Resetting of the luminescence signal in modern riverbed cobbles along the course of the Shiyang River, China

Luminescence dating can potentially be applied to determine the burial ages of rock surfaces. As part of testing the reliability and applicability of this technique, we sampled a series of modern riverbed cobbles along the Shiyang River, which occupies an endorheic basin in northwest China. The infrared stimulated luminescence (IRSL) signal was measured as a function of depth for cobbles of two different lithologies (sandstone and granite). The results show that (i) the bleaching rate of the signal for light-coloured granite is higher than for opaque dark-coloured sandstone, because granite is bleached to greater depths than sandstone; (ii) cobbles daylight bleaching depths show a downstream increasing trend, with almost all bleaching occurring in the upstream section; and (iii) despite possible abrasion of the upper surface of granite cobbles, the bleaching depth in the upper surface is greater than in the lower surface, indicating longer exposure times for the upper faces of cobbles. This work has important implications for the age-dating of fluvial deposits and the potential application of luminescence techniques to understand transport and deposition in fluvial environments.

General information
State: Published
Organisations: Center for Nuclear Technologies, Radiation Physics, Aarhus University, China Earthquake Administration, Lanzhou University, China University of Geosciences, Beijing
Contributors: Liu, J., Cui, F., Murray, A. S., Sohbati, R., Jain, M., Gao, H., Li, W., Li, C., Li, P., Zhou, T., Chen, J.
Pages: 184-190
Publication date: 2019
Peer-reviewed: Yes

Publication information
Journal: Quaternary Geochronology
Volume: 49
ISSN (Print): 1871-1014
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.17 SJR 1.972 SNIP 1.287
Web of Science (2017): Impact factor 3.44
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.3 SJR 1.738 SNIP 0.984
Web of Science (2016): Impact factor 2.46
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.22 SJR 2.158 SNIP 1.367
Web of Science (2015): Impact factor 3.142
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.86 SJR 1.953 SNIP 1.218
Web of Science (2014): Impact factor 2.687
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.89 SJR 2.512 SNIP 1.344
Web of Science (2013): Impact factor 2.476
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 3.77 SJR 2.783 SNIP 1.856
Web of Science (2012): Impact factor 4.015
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes