Supplement of Biogeosciences, 15, 3189–3202, 2018
https://doi.org/10.5194/bg-15-3189-2018-supplement

Biogeosciences Open Access EGU

Supplement of

Global-change effects on early-stage decomposition processes in tidal wetlands – implications from a global survey using standardized litter

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Supplementary Tables (S1-S3) and Figures (S1-S2)

Table S1 Hydrolyzable (H) and mineral fractions of green tea (n = 5 batches) and rooibos tea (n = 3 batches) and C and N contents (n = 2 batches). Samples of each batch were analyzed as duplicates

	Green Tea		Rooibos Tea	
	this study	*original*	*this study*	*original*
H [g g^{-1}]	0.933±0.012	0.842±0.023	0.676±0.040	0.552±0.050
Total C [%]	47.9±2.8	49.1±0.1	50.1±0.7	50.5±0.3
Total N [%]	3.9±0.2	4.0±0.1	1.1±0.1	1.2±0.1
Mineral fraction [g g^{-1}]	<0.005	<0.005	<0.001	<0.005

Table S2 Comparisons of *k* and *S* between high and low elevated zones within sites. Significant differences based on one-way ANOVA in *k* and *S* between zones are indicated by 'H' (value higher in high elevated zone) or 'L' (value higher in low elevated zone) and highlighted in orange or blue, respectively. 'X' indicates no significant difference between zones. Difference in elevation between zones (Δ_{el}) and dominant plant species are presented

site name	*k*	*S*	Δ_{el} (cm)	vegetation high	vegetation low
Dieksanderkoog	H	H	51	*Elymus athericus*	*Puccinellia maritima*
Sönke-Nissen-Koog	X	H	18	*Elymus athericus*	*Puccinellia maritima*
Spiekeroog	X	H	42	*Festuca rubra*	*Puccinellia maritima*
Ameland	L	H	NA	*Elymus athericus*	*Spatina anglica*
Noord-Friesland Buitendijks	X	H	15	*Elymus athericus*	*Elymus athericus*
Venice Lagoon	H	X	19	*Sarcocornia fruticosa*	*Salicornia veneta*
Rimouski	L	H[u]	160	*Plantago maritima*	*Spartina alterniflora*
Dipper Harbour	X	X	20	*Plantago maritima*	*Spartina alterniflora*
Laws Point	X	H	10-130	*Spartina patens*	*Spartina alterniflora*
TIDE project	X	H	10-130	*Spartina patens*	*Spartina alterniflora*
Patuxent River	X	X	126	*Impatiens capensis*	*Nuphar lutea*
Rhode River	L	H[u]	NA	mixed community	*Spartina alterniflora*
Wachapreague	X	H	NA	*Distichlis spicata*	*Spartina alterniflora*
Coon Island	L	H	68	*Spartina pacifica*	*Spartina foliosa*
Rush Ranch	L	H	61	mixed community	*Schoenoplectus acutus*
Twin Cays	H	X[u]	NA	*Rhizophora mangle* (dwarf)	*Rhizophora mangle* (fringe)
Isla Solarte	X[u]	H	NA	*Rhizophora mangle* (dwarf)	*Rhizophora mangle* (fringe)
Isla Cristóbal	X	H	NA	*Rhizophora mangle* (dwarf)	*Rhizophora mangle* (fringe)
Isla Popa	X	X	NA	*Rhizophora mangle* (dwarf)	*Rhizophora mangle* (fringe)
Dongtan	L	X	50	*Phragmites australis*	*Scirpus mariqueter*

Notes: [u]Mann-WhitneyU-tests were conducted if data did not meet ANOVA assumptions

Table S3 Overview of mean values for *k* and *S* based on the original TBI protocol (Keuskamp et al., 2013) and the modified protocol (present study)

