

Seasonality based on stable isotopes and clumped isotopes records in the growth bands of Early Miocene Gastropod (*Turitella* sp.) from the Kachchh basin of Western India

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Early Miocene time witnessed upliftment of Himalayan mountain which was responsible for driving a climatic transformation in the Indian subcontinent. Previous study on the $\delta^{18}\text{O}_{\text{water}}$ of rainfall reconstruction for Miocene period was obtained under the assumption of seasonal temperatures, which were judged based on pollen-based thermometry¹. Here we present the first time high resolution record of early Miocene seasonal temperature using stable isotope ratios measured in the carbonates found in the growth bands of well preserved *Turitella* sp. collected from the Khari Nadi formation, Kachchh basin, Western India. Stable carbon and oxygen isotope analysis along the growth axis of the four *Turitella* shells specimens registered $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ variabilities from -4.83‰ to -1.80‰ and -7.06‰ to -2.66‰ respectively while the temperature reconstruction using conventional oxygen isotope thermometry assuming seasonal water composition of Narmada estuary² showed a variability from 8° to 27°C. Our results indicates that the coastal region of Kachchh basin during Miocene was fresh water dominated, in contrast to the modern day drier condition. Clumped isotope based temperature and $\delta^{18}\text{O}_{\text{water}}$ reconstruction will be presented at the time of presentation.

Ref: [1] Dettman et al., 2001; *Geology*, 29 (1), pp. 31-34. [2] Kubota et al., 2015; *Geochem Jour*, 49(5), pp. 469-480