Supplement of Atmos. Chem. Phys., 17, 13699–13719, 2017
https://doi.org/10.5194/acp-17-13699-2017-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Future inhibition of ecosystem productivity by increasing wildfire pollution over boreal North America

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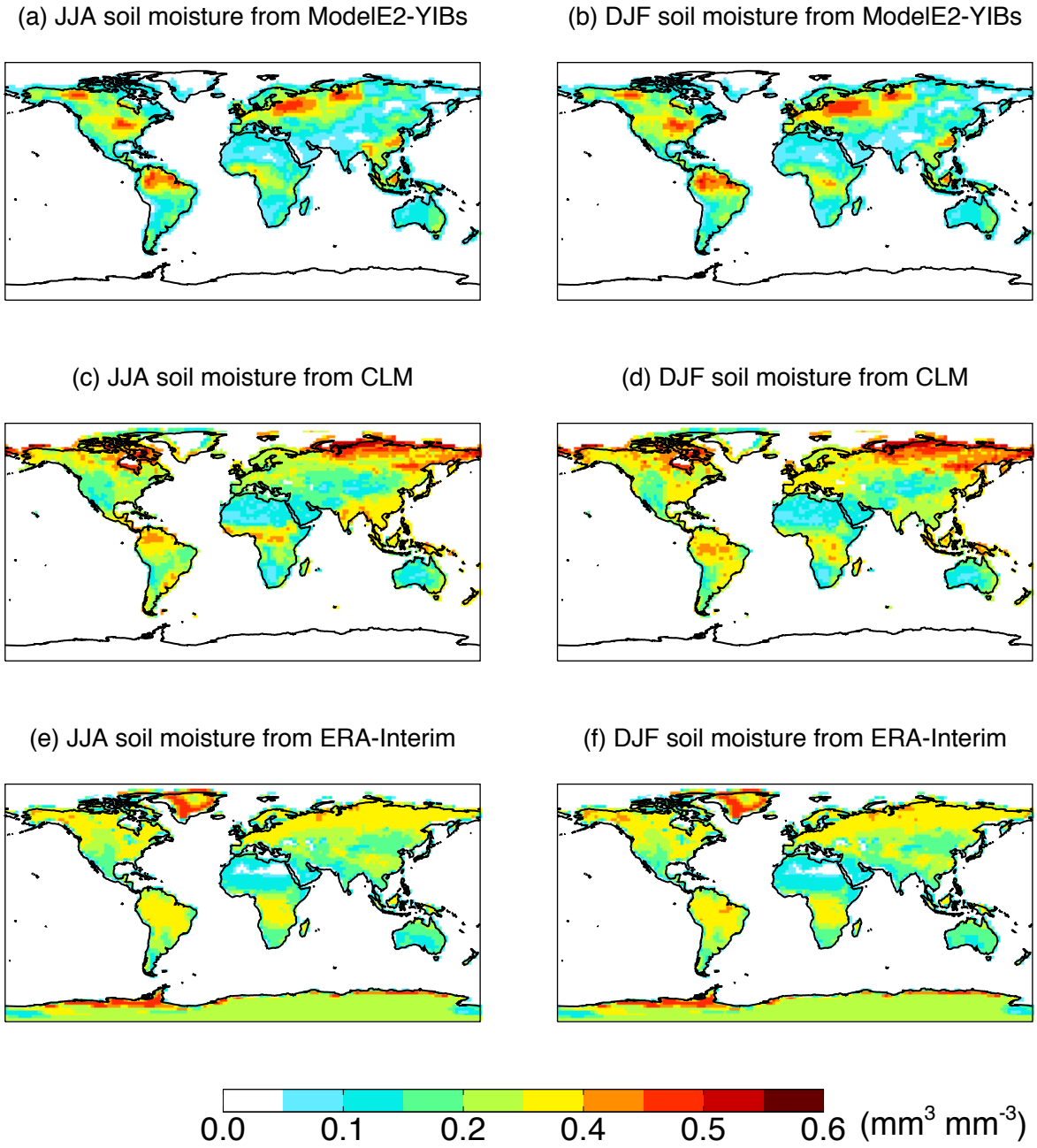

Figure S1. Comparison of (a, c, e) summer (June-August) and (b, d, f) winter (December-February) soil moisture at the top 1 m from (a, b) ModelE2-YIBs simulation, (c, d) CLM simulation, and (e, f) ERA-Interim reanalyses. The CLM simulation is perform using the Community Land Model driven with meteorological forcing from ERA-Interim reanalyses for 1980-2009 (Wang et al., 2016). The ERA-Interim reanalyses are downloaded from https://www.ecmwf.int. For >3300 land grids in the summer, the spatial correlation coefficient is R = 0.25 between ModelE2-YIBs and CLM, and R = 0.34 between CLM and ERA-Interim. The global area-weighted soil moisture is 0.22 mm^3 mm^{-3} for ModelE2-YIBs, 0.26 mm^3 mm^{-3} for CLM, and 0.23 mm^3 mm^{-3} for ERA-Interim. Statistics for winter are very similar to the summer results.

