HYDROGEOCHEMICAL PROPERTIES OF A SALINITY-AFFECTED COASTAL AQUIFER IN WESTERN JAPAN

Hiroshiro, Yoshinari
Urban and Environmental Engineering, Graduate School of Engineering, Kyushu University

Jinno, Kenji
Institute of Environmental Systems, Graduate School of Engineering, Kyushu University

Berndtsson, Ronny
Department of Water Resources Engineering, Lund University

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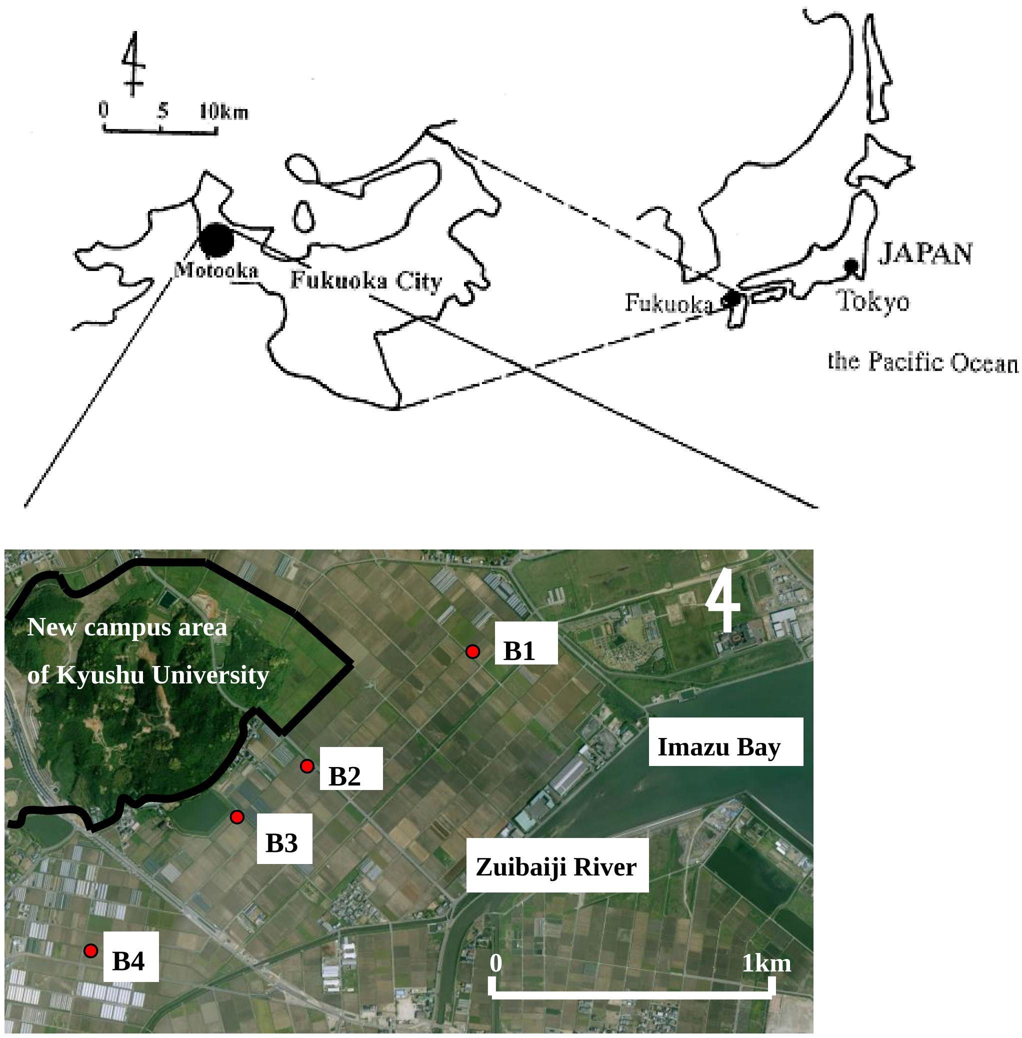

Fig.1 Map of Motooka in Fukuoka City with field site locations.

