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The table below describes the full database belonging to the following manuscript:

van de Vijzel, R.C., van Belzen, J., Bouma, T.J., van der Wal, D. & van de Koppel, J. (Submitted). Algal-induced biogeomorphic feedbacks lay the groundwork for coastal wetland development.

Whenever you use any part of the data or scripts described in this README-file, make sure to correctly refer to this manuscript and its authors.

V1 - 24 April 2021: first complete and finetuned version (belonging to the dataset uploaded to dataverse.nioz.nl)

FILE NAME (BULLETS INDICATE FOLDER-SUBFOLDER STRUCTURE)	EXPLANATION (“~” refers to top of this folder structure)
• EXPERIMENT1_RAW	
○ expA13A.xls	Raw results of lab analyses of the sediment samples of Experiment 1: chl-a and organic carbon content.
○ VauchMicroTopo2018_HARVEST.xlsx	Weights of sediment samples (wet and dry weight, i.e. before and after freeze drying) and weight of sample bags.
○ VMT18_Positions_Labels.pdf	Overview of the experimental setup: position of each sediment pot within the mesocosm and order in which photographs were taken.
• EXPERIMENT2_RAW_part1of2	
○ RESULTS	
▪ b9234 (Roeland malvern, OrgCN ChIA 2017)_COMPLETE.xls	Chlorophyll-a analysis of sediment samples in Experiment 2.
○ STARTUP	
▪ Experiment_fluidmud_2017_LABELS.xlsx	Explanation of syringe labels and positions of each syringe in the mesocosm. All syringes for T1-T3 have been assigned a randomized position within the mesocosm. The T0-syringes were analysed/sampled directly, so these were not placed in the mesocosm.
▪ 20170815_Exp_Fluidmud_Vauch_STARTUP.xlsx	“Zero-markings”, i.e. the INITIAL vertical positions (expressed as the mL-marking along each syringe) of each syringe piston at the beginning of the experiment. Please see “Experiment_fluidmud_2017_LABELS.xlsx” to know which syringe was located at which position, in order to know to which syringe each “zero-marking” belongs. These initial vertical heights are used to calculate the relative elevation change of each sediment core (see manuscript Fig. 5c and Fig. 6c).
○ T0_CORRECTED	
▪ T0_CORRECTED_COMPRESSION_WEIGHT_topview	
• IMG_####.JPG (135 images)	Topview photos of sediment cores being compressed. The first photo is the unloaded sample (3 photos are taken per step, for replication), the 2 nd photo is the sample after the first “load step”, and so on until the last “load step”. Then the next sample is photographed. The mudcore surface areas in these photos are analysed using the Matlab script “T0_CORRECTED_ClassifyLeaf.m”. Note that one extra intermediate step was photographed for T0_CORRECTED, i.e. a photo after ONLY placing the petridish (before placing bottles of weight on the petridish). See the readme-file “T0_CORRECTED_README_and_DATA.xlsx” for more info. So T0_CORRECTED has 5x3 photos per sediment core, while T1-T3 have 4x3 photos per sediment core.
• OUTPUT	
○ T0_CORRECTED_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat	Output from “T0_CORRECTED_ClassifyLeaf.m”
○ T0_CORRECTED_MudcoreArea-IMG_####.png (45 images)	Output from “T0_CORRECTED_ClassifyLeaf.m”
○ T0-T2_COMPRESSION_WEIGHT_RelArea_vs_load.pdf	Output from “T0_CORRECTED_COMPRESSION_WEIGHT_analysis_LeafArea_Topview.m”. This figure is the same as Figure 6b in the manuscript.

