SUPPLEMENTARY MATERIAL
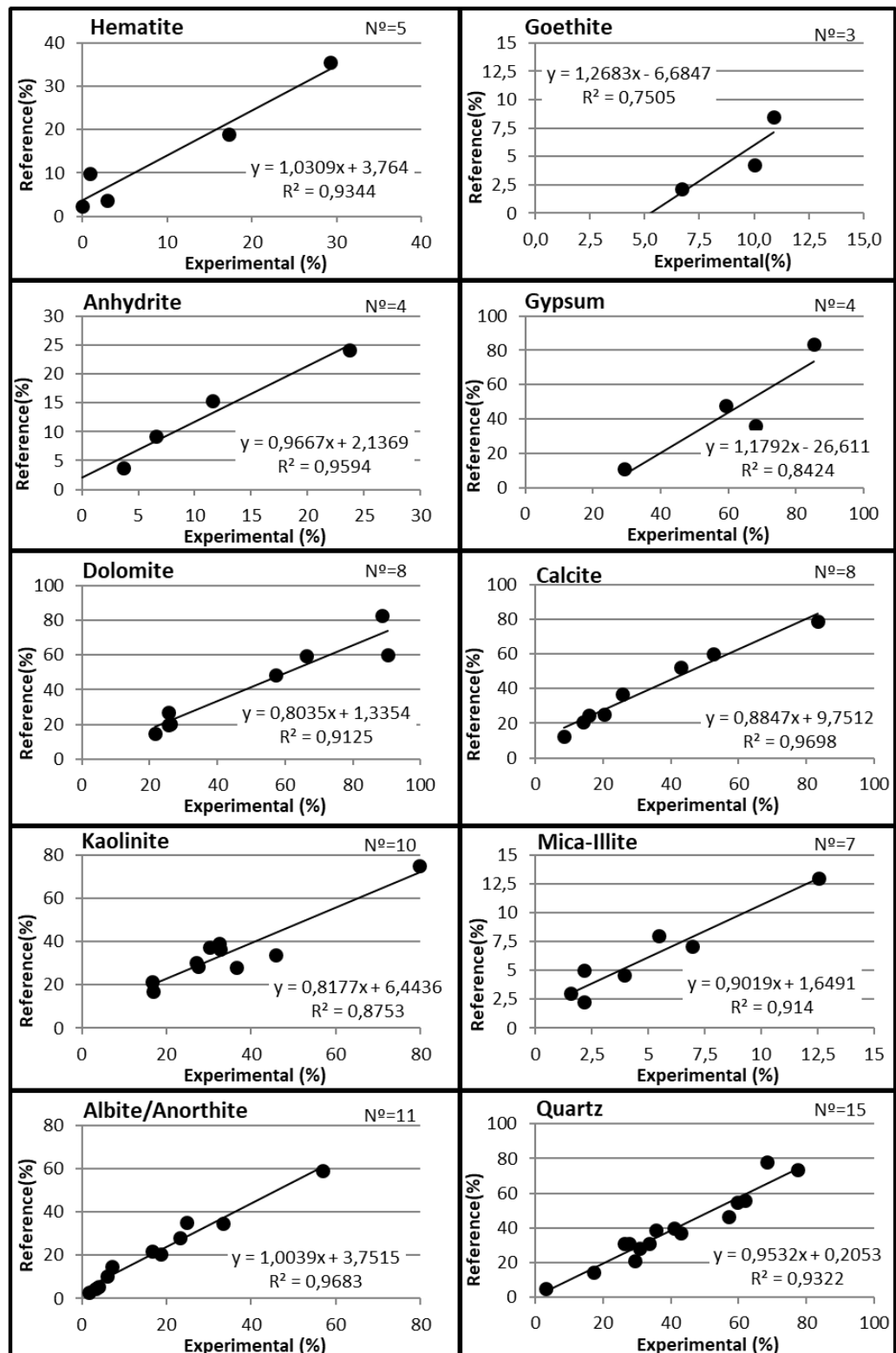
Figure S1. Cross correlation analysis of the content of minerals in mixtures of reference materials and the results obtained by using the internal reference method in this study. R2, the regression equation and the number of samples analysed are represented on the graphic. All the values are % of mineral in mass.
