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Calibrating a hydrological model in stage space to account for rating curve uncertainties: general framework and key challenges

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Highlights

- Method for quantifying rating curve uncertainties in discharge prediction is proposed
- A rainfall-stage model is developed and calibrated in stage space
- Such a rainfall-stage model couples a hydrological model with an inverse rating curve
- We consider both structural and parametric uncertainties of the rating curve
- Shares of these errors in the total uncertainty of stages and discharges are assessed
- Structural uncertainties of hydrological model dominates other uncertainty sources
- Ignoring rating curve errors affects the estimation of hydrological model parameters

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