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Supplement of

Contributions of surface solar radiation and precipitation to the spatiotemporal patterns of surface and air warming in China from 1960 to 2003

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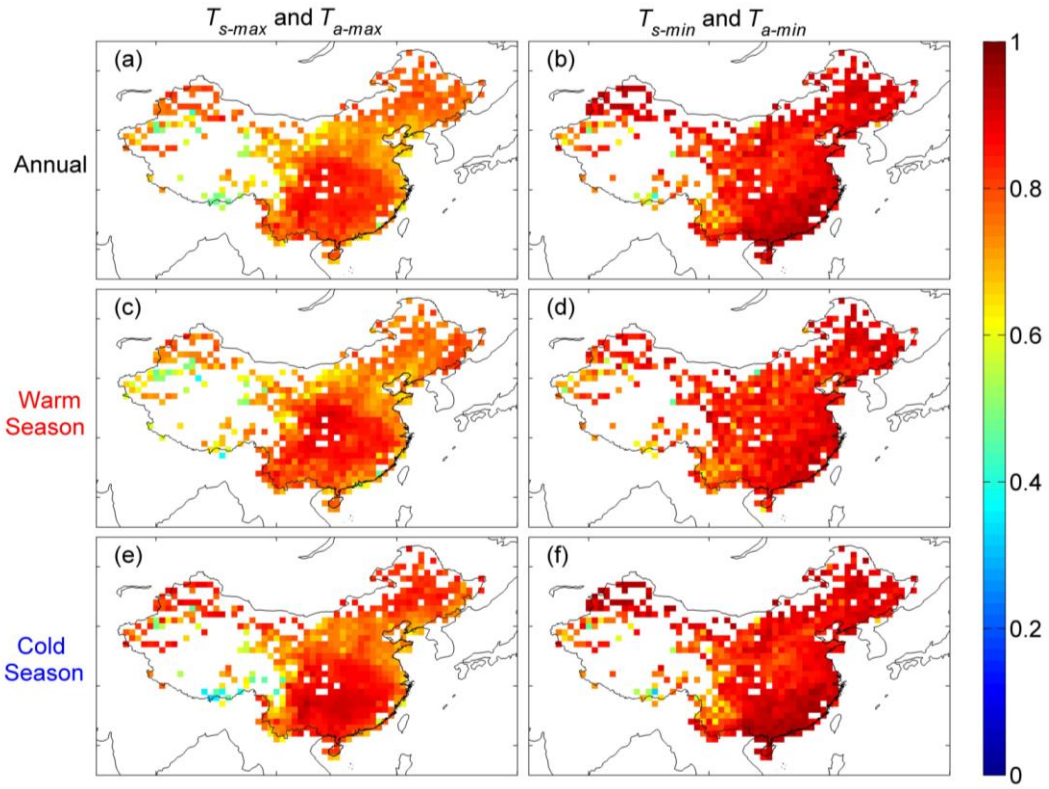

Figure. S1. The spatial patterns of the correlation coefficients between the land surface temperature (T_s) and the air temperature (T_a): (a), (c), and (e) are the correlation coefficients between daily maximum land surface temperature ($T_{s\text{-}max}$) and daily maximum air temperature ($T_{a\text{-}max}$) for the annual, warm, and cold seasonal scale, respectively; and (b), (d), and (f) are the correlation coefficients between daily minimum land surface temperature ($T_{s\text{-}min}$) and daily minimum air temperature ($T_{a\text{-}min}$) on the annual, warm, and cold seasonal scales, respectively.

