

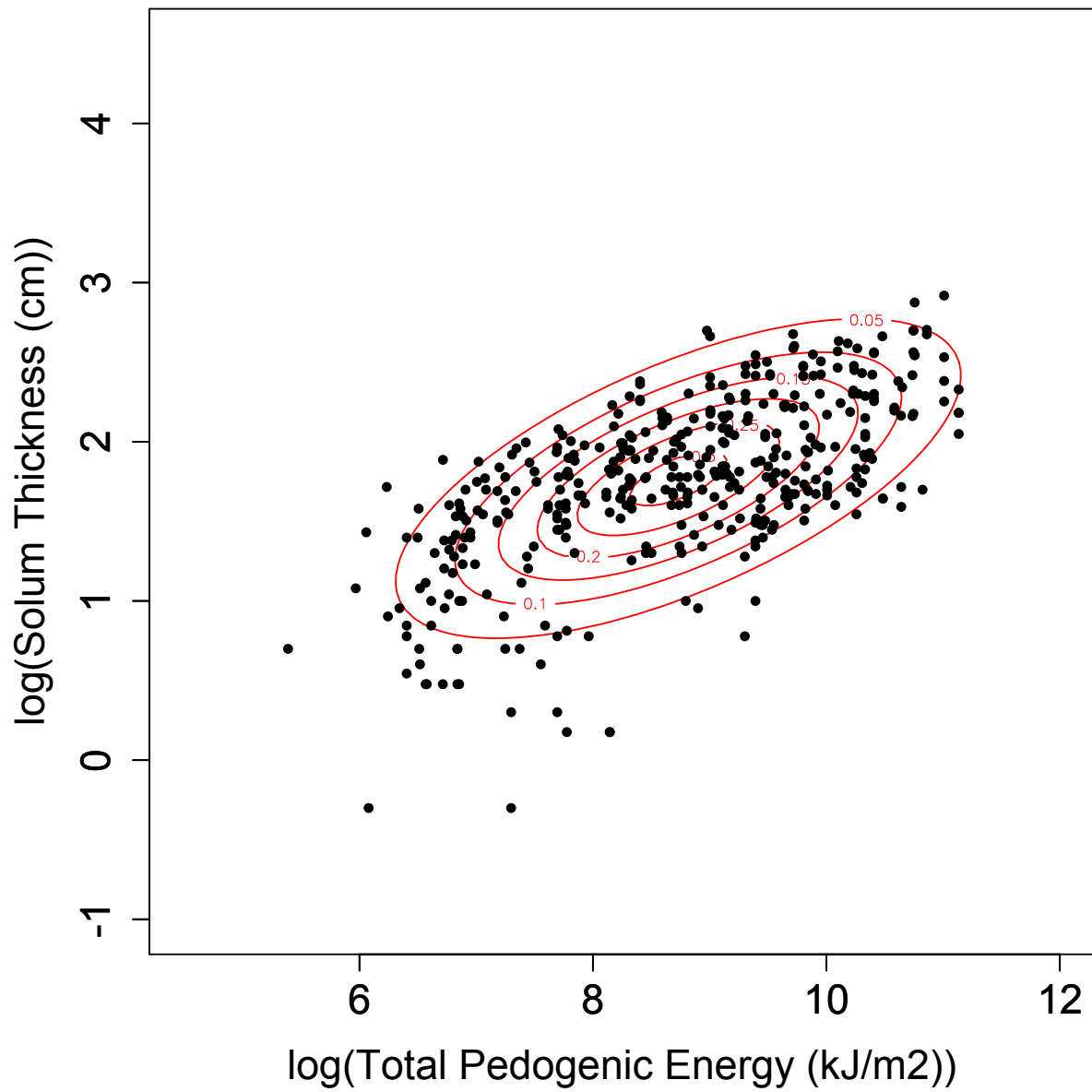


Calero, Delgado, Delgado, Martin-Garcia	Geoderma, 145: 278-287	2008									
			4	See, Calero et al., 2008	Spain	65.0	18.0	Quartzite, limestone, shale	Metamorphic	Fluvial Terrace	
Calero, Martin-Garcia, Delgado, Aranda, Delgado	Eur J. Soil Sci., 64: 192-209	2013									
Caner, Joussein, Salvador-Blanes, Hubert, Schlicht, Duigou	J.Plant. Nutr. Soil Sci., 173: 591-600	2010	4	Human landmarks, beach erosion	France	75.0	13.0	Eolian sand	Sedimentary	Anthropogenic	
D'Amico, Freppaz, Filippa, Zanini	Catena, 113: 122-137	2014	15	Relative/Not discussed	Italy	120.0	-1.0 - 2.0	Granitic	Igneous	Glacial Moraine	
Deither	USGS Bulletin 1590-F	1988	11	Tree ring, Relative, Topography	Washington, USA	125.0 - 150.0	11.0	Andesite	Igneous	Fluvial Terrace	
Dorrnsoro, Alonso	SSSAJ, 58: 910-925	1994	8	Archaeological, Stratigraphical	Spain	41.2	11.0	Granite, slate, quartzite	Igneous	Floodplain/ Fluvial Terrace	
