

Table S1: Codes of the raster layers used for calculating the interfaces (following [65]), from Australia’s Dynamic Land Cover Dataset Version 2.1 and from the Land Use and Management Information for Australia dataset.

Dataset	Land cover class	Interface	Relevant codes in the raster layer
Dynamic Land Cover Dataset Version 2.1	Forest	FAI	14 – 34
	Agriculture	FAI	5 – 10
	Forest	FGI	31 – 34
	Grassland	FGI	14 – 25
	Wildland	WUI	14 – 34
	Urban	WUI	35
Land Use and Management Information for Australia	Forest	FAI	100 – 222
	Agriculture	FAI	300 – 499, 510 - 529
	Wildland	WUI	100 – 222
	Urban	WUI	500, 530 – 579

Table S2: Between grouping differences of the explanatory variables (after transformations) using Tukey's HSD test within an ANOVA model. The values in the tables represent the average values per class (after variable transformation). Groups with different letters were identified as statistically different from each other. The class with the highest value per variable is highlighted using a bold font.

Variable name	Black Summer non forest fires (n = 186)	Black Summer forest fires not in SE Australia (n = 142)	Black Summer forest fires in SE Australia (n = 63)	Number of statistically significant different groups
% Area Biomes 1,4,10	0.000 b	0.041 b	1.470 a	2
% Area Biome 7	1.083 a	1.198 a	0.025 b	2
% Area Biome 12	0.025 a	0.308 a	0.075 a	1
% Area Biome 13	0.462 a	0.023 b	0.000 b	2
Rain last year	2.407 b	2.847 a	2.739 a	2
Rain last year %	-0.400 c	-0.079 a	-0.189 b	3
Days until rain	7.251 a	7.458 a	6.529 a	1
Days since rain	15.514 a	12.894 b	10.627 c	4
FDI start	1.545 a	1.348 b	1.316 b	2
FDI start4max	1.667 a	1.507 b	1.570 b	2
FDI99pct	1.569 a	1.369 b	1.343 b	1
Tree cover	0.206 b	1.210 a	1.304 a	2
Forest continuity	-0.875 c	3.133 b	3.690 a	3
VHI start	0.551 b	0.713 a	0.509 b	2
LFMC start	39.486 c	51.129 b	74.516 a	3
PV start	0.367 c	0.612 b	0.808 a	3
PV+NPV start	1.045 b	1.288 a	1.337 a	2
% Burnt 8 years	0.738 a	0.822 a	0.390 a	1
Times burnt 8 years	-0.321 a	-0.215 a	-0.395 a	1
Burnt 25km	0.330 a	0.366 a	0.253 b	2
Dist roads	1.575 a	1.381 b	0.988 c	3
Dist roads start	1.524 a	1.312 b	0.960 c	3
Dist electricity	2.243 a	2.065 b	1.289 c	3
Total pop	-0.190 b	-0.017 b	1.827 a	2
Mean pop	-1.367 b	-1.313 b	-0.790 a	2
Pop 10km	-1.175 b	-1.293 b	-0.603 a	2
% Indigenous PA	0.228 a	0.086 a	0.005 a	1
% PA	0.503 b	0.490 b	0.759 a	2
% native title Y	0.889 a	0.446 b	0.206 c	3
% native title Y/N	0.959 a	0.557 b	0.276 b	2
DLCD FAI	0.007 b	0.027 b	0.167 a	2
DLCD FGI	0.536 a	0.384 ab	0.184 b	2
DLCD WUI	0.000 b	0.001 b	0.004 a	2
AGRI FAI	0.012 b	0.020 b	0.283 a	2
AGRI WUI	0.037 b	0.032 b	0.143 a	2

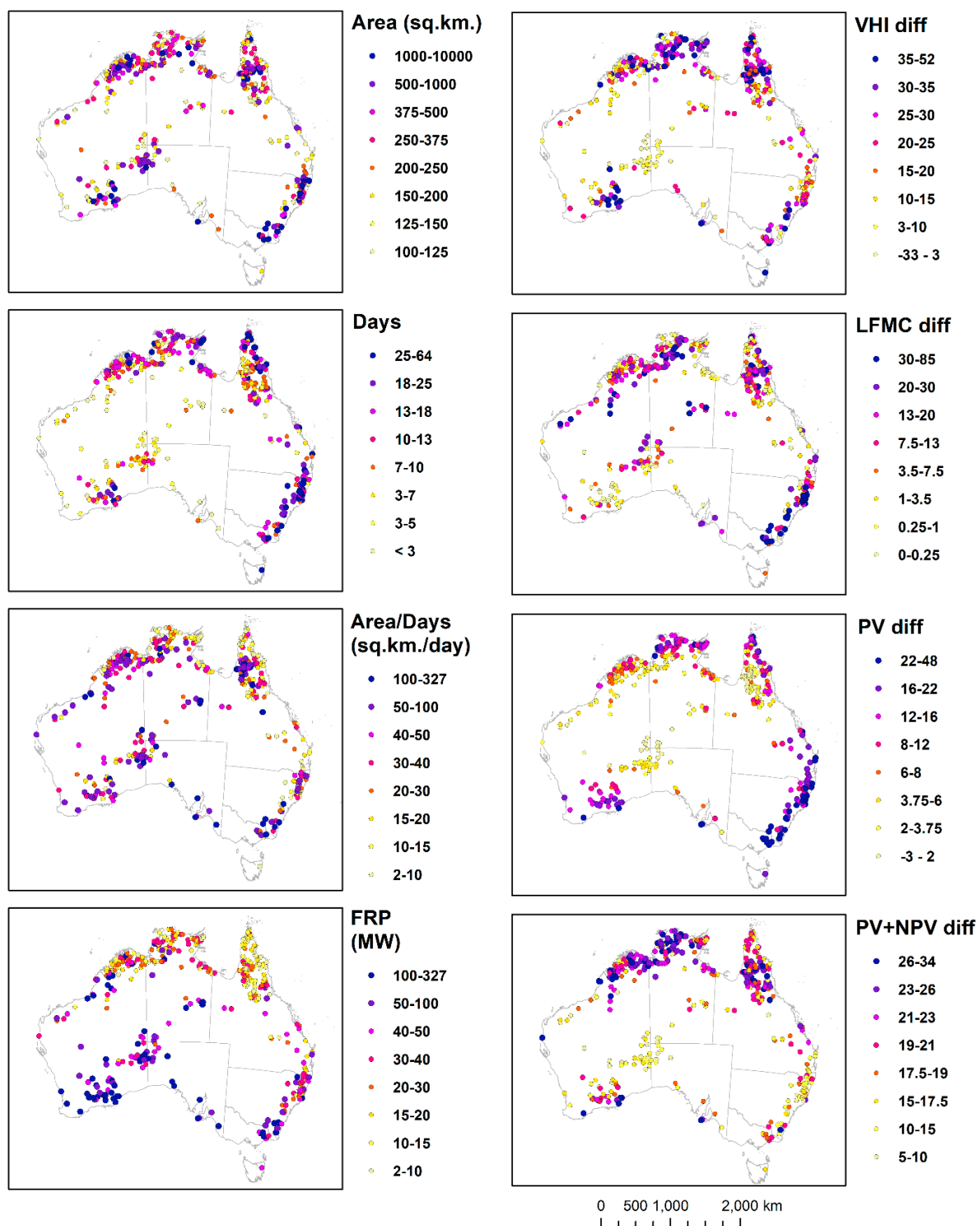


Figure S1: The values of the eight response variables for all the wildfires included in this study.

