



Supplement of

Use of streamflow indices to identify the catchment drivers of hydrographs

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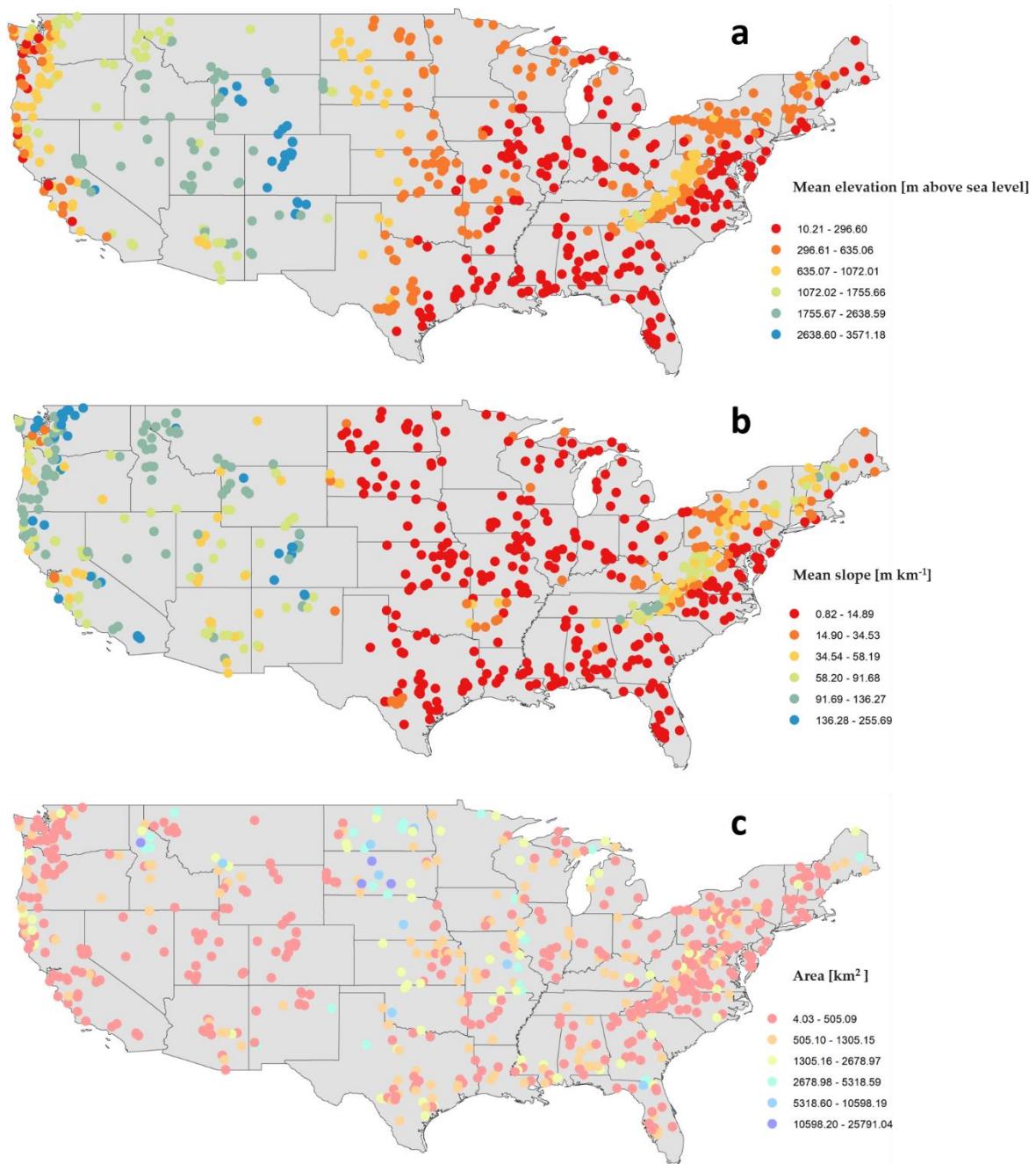


Figure S1. Maps of topographic characteristics of CAMELS catchments over the CONUS (Addor et al., 2017).
 (a) Mean elevation [m above sea level] (b) Mean slope [m km^{-1}] (c) Area [km^2].