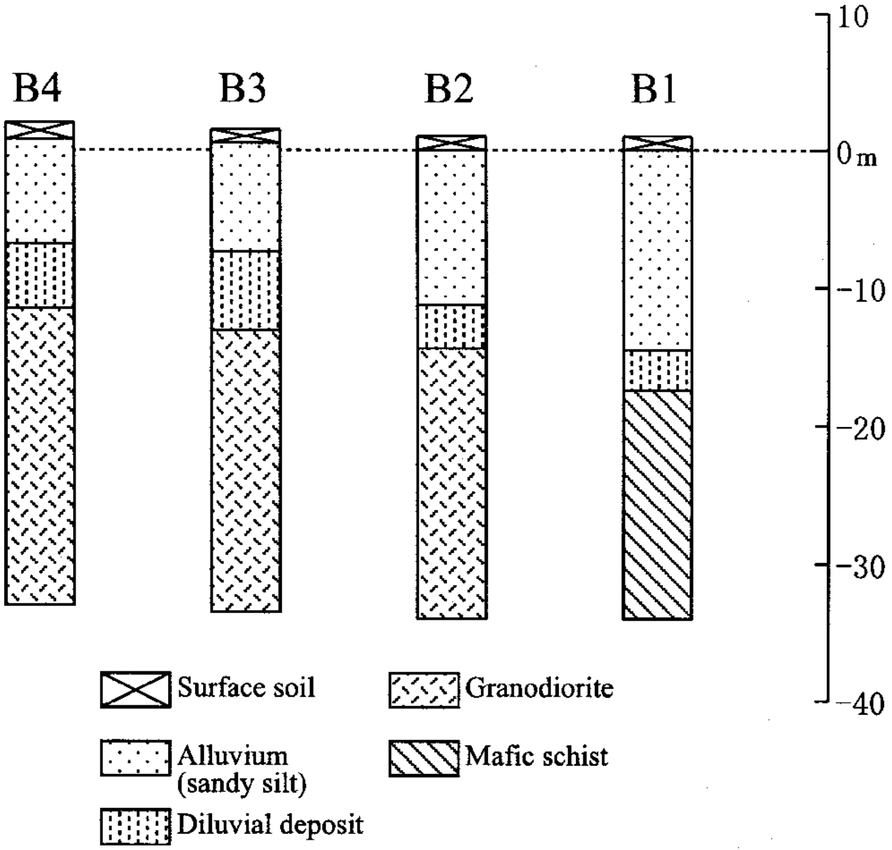

Fig. 2 Geological columnar section

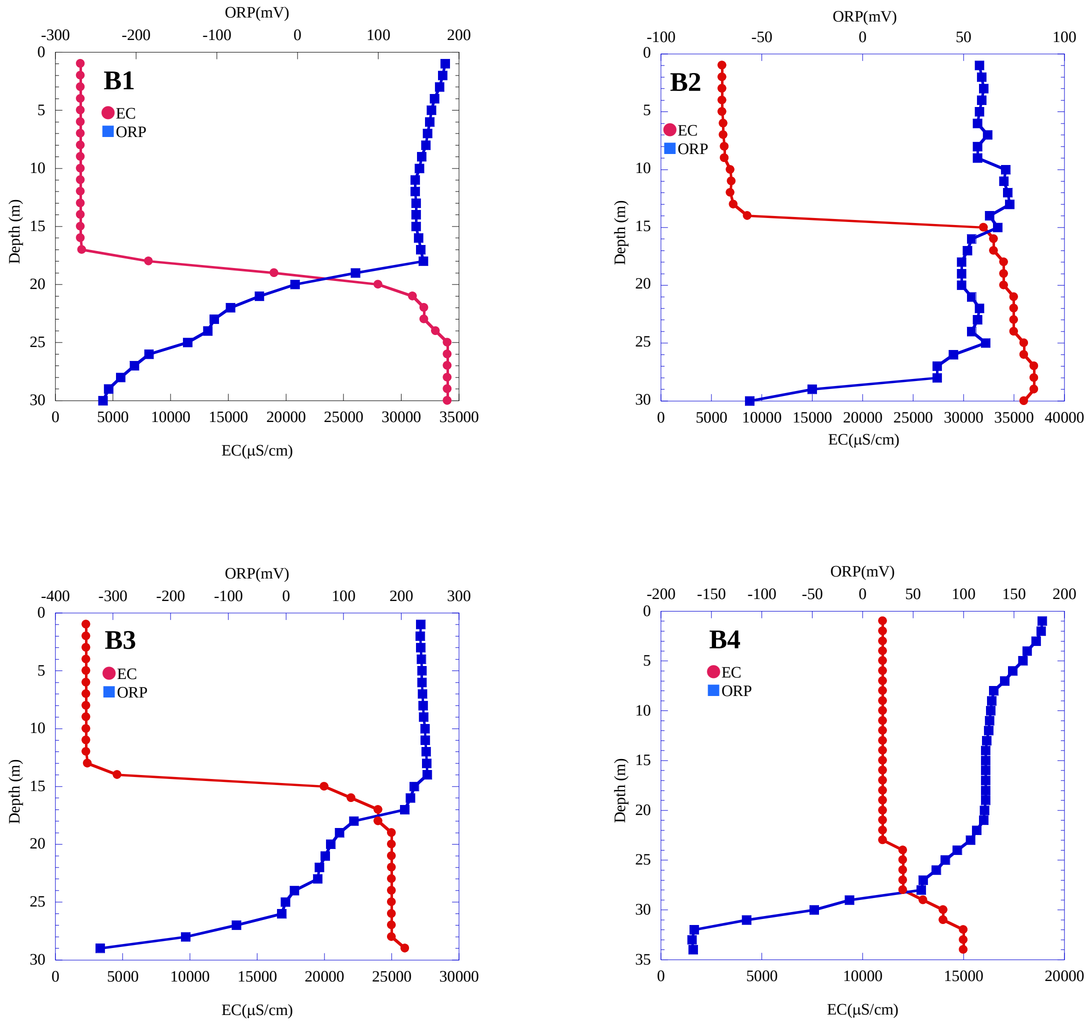

