

EGU24-7665, updated on 20 May 2024

<https://doi.org/10.5194/egusphere-egu24-7665>

EGU General Assembly 2024

© Author(s) 2024. This work is distributed under the Creative Commons Attribution 4.0 License.



Reduced ENSO Variability During the Onset of 4.2ka Event

Shaohua Dang¹, Kefu Yu², and Zhongfang Liu¹

¹State Key Laboratory of Marine Geology, Tongji University, Shanghai, China (dangshaohua@tongji.edu.cn)

²Guangxi Laboratory on the Study of Coral Reefs in the South China Sea, Guangxi University, Nanning, China

It is widely believed that anomalies in the state of tropical Sea Surface Temperature (SST), manifested as intensified ENSO variability, triggered the collapse of the Northern Hemisphere monsoon that occurred from 4500 to 3900a BP, known as the 4.2ka event. However, explicit records of ENSO variability, including events and variance, during the onset of 4.2ka event were still lacking to show how it changed and related to this climatic event. Here, we present a century-length (104-year) monthly coral record from the South China Sea (SCS) combined with modeling data to show that reduced ENSO variability was associated with an intensified Pacific Walker circulation ranging from 4400 to 4300 years BP, precisely corresponding to the onset of 4.2ka event. We hypothesize that such a mean state of tropical Pacific climate might not have triggered the development of the 4.2ka event, but rather responded to it.