Supporting Information

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Fig. S1. Comparison of spring temperature change from CRU dataset, GISS dataset, NARR dataset, and NCEP-DOE reanalysis dataset. Spatial pattern of spring temperature trend during the entire study period based on (*A*) CRU, (*B*) GISS, (*C*) NARR, and (*D*) NCEP-DOE; spatial pattern of turning point (TP) for spring temperature changes based on (*E*) CRU, (*F*) GISS, (*G*) NARR, and (*H*) NCEP-DOE; spatial pattern of spring temperature trend before its TP based on (*I*) CRU, (*J*) GISS, (*K*) NARR, and (*L*) NCEP-DOE; spatial pattern of spring temperature trend after its TP based on (*M*) CRU, (*N*) GISS, (*O*) NARR, and (*P*) NCEP-DOE. Because we don't have accesss to GISS data in the year of 2006, analyses on GISS dataset are for the periods between 1982 and 2005.



Fig. 52. Spatial distribution of trend in average NDVI for May and June (MJNDVI) during the different periods in North America. (A) MJNDVI trend during the whole study period 1982–2006, (B) MJNDVI trend before the TP of spring temperature trend, and (C) MJNDVI trend after the TP of spring temperature trend.



Fig. S3. Spatial distribution of winter (from previous November to February) precipitation change in different periods and correlation between winter precipitation and spring NDVI. Winter precipitation trend (A) before and (B) after TP of spring temperature and correlation coefficient (C) between winter precipitation and spring NDVI.

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Fig. S4. Spring precipitation and PDSI change in different periods. Spring precipitation trend (A) before and (B) after TP of spring temperature and spring PDSI trend (C) before and (D) after TP of spring temperature



Fig. S5. Spatial distribution of correlation coefficient between seasonal NDVI and seasonal climate. (A) Correlation between spring NDVI and spring temperature; (B) correlation between spring NDVI and spring precipitation; (C) correlation between summer NDVI and summer temperature; (D) correlation between summer NDVI and summer precipitation.



Fig. S6. Spatial distribution of trend in summer (June, July, and August) NDVI from 1982 to 2006.



Fig. 57. Schematic diagram showing the use of the piecewise linear regression to detect the turning point (TP) of spring temperature trend for a sample pixel (N40.25°, W124.25°). β 1 is the spring temperature trend before the TP of spring temperature trend, and β 1 + β 2 is the spring temperature trend after the TP of spring temperature trends