

**Climate drives inter-annual variability in probability of high severity fire occurrence in the western United States**

**Supplemental Tables and Figures.**

Table S1. Results from trend analysis of mean annual fraction of high severity fire (high severity acres / total acres) and annual count of fires with high severity fraction  $\geq 0.1732$  for the period 1984-2014. \*  $p < 0.05$ . We looked for trends in all large fires in the western US and for trends in fires by state. Standard Error values are in parentheses.

Parameter	Slope	$p$
<b>Westwide</b>		
<i>Mean Annual Fraction</i>	-1.31e-3 (5.52e-4)	0.025*
<i>Count Over Threshold</i>	0.04 (0.53)	0.947
<b>Arizona</b>		
<i>Mean Annual Fraction</i>	-1.66e-3 (8.21e-4)	0.052
<i>Count Over Threshold</i>	-0.04 (0.06)	0.540
<b>California</b>		
<i>Mean Annual Fraction</i>	-7.39e-4 (8.08e-4)	0.368
<i>Count Over Threshold</i>	-0.14 (0.14)	0.340
<b>Colorado</b>		
<i>Mean Annual Fraction</i>	3.27e-4 (3.27e-3)	0.921
<i>Count Over Threshold</i>	0.12 (0.04)	0.009*
<b>Idaho</b>		
<i>Mean Annual Fraction</i>	7.76e-4 (1.11e-3)	0.490
<i>Count Over Threshold</i>	0.15 (0.12)	0.240
<b>Montana</b>		
<i>Mean Annual Fraction</i>	-3.02e-3 (2.28e-3)	0.197
<i>Count Over Threshold</i>	0.12 (0.15)	0.432
<b>New Mexico</b>		
<i>Mean Annual Fraction</i>	-1.71e-4 (0.001)	0.887
<i>Count Over Threshold</i>	-4.43e-3 (0.07)	0.948
<b>Nevada</b>		
<i>Mean Annual Fraction</i>	-4.02e-3 (1.44e-3)	0.009*
<i>Count Over Threshold</i>	-4.03e-3 (0.11)	0.971
<b>Oregon</b>		
<i>Mean Annual Fraction</i>	-1.73e-3 (1.15e-3)	0.142
<i>Count Over Threshold</i>	-0.03 (0.07)	0.658
<b>Utah</b>		
<i>Mean Annual Fraction</i>	-2.06e-3 (2.48e-3)	0.415
<i>Count Over Threshold</i>	0.12 (0.07)	0.079
<b>Washington</b>		
<i>Mean Annual Fraction</i>	-9.21e-4 (2.20e-3)	0.678
<i>Count Over Threshold</i>	0.03 (0.03)	0.289
<b>Wyoming</b>		
<i>Mean Annual Fraction</i>	-3.65e-3 (2.66e-3)	0.187
<i>Count Over Threshold</i>	0.13 (0.07)	0.055

Figure S1. Frequency of fires by severity class for May-October, 1984-2014. Light gray bars are large fires with no presence of high severity fire; medium gray bars are fires that met the threshold for presence (high fraction  $\geq 0.042$ , but  $< 0.1732$ ); black bars are fires classified as high severity with high severity fraction exceeding the  $\geq 0.1732$  threshold.