Fig.3 Profile of EC and ORP.

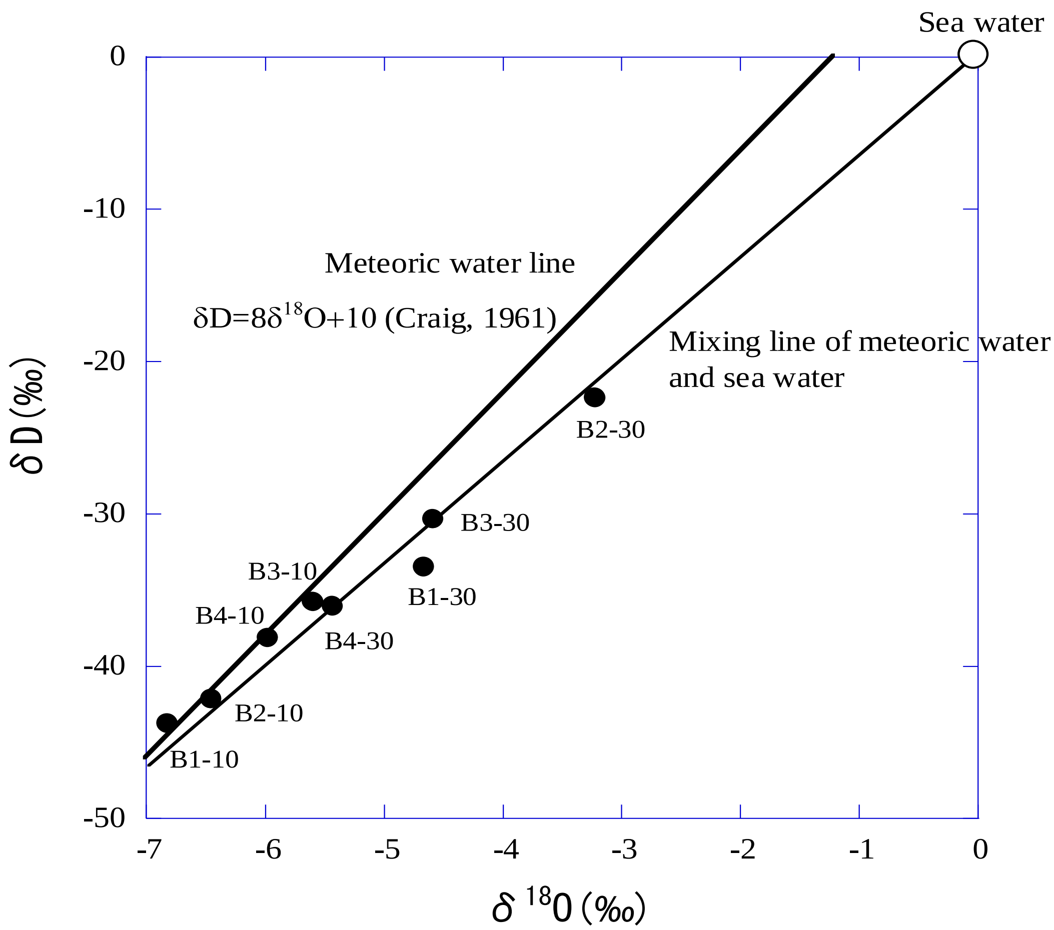

Fig.4 δ D and δ ^{18}O values of groundwater in all sampling points.

