

A 26KA STRATIGRAPHIC RECORD OF SURFACE RUPTURING EARTHQUAKES IN HOLE LOGS ACROSS THE XIADIAN FAULT, BEIJING

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The Xiadian Fault is one of the most important concealed active faults in the northern part of the North China Plain, east of Beijing. The 1679 Sanhe-Pinggu earthquake ($M=8$) is the latest surface rupturing event on it. In order to recognize its long-term slip behaviour and earthquake recurrence pattern, two bore holes 104m apart were conducted on the foot- and up-walls of the Xiadian fault and their stratigraphic logs were chronologized by use of TL and carbon 14 dating methods. Comparison between the two bore-hole logs in lithology and chronology shows differential sedimentation on both sides of the fault. The stratigraphic marks are established for identification of paleo-earthquakes in the bore-hole logs and 10 events are recognized to have been taken place since 26 ka BP. Following conclusions can be drawn: (1) The vertical slipping is irregular in the past 26ka BP. The main phase on the Xiadian fault occurred between 17.5-21ka BP.(2) The paleoearthquake recurrence follows a segmented quasi-periodically clustering recurrence model: Three paleoevents recurred unevenly with an interval of 4000-9000 years in the past 17.5 ka BP. Five successive paleoevents recurred clusteringly with a relatively short interval of 700-800 years during the period of 17.5-21.3ka BP, while two others recurred with an interval of 1300-3000 years. The paleoevents clustering occurred in the Latest Glacial maximum.