

# Supplementary data

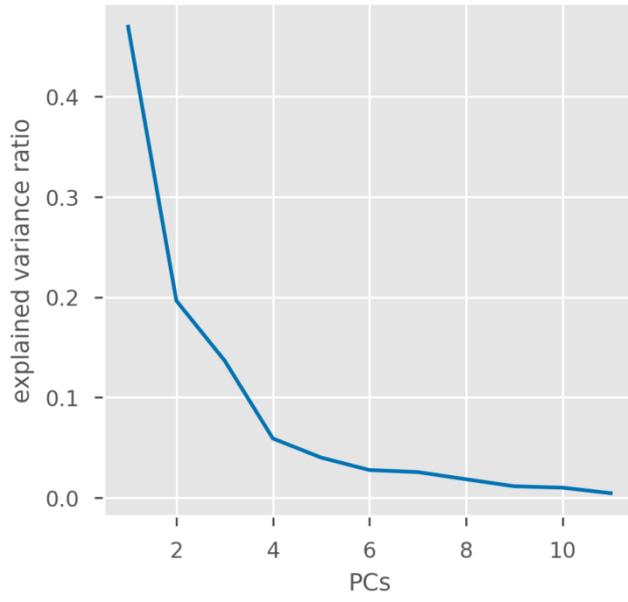
The raw data can be found on <https://doi.pangaea.de/10.1594/PANGAEA.920071>.

Table S 1. General information about the studied sediment cores.

Core Section	Longitude	Latitude	Northing	Easting	Zone	Length (cm)	Facies
N14-2	7.13431	53.71048	5952926	376,864.37	32	100	channel fill, moraine, eolian/fluvial
N27-2	7.182342	53.6976533	5951418	379,997.65	32	95	channel fill
N33-2	7.217895	53.6938717	5950937	382,334.11	32	99	channel fill
N35-4	7.167479	53.6914642	5950754	378,998.73	32	108	sand flat
N41-4	7.232223	53.6931083	5950829	383,277.96	32	99	channel fill
N59-1	7.17137	53.75187	5957467	379,428.59	32	107	channel fill
N72-2	7.14738	53.6951296	5951196	377,682.42	32	109	eolian/fluvial
VVC16-3	7.130155	53.68284	5949859	376,509.28	32	117	soil, eolian/fluvial
VVC16-4	7.130155	53.68284	5949859	376,509.28	32	119	peat, lagoonal
VVC20-3	7.111546	53.7598445	5958457	375,508.10	32	25	beach-foreshore

Table S 2. Data points obtained by X-ray fluorescence core scanning (XRF), CT core scanning (CT), digital photography (L\*) and magnetic susceptibility scanning (MS) for each sediment facies.

Sediment facies	XRF	CT	L*	MS
moraine	511	3878	24745	116
eolian/fluvial	814	5495	34397	166
soil	29	193	1234	6
peat	278	1992	12562	61
lagoonal	437	2972	19065	86
sand flat	506	3651	23070	110
channel fill	1992	13983	87735	415
beach-foreshore	116	857	5283	26



*Fig. S1. Scree plot of the explained variance ratio for each principal component (PC).*

