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## **Motianling peatland, a typical ombrotrophic bog in China documents the anthropogenic impact history during the past centuries**

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Ombrotrophic peat bogs are hydrologically isolated from the influence of local ground and surface waters and are fed exclusively by atmospheric deposition consisting of both solid particles and mineral substances dissolved in rain water. They have the advantage of widespread distribution and the physical and chemical properties of peat contribute to effective trapping and immobilization of atmospherically deposited solutes and particles. As a result, ombrotrophic peat can offer valuable opportunities to explore past atmospheric environmental conditions. Peatlands are widely distributed in China, including the Qingzang Plateau in the southwest and the mountains and plains in the northeast. However, the typical ombrotrophic peatlands with low ash content and rainfed characters are not common. The Motianling peatland in Aershan of Great Hinggan Mountains is in the most northern part of China that belongs to a moderate, cold climate with the domination of westerlies. This peatland has a well-established trophy status and its ombrotrophic character has been verified by multi-proxies. It has previously been studied to assess the levels of Pb and Hg pollution and dust deposition. To the best of our knowledge, Motianling peatland is one of the most typical ombrotrophic bog in China and its geochemical signatures document the anthropogenic impact history during the past centuries.