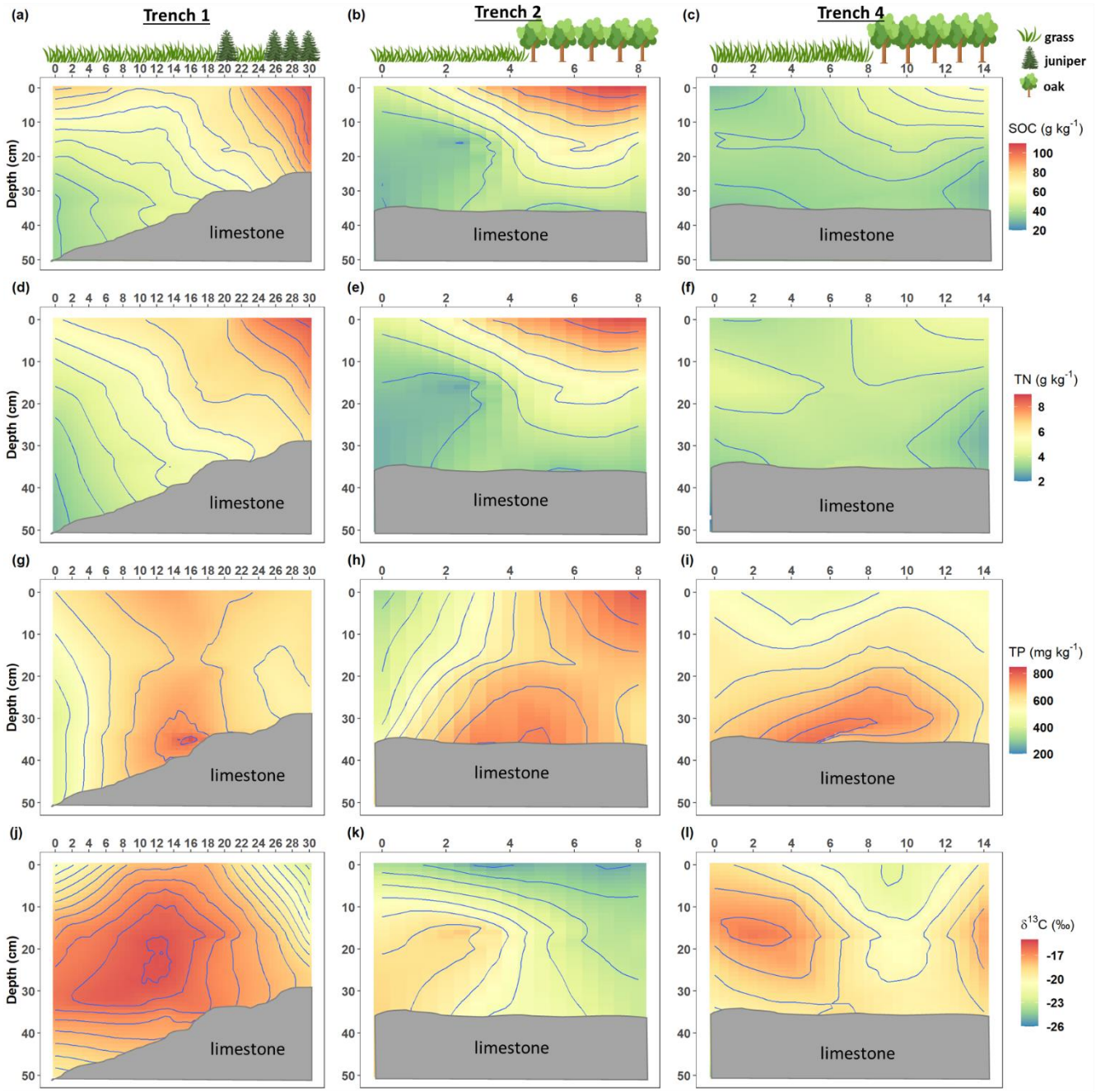

Figure S1. Contour maps of (a, b, c) soil organic carbon (SOC), (d, e, f) total nitrogen (TN), (g, h, i) total phosphorus (TP), and (j, k, l) $\delta^{13}C$ along trench faces in soil lying atop Edwards limestone. The X-axis denotes the location (m) along each individual trench. Vegetation occurring at specific locations along the trench faces is represented with the following symbols: grass ( ), juniper ( ), and oak ( ).

