Supporting Information for

The Atmospheric Response to North Atlantic SST Trends, 1870–2019

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Figures S1–S6

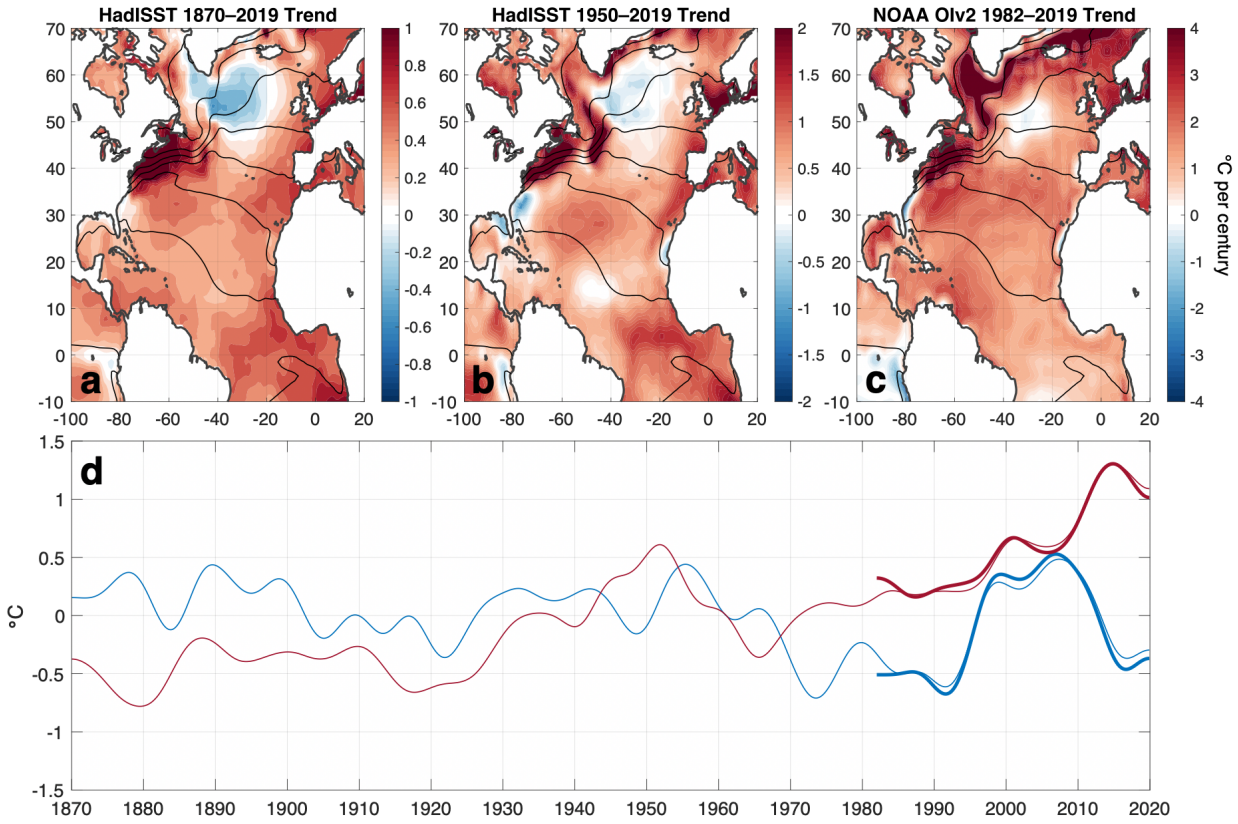

Figure S1. (a) Reproduction of Fig. 1a. (b) As in Fig. 1a but for the period 1950–2019. (c) As in Fig. 1a but for the period 1982–2019 from NOAA OIv2 observations. Note that each panel (a)–(c) has a different color scale. (d) Time series averaged over the cooling trend (45°W–20°W x 50°N–60°N, blue) and enhanced coastal warming trend (75°W–50°W x 35°N–50°N, red) from HadISST observations (thin lines) and NOAA OIv2 observations (thick lines). Each time series were subject to a 10-year low pass filter.

