

The Unexplored Nebula Project

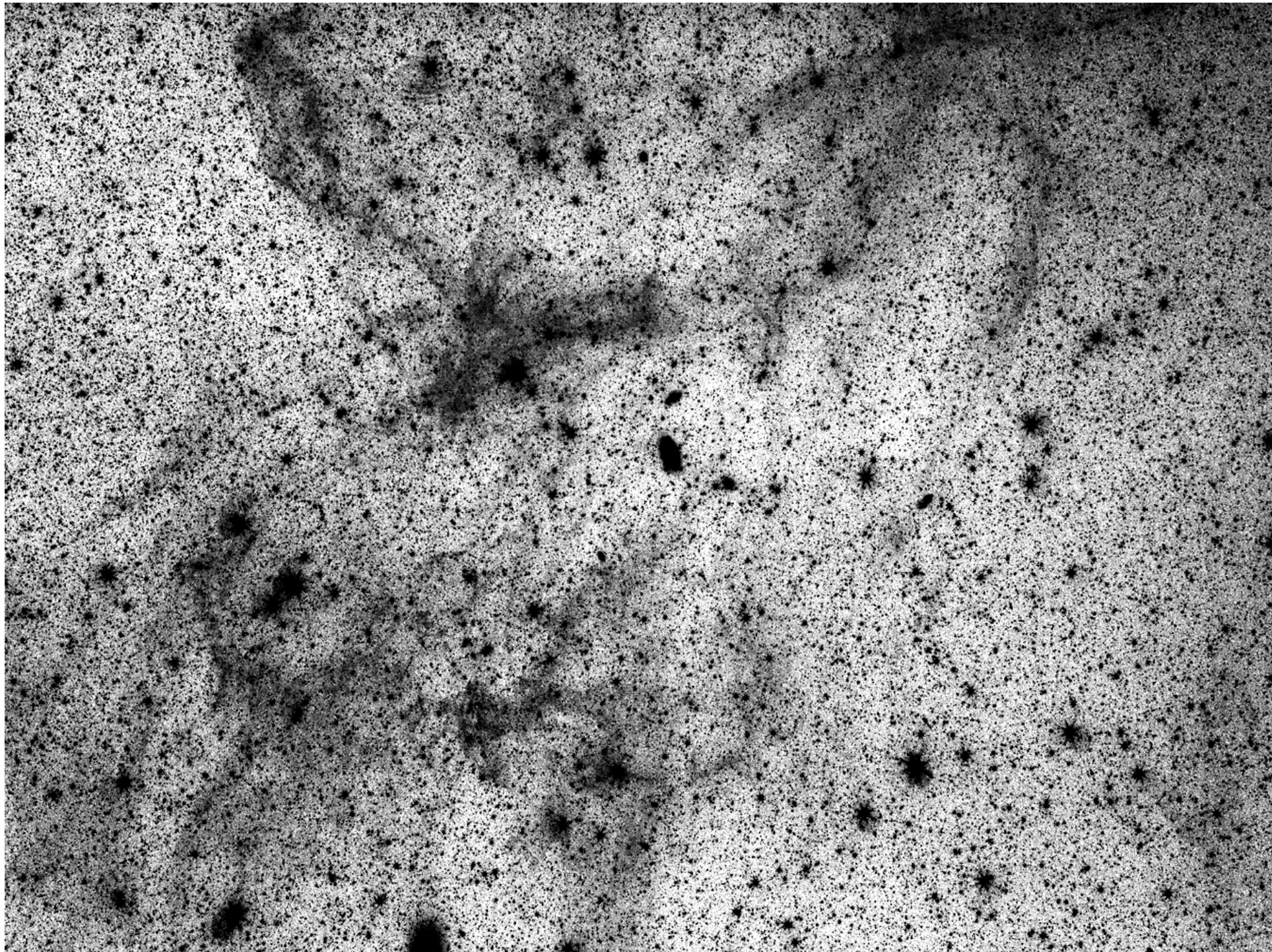
3019321-1

Steve Mandel

www.galaxyimages.com/UNP1.html



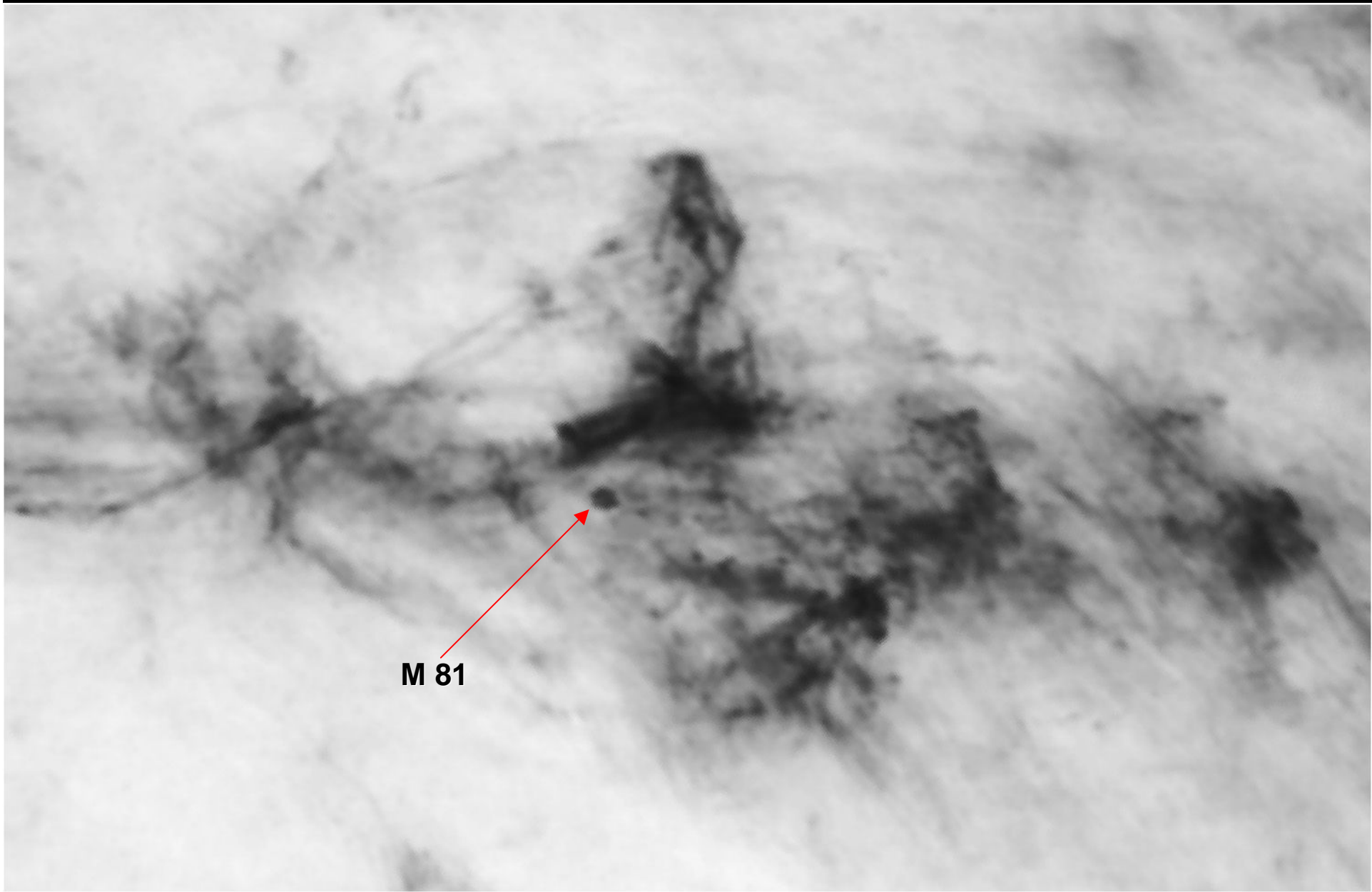




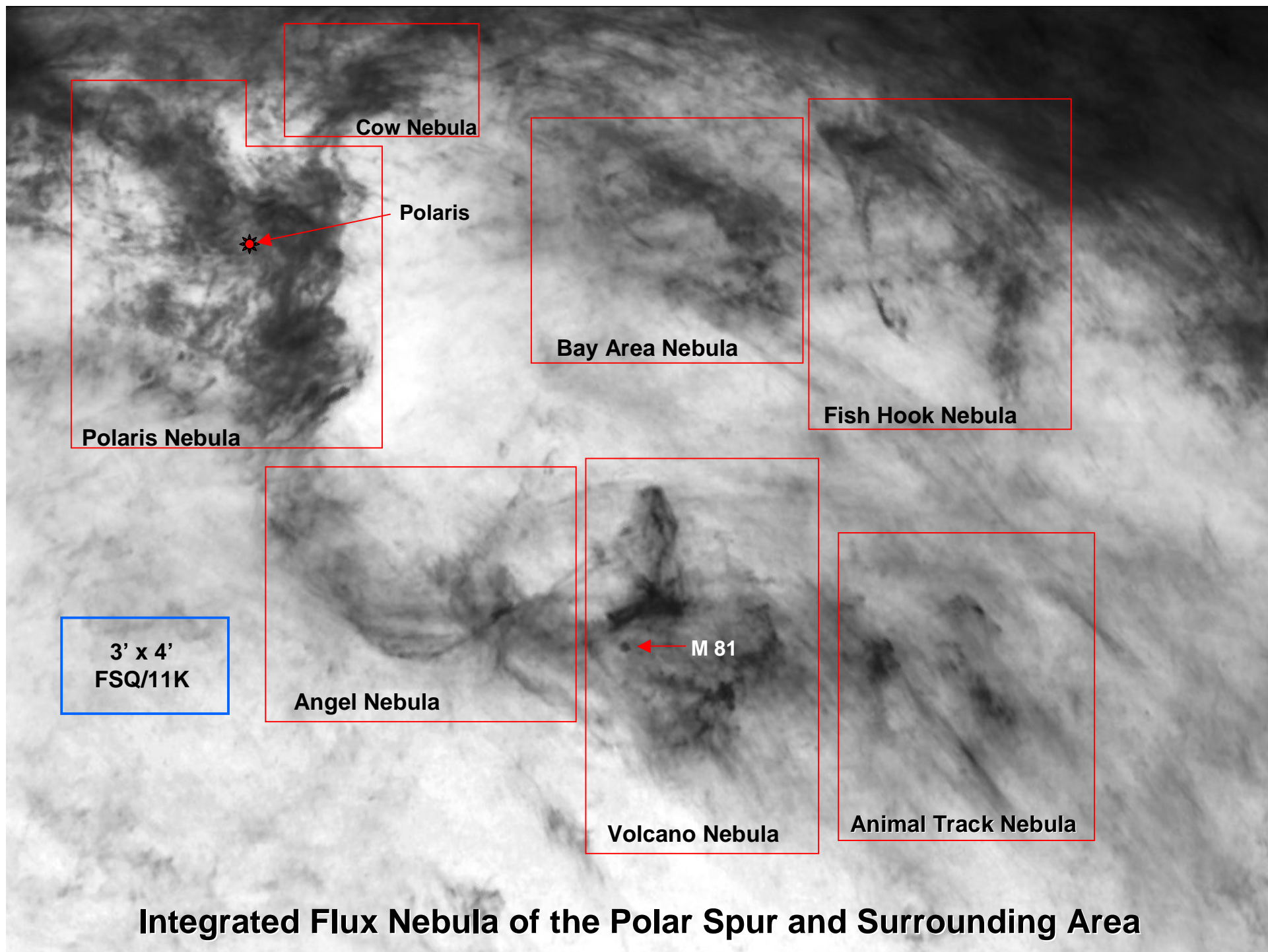


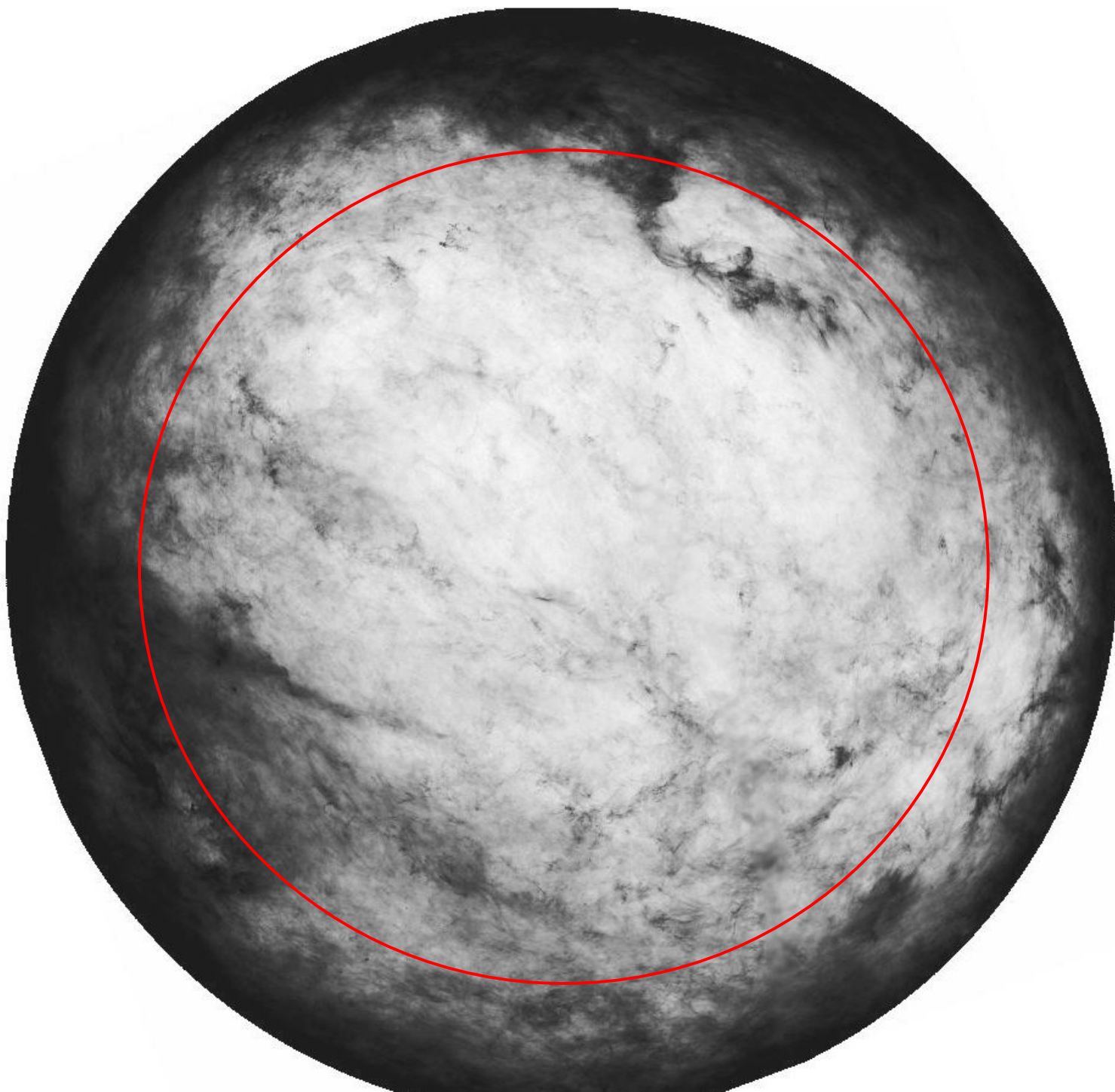


