



Geophysical Review Letter

Supporting Information for

Large wildfires in western US exacerbated by tropospheric drying linked to a multi-decadal trend in the expansion of the Hadley Circulation

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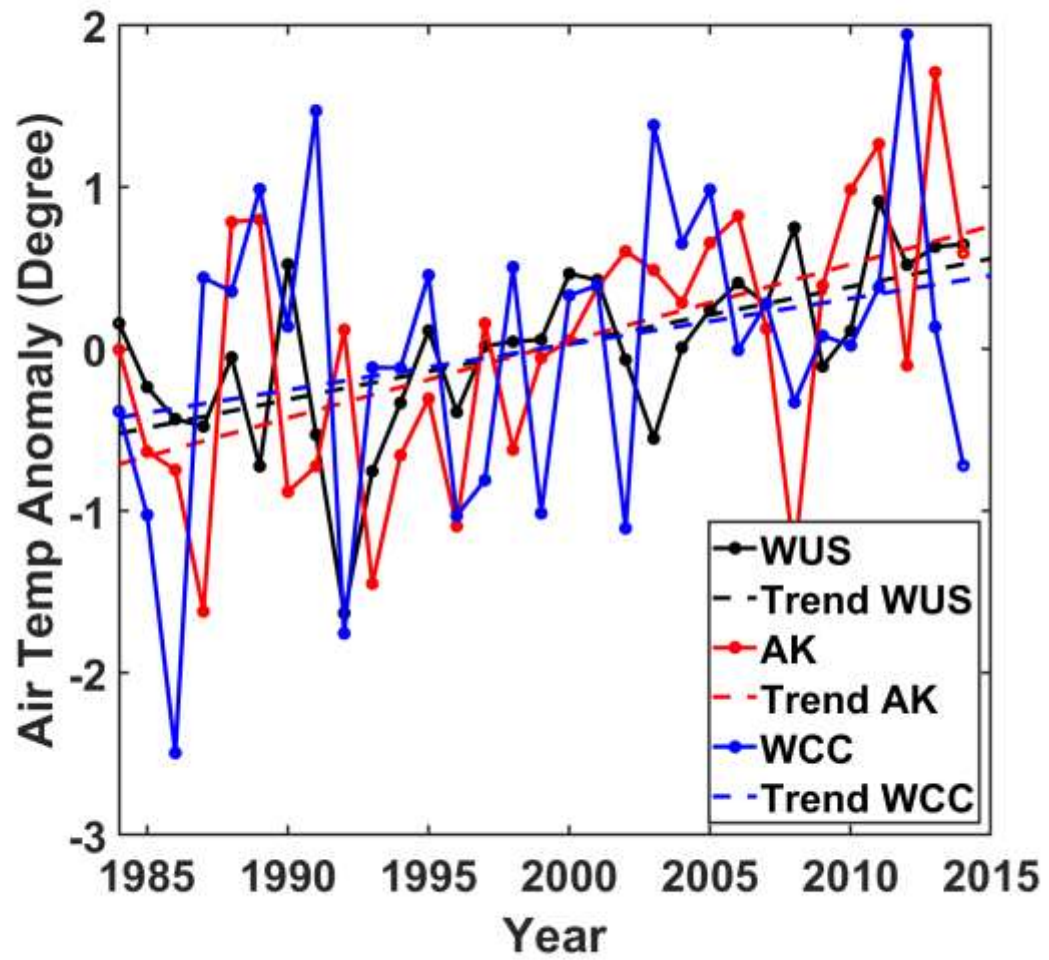


Fig.S1. Time series of air temperature anomaly (°C) over WUS(black), AK(red), and WCC(blue) respectively from 1984-2014. Linear trends are plotted as dash line respectively.

Table S1. Slope of the regression line for RH, clouds, downward SW and PDSI and correlation with burned area over western US, Alaska, and Western Central Canada during 1984-2014. The first column for each variable denotes the slope of the time series trend (in unit per decade). The second column denotes the correlation with burned area. Values marked with ** (*) represents $p < 0.01$ ($p < 0.05$).

Region	Burnt Area	RH		Cloud		Downward SW		PDSI	
	slope km ² /decade	slope %/decade	Corr	slope %/decade	Corr	slope W/m ² /decade	Corr	Slope /decade	Corr
WUS	7.5**	-0.69*	-0.64**	-5.9**	-0.56**	5.7**	0.49**	-0.4*	-0.44*
AK	8.6**	0.2	-0.002	-0.97	-0.03	3.2	-0.05	0.4	-0.23
WCC	3.9*	-0.4	-0.4*	0.02	0.25	-5.2*	-0.01	-0.5*	-0.43*

Table S2. Detailed information of the five reanalysis datasets.

Name	20CR	ERA-Interim	JRA55	MERRA2	NCEP2
Source	NOAA-CIRES	ECMWF	JMA	NASA	NCEP-NCAR
Atmospheric forecast system	Global Forecast System	Integrated Forecast System	Global spectral model	Goddard Earth Observing System	Global Forecast System
Data assimilation method	Three-dimensional variational data assimilation (3DVAR)	Four-dimensional variational data assimilation (4DVAR)	4DVAR	3DVAR	3DVAR
Satellite data processing	/	Fast Radiative Transfer Model	Fast Radiative Transfer Model	Community Radiative Transfer Model	Retrieve
Spatial resolution	2°×2°×24 levels	0.7°×0.7°×37 levels	1.25°×1.25°×37 levels	0.5°×0.625°×42 levels	2.5°×2.5°×17 levels
Time period	1851-2014	1979-present	1958-present	1980-present	1979-present
Reference	Compo et al. (2011)	Dee et al. (2011)	Kobayashi et al. (2015)	Gelaro et al. (2017)	Kanamitsu et al. (2002)