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Can snow persistence explain the spatial-temporal variabilities in streamflow hydrograph flashiness across snow-dominated regions?

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Recent research showed that, snow persistence, defined here as the fraction of time that snow is present on the ground, can play an important role in explaining spatial variability of average annual streamflow in moderately snowmelt-dominated regions. Here, we extend this work and explore the following questions: 1) whether globally available snow persistence data is useful for estimating a suite of streamflow signatures explaining the shape, flashiness and components of streamflow hydrograph, and 2) whether snow persistence could be useful for reconstructing streamflow patterns in ungauged watersheds, both spatially and temporally. We explore these questions across a spectrum of climatic dryness, snowiness, and geological settings. The motivations for the study are the need to understand how loss of snow may affect the components of streamflow in different climatic and geological settings, as well as the need for simple methods to predict components of streamflow in snow-dominated ungauged basins.