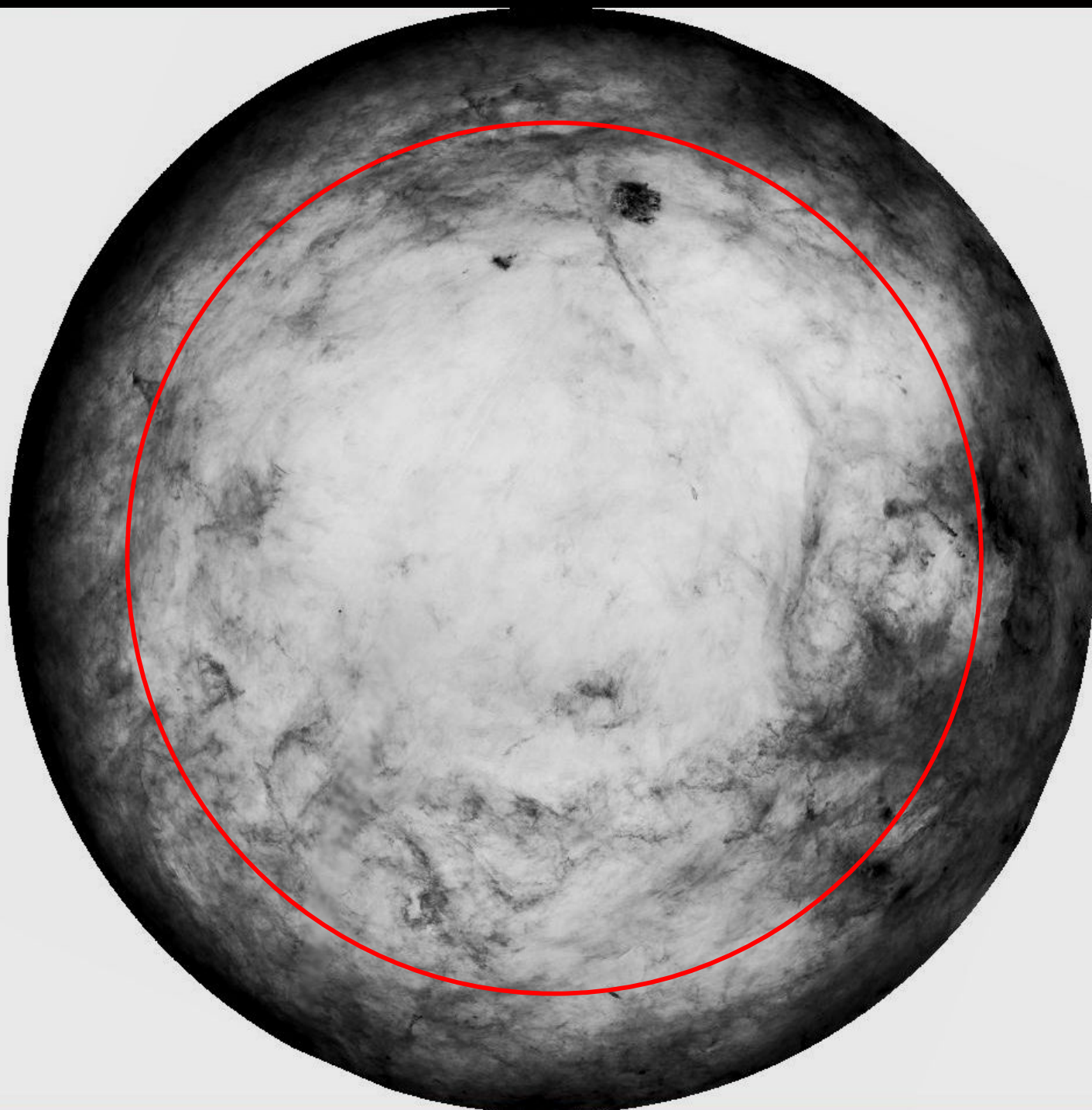
**Integrated Flux Nebula of the Polar Spur and Surrounding Area –
Dust Map**



M 81







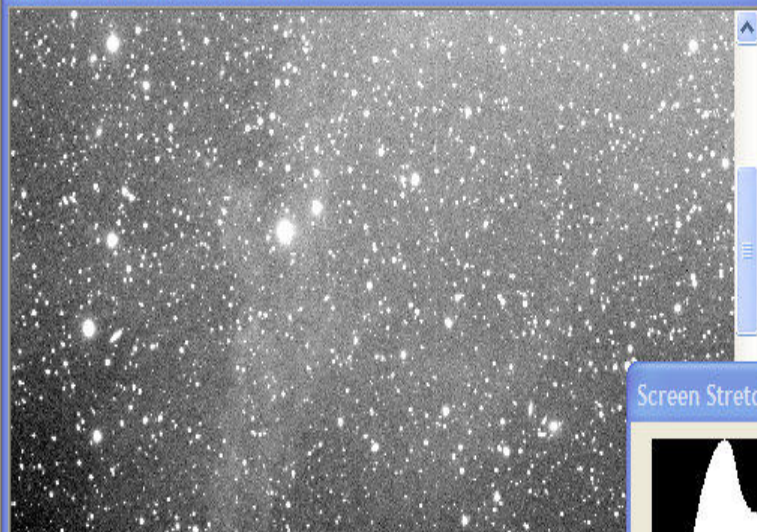




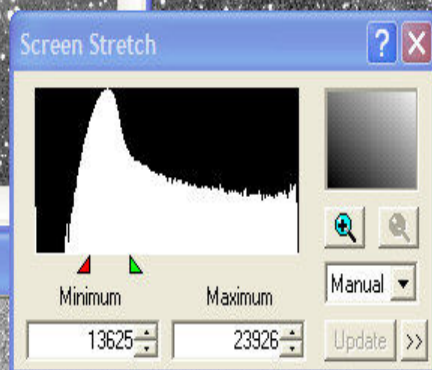
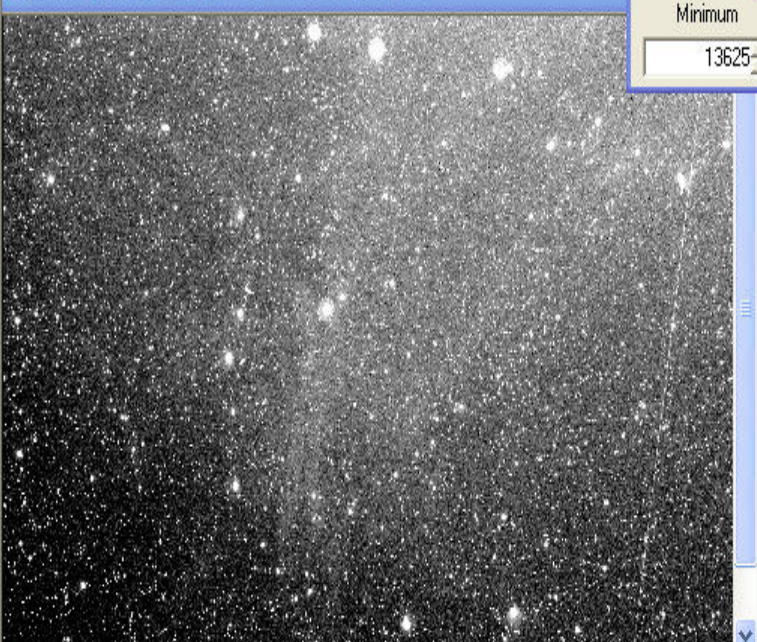