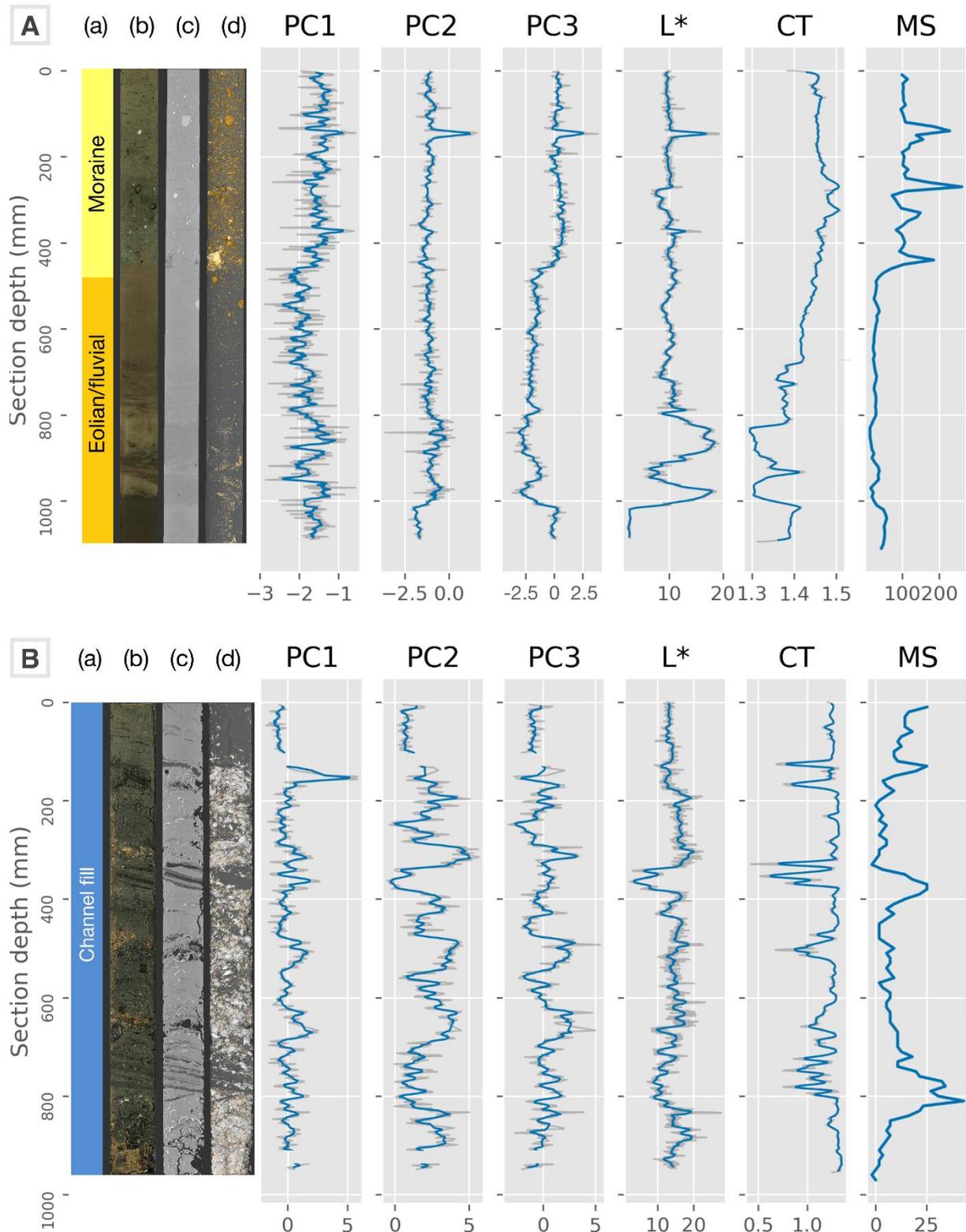


Fig. S2. Core N72-2 (A) and N27-2 (B): Facies labels (a), digital photograph (b), radiograph (c), and sediment constituents (golden: high-density sediments and lithic clasts, peach: low-density sediments, white: shell (fragments) separated using CT data (d)). Scores of PC1-PC3 (dimensionless) from elemental intensities, lightness ( $L^*$ ), ranging from 0 (black) to 100 (white), CT density (CT in  $10^3$  HU), and magnetic susceptibility (MS in  $10^6$  SI). Blue lines represent an 8 mm moving average, while grey lines represent raw data. No moving average is applied to MS.

