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Single soil particle or an aggregate?

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The knowledge of particle size distribution (PSD) of the soil is essential in many soil-related studies, as well as in erosional studies. Not only single particles are translocated during erosion process, but also aggregates of various size. Both of these types are responsible for either the redistribution of the nutrients and organic matter or for their in situ accumulation. The mentioned selectivity, the detachment and the early stage of the transport phase of the erosion were studied. Are the factors as slope or moisture content have an effect on the aggregate/particle size distribution of the runoff in case of the same soil sample? Which fraction dominates in the soil and the runoff?
Laboratory rainfall simulation experiments were applied for six different treatments: detailed studies were made on the aggregate size distribution of the runoff and the particle size distribution of the aggregate size classes.
The results showed the followings: 1) the >1mm macroaggregate fraction, which dominated the control sample (40%) was missing in the soil loss; 2) the ratio of microaggregates was increased (from 30% to 70%). The ratio of >50μm fraction was smaller in steeper slope and the fraction of 50-250μm decreased to its half under extremely dry or saturated condition.
The PSD histograms were similar per fraction in each treatment, but the shape of the PSD histograms suggested that there were unbroken aggregates in the sample. As we concluded, the real question could be, if it is really needed to measure particles. It could it also be possible that if a small (60-110 μm) aggregate (which is still stable after drop erosion and transportation) could be chemically broken down or it has to be counted with as a particle during modelling?

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