Eger, Almond, Condron	Geoderma, 163: 185-196	2011	4	Tree ring, Earthquake correlation, Radiocarbon, Relative	South Island, New Zealand	345.5	11.3	Schist, Gneiss	Metamorphic	Beach Ridges	
Egli, Fitze, Mirabella	Catena, 45: 19-47	2001	3	see, Zumbühl and Holzhauser, 1988; Radiocarbon	Switzerland	200.0	1.2	Granite, Gneiss	Metamorphic	Glacial Moraine	
Evans, Cameron	Can. J. Soil Sci., 59: 203-210	1979	4	Relative	Nunavut, Canada	30.0	-11.2	Granite, Gneiss	Metamorphic	Glacial Moraine	
Harden	USGS Bulletin 1590-A	1987	22	See Marchand and Allwardt, 1981, Uranium, Radiocarbon	California, USA	30.0	16.0	Granite	Igneous	Alluvial	
Harden, Sarna-Wojcicki, Dembroff	USGS Bulletin 1590-B	1986	11	Radiocarbon, U-Series, Amino acid analyses, Cool-water fauna	California, USA	36.0	15.0	Sandstone, conglomerate, marine sediments	Sedimentary	Marine/ Fluvial Terraces	
He, Tang	Catena, 72: 259-269	2008	6	Tree ring, plant community succession, distance from glacier	China	194.9	~ 4.0	Biotite schist, granodiorite, quartzite	Metamorphic	Glacial Moraine	

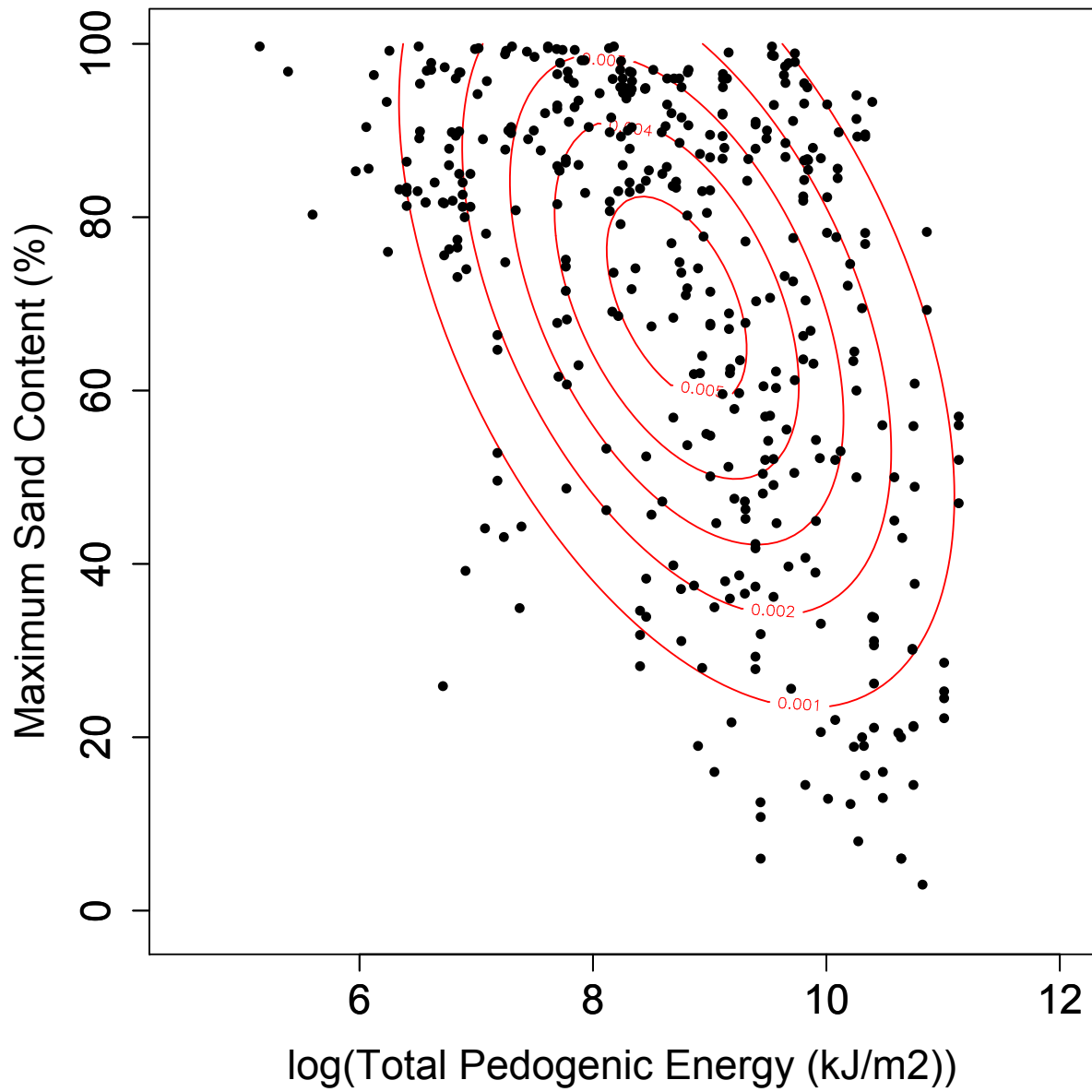
