

Supplementary Material

Effect of seawater intrusion on the formation of chlorinated and brominated trihalomethanes in coastal groundwater

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Table S1: Chemical composition of synthetic seawater as per ASTM D1141-98 [22].

Compound	Concentration (g/L)
NaCl	24.53
MgCl ₂	5.20
Na ₂ SO ₄	4.09
CaCl ₂	1.16
KCl	0.695
NaHCO ₃	0.201
KBr	0.101
H ₃ BO ₃	0.027
SrCl ₂	0.025
NaF	0.003

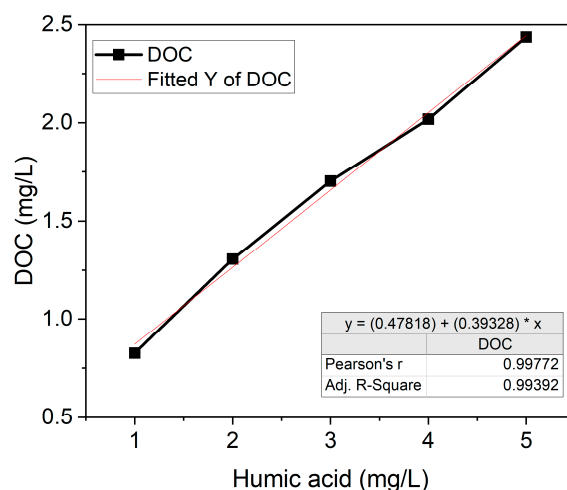


Figure S1. Dissolved organic carbon (DOC) for 1 – 5 mg/L of Humic acid concentration.

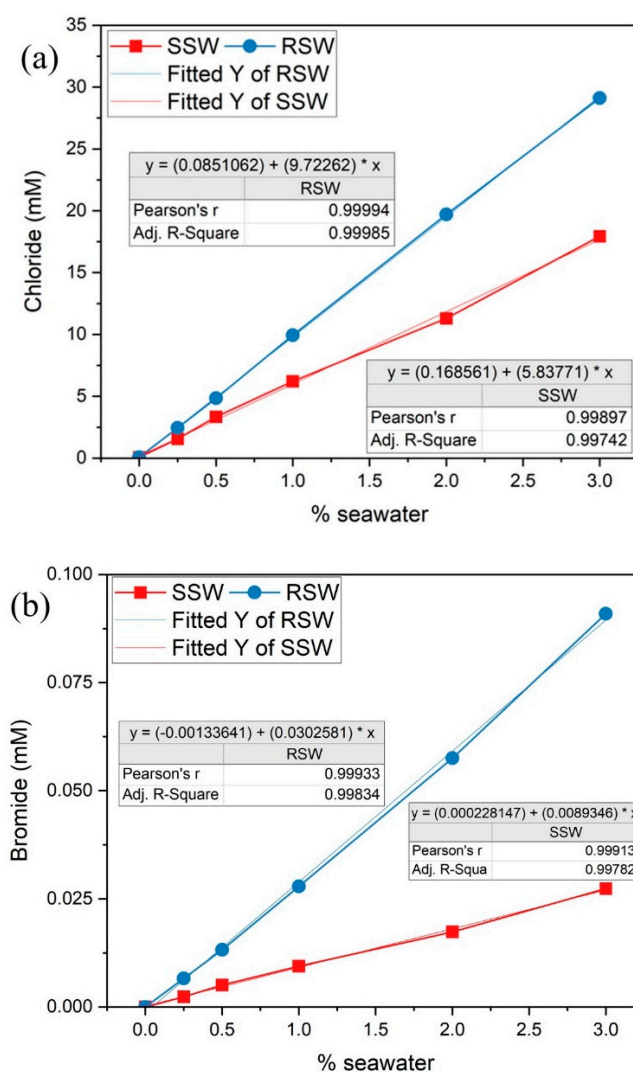


Figure S2. (a) Chloride and (b) bromide concentration at various seawater intrusion rates. SSW: synthetic seawater; RSW: real seawater

Table S2. Regression analysis results with regression model equation, coefficients, and ANOVA for chlorine demand, HA concentration, and SWI levels.

Regression equation					
$Chlorine\ demand\ (mg/L) = 0.004 + 0.448 \times SWI\ (\%) + 0.339 \times HA\ (mg/L)$					
Coefficients					
Term	Coef.	SE Coef.	T-Value	P-Value	
Constant	0.004	0.211	0.02	0.986	
SWI (%)	0.448	0.103	4.37	0.002	
HA (mg/L)	0.3391	0.0643	5.28	0.001	
Model summary					
R ² = 0.84, S= 0.26					
Analysis of variance					
Source	DF	SS	MS	F value	P value

Regression	2	3.328	1.66	23.38	0.000
SWI	1	1.356	1.35	19.06	0.002
HA	1	1.981	1.98	27.84	0.001
Error	9	0.640	0.071		
Lack-of-fit	8	0.640	0.080		
Pure Error	1	0.000	0.000		
Total	11	3.96			

