

A Science Service Feature

Released upon receipt  
but intended for use  
August 2, 1935

? WHY THE WEATHER ?

Mailed July 26, 1935

RADIATION FOG

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Fog is formed in several ways. "Radiation fog" forms on clear nights, when the earth cools rapidly by radiation to the sky. With a dead calm, the chilled earth condenses moisture from the air merely as dew or hoarfrost, and there is no fog. With a light wind, the air is mixed and brought to uniform temperature up to a height of, say, 10 to 50 feet above the ground and is cooled enough by the latter to condense innumerable fog droplets, which are too small to fall through the turbulent air to the ground. With a stronger wind, the air is mixed up to a height of perhaps hundreds of feet. The cooling effect of the ground, now applied to a great mass of air, is insufficient to cool this air to the dew-point -- the temperature of condensation -- and hence no fog forms.

Thus, with a clear nocturnal sky, the rule is: Calm, no fog; light wind, fog; strong wind, no fog. This rule only applies, however, to radiation fog, occurring over land. Fogs due to strong contrasts of temperature between air and water can form with fairly strong winds. "Advection fogs," produced in one place and carried by the wind to another, are also possible in windy weather.

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