Howard, Amos, Daniels	Quarternary Research, 39: 201-213	1993	8	Relative	Virginia, USA	~110.0	14.5	High grade metamorphic, granite	Metamorphic	Fluvial Terrace/Uplands	MAP and MAT for Richmond, VA from <a href="http://www.sercc.com/">http://www.sercc.com/</a>
Howard, Clawson, Daniels	Geoderma, 179-180: 81-95	2012	9	Radiocarbon	Michigan, USA	99.0	9.0	Glacial	Sedimentary	Floodplain/Fluvial Terrace/Paleochannel/Lake Terrace	
Huang, Tsai, Tsai, Hseu, Chen	SSSAJ, 74: 1271-1283	2010	13	Radiocarbon/Uplift Rates	Taiwan	180.0	22.5	Conglomerate/Tuff	Sedimentary	Marine Terrace	
Maejima, Matsuzaki, Higashi	Geoderma, 126: 389-399	2005	6	Cosmogenic Be	Japan	227.7	22.3	Coral limestones, siltsontes	Sedimentary	Coral reef terrace	
McDonald, Pierson, Flerchinger, McFadden	Geoderma, 74: 167-192	1996	4	see McDonald 1994, McDonald and McFadden, 1994	California, USA	15.0	Not Reported	Granite	Igneous	Alluvial	
McFadden, Hendricks	Quarternary Research, 23: 189-204	1985	20	Radiocarbon, Relative	California, USA	40.0 - 78.0	15.5 - 16.6	Plutonic/Metamorphic	Metamorphic	Alluvial	