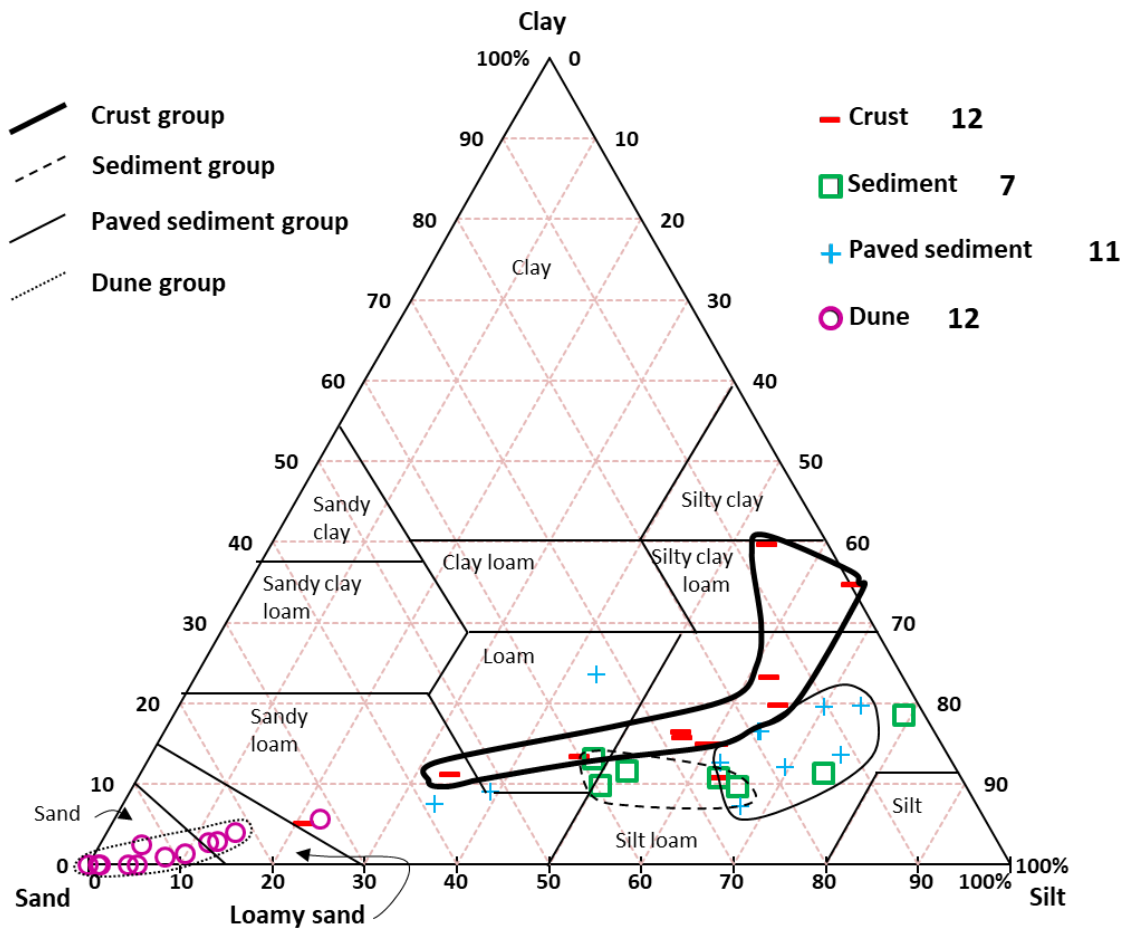
Figure S2. Ternary diagram for sand, silt and clay fractions, extracted from Valentin and Bresson (1992). Samples are differentiated by marker types and grouped with line types. Numbers in the legend indicate the number of samples represented in every group.
