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A historical analysis of the Stanley Avalanche Area with implications for predicting road-hit avalanches, Berthoud Pass, CO

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The Stanley avalanche area is commonly regarded as one of the most dangerous to impact a roadway in the state of Colorado. Weather and snowpack structure play a key role when making road closure and avalanche mitigation decisions. My research aims to quantify those parameters of variables that are typically needed to forecast an avalanche from the Stanley that is large enough to hit and cover U.S. Highway 40 with debris. I gathered avalanche occurrence data from 1970-2008 on the area and related it to precipitation and wind patterns. Results show that half of all avalanches to hit U.S. Highway 40 occurred during the short time frame from December 16 to January 31. The weather conditions preceding a road-hit avalanche included heavy precipitation and strong northwest winds. Avalanche events that did not hit the road were preceded by lighter precipitation and lighter winds from the west.