



The impact of changing climate on surface and ground water quality in southeast of Ireland

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In the current changing climate globally, Ireland have been experiencing a yearly recurrent extreme heavy rainfall events in the last decade, with damaging visible effects socially, economically and on the environment. Ireland intensive agriculture production is a major treat to the aquatic environment, Nitrogen and phosphorus losses to the water courses are major causes to eutrophication. The European Water Frame Directive (WFD 2000/60/EC) and Nitrates Directive (91/676/EEC) sets a number of measures to better protect and improve water status.

Five years of high temporal resolution river water quality data measurement from two contrasting catchment in the southeast of Ireland were correlated with rain fall and nutrients losses to the ground and surface water, additional to the integrated Southeast River District Basin ground and surface water quality to establish spatiotemporal connection to the agriculture activities, the first well-drained soil catchment had high coefficient correlation with rain fall with higher losses to groundwater, on the other hand higher nutrients losses to surface water were higher with less influence from groundwater recharge of N and P transfer, the poorly clay base soil contributed to higher increased losses to surface water during excessive rain fall.

Agriculture activities, hydrology, geology and human interaction can interact according to their site specific setting and the effects will fluctuate dependent on the conditions influencing the impact on water quality, there is a requirement to better distinguish those effects together and identify areas and land uses control and nutrients management to improve the water quality, stakeholders co-operation along with effective polices, long term monitoring, nutrients pathways management and better understanding of the environmental factors interaction on national, regional and catchment scale to enable planning policies and enforcement measures to be more focused on areas of high risk than others.