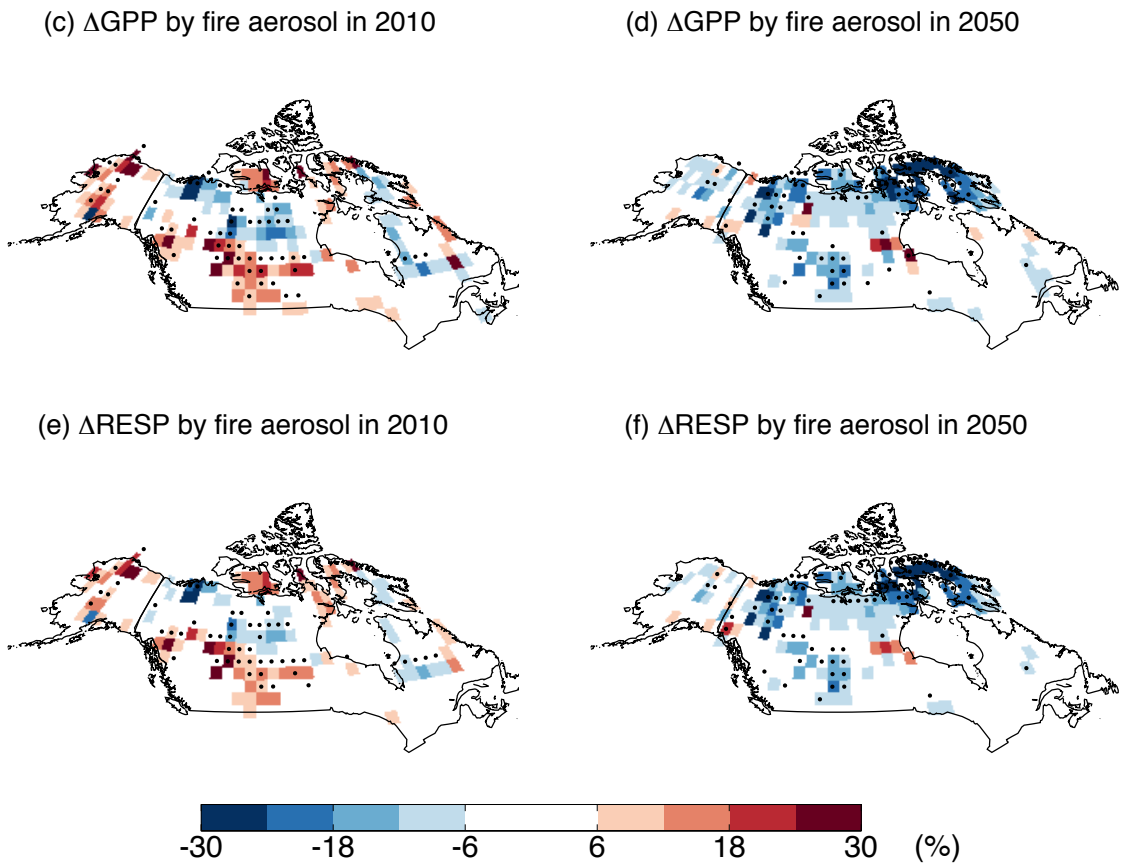

Figure S2. Predicted percentage changes in summer (a, b) GPP, and (c, d) autotrophic respiration caused by wildfire aerosols at (a, c) present day and (b, d) midcentury. Results for the 2010s are calculated as (F10AERO/F10CTRL - 1) × 100%. Results for the 2050s are calculated as (F50AERO/F50CTRL - 1)×100%. Significant changes (p<0.05) are marked with black dots.

Reference

Wang, A. H., Zeng, X. B., and Guo, D. L.: Estimates of Global Surface Hydrology and Heat Fluxes from the Community Land Model (CLM4.5) with Four Atmospheric Forcing Datasets, Journal of Hydrometeorology, 17, 2493-2510, doi:10.1175/Jhm-D-16-0041.1, 2016.