



## **Vegetation history and climate variability since 1.3kaBP reconstructed from high-resolution multiproxy analysis of mountainous peat sediment, Southeast China**

Chunmei Ma (1,2), Anning Cui (1), Yiman Fang (3), Lin Zhao (1), and Yulian Jia (4)

(1) School of Geographic and Oceanographic Sciences, Nanjing University, Nanjing, China (chunmeima@nju.edu.cn), (2) Jiangsu Collaborative Innovation Center for Climate Change, Nanjing, China (chunmeima@nju.edu.cn), (3) Department of Geography, Environment and Earth Sciences, University of Hull, Hull, UK, (4) Key laboratory of Poyang Lake wetland and watershed research, Ministry of Education, Jiangxi Normal University, Nanchang, China

Climate change during the last two millennia is one of the most important focuses of the “Past Global Changes” (PAGES) initiative. In this study, vegetation history and climate variability since 1.3kaBP was reconstructed from high-resolution multiproxy analysis of mountainous peat sediment from the central part of a swamp in Jiangxi Province, China.  $^{210}\text{Pb}$ ,  $^{137}\text{Cs}$  and AMS14C dating were used to build the age framework on the basis of Bacon model. Pollen, Humification degree (HD), Loss-on ignition (LOI), XRF scan elements and grain-size distribution were analyzed. During 637-800 AD, the vegetation combination consists of upland herbs taxa and scattered evergreen *Quercus* (*Quercus* E). However, the pollen concentration was very low, and plant genera were seldom. Since harsh environment is not conducive to pollen storage, vegetation condition reconstructed by pollen information cannot reflect real climate change. During the Medieval Warm Period (MWP, 800-1250 AD) [U+FF0C] vegetation is abundant through the entire period, *Quercus* E is the building group of the forest, *Pinus* and *Castanopsis* are sporadic. Upland herbs grew up vigorously in the lower part of forest. Peat began to accumulate in the basin high terrain, where wetland herbs grew vigorous. The climate during MWP was characterized by warm and wet, inside there were obvious secondary fluctuations. Dramatic vegetation changes were recorded during the Little Ice Age [U+FF08] LIA, 1340–1870 AD). The vegetation community was primarily dominated by *Castanopsis*, upland land herbs thrive; wetland herbs were sparse with great fluctuations depending on changes in the humidity. Overall, during LIA, temperature pattern was featured by “four cold period and three warm period“, and humidity condition was experienced a process from drought to wet. Periodic analysis of the moisture proxy (PCA 1) and temperature indicator (E/D: evergreen/deciduous tree pollen) shows cyclic fluctuations of ~150 years in the temperature and precipitation, which is corresponded to historical document records. Solar activity should be the fundamental force that drove the same-phase variation of the temperature and precipitation in this region.