

Figures

Table 1: Summary of study lake characteristics

Characteristic	Mean	LQ	UQ
Max Depth (m)	12.95	9.20	21.34
Ag Landuse (%)	53.27	17.68	74.05
TP (ug/L)	40.00	20.00	110.00
P Retention (%)	0.46	0.24	0.59
Secchi (m)	1.50	0.90	2.40
Chl (ug/L)	11.85	6.05	21.30
Residence Time (yr)	0.63	0.20	1.80

Table 2: Table continues below

	Stream density	Avg. link len.	S. order ratio	Closest lake dist.	Baseflow
Avg. link len.	-0.26				
S. order ratio	-0.26	0.26			
Closest lake dist.	0.27	-0.05	-0.12		
Baseflow	-0.52	0.2	0.19	-0.2	
Up. lake area	-0.16	0.01	-0.25	0.12	0.21
Max depth	-0.04	0.08	0.01		0.23
				0	

Up. lake area

0.17

Table 4: Partition cutoff table

Abb	Scale	Metric	Connectivity Type	Split Value	Delta k
ll	nws	Average Link Length	long	2380.09	0.23
cd	nws	Closest lake distance	long	3273.65	0.22
sd	nws	Stream density	lat	13.84	0.20
lc	focal	Lake Connection	long	NA	0.17
la	nws	Upstream lake area	lat	153.50	0.16
md	focal	Max Depth	NA	19.81	0.15
ll	iws	Average Link Length	long	2177.08	0.14
bf	iws	Baseflow	lat	63.76	0.12

Abb	Scale	Metric	Connectivity Type	Split Value	Delta k
sr	iws	Stream order ratio	long	0.67	0.10
bf	nws	Baseflow	lat	53.43	0.08
cd	iws	Closest lake distance	long	3773.61	0.05
sr	nws	Stream order ratio	long	0.40	0.04
sd	iws	Stream density	lat	4.43	0.03

metric	direction	k	connectivity	in_lake_processing	axis	connectivity type
closest lake distance	lower	higher	lower	higher	lake-stream	long
average link length	lower	higher	lower	higher	stream	long
lakeconnection	DR_Stream	higher	lower	higher	lake	long
upstream lake area	lower	higher	lower	higher	lake	lat
stream density	higher	higher	lower	higher	stream	lat
baseflow	higher	higher	lower	higher	stream	lat
stream order ratio	higher	higher	lower	higher	stream	long

