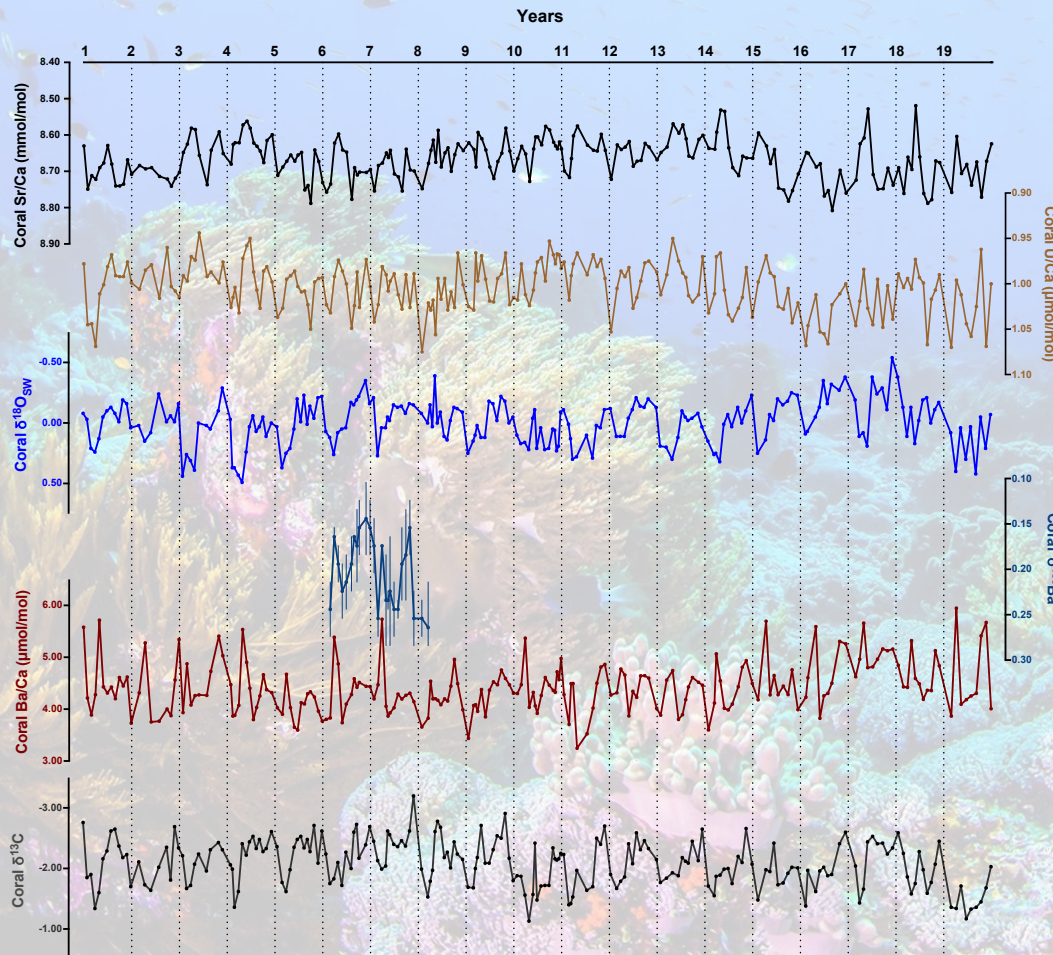


# Monthly-resolved coral $\delta^{138}\text{Ba}$ records of increased terrestrial input during south Asian summer monsoon

PI: Ed Hathorne, and Yang Yu (PhD student), Christopher Siebert, Martin Frank

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In this project, we produce monthly-resolved records of  $\delta^{138}\text{Ba}$  from a young fossil *Porites spp.* coral collected on the Andaman Islands (Bay of Bengal, India) that grew prior to the 19th century, supplemented the analysis of coral Sr/Ca, U/Ca, Ba/Ca,  $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$ .

First time series data for coral  $\delta^{138}\text{Ba}$  show pronounced seasonal cyclicity in a continuous two-year record and fall within a range from  $0.17 \pm 0.03$  (2SD) to  $0.28 \pm 0.03$  (2SD). Coral  $\delta^{138}\text{Ba}$  values are generally lighter during summer monsoon season (May-October) characterized by enhanced rainfall and river discharge. The coral Ba/Ca ratios appear to follow the seasonal cycles displayed by the coral  $\delta^{138}\text{Ba}$  values, with higher coral Ba/Ca ratios accompanying lower coral  $\delta^{138}\text{Ba}$  values. In addition to the light coral  $\delta^{138}\text{Ba}$  values during the summer monsoon season, light coral  $\delta^{138}\text{Ba}$  values can also be observed during early spring, which are associated with sharp coral Ba/Ca spikes. We propose that sediment-borne Ba trapped in the coastal mangroves may be a source of soluble Ba during low discharge seasons. Coral skeletal Ba isotopes, together with Ba/Ca,  $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$ , show great promise for reconstructing palaeo-discharge over time, particularly on monthly and seasonal timescales.