

How should flood risk assessments be done in a changing climate?

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Growing consensus on climate and land use change means that it is reasonable to assume, at the very least, that flood levels in a region may change. Then why, ask Rosner et al. in a new study, do the dominant risk assessment techniques used to decide whether to build new flood protection infrastructure nearly always start with an assumption of "no trend" in flood behavior?

In an argument grounded in an analysis of the inherent limitations of statistical analyses, the authors suggest that researchers' typical starting assumption that flood behavior is not changing—even in the face of suspected trends in extreme events and knowledge of how difficult such trends are to detect—causes water managers to undervalue [flood protection](#) benefits, opening the door to unnecessary losses down the line.

When researchers assume no trend, statistical errors could cause them to overlook of the risks of underpreparing for changing flood conditions. Often, potential flood damage due to underpreparedness far exceeds the potential cost of overinvesting in [flood](#) protection infrastructure. Flipping the process around, starting with an assumption that a change in [flood conditions](#) is occurring, would give critical attention to the risk of underestimating future floods, rather than only considering the risk of wasting money on unneeded infrastructure.

The authors propose a method of [risk assessment](#) that starts with the null hypothesis of "no trend" but that explicitly assesses the effect of

statistical uncertainties that may cause them to misidentify real trends and the damages those trends might produce.

More information: Rosner, A., R. M. Vogel, and P. H. Kirshen (2014), A risk-based approach to flood management decisions in a nonstationary world, *Water Resour. Res.*, 50, 1928, [DOI: 10.1002/2013WR014561](https://doi.org/10.1002/2013WR014561)

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