Figure S1

Rate of spread as a function of wind speed when using the GR6 Scott and Burgan fuel model with a live herbaceous moisture content of 60% as an input to the SPITFIRE rate of spread calculation as reproduced in a Matlab code. The manner in which live and dead fuel moistures are combined in the SPITFIRE approach allows realistic live fuel moistures to cause fire extinction under conditions where this is not the case when applying the correct version of the Rothermel model.

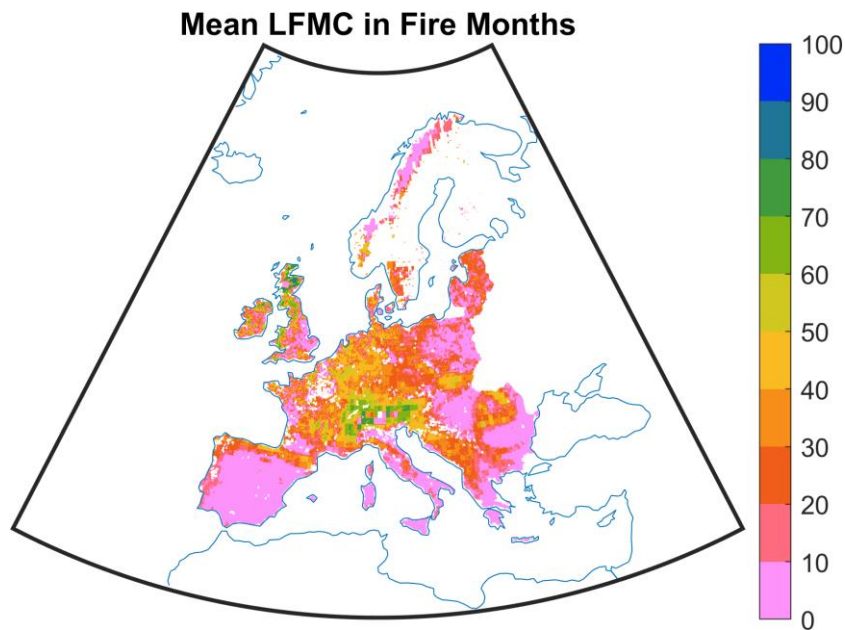
Figure S2

Live grass moisture in the months during which there is fire in the old SPITFIRE parametrization, for the European domain

