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Dakar Niño under global warming investigated by a high-resolution regionally coupled model

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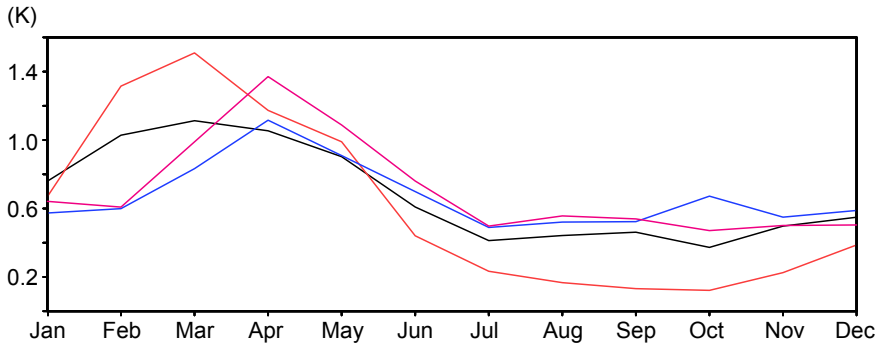

Figure S1. Time series of monthly SST standard deviation averaged over the Dakar Index box: ERA5 (black), ESA (red), ROM_P (blue), and ROM_F (magenta).

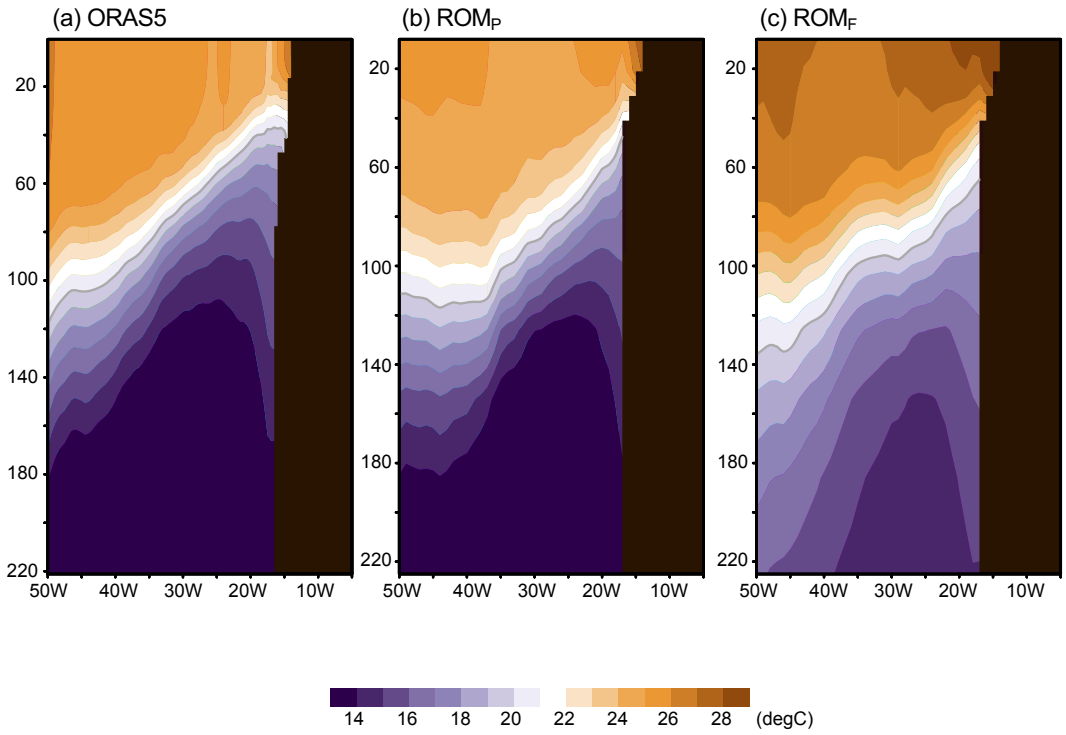

Figure S2. Depth-longitude section of climatological ocean temperature in March averaged between 9N and 12N for (a) ORAS5 reanalysis, (b) ROMP, and (c) ROMF, respectively. The gray contour denotes the ocean temperature of 20C, a proxy for the thermocline depth.

