

Table S6: Overview of TA, DIC, $\delta^{13}\text{C}_{\text{DIC}}$, major elements (Ca, Mg, DSi), pCO_2 , CH_4 and N_2O concentrations, CO_2 and CH_4 fluxes and K600 for the different sampling sites during the dry season sampling campaign of 2013.

River	Station ID	TA [mmol L ⁻¹]	DIC [mmol L ⁻¹]	$\delta^{13}\text{C}_{\text{DIC}}$ [‰]	Ca	Mg [μM]	DSi	pCO_2 [ppm]	CH_4 [nmol L ⁻¹]	N_2O	CO_2 flux [mg C m ⁻² d ⁻¹]	CH_4 flux	K600 [cm h ⁻¹]
Zambezi mainstem													
Zambezi River	ZBZ.1	0.148	0.052	-21.9	8.6	5.6	137	2555	636	9.3	222		0.2
Zambezi River	ZBZ.2	0.863	0.295	-9.5	79	41	165	617	79	8.1			
Zambezi River	ZBZ.3	1.598	1.566	-9.8	436	288	215	681	259	8.1	269	68.5	2.8
Zambezi River	ZBZ.4	1.042	0.962	-9.2	261	167	211		454	8.1			
Zambezi River	ZBZ.5	1.075	0.988	-7.8	270	171	211	816	873	8.1	355	100.1	2.4
Zambezi River	ZBZ.6	1.050	1.010	-7.5	274	177	203	300	265	8.8	-23	5.5	0.4
Zambezi River	ZBZ.8	1.043	1.003	-5.9	121	59	173	707	300	8.1	168	12.7	1.6
Zambezi River	ZBZ.10	1.329	0.816	-7.1	224	116	174	2600	25	11.4			
Zambezi River	ZBZ.11	1.119	0.813	-6.4	220	113	163	1602	311	9.9	3402	349.5	6.9
Zambezi River	ZBZ.13	0.996	0.979	-5.1	287	156	176	462	403	7.8	-33	19.9	
Tributaries													
Kafue River	KAF.1	3.043	2.960	-10.7	1860	1035	308	2529	261	10.3			
Kafue River	KAF.4	2.409	2.441	-6.9	1360	1247	282	331	190	7.2			
Kafue River	KAF.5	3.162	3.134	-7.9	999	916	213	1705	656	7.6	251	4.5	0.5
Kafue River	KAF.6	1.939	1.881	-5.7	628	421	162	1022	92	9.5	566	19.6	2.3
Kafue River	KAF.8	2.439	2.094	-6.3	668	444	205	6049	539	7.0	10870	57.2	4.9
Kafue River	KAF.9	2.464	2.102	-6.6	628	416	194	6647	898	8.3	4195	14.7	1.7
Kafue River	KAF.10	2.125	2.099	-5.8	661	437	201	1099	274	8.7	807	651.7	3.1
Reservoirs													
Kariba Res.	KAR.3	0.843	0.827	-3.5	227	116	176	156	19	8.6	-277	14.1	2.6
Itezhi Tezhi Res.	ITT.2	1.800	1.822	-3.0	598	394	160	165	71	7.8	-418	97.0	4.0