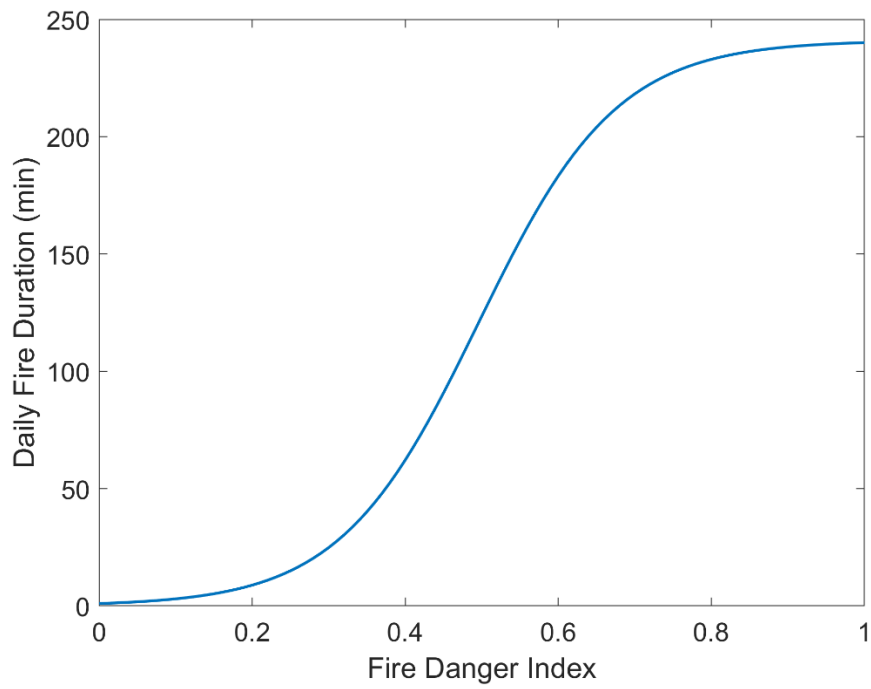
Figure S3

The original fire duration function from the SPITFIRE model

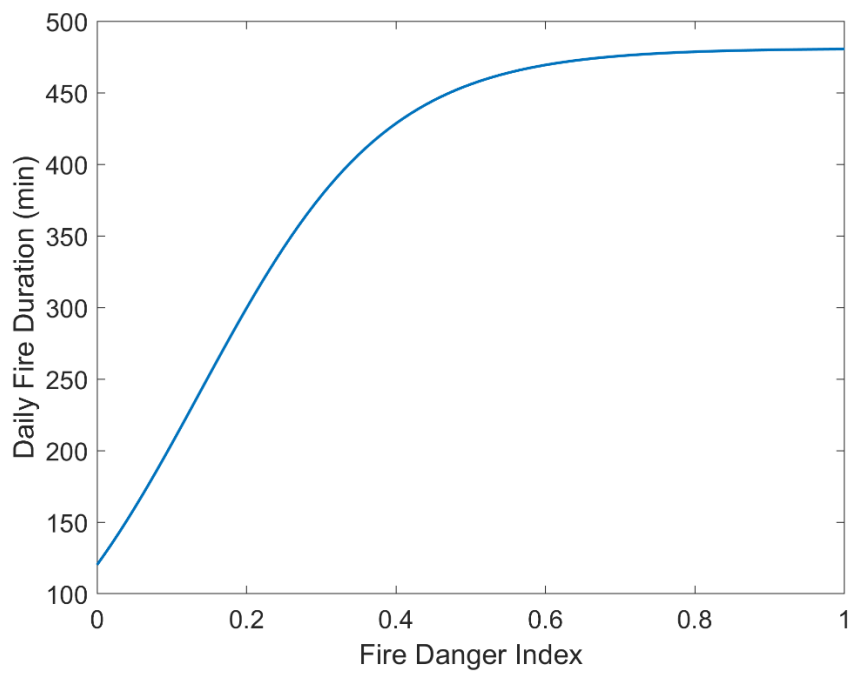
Figure S4

The updated fire duration function. In this case, the maximum fire duration is set to 480 minutes, the minimum fire duration is set to 120 minutes and the scaling parameter is set to -8.