McFadden, Weldon	GSA Bulletin, 98: 280-293	1987	10	Radiocarbon, Magnetic Stratigraphy, Fossils	California, USA	63.0 - 73.0	Not Reported	Schist, Granite	Metamorphic	Fluvial Terrace	
McFadden, Wells, Dohrenwend	Catena, 13: 361-389	1986	11	K-Ar Dating	California, USA	12.0 - 25.0	16.0 - 18.0	Loess/Basalt	Sedimentary/Igneous	Volcanic	
Merritts, Chadwick, Hendricks	Geoderma, 51: 241-275	1991	6	Radiometric dating, Altudinal spacing analysis	California, USA	100.0 - ~200.0	12.0 - 14.0	Eolian silt/arkosic sandstone, siltstone, shale	Sedimentary	Marine Terrace	
Muhs	Geoderma, 28: 257-283	1982	13	Uplift Rate Estimate, Radiocarbon	California, USA	16.5	16.0	Andesite	Igneous	Marine Terrace	
Muhs	Quaternary Research, 56: 66-78	2001	11	Uplift rate estimate, U-Series dating	Barbados	110.0 - 212.0	24.0 - 28.0	Limestone	Sedimentary	Coral reef terrace	
Rasmussen	Unpublished	2015	20	K-Ar Dating, Paleomagnetic, Morphological	Arizona, USA	~ 58.0	~ 8.0	Basalt	Igneous	Volcanic	MAP and MAT for Flagstaff, AZ from <a href="http://drought.unl.edu/">http://drought.unl.edu/</a>

