



## **Uncertainty in flood damage estimates and its potential effect on investment decisions**

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This paper addresses the large differences that are found between damage estimates of different flood damage models. It explains how implicit assumptions in flood damage models can lead to large uncertainties in flood damage estimates. This explanation is used to quantify this uncertainty with a Monte Carlo Analysis. This Monte Carlo analysis uses a damage function library with 272 functions from 7 different flood damage models. This results in uncertainties in the order of magnitude of a factor 2 to 5. This uncertainty is typically larger for small water depths and for smaller flood events. The implications of the uncertainty in damage estimates for flood risk management are illustrated by a case study in which the economic optimal investment strategy for a dike segment in the Netherlands is determined. The case study shows that the uncertainty in flood damage estimates can lead to significant over- or under-investments.