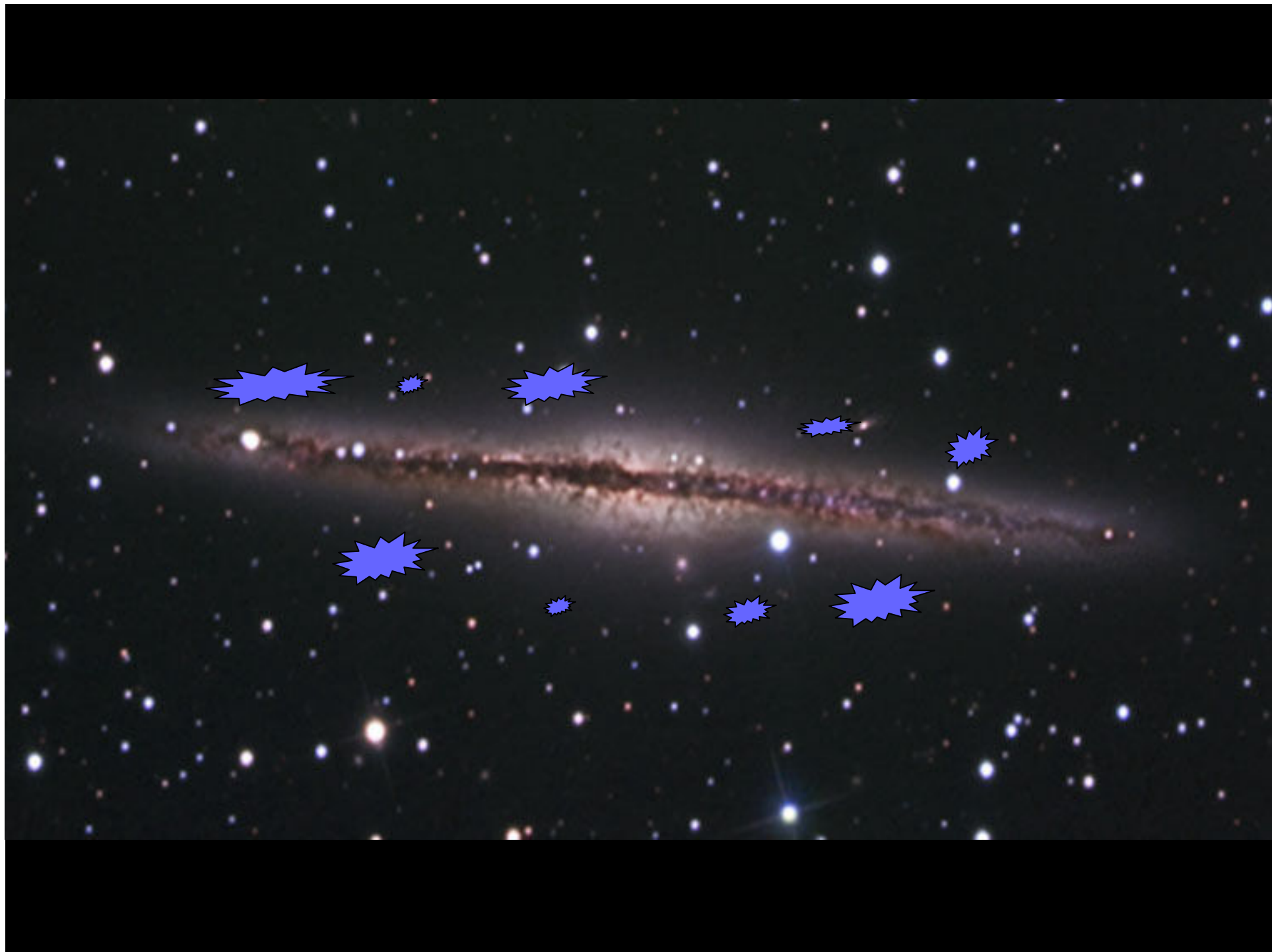
Mean Red_Area1.3 4.1132b.FIT

Mean Blue_Area1.3 4.11_32b.FIT



Mean Green_Area1.3 4.11 00132b003.FIT



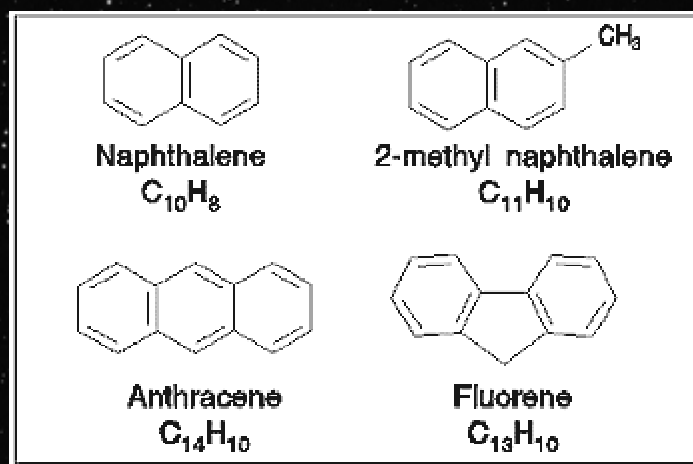


Dust - The Cosmic Mother

- Dust is born in supernovae and low mass red giants
- Molecular Hydrogen (H_2) forms on dust particles
- Stars are born in GMCs - H_2 / CO / PAH
- Dust shields the column from UV
- Stars / Carbon-based molecules abound

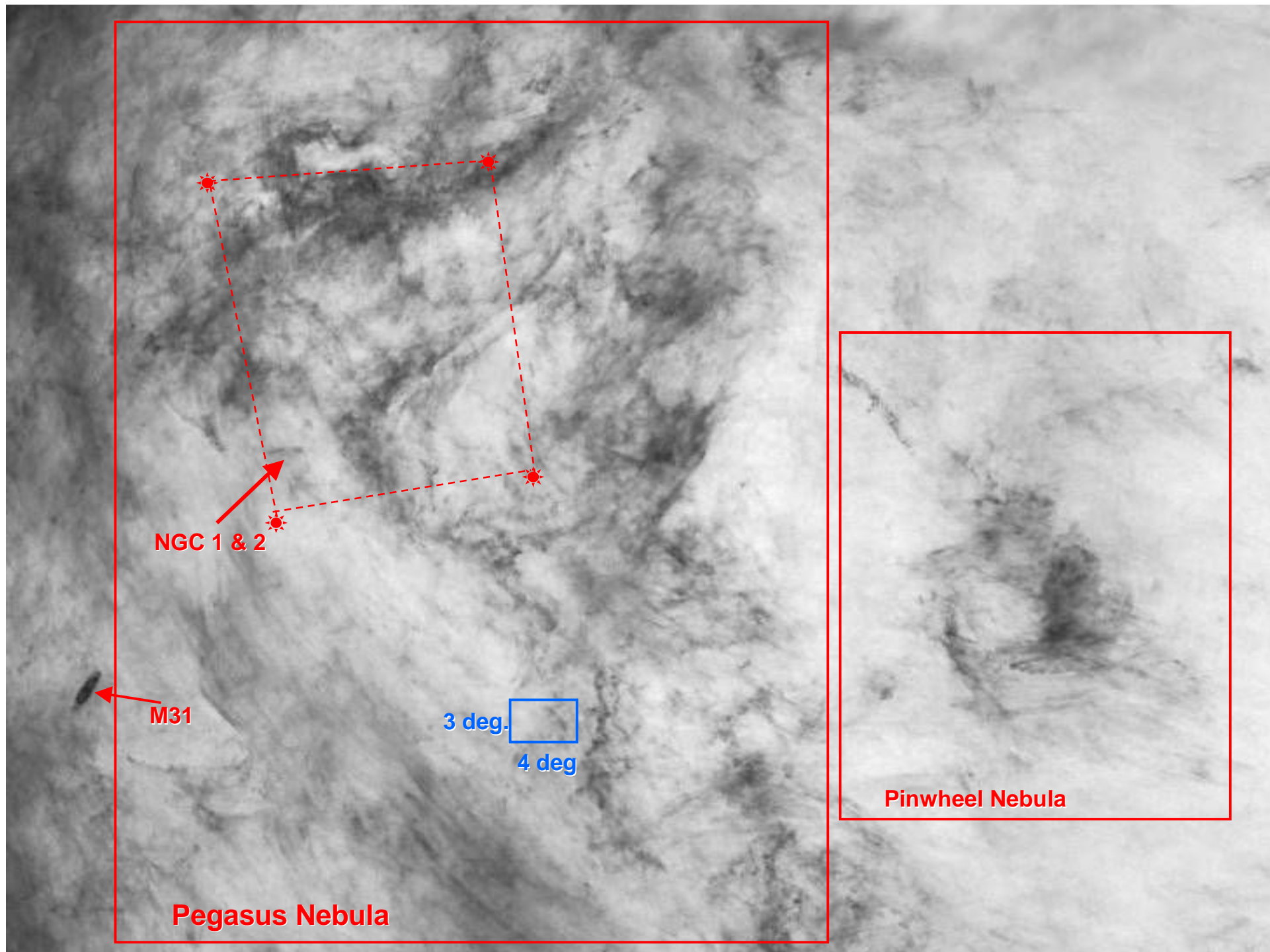
Polycyclic Aromatic Hydrocarbons - Say What?

- PAHs are biogenic compounds formed in winds of dying stars
- Swap a C atom for an N – amino acids, DNA, hemoglobin
- Spitzer Space Telescope detected it in M81
- Building blocks of life found outside of our galaxy



Extended Red Emission (ERE)

- **Photoluminescence from dust / UV interaction**
- **Broad band in the 540nm to 950nm range**
- **Found in dusty environments that are carbon-rich**
- **PAHs are a major component of dust**
- **BL - Blue Luminescence also from dust**



