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Supplement of

Quantitative imaging of the 3-D distribution of cation adsorption sites in undisturbed soil

Hannes Keck et al.

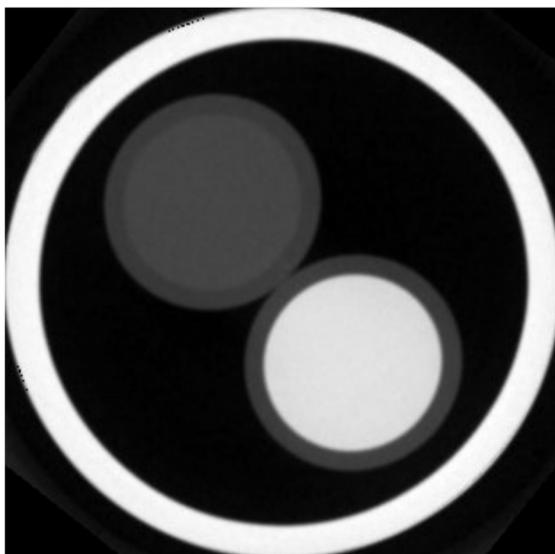
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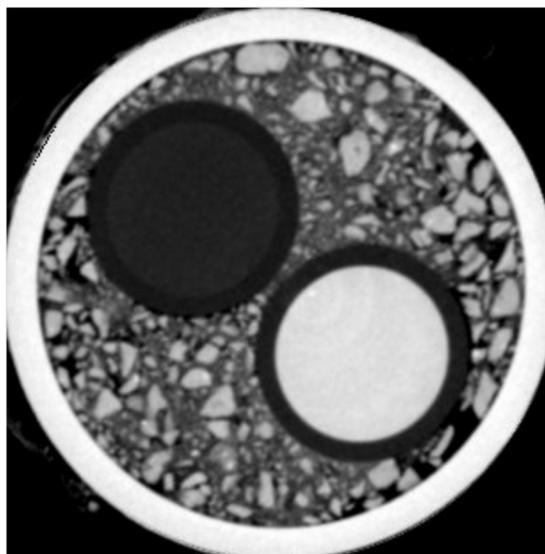
Table S1: Average gray values (GV) of the KCl and BaCl₂ solutions of contrast images with different bulk densities (BD) and its effect on the resulting contrast between the GV of the BaCl₂ and the KCl solutions.

	Air	BD 1.12 g cm⁻³ Silty clay	BD 1.43 g cm⁻³ Silty clay	BD 1.66 g cm⁻³ Sand	units
KCl solution	16254.30	16026.01	16184.68	15945.33	GV
BaCl ₂ solution	19043.46	19063.68	19136.38	19159.73	GV
Resulting contrast	2789.16	3037.68	2951.70	3214.41	GV
Difference in contrast compared to the air sample	0	8.91	5.83	15.25	%