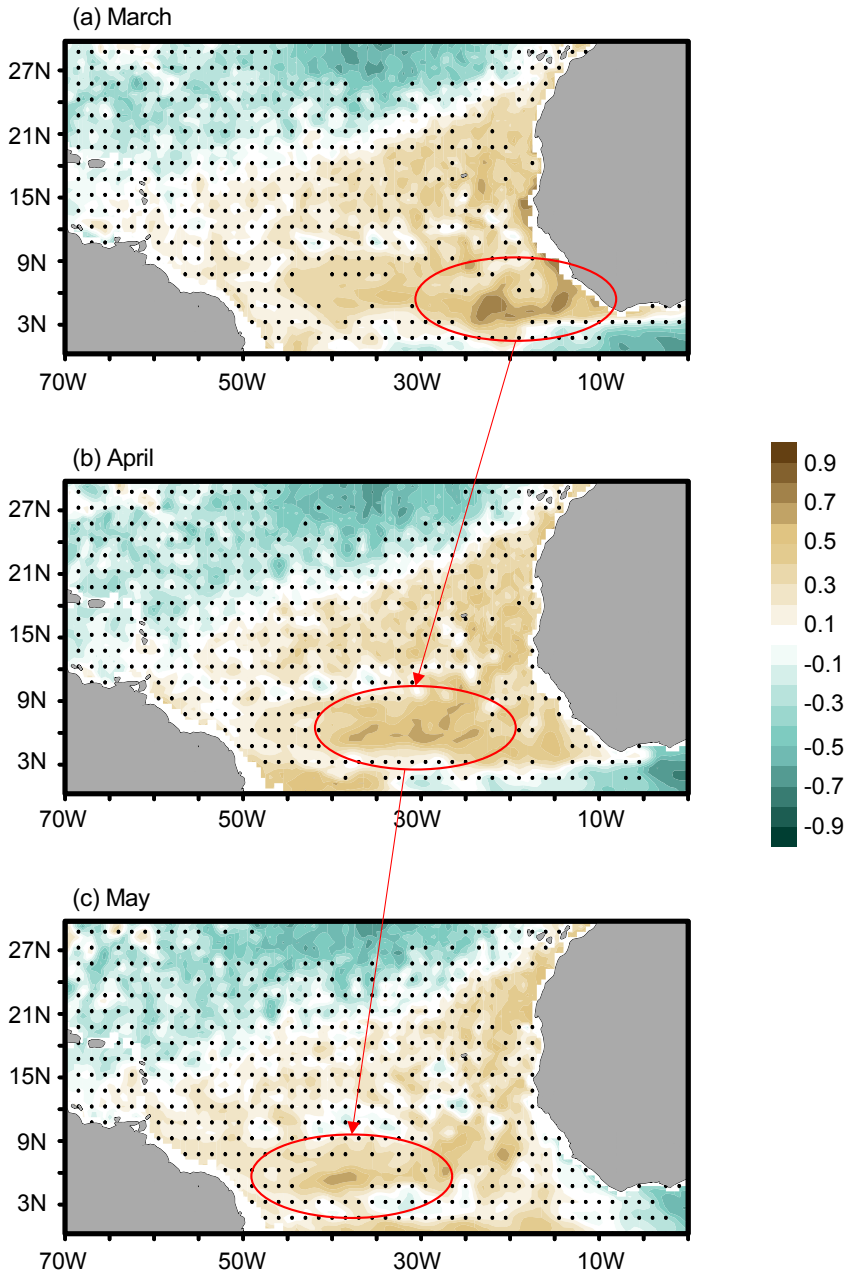

Figure S3.
Lag-correlation plots between March Dakar Index (SST over 9°N-14°N and 21°W-17°W) and ocean temperature at 41m depth in ROM_P from March to May. Dots denote no significance of correlation. The red circle and arrow are the highest correlaiton and indication of westward propagation by eye.

