Table S6. Results of flume level (γ) biodiversity partitioning into independent orthogonal components α and β, or richness and evenness. The table gives slopes b_1, coefficients of determination (r^2) and significance levels of linear models of diversity measures on flow heterogeneity (SD_{Rxyz}). γ-, α-, β-diversity and Hill-evenness were computed for Hill exponents q = 1 (i.e., all OTU´s equally weighed by their frequency) and q = 2 (i.e., index is disproportionately sensitive towards common OTU´s). Computations for q = 0 (i.e., index is maximally sensitive towards rare OTU´s) are equivalent to richness. All diversity indices except Pielou´s evenness and mean Bray-Curtis dissimilarity were expressed as numbers equivalents. Full and reduced (red.) set refer to use of all OTUs detected by TRFLP-fingerprinting (full set) or conservative reanalysis using a reduced dataset limited to taxa found at all microhabitats (=samples) at each date which effectively limits the analysis to an investigation of evenness differences. All data standardised and pooled from 4 sampling dates, total sample size = 16 per flume, significant relationships printed bold.

	Hill exponent q = 1 Shannon entropy	Hill exponent q = 2 Gini-Simpson coefficient
γ-diversity, full set	$b_1 = +0.06$, $r^2 = 0.01$ P = 0.62	$b_1 = +0.12$, $r^2 = 0.05$ P = 0.32
γ-diversity, red. set	$b_1 = +0.14$, $r^2 = 0.06$ P = 0.35	$b_1 = +0.13$, $r^2 = 0.05$ P = 0.36
α-diversity, full set	$b_1 = +0.07$, $r^2 = 0.01$ P = 0.57	$b_1 = +0.12$, $r^2 = 0.05$ P = 0.31
α-diversity, red. set	$b_1 = +0.07$, $r^2 = 0.01$ P = 0.63	$b_1 = +0.08$, $r^2 = 0.02$ P = 0.59
β-diversity, full set	**$b_1 = +0.31$, $r^2 = 0.30$** **P < 0.01**	**$b_1 = +0.37$, $r^2 = 0.41$** **P < 0.001**
β-diversity, red. set	**$b_1 = +0.45$, $r^2 = 0.63$** **P < 0.001**	**$b_1 = +0.46$, $r^2 = 0.64$** **P < 0.001**
evenness (Hill) – full set	$b_1 = -0.02$, $r^2 = 0.001$ P = 0.88	$b_1 = -0.06$, $r^2 = 0.01$ P = 0.64
evenness (Hill) – red. set	same as γ-diversity	same as γ-diversity
richness (Hill exponent q = 0)	$b_1 = +0.04$, $r^2 = 0.005$ P = 0.74	
evenness (Pielou) – full set	$b_1 = +0.22$, $r^2 = 0.16$ P = 0.06	
evenness (Pielou) – red. set	$b_1 = +0.14$, $r^2 = 0.06$ P = 0.34	
mean Bray-Curtis dissimilarity as β-diversity	**$b_1 = +0.41$, $r^2 = 0.53$** **P < 0.001**	