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Soils as a buffer of contaminants in catchments

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Human activities deliver large quantities of contaminants into the environment through atmospheric emissions or direct releases. As many of those contaminants are particle-reactive, they bind strongly to the finest particles or on their organic matter fraction once they deposit onto soils. Contaminants may subsequently migrate in depth of the soil depending on their physico-chemical characteristics. They may also be redistributed along hillslopes in association with particles during soil erosion events and may be subsequently supplied to rivers, preventing to meet the international environmental targets (e.g. in the framework of the EU Water Framework Directive). In regions where soil erosion rates are low to moderate, a large quantity of particle-reactive contaminants may accumulate in soils that constitute a reservoir of pollutants that may be delivered to rivers during decades or centuries.
This session will focus on the specific role played by soils as a reservoir of contaminants at the catchment scale. A better understanding of this role and a quantification of the persistence of contaminants in this reservoir will provide crucial insights to guide the implementation of efficient mitigation measures. Contributions to this session may address any aspect of particle-borne contaminant transfer at the catchment scale, with an emphasis on the role played by soils in their storage and transfer. Field-based or modeling studies may focus either on specific pollutants or on a wider range of substances, e.g. metals, radionuclides, organic contaminants.
Key themes may include:
• Contaminant budget at the hillslope vs. the catchment scales;
• Evaluation of the contribution of the regional vs. local contamination sources;
• Evaluation of the contaminant removal from soils by degradation vs. soil erosion;
• Quantifying the persistence of contaminants in soils;
• Discrimination between the legacy and the contemporary supply of contaminants to soils.