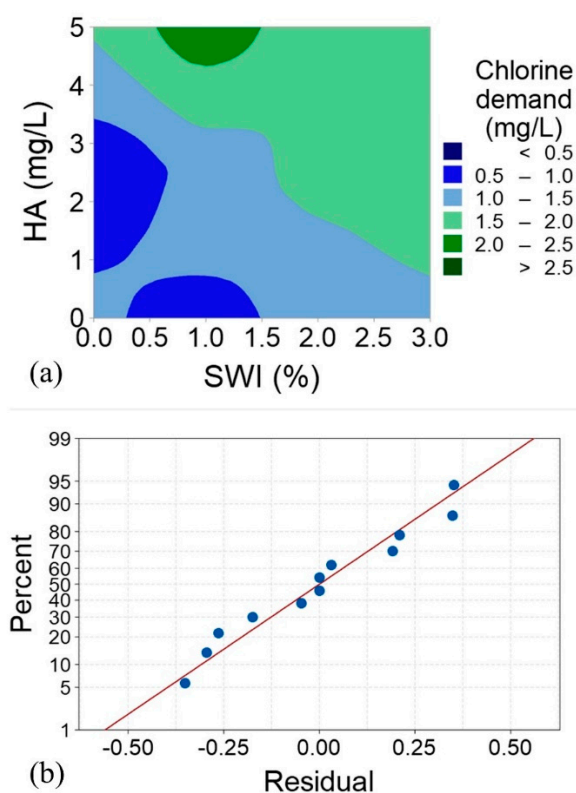


Figure S3. (a). Contour plot of chlorine demand with SWI levels and HA concentration and (b). normal probability plot (response is chlorine demand)

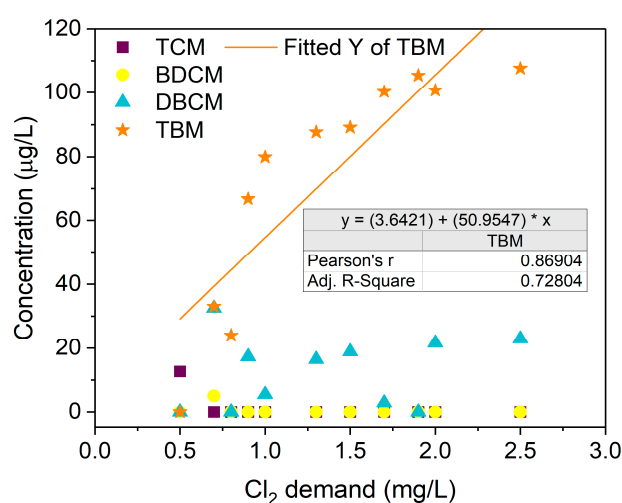


Figure S4. Effect of chlorine demand on speciation of THMs; TTHM: total THMs

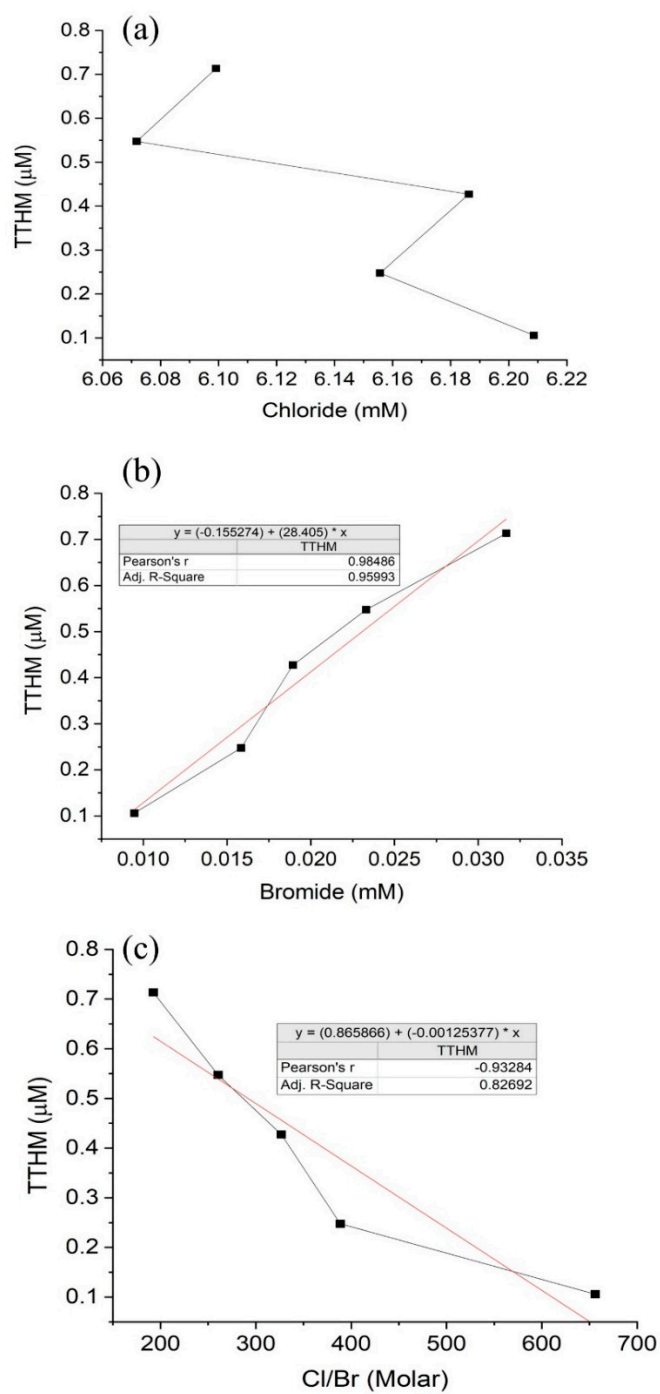


Figure S5. Change in total THMs (TTHMs) with increasing (a) chloride, (b) bromide, and (c) chloride-to-bromide ratio