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A biogenic silica record of climatic changes over the last 26,000 years in the Andaman Sea

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Paleoclimatic construction on terrestrial and marine deposits from the Indian Ocean has indicated apparent local response to global changes since the last glaciation. Comparison of marine records that track environment changes in vital regions can help evaluate the driving mechanism of paleoclimate evolution in the Indian Ocean and further explain its relationship with high latitude areas. Here we present paired content and mass accumulation rate (MAR) of biogenic silica (BSi) from Andaman Sea core ADM-9 that provide records of paleoproductivity over the last 26,000 years, which could reveal the most fluctuations of climate since the last glaciation. Age control is based on accelerator mass spectrometry (AMS) data on dominant planktic foraminifera Neogloboquadrina dutertrei. The BSi content varies between 0.59% and 1.67%, and both the content and MAR series of BSi could be divided into two stages by the Bølling-Allerød (B/A) period. The results indicate that paleoproductivity kept in weak and stable level during the last glaciation (26-13.5 ka B.P.), which was mainly controlled by precipitation condition under the low sea level background, cold and dry climate condition caused the land-sea interaction process changed little. During the Holocene (13.5 ka B.P.-present), includes the Younger Dryas (YD) period, the Malacca Strait opened with the sea level rising and further infused high chlorophyll materials from the South China Sea (SCS), which caused a high paleoproductivity level than last glaciation, while and the continuous increasing Indian summer monsoon leads to more nutrition material and fresh water inflow into the southeastern Andaman Sea from the Irrawaddy River, MAR changed more sensitively and shows a kind consistent with North Atlantic Ocean climate evolution, such as YD, 8.2ka, 5.3ka events. These findings support the hypothesis that rapid climate change since the last glaciation were forced by North Atlantic Ocean, and local environment changes could also play an important rule during this teleconnection processes.