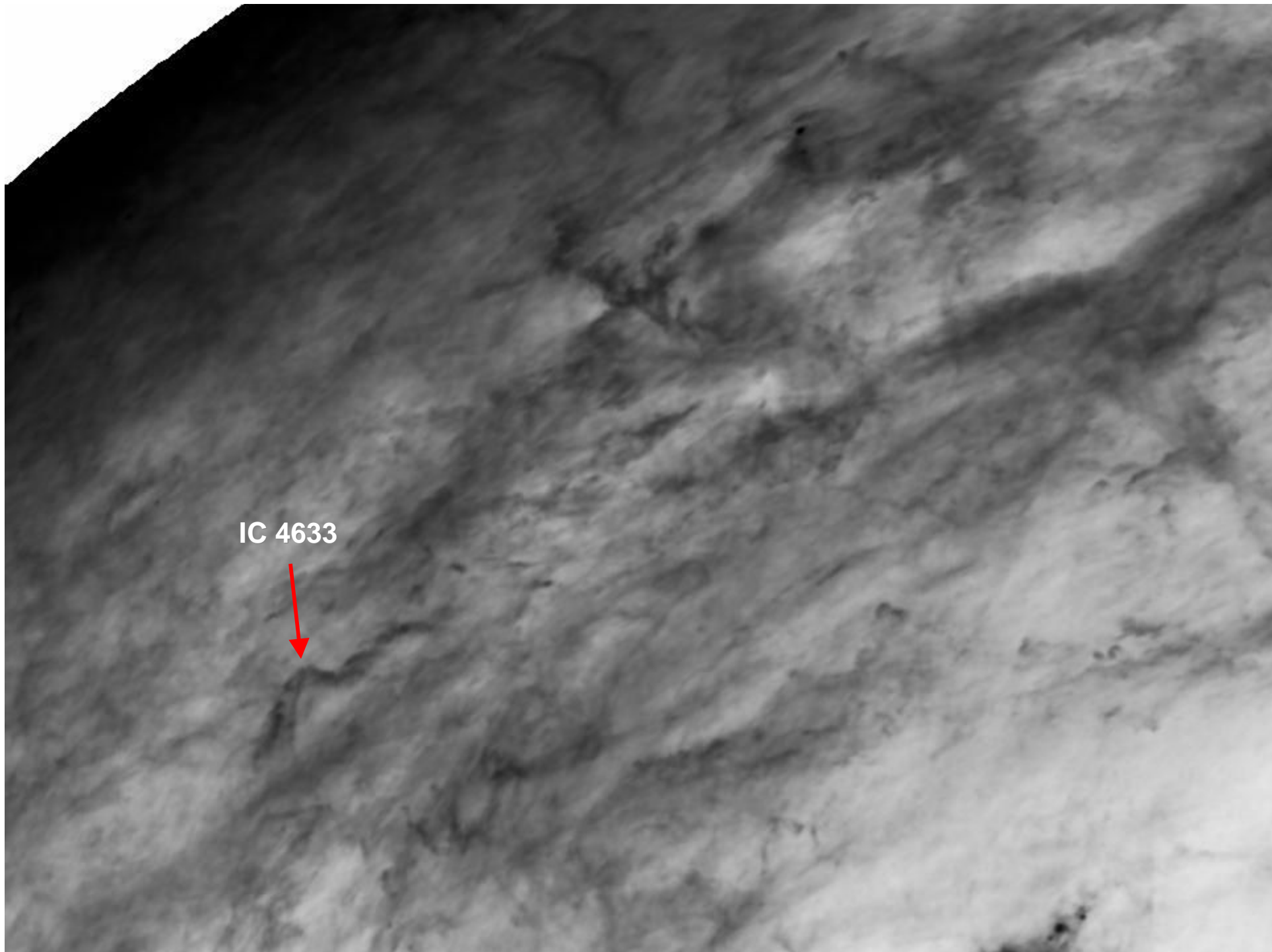


NGC 1 & NGC 2 - by R. J. Gabany

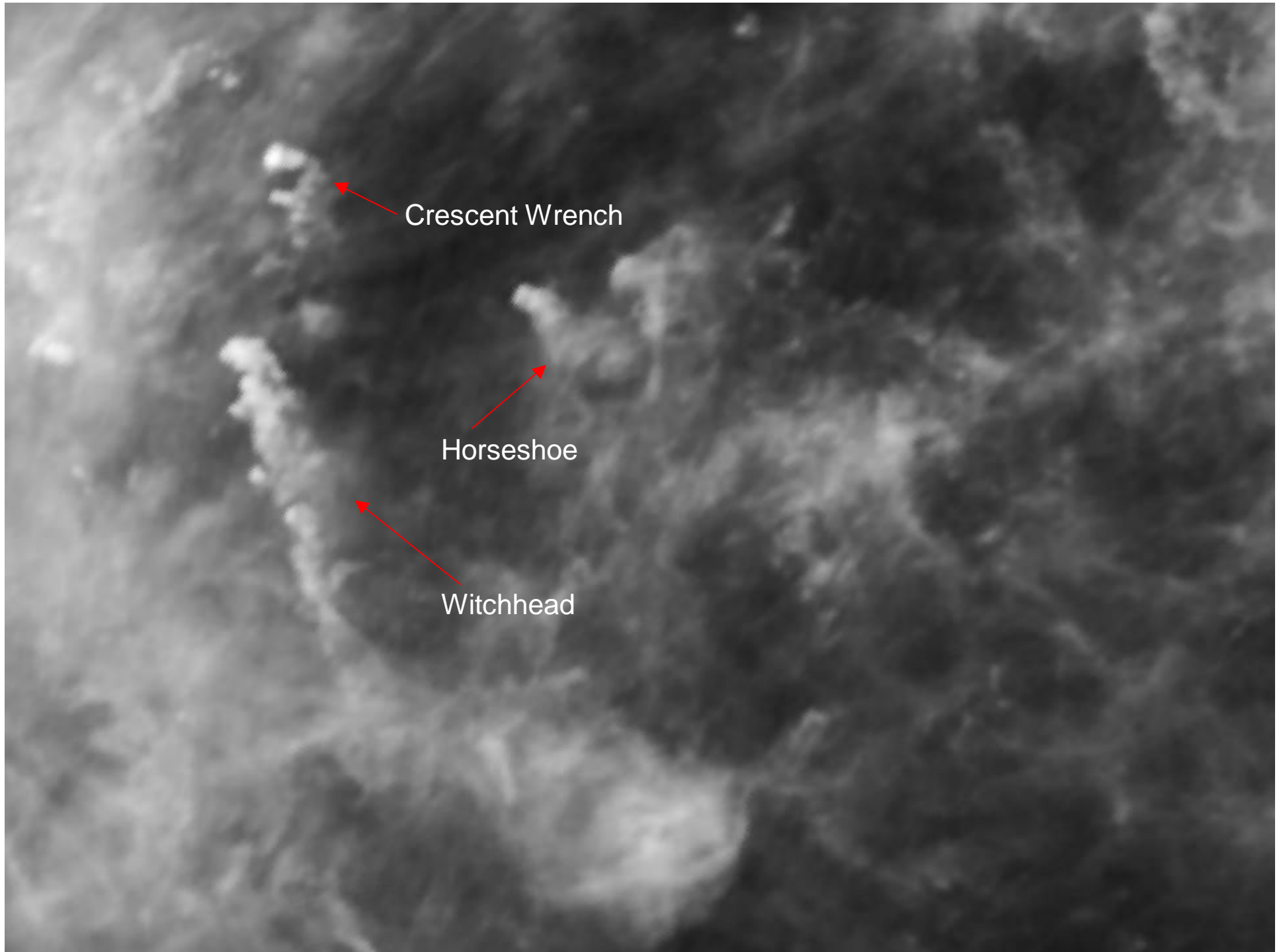








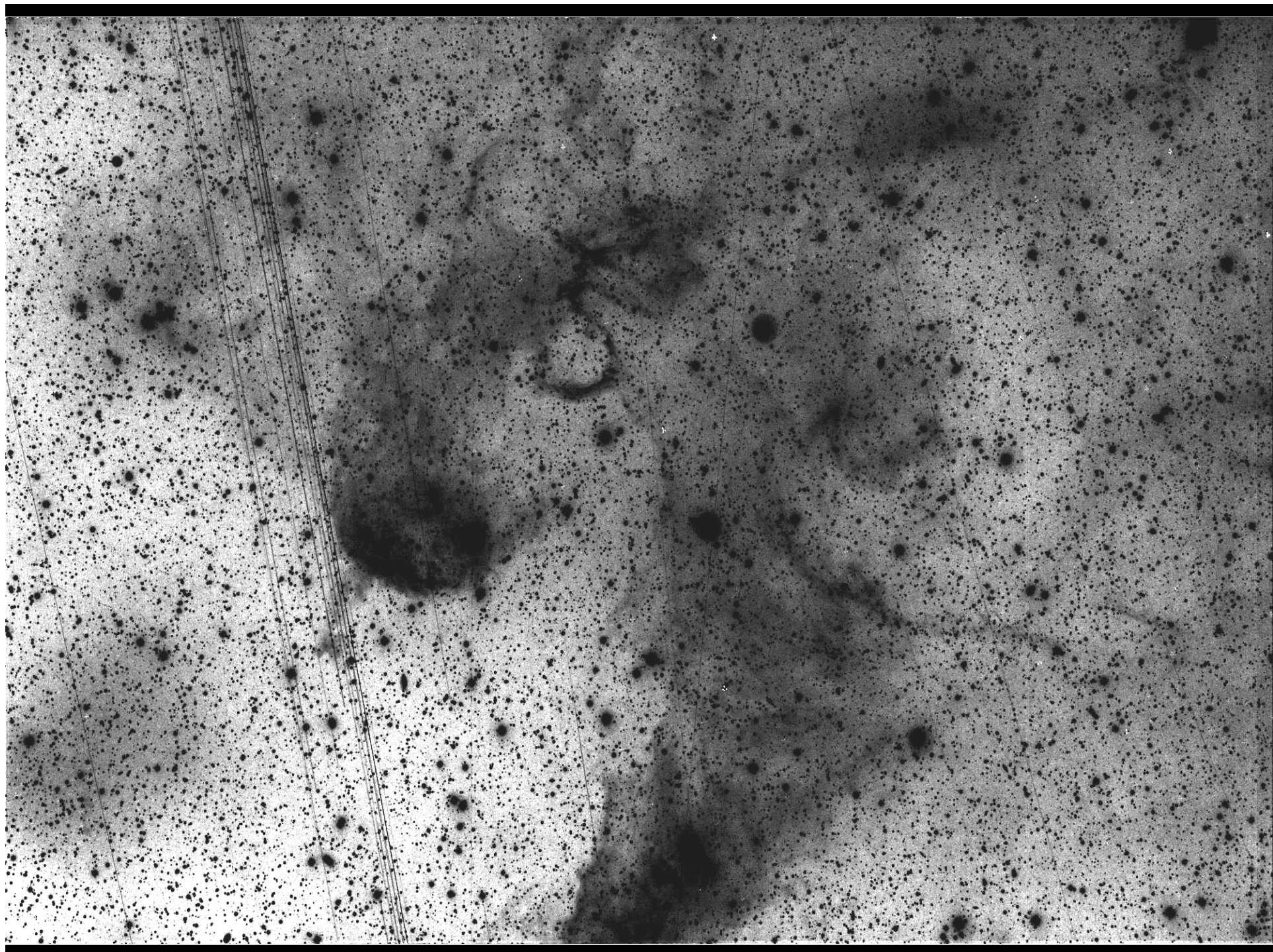
IC 4633



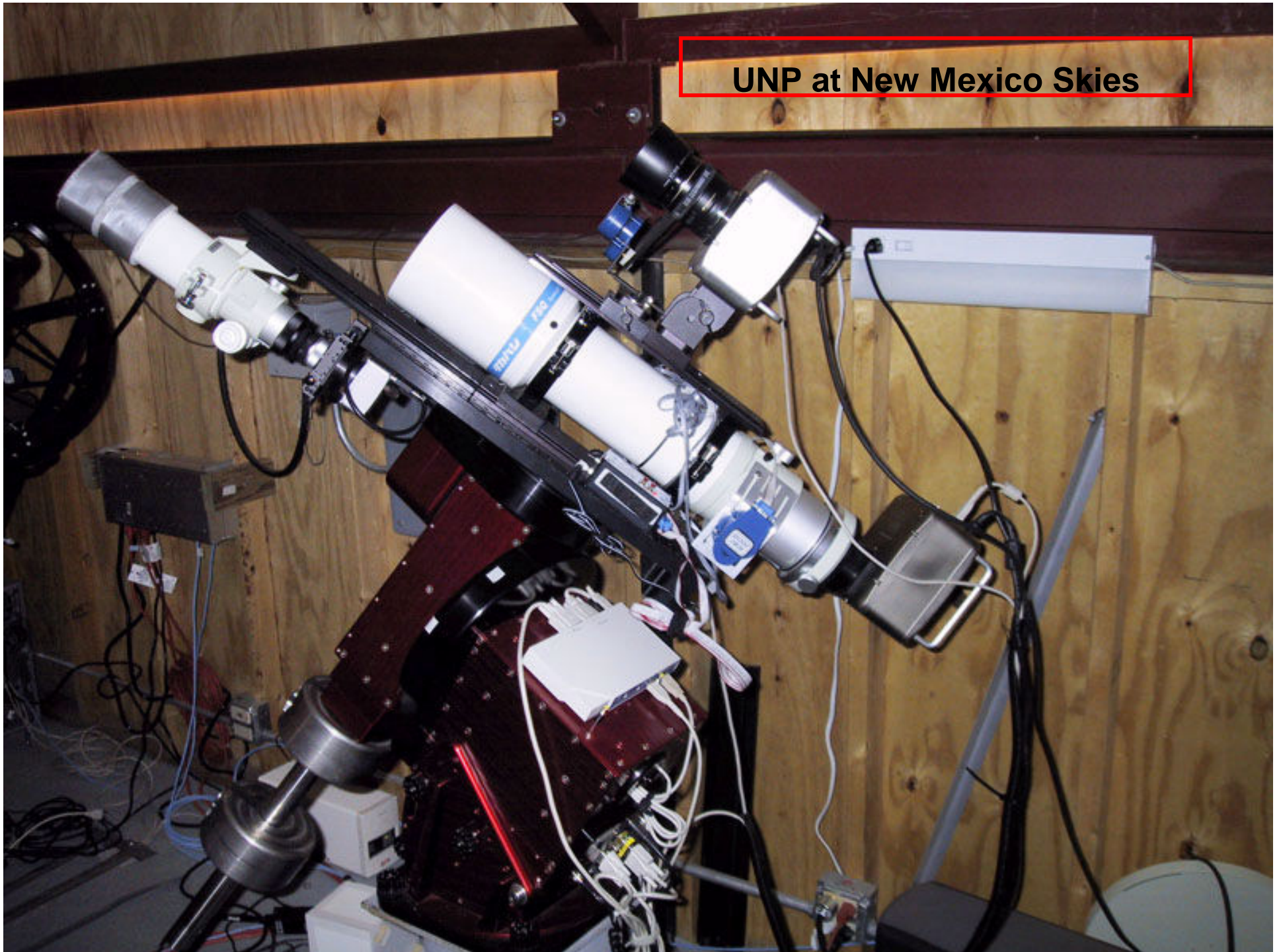
Crescent Wrench

Horseshoe

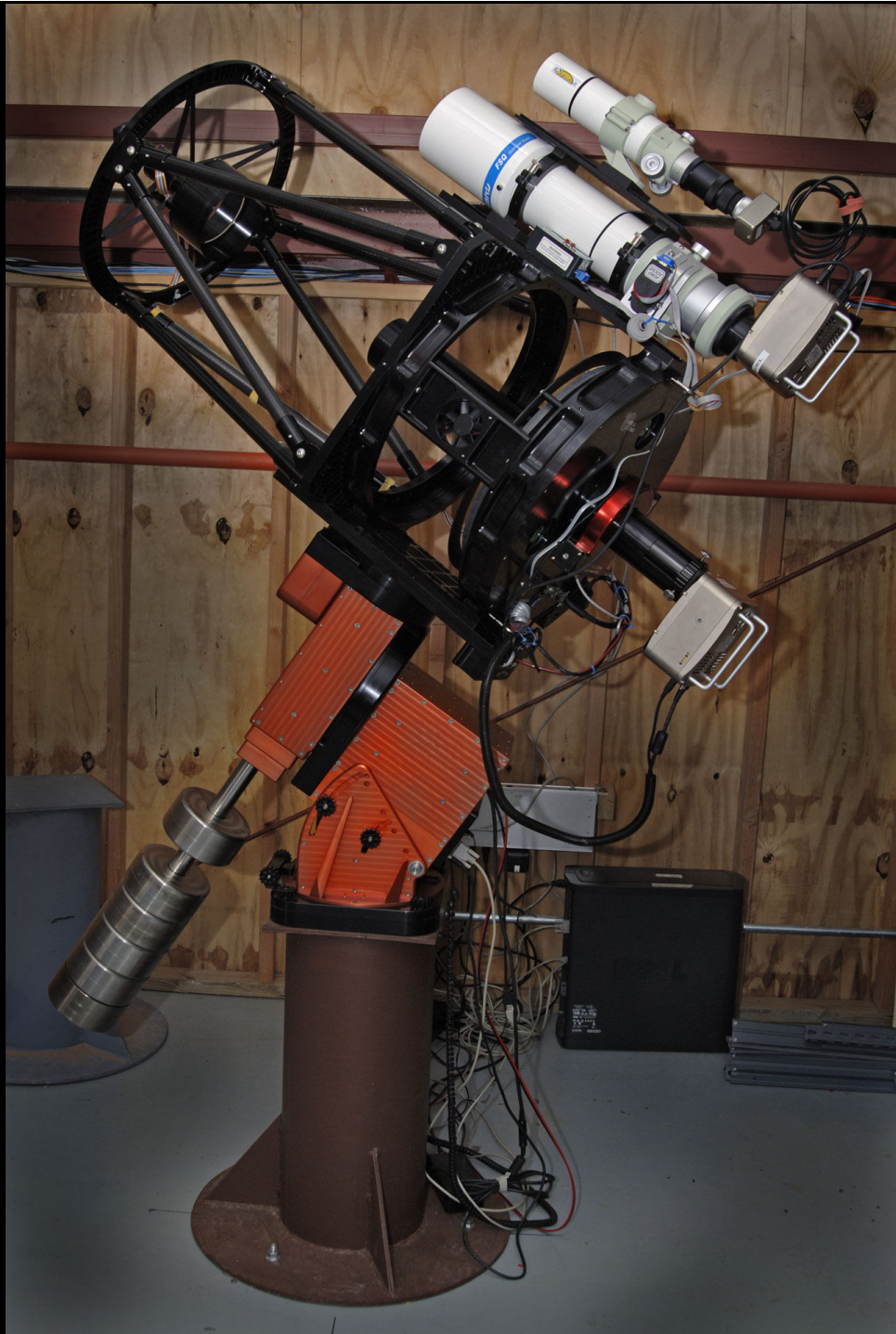
Witchhead



UNP at New Mexico Skies



3GT
New Mexico Skies





But wait.....there's more!

