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Spatio temporal visualization of soil critical sources areas to assess the dynamics of source pollution in agricultural management practices

Natalia Uribe and Gerald A Corzo P
IHE Delft Institute for Water, Hydroinformatics, Engineering, Delft, Netherlands (g.corzo@un-ihe.org)

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always changes aim at the reduction of nutrient pollution. Critical identification of areas that are the sources of pollution is crucial for identifying which practices provide the most substantial contamination. The dynamics of agricultural practices are complex and the precise determination of pollution concentration requires a comprehensive model. In this research, we present the results of analysing via a new visualisation technique were the critical source areas using a spatiotemporal methodology that allows for a georeferenced identification of changes. The proposed method in this research used a radial diagram to evaluate the changes in regions of pollution and makes a radial diagram formulation of intensities, location and frequency. For this location and intensity identification, a clustering process, using the Non-contiguous drought areas method and the Contrigous drought area method. This clustering groups by first mapping in one dimension the threshold that defines a change in the state of the CSA, and then groups if by its neighbours and soil characteristics. To obtain a spatially distributed data, a SWAT model was set up for two types of crops, mainly potato and tomato tree, aside, we added also Kikuyu grass as it is one of the most important in the region. The simulation period for our experiment was in an area of 103434 Ha, using daily data from 1995 to 2015. Two steps calibration was done, first with streamflow and second with an analysis of monthly nutrients. Results show a definite change in location, which will imply that a significant error could be present if the spatiotemporal relation is not analysed. The current work is part of a PhD thesis and the partial results presented here contribute to a broader formulation of the optimisation of agricultural practices to reduce the impact of the Critical Source Areas in nutrients pollution.