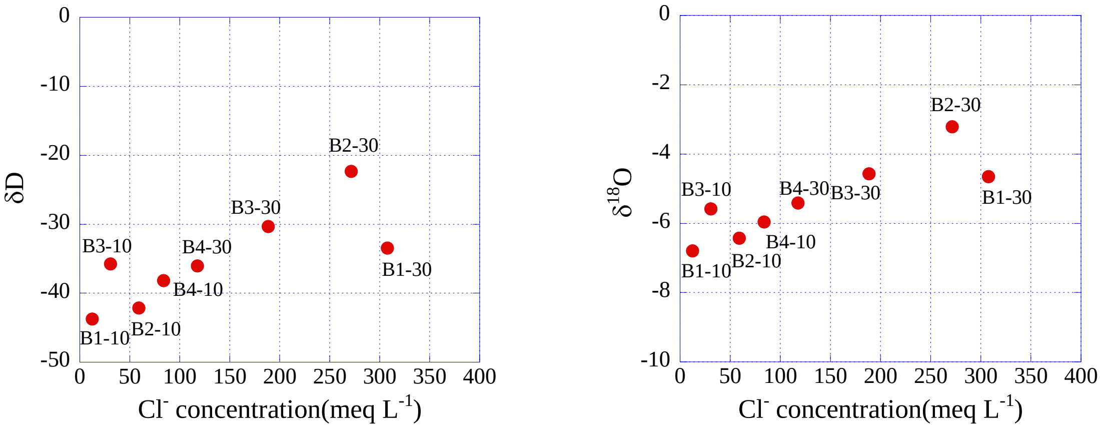

Fig.5 Relationship between δD, δ^{18}O and Cl^- concentration.

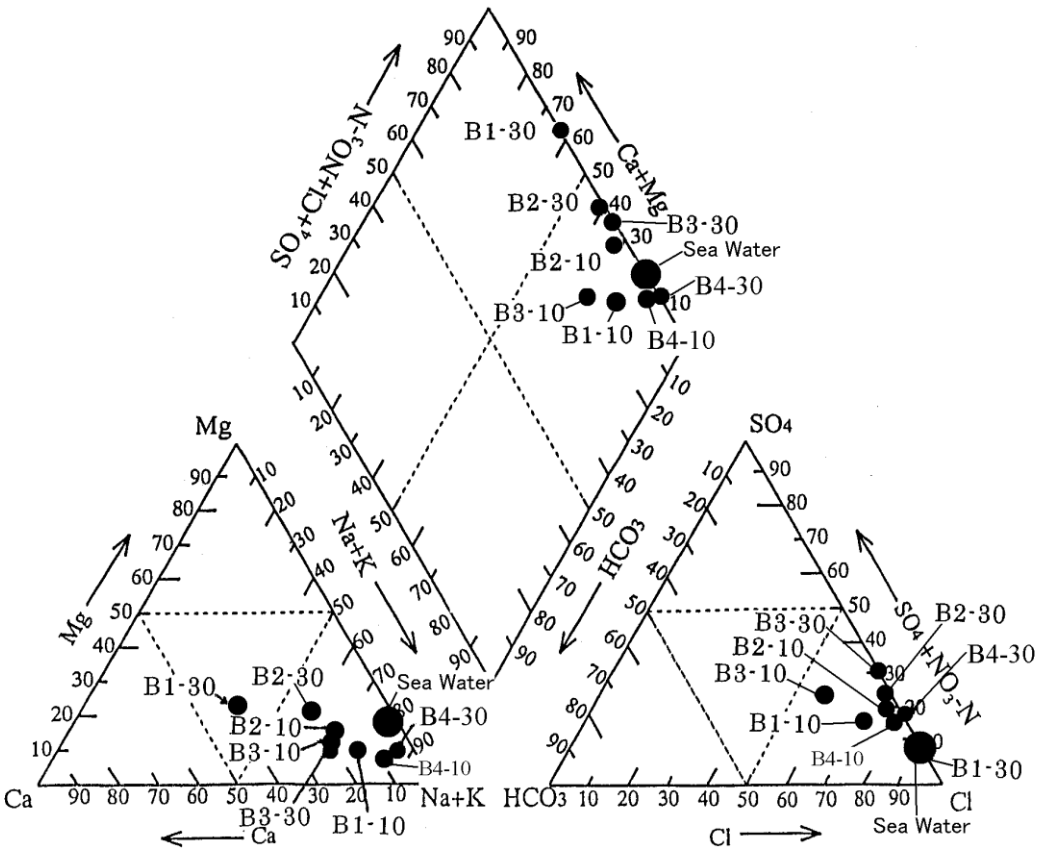

Fig. 6 Piper diagram for all sampling points.