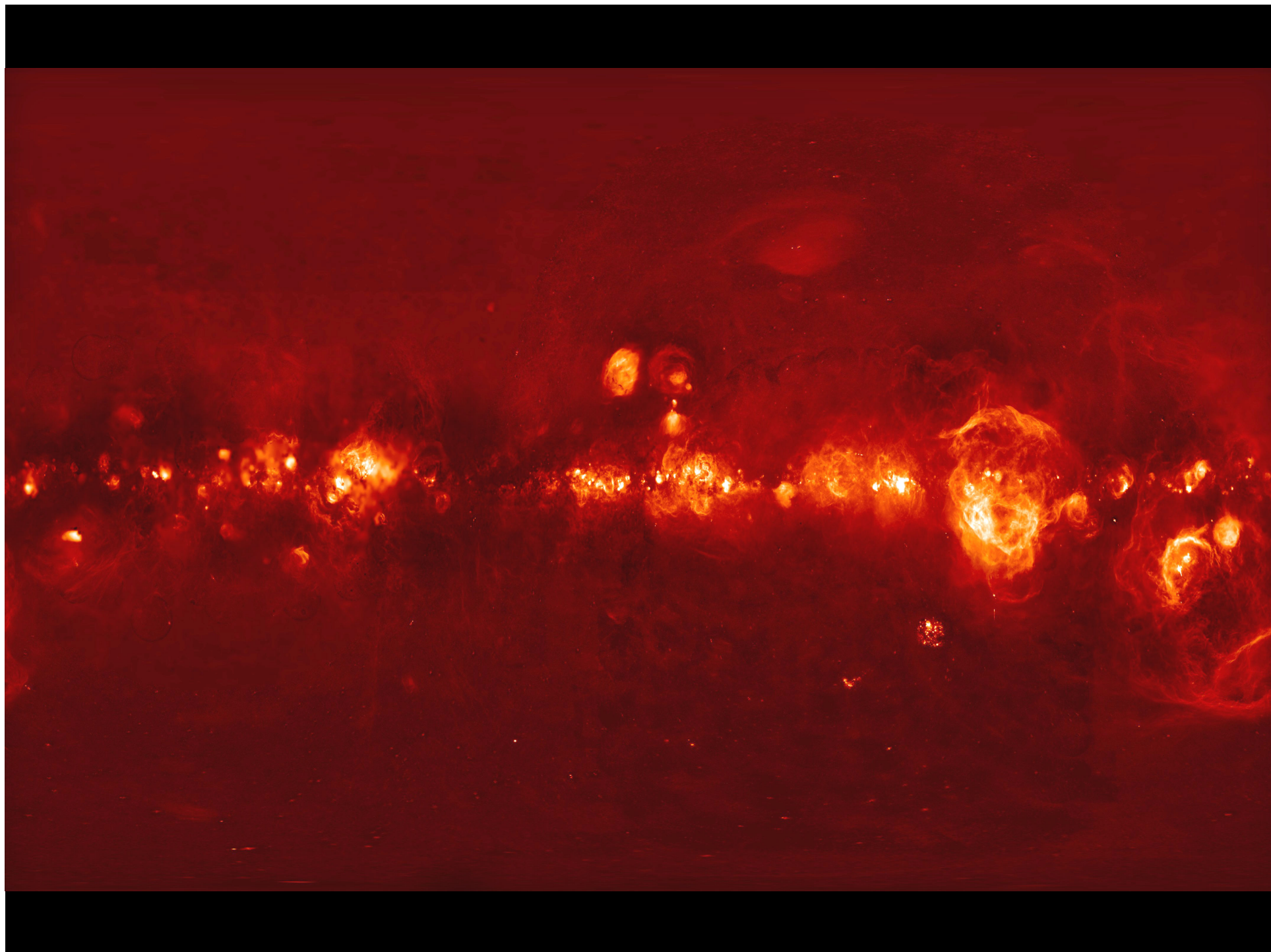
Unknown Emission Nebula

WHAM

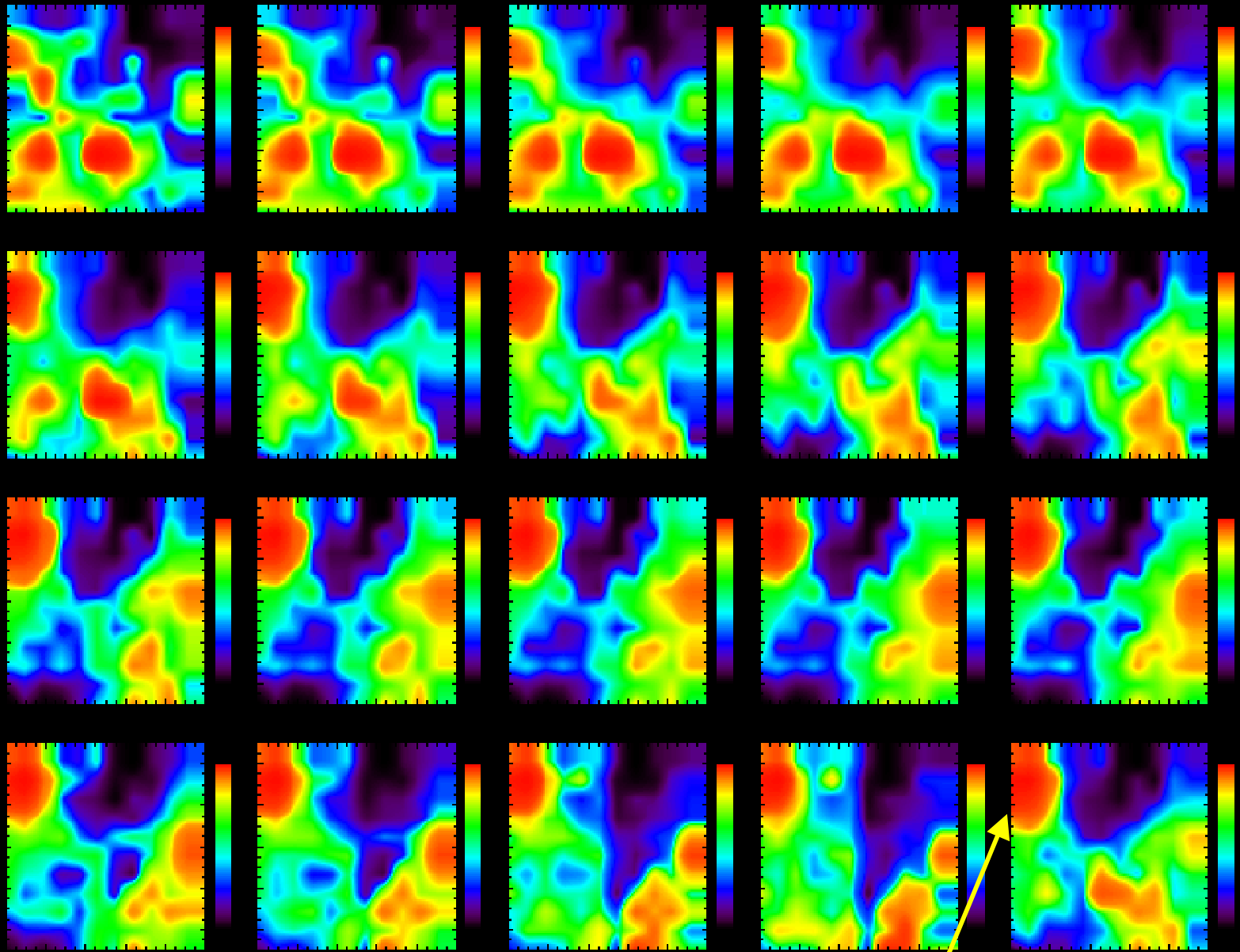
Wisconsin H-alpha Mapper

- .6m telescope with 15cm Fabry-Perot Spectrometer, .5nm H-a filter
- In 30 seconds can capture 10 million x fainter than Orion (.05 Rayleighs)
- One degree beamwidth – I provide higher resolution for them.

