

**Accessory publication**

**Salinity-induced acidification in a wetland sediment through the displacement of clay-bound iron(II)**

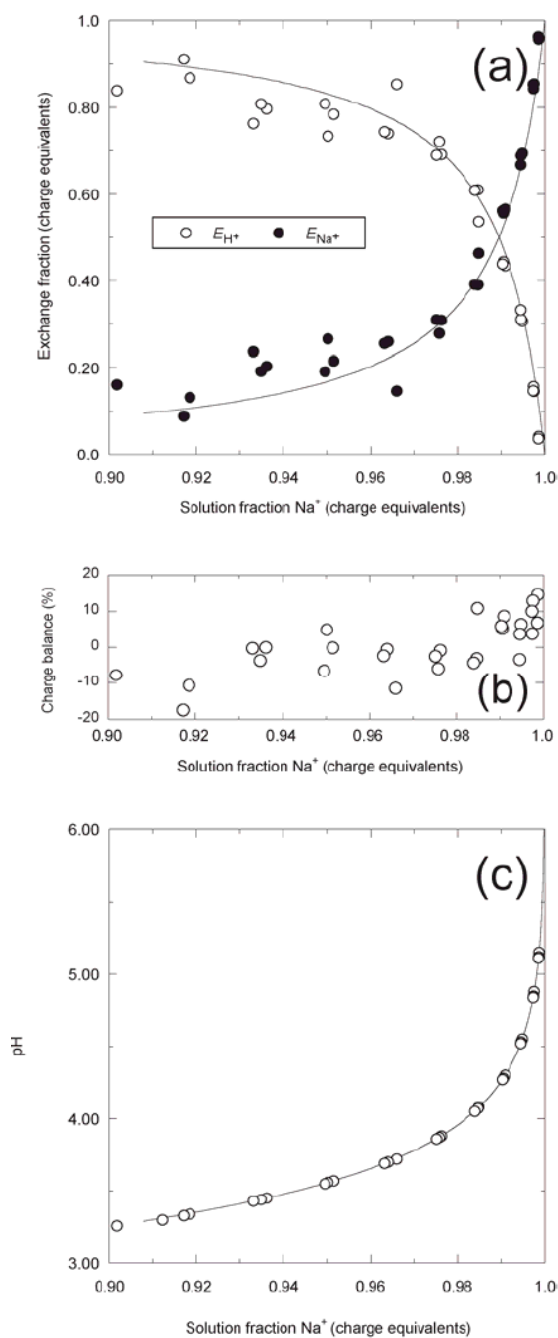
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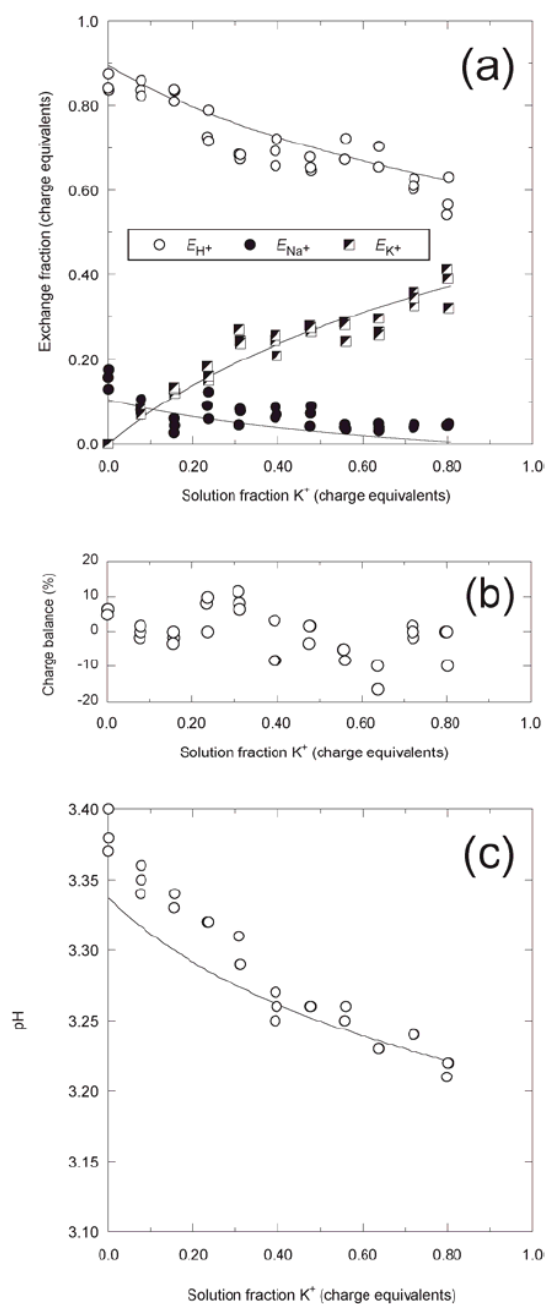
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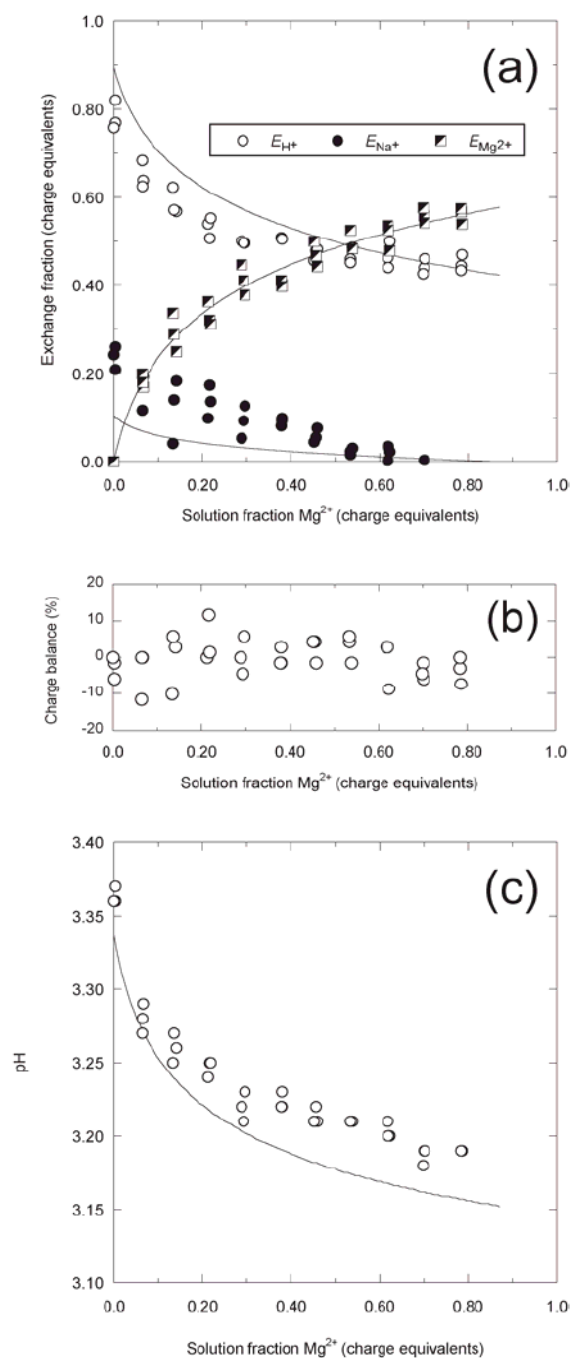
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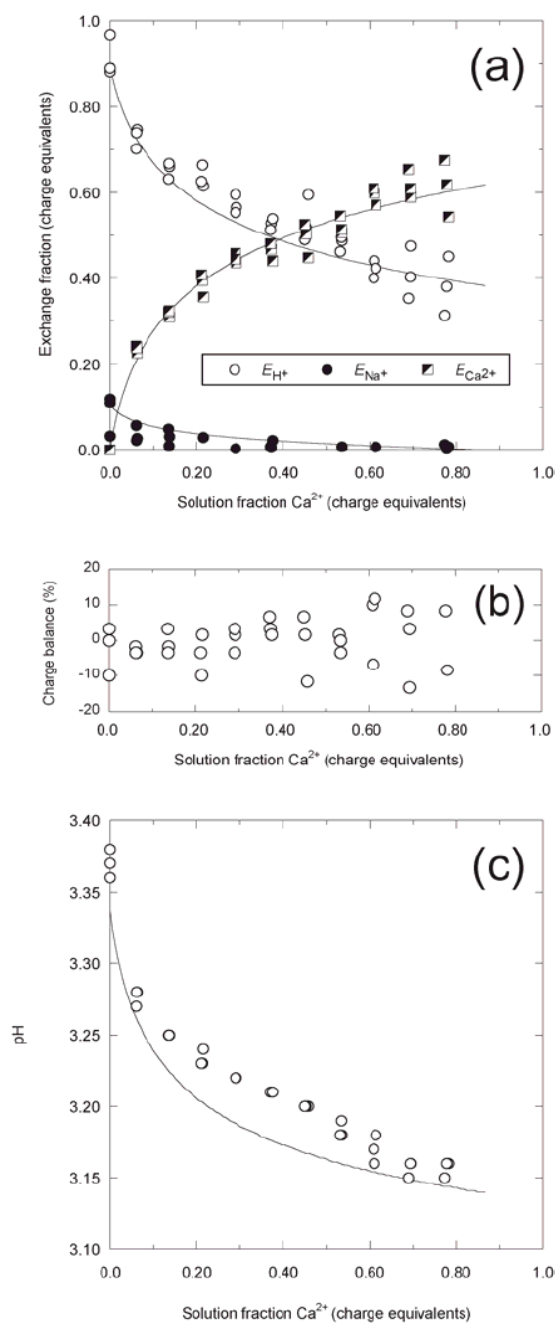
**Fig. A1.** (a) Experimental charge equivalent fractions of Na<sup>+</sup> and H<sup>+</sup> exchanged onto purified Norman's Lagoon clay. Solid lines are modelled using the exchange constants in Table 1 (main paper). (b) Experimental charge balance, plotted as percentage deviation from average exchange site concentration. (c) Experimental (O) and modelled (solid line) pH of clay mixture; all figures plotted as a function of the charge equivalent fraction Na<sup>+</sup> in solution.



