

Advection Fog

“Advection fog” forms when relatively warm air moves over a colder surface (for example: a body of water, snow-covered ground, etc.) and the interaction between the two results in the air becoming saturated. The term “advection” just means that the fog formed due to an air mass being transported by the wind. A popular example of this type of fog is the fog that is often seen enveloping the San Francisco Bay area. Moist, relatively warm air from the Pacific Ocean meets the relatively colder air along the California coast. This warm, moist air cools to its dewpoint, saturates, and results in the formation of fog that moves onshore.



Advection fog moving onshore into the San Francisco Bay area. Photo source: By Dschwen and Brocken Inaglory (Own work) [[CC BY-SA 3.0](#) or [GFDL](#)], via Wikimedia Commons.

Steam Fog

“Steam fog”, also called “evaporation fog”, requires a body of water. It forms when cold air moves over relatively much warmer water. When this occurs, water from the water’s surface evaporates and water vapor is added to the colder air. The cold air then saturates quickly and fog forms.

Upslope Fog

“Upslope fog” forms when moist air is forced up the slope of mountainous terrain. As the moist air rises, it cools. Eventually, that moist air reaches its dewpoint, saturates, and fog forms. From the ground below the mountain, the fog may appear like any ordinary cloud. But, when observed from the mountain itself, the cloud would be considered fog, since it is in contact with the earth’s surface.



Upslope fog over the Santa Catalina Mountains. Photo by Grant Montgomery/flickr ([license](#))

Valley Fog

“Valley fog” refers to fog that forms in a valley. At night, air at the top of a mountain or ridge cools faster than air at the bottom. Since cooler air is denser than warmer air, this cooler air sinks down the slope of the mountain/ridge. In a valley, cooler air drains down both sides of the valley, resulting in colder air at the bottom of the valley. This then forms an inversion, which traps the colder air near the ground. If enough moisture is present in the air at the bottom, the air will saturate and fog will form.

The rare fog that fills the Grand Canyon is an example of a valley fog. A recent rain can increase the moisture within the canyon and contribute to bringing the air to saturation.

Hail Fog

“Hail fog” is a localized type of fog that can form when a significant amount of hail from a thunderstorm accumulates on the ground. As the hail melts and the meltwater evaporates, it cools the air right above it and adds moisture to the air. If the air is already moist, a shallow layer of fog may form.