

## Paleoclimatic variation during the last 50 kyr recorded in clay minerals in the Kathmandu Basin sediments, Central Nepal Himalayas

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The estimation of crystallinity and relative amount of clay minerals in the Kathmandu Basin sediments were made by using the decomposition procedure of X-ray diffraction (XRD) patterns in order to reconstruct the paleoclimatic variation during the last 50 kyr recorded in the Kathmandu Basin.

The variations of the two illite crystallinity indices, Lanson index (LI) and modified Lanson index (MLI) between 7 m and 25 m in depth of the drilled sediments were in harmony with the pollen analysis results of the same samples. The increasing hydrolysis condition expected from the results of illite crystallinity indices corresponded to the pollen zone in which some pollen as warm and wet climate indicators increase, while the decreasing hydrolysis condition corresponded to the pollen zone showing the increase of pollen as cold and dry climate indicators.

The variation of the hydrolysis condition inferred from these indices were also congruous with the variation of  $\delta^{18}O$  obtained from planktonic foraminifers of deep sea sediments in the Arabian Sea. These results show that the major climatic variations in the Kathmandu Basin during the last about 50 kyr were closely related to global climate, without apparent local climatic changes. In addition, they depicted that it was dry during the cold climate and wet during the warm climate in the Kathmandu Basin.