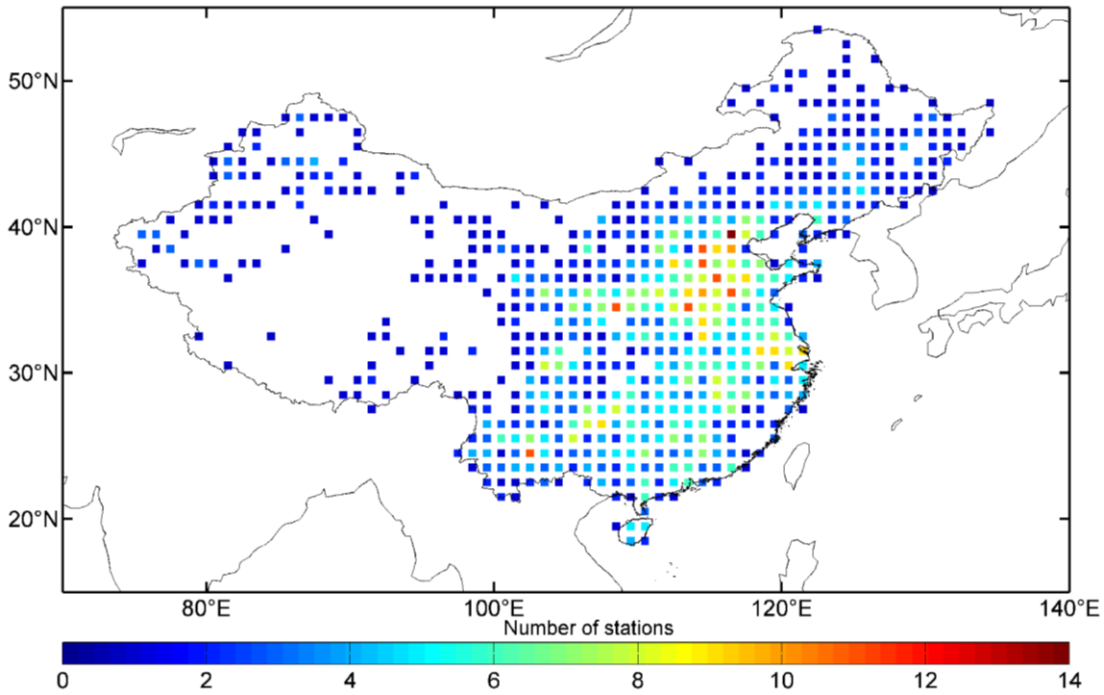

Figure S2. Number of selected stations in each 1° × 1° grid. To reduce the effect of the spatial heterogeneity of the station density, the monthly anomalies of all variables are binned into 1° × 1° grids. Six hundred and twenty-seven such grids are obtained, accounting for 65.79% of all the grids in Mainland China. The value of each grid is the average of the stations in this grid and the regional averaged value is the average of all the grids in the period. On average, the results covered the equivalent of 65.79% of China's land surface.