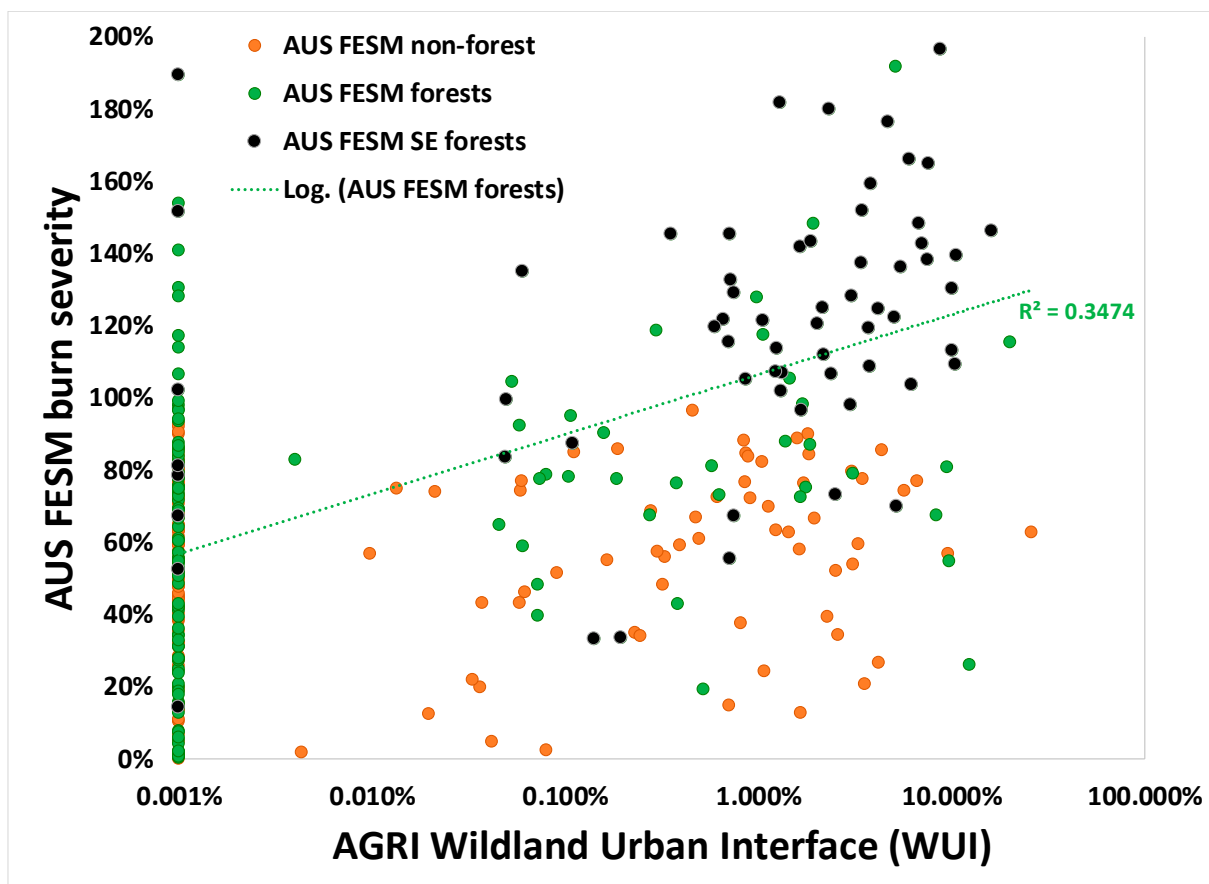


Figure S2: The correspondence between the wildland urban interface (AGRI WUI) and AUS FESM burn severity. The trend line is for all forest fires ($n = 205$) including those in SE Australia.