• T0_CORRECTED_ClassifyLeaf.m	This Matlab-script analyses all topview photos (IMG_####.JPG, in the same folder) and computes the pixel area of each photo (it only uses one photo per load step, so only one out of three of all the photos is used, because the other two-third are replicate photos). An quick preview of the analysis result (i.e. area that is classified as “mud” by the algorithm) is stored in the subfolder “OUTPUT” as “T0_CORRECTED_MudcoreArea-IMG_####.png”. All results (mud core surface area at each different load step for each sediment core) are saved in “OUTPUT/T0_CORRECTED_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat”
• T0_CORRECTED_COMPRESSION_WEIGHT_analysis_LeafArea_Topview.m	This Matlab-script uses “T0_CORRECTED_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat” to make the final plots of sediment surface deformation as a function of load step.
▪ T0_CORRECTED_README_and_DATA.xlsx	Raw sampling data, i.e. sediment weights of the samples taken for the T0-harvest.
○ T1	
▪ T1_COMPRESSION_WEIGHT_README.xlsx	The vertical heights of each sediment core within the syringes; these heights were used to compute the substrate elevation changes (see Fig. 6c).
▪ T1_COMPRESSION_WEIGHT_topview	
• AllDataSorted_Topview.mat	Output from “T1_COMPRESSION_WEIGHT_analysis_LeafArea.m”, i.e. sediment surface areas, but better organized in a matrix.
• ClassifyLeaf_IMG_9303.m	As T0_CORRECTED_ClassifyLeaf.m, but applied to dataset T1.
• IMG_####.JPG (216 images)	Topview photos of sediment cores being compressed. The first photo is the unloaded sample (3 photos are taken per step, for replication), the 2nd photo is the sample after the first “load step”, and so on until the last “load step”. Then the next sample is photographed. The mudcore surface areas in these photos are analysed using the Matlab script “ClassifyLeaf_IMG_9303.m”.
• OUTPUT	
○ MudcoreArea-IMG_####.png (72 images)	As T0_CORRECTED_MudcoreArea-IMG_####.png, but then for dataset T1
○ T1_COMPRESSION_WEIGHT_LeafAreaArray.mat	Output from “ClassifyLeaf_IMG_9303.m”, i.e. sediment surface areas for all the load steps and all the sediment samples.
• T1_COMPRESSION_WEIGHT_analysis_LeafArea.m	Load “T1_COMPRESSION_WEIGHT_LeafAreaArray.mat” and make plots (surface area deformation for the different treatments, and as a function of load step). Plots are saved in subfolder “OUTPUT”. Also, produce the file “AllDataSorted_Topview.mat”, i.e. the same results as in “T1_COMPRESSION_WEIGHT_LeafAreaArray.mat” but more properly organized in a matrix.
▪ T1_SAMPLING_README.xlsx	Sediment sample weights (before and after freeze drying)
• EXPERIMENT2_RAW_part2of2	
○ T2	
▪ T2_COMPRESSION_WEIGHT_topview	
• photos	
○ IMG_####.JPG (216 images)	As ~/EXPERIMENT2_RAW_part1of2/T1/IMG_####.JPG, but then for T2.
○ OUTPUT	
▪ MudcoreArea-IMG_####.png (72 images)	Output of T2_ClassifyLeaf.m
▪ T2_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat	Output of T2_ClassifyLeaf.m
○ T2_ClassifyLeaf.m	Matlab script that analyses all “OUTPUT/IMG_####.JPG”, measures surface area of sediment cores (measured in pixels), stores results in “OUTPUT/T2_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat” and also stores a preview of each analyses photo in “OUTPUT/MudcoreArea-IMG_####.png”.
○ T2_COMPRESSION_WEIGHT_analysis_LeafArea_Topview_CORR2020.m	Matlab script: loads “OUTPUT/T2_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat” and makes plots of mud core deformation as a function of load step, and to plot the difference with/without algal growth.
▪ T2_readme.xlsx	Vertical heights of the sediment surface (used to calculate relative elevation change, e.g. Fig. 5c and 6c), and sediment sample weights (wet and dry weights).
○ T3	

- T3_COMPRESSION_WEIGHT_topview - photos - IMG_####.JPG (216 images) - OUTPUT - MudcoreArea-IMG_####.png (72 images) - T3_COMPRESSION_WEIGHT_LeafAreaArray_topview.mat - T3_ClassifyLeaf.m - T3_COMPRESSION_WEIGHT_analysis_LeafArea.m	As ~/EXPERIMENT2_RAW_part1of2/T1/IMG_####.JPG, but then for T3. Output of T3_ClassifyLeaf.m Output of T3_ClassifyLeaf.m Matlab script that analyses all "OUTPUT/IMG_####.JPG", measures surface area of sediment cores (measured in pixels), stores results in "OUTPUT/T3_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat" and also stores a preview of each analyses photo in "OUTPUT/MudcoreArea-IMG_####.png". Matlab script: loads "OUTPUT/T3_COMPRESSION_WEIGHT_LeafAreaArray_Topview.mat" and makes plots of mud core deformation as a function of load step, and to plot the difference with/without algal growth. For T3: sediment sample weights (before and after freeze drying, i.e. to quantify water content) and vertical positions of the sediment core relative to the syringe edge (i.e. to quantify elevation change).
T3_README.xlsx	
- Figures - Fig1 - DJI_0020.JPG - Fig1.pdf - IMG_0125.jpg - Paardenschor_2016_JimvanBelzen.png - SigmaplanPicture.png - Fig2 - Fig2.pdf - Fig3 - Fig3.pdf - Fig4 - Fig4.pdf - photos - t=0days 4 images - t=264days 4 images - rawdata - Art3_v6_Fig4_CHLA.pdf - Art3_v6_Fig4_orgC.pdf - Art3_v6_Fig4.m - output - CHLA_anova.csv - CHLA_boxplot.pdf - CHLA_hist.pdf - CHLA_levene.csv - CHLA_qq.pdf - CHLA_shapiro_pvalue.csv	Drone image taken by Jim van Belzen on Ketenisse mudflat on 05 September 2016. Figure 1 from manuscript In-situ photo taken by Roeland C. van de Vijzel on Ketenisse mudflat, 16 September 2016. In-situ photo taken on Paardenschor mudflat by Jim van Belzen in 2016. In-situ photo taken (© Vilda/Yves Adams) taken around 2010 at the intertidal flat of Paardenschor (51.334521°N, 4.251750°E). Figure 2 in the manuscript. Figure 3 in the manuscript. Figure 4 in the manuscript. Photos of the 4 different treatments. Photos taken at the end of Experiment 1. Photos of the 4 different treatments. Photos taken at the start of Experiment 1. Result of the matlab script (subplot 4i). Result of the matlab script (subplot 4j). Matlab-script to make the subplots Fig. 4i and 4j, using the statistical results in the subfolder "output". This folder contains all output from VMT18_statistics.r.