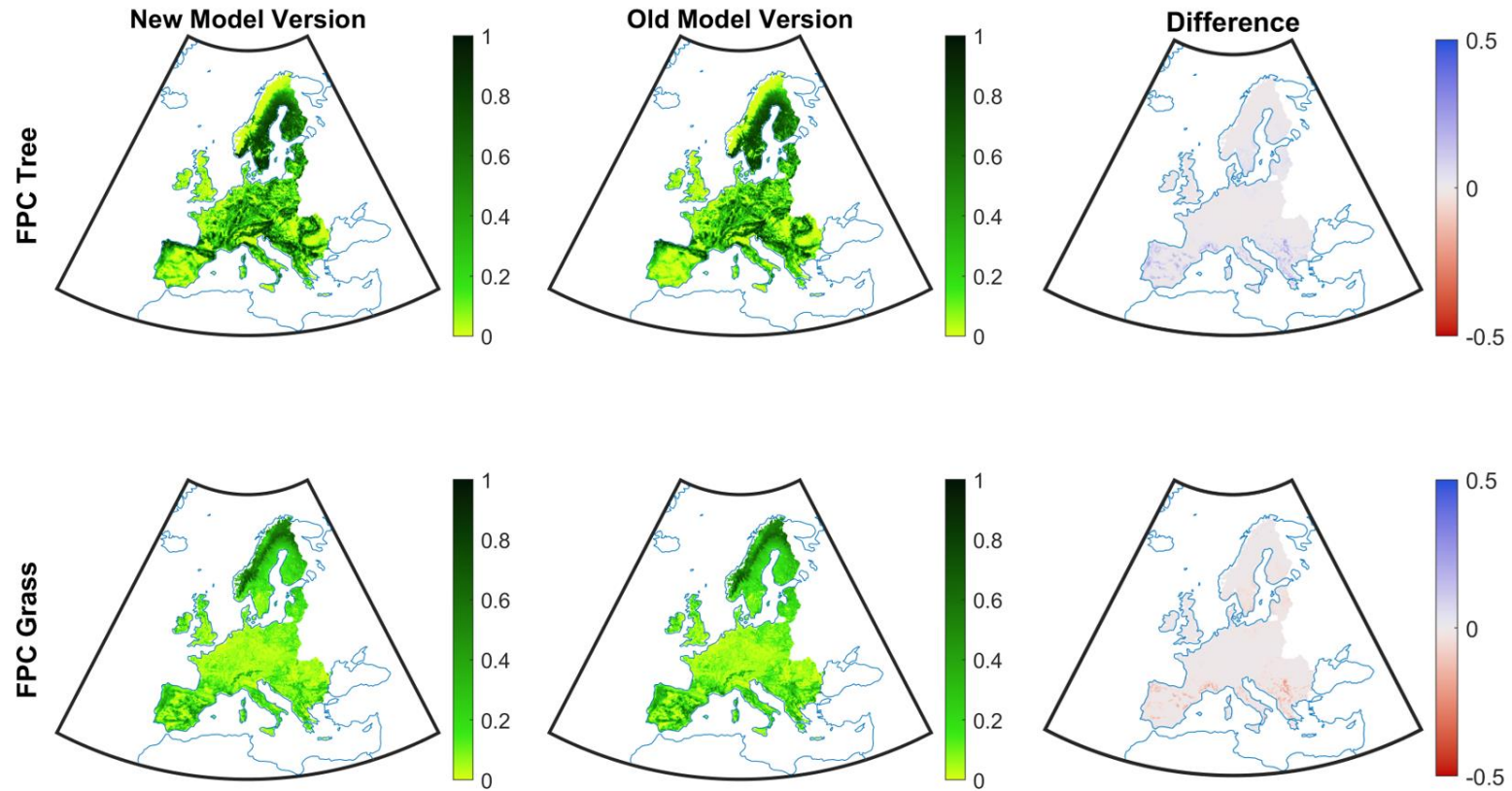
Figure S5

Foliar Projective Cover (FPC) of tree PFTs and grass PFTs in LPJmL5.7-SPITFIRE with the old SPITFIRE version compared to the new SPITFIRE version. The difference plots show the fpc values of the old model version subtracted from those from the new model version. The new SPITFIRE version shows significantly more trees and less grass in fire-prone regions due to the removal of the upward bias in tree mortality through crown scorch

Table S1

Validation of the corrected implementation of the Rothermel fire spread model in SPITFIRE against a Matlab implementation of the Rothermel model. The Andrews et al. (2013) wind speed limit was used for all runs.

Fuel Model	Wind Speed (m/min)	Rate of Spread			Fireline Intensity		
		Model Code (m/min)	Matlab (m/min)	Difference (%)	Model Code (kW/m)	Matlab (kW/m)	Difference (%)
GR6	100	18.56	18.51	-0.27	4611.7	4562.8	-1.07
	200	50.84	50.71	-0.26	12633	12504	-1.03
	300	93.37	93.14	-0.25	23201	22965	-1.03
TU2	100	3.46	3.46	0.00	309	306.9	-0.68
	200	8.78	8.77	-0.11	783.7	778.5	-0.67
	300	15.42	15.42	0.00	1377.2	1368.4	-0.64
TL3	100	0.5487	0.5573	1.54	24.22	24.85	2.54
	200	1.2472	1.268	1.64	55.06	56.52	2.58
	300	1.971	2.011	1.99	87.00	89.67	2.98