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Supplement of

Three-North Shelter Forest Program contribution to long-term increasing trends of biogenic isoprene emissions in northern China

Xiaodong Zhang et al.

Correspondence to: Jianmin Ma (jianminma@lzu.edu.cn)
and Tao Huang (huangt@lzu.edu.cn)

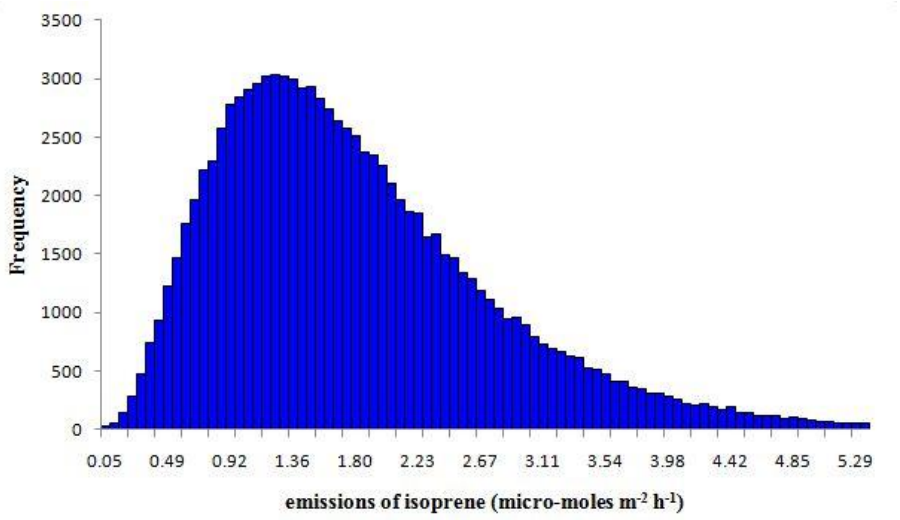

Fig. S1. Frequency distribution of biogenic emission fluxes of isoprene.

Table S1. Coefficients of variation (*CV*, %) of input parameters for the uncertainty analysis (Guenther et al., 1999) in computation of biogenic isoprene emission fluxes using MEGAN2.1 (Guenther et al., 2012), the model run times: 100,000.

Parameter	Light	LAI	PAR	E_{opt}	C_{T1}	C_{T2}	Emi_fac
CV （%）	10	30	10	10	10	10	30

LAI: leaf area index

PAR: photosynthetically active radiation

E_{opt}: maximum normalized emission capacity

CT1: empirical coefficient for the energy of activation

CT2: empirical coefficient for the energy of deactivation

Emi_fac: emission factor (Guenther et al., 2012)

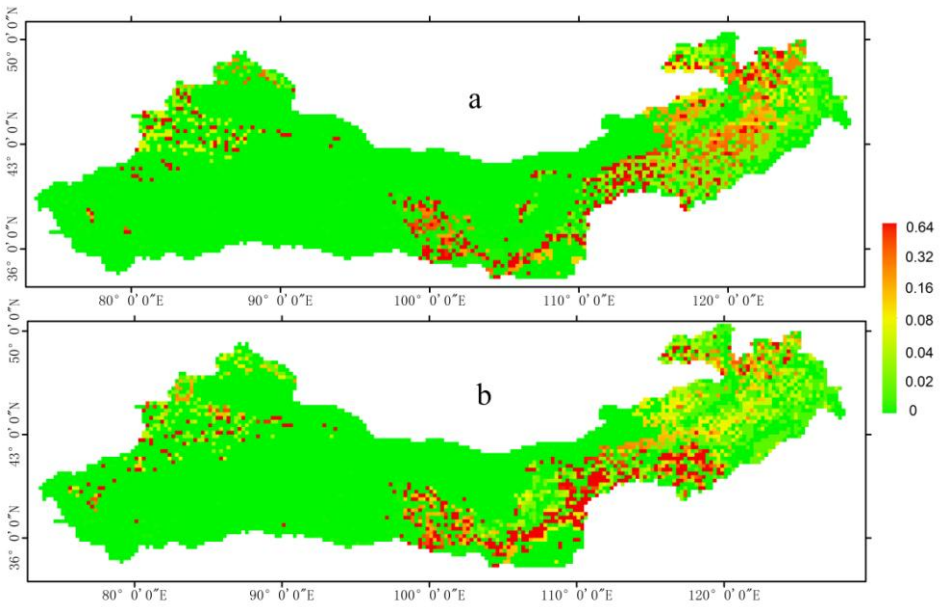

Fig. S2. MEGAN2.1 (Guenther et al., 2012) simulated biogenic isoprene emission fluxes (micro-moles m^{-2} hr^{-1}) in 1982 (a) and 2010 (b) across the TNRSF.