Reheis	USGS Bulletin 1590-C	1987a	13	Incision rates, Obsidian hydration, Volcanic eruptions, Megafaunal presence	Wyoming, USA	16.5	7.2	Limestone, dolomite	Sedimentary	Alluvial	
Reheis	USGS Bulletin 1590-D	1987b	35	Correlation with dated deposits, tephrochronology, Incision rates, Marine Oxygen Isotope	Montana, USA	37 - 64	5.6 - 8.3	Granitic gneiss	Metamorphic	Alluvial	
Rodbell	Arctic and Alpine Research, 22, 4: 355-365	1990	12	Lichenometric, Weathering rinds, Radiocarbon	South Island, New Zealand	320.0	8.5	Greywacke	Sedimentary	Glacial Moraine	Particle Size Fractions as: Sand 2.0mm - 62.5 $\mu$ , Silt 62.5 $\mu$ - 3.9 $\mu$ , Clay $\leq$ 3.9 $\mu$
Sauer, Schellmann, Stahr	Catena, 71: 382-393	2007	7	Radiocarbon	Argentina	28.7	12.6	Gravel	Sedimentary	Beach Ridges	
Shepard	Unpublished	2012	4	Relative	Arizona, USA	24.0	~ 20.0	Granite	Igneous	Alluvial	
Singleton, Lavkulich	Can J. Soil Sci. 67: 795-810	1987	7	Tree Ring, Beach Building Rate	British Columbia, Canada	320.0	Not Reported	Sand	Sedimentary	Beach Ridges	