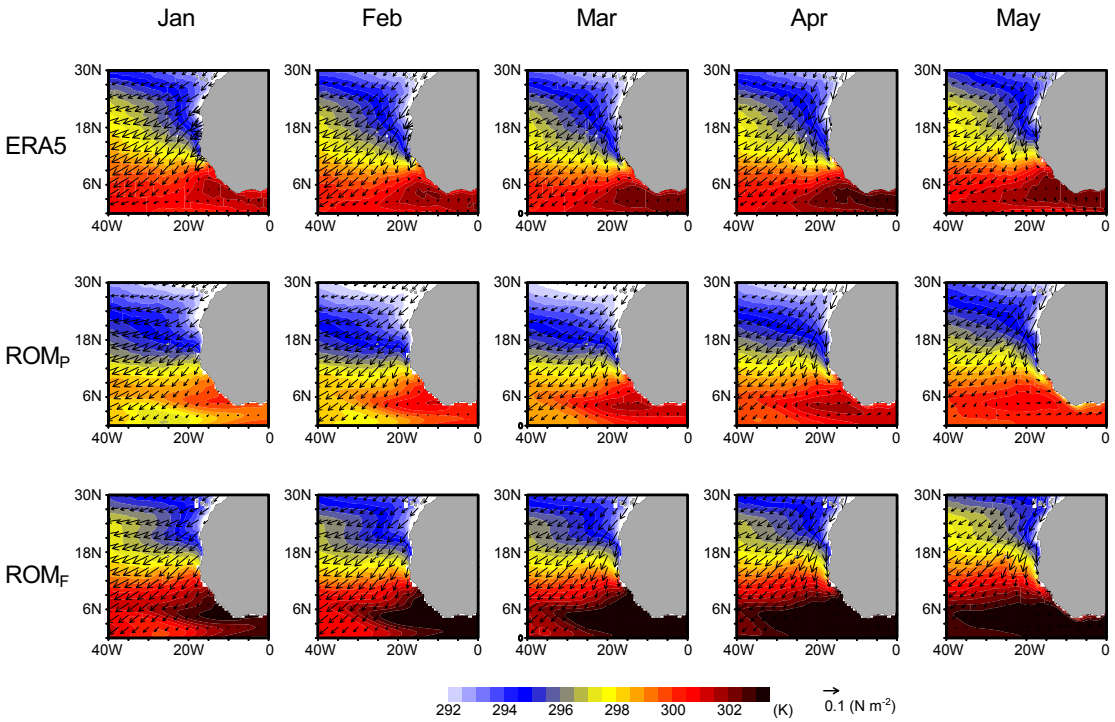

Figure S4. Climatolgoy of SST and wind stress for ERA5 (top), ROM_P (middle), and ROM_F (bottom) from January to May.

