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? WHY THE WEATHER ?

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SNOW SMUDGES AND FLURRIES

On a cold windy day in winter, you will often see snow smudges in the sky. These clouds of snow have no distinct outlines, but present a blurred appearance. Such clouds are likely to develop in cold northwest or north winds. The upper portion of the wind advances more rapidly than the friction retarded lower portion and is hence the colder. It is also likely to be colder than the surface air because of less frequent warming contacts with the ground and its more expanded condition. Convection or merely turbulent overturning in the wind raise and cool some of the warmer air and cause condensation of some of its moisture into cumulus clouds. These dense, sharply defined, rounded top clouds perhaps at first are composed mostly of water droplets, because even at quite a low temperature water sometimes condenses into liquid droplets. But in any event there would be some snowflakes and these would grow at the expense of the liquid droplets. Water droplets evaporate in the presence of snow crystals because snow crystals have a lower vapor pressure, and can, therefore, continue to take water molecules from the air till after the air is no longer "saturated" with respect to the liquid droplets, which must then evaporate. In the course of relatively few minutes a cloud of water droplets with its distinct and at times colorful outlines may change into a smudgy cloud of snow, with more or less diffuse snow trails dropping from it. If the air below is not dry enough to evaporate all these trails, some reach the ground and we have snow flurries.

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(Tomorrow: "Too Cold to Snow")

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