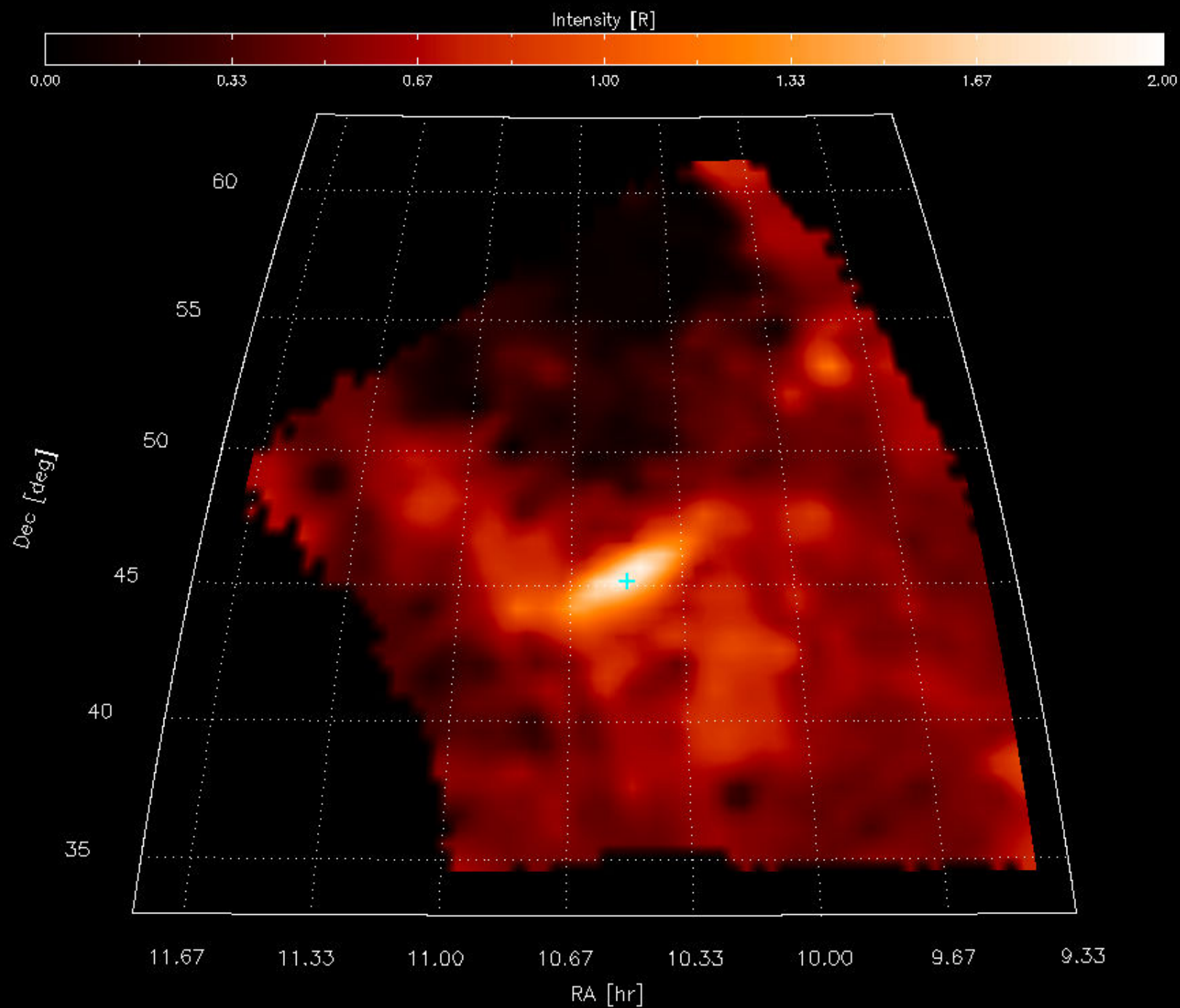




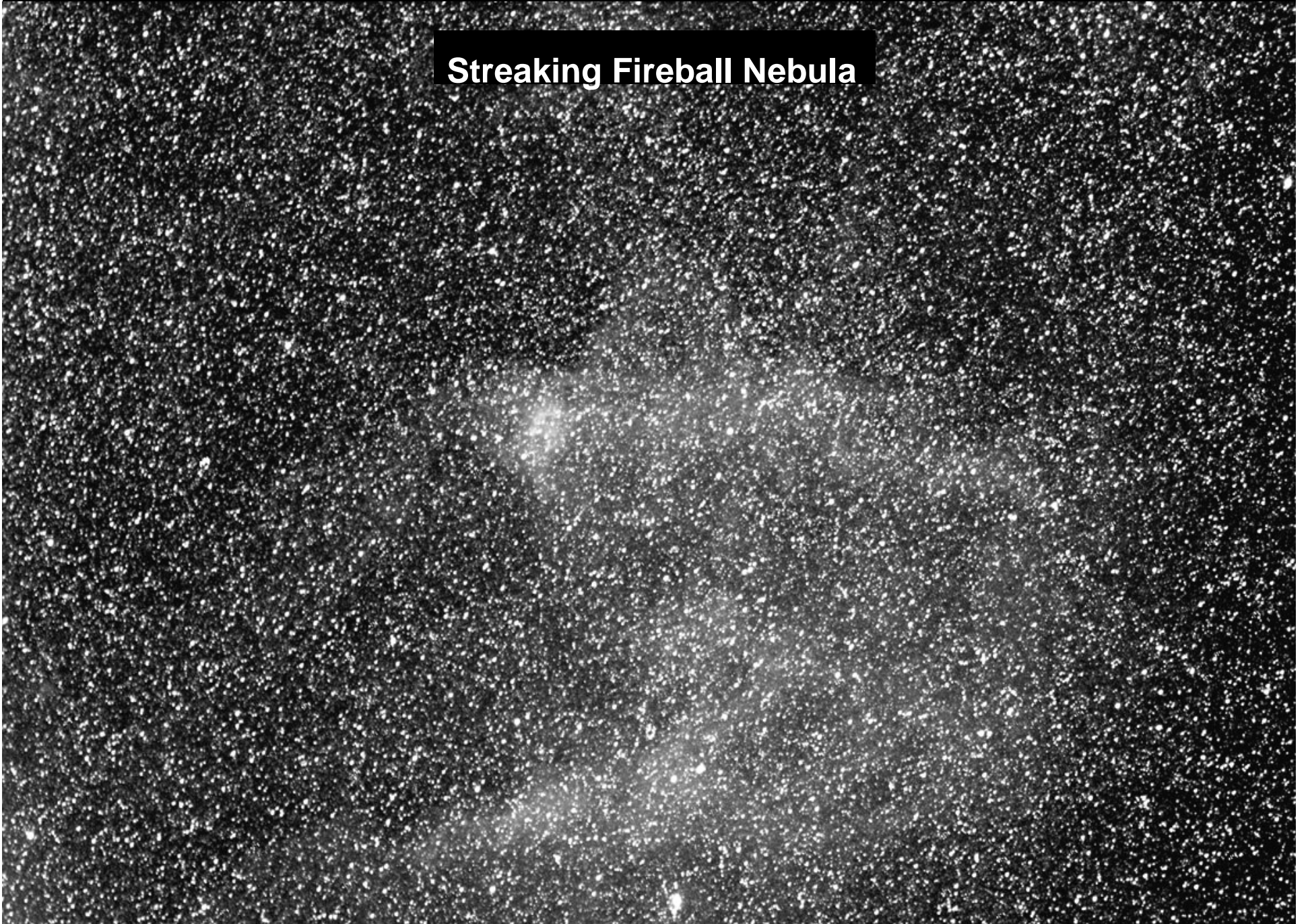
WHAM Velocity Maps



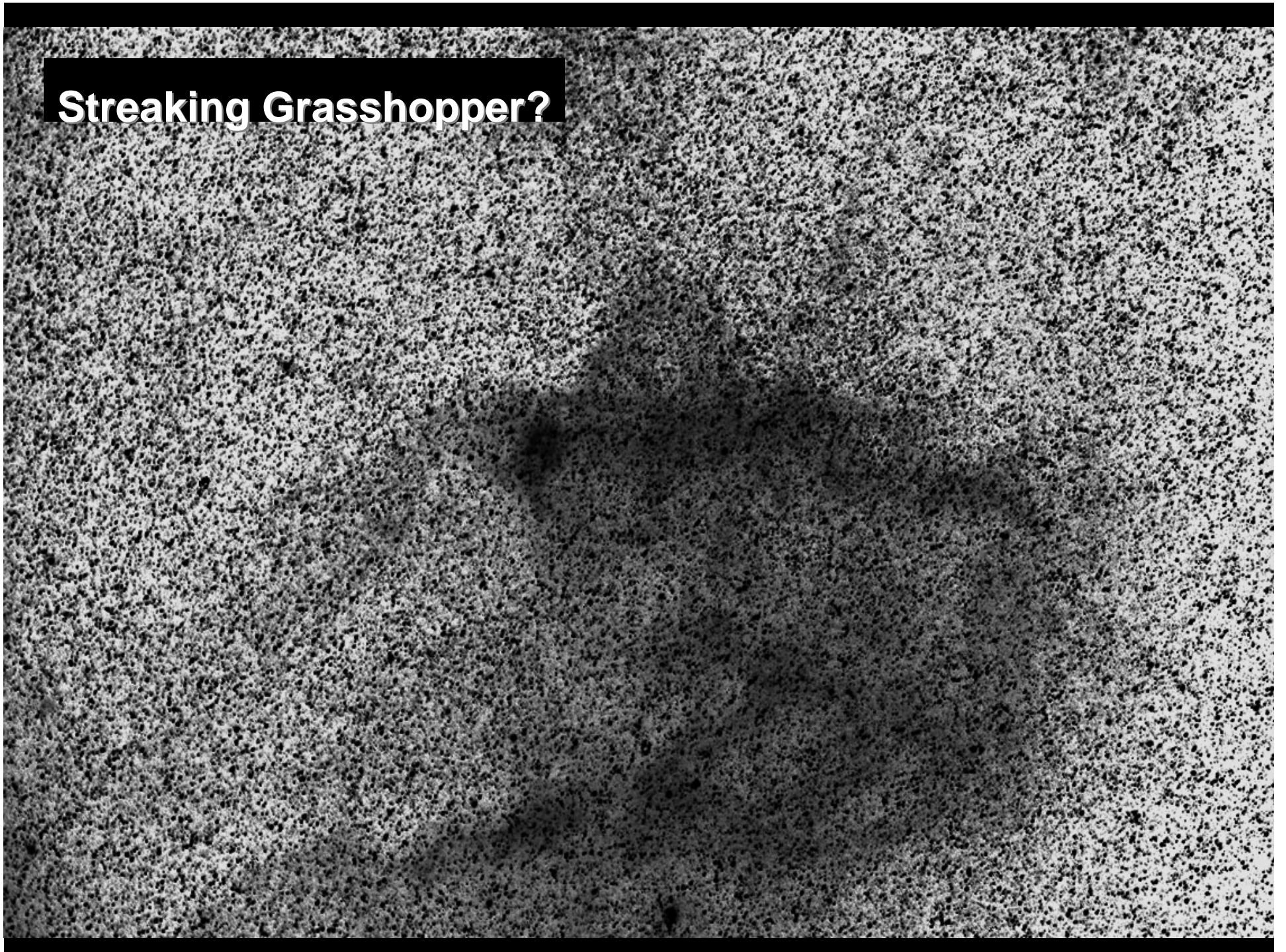
Sh2-124