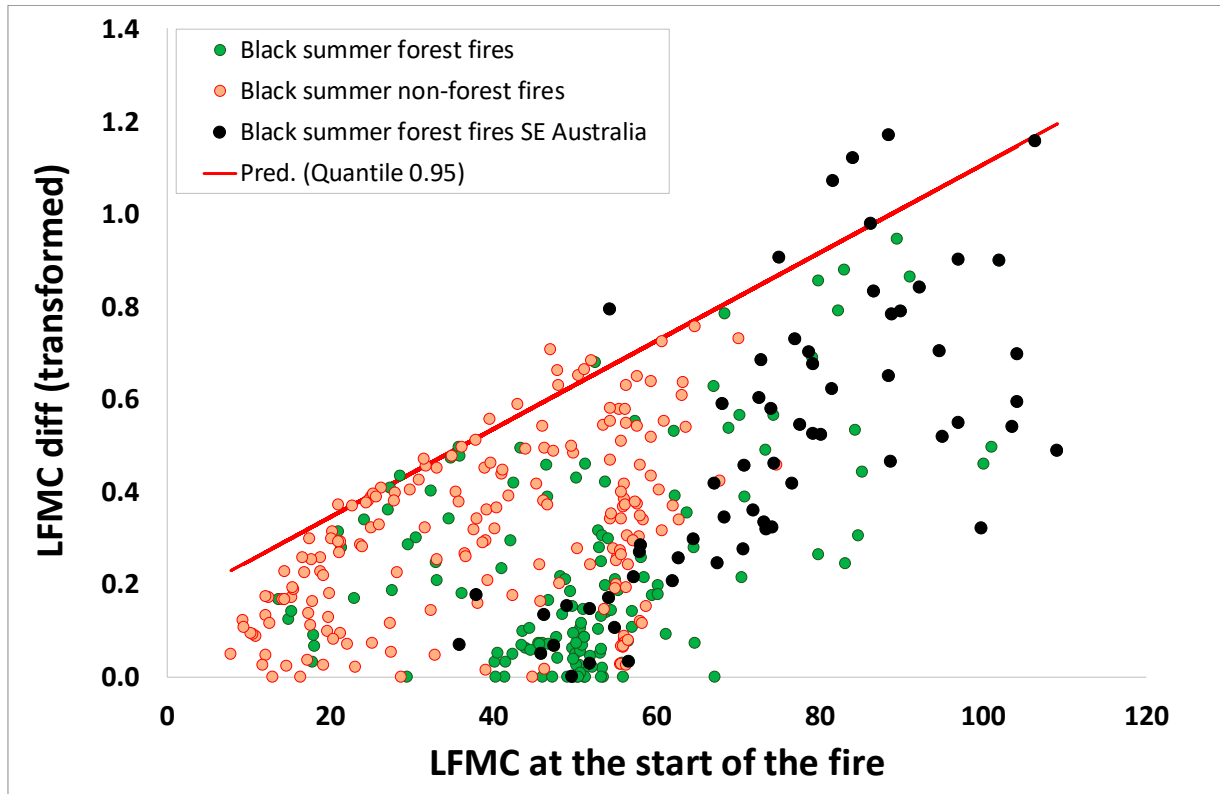


Figure S3: Quantile regression (quantile of 0.95), for the change in LFMFC during the fire (as the response variable), and the LFMFC at the start of the fire (as the explanatory variable).