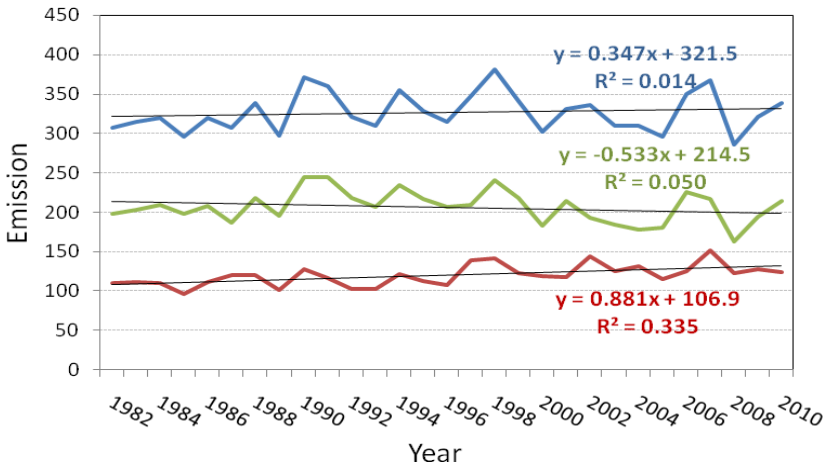

Fig. S3. Annual total biogenic isoprene emission (micro-moles $m^{-2}h^{-1}$) from 1982 to 2010. Blue solid line stands for the emissions in Northern China with the TNRSF included, green soild line represents the emissions in Northern China without the TNRSF included, and red solid line indicates the emission in the TNRSF only. Black solid line stands for their respective linear trend.

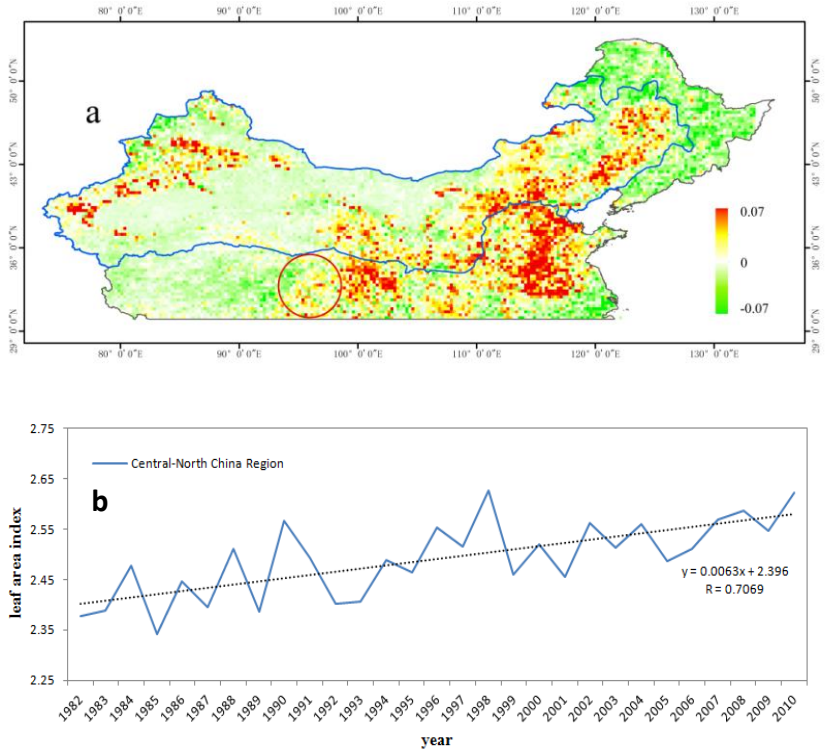

Fig. S4. (a) Linear trend of leaf area index (LAI) from 1982 to 2010 over Northern China. Red circle indicates the region extending from Qinghai to Qinling–Ta-Pa Mountains where the higher isoprene emission fluxes in 2000 were found (Fig. 4 in main text); (b) annual mean LAI averaged over Central-North China region of the TNRSF.

