



## **How fuzziness increases information content**

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In this paper we present a new way to extract flood edges from a satellite radar image. Although uncertainty in data and models is now widely recognized and despite the fact that most satellite observations are known to be very much imperfect, there is still widespread use of ‘optimized’ image processing techniques to retrieve a ‘binary’ flood map. Such a map gives the impression of being an optimal solution but when used in model calibration can lead to an unidentifiable or physically doubtful parameter space.

We show that a proper statistical approach to estimate uncertainty in image processing can reveal more useful information about flood parameters than was previously possible with an ‘optimal’ binary solution, even in the case of a low quality SAR image. Subsequently, we illustrate how a regional model calibration procedure, which builds Pareto fronts using uncertain flood edges, can be used to define targeted model calibration and thus identify the best possible model for specific risk areas. First results show that this procedure is promising but a lot of work is still needed in this direction.