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Sediment pollution and morphodynamics of an extreme event: Examples from the July 2021 flood event from the Inde River catchment in North Rhine-Westphalia

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Extreme precipitation and discharge between July 13th and 16th 2021 caused serious flooding with bank erosion, including damages to infrastructure and buildings nearby the Eifel mountain region. Especially the small town of Stolberg and Eschweiler in the Inde River catchment were heavily affected. On-site investigation along the Inde River and its tributary, the Vichtbach creek, after the flood event show that mainly coarse sediments were remobilized and accumulated in the upper and middle reaches. The water masses mobilized not only sediments including gravel but also large objects like broken down trees and cars. In contrast, silty sediments were deposited in the lower reaches.

The Stolberg region is a former mining area with related industries resulting in contaminated soils and tailings close to the floodplains (Esser et al. 2020). Therefore, our investigations also focus on pollution by sediment-bound heavy metals and their distribution in the floodplains before and after this event. Flood sediment samples were taken immediately after the extreme flood event. Based on the results of flood-related pollution monitoring, conducted between 2016 and 2019 (Esser, 2020), the impact of the extreme event in July can be evaluated. During the July flood event, an exceptional amount of pollutants was remobilized. In addition to an increase in pollutants on the modern floodplain, wider areas of older and higher floodplains (Altauen) were also affected.

Esser, V. (2020): Untersuchungen zur fluvialen Morphodynamik und zur rezenten Schadstoffausbreitung in Flusssystemen - Beispiele aus der Grenzregion Belgien, Niederlande und Deutschland. PhD-Thesis, RWTH Aachen University.

Esser, V., Buchty-Lemke, M., Schulte, P., Podzun, L.S., Lehmkuhl, F. (2020): Signatures of recent pollution profiles in comparable Central European rivers - Examples from the International River Basin District Meuse. *Catena* 193: 104646. <https://doi.org/10.1016/j.catena.2020.104646>