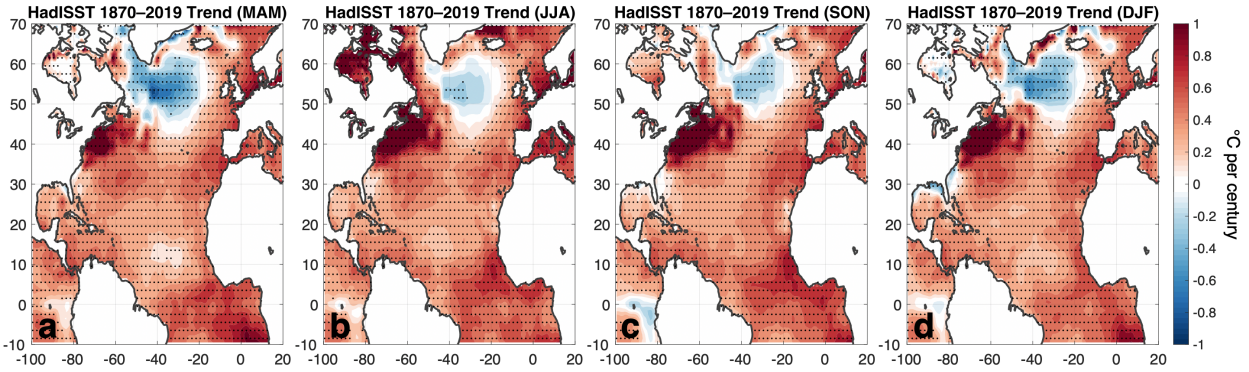

Figure S2. Reproduction of Fig. 1a but for seasonally averaged SST anomalies defined as March–May (a), June–August (b), September–November (c), and December–February (d). Trends that are statistically significant at the 90% confidence interval are stippled.

