Paleoenvironmental reconstruction using lake cores in inland areas of China

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Paleoenvironmental changes based on various kinds of geological records during the last 20 thousands years have been investigated in inland and coastal areas of China and other areas in eastern Asia. In inland areas, wet-dry cycles are more important than warm-cool cycles. Surface geological conditions and vegetation are controlled mainly by humidity. Lake cores give us comparatively continuous past records, but in arid areas environments change abruptly and unstable, so the past records are sometimes intermittent. We need the related environmental information in and around lakes.

Some topics relating to environmental reconstruction of inland China during the latest Pleistocene and Holocene are discussed.

The pollen influx of Lop Nur, Tarim Basin shows the long history of environmental changes in Tarim Basin and Taklimakan Desert. During the dry phase of the pollen record, flood and large-scale sand dune formation occurred, 18-17ka, 13-12ka and 9-8ka, probably corresponding to dust peaks and glacial cycles in ice cores. After these stages, the environment became dry but comparatively stable, and only small-scale sand dune formed.

Eastern part of northwest China, north China and northeast China are influenced dominantly by East Asian monsoon. Many paleoenvironmental records such as pollen, lake-level, magnetic susceptibility, sea-level, show the warm and high precipitation stage (climatic optimum) in early to middle Holocene. Precipitation in these areas is supplied by the summer monsoon. However, western part of northwest China is not influenced by the summer monsoon. These two areas have had the different environmental history, suggesting that each has been under the different climatic systems.