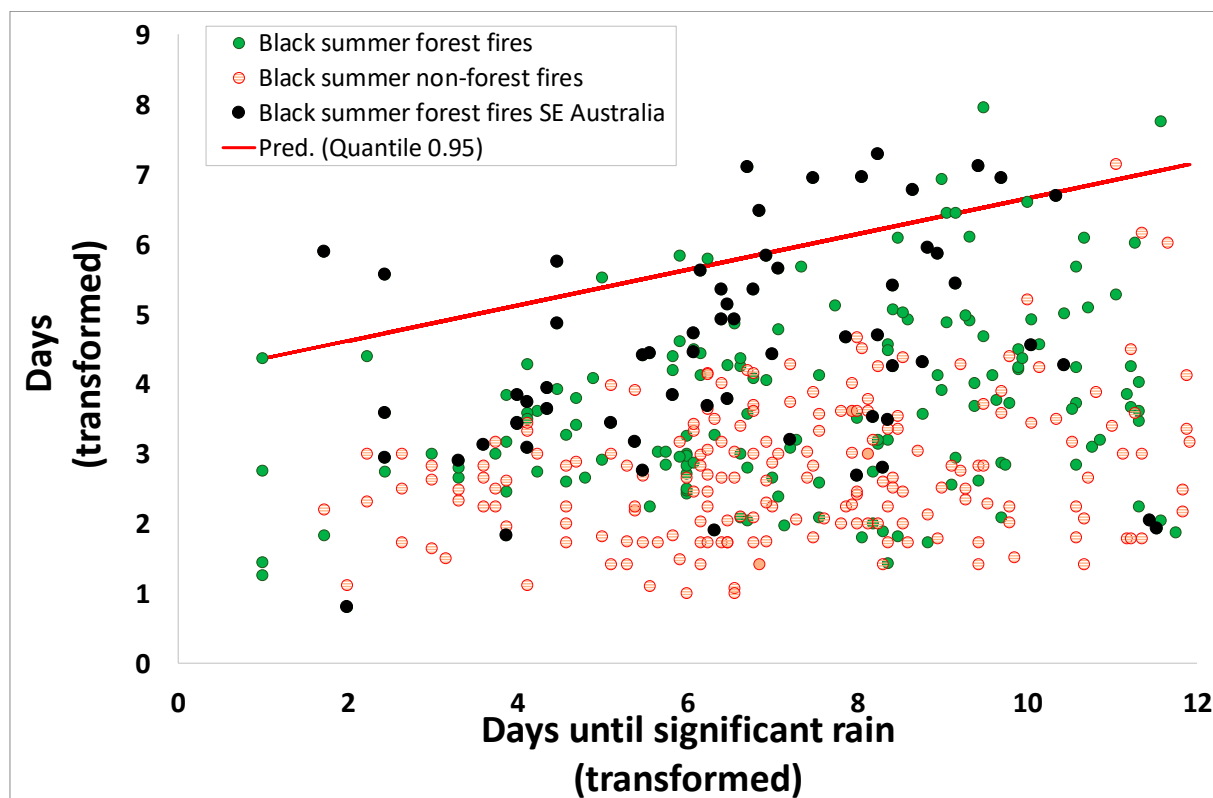
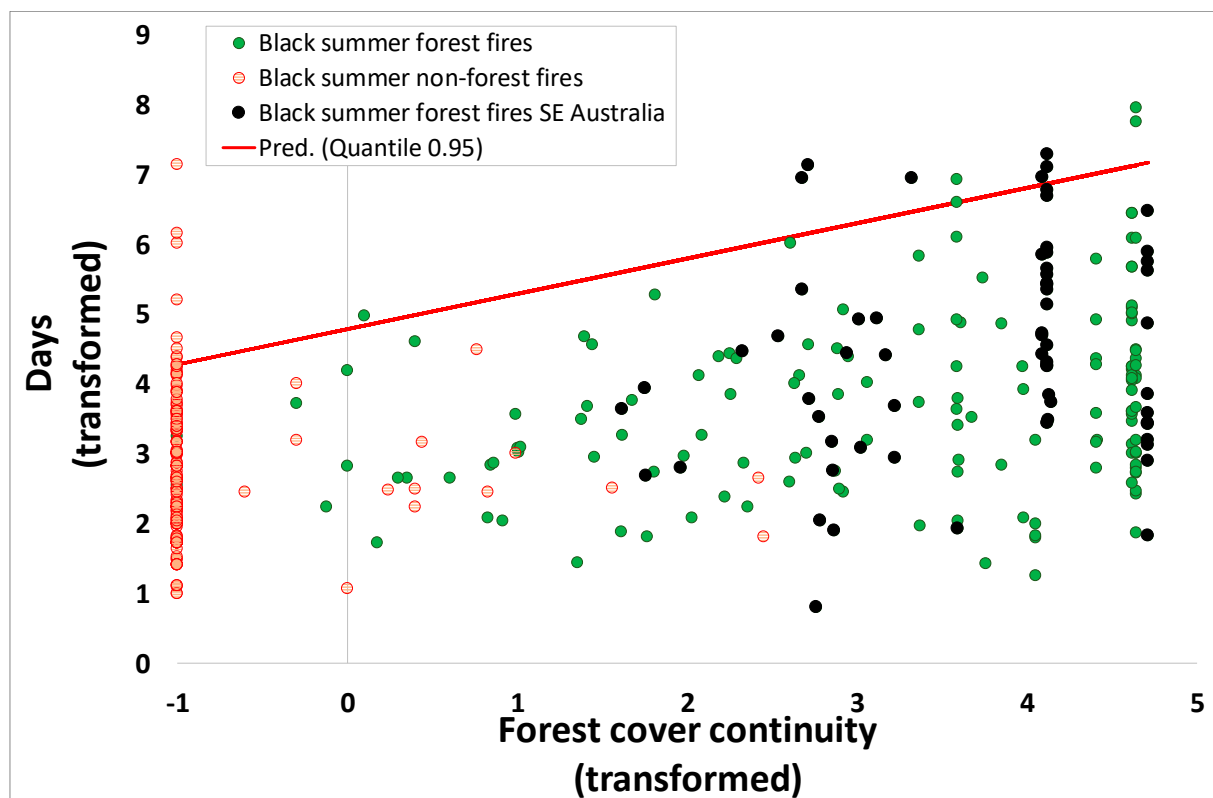