Table S1. CAMELS attributes (Addor et al., 2017)

Sl.no	Attribute	Description	Unit
Climatic indices			
1	aridity	aridity (ratio of mean PET to mean precipitation)	-
2	p_seasonality	seasonality and timing of precipitation (positive (negative) values indicate that precipitation peaks in summer (winter); values close to 0 indicate uniform precipitation throughout the year)	-
3	frac_snow	fraction of precipitation falling as snow	-
4	high_prec_freq	frequency of high precipitation days (≥ 5 times mean daily precipitation). High precipitation days are defined as days that are \geq five times the mean daily precipitation (Addor et al., 2017).	days yr ⁻¹
5	high_prec_dur	average duration of high precipitation events	days
6	low_prec_freq	frequency of dry days	days yr ⁻¹
7	low_prec_dur	average duration of dry periods	days
Land cover characteristics			
8	Forest_frac	forest fraction	-
9	Lai_max	maximum monthly mean of the leaf area index	-
10	Gvf_max	maximum monthly mean of the green vegetation fraction	-
Soil characteristics			
11	soil_depth_pelletier	depth to bedrock	m
12	sand_frac	sand fraction	%
13	clay_frac	clay fraction	%
Geological characteristics			
14	geol_porosity	subsurface porosity	-
15	geol_permeability	subsurface permeability (log10)	m ²

