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## **The imprints of Indian Ocean Monsoon and West Pacific Monsoon on the spatial and temporal patterns of forest fires in Yunnan, Southwest China**

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Wildfire is a widespread natural disturbance and internal ecological process, critical in shaping ecosystem structure and function across scales. The Indo-China Peninsula and its surrounding areas is a global hotspot of fires initiated by natural and anthropogenic drives. Studies indicated that both the Indian Ocean monsoon and the Pacific Ocean monsoon significantly influence the climate in this region, and the precipitation seasonality regulated by monsoon is a critical driver of prevalent wildfires. However, the relative importance of the two monsoon systems on the terrestrial ecosystems in this region, specifically via their effects on vegetation burnings, has rarely been estimated. Yunnan Province in Southwest China comprises the northeast corner of this region, and shares the intensive impacts of the two monsoon systems in terms of the characteristics of climate and wildfire activity. The present study integrated multiple data sources of the forest fires during 2003~2015 in Yunnan, detected the spatial and interannual variations of the fire occurrence and burnt area, and related the fire activities with the dynamics of the Indian Ocean Monsoon (IOM) and West Pacific Ocean Monsoon (WPOM). The monthly time sequence analysis of the forest fire events in Yunnan Province showed that, a significant, synchronous teleconnection can be detected between the forest fire dynamics and Indian Ocean Warm Pool intensity, while an opposite temporal pace was revealed for the West Pacific Ocean Warm Pool. During the study period, IOM dominated the wildfire seasonality in Yunnan in eight years, in contrast to the dominance of WPOM in five years. A borderline can roughly divide Yunnan into the west and the east climatic regions, which were dominated by IOM and WPOM, respectively. Humidity and the forest area ratio were the dominant factors for the mean annual fire number and burnt area in the IOM affected region; but in the WPOM region, rural road density was the most important factor. It was suggested that the fire regime of the IOM region was climate-driven for fire number and fuel-driven for burnt area, while the fire regime was dominant with human activities in the WPOM region in Yunnan.