Comment 4: p. 2612, Eq 10: Why does this equation differ from K4 in Table 1?

Reply: Equation (10) is derived from K4 in Table 1. We added the following to clarify this:

"The corresponding equilibrium expression is

$$K = \frac{[H^+][NO_3^-]\gamma_{H^+}\gamma_{NO_3^-}}{P_{HNO_3} w_{H_2O}^2}$$

(10)

where K is the equilibrium constant; [*A*] denotes the molar concentration of *A*; γ_{H^+} and $\gamma_{NO_3^-}$ are the activity coefficients of H^+ and NO_3^-; P_{HNO_3} is the partial pressure of HNO_3 gas; w_{H_2O} is the water content.

Since $\gamma_{HNO_3}^2 = \gamma_{H^+}\gamma_{NO_3^-}$ and $P_{HNO_3} = [HNO_3]RT$,

$$K = \frac{[H^+][NO_3^-]\gamma_{HNO_3}^2}{[HNO_3]w_{H_2O}^2 RT}$$

(11)

where γ_{HNO_3} is the mean activity coefficient of H^+ and NO_3^-; *R* is the universal gas constant; and *T* is temperature…" (On page 9, lines 11-19)