Table 1 Depth of sampled groundwater.

Sampling site	Depth(m)	Symbol
B1	10	B1-10
B1	30	B1-30
B2	10	B2-10
B2	30	B2-30
B3	10	B3-10
B3	30	B3-30
B4	10	B4-10
B4	30	B4-30

Table 2 Fraction of seawater in Motooka (meq L^{-1}).

Motooka B 1−30	Seawater	Sample	Mix	React	Fresh water
Na^+	485.00	116.00	265.15	−149.15	13.60
K^+	10.60	0.65	5.70	−5.05	0.09
Mg^{2+}	110.20	69.00	59.53	9.47	1.55
Ca^{2+}	21.40	123.00	12.73	110.27	2.82
Cl^-	566.00	308.00	308.00	0.00	12.80
$(NO_3^-)+(HCO_3^-)$	2.40	10.00	2.60	7.40	2.82
SO_4^{2-}	58.60	18.10	32.41	−14.31	2.44
fsea	100.00	53.36			

Motooka B 2−30	Seawater	Sample	Mix	React	Fresh water
Na^+	485.00	221.00	234.82	−13.82	53.90
K^+	10.60	0.41	4.56	−4.15	0.20
Mg^{2+}	110.20	72.50	52.69	19.81	11.10
Ca^{2+}	21.40	82.70	17.34	65.36	14.40
Cl^-	566.00	272.00	272.00	0.00	59.40
$(NO_3^-)+(HCO_3^-)$	2.40	53.31	7.92	45.39	11.91
SO_4^{2-}	58.60	51.30	29.40	21.90	8.29
fsea	100.00	41.97			

Motooka B 3−30	Seawater	Sample	Mix	React	Fresh water
Na^+	485.00	153.00	169.48	−16.48	37.50
K^+	10.60	0.37	3.24	−2.87	0.16
Mg^{2+}	110.20	36.10	37.20	−1.10	6.67
Ca^{2+}	21.40	54.50	14.42	40.08	11.50
Cl^-	566.00	189.00	189.00	0.00	31.30
$(NO_3^-)+(HCO_3^-)$	2.40	48.40	13.47	34.93	18.10
SO_4^{2-}	58.60	42.40	21.82	20.58	6.43
fsea	100.00	29.49			

Motooka B4−30	Seawater	Sample	Mix	React	Fresh water
Na^+	485.00	118.00	116.67	1.33	88.80
K^+	10.60	0.40	1.23	−0.83	0.52
Mg^{2+}	110.20	11.90	14.29	−2.39	7.03
Ca^{2+}	21.40	8.58	10.89	−2.31	10.10
Cl^-	566.00	118.00	118.00	0.00	84.10
$(NO_3^-)+(HCO_3^-)$	2.40	7.93	11.46	−3.53	12.15
SO_4^{2-}	58.60	19.80	13.60	6.20	10.20
fsea	100.00	7.03			

Table 3 Tritium concentrations of sampled groundwater.

Sampling site	Tritium conc. (TR)
B1-10	0.8
B1-30	less than 0.3
B2-10	4.4
B2-30	less than 0.3
B3-10	4.1
B3-30	0.5
B4-10	1.1
B4-30	less than 0.3

Table 4 ^{14}C activity.

Sample	Depth(m)	$\delta\ ^{13}C$	^{14}C(pMC)	+/-	Libby age(yr)	+/-
plant(root)	0.2	-13.9	111.45	0.53	modern	
shell	1.9	0.92	76.64	0.46	2137	49
shell	2.8	0.33	55.57	0.34	4720	49
shell	3.7	-1.9	45.39	0.29	6344	51
shell	4.3	-0.09	44.44	0.3	6514	53
shell	5.27	-3.33	41.14	0.28	7134	55
shell	9.9	-1.86	41.37	0.28	7090	55