Circumhorizontal arcs – fire rainbows – cloud rainbows

Curious Cat Science and Engineering Blog

Fire Rainbow, Johor Bahru by John Hunter [1]

Yesterday afternoon I spotted this odd, colorful, spectrum seemingly in a cloud in Johor Bahru, Malaysia [2]. The colors are similar to a rainbow but the prism effect takes on a bit different form than a rainbow as I learned with a bit of searching online. I added a short post to this blog, about the phenomenon [3] a few years ago.

Johor Bahru under a large cloud which is topped with a fire rainbow.

A circumhorizontal arc is an optical phenomenon – an ice-halo formed by plate-shaped ice crystals in high level cirrus clouds. They are also known as “fire rainbows,” if the cloud is at the right angle to the sun, the crystals will refract the sunlight just as when rainbow is created.

Dramatic cloud close up (top of the cloud in the earlier photo).

These fire rainbows can only occur when the sun is 58 degrees or higher above the horizon and when the clouds or haze contain plate-shaped ice crystals. The arc has a considerable angular extent and thus, rarely is complete. When only fragments of a cirrus cloud are in the appropriate sky and sun position, they may appear to shine with spectral colors.

Zooming in more on the photo above to see the colors in one instance of the circumhorizontal arc

The exciting colors appeared in a few different locations over time as the cloud pattern developed over about 10 minutes. But all of the spectrums appear just above the huge cloud formation seen in the wide view photos above. All the photos are by John Hunter and can be reused as long with the conditions for using the photos [4] are followed (Creative Commons Attribution).

Links:
[1] http://johnhunter.com/
[2] http://malaysia.curiouscatnetwork.com/tag/johor-bahru/
[3] http://engineering.curiouscatblog.net/2006/06/20/rare-rainbow-over-idaho/
[4] http://curiouscat.com/photo_use.cfm