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Metal(loid) speciation and size fractionation in sediment pore water depth profiles examined with a new meso profiling system

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HIGHLIGHTS

- A novel laboratory meso profiling and sampling system (*messy*) is introduced.
- *Messy* enables to survey the redox potential when sampling water across the sediment water interface (SWI) down to 20 cm depth.
- *Messys* performances in impact orientated release-, speciation, and size fractionation studies are demonstrated in a 151 days sediment incubation experiment. 13 metal(loid)s, As and Sb speciation and the colloidal fraction were addressed.
- 13 metal(loid)s) released into the pore water of an anaerobic oxbow sediment are grouped into those stronger impacted by mechanical disturbance and those impacted by natural acidification (oxygen induced pyrite weathering).
- The fate of Sb, spiked as Sb_2O_3, sediment disturbance, is presented.
- A spike of Sb_2O_3 did not impact Sb(III) concentration in the pore water during mechanical disturbance and acidification.