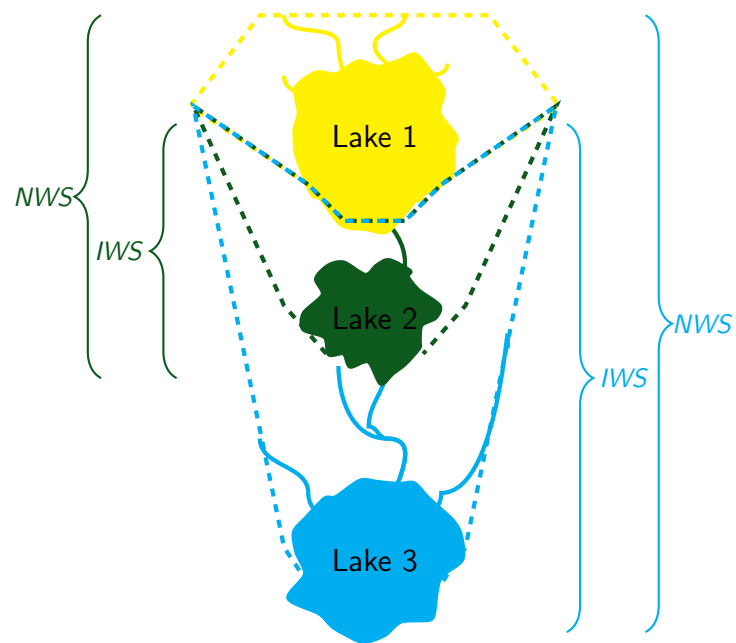


Figure 1: Watershed diagram

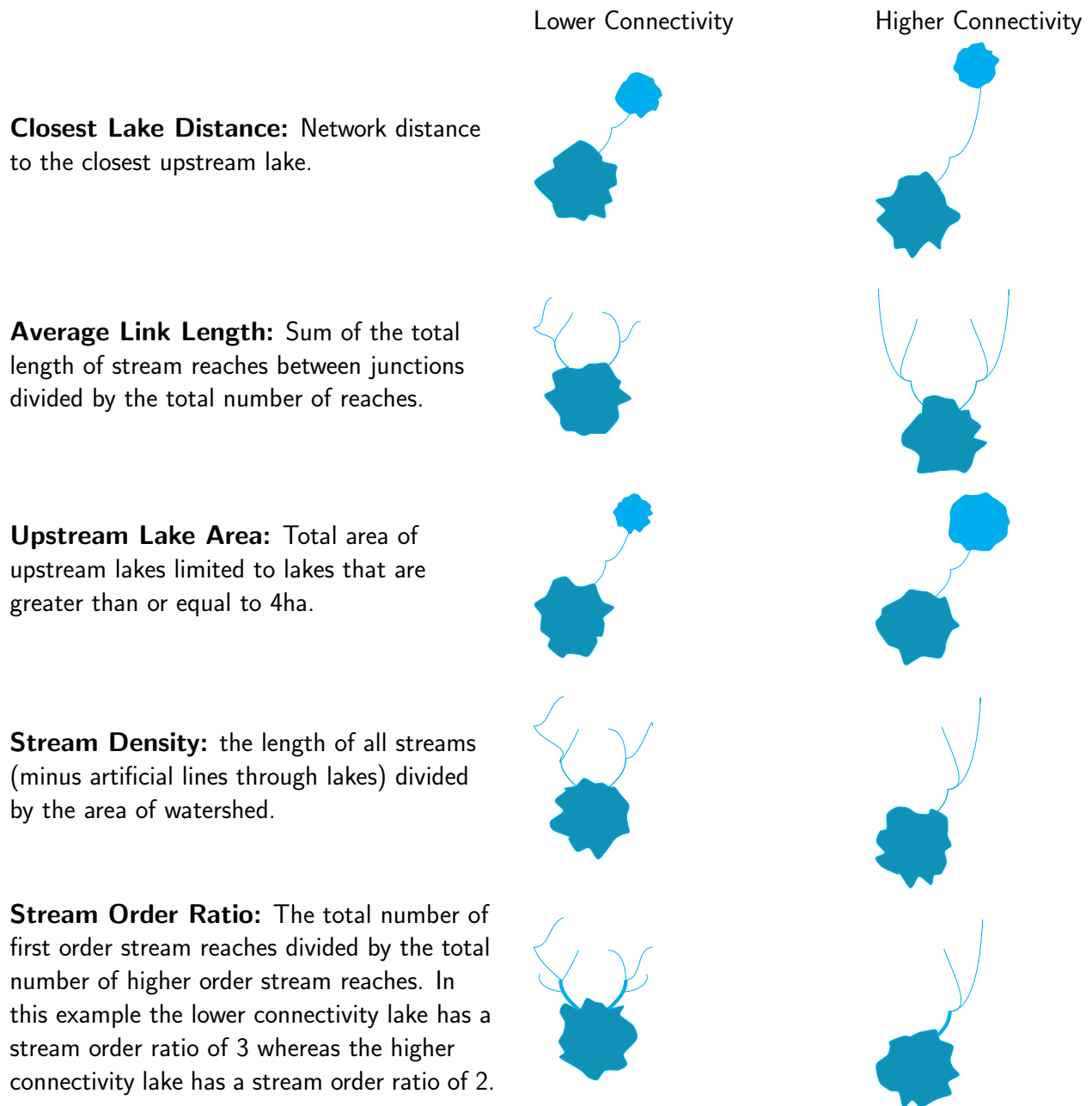


Figure 2: Connectivity metric box

