**URBAN CLIMATE**

Urban climate, any set of climatic conditions that prevails in a large metropolitan area and that differs from the climate of its rural surroundings.

Urban climates are distinguished from those of less built-up areas by differences of air temperature, humidity, wind speed and direction, and amount of precipitation. These differences are attributable in large part to the altering of the natural terrain through the construction of artificial structures and surfaces. For example, tall buildings, paved streets, and parking lots affect wind flow, precipitation runoff, and the energy balance of a locale.

Also characteristic of the atmosphere over urban centres are substantially higher concentrations of pollutants such as carbon monoxide, the oxides of sulfur and nitrogen, hydrocarbons, oxidants, and particulate matter. Foreign matter of this kind is introduced into the air by industrial processes (e.g., chemical discharges by oil refineries), fuel combustion (for the operation of motor vehicles and for the heating of offices and factories), and the burning of solid wastes. Urban pollution concentrations depend on the magnitude of local emissions sources and the prevailing meteorological ventilation of the area—i.e., the height of the atmospheric layer through which the pollutants are being mixed and the average wind speed through that layer. Heavy concentrations of air pollutants have considerable impact on temperature, visibility, and precipitation in and around cities. Moreover, there occasionally arise weather conditions that allow the accumulation of pollutants over an urban area for several days. Such conditions, termed temperature inversions (increasing air temperature with increasing altitude), strongly inhibit atmospheric mixing and can cause acute distress in the population and even, under extremely severe conditions, loss of life. Atmospheric inversion caused an air-pollution disaster in London in December 1952 in which about 3,500 persons died from respiratory diseases.