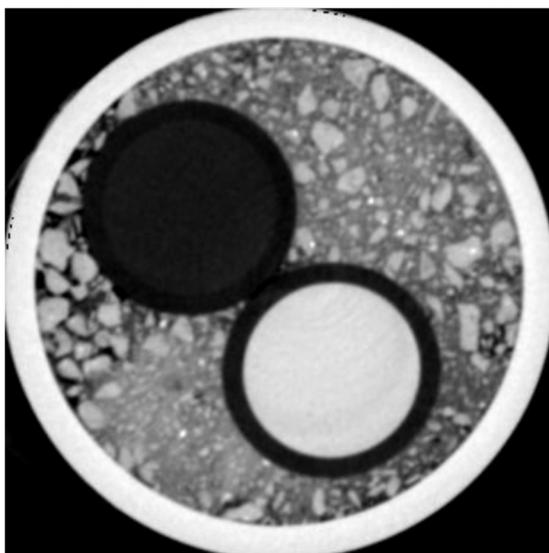
Air



BD 1.12 g cm⁻³



BD 1.43 g cm⁻³



BD 1.66 g cm⁻³

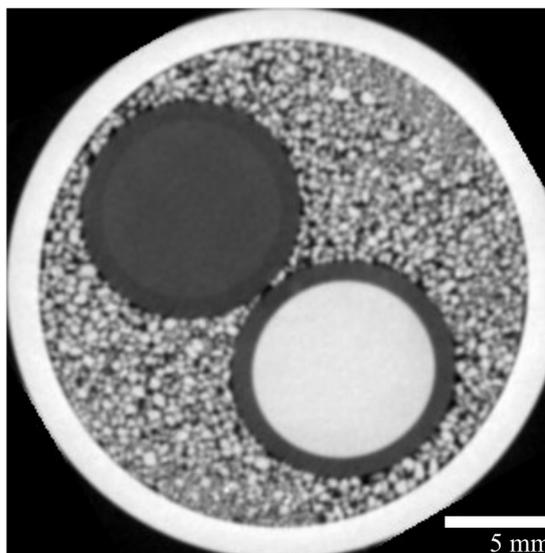


Figure S1. Cross-sections of four different contrast images.

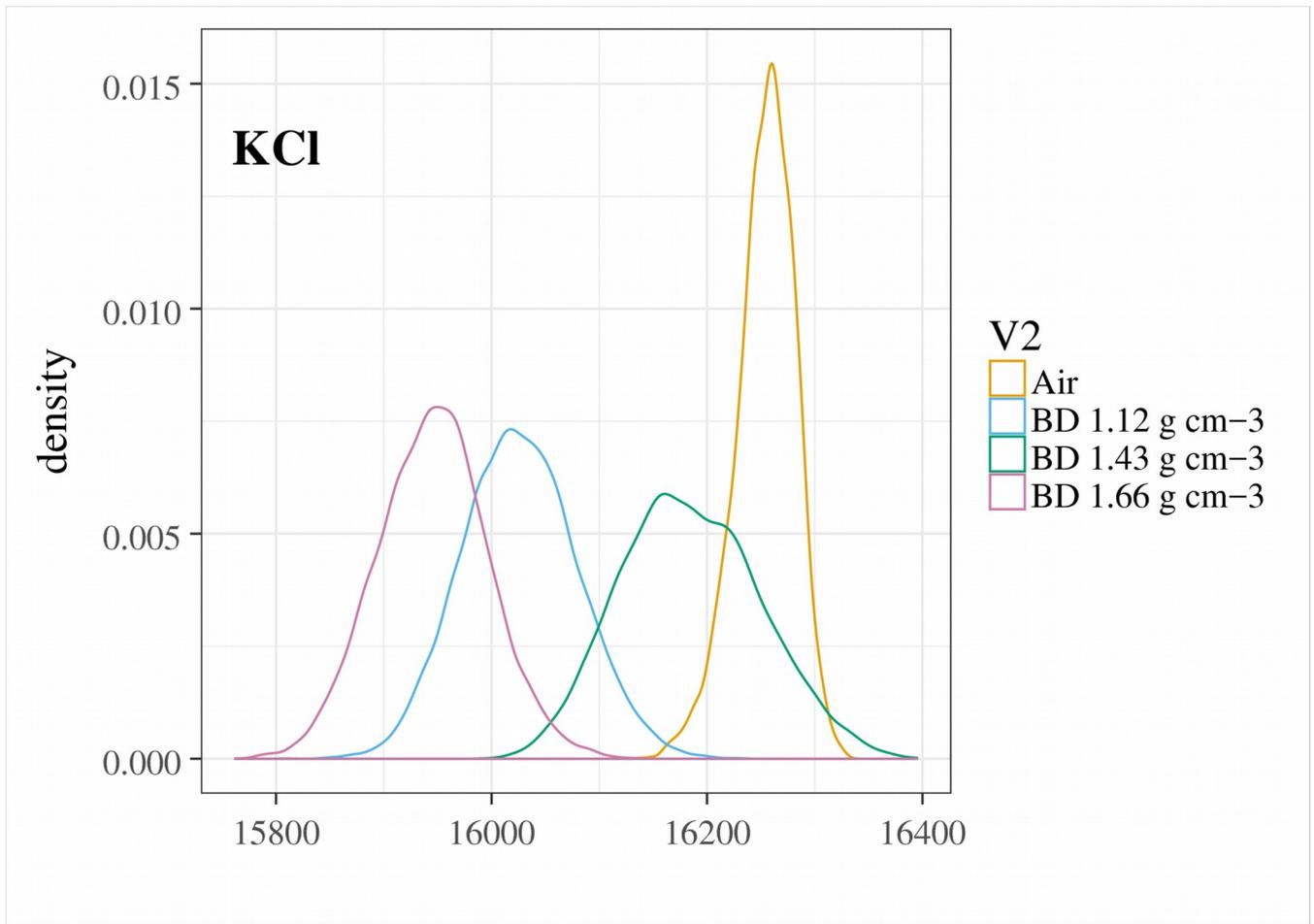


Figure S2: Gray value distributions of the KCl solution from four different contrast images. Yellow: with an air-filled aluminium column, blue, green and purple: with packed soil but different bulk densities (BD).

