

Halo

Large faintly colored ring around sun or moon. Size is about twice that of spread hand at arms length. Color is reddish inside, bluish outside.

Best seen by covering sun with hand. Created by tiny ice crystals at high altitude, which act as prisms to spread light into colors.

Often seen when cirrostratus clouds cover the sky. Used by old-time mariners as indicator of stormy weather on the way. Technically referred to as 22 degree halo, indicating its angular size. Rarely a 46 degree halo may be seen.



Combined Display of Halo, Sundogs, and parhelic circle.



(blue dot is internal reflection in camera. Picture taken at Patagonia Post office.)

Sun Pillar

Vertical shaft of light above sun. Normally visible only shortly after sunset or before sunrise. Caused by light reflected off tiny ice crystals. Color is simply that of sun itself.



Sundog

Bright patch of light on either side of sun or moon. Called sundog because it follows along beside sun as sun moves across sky. Also called parhelia. Located about a hand's breadth from sun. Caused by ice crystals in stratosphere, much as halo is formed.



Circumzenith Arc

Straight over head. Sometimes called "Fire-bow".



Rainbow

The familiar colored arc of light. Created by sunlight reflecting off raindrops and being dispersed into colors as the light enters and leaves droplet. If light reflects internally in the drop a second time, it creates "secondary" bow, as seen here.



Note color order reversed in outer bow. Brightness of bow depends on size of droplets. Bigger droplets give brighter bow. Very tiny droplets create a white bow.

Corona and Cloud Iridescence

Colors are like those seen with oil on water: pink and pale green most visible. Seen around sun or moon sometimes as circle of light, in which case called a corona. May also just appear as colored patches on clouds.



The Glory

The glory appears as a colored ring around your shadow if it falls on a layer of cloud or

fog. It is frequently seen around the shadow of your plane if you are flying close to and above a deck of clouds. May also be seen by mountaineers when their shadow appears on cloud. If there are several observers, the glory is not seen around the head of any observer but self. Very ego gratifying.



Sub-Sun

Sub-Sun (the elliptical blob) is reflection of sunlight from ice crystals in a layer below you. It is analogous to the sun reflecting from a body of water. Sun-sun "follows" along as plane flies. If plane enters cloud with ice, the sun sun may suddenly enlarge and "rush" toward plane.



Some words of explanation.

All these phenomena are caused by tiny atmospheric particles of ice, liquid water, or dust...sometimes even pollen(!!) Ice crystals are typically a fraction of a millimeter in size.

Formed at high altitude (several tens of thousand feet where it is always very cold).

Pure colors are created by light refracting and being dispersed in the prism shape of the ice crystal or by refraction and reflection inside water droplets. Colors can also occur by diffraction in small water droplets. These colors tend to be pink-ish and green-ish, similar to the colors seen in oil on water.