	○ CHLA_summary.csv	
	○ CHLA_tHSD.csv	
	○ CHLA_tHSDplot.pdf	
	○ orgC_anova.csv	
	○ orgC_boxplot.pdf	
	○ orgC_hist.pdf	
	○ orgC_levene.csv	
	○ orgC_qq.pdf	
	○ orgC_shapiro_pvalue.csv	
	○ orgC_summary.csv	
	○ orgC_tHSD.csv	
	○ orgC_tHSDplot.pdf	
	• VMT18_statistics.r	R-script to perform analyses and statistical tests on the data (VMT18.csv). Results (plots and statistics tables) are stored in the subfolder "output".
	• VMT18.csv	Raw data (same as ~/EXPERIMENT1_RAW/expA13A.xls and in ~/EXPERIMENT1_RAW/VauchMicroTopo2018_HARVEST.xlsx), organized in a spread sheet to be loaded into "VMT18_statistics.r" (in this folder). Note that sample weights were employed to convert chl-a and organic carbon concentrations into actual amounts per sample. A log-transformation was applied to the organic carbon data (see manuscript for more info).
○ Fig5+6		
	▪ Art3_v6_Fig5_CHLA_ORIGINAL.pdf	Subplot for Fig.5, output of Art3_v6_Fig5+6.m
	▪ Art3_v6_Fig5_ElevChange_ORIGINAL.pdf	Subplot for Fig.5, output of Art3_v6_Fig5+6.m
	▪ Art3_v6_Fig5_RAI4_ORIGINAL.pdf	Subplot for Fig.5, output of Art3_v6_Fig5+6.m
	▪ Art3_v6_Fig5+6.m	In this Matlab script, the statistical output data of the different R-scripts described in this folder are combined, to make the plots for Fig. 5 and 6 in the manuscript.
	▪ Art3_v6_Fig6_CHLA_ORIGINAL.pdf	Subplot for Fig.6, output of Art3_v6_Fig5+6.m
	▪ Art3_v6_Fig6_ElevChange_ORIGINAL.pdf	Subplot for Fig.6, output of Art3_v6_Fig5+6.m
	▪ Art3_v6_Fig6_RAI4_ORIGINAL.pdf	Subplot for Fig.6, output of Art3_v6_Fig5+6.m
	▪ Art3_v6_Fig6_WC_ORIGINAL.pdf	Subplot for Fig.6, output of Art3_v6_Fig5+6.m
	▪ Fig5.pdf	Fig.5 from the manuscript
	▪ Fig6.pdf	Fig.6 from the manuscript.
	▪ Figure5	
	• rawdata	
	○ FluidMudVaucheria2017_rawdata.xlsx	Experiment 2: Sediment surface areas and sediment deformation data (i.e. output from the Matlab scripts described in "~/EXPERIMENT2_RAWDATA" in for all harvest times (T0-T3) collected in one spread sheet.
	○ FMV17_statistics.r	R-script where the sediment deformation rate-dataset (RelAreaIncr4, abbreviated as RAI4, see FMV17.csv) is statistically analysed. Output of these analyses are stored in the subfolder "output".
	○ FMV17.csv	As "FluidMudVaucheria2017_rawdata.xlsx", but the sediment deformation rate (RelAreaIncr4_ORIGINAL) is subjected to a data transformation (RelAreaIncr4_ARCSIN_SQRT_PROP_DATA) and then saved as RelAreaIncr4. The latter, transformed dataset is loaded analysed statistically in FMV_statistics.r .
	○ output	Output of statistical tests in FMV17_statistics.r
	▪ RAI4_anova.csv	
	▪ RAI4_boxplot.png	
	▪ RAI4_hist.png	
	▪ RAI4_levene.csv	
	▪ RAI4_ORIGINAL_boxplot.png	

