

**Real-Time Images of
Airborne Snow Water Equivalent Data and
Satellite Areal Extent of Snow Cover Data for the
U.S. and Southern Canada**

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The National Weather Service (NWS) Office of Hydrology maintains the National Operational Hydrologic Remote Sensing Center in Minneapolis. The primary function of the Center is to generate and distribute remotely sensed, real-time, hydrology products covering major portions of the U.S. and southern Canada for use by various Federal, state, and private agencies in operational and research hydrology programs. In January, 1989, the Center began distributing real-time areal extent of snow cover data derived from the Advanced Very High Resolution Radiometer (AVHRR) on the NOAA polar orbiting satellites. In January, 1990, the Center made available additional, real-time, airborne and satellite snow cover products for use by NWS and other Federal, state, and private hydrologists.

Satellite data are sectorized into 16 windows covering the U.S. and Canada south of 55 degrees north. Satellite snow cover data sets and images are generated for over 3,000 NWS and Canadian river forecast basins. Real-time snow cover products include: (1) alphanumeric airborne snow water equivalent by flight line, (2) alphanumeric and image mean, areal airborne snow water equivalent by basin for the Upper Midwest and East, and (3) alphanumeric and image satellite areal extent of snow cover by basin and by elevation zone. The alphanumeric and image data are available electronically to all NWS and non-NWS users in real-time. Additionally, the satellite snow cover maps are FAXed to end-users upon request and are available electronically in: (1) a PC compatible format, and (2) a raster format for use in geographic information systems or digital image processing systems. The poster paper provides examples of large size images and maps of airborne and satellite snow cover products distributed electronically in real-time and in hardcopy using overnight mail during the 1991 snow season. All image products will be available electronically to end-users in real-time over INTERNET during the 1992 snow mapping season.

We are developing techniques to incorporate DEM data and forest canopy cover data into the snow cover classification procedures to better estimate snow cover in areas where the snow surface is obscured from view by: (1) cloud cover, or (2) dense forest canopy. Research is also continuing toward improvement of normalization procedures to include corrections for within image effects of terrain and for effects of atmospheric scattering and absorption. Additionally, we are working on techniques and procedures to generate, in near real-time, a raster (or grid-cell) snow water equivalent data set using: (1) ground-based point snow water equivalent data, (2) airborne line snow water equivalent data, (3) satellite areal extent of snow cover data, (4) digital elevation data, and (5) forest canopy cover data sets.

Interested users can receive more information on any of the aforementioned snow cover products, maps, or data sets by contacting:

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If you have any questions, suggestions, or require any additional information, please give Milan a call.

REFERENCES

Carroll, T.R. (1991) Operational airborne and satellite snow cover products of the National Operational Hydrologic Remote Sensing Center. Proceedings of the Forty-Seventh Annual Eastern Snow Conference; Bangor, Maine; 1990 June 7-8; pp: 87-98.