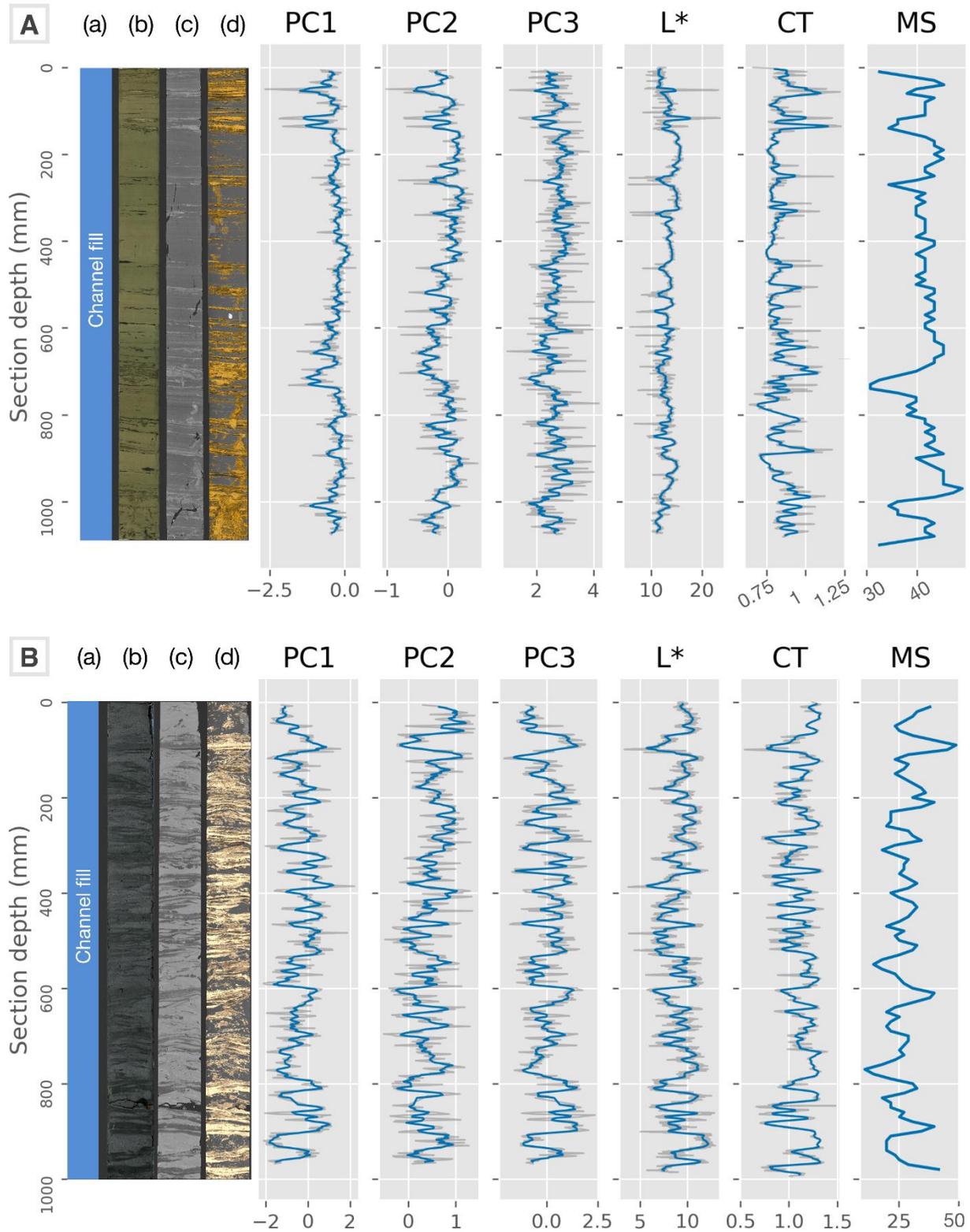


Fig. S3. Core N59-1 (A) and N41-4 (B): Facies labels (a), digital photograph (b), radiograph (c), and sediment constituents (golden: high-density sediments and lithic clasts, peach: low-density sediments, white: shell fragments) separated using CT data (d). The sediment constituents (d) reveals the intercalated layer structures and bioturbations. Scores of PC1-PC3 (dimensionless) from elemental intensities, lightness ( $L^*$ ), ranging from 0 (black) to 100 (white), CT density (CT in  $10^3$  HU), and magnetic susceptibility (MS in  $10^{-6}$  SI). Blue represent an 8 mm moving average, while grey lines represent raw data. No moving average is applied to MS.