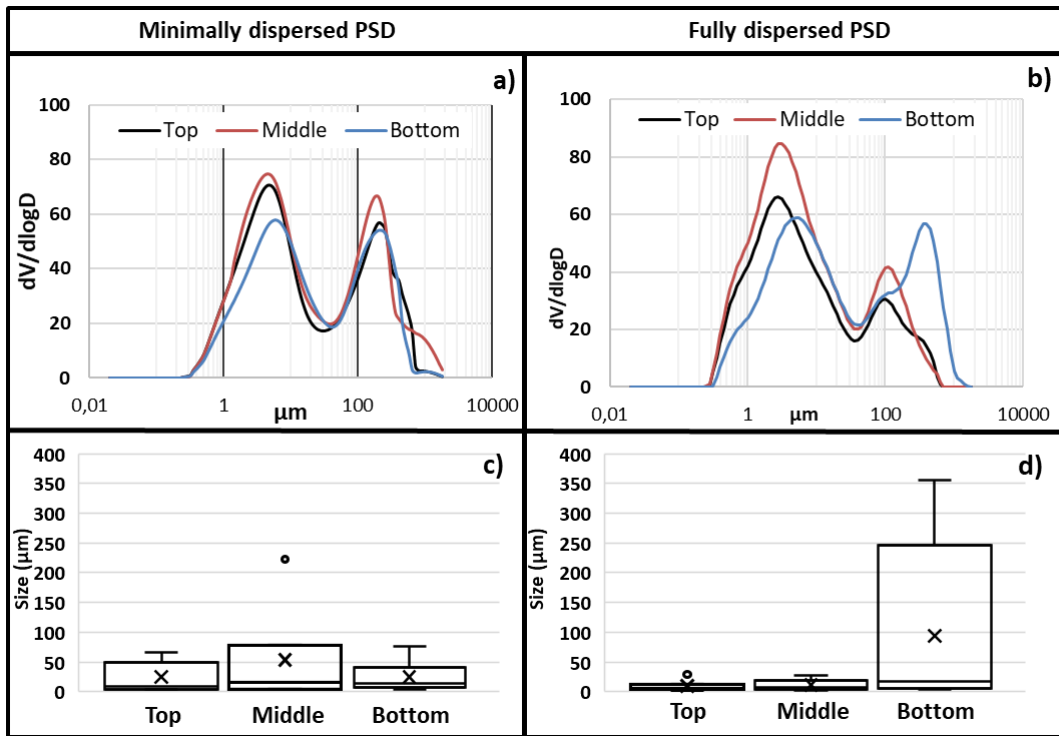
Figure S3. (a) MDPSD and (b) FDPSD from top, middle and bottom sections of crusts; Mean particle size median diameter from c) FDPSD and d) MDPSD.