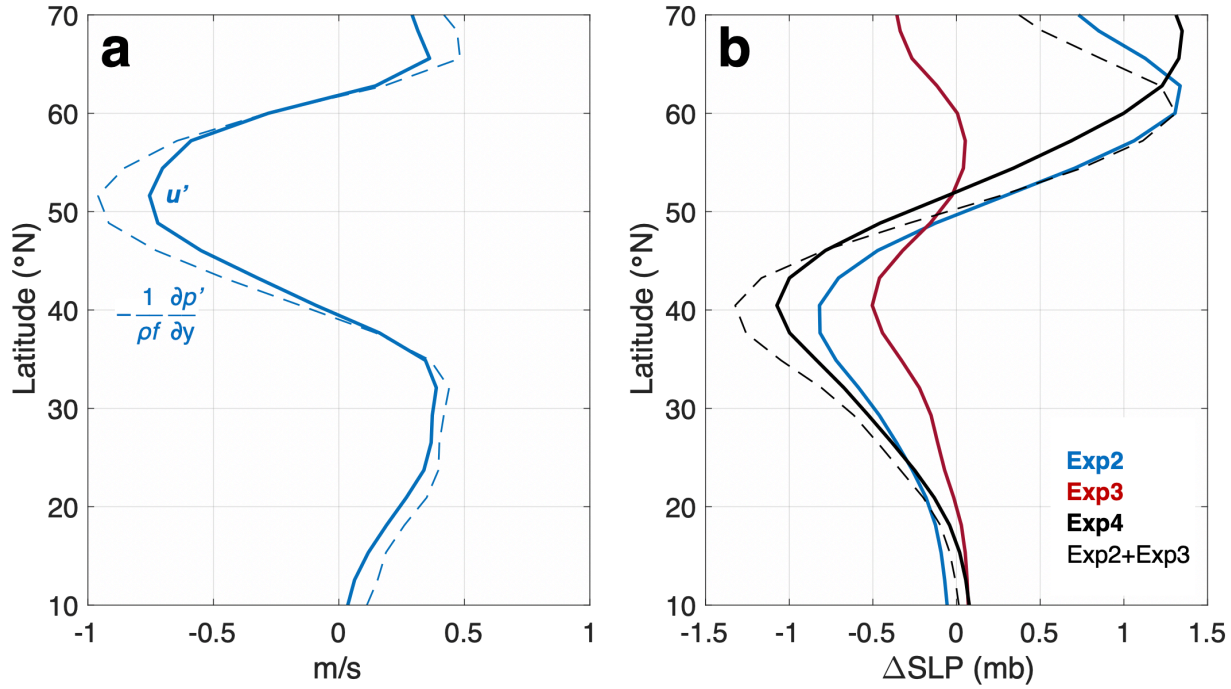

Figure S3. (a) Zonal mean (80°W–0°W), time-mean, boreal wintertime (DJF) surface zonal wind anomaly from Exp2 (*u'*, m/s, thick solid line), and the geostrophic zonal wind anomaly (m/s, thin dashed line) calculated from the equivalently averaged profile of SLP anomaly. (b) Zonal mean (80°W–0°W), time-mean, boreal wintertime (DJF) SLP response (mb) to cold SST anomalies (Exp2, blue), warm SST anomalies (Exp3, red), and both cold *and* warm SST anomalies (Exp4, thick black). The thin dashed black line is the sum of the responses in Exp2 and Exp3. Note that the three thick profiles in (b) represent zonal averages of fields presented in Fig. 2a–c. Also, the blue profile in (b) is the profile of SLP anomaly used in the calculation of geostrophic zonal wind displayed in (a).

