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Sediment yield response to climate change in an atlantic catchment in NW Spain: preliminary results with the SWAT model

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Soil erosion is soil quality degradation in an irreversible direction and soil loss to river is considered as important environmental problem. The severity, frequency and extent of erosion will be altered by changes in rainfall amount and intensity. Climate change will thus amplify many current problems of soil erosion. It is therefore crucial to understand the potential impacts of climate change on soils to allow the developments in predictive capacity necessary to improve their management in the future. In this paper, the Soil Water Assessment Tool (SWAT) hydrological model is applied to analyse the effects of climate change on sediment yield in a catchment under Atlantic climate, due to changes in rainfall, runoff and vegetation cover. The study site is an agroforestry catchment of 16 km2 (the Corbeira, tributary of the Mero River) located in NW Spain. The SWAT is calibrated and validated for current conditions using 6-year monitored streamflow and sediment data from October 2004 to 2010. Then it is used to simulate the impact of climate change on sediment yield for the period 2070-2100, based on existing regional climate models. Results are expected to provide erosion information to environmental management to reassess proactive management actions that may enable the society to adapt these changes.