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## Supplemental Material

The supporting information in this document contains observed XRD patterns (black) and best matches (grey) generated by the program WILDFIRE for size fractions of our samples.

**Figure S1.** Best-fit WILDFIRE-generated patterns for the observed X-ray diffraction patterns for different size fractions of our samples from the study area. Black and gray lines show measured and best-fit patterns for random preparations, respectively. Unmatched peaks are quartz and non-illite clay minerals.