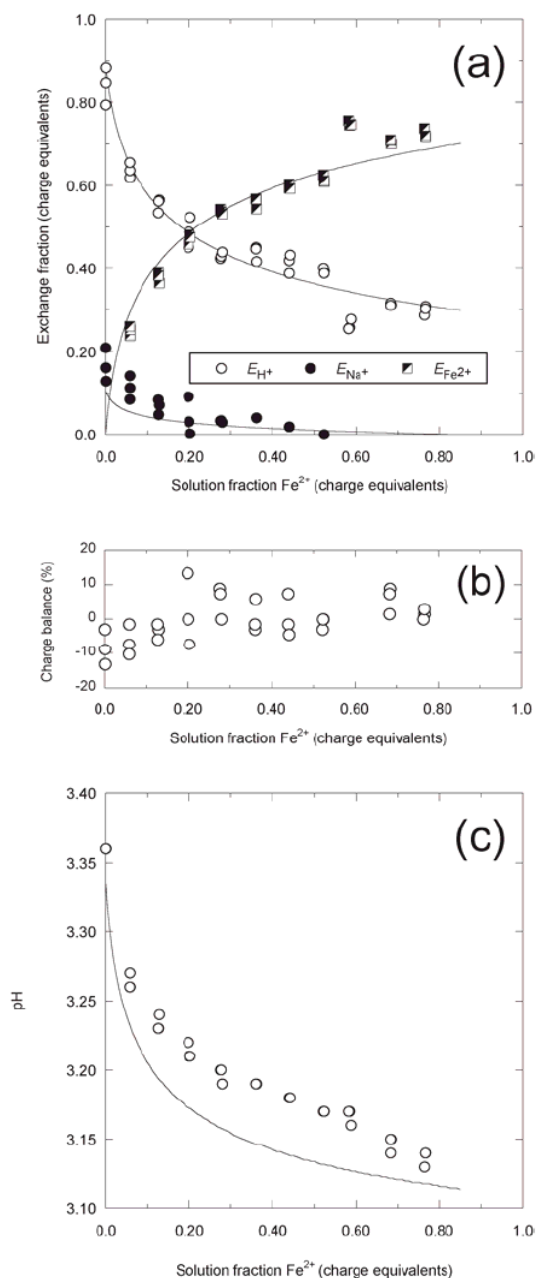
**Fig. A2.** (a) Experimental charge equivalent fractions of K<sup>+</sup>, Na<sup>+</sup> and H<sup>+</sup> exchanged onto purified Norman's Lagoon clay. Solid lines are modelled using the exchange constants in Table 1 (main paper). (b) Experimental charge balance, plotted as percentage deviation from average exchange site concentration. (c) Experimental (○) and modelled (solid line) pH of clay mixture; all figures plotted as a function of the charge equivalent fraction K<sup>+</sup> in solution.