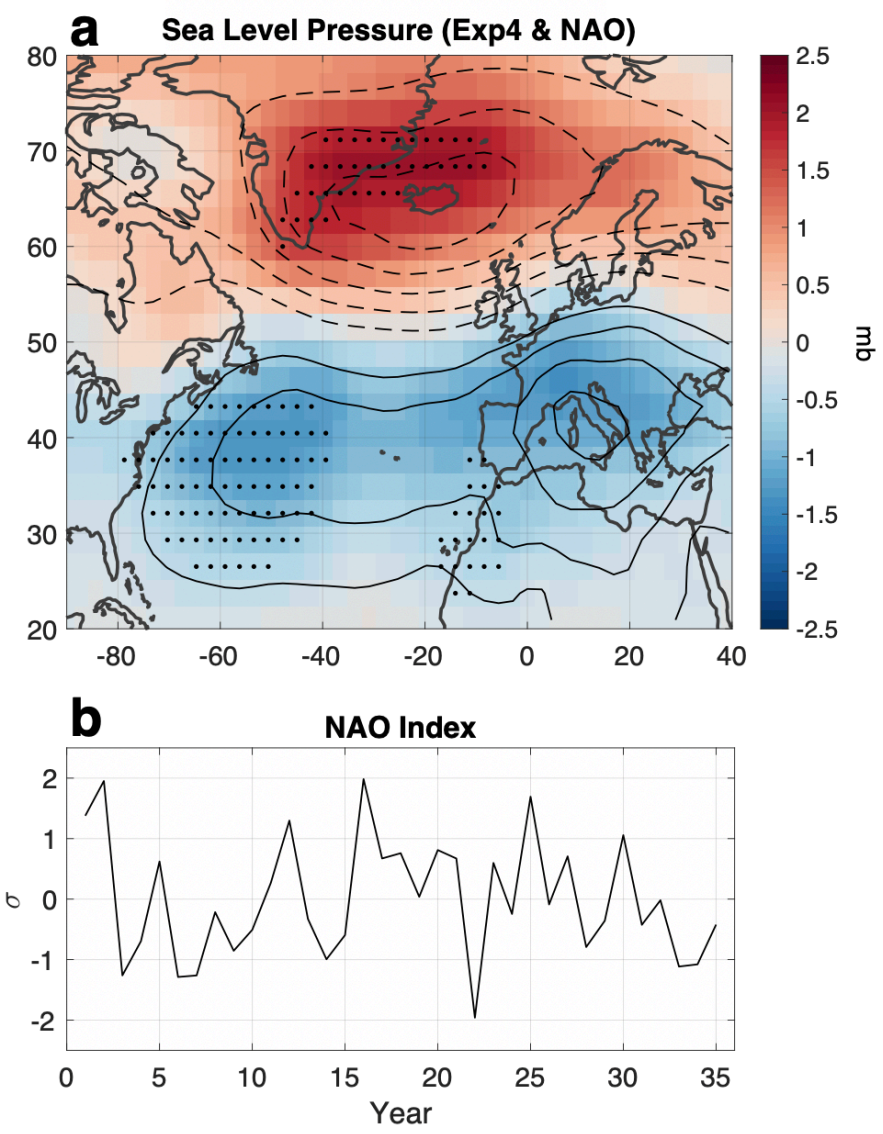

Figure S4. (a) Colors: Time-mean, boreal wintertime (DJF) SLP response (mb) to cold and warm SST anomalies (*i.e.*, Exp4, as contoured in Fig. 2c). Differences from Exp1 that are statistically significant at the 90% confidence interval based on a Student's t-test are stippled. Contours: SLP anomalies (contoured every 0.5 mb, zero omitted) associated with the positive phase of the NAO in the AGCM, calculated as the leading EOF of boreal wintertime SLP within the domain shown, from the control experiment (Exp1). The spatial correlation between the two fields is –0.94. (b) Corresponding NAO index (principal component associated with the leading EOF). The time series in (b) is normalized (units standard deviations); the EOF loading pattern in (a) is mb per NAO standard deviation.