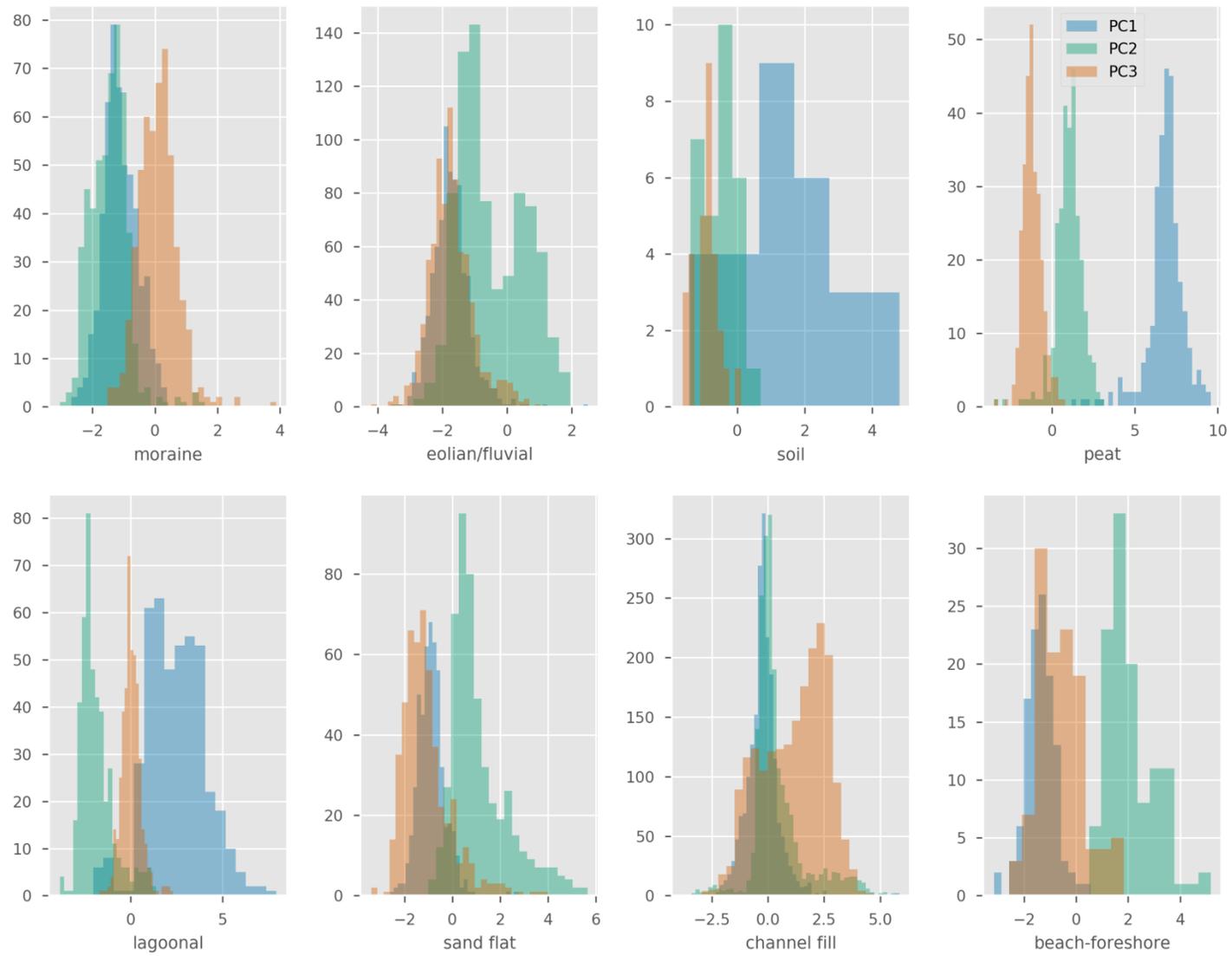


Fig. S4. Histograms of PC1 to PC3 scores for each facies. X-axis stands for the score value and y-axis shows the count.