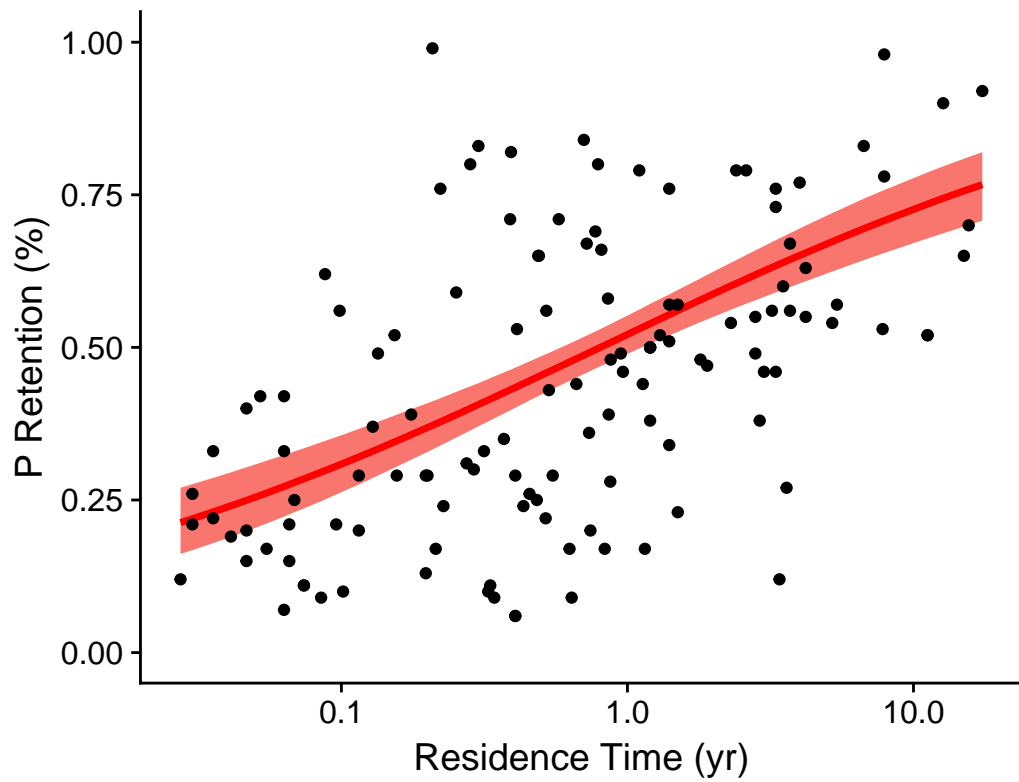


Figure 3: Median and central 95% interval estimates from the non-hierarchical model posterior relative to raw data.

