Global Snow Drought Characteristics and Change

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The seasonal snowpack plays a key role in global water resources, providing large populations with water for domestic, agricultural, and municipal uses. Below-average or low snow water equivalent (SWE) accumulation can greatly stress a region's water supply, economy, etc., which highlights an existing need for a global snow drought assessment. We therefore explore frameworks for characterizing and quantifying snow drought conditions (e.g., severity, duration, intensity) in snow-dominated areas around the world. We examine a variety of topographic, climatic, and ecologic regimes to better understand the spatial and temporal variability of snow droughts across the globe and how they are changing. Identifying regions that are becoming more prone to snow drought conditions will become increasingly important in a warming world, particularly in places that derive large fractions of their water resources from snowmelt.