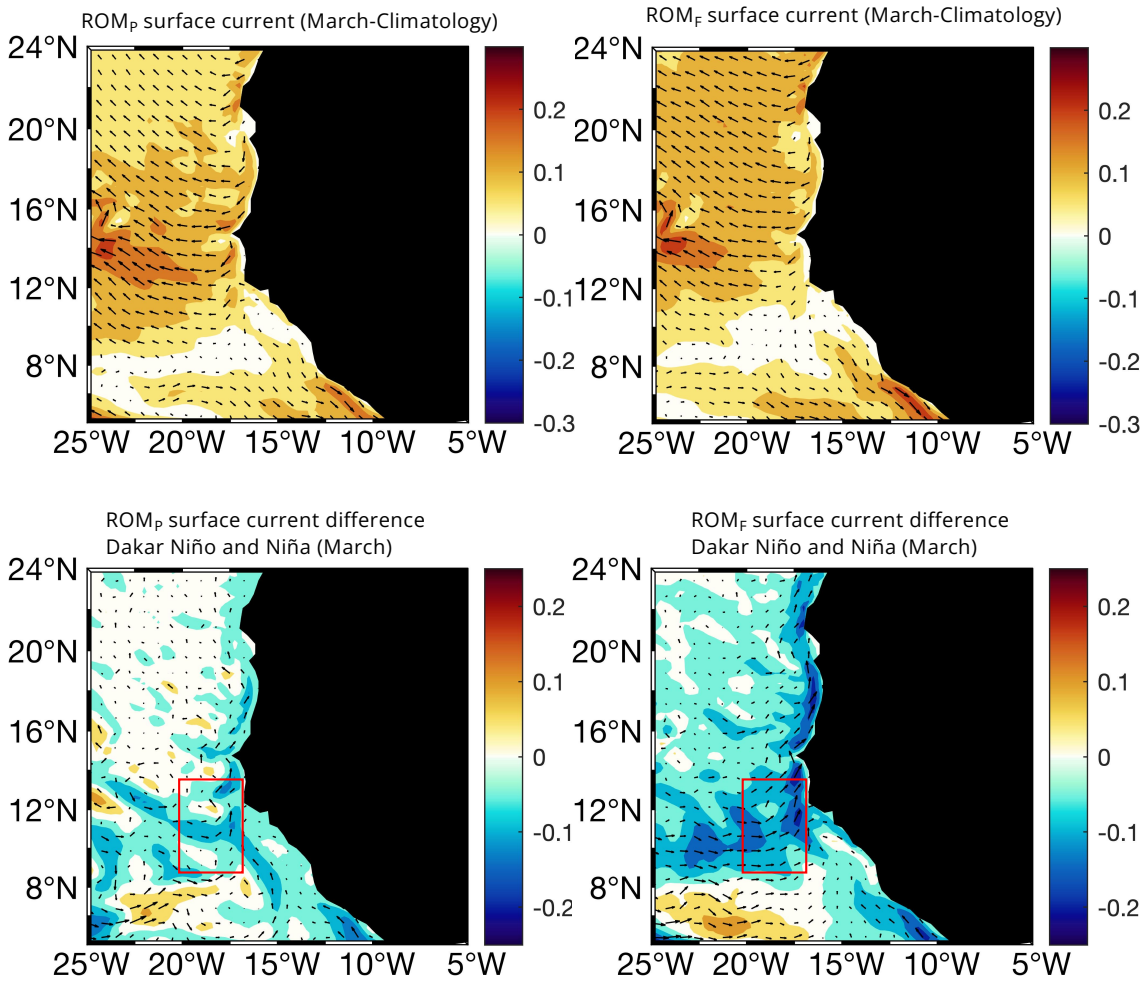

Figure S5. (Top) surface ocean curret climatology for (a) ROM_P and (b) ROM_F. (Bottom) surface ocean current difference between Dakar Niño and Niña composite for (c) ROM_P and (d) ROM_F. Vector denotes the ocean current and color is ocean current velocity.