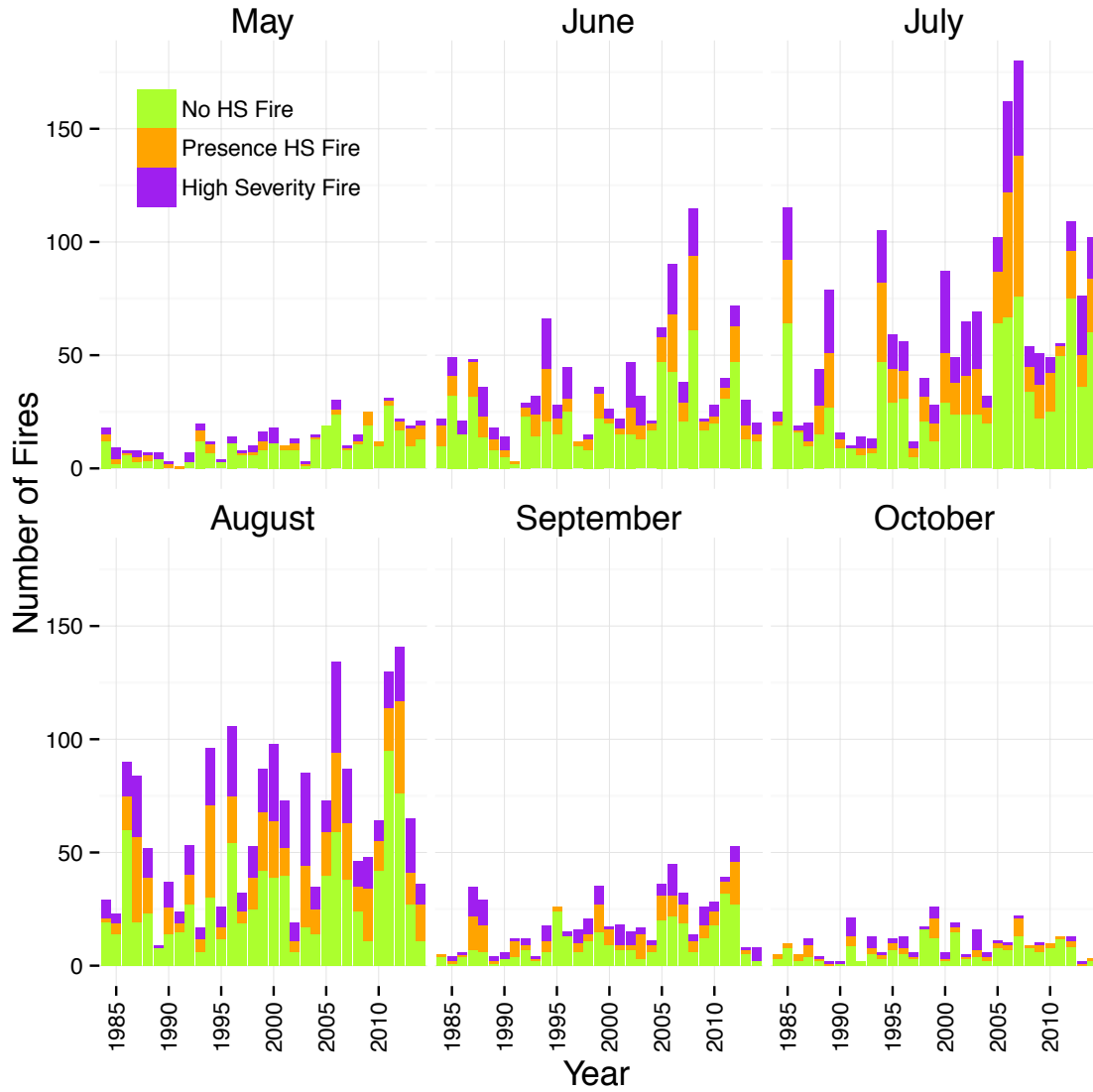


Figure S2. Frequency of fires by severity class for each state, 1984-2014. Light gray bars are large fires with no presence of high severity fire; medium gray bars are fires that met the threshold for presence (high fraction  $\geq 0.042$ , but  $< 0.1732$ ); black bars are fires classified as high severity with fraction exceeding the high fraction  $\geq 0.1732$  threshold.