	H following original TBI protocol				H following modified protocol			
	stabilization (*S*)		decomp. rate (*k*)		stabilization (*S*)		decomp. rate (*k*)	
Site name↓ relative elevation→	high	low	high	low	high	low	high	low
Dieksanderkoog	0.194	0.107	0.037	0.018	0.273	0.194	0.025	0.014
Sönke-Nissen-Koog	0.188	-0.081	0.022	0.017	0.259	0.024	0.016	0.014
Spiekeroog	0.546	0.297	0.007	0.005	0.460	0.353	0.006	0.005
Ameland	-0.047	-0.088	0.014	0.017	0.112	0.077	0.014	0.016
Noord-Friesland Buitendijks	0.230	0.135	0.023	0.026	0.275	0.220	0.015	0.017
Schiermonnikoog	-0.003	NA	0.008	NA	0.095	NA	0.007	NA
Venice Lagoon	0.260	0.256	0.007	0.003	0.324	0.329	0.006	0.002
Vilacoto	0.337	NA	0.031	NA	0.401	NA	0.019	NA
Garxal	0.347	NA	-0.001	NA	0.411	NA	-0.001	NA
Alfacs	NA	0.219	NA	0.008	NA	0.295	NA	0.007
Mechelińskie Łąki	0.161	NA	0.017	NA	0.243	NA	0.013	NA
Rimouski	0.625	0.383	-0.003	0.003	0.661	0.443	-0.003	0.003
Dipper Harbour	0.262	0.069	0.012	0.010	0.334	0.160	0.010	0.009
Long Marsh, north of inlet	0.242	NA	0.004	NA	0.316	NA	0.003	NA
Long Marsh, south of inlet	0.189	NA	0.007	NA	0.268	NA	0.006	NA
Long Marsh, south of Narrows	0.195	NA	0.007	NA	0.273	NA	0.006	NA
Laws Point	-0.027	-0.043	0.012	0.012	0.073	0.058	0.010	0.010
TIDE project	-0.009	-0.069	0.010	0.012	0.089	0.035	0.008	0.014
Patuxent River	-0.096	-0.074	0.017	0.016	0.012	0.034	0.013	0.013
Rhode River	-0.091	-0.120	0.015	0.020	0.016	-0.011	0.012	0.015
Wachapreague	0.020	-0.086	0.013	0.014	0.116	0.020	0.011	0.012
Coon Island	0.105	0.012	0.010	0.018	0.192	0.102	0.008	0.014
Rush Ranch	0.082	-0.013	0.012	0.017	0.171	0.086	0.010	0.013
China Camp	0.098	NA	0.011	NA	0.186	NA	0.009	NA
Twin Cays	-0.002	0.003	0.011	0.010	0.096	0.102	0.009	0.009
Isla Solarte	-0.025	-0.050	0.011	0.011	0.075	0.053	0.010	0.010
Isla Cristóbal	-0.023	-0.069	0.012	0.011	0.081	0.041	0.010	0.009
Isla Popa	-0.046	-0.064	0.013	0.013	0.056	0.039	0.011	0.011
Mar Chiquita	0.162	0.310	0.006	0.008	0.244	0.377	0.005	0.007
Dongtan	-0.027	-0.029	0.013	0.013	0.073	0.071	0.011	0.011

