On Wet Slab Mechanics and Yellow Snow: A Practitioner's Observations

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Wet slab avalanches remain a vexing phenomenon to theoreticians and practitioners alike. Empirically based studies that employ the same field methods commonly used by practitioners can have particular relevance to technicians and recreationists. This project seeks to expand fundamental knowledge of wet slab avalanches from a practical perspective, using common field methods: hand tests and dyes.

Specific analytical emphases include: a) temporal changes in the overall structure and strength of the snowpack -on a meso-scale, the course of one day, and a macro-scale, over the course of several weeks -during the transition from the ripening phase to the output phase; b) variations in propagation propensity correlated to shear and compression strength; and c) effects of water percolation through heterogeneous stratigraphy in a depth hoar climate snowpack in central Colorado. Preliminary data on strength tests and propagation propensity reveal consistent patterns in the strength of the snowpack, and direct correlations to recently developed propagation hand tests. Initial observations of dye percolation may indicate consistent percolation and wetting properties that relate to failure.

Final analysis of the data considers possible models for wet slab avalanches in a depth hoar climate during the ripening phase, at or before peak snow water equivalent; and during the output phase, after peak snow water equivalent or during decreasing snow water equivalent.