Suther	University of Georgia, MS Thesis	2006	7	Optical Stimulated Luminescence	North Carolina, USA	117.9	16.9	Sandstone/siltstone	Sedimentary	Alluvial	
Tsai, Maejima, Hseu	Quaternary International, 188: 185-196	2009	3	Meteoric <sup>10</sup> Be	Taiwan	~ 170.0	~ 23.0	Quartzite, sandstone, shale, slate	Sedimentary	Lateritic	
VandenBygaart, Protz	Can. J. Soil Sci., 63-72	1995	6	Radiocarbon, Topographic	Ontario, Canada	85.6	8.0	Limestone	Sedimentary	Dunes	
Vidic, Lobnik	Geoderma, 76: 35-64	1997	22	Topographic position, <sup>10</sup> Be, Paleomagnetic analyses	Slovenia	140.0 - 170.0	9.5	Limestone	Sedimentary	Fluvial Terrace	

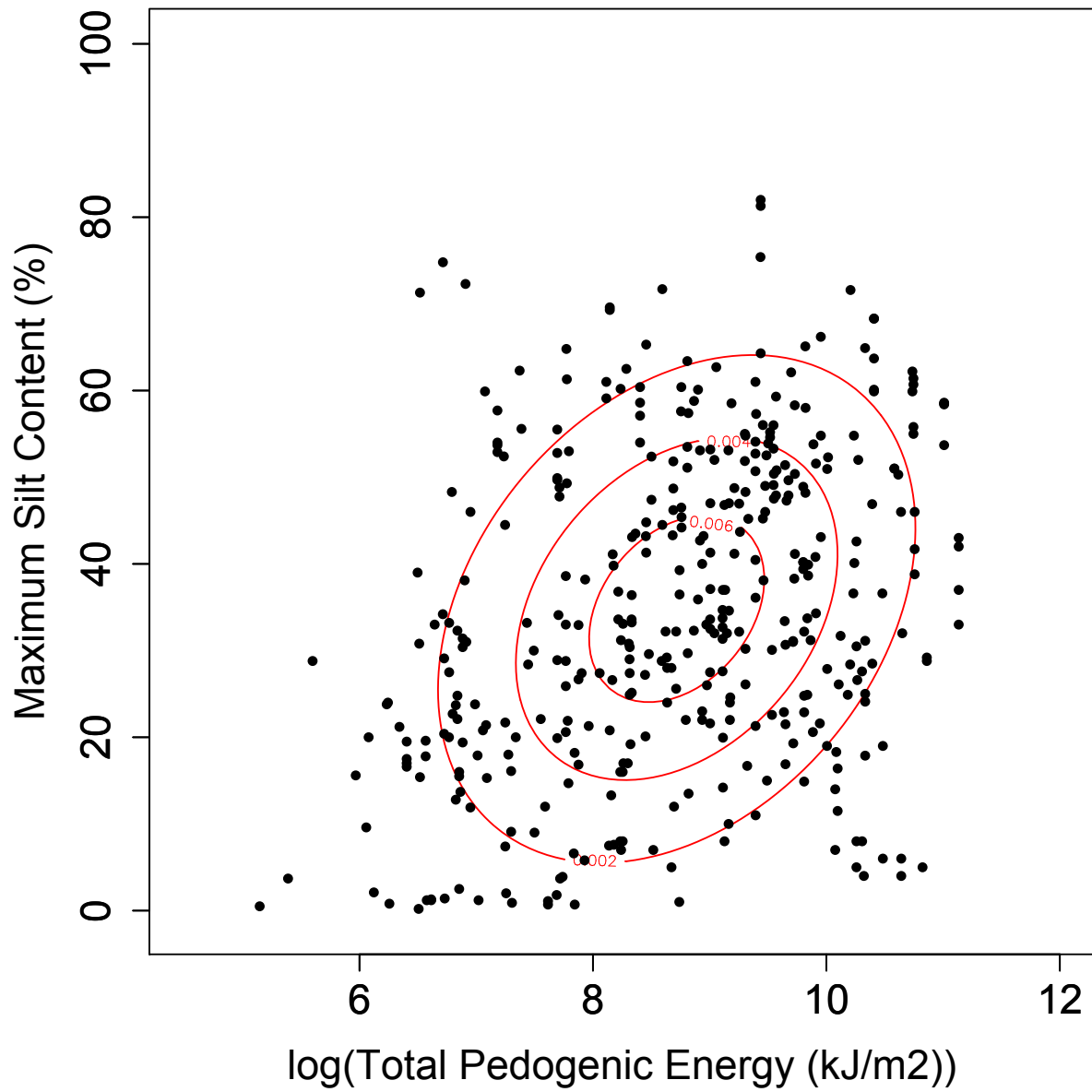
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**Figure S1 Bivariate normal distribution between TPE and solum thickness.**



**Figure S2 Bivariate normal distribution between TPE and max sand content.**



**Figure S3 Bivariate normal distribution between TPE and max silt content.**

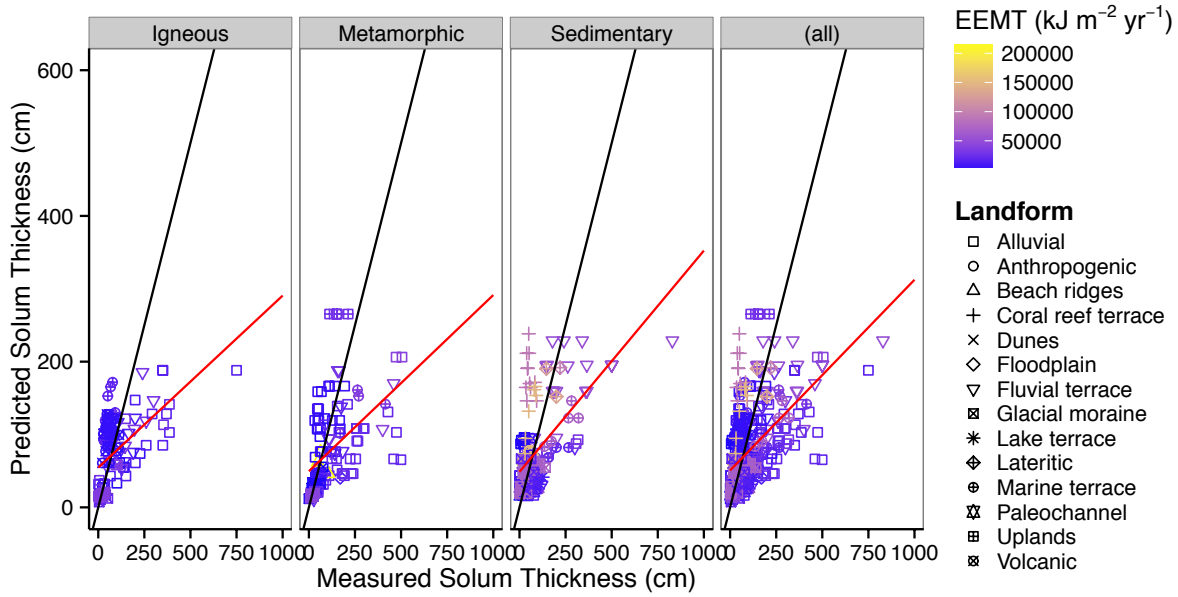


Figure S4 LOOCV results for solum thickness.