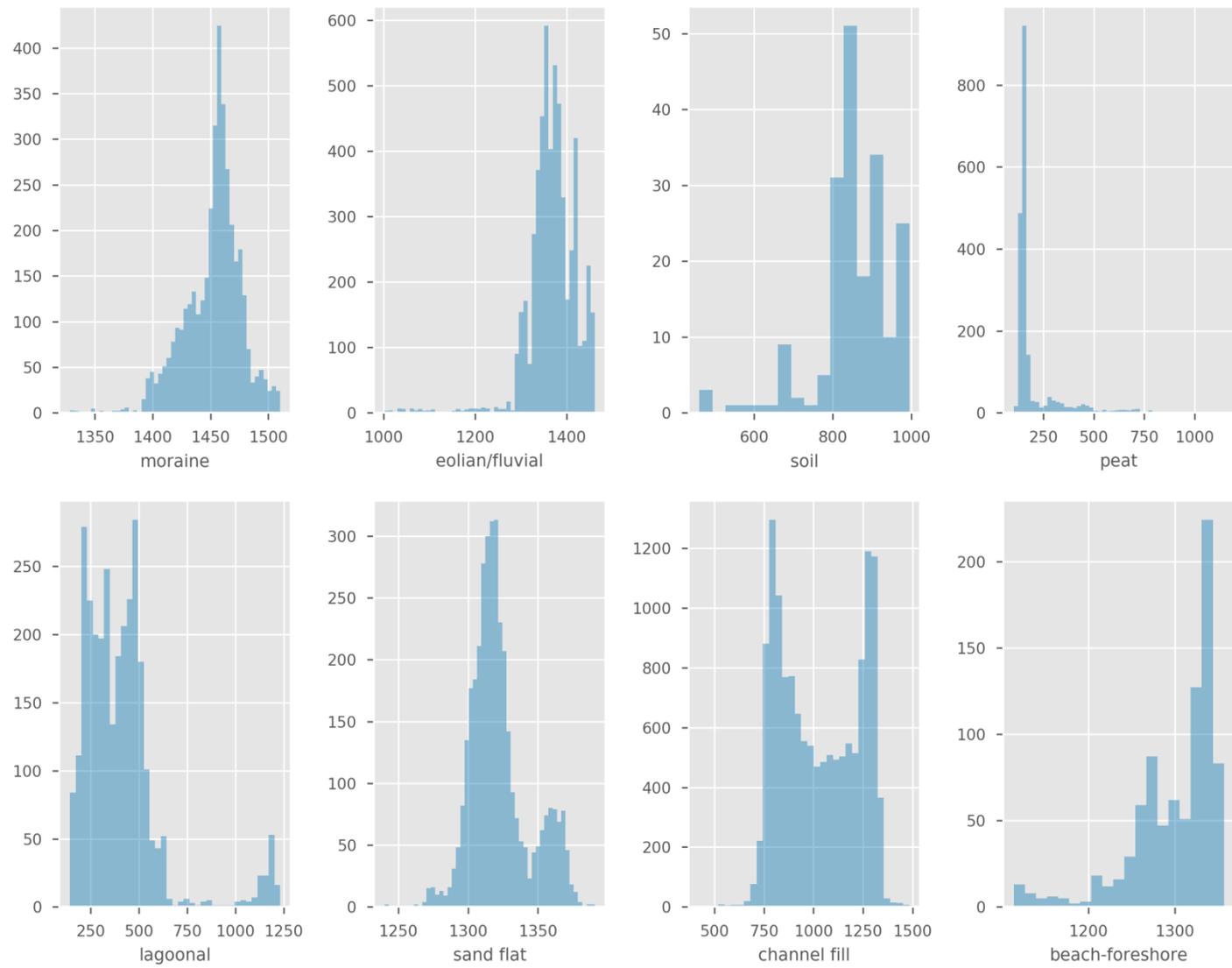


Fig. S5. Histogram of CT-density values for each facies. X-axis stands for the CT-density value (HU) and y-axis shows the count.

