

“When sediment becomes soil and soil becomes sediment...”

a report from the SedNet special workshop at Strengliner Mühle, May 2016

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In the soil-water-sediment cycle, particulate material is continuously eroded, deposited, suspended and buried. Whenever sediments are deposited in flood plains, or soil is eroded from riverbanks, physico-chemical properties of the particulate matter changes. Differences in grain size distribution, salinity, organic matter, pH, redox-conditions, UV-exposure etc. have an impact on many ecological parameters such as colonization, bacterial activity, nutrient recycling, the material's quality as a habitat, and on bioavailability of adsorbed contaminants, beside others. Few studies have focused on processes that accompany the transition between soil and sediment. In an attempt to counter the current demarcation between soil and sediment approaches, SedNet, the sediment network, initiated a workshop in 2016 on the topic “when sediments become soil and soils become sediment” bringing together soil and sediment experts from business, administration and academia. This presentation will summarize the workshop's discussion. It will point out various examples, in which sediment-soil transitions take place, with very different ecological consequences; examples like the dewatered sediment that is still – after many years – very different from the surrounding soils. Or the impact of irregular changes of water levels in hydropower reservoirs on the benthos in the “intertidal” area. This presentation will report on cases where e.g soil as well as sediment legislation apply at the same time and result in different management recommendations. The danger of applying different risk assessment methods when matrices are transformed periodically will be presented and potential solutions discussed.

In the workshop, more questions were identified than answers given. It became clear, how little research had been assigned so far to soil-sediment-soil transitions. In the light of climate warming, increasing UV radiation, rising sea levels, new emerging substances and re-occurring floods, awareness of the relevancy of these dynamic zones in research and management urgently needs to rise.

In this respect, the auditorium will be asked to engage in a discussion on this issue and raise topics that they feel to be of special importance or challenges which should just not be overlooked.



Fig 1: Deposited, partly vegetated sediments at the banks of the Hull river, GB

Participants of the workshop, on behalf of whom this presentation is given:

Name	Institution	Country
Gunnel Göransson	SGI	Sweden
Philipp Mayer	DTU	Denmark
Sebastian Höss	ECOSSA	Germany
Sabine Apitz	SEA environmental Decisions	Great Britain
Jeanette Rotchell	University of Hull	Great Britain
Carmen Casado	EAWAG-EPFL	Switzerland
Gijs Breedveld	NGI	Norway
Philippe Bataillard	BRGM	France
Chiara Ferronato	University of Bologna	Italy
Leonard Osté	Deltares	The Netherlands
Kate Spencer	Queen Mary University of London	Great Britain
Philip Spadaro	TheIntelligenceGroup	USA
Dirk Dedecker	OVAM	Belgium
Susanne Heise	HAW	Germany
Kamelia Samet	HAW	Germany