a)

b)

c)
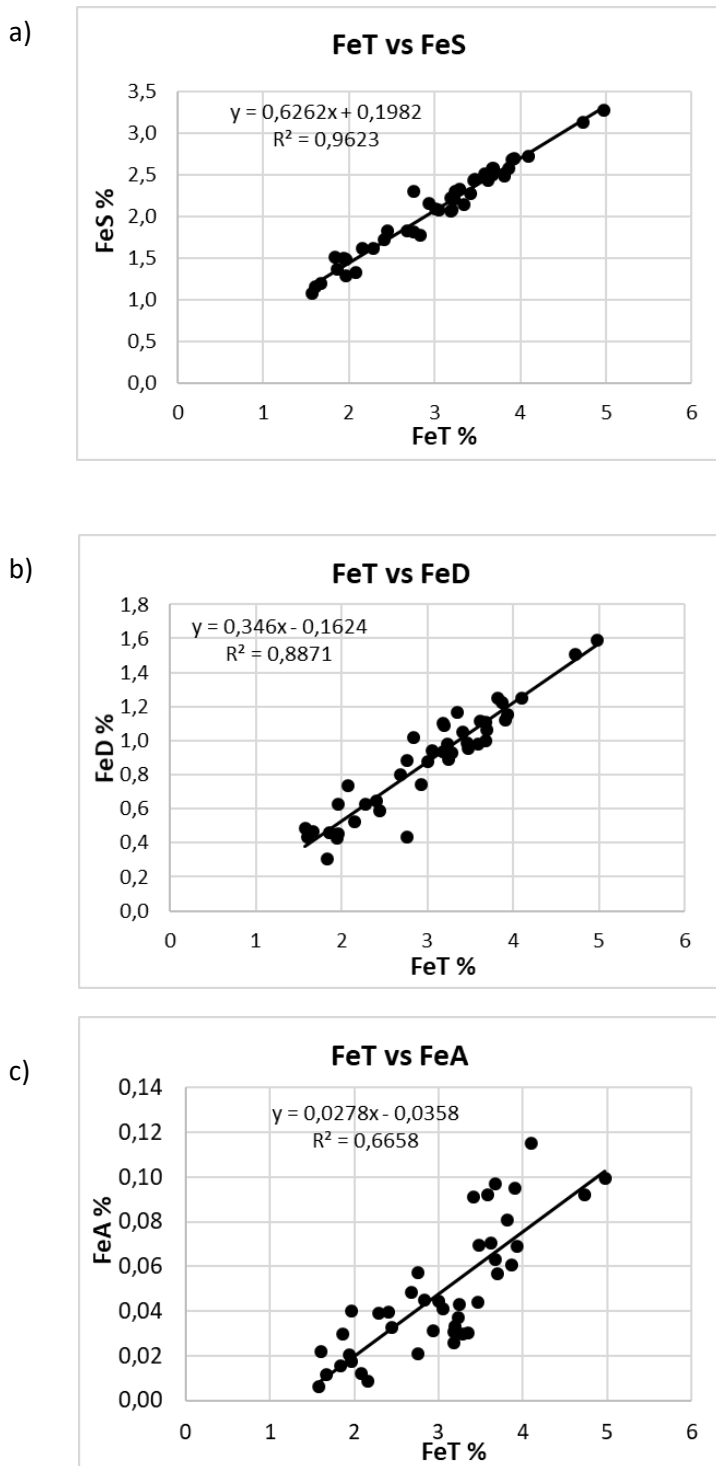
Figure S4. Linear correlations between FeS (structural iron in minerals like clays) a), FeD (iron in minerals like hematite and goethite) b) and FeA (iron adsorbed in clays and nanosized Ferrihydrite ($Fe_{4-5}(OH,O)_{12}$) c) and FeT (Total iron content).
