

EGU23-17240, updated on 21 Apr 2024  
<https://doi.org/10.5194/egusphere-egu23-17240>  
EGU General Assembly 2023  
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## Generating risk maps for river migration using probabilistic modeling

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Human settlements and infrastructure in alluvial floodplains face erosional risk due to the lateral migration of meandering rivers. There is a large body of scientific literature on the dominant mechanisms driving river migration. However, it is challenging to make accurate forecasts of river meander evolution over multiple years. This is in part because deterministic mathematical models are not equipped to account for stochasticity in the system. Besides, uncertainty due to model deficits and unknown parameter values remains. For a more reliable assessment of risks, we therefore need probabilistic forecasts. In this work, we suggest a workflow to generate river-migration risk maps using probabilistic modeling. Forecasts for river channel position over time are generated by Monte Carlo runs, using a distribution of model parameter values inferred from satellite data, enabling us to make risk maps for river migration. We demonstrate that such risk maps are more informative in avoiding false negatives, which can be both detrimental and costly, in the context of assessing erosional hazards due to river migration.