Figure S4: Quantile regression (quantile of 0.95), for the number of days a fire burnt (as the response variable), and the number of days until there was significant rain since the beginning of a wildfire (as the explanatory variable).



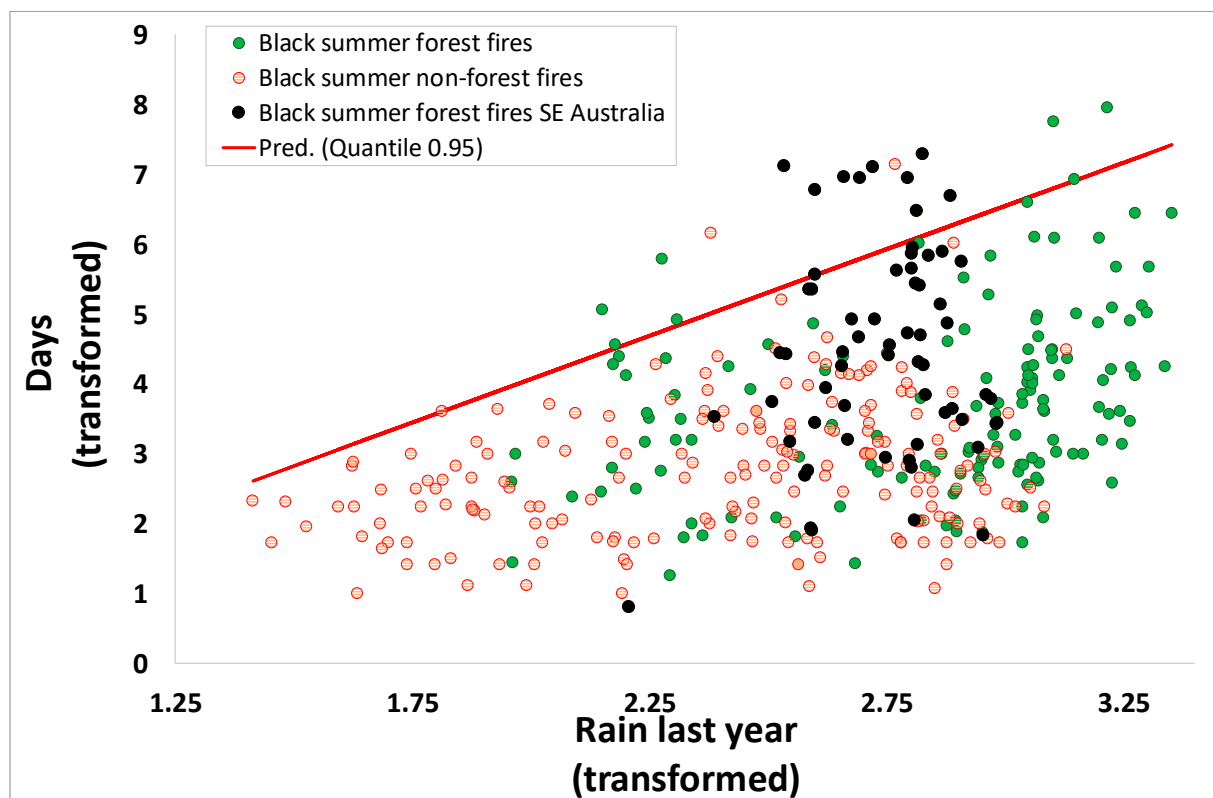


Figure S6: Quantile regression (quantile of 0.95), for the number of days a fire burnt (as the response variable), and the amount of rain in the year before the fire (as the explanatory variable).

