

Ber. Inst. Erdwiss. K.-F.-Univ. Graz	ISSN 1608-8166	Band 17	Graz 2012
<i>IGCP 580, 4th Annual Meeting</i>		Graz, 24-30 th June 2012	

Four warm and humid climatic events since the Pliocene inferred from the identification of sedimentary greigite (Fe_3S_4) in Lake Qinghai, China

FU, C.-F.^{1,2}, JAN, B.³, QIANG, X.-K.² & AN, Z.-S.²

- (1) Key Laboratory of Western Mineral Resources and Geological Engineering, Ministry of Education of China & Chang'an university, Xi'an, Shaanxi, 710054, China; *fuchaofeng@gmail.com*
 (2) State Key Laboratory of Loess and Quaternary Geology, Institute of Earth and Environment, CAS, Xi'an, Shaanxi, 710075, China; *qiangxk@loess.llqg.ac.cn*
 (3) Geomagnetism Lab, School of Environment Science, University of Liverpool, Oliver Lodge Building, Liverpool L69 7ZE, UK; *janbloemendal@gmail.com*

Qinghai Lake, located on the northeastern margin of the Qinghai-Tibet Plateau, is China's largest extant closed-basin lake, and is of considerable interest in the context of research on Asian climate and environment evolution and the recent uplift history of the Tibetan Plateau. A 626 m long core has been drilled in the southern basin of Lake Qinghai and which reveals a generally continuous sedimentary record consisting of aeolian silt at the base, overlain by lake sediments. Magnetostratigraphy dates the base of the sequence to about 5.1 Ma. The magnetic susceptibility record reveals the presence of four distinct peaks at depths of 431.99 – 419.24 m, 410.28 - 396.40 m, 47.43 - 43.89 m, and 17.23 - 16.41 m, and from which samples were chosen for detailed rock magnetic analysis, including thermomagnetic and hysteresis properties. The results indicate the presence of the authigenic ferrimagnetic sulphide greigite (Fe_3S_4) of stable single domain or pseudo-single-domain grain size and which we conclude is responsible for the enhanced magnetic susceptibility. Sedimentary greigite is most frequently found in rapidly deposited marine sediments, but it can also form in freshwater environments with a high organic loading (SNOWBALL & TORII, 1999). From the presence of the greigite, together with the results of sediment grain size and geochemical analyses, we infer that the four intervals represent episodes of relatively warm and humid climate. Based the magnetostratigraphic-based age model they are dated as follows: 3.802 - 3.726 Ma, 3.620 - 3.592 Ma, 0.613 - 0.597 Ma and 0.174 - 0.168 Ma B.P.

Acknowledgements: This study was supported by the National Natural Science Foundation of China (Grants 40872114, 41140028).

References

- SNOWBALL, I. & TORII, M. (1999): Incidence and significance of magnetic iron sulphides in Quaternary sediments and soils. 199-230. In: MAHER, B.A. & THOMPSON, R. (eds), Quaternary climates, environments and magnetism. Cambridge University Press.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Berichte des Institutes für Geologie und Paläontologie der Karl-Franzens-Universität Graz](#)

Jahr/Year: 2012

Band/Volume: [17](#)

Autor(en)/Author(s): diverse

Artikel/Article: [Four warm and humid climatic events since the Pliocene inferred from the identification of sedimentary greigite \(Fe₃S₄\) in Lake Qinghai, China. 23-23](#)