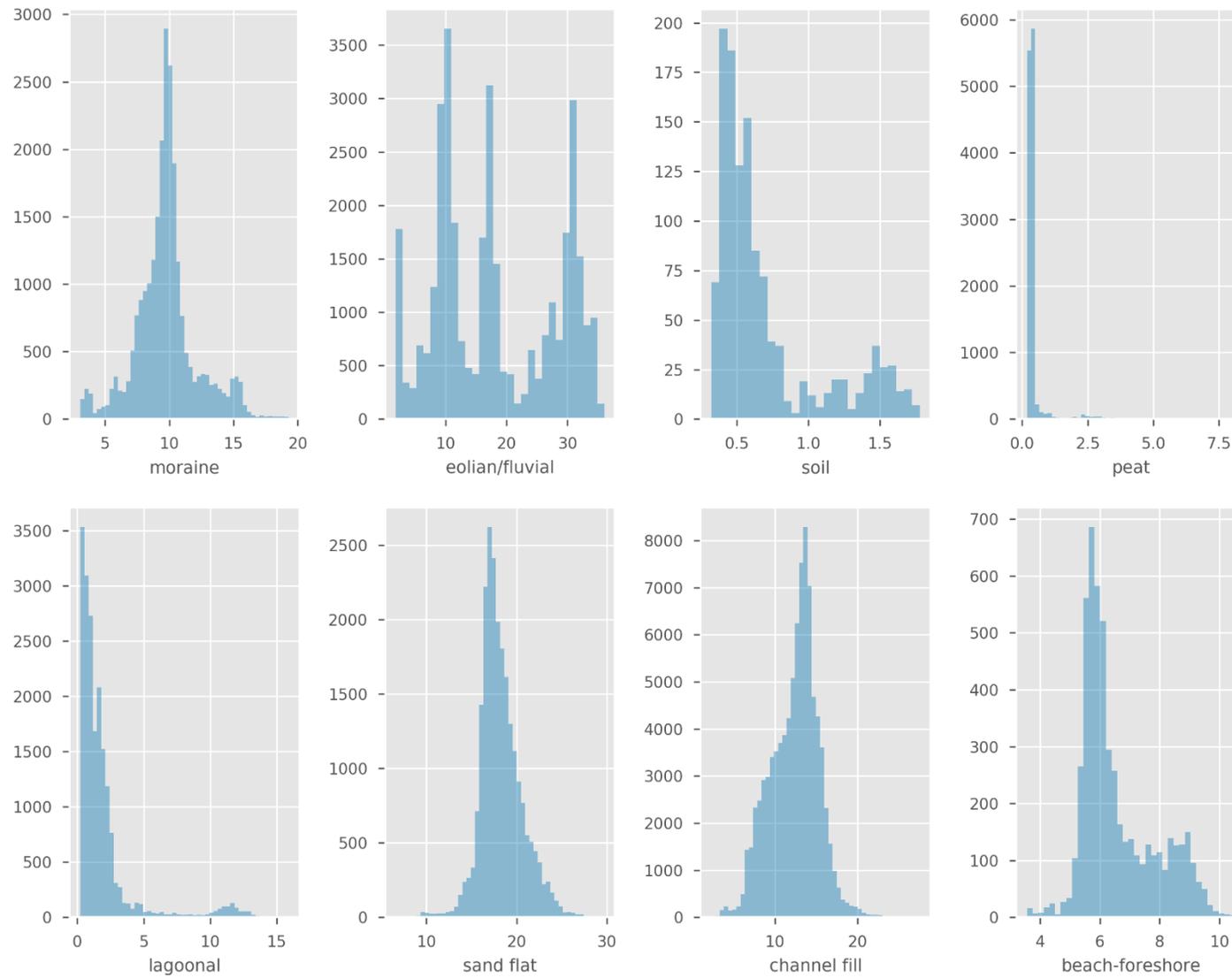


Fig. S6. Histogram of  $L^*$  values for each facies. X-axis stands for the  $L^*$  value and y-axis shows the count.

