COMPUTER SYSTEMS FOR SNOWPACK PREDICTION

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Avalanche researchers are utilizing more information that is collected and processed by computers. However, often the most interesting information such as that obtained from standard snowpits is ignored in computer analysis because of cumbersome data formats. Some problems in preparing snowpack information for computer analysis have been approached by considering three aspects of computerized investigations: data acquisition, data management, and data analysis. Quantitative parameters are obtained and information sets are ordered to numerically represent snowpacks. Hand test hardnesses and the degree of metamorphism within snow grains are scaled, and measurements of density, temperature and layer stratigraphy are sampled so their profiles coincide. The data are structured to study each parameter, each layer, or complete snowpacks with a flexible file management system which considers the snowpack features most important for the area of interest. Patterns are recognized within complete snowpacks for avalanche forecasting. Features of specific layers are correlated to explain changes in the snow fabric. Simple comparisons of individual parameters give insight to basic snow properties. Examples show the information analyzed in the form of graphs, statistical comparisons, and time series. Each aspect of computer processing considers the influence on every other aspect and the capabilities of the user's host computer. This paper addresses these problems and presents some operative computer routines.