

## ***Xenoxylon* synecology and palaeoclimatic implications for the Mesozoic of Eurasia**

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The distribution of fossil wood genera has been demonstrated to be an effective proxy for Mesozoic terrestrial climates. In this study, we investigated the phytocoenoses, which were associated with *Xenoxylon* confirmed to be a marker for a cool and/or wet climate in a boreal hemisphere (i.e., *Xenoxylon*-phytocoenoses) during the Mesozoic, using specimens of fossil wood. It was confirmed that *Xenoxylon* co-occurs more often with some wood genera than with others. For example, *Protocedroxylon*, a wood that is most likely related to the Pinaceae, is the genus most often associated with *Xenoxylon*-phytocoenoses. Although *Taxodioxygen* is also found in *Xenoxylon*-phytocoenoses, it is not found, however, as consistently as *Protocedroxylon*. The distribution and diversity of *Xenoxylon*-phytocoenoses changed throughout the Mesozoic. During the Late Triassic and Late Cretaceous, *Xenoxylon*-phytocoenoses had low diversity and were restricted to higher palaeolatitudes during the Late Cretaceous. However, during the Early to Middle Jurassic, *Xenoxylon*-phytocoenoses were distributed much farther south, while their diversity concomitantly increased sharply. From the Late Jurassic to the Early Cretaceous, the distribution of *Xenoxylon*-phytocoenoses moved northward in Europe and even more so in East Asia. The changes in the distribution of *Xenoxylon*-phytocoenoses are in agreement with changes in both global and regional climates. Our results also demonstrated that, within the *Xenoxylon* distribution range, the corresponding phytocoenoses were differentiated along a latitudinal gradient and according to the global climate change patterns during the Mesozoic.

**Key words:** Fossil wood, *Xenoxylon*-phytocoenoses, palaeoecology, palaeoclimate, Mesozoic, Eurasia.

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