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New Progress in Paleoearthquake Studies of the East Sertengshan Piedmont Fault, Inner Mongolia, China

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The two eastern segments of the Sertengshan piedmont fault have moved considerably since the Holocene. Several paleoseismic events have occurred along the fault since 30 ka BP. Paleoearthquake studies have been advanced by digging new trenches and combining the results with the findings of previous studies. Comprehensive analyses of the trenches revealed that 6 paleoseismic events have occurred on the Kuoluebulong segment since approximately 30 ka BP within the following successive time periods: 19.01-37.56 ka, 18.73 ka, 15.03-15.86 ka, 10.96 ka, 5.77-6.48 ka and 2.32 ka BP. The analyses also revealed that 6 paleoseismic events have occurred on the Dashetai segment since approximately 30 ka BP, and the successive occurrence times are 29.07 ka, 19.12-28.23 ka, 13.92-15.22 ka, 9.38-9.83 ka, 6.08-8.36 ka and 3.59 ka BP. The results indicate that quasi-periodic recurrences occurred along the two segments with an approximate 4000 a mean recurrence interval. The consistent timing of the 6 events between the two segments indicates that the segments might conform to the cascade rupturing model between the two segments of the Sertengshan piedmont fault. The latest event on the Kuoluebulong segment of the Sertengshan piedmont fault is the historical M8 earthquake that occurred on November 11, 7 BC, which was recorded by a large number of Chinese historical texts.