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洛川黄土记录的最近2500ka东亚冬夏季风变化周期

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摘要：

对厚约１４０ｍ的陕西洛川坡头村黄土剖面进行间距３～１０ｃｍ的系统采样，测量了全部样品的磁化率和粒度，选择〉３０μm颗粒百分含量和磁化率分别作东亚冬，夏季风强度变化的替代性指标，以新建立的时间标尺为基础，分析了最近２５００ｋａ以来东亚季风变化的周期特征。结果表明，第四纪东亚冬，夏季风变化时间序列包括含有１００ｋａ，４１ｋａ和２３ｋａ地球运动轨道要素变化的周期，同时包含有约８０ｋａ，５６ｋａ和３０ｋａ

关键词：洛川 黄土记录 东亚 冬夏季风 季风 变化周期

Periodicity of East Asian Winter and Summer Monsoon Variation during the Past 2500 ka Recorded by Loess Deposits at Luochuan on the Central Chinese Loess Plateau

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Abstract:

The typical loess profile at Potou on the central Chinese loess plateau was sampled at 3-10 cm intervals. All samples were measured for magnetic susceptibility and grain size. The magnetic susceptibility and percentage of the >30 um grain size fraction were used as indicators of summer and winter monsoon strengths respectively, and on the basis of a new reliable time scale, a time series of paleomonsoonal climate variation in East Asia was set up. Spectral analysis for the new time series presents the 100 ka, 41 ka and 23 ka cycles of variations of the orbital elements of the Earth movement. Meanwhile, other cycles such as 80 ka, 56 ka and 30 ka were also recorded in the loess-paleosol sequences unambiguously. The cycles of paleomonsoonal variations during the Quaternary evolved with time, and those of winter and summer monsoons were different in some stages. The variations of the orbital elements of the Earth were not the only dominant factor which triggered cycles of the East Asian monsoonal changes during the Pleistocene, and other factors within the monsoonal system were also important. In addition, the cycles of summer and winter monsoon variations during the past 2500 ka and relationships between them are multimod-el.

Keywords: loess deposit on the central Chinese loess plateau East Asian summer and winter monsoons the last 2500 ka

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