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Use of the GREAT-ER model to estimate mass fluxes of chemicals, carried into the Western Scheldt estuary from the Rupel basin

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The poster illustrates the application of the GREAT-ER model to estimate the mass flux of chemicals carried from a river basin into an estuary. GREAT-ER (Geo-referenced Regional Exposure Assessment Tool for European Rivers) is a newly developed model (1999) for management and risk assessment of chemicals in river basins (see www.great-er.org). Recently the Rupel basin has been made available for use within GREAT-ER. This now allows to make a reliable estimation of the contribution of pollutant point sources in the Rupel, to the pollutant load in the Western Scheldt Estuary.

A calculation of the mass flux in the last stretch of the river network was made for five household chemicals or pharmaceuticals (i.e. LAS, boron, HHCB, aspirin and ethinyl oestradiol) as an example. The 'Watershed Attenuation Factor' (WAF) concept allows to calculate the fraction of the total load of these chemicals eliminated on their way to the estuary through the combined action of sewers, municipal waste water treatment infrastructure and/or biological self-purification of the rivers. The calculated WAFs range between 0% (boron) to 85% (LAS) for this test set of chemicals.

If the GREAT-ER Rupel basin could in the future be combined with the other sub-basins in the Schelde watershed, this would open the perspective to make highly accurate estimations of the total estuary's pollutant input via its rivers.