

# Seasonal variation of silicate and carbonate weathering in a tropical river, southern India

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Peninsular river water flowing through Deccan basalts have been investigated for the  $\delta^{13}\text{C}$  and Si/HCO<sub>3</sub> ratio for quantifying the relative contributions from silicate and carbonate weathering [1]. Seasonal river water from Cauvery drains silicate and carbonate lithology at higher elevation and tertiary to quaternary marine and pedogenic carbonate dominating terrain in the lower reaches showed characteristic geochemical and isotopic pattern [2]. Here, we investigate the seasonal isotopic variation of  $\delta^{13}\text{C}$  in the main channel and tributaries of Cauvery.

Using contributions of DIC and  $\delta^{13}\text{C}$  we identified silicate and carbonate dominating sources within the drainage basin. Spatially, our observation captured a large range in  $\delta^{13}\text{C}$  and Si/HCO<sub>3</sub> values; Pre-Monsoon  $\delta^{13}\text{C}$  values ranges between -17.57‰ to -4.02‰ while during Monsoon it varies between -9.19‰ to +0.61‰; Si/HCO<sub>3</sub> values for Pre-Monsoon ranges between 0.028 - 0.67 and for Monsoon it varies between 0.073 - 0.80. Sampling Sites at higher elevation showed lighter  $\delta^{13}\text{C}$  composition, while sites at flood plain show relatively enriched  $\delta^{13}\text{C}$  which indicate mixing of soil derived CO<sub>2</sub> with C<sub>4</sub> plants. Result suggests dominance of carbonate weathering during the Monsoon Period, while silicate weathering is pronounced during non monsoon period.

[1] A. Das et al. (2005) *EPSL*, **236**, 419– 429. [2] A. Violette et al. (2010) *Geochimica et Cosmochimica Acta*, **74** (24), 7059-7085.