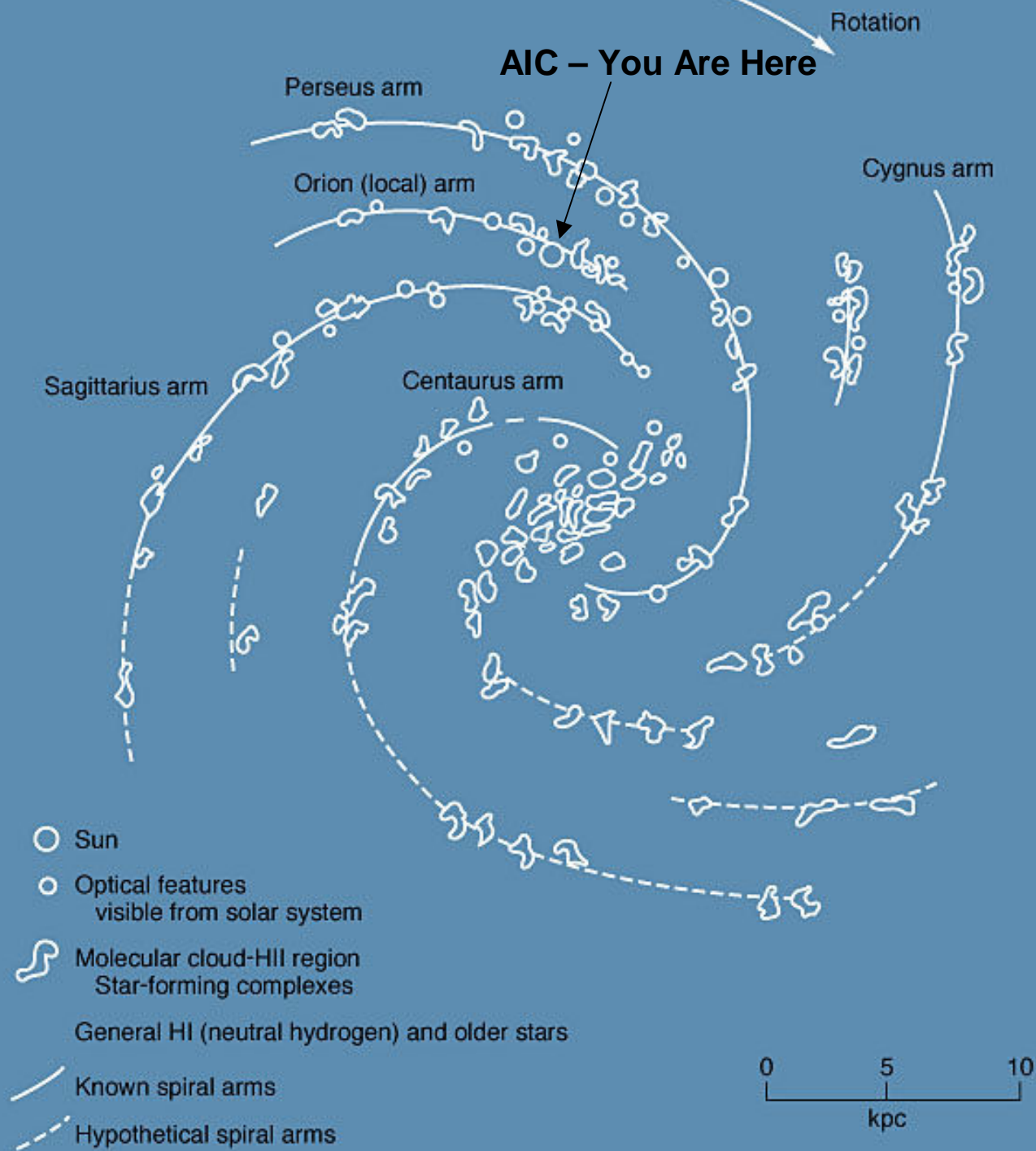


Streaking Fireball Nebula

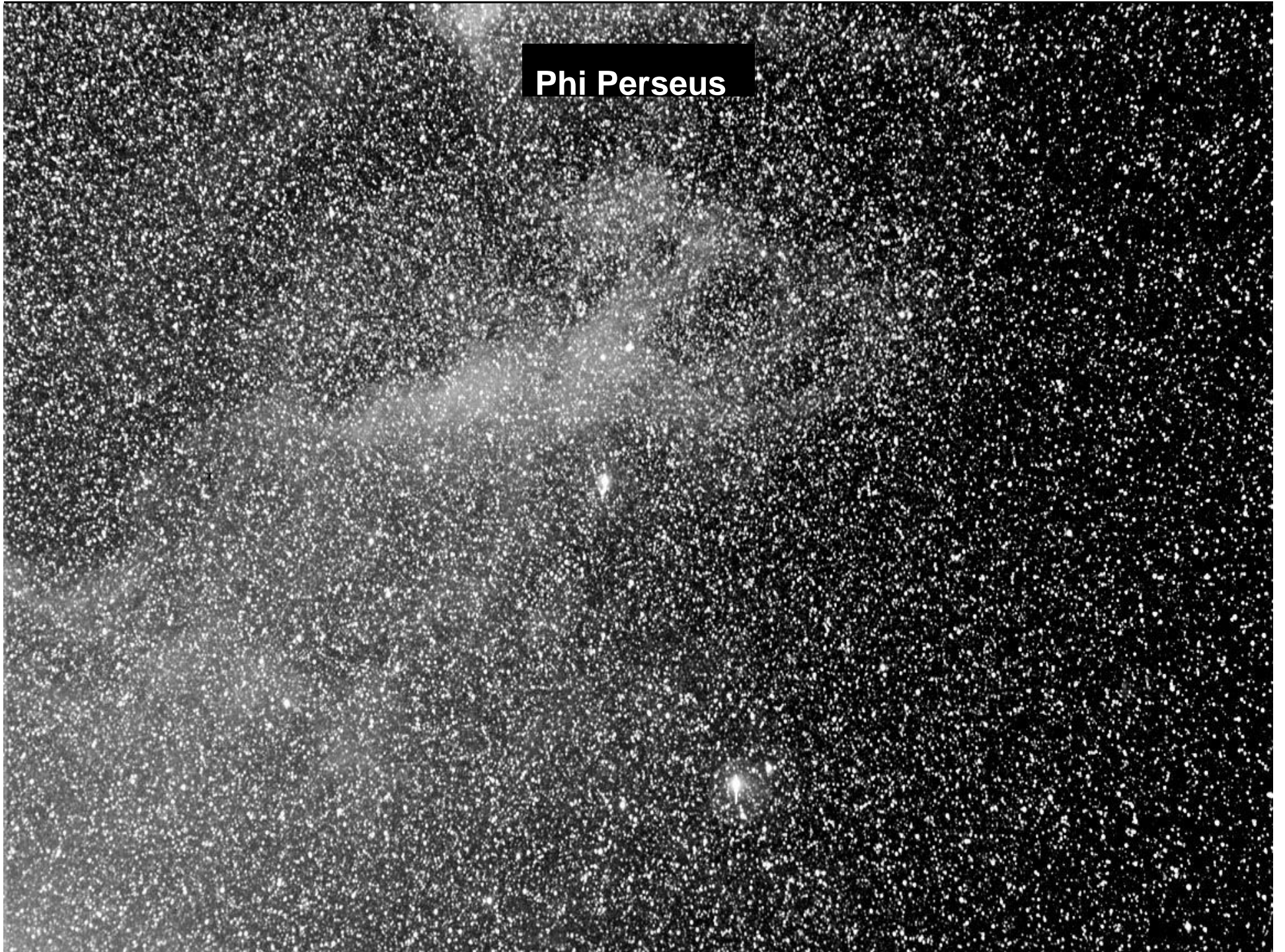


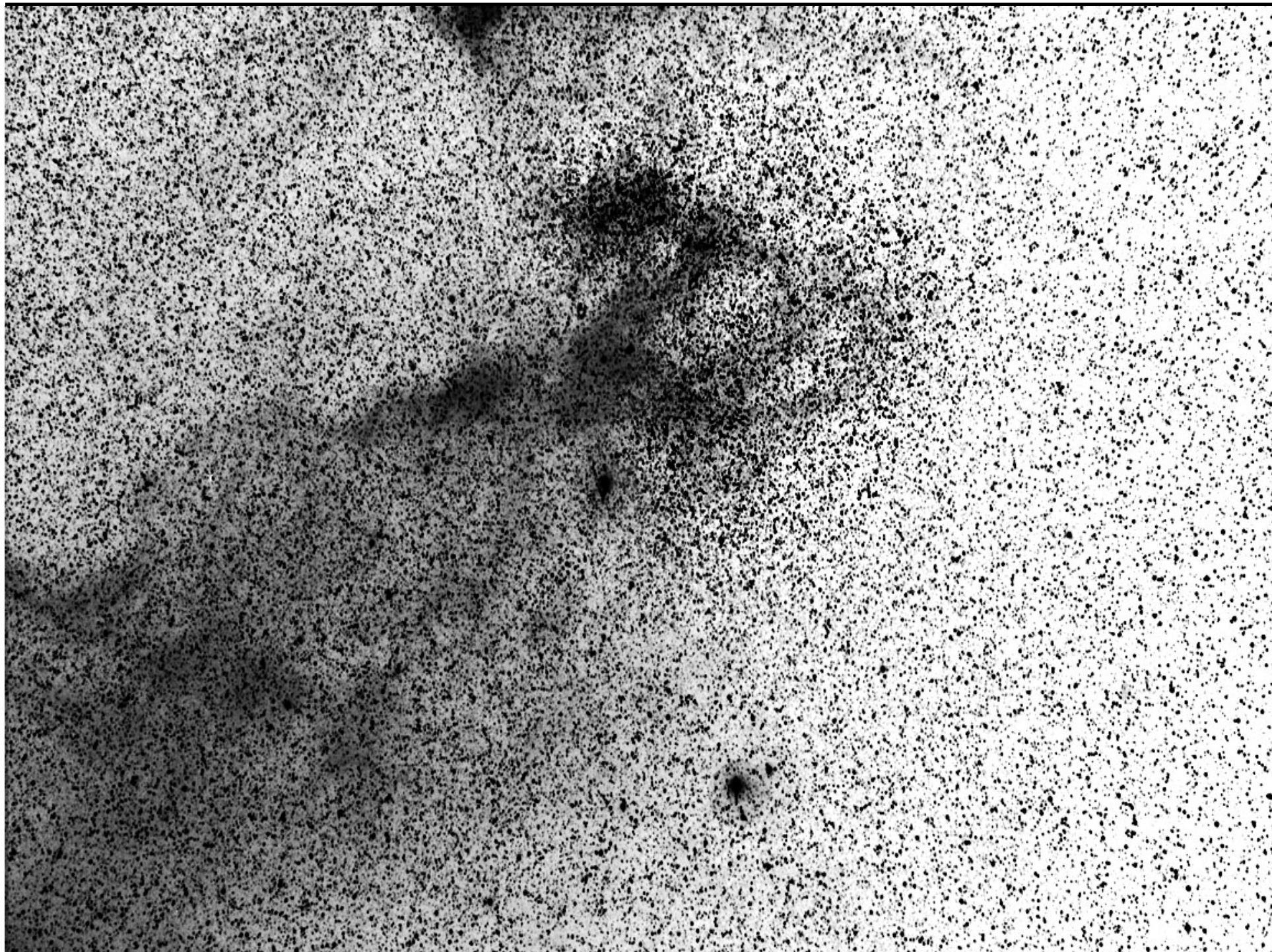
Streaking Grasshopper?

