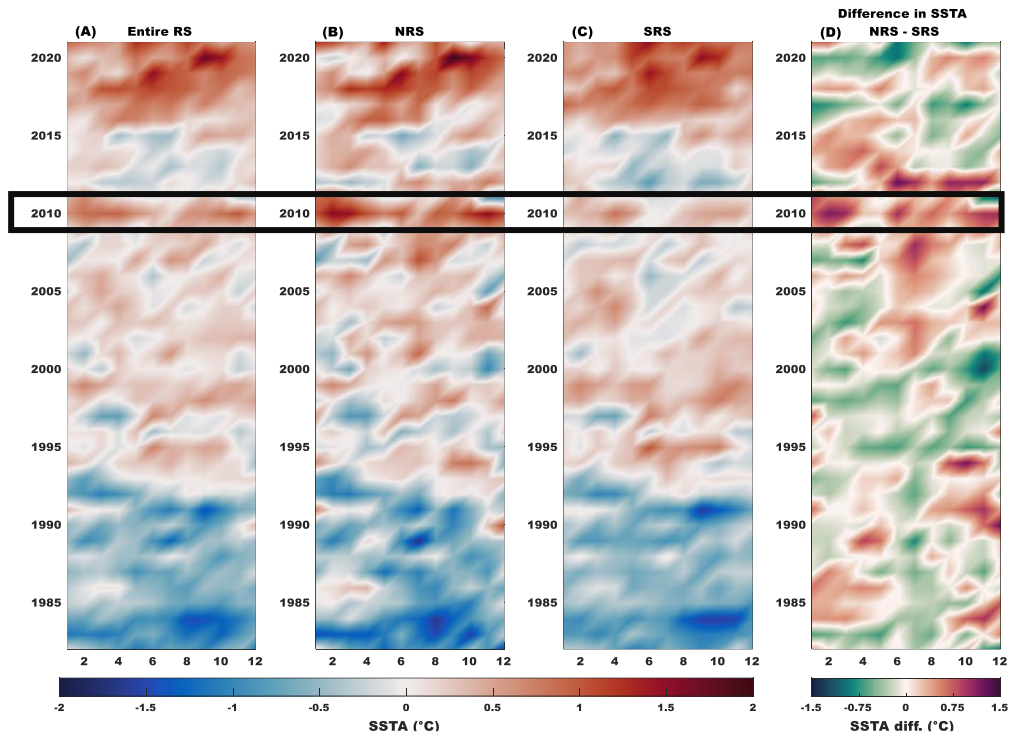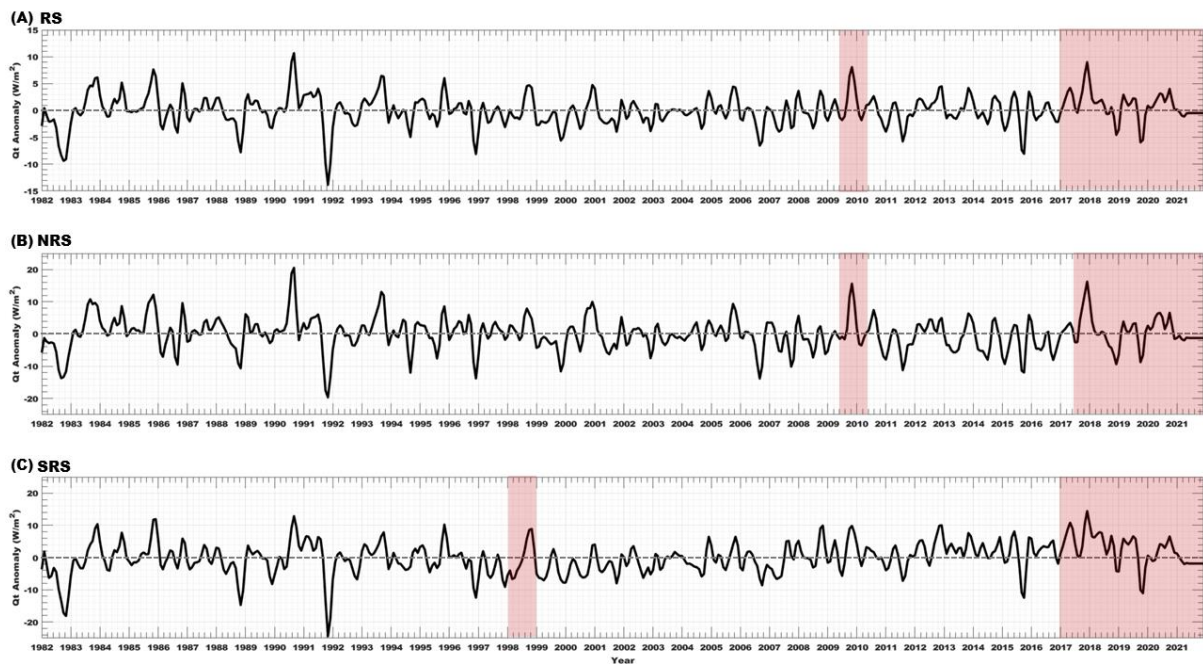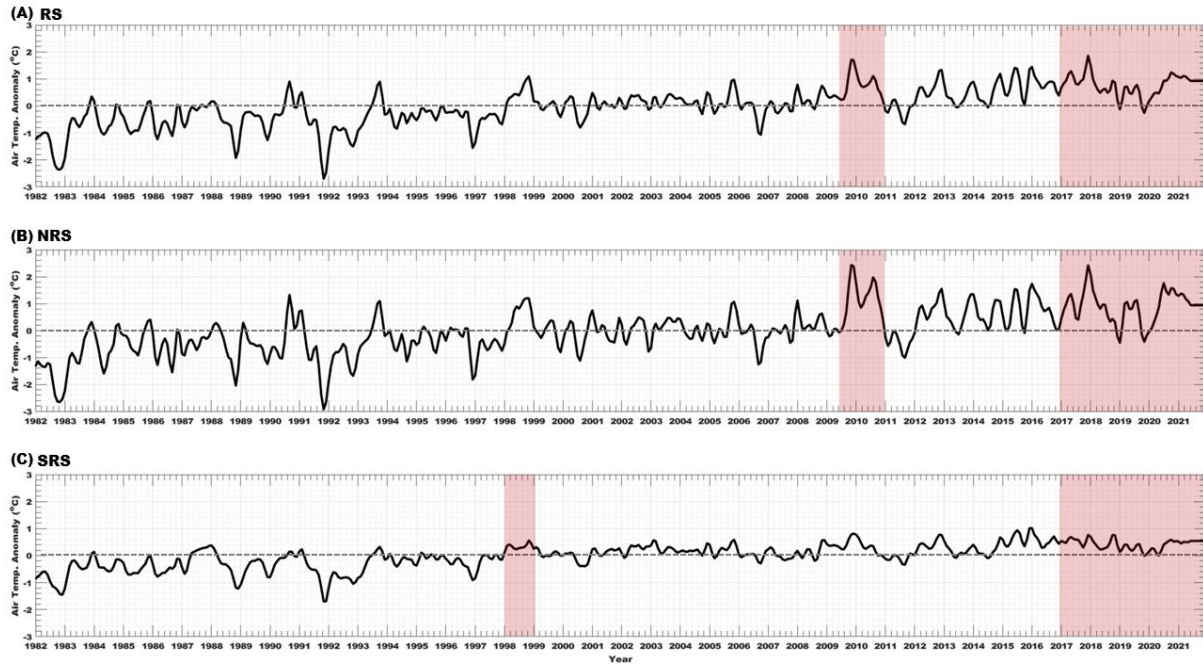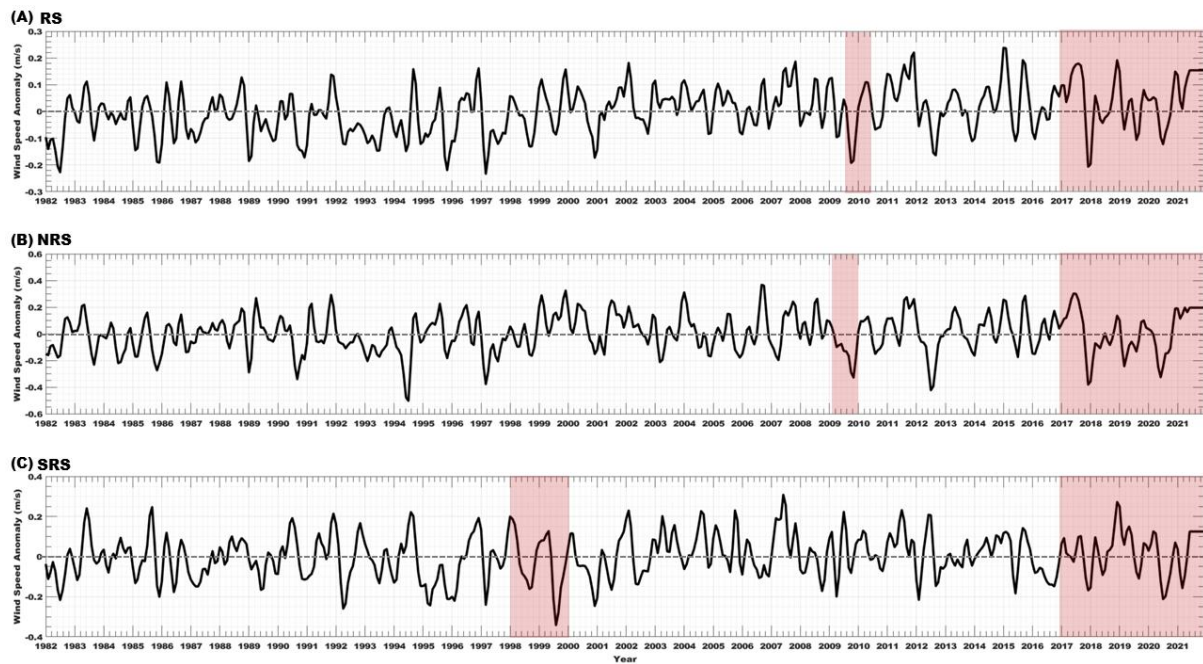# Supplementary

S1. Temporal pattern of long-term monthly SSTA for the period 1982 to 2021. (A-C) The monthly time series of SSTA in the entire RS, NRS, and SRS , respectively. (D) The monthly SSTA difference between NRS and SRS, where the red color represents the periods when SSTA was higher in NRS than in SRS, and the green color represents the period when SSTA was higher in SRS than in NRS.

S2. The temporal evolution of the anomaly of the total heat flux (in W/m^2) in the entire Red Sea (A), NRS (B), and SRS (C) between 1982 and 2021. The red shaded areas represent the years with the highest MHW frequency in each basin.

S3. The temporal evolution of the anomaly of the atmospheric temperature (in ^{o}C) in the entire Red Sea (A), NRS (B), and SRS (C) between 1982 and 2021. The red shaded areas represent the years with the highest MHW frequency in each basin.

S4. The temporal evolution of the anomaly of the wind speed (in m/s) in the entire Red Sea (A), NRS (B), and SRS (C) between 1982 and 2021. The red shaded areas represent the years with the highest MHW frequency in each basin.