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**Miocene vegetation shift and climate change: evidence from the Siwalik of Nepal**

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**ABSTRACT**

We reconstruct climate and vegetation applying the Coexistence Approach (CA) methodology on two palaeofloras recovered from the Lower (middle Miocene; ~13–11 Ma) and Middle Siwalik (late Miocene; 9.5–6.8 Ma) sediments of Surai Khola section, Nepal. The reconstructed mean annual temperature (MAT) and cold month mean temperature (CMT) show an increasing trend, while warm month mean temperature (WMT) remains nearly the same during the period. The reconstructed precipitation data indicates that the summer monsoon precipitation was nearly the same during the middle and late Miocene, while the winter season precipitation significantly decreased in the late Miocene. The overall precipitation infers increased rainfall seasonality during the late Miocene. The vegetation during the middle Miocene was dominated by wet evergreen taxa, whereas deciduous ones increased significantly during the late Miocene.

The reconstructed climate data indicates that high temperature and significantly low precipitation during the winter season (dry season) in the late Miocene might have enhanced forest fire which favoured the expansion of C<sub>4</sub> plants over C<sub>3</sub> plants during the period. This idea

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