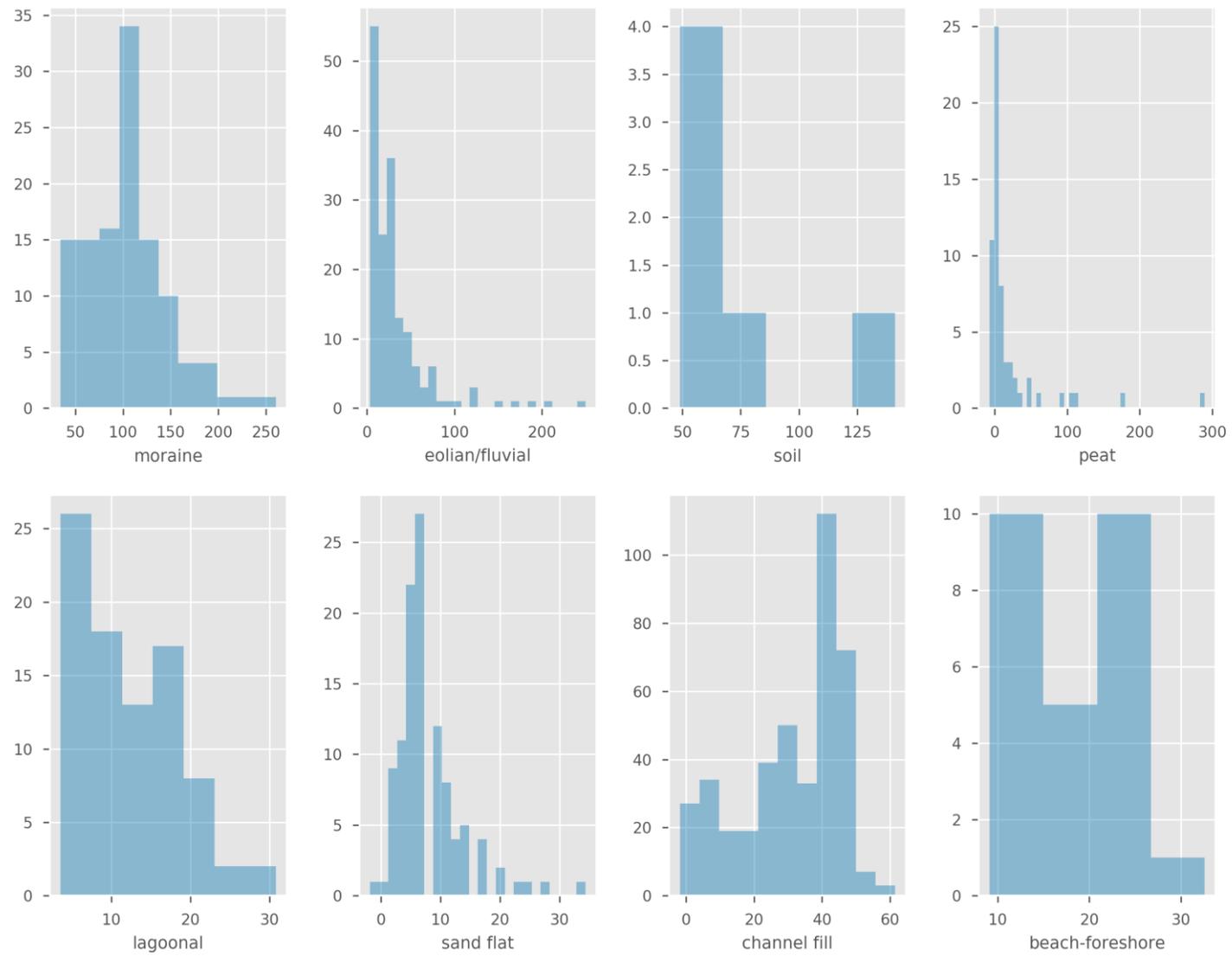


Fig. S7. Histogram of MS values for each facies. X-axis stands for the MS value ( $10^{-6}$  SI) and y-axis shows the count.