

Method description of pollutant calculations in StormTac Web

StormTac guide, 2016-07-20

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The method used in StormTac Web to calculate the annual pollution load from catchments is based on the product of the annual pollutant concentrations of various land use and annual flow, where the annual flow in turn is calculated from the product of the annual rainfall, area and volume runoff coefficient. The method allows the direct calibration against the flow and concentration, and it is peer reviewed (Larm, 2000). Examples of other models which basically use the same method are SWMM, Storm, Mike and MUSIC.

Observations including Huber (1980), EPA (1983) and Driscoll et al. (1989) usually show that the stormwater concentration is poorly or not at all correlated with stormwater flow or stormwater volume, which indicates that it is sufficient to assume that concentration is constant, according to Novotny (1995). As the pollution load is the product of concentration and flow, load is normally well correlated with the flow regardless of whether the concentration is correlated to flow or not. If the load is linearly proportional to the flow, the assumption that the concentration is constant is valid and so-called "standard concentrations" from different land use can be used. If not, you need to use some kind of function between the concentration and flow (Novotny, 1995). A large number of data from river basins in the United States in the 1980s were used and the pollution load was calculated in different models. The two most significant variables for the calculation proved to be the total annual rainfall and basin area. For some of the models were also among others variables impermeable area and land use significant (Novotny, 1995; Sing, 1995).

Encouragingly, rainfall and runoff functions show good potential for predicting pollutant loads (Francey, 2010).

References

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