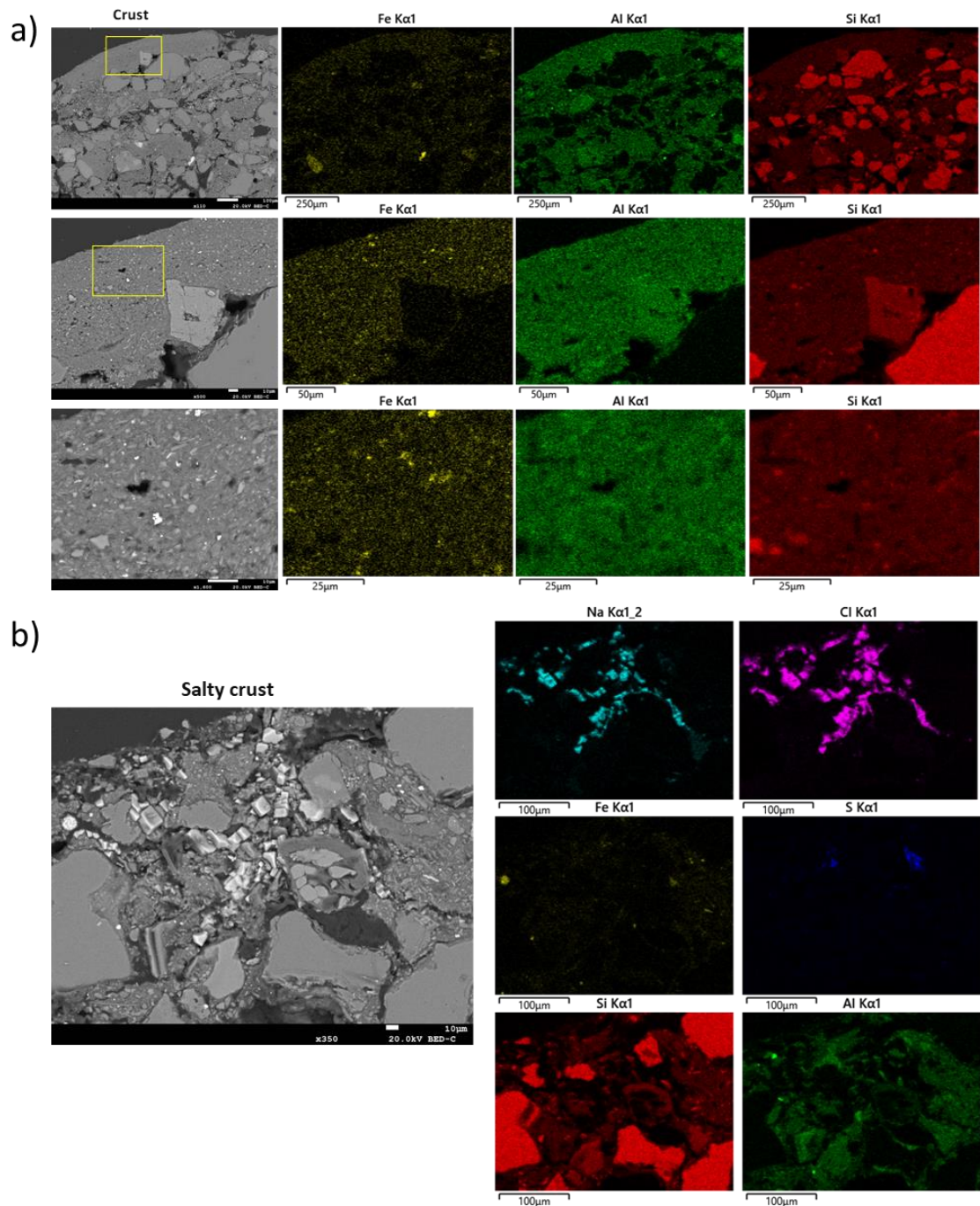
Figure S5. a) Scanning electron microscope of the top section of a crust with a zoom in on a small part, together with the elemental mapping of Fe, Al and Si with presence of homogeneous presence of iron (silicates and iron oxides). b) Detailed scanning electron microscope image and elemental mapping with Na, Cl, Fe, S, Si and Al for a very top section of a salty crust with very well formed halite crystals.