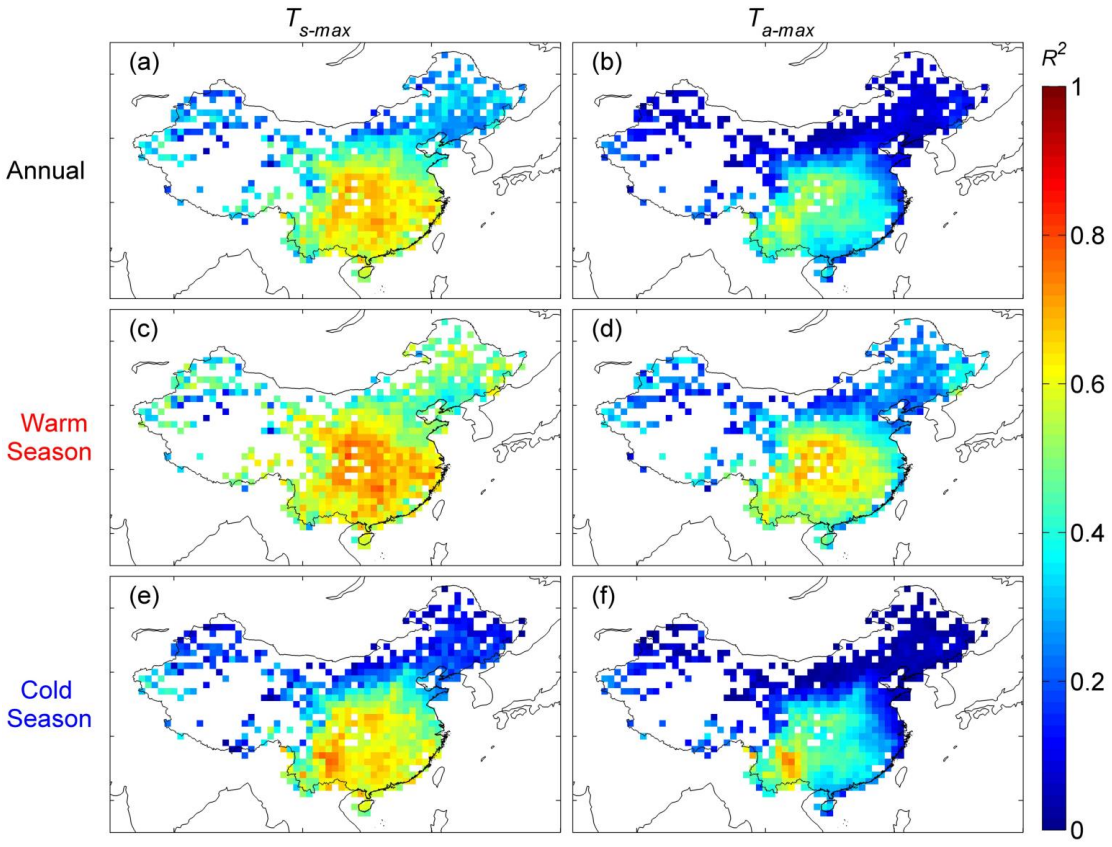

Figure S3. Maps of the R^2 (coefficient of determination) of multilinear regression of daily maximum land surface temperature ($T_{s\text{-}max}$, a, c, e), and daily minimum air temperature ($T_{a\text{-}max}$, b, d, f) to surface solar radiation (R_s) and precipitation (P) variation for the annual, warm, and cold seasonal scales. R^2 is the number that indicates the proportion of the variance in $T_{s\text{-}max}$/ $T_{a\text{-}max}$ that is predictable from the R_s and P.

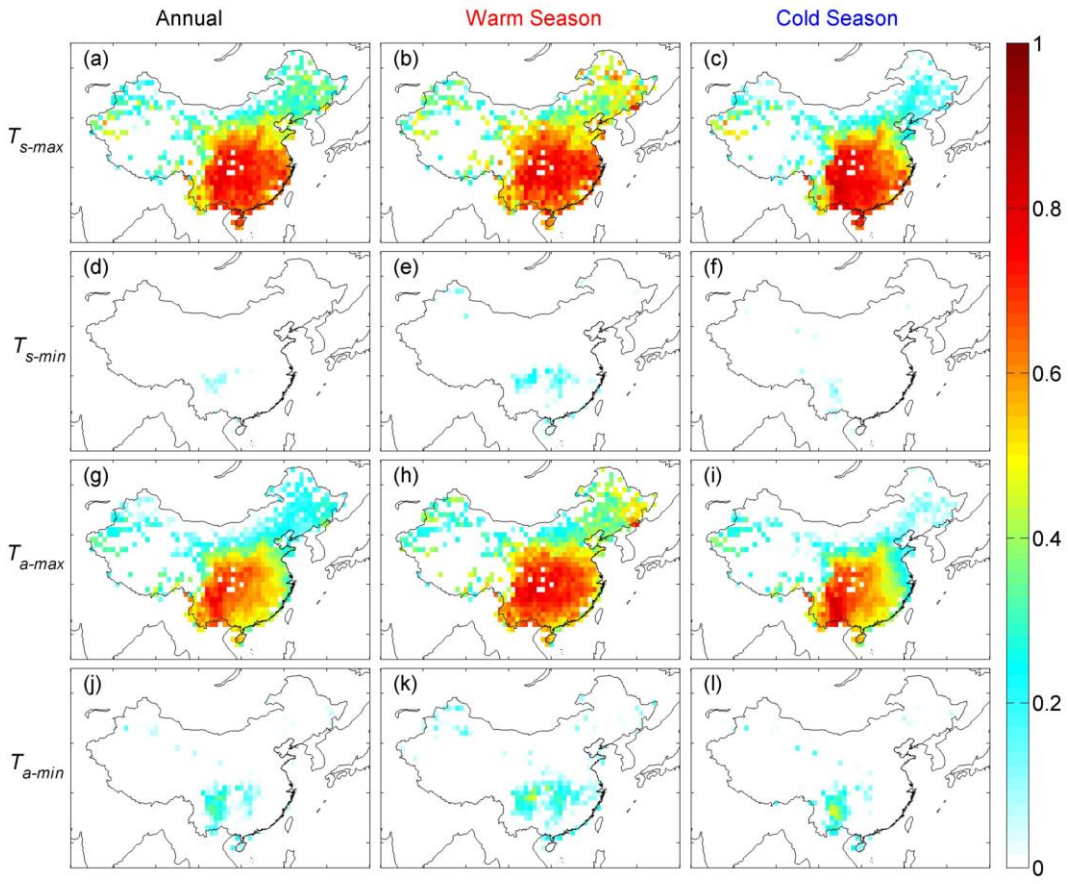

Figure S4. Maps of the partial correlation coefficients between the surface solar radiation (R_s) and the temperatures (T) for the annual, warm, and cold seasonal scales. The linear partial correlation coefficients calculated based on the monthly anomalies of R_s and T after avoiding the effect of precipitation (P), which indicates the proportion of variances of T that are attributed to the variation of R_s.

