Table S7. Associations between metavariable dissimilarity matrices as expressed by Mantel statistics. Mantel (upper diagonal) and partial Mantel (lower diagonal) statistics (controlling for flow heterogeneity), significant values printed bold, P-values not corrected for multiple testing, see Table S3 for variables used for calculation of dissimilarity matrices. Upper left subset of matrix is identical to matrix given in Table 1.

	β-diversity	resource use distribution	resource use diversity	DOC mass transfer	glucose mass transfer	community composition	structural diversity	Chloro-phyll-a	γ-diversity	γ-evenness
flow heterogeneity (HET)	**.81** **P=.007**	.38 P=.22	**.48** **P=.046**	**.55** **P=.018**	**.94** **P=.000**	.52 P=.07	**.91** **P=.000**	**.86** **P=.004**	-.28 P=.71	.09 P=.40
β-diversity (BETA)		**.61** **P=.011**	**.83** **P=.008**	**.73** **P=.010**	**.86** **P=.004**	.50 P=.06	**.74** **P=.015**	**.60** **P=.032**	-.20 P=.67	.14 P=.34
resource use distribution (DOCUSE)	**.55** **P=.038**		**.51** **P=.017**	.21 P=.23	.29 P=.18	.23 P=.31	.24 P=.24	.00 P=.35	-.41 P=.98	.43 P=.16
resource use diversity (DOCDIV)	**.85** **P=.007**	.40 P=.09		.54 P=.07	**.59** **P=.024**	.16 P=.26	.40 P=.08	.36 P=.09	-.25 P=.75	-.19 P=.73
DOC mass transfer (EFDOCMT)	.57 P=.05	.01 P=.37	.37 P=.12		**.67** **P=.007**	**.68** **P=.000**	**.75** **P=.017**	.42 P=.07	.26 P=.17	.15 P=.24
glucose mass transfer (EFGLCMT)	**.50** **P=.047**	-.21 P=.75	.45 P=.09	.53 P=.07		.47 P=.11	**.90** **P=.000**	**.88** **P=.007**	-.20 P=.59	-.03 P=.49
community composition (COMMCOMP)	.15 P=.33	.04 P=.41	-.12 P=.64	**.55** **P=.001**	-.06 P=.49		.37 P=.16	-.52 P=.97	**.83** **P=.049**	.49 P=.16
structural diversity (STRUCDIV)	.03 P=.44	-.25 P=.79	-.10 P=.59	**.72** **P=.021**	.30 P=.15	**.60** **P=.024**		**.81** **P=.007**	-.12 P=.59	.18 P=.29
Chlorophyll-a (CHLA)	-.31 P=.79	-.69 P=.96	-.13 P=.63	-.13 P=.66	.40 P=.14	.22 P=.30	.14 P=.33		-.30 P=.80	-.17 P=.62
γ-diversity (GAMMA)	.05 P=.39	-.34 P=.85	-.14 P=.63	**.52** **P=.004**	.21 P=.24	.53 P=.11	.33 P=.20	-.11 P=.51		.11 P=.41
γ-evenness (GAMMA-E)	.11 P=.38	.43 P=.16	-.27 P=.81	.12 P=.28	-.34 P=.77	.47 P=.12	.23 P=.25	-.50 P=.89	.14 P=.41	