Poster Number

10

Topic	Exposure assessment
Title	**A Probabilistic Multi-Compartmental Model for Interpreting DGT Kinetics in Sediments**
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Summary: Information on metal exchange between the particulate phase and the solution in sediments and soils can be assessed using the diffusive gradients in thin-films technique (DGT) which is a dynamic *in situ* measuring technique. Interpretation of DGT measurements in soils and sediments were interpreted so far by a model known as DGT-Induced Fluxes in Soils and Sediments model (DIFS). Despite its wide dissemination among DGT users, the DIFS model may however show several flaws: (i) many accumulation kinetics onto DGT show several stages and DIFS was showed to be unable to fit simultaneously short- and long-term experimental data; (ii) several combinations of the two fitted DIFS parameters can give the same results, and the question remained how to select the 'best' combination.

To overcome these problems, (i) a model considering two particulate binding pools is proposed instead of the DIFS model which assumes a single particulate pool and (ii) a probabilistic approach is proposed to fit experimental data and to represent parameters by Probability Distribution Functions (PDFs) instead of single values.

The new probabilistic model was tested on different formulated sediments under various conditions (e.g. different reactive components like iron oxides or organic matter, different physico-chemical conditions like pH). It was shown that a good fitting can be obtained for the complete set of data (i.e. both for short- and long-term kinetics) and that an uncertainty range for each modeling parameter is provided. The interpretation of parameters PDFs allows distinguishing quite different geochemical behaviors providing useful information on metal dynamics in sediments.