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Jianganlin Surface Rupture of Lushan M_s7.0 Earthquake, Sichuan, China

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According to China seismograph network, Lushan M_s7.0 earthquake occurred in Lushan County, Ya' an City, Sichuan Province, China on April 20, 2013. The epicenter was located at 30.3° N, 103.0° E, the focal depth being 13 km and origin time 08:02:46 Beijing Time.

A NWW-trending surface rupture of the Lushan M_s7.0 earthquake is found at the mountain slope with 30-40° falling gradients and elevations of 1529-1578m to the west of Group 2, Jianganlin village, Shangli town, Ya' an City, Sichuan, China, by the fieldwork team of Geophysical Exploration Center, China Earthquake Administration about the Lushan M_s7.0 earthquake during the period of emergency investigation into the earthquake. The Jianganlin surface rupture with the striking of 120° consists of 3 segments, which, in the range of about 80m long, spread nearly linearly, their lengths are among 6-10m, and the most width is 40cm. The general strike of the surface rupture is 120°, fracture plane of which is flat, dipping southwestward at 62-85° angles. The lithology where the rupture passes is mostly clay. There are two sets of fresh striation on the surface rupture, the striation with larger plunge angles usually only remains above the range

10-20cm from the ground, which is covered by those with smaller plunging angles. A root with a diameter of about 4cm that the rupture passes through has been obviously shifted, which shows that the hanging wall rose 15cm, and shifted 10cm to the SE. Besides, some strata are inverted in the hanging wall. The trench exposes that the black humus layer in the hanging wall rose about 15cm relative to one in the footwall. The comprehensive analysis shows that the Jianganlin surface rupture during the Lushan M_s7.0 earthquake at first experienced thrust, and then sinistral strike-slip.

Jianganlin surface rupture of the Lushan M_s7.0 earthquake, which has clear shift striation, and the faulted roots and strata, provides important basic information for studying the seismogenic structures and earthquake damage although the NWW strike of the surface rupture is inconsistent with the NE strike of seismic rupture from the focal mechanism.

Key words: Lushan M_s7.0 earthquake; surface rupture; striation; thrust; sinistral strike-slip

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