

Supplementary Material

Projecting live fuel moisture content via deep learning

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S1. CONUS Climate Zones

The distribution of the prepared Globe-LFMC sites and samples over the CONUS climate zones is shown in table S1. Fifteen of the 22 CONUS climate zones are represented in the Globe-LFMC dataset. However, many of these are represented by only a few samples, with seven having fewer than 1000 samples.

Table S1. List of CONUS climate zones

The code and description of each climate zone found in the CONUS (Beck *et al.* 2018), the number of Globe-LFMC sites located in each climate zone and the number of samples collected from these sites.

Code	Description	#Sites	#Samples
Af	Tropical; rainforest	-	-
Am	Tropical; monsoon	-	-
Aw	Tropical; savannah	-	-
BSh	Arid; steppe; hot	14	924
BSk	Arid; steppe; cold	318	24029
BWh	Arid; desert; hot	2	40
BWk	Arid; desert; cold	20	2240
Cfa	Temperate; no dry season; hot summer	48	4551
Cfb	Temperate; no dry season; warm summer	1	299
Cfc	Temperate; no dry season; cold summer	-	-
Csa	Temperate; dry summer; hot summer	105	11152
Csb	Temperate; dry summer; warm summer	62	4544
Csc	Temperate; dry summer; cold summer	-	-
Dfa	Cold; no dry season; hot summer	10	388
Dfb	Cold; no dry season; warm summer	130	8420
Dfc	Cold; no dry season; cold summer	114	6093
Dsa	Cold; dry summer; hot summer	2	264
Dsb	Cold; dry summer; warm summer	87	3114
Dsc	Cold; dry summer; cold summer	10	236
Dwa	Cold; dry winter; hot summer	-	-
Dwb	Cold; dry winter; warm summer	1	117
ET	Polar; tundra	-	-

S2. Auxiliary Variable Normalisation

Three static (auxiliary) variables were prepared for each sample (Table S2); the latitude and longitude of the centroid of the MODIS pixel in which the sampling site is located, and climate zone at the pixel's location. As shown in table S2, the variables are normalised or transformed to provide a total of eighteen normalised auxiliary variables.

The latitude, which ranges between -90 and 90 , was normalised to the range $[-1, 1]$ by simply dividing the original value by 90 . To capture the cyclic nature of longitude, it was first normalised to the range $[-\pi, \pi]$, then sine and cosine transformations applied. These transformations resulted in two variables, both with the range $[-1, 1]$. The categorical climate zone data was transformed to obtain a binary variable for each climate zone, a process called *one-hot encoding*. A variable is created for each climate zone value, which is set to 1 for samples from sites located in that climate zone, and 0 for all other samples. As 15 climate zones are represented in the Globe-LFMC dataset, there are 15 such binary variables. Each sample has one of these variables set to the value 1, and other fourteen set to 0.

Table S2. Auxiliary variables

The auxiliary variables prepared for each sample, the normalisation method used for each variable, and the number of variables after normalisation.

Variable	Range	Normalisation method	Number of variables after normalisation
Latitude	$[-90, 90]$	Range $[-1, 1]$	1
Longitude	$[-180, 180]$	Sine/cosine transform	2
Climate Zone	15 discrete values	One-hot encoding	15
Total number of normalised variables			18