

### Offered Title: Cirrus Clouds in Space

Cirrus clouds are among the highest-flying clouds in our atmosphere. They can be found as high as 45,000 feet. 45,000 feet is high but not even near space so how can I say, "Cirrus Clouds in Space"? I'm just talking about two different things, things that share similar characteristics. Both are tenuous, spread out and wispy. What then, am I referring to?

*Galactic Cirrus.* Dust clouds in space.

Notable astronomers such as William Herschel, Father Johann Hagen, and Baron Renaud de Terwangne described or sketched areas within their eyepiece view that appeared slightly brighter. They didn't know what it was, but they knew they saw it. Galactic cirrus formations were not characterized until the mid-1980s, with IRAS (Infrared Astronomical Satellite). They are collections of dust particles. Some of the dust absorbs light, obscures our view and emits infrared light. I'm going to focus on the dust that can be seen via reflected visible light, and it can be observed, even with relatively modest size telescopes.

Galactic cirrus dust is essentially leftovers from the making and breaking of all the stuff (stars, galaxies, planets, etc.) in our universe. Its presence became a nuisance once astronomical photography was established, presenting as cloudy or brighter areas on photographic plates. It was thought to be defective emulsions or unseen atmospheric clouds.

IRAS was essential in our understanding that this dust is pervasive, concentrated around and in between galaxies. That's a lot of dust. Due to its concentration around galaxies, galactic cirrus has been shown to affect the color rendition in photos of those galaxies with the most dust around them. This certainly creates challenges for accurately rendering them.

What about observing galactic cirrus? It is so very dim and thin, what's the attraction? Just as with all dim, extended objects it's the hunt and the A-ha! moment when you spot it. As I said above, galactic cirrus is within reach of modest size telescopes but the catch...isn't there always a catch...it is best seen with fast optics. If you read last weeks column I talked about the fast optics of Dragonfly. The smaller the f/number, the faster. For example, f/2.8 is faster than f/4. Faster means more light.

Quality fast scopes (f/2.8 to f/3) are more time consuming to produce and therefore expensive. An 8" to 10" reflector with a speed of f/4 or 4.5 can be just enough to allow spotting galactic cirrus. A low power (25-50x), very wide angle (100 degree) eyepiece is helpful. A clear, dark, moonless night sky is essential. They will still be tricky even if you know where to look.

Where to look? Start by looking around M51 in Canes Venatici. Look for large arcs and areas of faint, wispy nebulosity. Galactic cirrus!

### What's in the Sky?

May 19; after sunset; W-NW: Mars and open cluster M35 are very close in Gemini, near the horizon. Use binoculars or a telescope.