Table 1. Values of rate constants k_{CO_2}, $k_{OH^-}K_W$, k_d, and $k_{HCO_3^-}$ and first dissociation constant of carbonic acid calculated from the rate constants. Standard deviations of rate constants (in parentheses) were obtained from regressions of k'_h and k'_d vs. $1/a_H$ or a_H. Standard deviations of first dissociation constants were calculated from combined errors of the rate constants, i.e. $\Delta K'_1/K'_1 = [(\Delta k_{CO_2}/k_{CO_2})^2 + (\Delta k_d/k_d)^2]^{0.5}$.

T (°C)	S (×10³)	$k_{CO_2} \times 10^2$ (s^{-1})	$k_{OH^-}K_W \times 10^{11}$ ($mol \cdot dm^{-3} \cdot s^{-1}$)	$k_d \times 10^{-4}$ ($dm^3 \cdot mol^{-1} \cdot s^{-1}$)	$k_{HCO_3^-} \times 10^4$ (s^{-1})	K'_1* (×10⁶)	K'_1† (×10⁶)	K'_1‡ (×10⁶)
25	3.40	3.52(0.06)	9.0(0.5)	4.66(0.07)	1.90(0.19)	0.76(0.02)	0.47(0.04)	0.57
25	22.36	4.00(0.08)	10.3(0.6)	4.58(0.08)	1.47(0.21)	0.87(0.02)	0.70(0.11)	0.85
25	33.77	3.62(0.11)	13.4(0.7)	3.52(0.09)	1.17(0.27)	1.03(0.04)	1.15(0.27)	0.98
25	37.06	3.52(0.04)	15.2(0.3)	3.49(0.04)	1.68(0.15)	1.07(0.04)	0.91(0.09)	1.02
5	33.77	0.40(0.004)	1.44(0.04)	0.52(0.03)	−0.06(0.10)§	0.77(0.04)	—	0.70
15	33.77	1.49(0.04)	3.10(0.15)	1.89(0.07)	0.49(0.19)	0.79(0.04)	0.63(0.25)	0.86
25	33.77	3.62(0.11)	13.4(0.7)	3.52(0.09)	1.17(0.27)	1.03(0.04)	1.15(0.27)	0.98
35	33.77	7.56(0.32)	43.3(3.1)	6.39(0.05)	6.00(1.8)	1.18(0.03)	0.73(0.22)	1.06

* Calculated from k_{CO_2}/k_d.
† Calculated from $k_{OH^-}K_W/k_{HCO_3^-}$.
‡ Calculated from equation fit by Millero 1979 to data of Mehrbach et al. 1973.
§ Estimated value for this constant is $k_{OH^-}K_W/K'_1 = 0.21 \times 10^{-4}$.