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1 **Otero-Fariña et al: Supplementary Information**

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4 **Sensitivity Analysis of the Cu Ferrihydrite, Goethite and Humic Acid Surface Complexation**

5 **Models**

6

7 To evaluate the sensitivity of our end-member models to our chosen input parameters (Section 3.3.1,
8 main article) we performed a sensitivity analysis where, for each model, we systematically varied
9 C_{stern} , electrolyte binding constants, surface site densities and surface area, while monitoring the log K
10 for the Cu adsorption complex. The analysis for Fh is reproduced here from Moon and Peacock
11 (2013). The analyses for Gt and HA are done here based on the protocols of Moon and Peacock
12 (2013). In keeping with the Fh analysis, we varied C_{stern} by $\pm 40\%$, electrolyte binding constants
13 between -1.5 and 0.5 log K, and the surface site densities and surface area by a factor of ± 3 . The Gt
14 analysis was performed using the combined Gt_0.2wt%Cu and Gt_0.7wt%Cu input file. The results of
15 our analysis indicate that our models are able to provide equally good fits to our Cu adsorption data
16 under all combinations of input parameters at the extremes listed above. The optimised best fitting log
17 K values for Fh, Gt and HA varied by up to ± 0.9 , ± 0.7 and ± 1.0 log units, respectively, depending on
18 the combination of model input parameters used. Our models are therefore robust under all reasonable
19 model input parameters and we find log K values for Fh, Gt and HA of 8.61 ± 0.9 (Moon and Peacock,
20 2013), 12.93 ± 0.7 and 2.42 ± 1.0 , respectively.