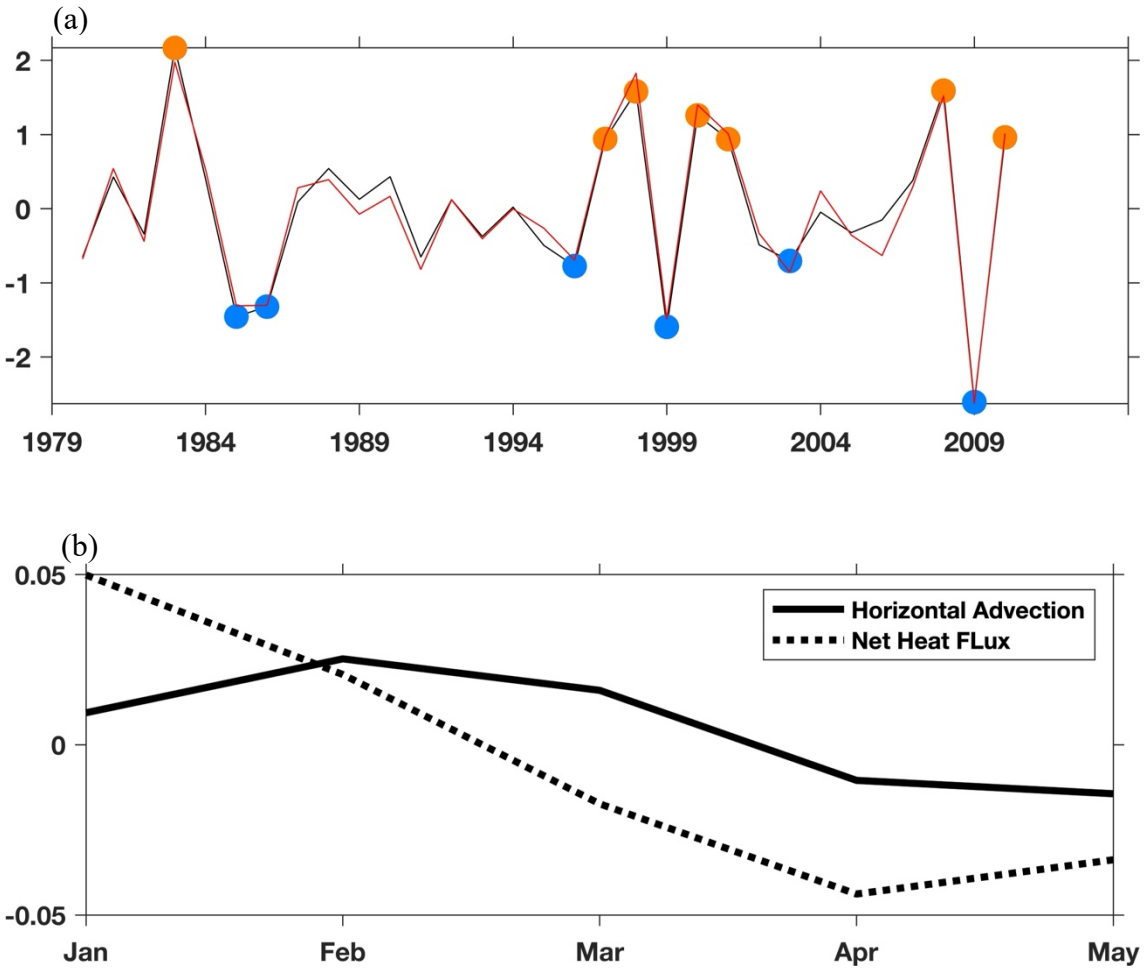

Figure S6. (a) Time series of Dakar Index (detrended SST averaged 9°N-14°N and 20°W-17°W) for ERA5 (black) and ORAS5 (red). The orange and blue dots indicate Dakar Niño and Niña events, respectively. (b) Lag-compoiste anomaly oh heat budget in ORAS5 between Dakar Niños and Dakar Niñas. March is lag=0. The unit is K day^{-1}.

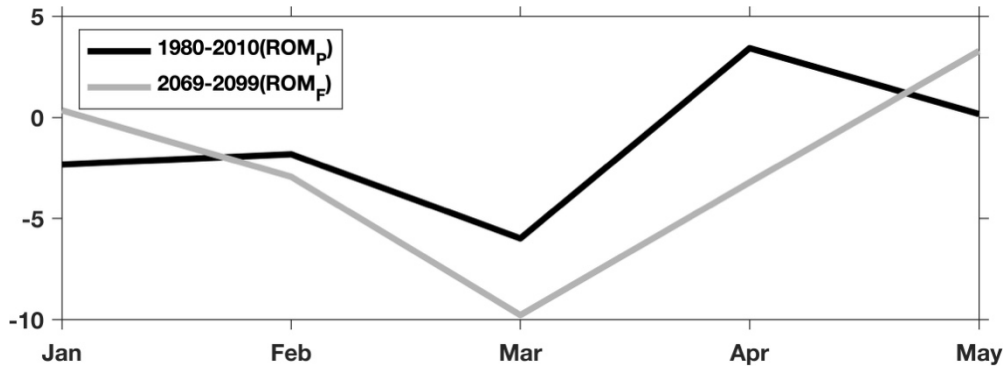

Figure S7. Monthly time series of lag-composite difference of ocean mixing layer depth between Dakar Niño and Dakar Niña events (Niño minus Niña) in (black) 1980-2010 and (grey) 2069-2099. March is lag=0. The unit is m