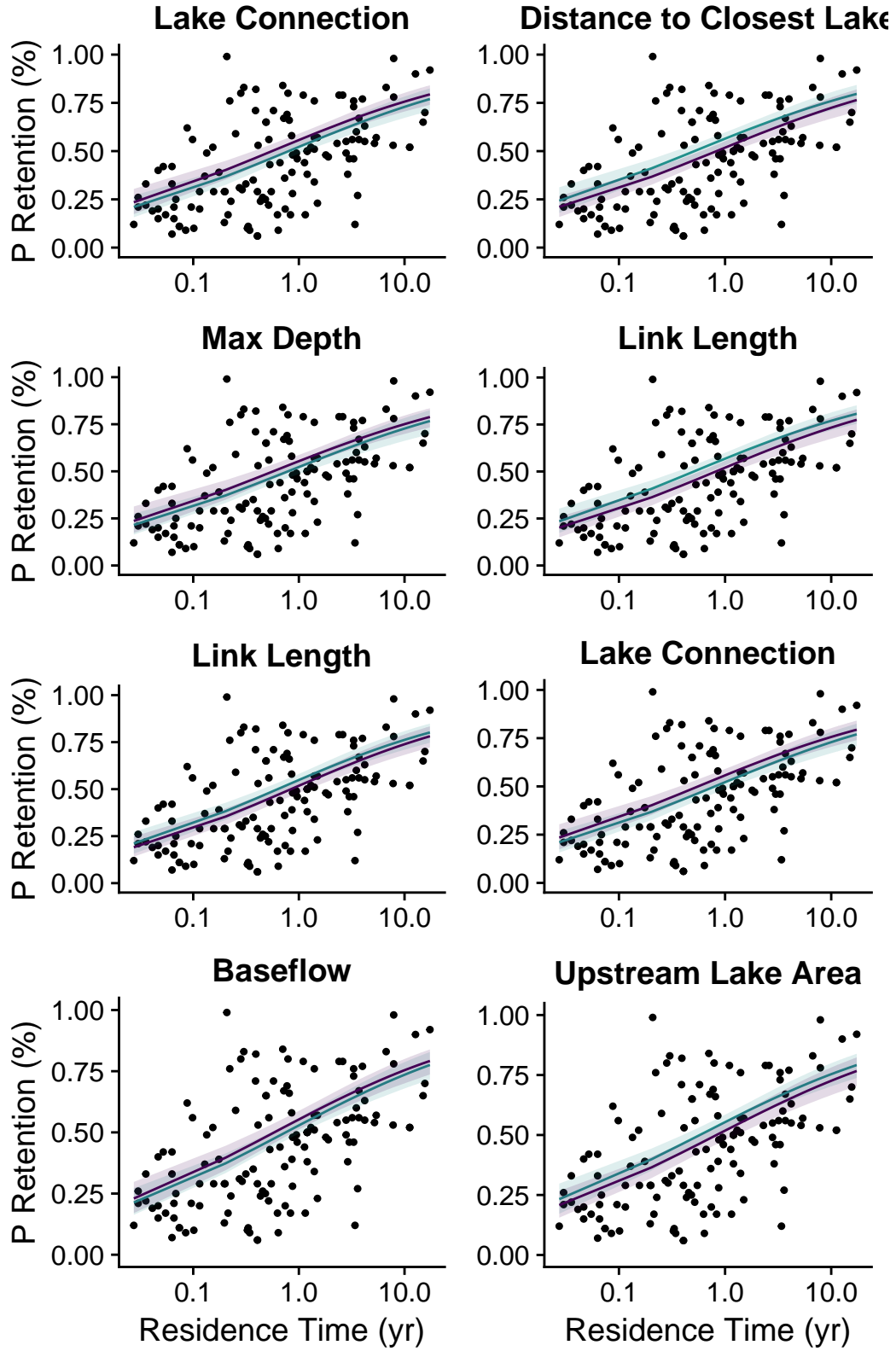


Figure 4: Median and central 95% interval estimates from the hierarchical model posteriors relative to raw data. Dark lines and shaded polygons represent the estimates from the lower of the two partition groups (see Table 1)