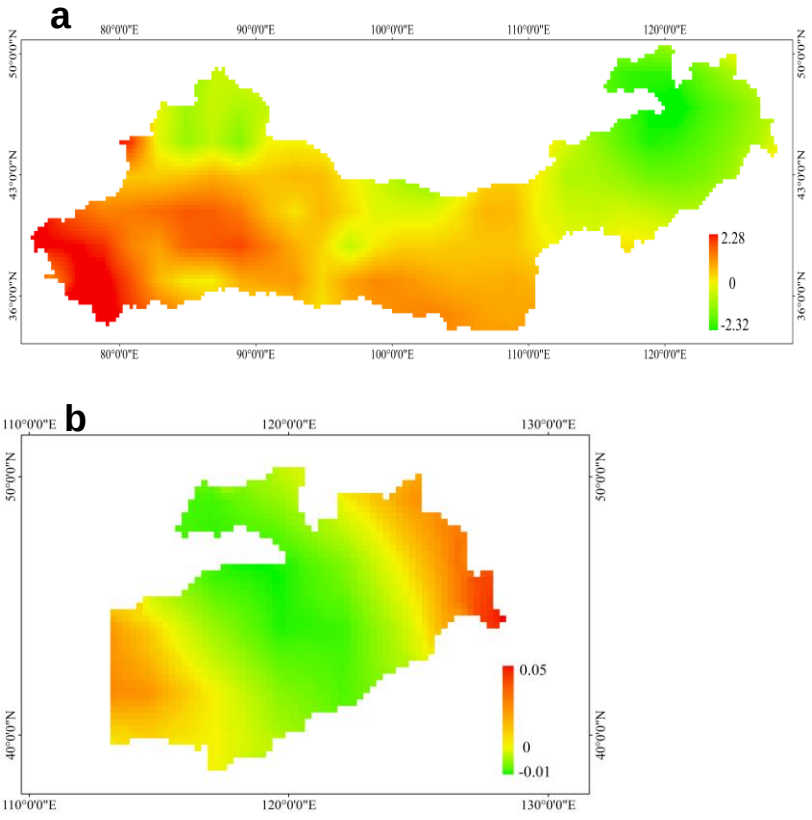

Fig. S5. (a) Differences of annual surface air temperature (SAT) between 1982 and 2010 ($T_{2010} - T_{1982}$)**.** SAT data were collected from the NCEP reanalysis data http://www.esrl.noaa.gov/psd/cgi-bin/data/composites ; (b) trends of surface air temperatures over the Northeastern China region of the TNRSF from 1982 to 2010.

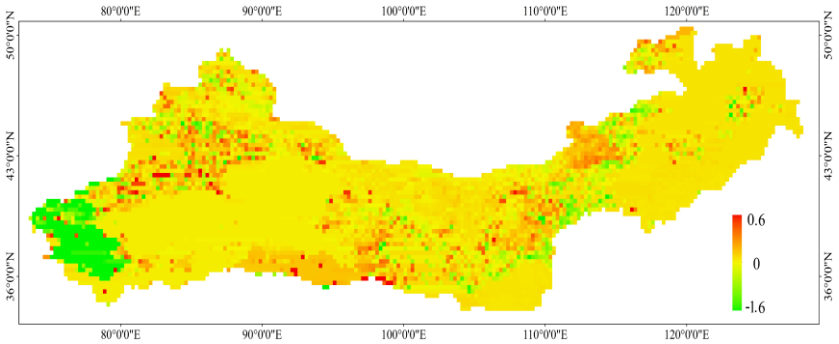

Fig. S6. Linear trend of PAR (photosynthetically active radiation, umol m^{-2} s^{-1}) from 1982 to 2010.

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