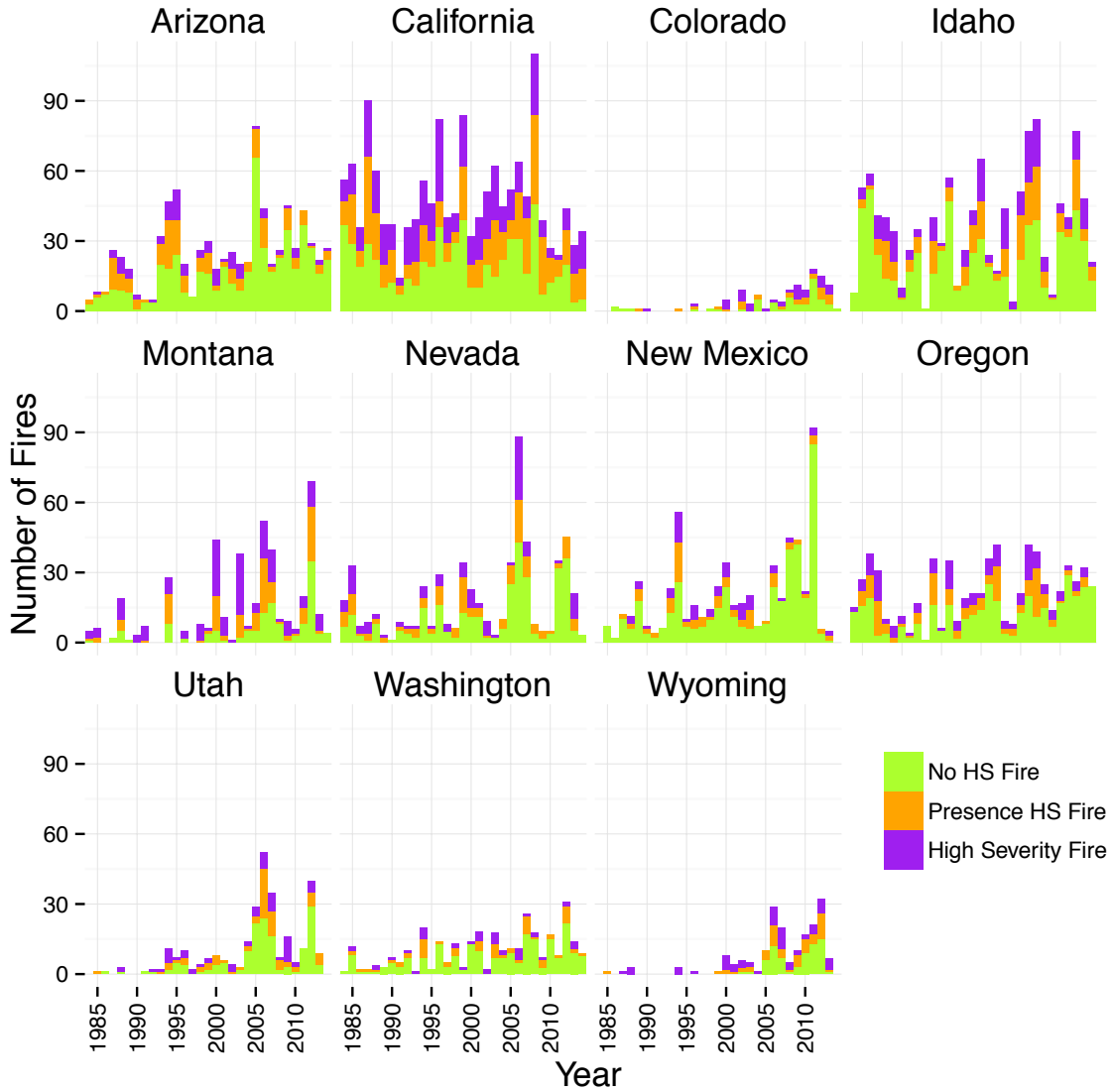


Figure S3. Yearly number of high severity fire occurrences and mean annual anomalies (from 1961-1990 mean) of within year climate predictor variables (1984-2007). The anomalies are calculated for each voxel (month-year-location) that contained a high severity fire occurrence and the annual mean for all fire events is presented. Years with a large number of high severity fire events are highlighted with dotted lines.