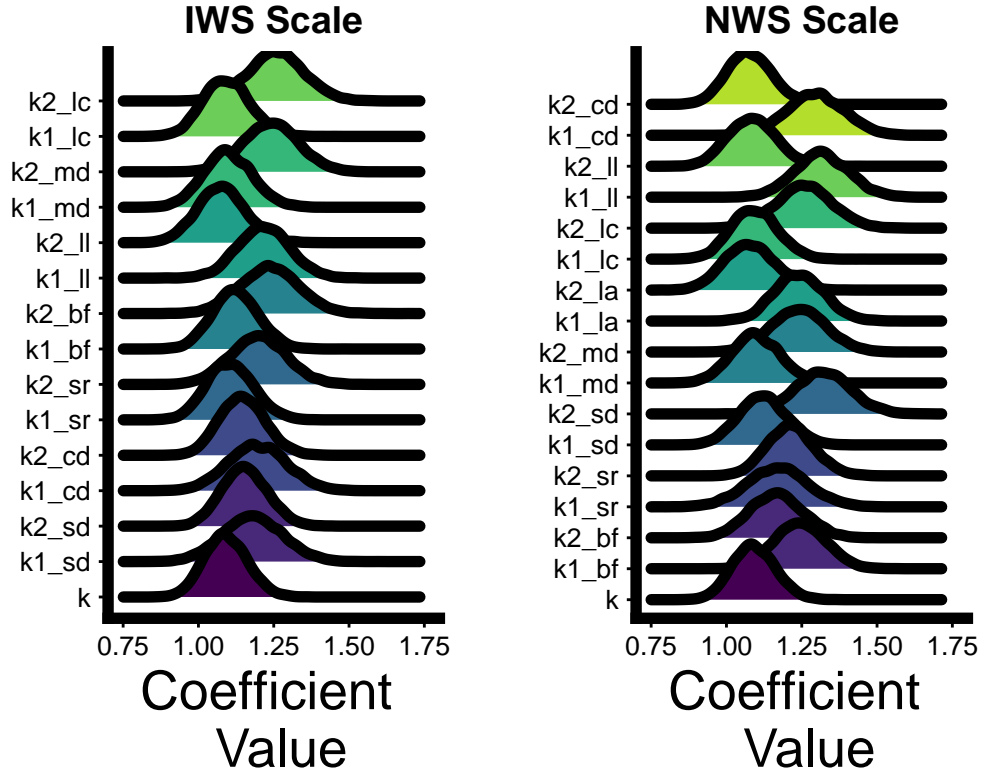


Figure 5: Distribution of Vollenweider's k in low and high connectivity partitions at the IWS and NWS scales.

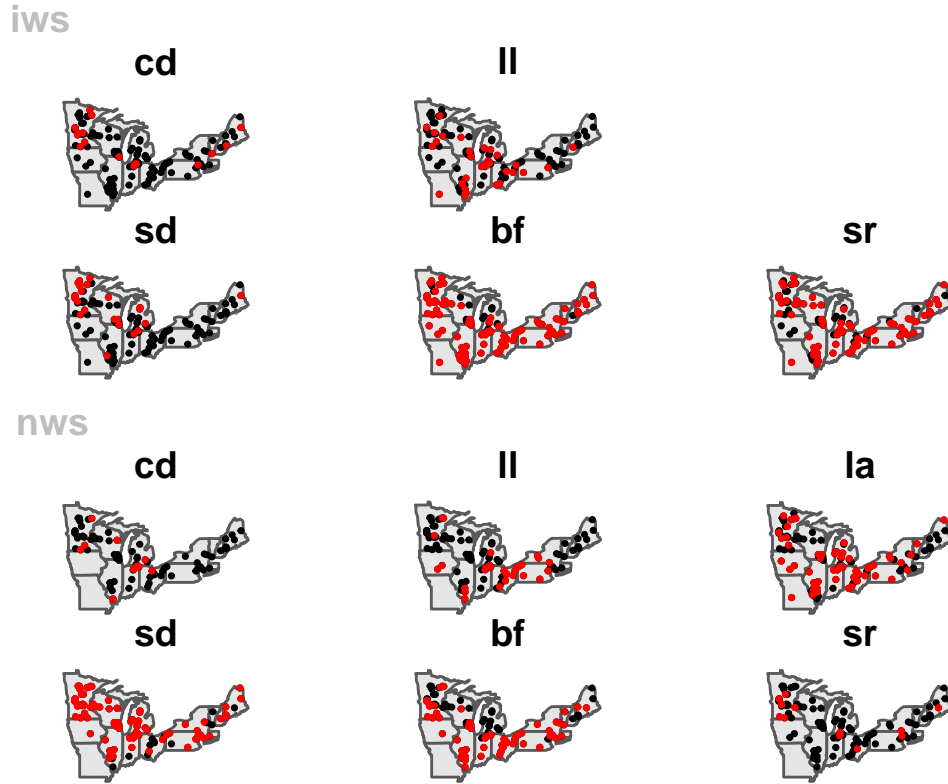


Figure 6: Map of lake connectivity partitions.

