

A Science Service Feature

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? WHY THE WEATHER ?

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DRYNESS FAVORS HOT WEATHER

One hot afternoon when damp soil was 92, dry soil was found to be 106 to 114 degrees Fahrenheit, and the air over the dry soil 3 to 5 degrees hotter than that over the damp. Much of the radiation from the sun was being used in evaporating water from the damp surface. Local dryness thus directly favors high temperature.

Through lack of cloudiness, dryness also promotes hot weather. On a dry day the dewpoint is far below the air temperature. Consequently, a great ascent with attendant cooling by expansion or cooling by other means must take place before clouds will form. But when the ground is generally damp, or when the wind is coming from a warm water surface, the air tends to be humid. Therefore, clouds may form readily and provide a sunshade for the ground, even if not a cooling shower.

Local and general dryness combined in fostering the recent excessively hot spell. Little rain had fallen recently over wide stretches of the interior and East, and the importation of southern vapor in quantity was blocked by a ridge of high pressure through the South. In this high pressure area dry air settled and with clear skies under a blazing sun moved northward toward a Canadian low. Much of this air heated in the Mid-west then drifted eastward. Owing to the considerable warming that had already taken place at heights up to 2 or 3 miles, even high temperatures and eastern mugginess in the lower layers failed to produce normal instability which commonly alleviates the heat with shade or shower.

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