

A Science Service Feature

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? WHY THE WEATHER ?

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FOG OVER SNOW

When there is snow on the ground, the character of the weather changes suddenly when the dewpoint of the air rises much above the freezing point. So long as the dewpoint remains low, there is no fog, and the cooling of the snow by evaporation and by radiation of clear skies favors but limited melting. But when the dewpoint rises well above the snow temperature the moisture augments the rate of melting; there is latent heat from condensation of moisture on the cold surface and in the air nearby, and heat is pouring into the snow day and night by radiation and conduction from the warmer fog. The fog decidedly resists chilling, there is so much moisture to be condensed. Air nearly calm over a snow surface may continue to be at 42 to 48 degrees Fahrenheit for hours, the receipt of heat from above balancing the loss to the snow.

Under such conditions melting of the snow goes on uninterruptedly day and night. Disappearance of snow, which, before the fog, is intermittent and at a moderate rate, becomes rapid as the fog comes on, and one hears remarks of fog being a good snow cutter. But, of course, the fog under such circumstances is only the result of the chilling of warm moist air by the snow surface, just as the melting of the snow is owing to the receipt of heat from the warm air. Fog and rapid snow melting are both the results of the presence of the warm humid air over the snow cover.

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