



地理学报(英文版) 2005年第15卷第4期

The five major changes in the evolution of the Loess Plateau

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On the basis of the geomorphology, paleosol, paleoclimate and loess age, major changes of the Loess Plateau were studied. There are five major changes in the evolution of the Loess Plateau in China. Among them, the first, second, third and fourth major changes have taken place since the formation of the Loess Plateau, and the fifth major change will happen in 100 years. The first major change, which occurred at about 2.50 Ma BP, was a transition from red earth plateau to the Loess Plateau, and reflects the climate from the warm-sub-humid to the alteration between cold-and-dry and warm-and-humid. The driving force of this first major change was climate. The second major change, which took place at about 1.60 Ma BP, was a vital transition of the main rivers in this area from non-existence to existence, and represented an important change on the Loess Plateau's neotectonic uplift from the slow rising to periodically accelerated rising, and making the river's erosion go from feeble to strong. The driving force of the second major change is tectonic uplift. The third major change which occurred at about 150 ka, was a great transition of the Yellow River's inpouring from a lake outlet to a sea outlet. At that time, the Yellow River cut the Sanmen Gorge. The transition led to the transformation of loess material from internal transportation to external transportation. The driving force of the third major change was running water erosion. The fourth one that occurred at about 1.1 ka was a change of the Loess Plateau from natural erosion to erosion accelerated by human influences. The driving force of the fourth major change is mainly human activities. The fifth major change, which is the opposite change to the fourth one, in which the motive power is human activity, too.

Paper (PDF)

关键词: the Loess Plateau; major changes; the driving force; the age of change doi: 10.1360/gso50411