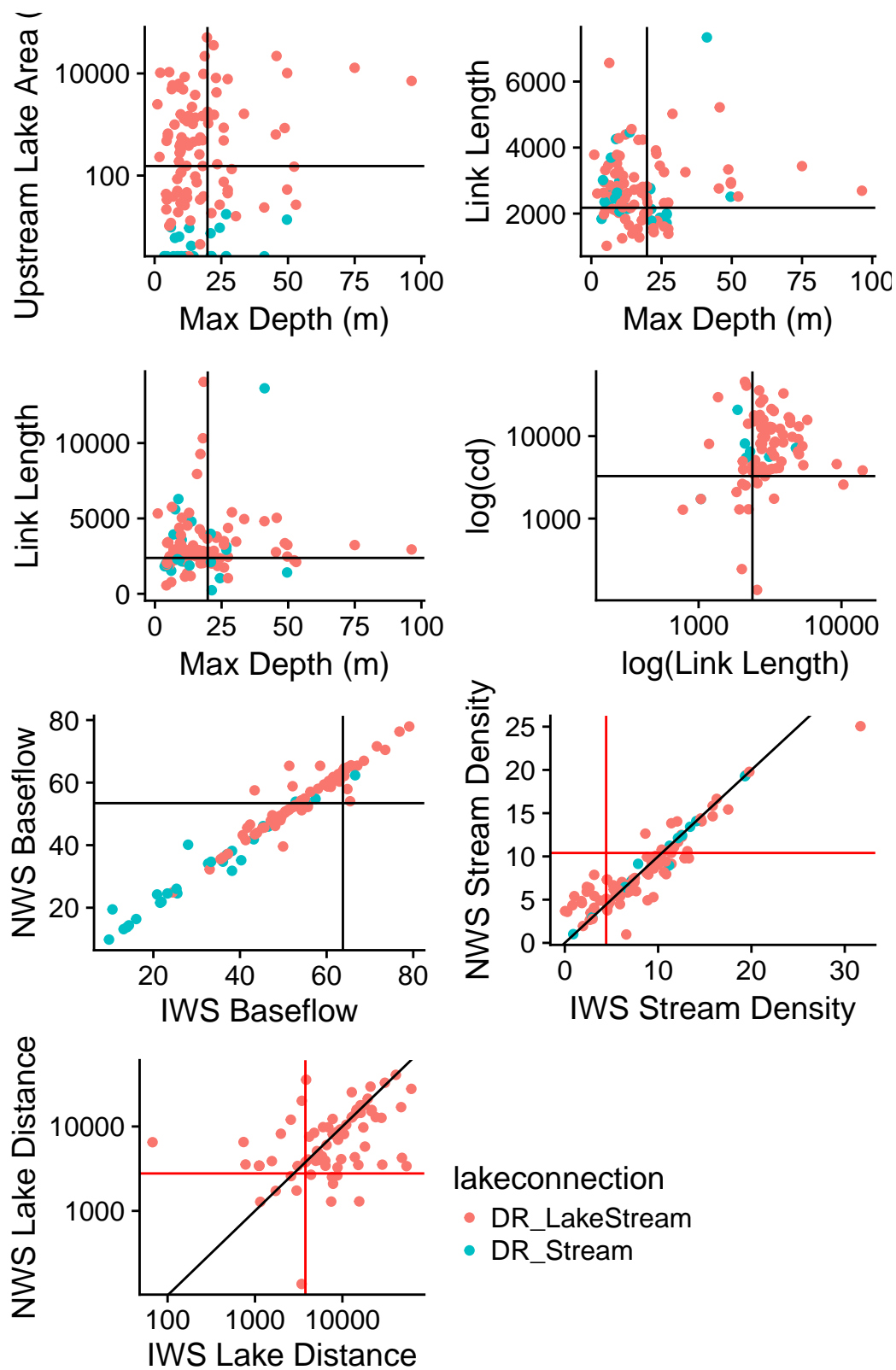


Figure 7: Exploratory plots