Dew Point Encyclopedia Article

Dew Point

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Dew Point

The dew point is that **temperature** below which the **water** vapor in a body of air cannot all remain vapor. When a body of air is cooled to its dew point or below, some fraction of its water vapor shifts from gaseous to liquid phase to form **fog** or cloud droplets. If a smooth surface is available, vapor condenses directly onto it as drops of water (dew).

The dew point of a body of air depends on its water vapor content and pressure. Increasing the fraction of water vapor in air (i.e., its relative **humidity**) raises its dew point; the water molecules are more crowded in humid air and thus more likely to coalesce into a liquid even at a relatively warm temperature. Decreasing the pressure of air lowers its dew point; lowering pressure (at constant temperature) increases the average distance between molecules and makes water vapor less likely to coalesce.

Air at ground level often deposits dew on objects at night as it cools. In this case, the dew point of the air remains approximately constant while its temperature drops. When the dew point is reached, dew forms. Ground mist and fog may also form under these conditions.

The dew point can be measured using a dew-point hygrometer. This instrument, invented in 1751, consists essentially of a **glass** with a thermometer inserted. The glass is filled with **ice** water and stirred. As the temperature of the glass drops, the air in contact with it is chilled; when it reaches its dew point, water condenses on the glass. The temperature at which **condensation** occurs is recorded as the dew point of the surrounding air.

If the dew point of a body of air is below 32°F (0°C), its water vapor will precipitate not as liquid water but as ice. In this case, the dew point is termed the frost point.

See Also

Atmospheric Inversion Layers; Atmospheric Lapse Rate; Cloud Seeding; Clouds and Cloud Types; Evaporation; Precipitation; Weather Forecasting Methods; Weather Forecasting