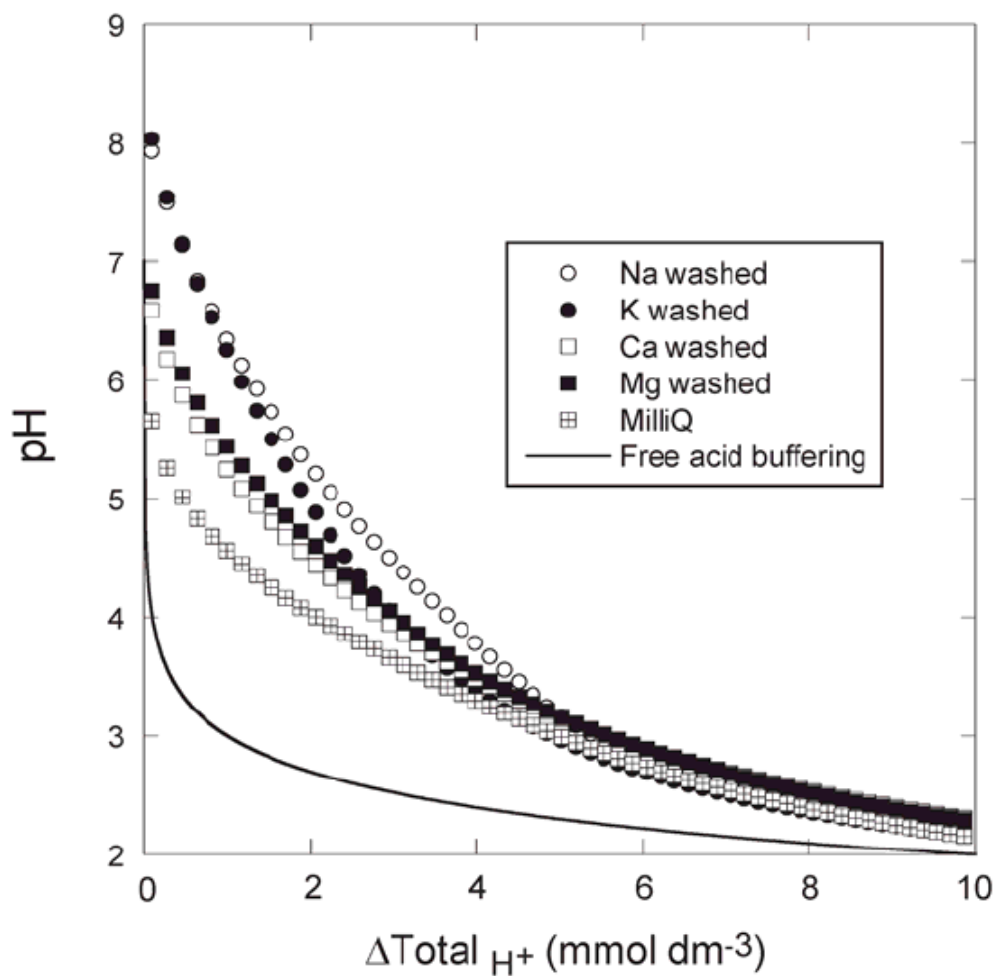
**Fig. A3.** (a) Experimental charge equivalent fractions of Mg<sup>2+</sup>, Na<sup>+</sup> and H<sup>+</sup> exchanged onto purified Norman's Lagoon clay. Solid lines are modelled using the exchange constants in Table 1 (main paper). (b) Experimental charge balance, plotted as percentage deviation from average exchange site concentration. (c) Experimental (○) and modelled (solid line) pH of clay mixture; all figures plotted as a function of the charge equivalent fraction Mg<sup>2+</sup> in solution.



**Fig. A4.** (a) Experimental charge equivalent fractions of Ca<sup>2+</sup>, Na<sup>+</sup> and H<sup>+</sup> exchanged onto purified Norman's Lagoon clay. Solid lines are modelled using the exchange constants in Table 1 (main paper). (b) Experimental charge balance, plotted as percentage deviation from average exchange site concentration. (c) Experimental (○) and modelled (solid line) pH of clay mixture; all figures plotted as a function of the charge equivalent fraction Ca<sup>2+</sup> in solution.



**Fig. A5.** (a) Experimental charge equivalent fractions of Fe<sup>2+</sup>, Na<sup>+</sup> and H<sup>+</sup> exchanged onto purified Norman's Lagoon clay. Solid lines are modelled using the exchange constants in Table 1 (main paper). (b) Experimental charge balance, plotted as percentage deviation from average exchange site concentration. (c) Experimental (○) and modelled (solid line) pH of clay mixture; all figures plotted as a function of the charge equivalent fraction Fe<sup>2+</sup> in solution.



**Fig. A6.** Buffering properties of Norman's Lagoon clay sediment (not purified) after exchange with chloride salts of:  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$  or  $\text{Mg}^{2+}$  and then washed with purified water (MilliQ), or washed with MilliQ water without prior exchange. Titration conditions as described in main paper.