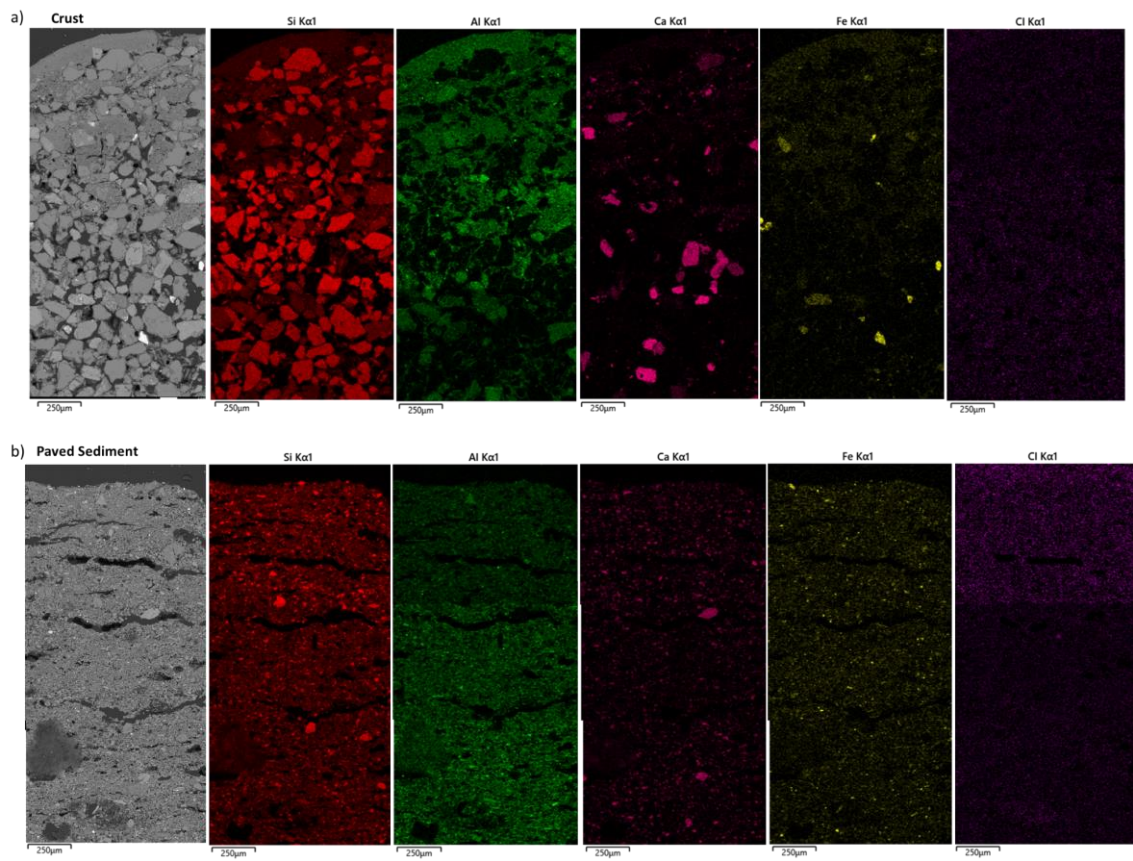
Figure S6. Crust a) and paved sediment b) profile of the first millimetres from the low-lands on the scanning electron microscope with elemental mapping of Si, Al, Ca, Fe and Cl.
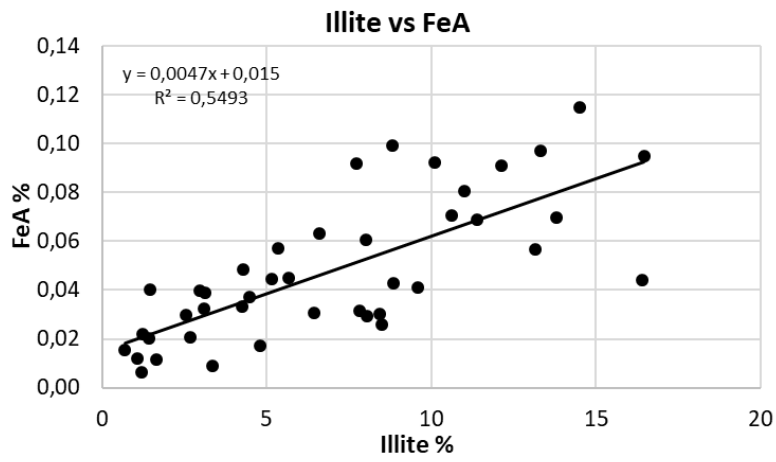
Figure S7. Correlation between most present clay (Illite) and readily exchangeable Fe (FeA).