RECENT ADVANCES IN THE COLLECTION AND TRANSMISSION OF MOUNTAIN WEATHER AND SNOWPACK DATA FOR AVALANCHE FORECASTING

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The advent of regional avalanche forecasting centers as well as increasingly sophisticated avalanche control programs has made the collection of reliable and accurate weather and snowpack information important. Inaccessibility of representative measuring sites and/or prohibitive costs in maintaining an observer on site has resulted in the development of new methods of collecting and transmitting these data. These developments have affected both the type and form of the sensing devices as well as the methods of data transmission. Sensors have suffered from a lack of durability during intense storm conditions, when the data is most needed. This has been particularly true of wind instruments affected by riming. New instrumentation has been developed specifically for avalanche work which maintains wind data during extreme conditions while only slightly sacrificing sensitivity. Similarly, measurement of snowfall and water equivalents at remote sites has been difficult. However, new advances have now made these measurements possible even at sites without power. Improved sensors have improved the accuracy of temperature measurements. The transmission of data from remote sites has usually been limited to the extension of land lines directly from the sensors. However, recent advances in electronics allow the encoding of data from almost any type of sensor with subsequent transmission over distances of miles to thousands of miles using either, telephone quality land lines, VHF radio, geostationary satellites, meteor-trail backscatter or a combination of these methods.