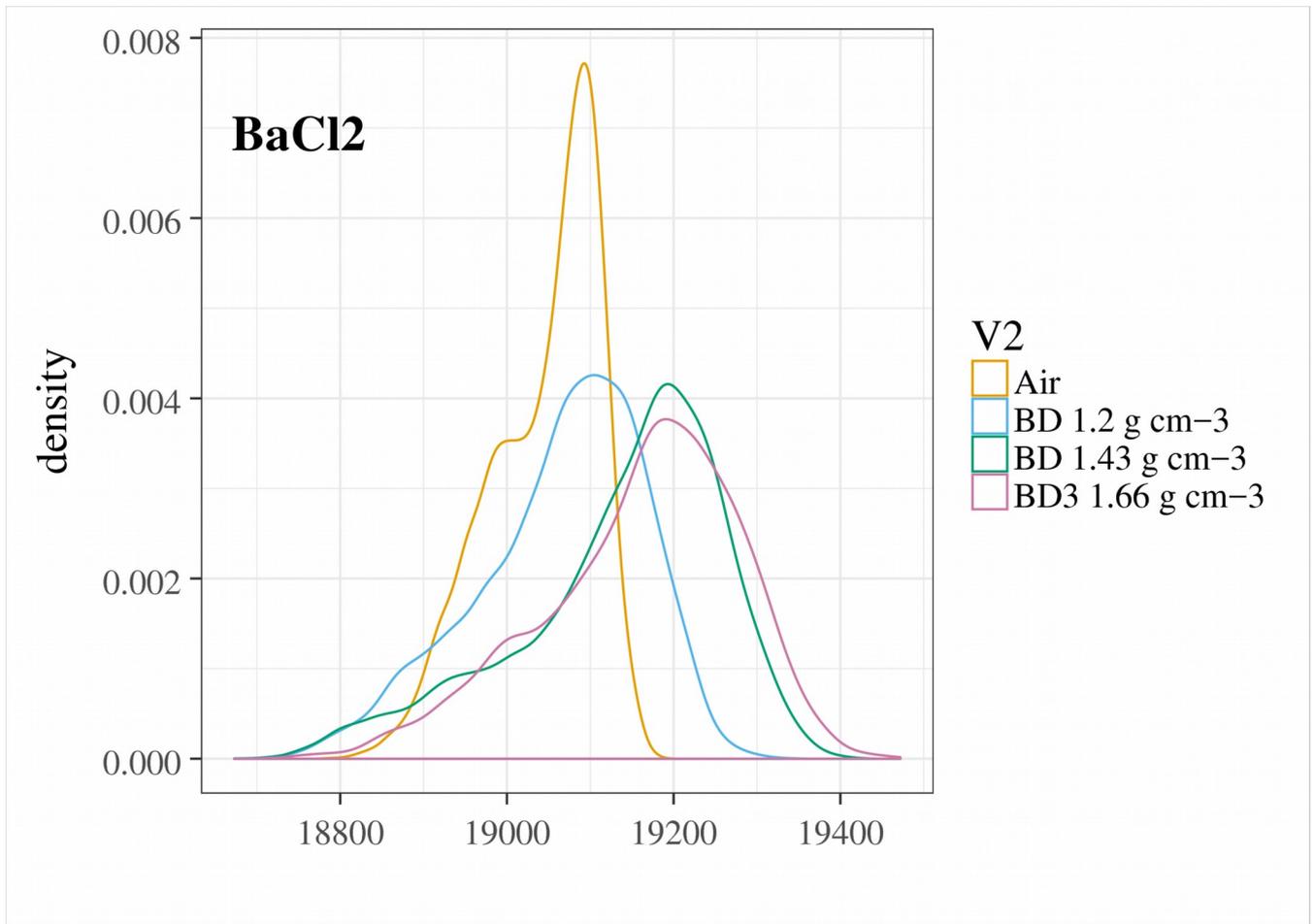


Figure S3: Gray value distributions of the BaCl₂ solution from four different contrast images. Yellow: with an air-filled aluminium column, blue, green and purple: with packed soil and different bulk densities (BD).

