EGU2020-21502
https://doi.org/10.5194/egusphere-egu2020-21502
EGU General Assembly 2020

Water-sediment interaction in the Arno- and Tiber river catchments (central Italy)

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The Tiber and the Arno river basins, represent the first (17,156 km^2) and the second (8,228 km^2) largest catchments in the peninsular Italy, respectively. The recent combined sampling (2017-2019) of river waters and sediments in the heterogeneous geological environment of the Apennines enables the assessment of the geochemical and mineralogical interaction between bedrock, river sediments and water. The mineralogical and geochemical composition of the stream sediments are related to the corresponding lithological composition of the hydrological catchment, thus assessing physical weathering within the river basins. On the other hand, chemical weathering is assessed by the analysis of hydrochemical data from the Arno and Tiber rivers and their main tributaries. Locally, anthropogenic processes overprint the natural signature and the magnetic properties of the sediments provide effective data to map those areas. The application of multivariate robust statistical techniques on the combined dataset evaluates the water-sediment interaction and their spatial properties in central Italy. The main goal of this research is to investigate how the linkage between surface waters and steam sediments chemistry can be influenced by catchment-specific properties (e.g. landscape attributes, anthropic impact and climate) through an effective comparative analysis between two of the most important Italian watersheds.