A New Approach to Data Visualization for Avalanche Forecasting

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Avalanche forecasters are increasingly faced with making difficult and controversial decisions. In order to make accurate predictions and decisions, efficient and effective means to analyze data are needed. This research developed a new visualization prototype for displaying spatial data for forecasters.

Current avalanche forecasting practices incorporate large numbers of data sets in many different forms and locations when estimating present and future snowpack conditions. By creating a more holistic approach to forecasting, this visualization prototype combines individual factors with historical data to present an objective view of the snowpack. The holistic approach also reduces heavy reliance on the forecasters' experience and ability to synthesize large amounts of data. The graphical user interface enables forecasters to see the contribution of each factor and access the data at varying resolutions for additional in-depth analysis to help asses the overall snow stability level.

This research expands the forecaster's decision support system by incorporating new methodology into time-honored and proven methods. The intermediate determination of success for this research is based upon the positive evaluations and feedback received from the avalanche forecasting community. The true success of the visualization prototype is whether the developed visualization improves the overall effectiveness of the avalanche forecasting process.