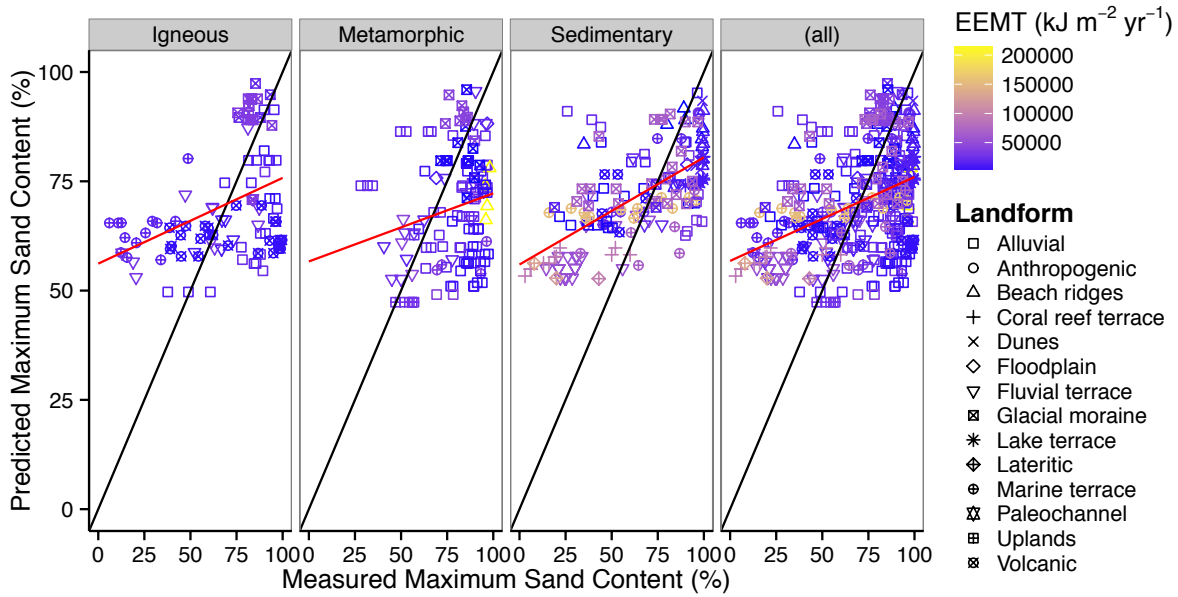
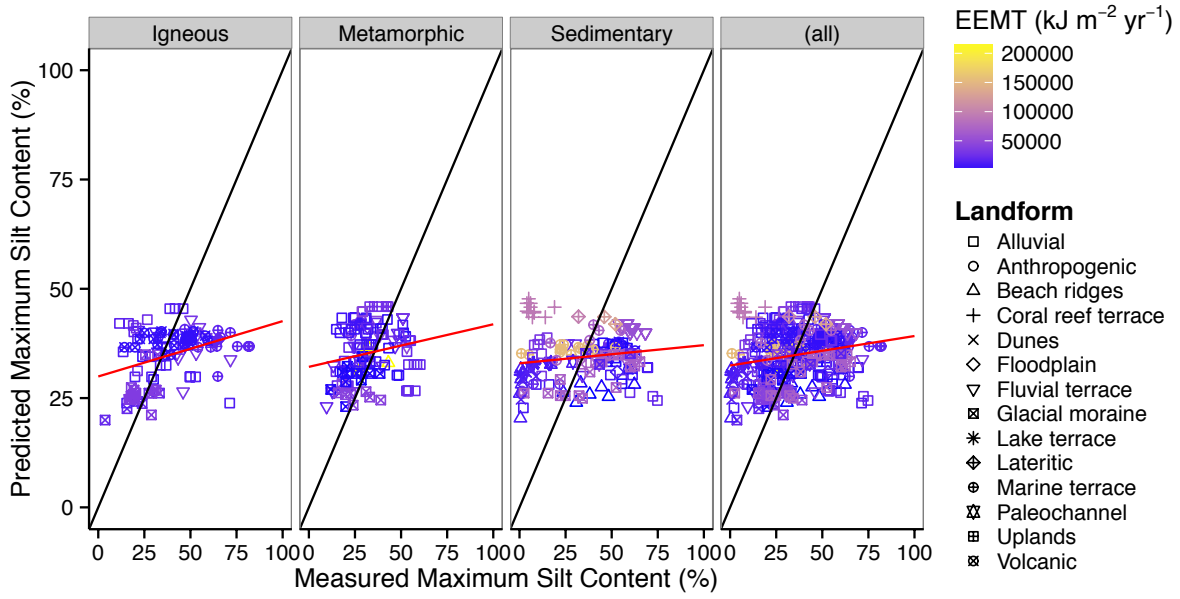


Figure S5 LOOCV results for max sand content.





**Figure S6 LOOCV results for max silt content.**