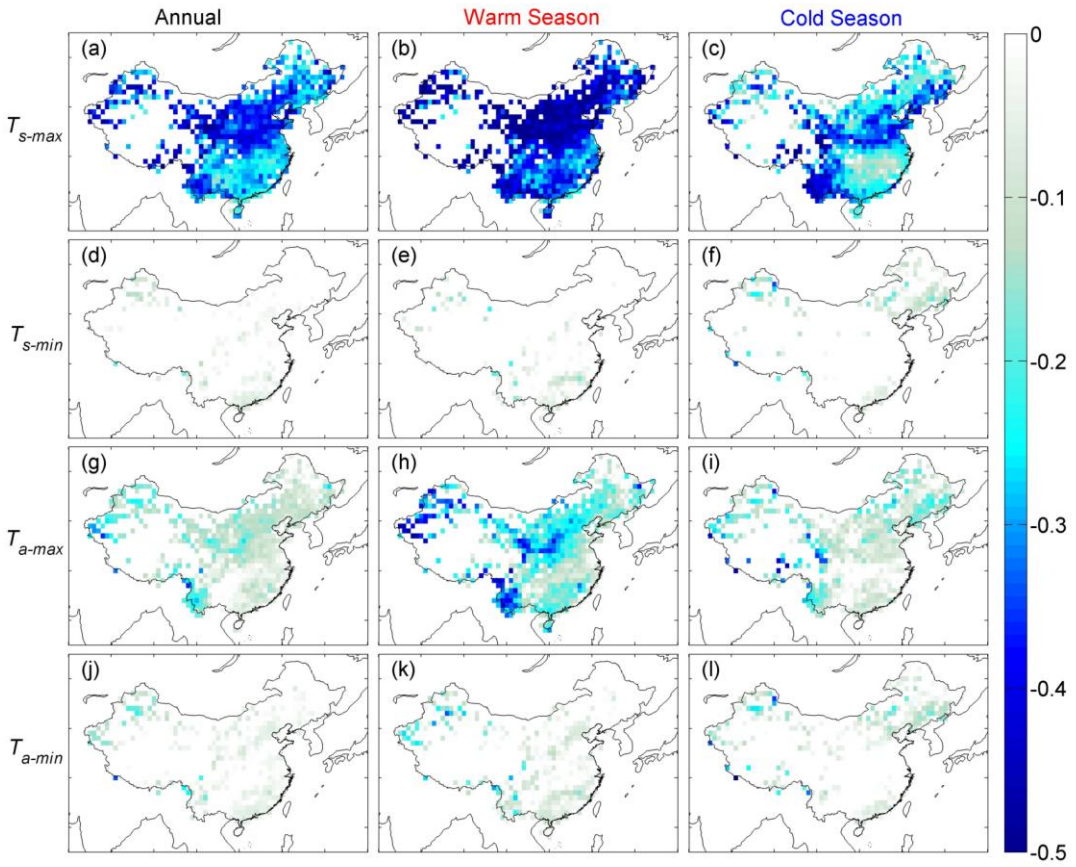

Figure S5. The partial correlation coefficients between the precipitation (*P*) and the temperatures for the annual, warm, and cold seasonal scales. The linear partial correlation coefficients calculated based on the monthly anomalies of *P* and *T* after avoiding the effect of surface solar radiation (R_s), which indicates the proportion of variances of *T* that are attributed to the variation of *P* in Eq (1).

