Supplementary material

Table S1. Description of Köppen-Geiger climate symbols and defining criteria.

Vegetation group	Description	Criteria from [1]
	Temperate (C)	**$T_{hot}>10$ & $0<T_{cold}<18$**
Cfa	Warm temperate climate, fully humid with hot summer	$P_{sdry}>40$ & $P_{sdry}>P_{wwet}/3$ & $P_{wdry}>P_{swet}/10$ & $T_{hot}\geq22$
Cfb	Warm temperate climate, fully humid with warm summer	$P_{sdry}>40$ & $P_{sdry}>P_{wwet}/3$ & $P_{wdry}>P_{swet}/10$ & $T_{hot}<22$ & $T_{mon10}\geq4$
Csa	Warm temperate climate with dry and hot summer	$P_{sdry}<40$ & $P_{sdry}<P_{wwet}/3$ & $T_{hot}\geq22$
	Cold (D)	**$T_{hot}>10$ & $T_{cold}\leq0$**
Dfa	Snow climate, fully humid with hot summer	$P_{sdry}>40$ & $P_{sdry}>P_{wwet}/3$ & $P_{wdry}>P_{swet}/10$ & $T_{hot}\geq22$
Dfb	Snow climate, fully humid with warm summer	$P_{sdry}>40$ & $P_{sdry}>P_{wwet}/3$ & $P_{wdry}>P_{swet}/10$ & $T_{hot}<22$ & $T_{mon10}\geq4$
Dfc	Snow climate, fully humid with cold summer	$P_{sdry}>40$ & $P_{sdry}>P_{wwet}/3$ & $P_{wdry}>P_{swet}/10$ & $T_{hot}<22$ & $T_{mon10}\geq4$ & $T_{cold}>-38$
Dsa	Snow climate with dry and hot summer	$P_{sdry}<40$ & $P_{sdry}<P_{wwet}/3$ & $T_{hot}\geq22$
Dsb	Snow climate with dry and warm summer	$P_{sdry}<40$ & $P_{sdry}<P_{wwet}/3$ & $T_{hot}<22$ & $T_{mon10}\geq4$
	Polar (E)	**$T_{hot}<10$**
ET	Tundra climate	$T_{hot}> 0$

Thot—temperature of the hottest month, Tcold—temperature of the coldest month, Tmon10—number of months where the temperature is above 10, Pdry—precipitation of the driest month, Psdry—precipitation of the driest month in summer, Pwdry—precipitation of the driest month in winter, Pswet—precipitation of the wettest month in summer, Pwwet—precipitation of the wettest month in winter.

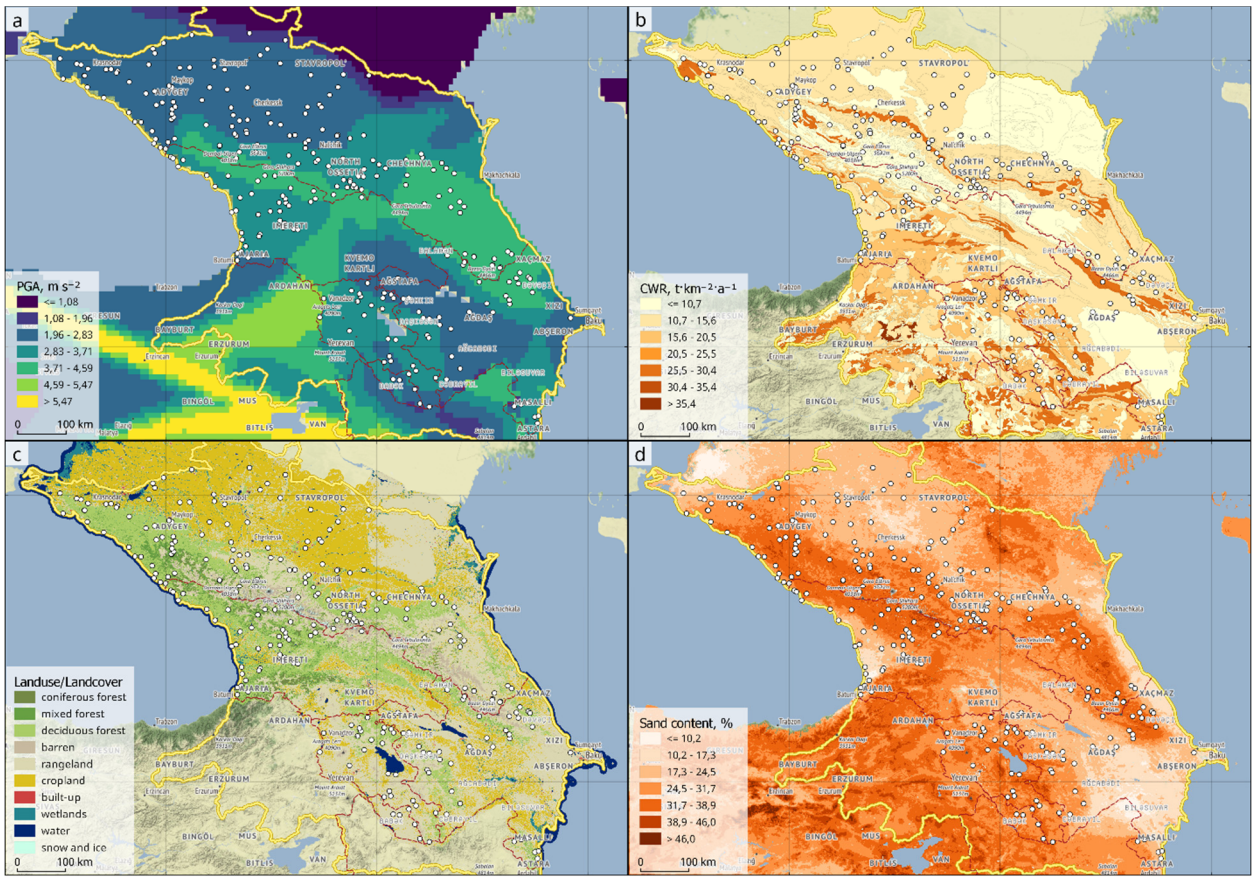

Figure S1. Spatial distribution of SSY factors: (a) estimated peak ground acceleration (PGA, m s^{-2}) with an exceedance probability of 10% in 50 years, as derived from the GSHAP data set [2]; (b) average chemical weathering rates (CWR, t km^{-2} yr^{-1}) calculated for every individual GLiM [3] class by Hartmann et al. [4]; (c) Caucasus land-cover classification for 2015 derived from Buchner et al. [5]; (d) mean sand content (SAND, %) in the intrinsic topsoil (0–30 cm depth) from the International Soil Reference and Information Centre (ISRIC) SoilGrids database [6].

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