	▪ RAI4_ORIGINAL_summary.csv	
	▪ RAI4_qq.png	
	▪ RAI4_shapiro_pvalue.csv	
	▪ RAI4_summary.csv	
	▪ RAI4_tHSD.csv	
	▪ RAI4_tHSDplot.png	
▪ Figure6		
• rawdata		
○ Experiment_Vaucheria_Fluidmud_Watercontent.m		In this Matlab script, the vertical positions of the sediment cores are collected from the different Excel files (see Experiment2_RAWDATA) and combined into one matrix where the substrate elevation change over time is listed per syringe. This data is used in FMV17_ElevChange_outliers.csv. The latter csv-file is used in the R-script FMV17_ElevChange_statistics.R to calculate average elevation changes and to do statistical tests.
○ FMV17_CHLA_statistics.r		R-script where the chl-a data is analysed statistically.
○ FMV17_CHLA.csv		Data, as in “~/Experiment2_RAWDATA_part1of2/RESULTS/b9234 (Roeland malvern, OrgCN ChIA 2017)_COMPLETE.xls”. This data is loaded into the R-script “FMV17_CHLA_statistics.r” for further statistical analysis of Chl-a data.
○ FMV17_ElevChange_outliers.csv		The substrate elevation change data, as computed in “Experiment_Vaucheria_Fluidmud_Watercontent.m” is listed here, after outliers (see Manuscript for explanation) have been filtered out (ElevChange_mL_ORIGINAL). On this dataset, a data transformation is applied (see manuscript for info) and the transformed data is stored as “ElevChange_mL”. This data set is used in FMV17_ElevChange_statistics.R to do statistical tests.
○ FMV17_ElevChange_statistics.R		R-script where statistical tests are performed on the dataset in FMV17_ElevChange_outliers.csv.
○ FMV17_SAMPLING_rawdata_duplicateT0.csv		As “FMV17_SAMPLING_rawdata.xlsx”, but duplicate datapoints for T0 are removed and a logarithmic transformation is applied on the data FMV17_SAMPLING_rawdata.xlsx). This dataset is loaded into FMV17_SAMPLING_statistics.r to do statistical tests of the water content data.
○ FMV17_SAMPLING_rawdata.xlsx		In this Excel sheet, the sediment sample weights of all time steps (T0-T3) are combined (for original data, see the different Excel sheets in “Experiment2_RAWDATA”) and water content is calculated.
○ FMV17_SAMPLING_statistics.r		
○ output		Statistical output from FMV17_SAMPLING_statistics.r, FMV17_ElevChange_statistics.R and FMV17_CHLA_statistics.r.
	▪ CHLA_anova.csv	
	▪ CHLA_boxplot.png	
	▪ CHLA_hist.png	
	▪ CHLA_levene.csv	
	▪ CHLA_ORIGINAL_summary.csv	
	▪ CHLA_qq.png	
	▪ CHLA_shapiro_pvalue.csv	
	▪ CHLA_summary.csv	
	▪ CHLA_tHSD.csv	
	▪ CHLA_tHSDplot.png	
	▪ ElevChange_anova.csv	
	▪ ElevChange_boxplot.png	
	▪ ElevChange_hist.png	
	▪ ElevChange_levene.csv	
	▪ ElevChange_ORIGINAL_boxplot.png	
	▪ ElevChange_ORIGINAL_summary.csv	
	▪ ElevChange_qq.png	

	▪ ElevChange_shapiro_pvalue.csv	
	▪ ElevChange_summary.csv	
	▪ ElevChange_tHSD.csv	
	▪ ElevChange_tHSDplot.png	
	▪ FMV17_CHLA_dunn.csv	
	▪ WC_anova.csv	
	▪ WC_boxplot.png	
	▪ WC_hist.png	
	▪ WC_levene.csv	
	▪ WC_ORIGINAL_summary.csv	
	▪ WC_qq.png	
	▪ WC_shapiro_pvalue.csv	
	▪ WC_summary.csv	
	▪ WC_tHSD.csv	
	▪ WC_tHSDplot.png	
○ Fig7		
▪ Fig4.7.pdf		
○ FigS1		
▪ FigS1.pdf		Supplementary Figure 1.
○ FigS2		
▪ SFig4.2.pdf		Supplementary Figure 2.
○ FigS3		
▪ SFig4.3.pdf		Supplementary Figure 3. Photos were taken from the folder ~/EXPERIMENT2_RAW_part2of2/T3/T3_COMPRESSION_WEIGHT_topview/photos
○ TableS1		
▪ Art3_v7_TableS1.pptx		Powerpoint file where the output of all statistical tests (see ~/Figures/Fig5+6/Figure5/rawdata/output and ~/Figures/Fig5+6/Figure6/rawdata/output) are combined into one table, which becomes Table S1 in the manuscript.