

A Science Service Feature

? WHY THE WEATHER ?

Dr. Charles F. Brooks,
Secretary, American Meteorological Society
says:

THERE IS WATER IN THE AIR

All atmospheric air consists in part of moisture. The warmer the air the greater, usually, this proportion, and for each temperature there is a limit to the amount of water vapor that can exist in any volume. Therefore, when warm air is cooled there must come a point at which some of the water vapor must separate out, or condensation take place. The temperature at which this phenomenon occurs is known as the dew-point. The importance of the dewpoint in weather science is evident when one considers that only when this temperature is reached does the condensation of atmospheric moisture take place in the form of dew, fog or cloud.

The number of degrees which the temperature must fall before the dewpoint is reached depends upon the humidity. If the air contains close to the maximum possible amount of water vapor at the existing temperature, then the dewpoint will be quickly reached. If the air is relatively dry, then the temperature fall must be greater if condensation is to take place.

For example, on a May morning when a column of heated air rises from the earth's surface it is cooled by expansion until, finally, its temperature is reduced to the dewpoint, and the condensation of some of its moisture forms clouds. If the warm column consists of highly moist air the temperature drop required is only a few degrees and the dewpoint will be reached at no considerable height. If the air is dry the ascending current will have to rise higher before clouds are formed.

(Tomorrow: Air Dries by Heating)

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