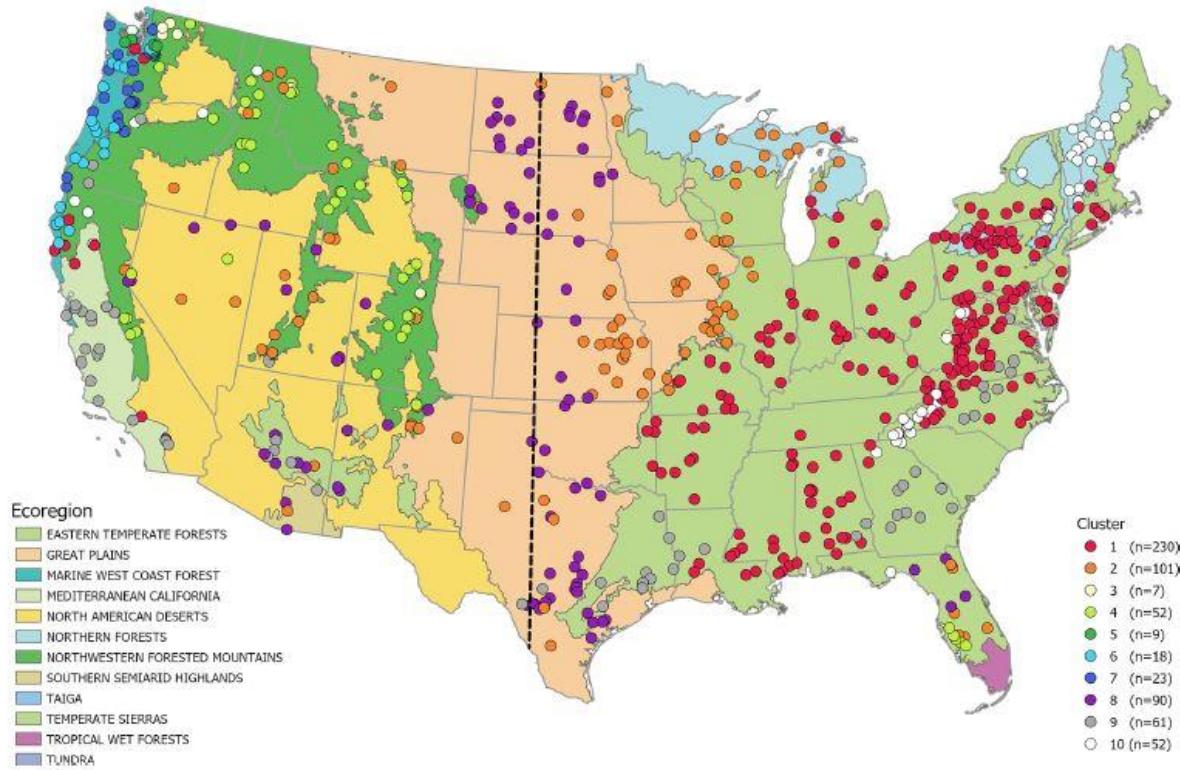


Figure S2. Location of clustered CAMELS catchments and level I ecoregions in the continental United States (Omernik and Griffith, 2014). Source: <https://zutn.github.io/Catchment-Classification/map.html>. The clusters derived from the hydrological signatures by Juhn et al. (2020) largely follow to ecoregions in the United States. The 100th meridian is typically considered as the dividing climatic line in the United States, splitting the country into a semiarid west and a humid east. Clusters 3, 4, 5, 6, and 7 are mainly in the west, and Clusters 1 and 10 are primarily in the east. However, Clusters 2, 8, and 9 show approximately similar catchment numbers in both regions. Furthermore, catchments in the eastern half of the US form large spatial patterns of similar behavior; in contrast, catchments in the west are patchier.

Table S2. Properties of catchment clusters (Jehn et al., 2020)

Cluster	Number of catchments	Region	Dominating attribute
1	230	Southeastern and Central Plains	Aridity
2	101	Central Plains (with scattered catchments all over western US)	Green vegetation fraction maximum
3	7	Northwestern Forested Mountains	Fraction of precipitation falling as snow
4	52	Northwestern Forested Mountains and Florida	Precipitation seasonality
5	9	Northern Marine West Coast Forests	Forest fraction
6	18	Marine West Coast Forests	Aridity
7	23	Western Cordillera	Fraction of precipitation falling as snow
8	90	Great Plains and North American deserts	Precipitation seasonality
9	61	All southernmost states of the US	Aridity
10	52	Appalachian Mountains	Mean elevation

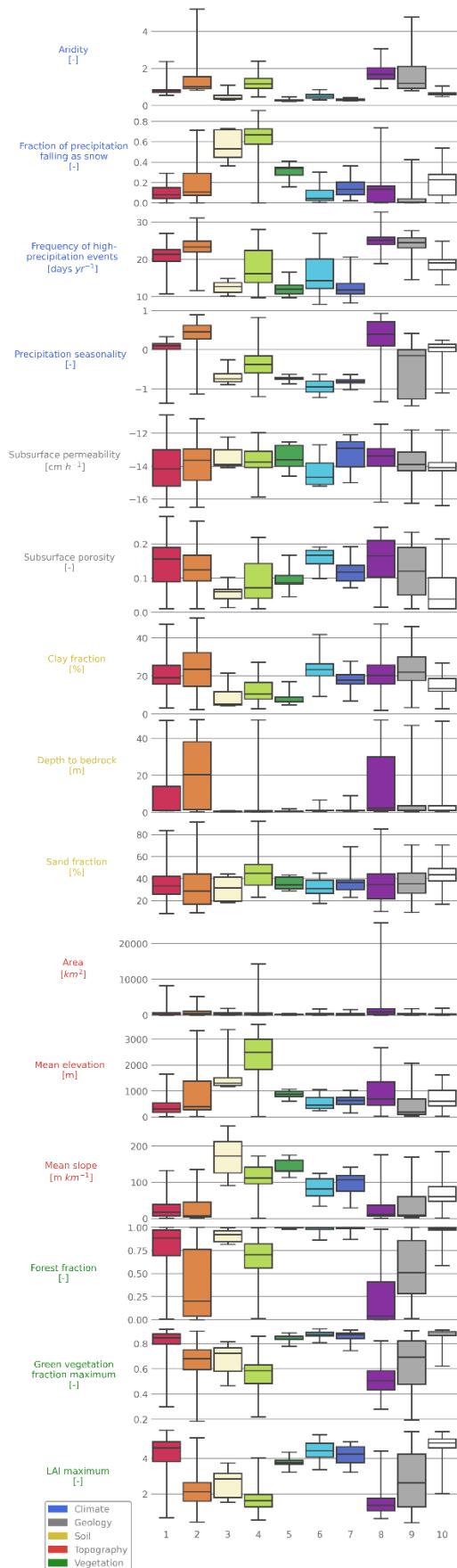


Figure S3. Boxplots of the catchment attributes of the clusters (Jehn et al., 2020).