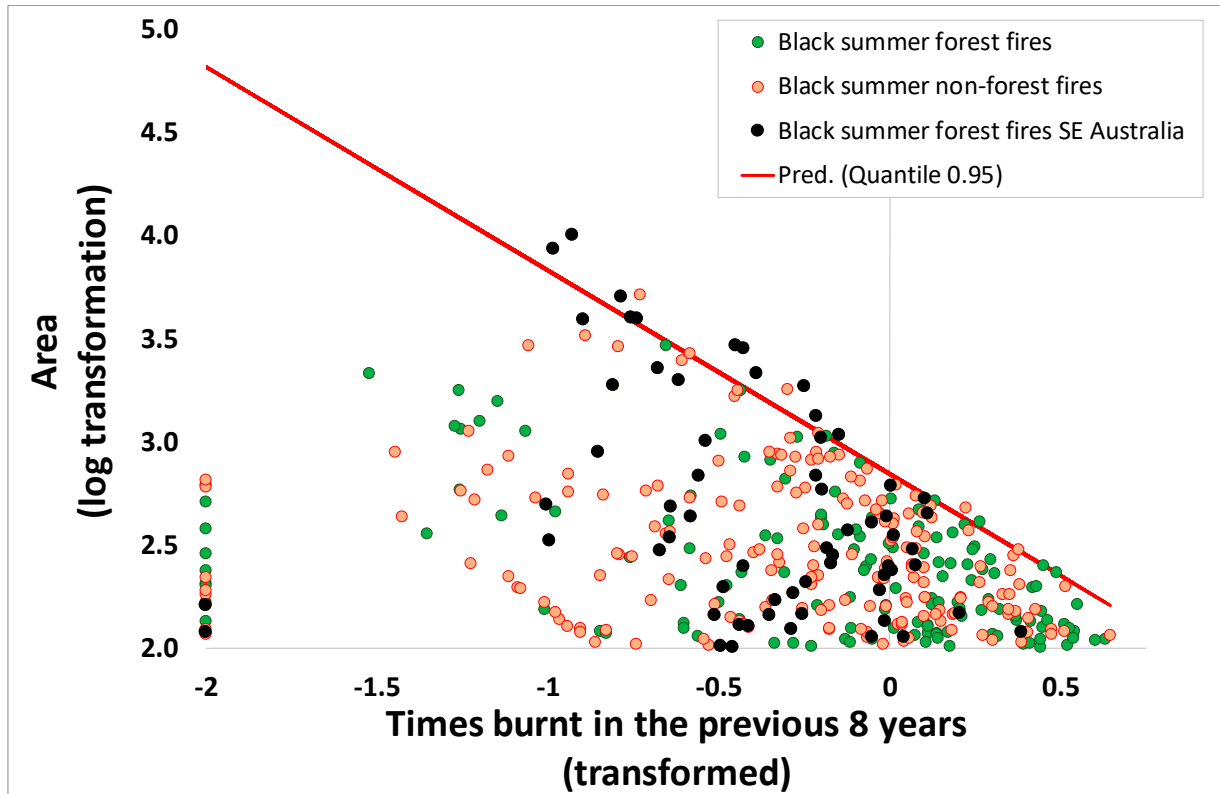


Figure S7: Quantile regression (quantile of 0.95), for the burnt area (as the response variable), and the number of times there were fires within the boundary of a wildfire in the previous eight years (as the explanatory variable).