Figure S1 -- Data mining

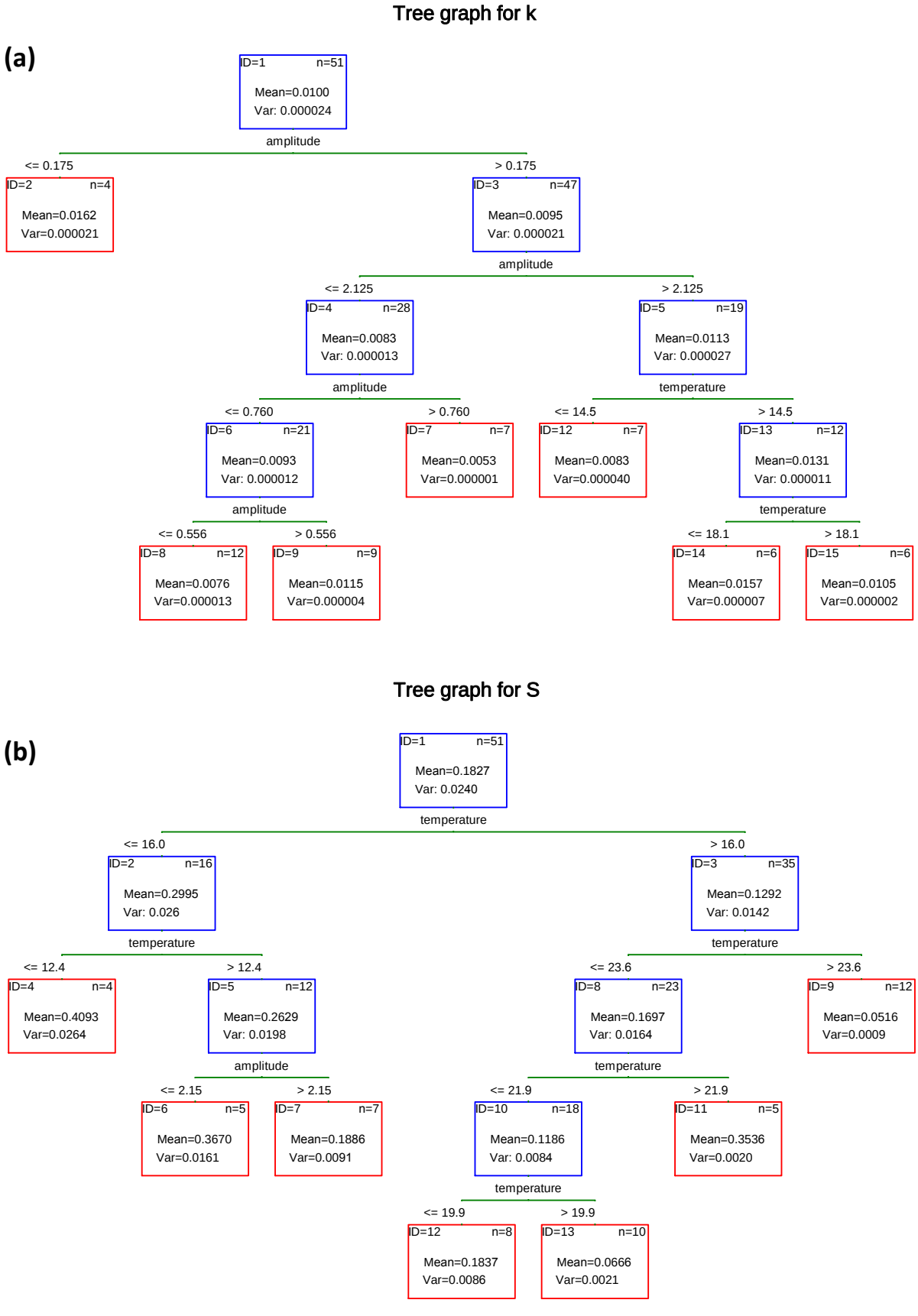

Figure S1 Data mining: Classification and regression trees (CART) for (a) decomposition rate and (b) stabilization. Step-wise splitting of the data set was conducted based on the predictor variables temperature, tidal amplitude, salinity class, soil type, ecosystem type, and elevation zone. CART was conducted with mean values of each site by elevation zone combination (n = 51). Minimum size of child nodes was set at 4, corresponding to at least two sites; V-fold cross validation was set at 5.

Figure S2

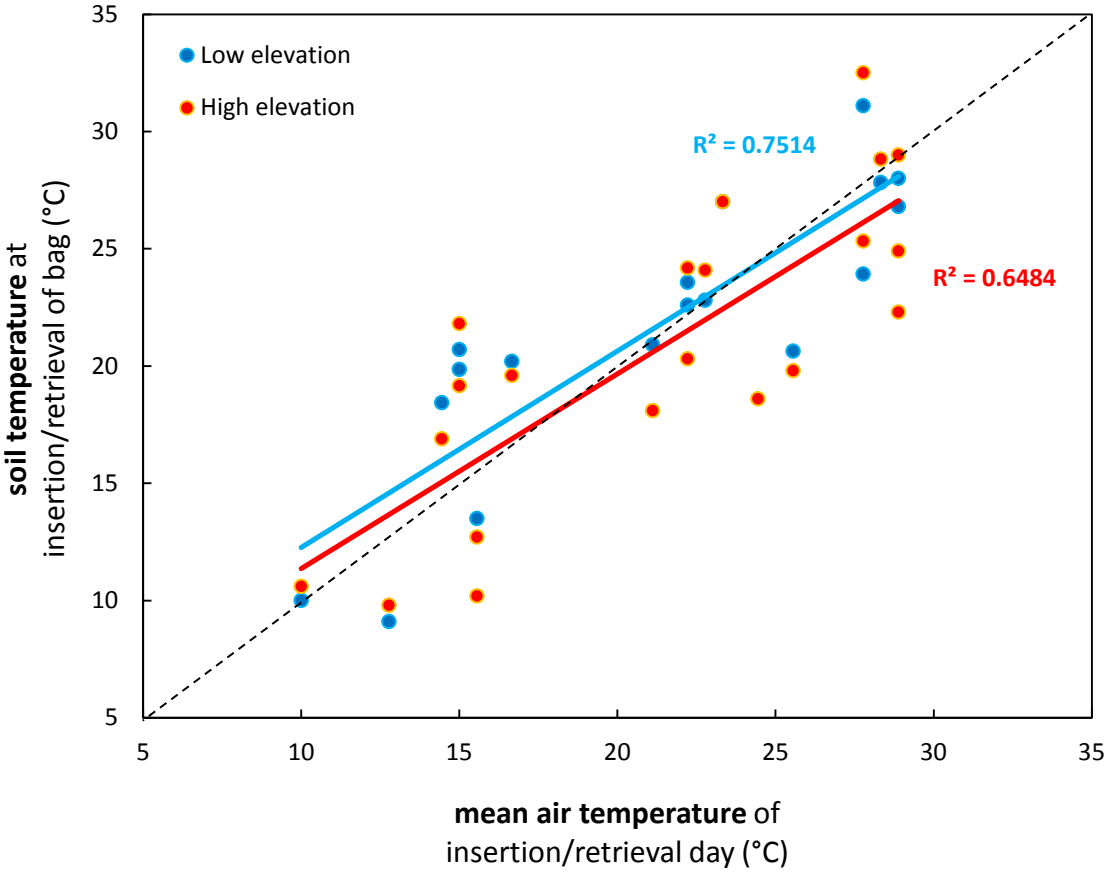

Figure S3 Mean air temperature of insertion/retrieval day of tea bags (as obtained from the closest station of the AccuWeather service) versus soil temperature at the time point of insertion/retrieval of tea bags (assessed in 14 sites) in high and low elevated zones. **Additional statistics:** paired t-test comparing difference of air versus soil temperature between paired high and low elevated zones: p = 0.56; paired t-test comparing soil temperature between paired high and low elevated zones: p = 0.34