Paleofire, Vegetation, and Climate Reconstructions of the Middle to Late Holocene From Lacustrine Sediments of the Toushe Basin, Taiwan

Chunmei Ma and Zhenhui Huang

We identified four climatic stages between 6.2 and 1.3 cal kyr before present (BP) based on pollen and charcoal concentrations by high-resolution Accelerated mass spectrometer (AMS) $^{14}$C-dated sediment profile from Taiwan’s Toushe Basin. From 6.2 to 4.6 cal kyr BP, the region was warm-wet with infrequent wildfires and dominant subtropical evergreen broad-leaved forests. The climate was cooler-drier from 4.6 to 3.0 cal kyr BP, with a decline in forest and increased fire frequency. From 3.0 to 2.1 cal kyr BP, climate further cooled and dried, with the development of alpine meadows and higher fire frequency. The region became warmer and wetter from 2.1 to 1.3 cal kyr BP, accompanied by forest recovery. Climatic changes were linked to changes in East Asia Summer Monsoon intensity, which is mainly controlled by solar radiation. Wildfires were likely controlled by precipitation variability that is influenced by East Asia Summer Monsoon and El Niño–Southern Oscillation. Toushe Basin experienced drought conditions and frequent wildfires during the El Niño years.