

**Figure S1.** Coral X-ray photograph of 15WC23 and 15XS28.



**Figure S2.** The two end-members result. Comparison of the proportion of freshwater input (red line) with Δδ18O (black line) from coral (Deng et al., 2017) at east Hainan Island. Note that for reducing the error, the calculated proportion of freshwater input and upwelling are processed with two point moving average.