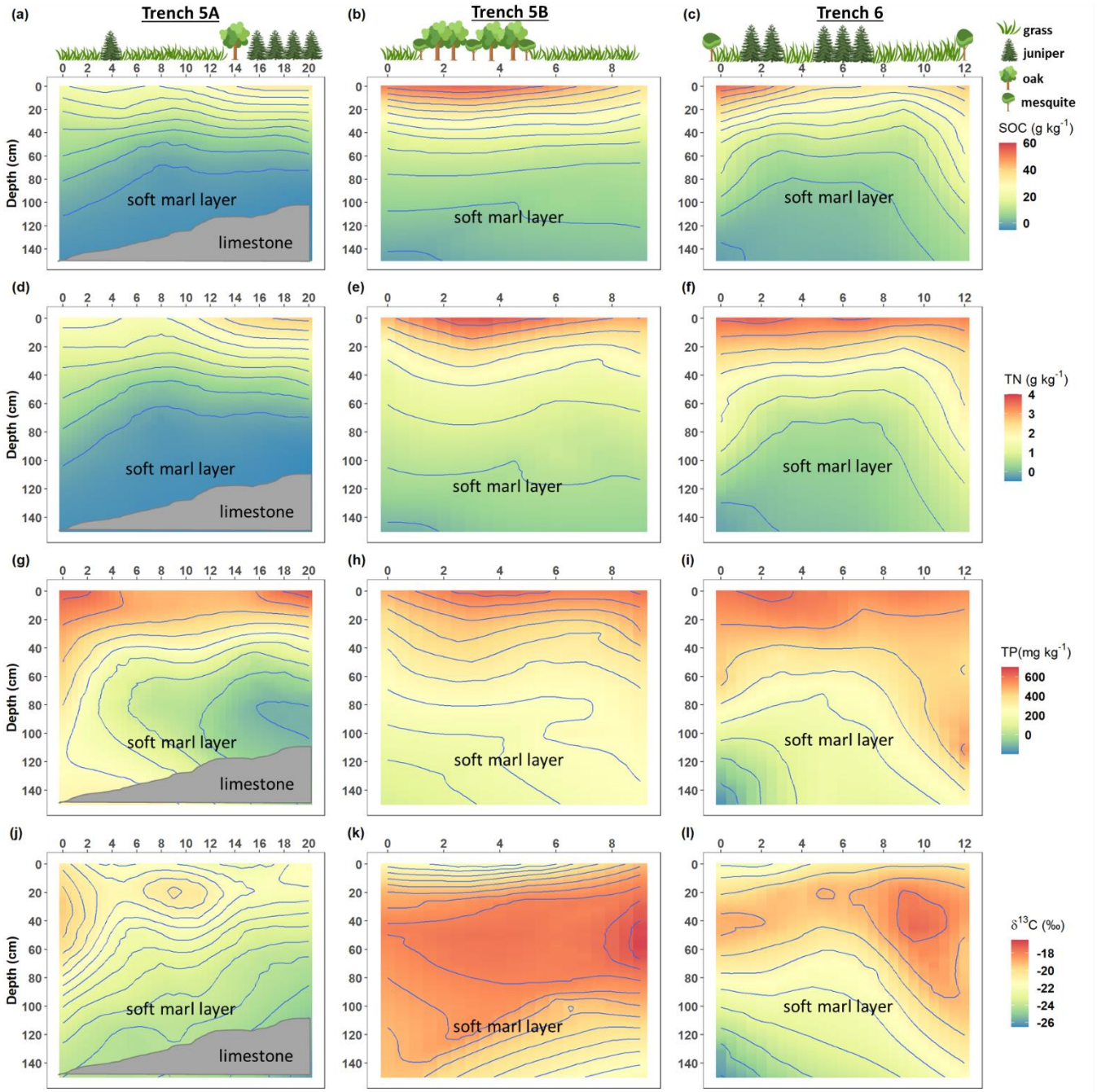

Figure S2. Contour maps of (a, b, c) soil organic carbon (SOC), (d, e, f) total nitrogen (TN), (g, h, i) total phosphorus (TP), and (j, k, l) $\delta^{13}C$ along trench faces in soil lying atop Buda limestone. The X-axis denotes the location (m) along each individual trench. Vegetation occurring at specific locations along the trench faces is represented with the following symbols: grass ( ), juniper ( ), oak ( ), and mesquite ( ).

