

# Whaddya Mean, Freezing?

If asked, most people will tell you that, if you cool water to 32°F/0°C, it will freeze. Are they right? Well . . ., yes and no, but mostly no.

Actually, 32°F is the melting point of ice, not the freezing point of water. You will never find ordinary ice at temperatures above that point. However, water does not automatically freeze at that temperature.

If sufficient "icing nuclei" are present, then water will indeed freeze at that temperature. These nuclei (clay particles and the like) are almost always present on the ground, but are less common in the atmosphere. There, away from the earth's surface, most cloud droplets (liquid water) won't freeze until a temperature of -40°F/-40°C is reached. In meteorological terms, this is called "the icing point", and is the temperature at which water automatically freezes.

Consequently, most liquid cloud droplets happily spend their entire lives (a matter of minutes) at temperatures well below 32°F/0°C! Most of those clouds that you see overhead are composed of water droplets at temperatures well below 32°F/0°C. During the winter months, the cloud droplets stay liquid well below zero (-18°C)!

Sea water, of course, does not form ice until it cools to around 28°F or 29°F (-2°C), depending upon its salinity. Adding other solutes to pure water (such as anti-freeze) can depress the icing point even further.