A Science Service Feature

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? WHY THE WEATHER ?

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NOCTURNAL SHOWERS

We are familiar with the daytime formation and growth of cumulus clouds but not with what happens at night. Are all the night showers simply left-overs from daytime convection, or do they arise from nocturnal processes?

On the Plains well over half the rain in summer falls at night. In the East, where daytime showers are heavier, less than half the summer rainfall is nocturnal.

Showers are due to convection The warmer air is pushed up by cooler air until it has expanded and cooled to a point well below the condensation temperature of its water vapor. Such action does not take place on a scale adequate for showers unless the contrast between lower and upper air is considerable. This can be effected by heating below, cooling above, or both. Heating below when the sun warms the earth and lower air is responsible for daytime convection and showers characteristic of afternoon. Cooling above, when nocturnal radiation takes place readily from the upper portions of a layer of humid air, provides the contrasts needed for nighttime convection and attendant showers. Since the air is more humid at night than by day, less convection is required for producing rainfall during the cooler hours.

On muggy days, the cooling aloft in the evening when the lower air is still warm may keep afternoon showers going till several hours after sunset. In drier weather, however, no rain may result from nocturnal convection till late at night or early in the morning when humidities have first reached a high enough percentage. It is hard to tell when there will be night showers.

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