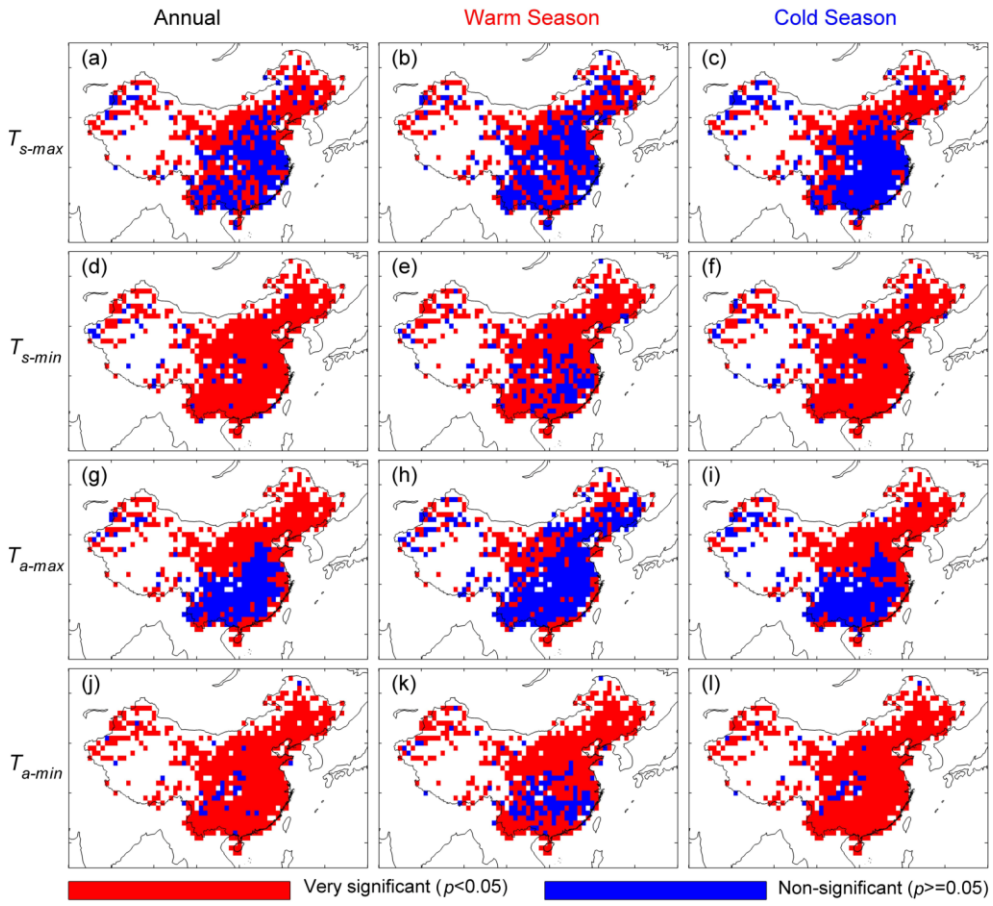

Figure S6. The corresponding significant test of trends of daily maximum land surface temperature ($T_{s\text{-}max}$, a-c), daily minimum land surface temperature ($T_{s\text{-}min}$, d-f), daily maximum air temperature ($T_{a\text{-}max}$, g-i), and daily minimum air temperature ($T_{a\text{-}min}$, j-l) (see Fig 4) in China during 1960-2003.