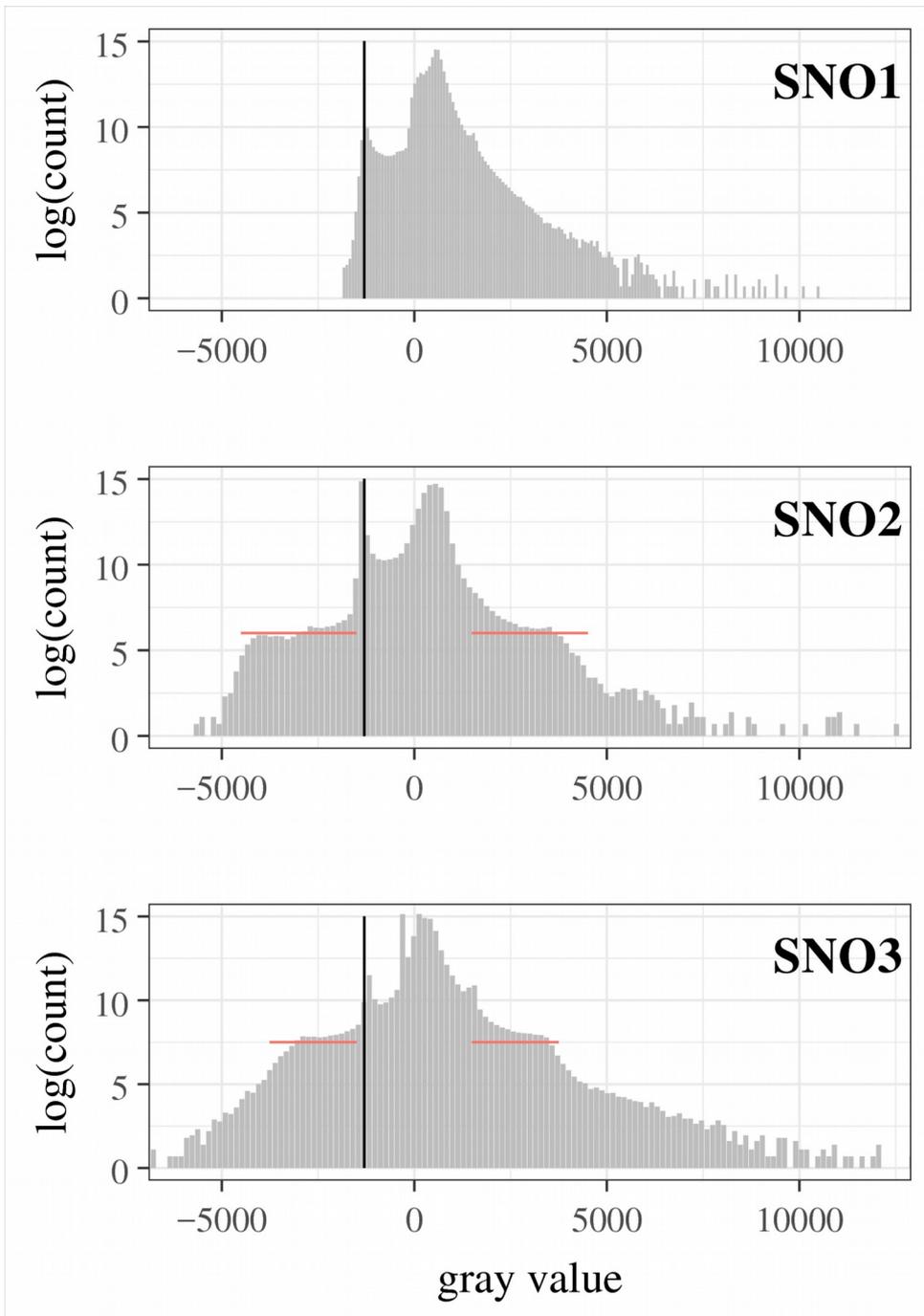


Figure S4: Global gray value distribution for SNO1, SNO2 and SNO3. The horizontal red lines highlight the ‘plateau’ feature.