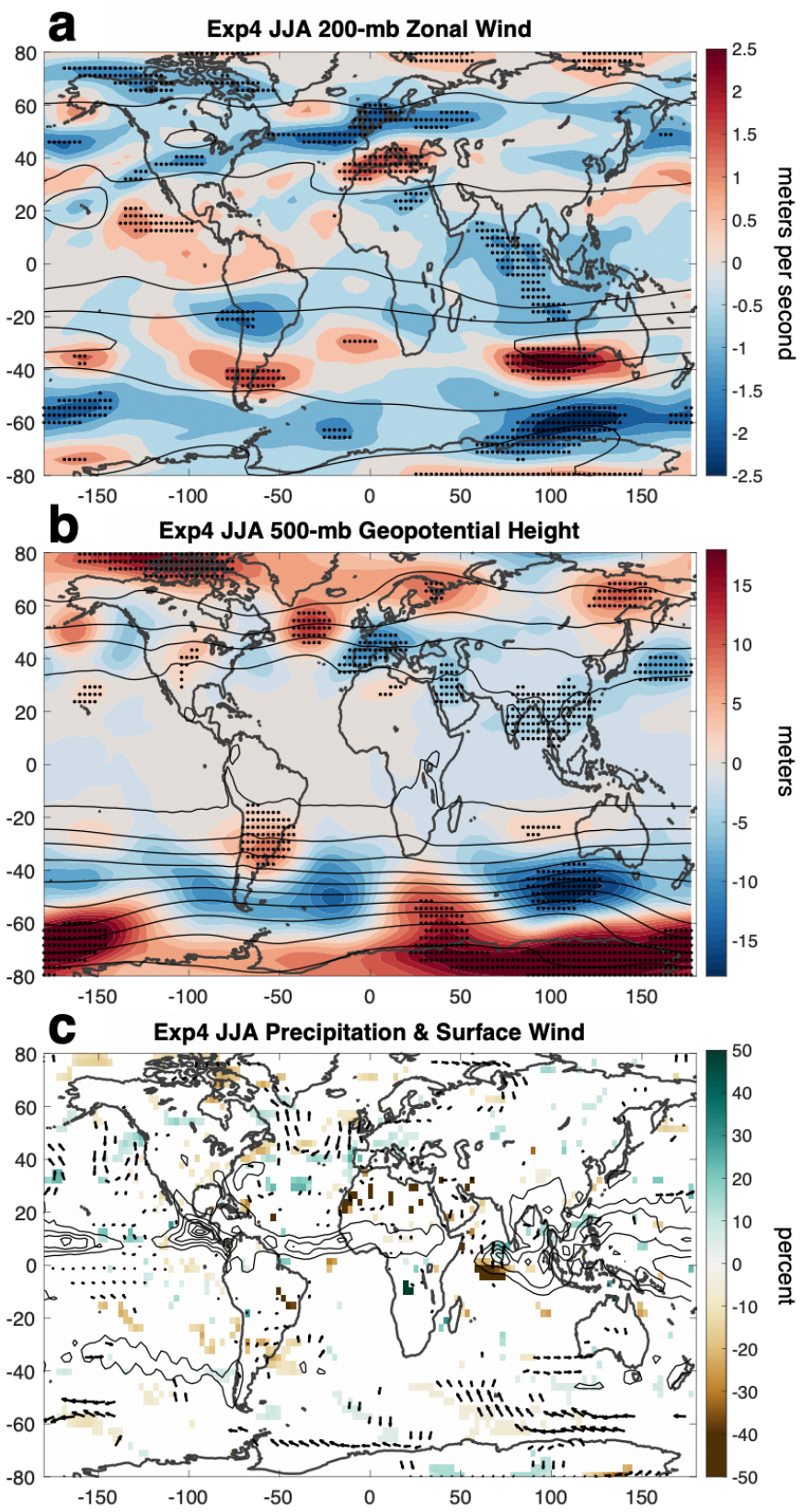

Figure S5. As in Fig. 4 but for boreal summertime (JJA).

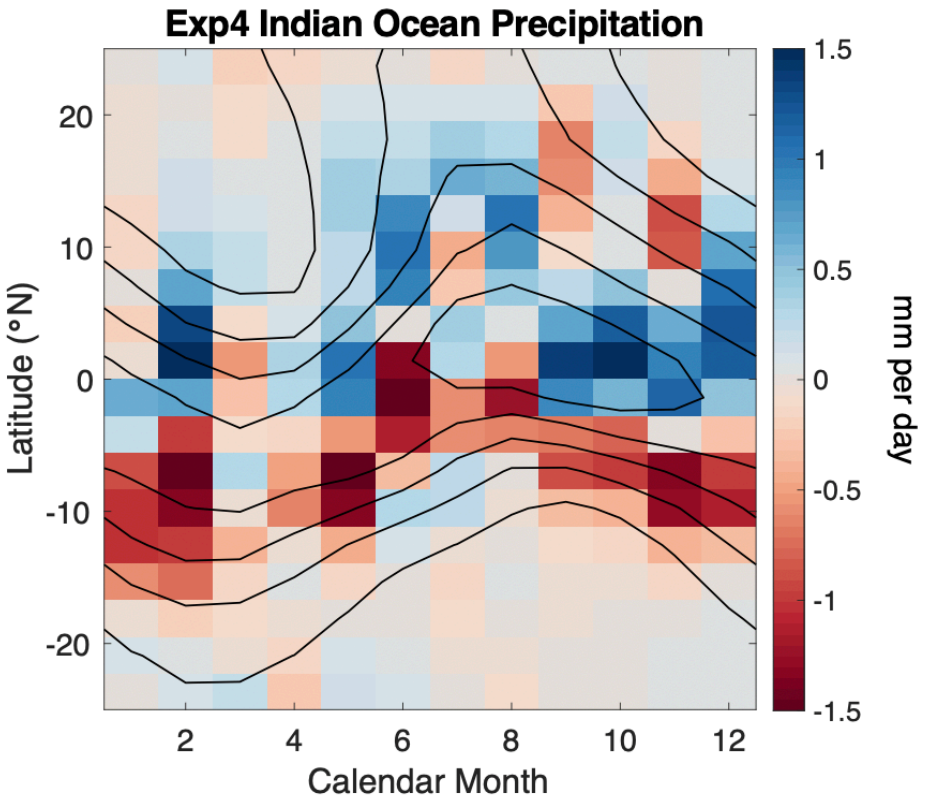

Figure S6. Colors: Response of precipitation (mm/day) within the tropical Indian Ocean to cold and warm SST anomalies in the North Atlantic (*i.e.*, Exp4) as a function of calendar month, zonally averaged from 60°E–120°E. Contours: Mean seasonal cycle of precipitation in the control experiment (Exp1, contours every 2 mm/day), zonally averaged from 60°E–120°E.