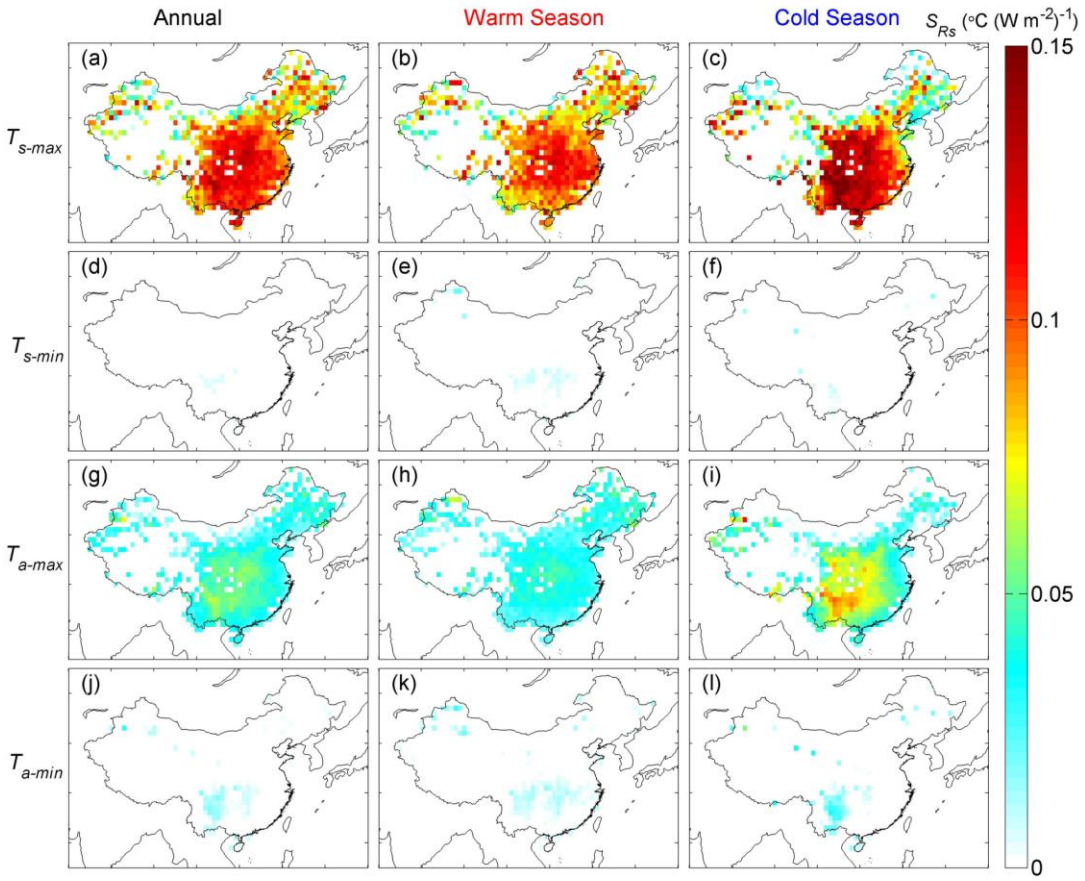

Figure S7. Maps of the sensitivities of daily maximum land surface temperature ($T_{s\text{-}max}$, a-c), daily minimum land surface temperature ($T_{s\text{-}min}$, d-f), daily maximum air temperature ($T_{a\text{-}max}$, g-i), and daily minimum air temperature ($T_{a\text{-}min}$, j-l) to the surface solar radiation (R_s) variation for the annual, warm, and cold seasonal scales (S_{Rs}). The sensitivity of T to R_s is the linear coefficient estimated in Eq (1), which denotes that a unit of R_s change would cause how much change in T.