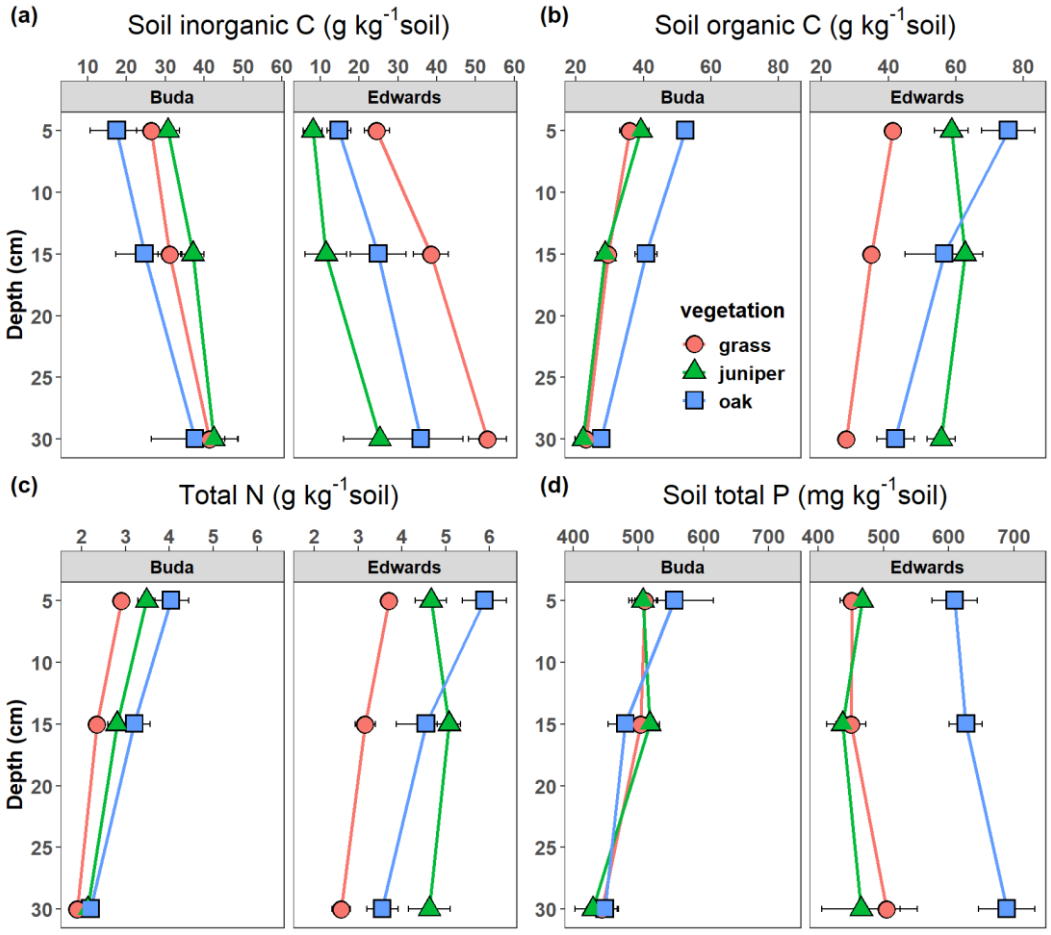

Figure S3. The vertical distributions of (a) soil inorganic C, (b) SOC, (c) total N, and (d) total P concentrations beneath grass, juniper, and oak in soils derived from the Buda vs. Edwards formations. Results are given as means ± standard errors. Data are plotted at the midpoints of the depth increments.

Table S1. ANOVA results for effects of soil depth, vegetation, geology, and their interactions on soil organic carbon (SOC), total nitrogen (TN), total phosphorous (TP), and soil inorganic carbon (SIC) concentrations. Asterisks label the significant changes: ∗p < 0.05, ∗∗p < 0.01, ∗∗∗p < 0.001; ns, non-significant.

	SOC	TN	TP	SIC
		(g kg^{-1} soil)		
depth (D)	***	***	ns	***
vegetation (V)	***	***	ns	***
geology (G)	***	***	ns	ns
D × V	ns	*	ns	ns
D × G	ns	ns	ns	ns
V × G	**	ns	*	***
D × V × G	*	ns	ns	ns