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## **Petrographic and Organic Geochemical Evidences of Wildfire from the Middle Permian Coal of North China Basin and its significance for Permian mass extinction**

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Abundant attempts for reconstruction of Permian ecosystems have been made. Most of the studies concentrated on the Late Permian because the largest mass extinction occurred at the Permian-Triassic boundary and were related to volcanic activities in large igneous provinces [1-5]. In the present study, evidence for widespread wildfires in the Middle Permian in North China Basin is provided. The Both, volcanic activity and the thereby induced wildfires could have released pollutants and influenced the paleoclimate and the ecosystem.

The North China Basin is the largest coal-bearing basin in China. In order to study the influences of the wildfires on ecosystem of the Middle Permian, 146 coal samples of six coalfields were taken from North China Basin and then analysed by organic geochemical and petrologic methods. The results indicate that the enrichment of high-molecular-weight polycyclic aromatic hydrocarbons (PAHs) associated with the presence of inertinite macerals, natural char and natural coke particles were observed from the coal samples. The high-molecular-weight aromatics indicate that PAHs formed by combustions of natural vegetation or peat during the sedimentation stage. The high contents of inertinite macerals, abundant natural char and natural coke particles also indicate that the Permian coal from the North China went through far-ranging wildfires. Tuff and high-temperature quartz were observed and may indicate that the wildfires could have caused by volcanic activities. These wildfires could discharge abundant pollutant gas to the atmosphere. The wildfires could have played a role for the mass extinction occurred at the Guadalupian—Lopingian boundary.

### *References:*

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