence; Qinghai Lake; water content estimates; Qilian Mountains; China.

Introduction

The northwest-southeast trending Qilian Mountains, with peaks reaching more than 5200 m a.s.l., form the extreme northeastern front of the Tibetan Plateau. The mountains are drained by three major river systems: the Heihe River feeding the Ejina Basin on the northwestern slopes; the Shiyang River feeding the Minqin Basin on the northeastern slopes; and the Buha River (together with several smaller streams and rivers) feeding the Qinghai Lake Basin on the southern slopes (Fig. 1). A fourth smaller drainage system on the southwestern slopes also feeds the Gahai/Tuosu basin. Precipitation in the upper montaine regions of the Qilian Mountains provides as much as 80-95% of the annual water input into the terminal lakes at the ends of these closed-basin systems (Rhode et al. 2010; Li et al. 2012; Li et al. 2015).

Insert Figure 1 about here