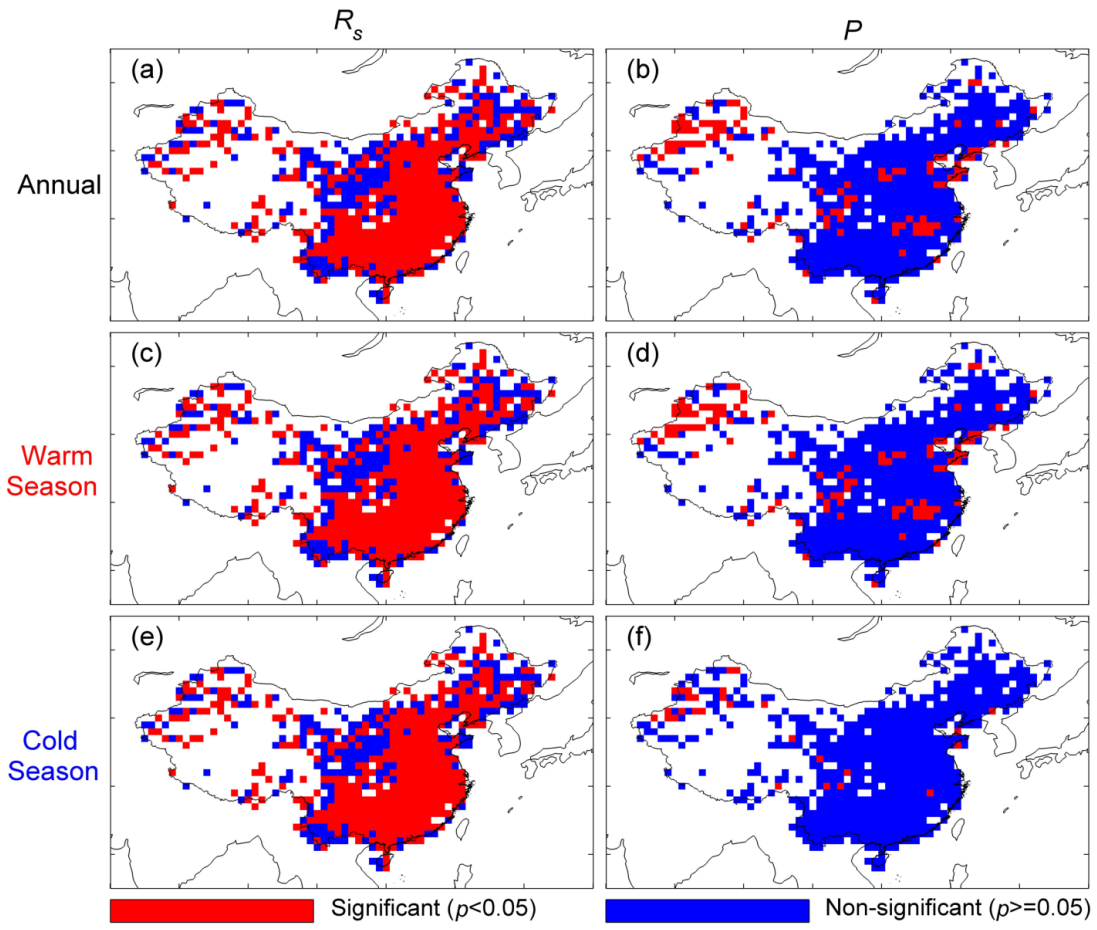

Figure S8. The corresponding significant test of trends of surface solar radiation (R_s, see Fig 5a-c) and precipitation (P, see Fig 6a-c) in China during 1960-2003.

