Supplement of

Understanding land surface response to changing South Asian monsoon in a warming climate

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Figure S1. Spatial distribution of JJAS mean precipitation (P; mm d\(^{-1}\)) from (a) CMAP observations (1979-2005) and (b) HIST simulations of LMDZ model (1951-2005). Box indicate the Bay of Bengal (80°-98° E; 8° -22° N) region.
Figure S2. Spatial distribution of JJAS mean precipitation (mm d\(^{-1}\)) from (a) APHRODITE and (b) IMD data sets during 1951-2005.
Figure S3. Area averaged time series of JJAS mean precipitation from (blue) APHRODITE and (red) IMD over the domain 70° -90° E; 10° -28° N for the period 1951-2005. The numerical values indicate the mean, interannual variability and long term trends in precipitation.
Figure S4. Area averaged time series of JJAS mean (a) 2m air temperature (°C) and precipitation (mm d\(^{-1}\)) from LMDZ (red) HIST and (black) NAT simulations. Linear trends in 2m air temperature and precipitation for HIST experiment are 1.1 °C (55 yr\(^{-1}\), -0.8 mm d\(^{-1}\) (55 yr\(^{-1}\) respectively (and significant at 95% level). The trends in NAT are close to zero and statistically not significant.
Figure S5. Spatial distribution of JJAS mean difference (HIST-NAT) of (a) Mean sea level pressure (shaded; hPa), wind at 850 hPa (vectors; m s$^{-1}$) and (b) precipitation (mm d$^{-1}$) between HIST and NAT experiments of LMDZ for 1951-2005. The significant differences at 95% level for wind and precipitation are stippled.
Figure S6. Scatter plot of trends in JJAS mean precipitation versus total soil moisture over the Indian land region 70°E-90°E; 10°N-28°N for the 55-year (1951-2005) period for HIST simulation of LMDZ.