Monthly climate records during past 2ka derived from Giant Clam shells (*Tridacna spp.*) in western Pacific

Chengcheng Liu[1], Hong Yan*[1]

State Key Laboratory of Loess and Quaternary Geology, Institute of Earth Environment, Chinese Academy of Sciences, Xi'an 710061, China

*correspondence:yanhong@ieecas.cn

Paleoclimate records during the past 2ka are very important for understanding the current global warming and predicting future climate changes. However, our knowledge on seasonal information of the climate system during the past 2ka is still very lack due to the limitation of monthly resolution paleoclimate archives. *Tridacna spp.,* the largest marine bivalve species in global ocean, is a prominent member of the sub-tropical and tropical Indo-Pacific coral reef communities from the Eocene to present. The hard and dense aragonite shells of *Tridacna spp.* have annual even daily growth line in their inner layer, which is an ideal material for monthly even daily climate reconstructions. In this study, we collected lots of modern and sub-fossil *Tridacna spp.* samples from South China Sea of western Pacific. We first obtained the monthly resolution $\delta^{18}O$ and Sr/Ca from modern *Tridacna spp.* and demonstrated that the Sr/Ca and $\delta^{18}O$ can be used to be the reliable proxies of monthly SST (Sea Surface Temperature) and SSS (Sea Surface Salinity). And then we dated the age of the sub-fossil samples and established a continuous sample series covered the past 2ka in South China Sea. We are going to establish monthly SST and SSS records in western Pacific during the past 2ka based on the Sr/Ca and $\delta^{18}O$ of the *Tridacna spp.* sub-fossil shells, and discuss the seasonality, ENSO variability, seasonal extreme climate events and so on.