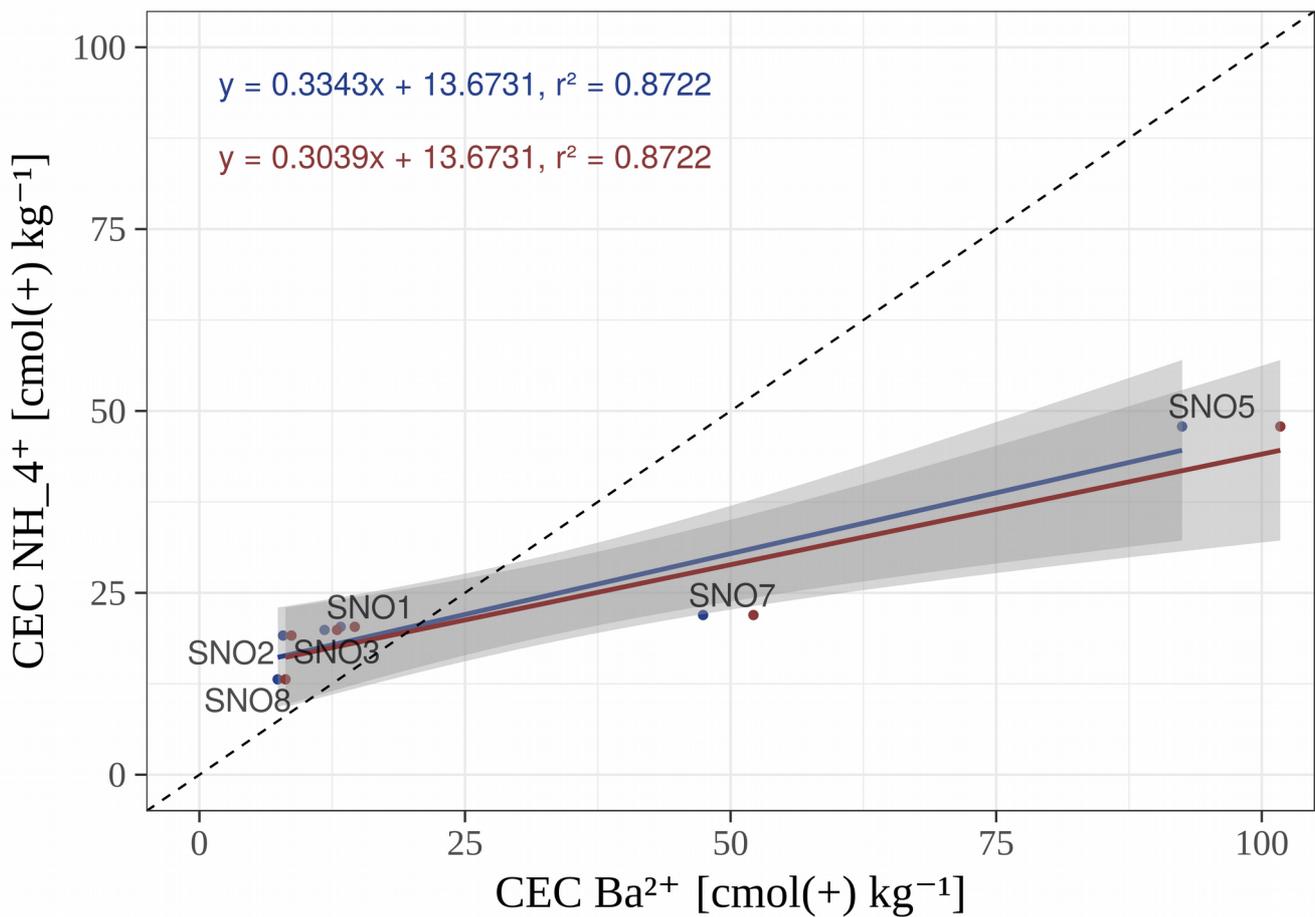


Figure S5. Relation between the cation exchange capacity ($\text{cmol}_{(+)} \text{kg}^{-1}$) measured with NH_4^+ and Ba^{2+} obtained from the difference image analysis of the natural soil samples. Blue represents the original data and red the adjusted data that considers the change in contrasts of the KCl and BaCl_2 solutions as a result of X-ray attenuation by the soil matrix. Blue and red lines represent linear models with 95 % confidence intervals in gray ($p < 0.01$). The dotted line has a slope of 1.