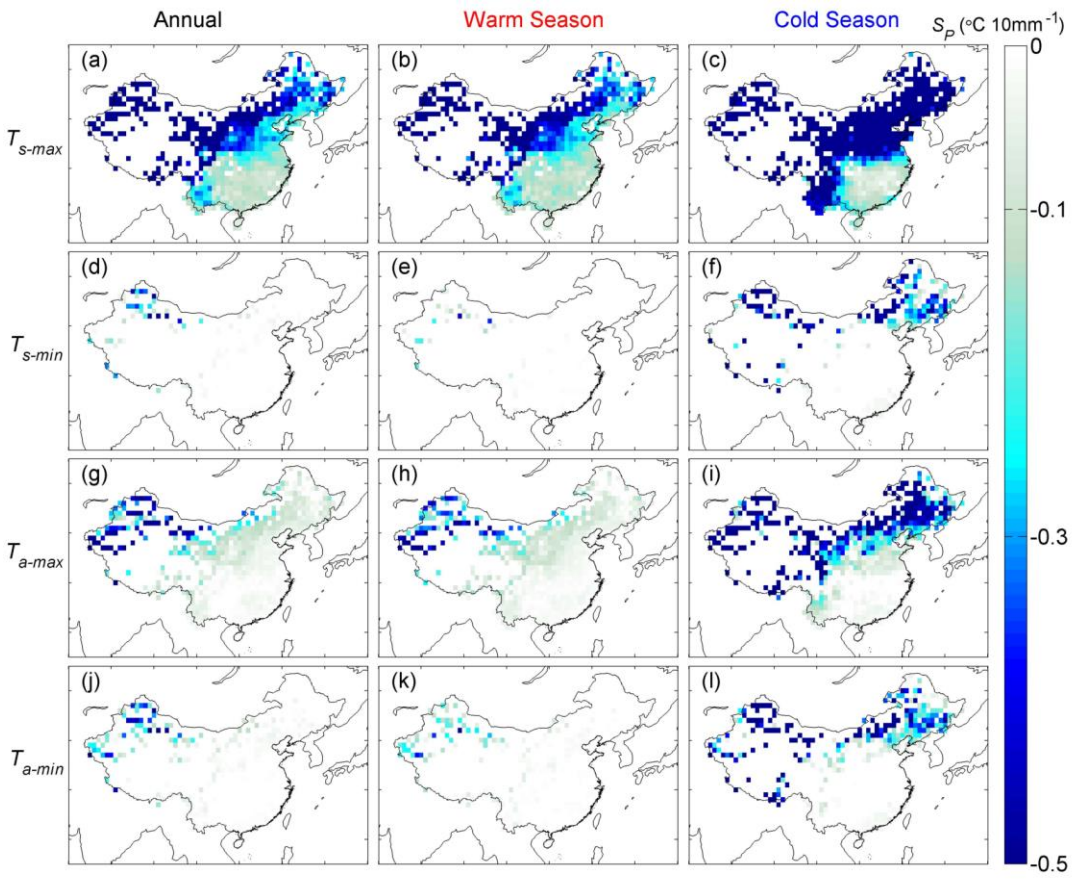

Figure S9. Maps of the sensitivities of daily maximum land surface temperature ($T_{s\text{-}max}$, a-c), daily minimum land surface temperature ($T_{s\text{-}min}$, d-f), daily maximum air temperature ($T_{a\text{-}max}$, g-i), and daily minimum air temperature ($T_{a\text{-}min}$, j-l) to precipitation (P) variation on annual, warm, and cold seasonal scales (S_P). The sensitivity of T to P is the linear coefficient estimated in Eq (1), which denotes that a unit of P change would cause how much change in T.

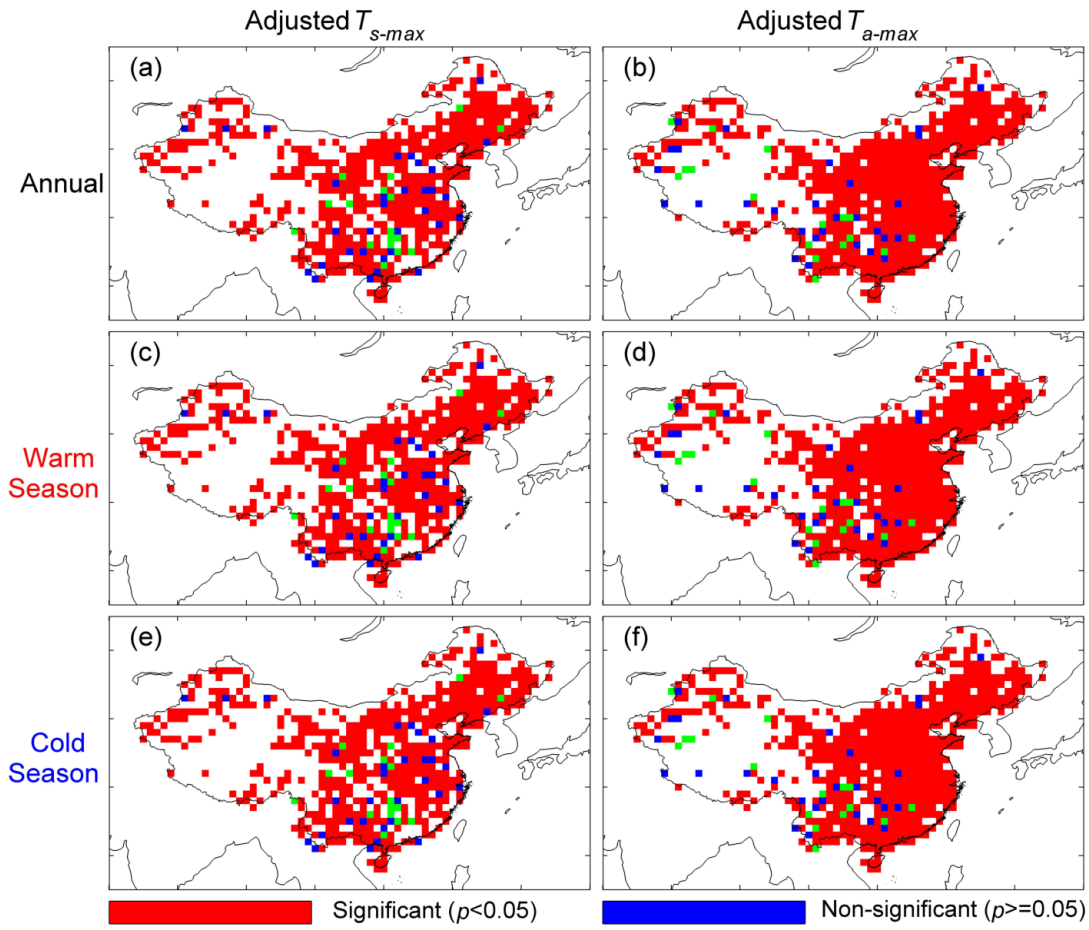

Figure S10. The corresponding significant test of trends of daily maximum land surface temperature ($T_{s\text{-}max}$) and daily maximum air temperatures ($T_{a\text{-}max}$) after adjusting the effect of surface solar radiation (R_s) and precipitation (P) (see Fig 8) in China from 1960 to 2003.