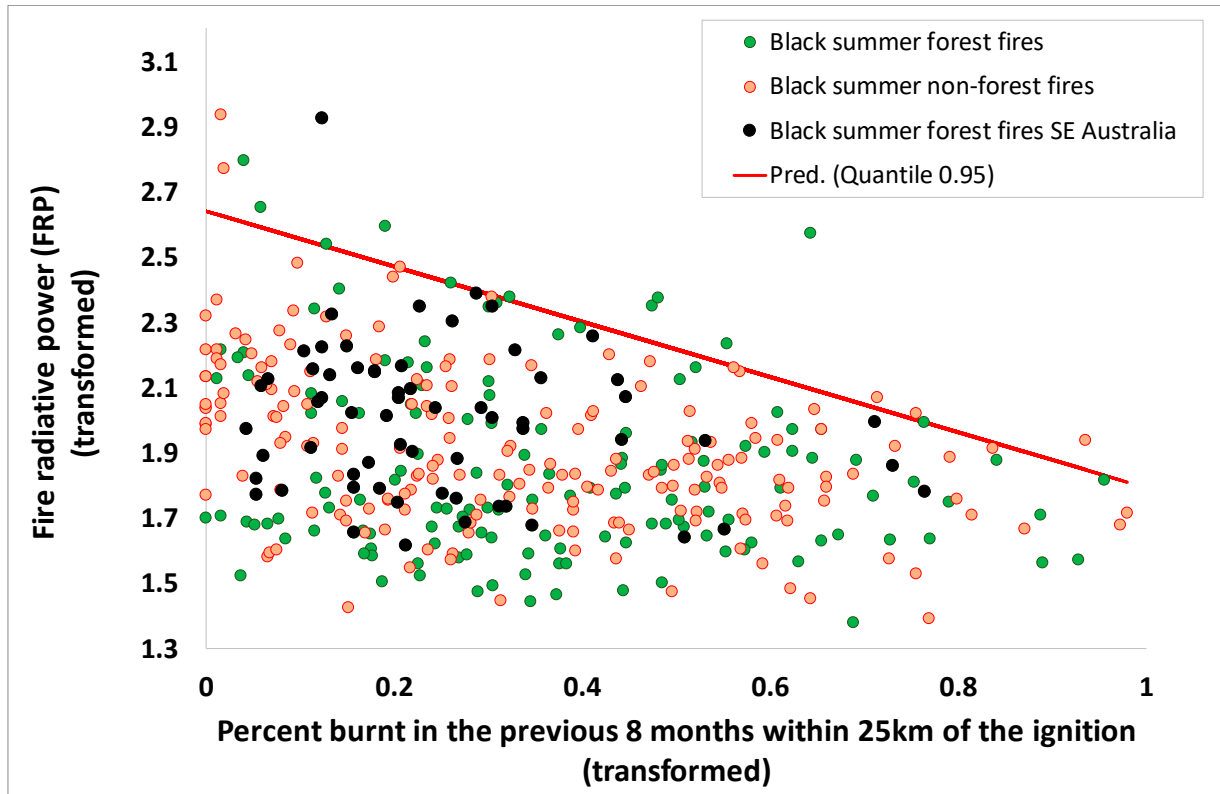


Figure S8: Quantile regression (quantile of 0.95), for fire radiative power (as the response variable), and the percent area which was burnt in the previous eight months within 25 km of the ignition of the fire (as the explanatory variable).

Supplementary data files with a ReadMe file. Including the following datasets:

File name	Type	Content
BlackSummer391fires.mpk	ArcGIS Map Package	GIS layers as detailed below with their symbology
burndate_segment_win3_var75_sim5_poly_NL_ds_gt100.shp	ESRI shapefile	Polygons of 391 large wildfires
MCD_Sep2Jan_fires_pnt_in.shp	ESRI shapefile	Approximate locations of ignitions of the 391 wildfires based on their burn dates
Burndate_V1_MCD.rst	Terrset raster file	Burn date of grid cells during Australia's Black Summer, based on VIIRS and MODIS
Agri2018_WUI.tif	TIF raster file	2018 Wildland Urban Interface based on Land Use and Management Information for Australia
Agri2018_FAI.tif	TIF raster file	2018 Forest Agricultural Interface based on Land Use and Management Information for Australia
DLCD_2015_WUI.tif	TIF raster file	2015 Wildland Urban Interface based on Dynamic Land Cover Dataset Version 2.1
DLCD_2015_FGI.tif	TIF raster file	2015 Forest Grassland Interface based on Dynamic Land Cover Dataset Version 2.1
DLCD_2015_FAI.tif	TIF raster file	2015 Forest Agricultural Interface based on Dynamic Land Cover Dataset Version 2.1
All 391 fires 2upload.xlsx	Excel file	Tables with the response variables and explanatory variables of each of the 391 wildfires. Time series of FRP, burnt area, FDI, LFMC, VHI, PV+NPV and daily rainfall for each of the 391 wildfires