

# Interpreting Machine-Learning Flood Prediction Models

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Flood is the outcome of hydrometeorological processes interacting at a range of space-time scales. Hydrological models are utilized in research and in practice to simulate these processes and to predict flood events. Recent advances in machine learning (ML) models show that they can outperform flood process-based models. However, a main criticism is that these models act as a black-box without providing understanding of important flood generation factors. Interpretability methods can tackle this drawback as they are aimed to explain ML models and to help understand their findings as well as to assure their correctness.

In this study we focus on the importance of precipitation space-time structure as the main driver of flood events. We show that interpretability of precipitation features used as input to flood ML models even allows gaining new insights on their importance which could not, or would be difficult to, be gained from standard hydrological models.