Geophysical Research Abstracts
Vol. 14, EGU2012-13465, 2012
EGU General Assembly 2012

Erosion of SOC and Phosphor – linkage between transport rate and grain size as a function of time

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Erosion of soil organic carbon (SOC) and phosphorus (P) from agricultural soils is known to have a serious impact on crop productivity, soil fertility, and water quality as well as on biochemical cycles and global climate change. Much is known about the quantities eroded and the general processes involved, however, the dynamic linkage between grain size of mobilized sediment and SOC and P transport rate as a function of time is poorly understood. The Portable Wind and Rainfall Simulator (PWRS) was therefore used in a field study in Denmark to gain more insight into SOC and P erosion, with a special focus on the differences between windless and wind-driven rain.
The PWRS simulated severe erosion events (intensity of about 90 mm h-1) on bare soil, a loamy sand with a history of arable cropping and intensive fertilization. The generated sediment was collected in 2.5 min intervals for 30 minutes. In the laboratory the sediment from each interval was sieved and the resulting grain size fractions were analysed for SOC and P content.