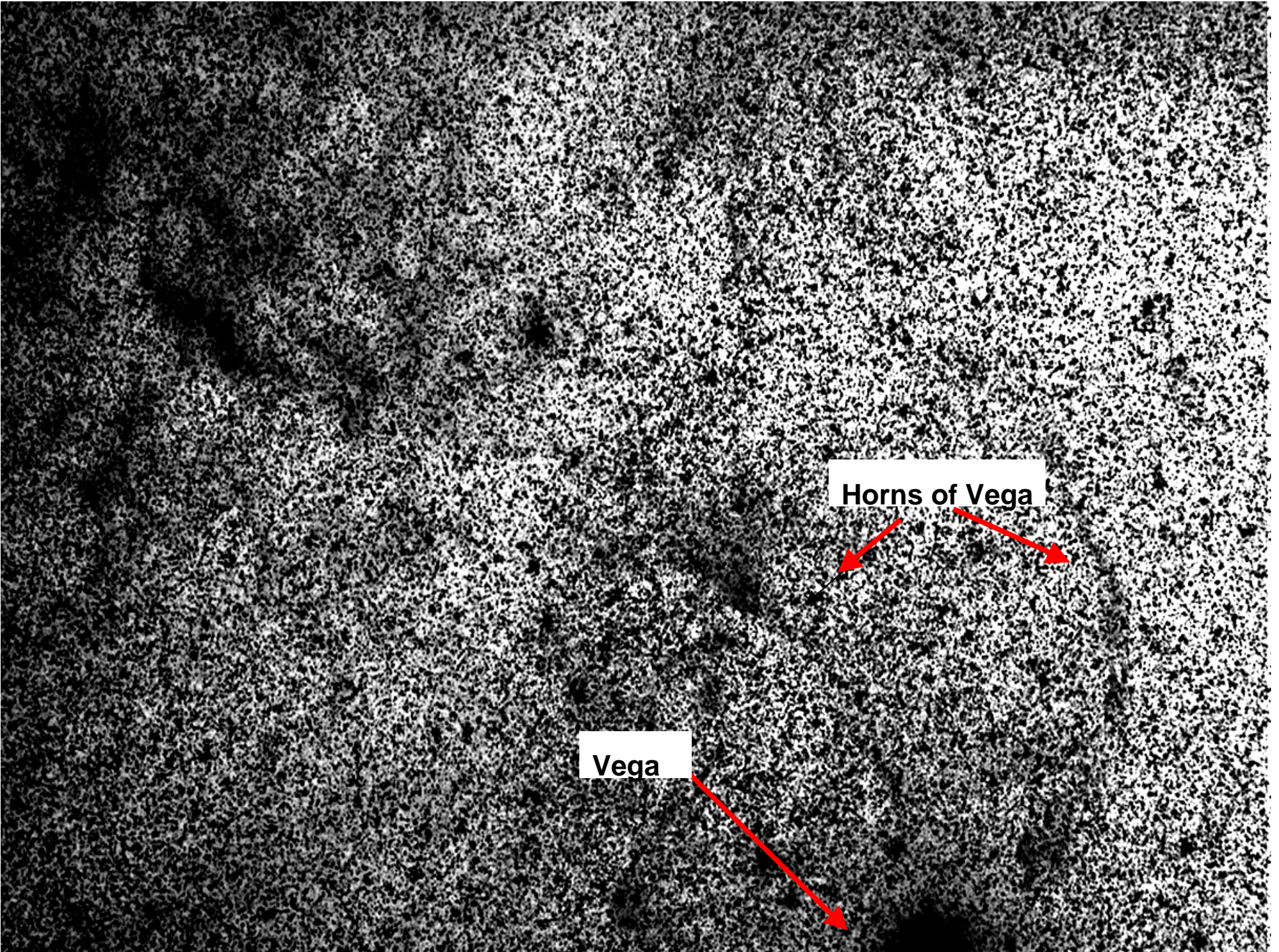




Phi Perseus



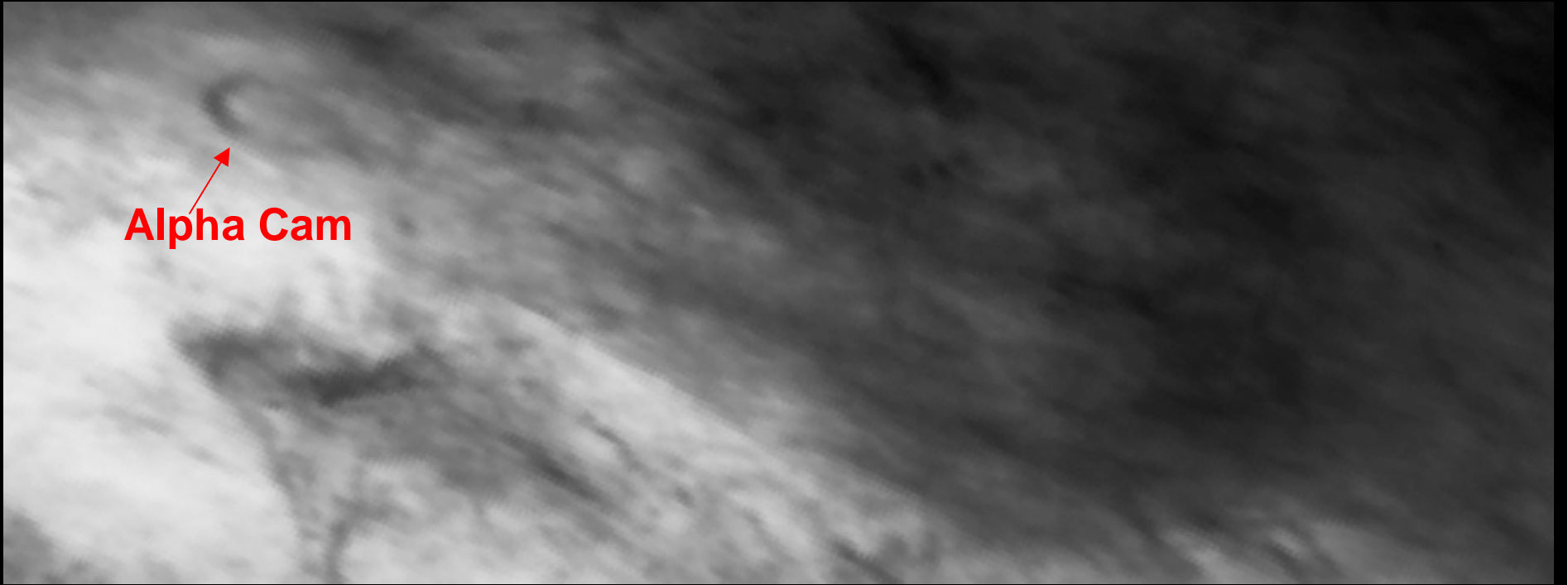




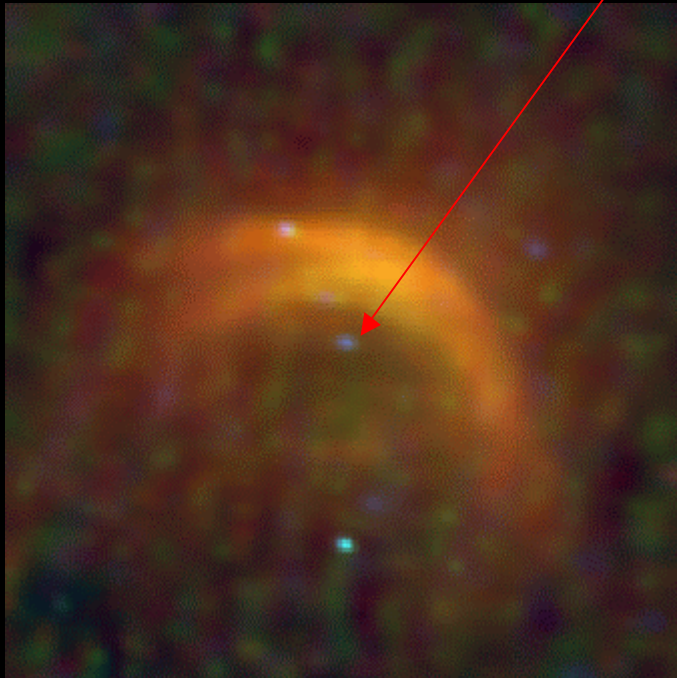
Horns of Vega

Vega

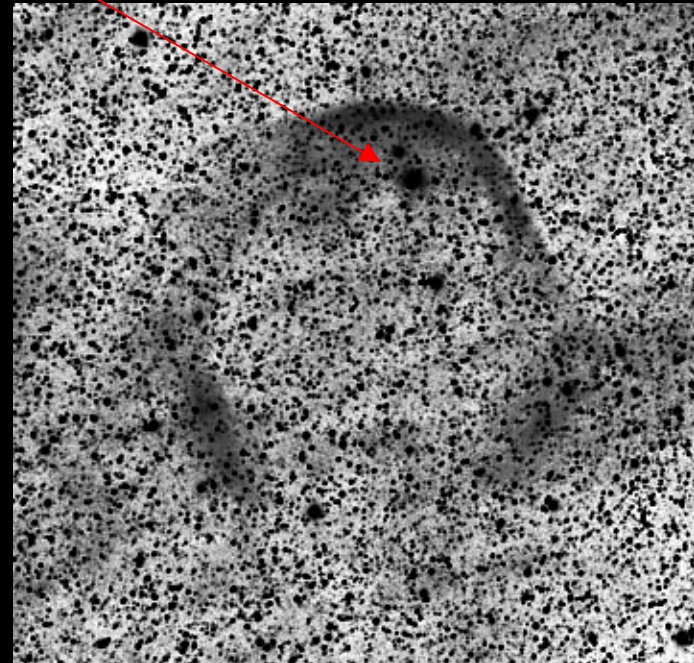
Alpha Cam



Alpha Cam



IRAS



UNP



Implications for the Amateur Imaging Community

- **Many more nebula than we thought**
 - **Explore Lynd's Catalogue**
 - **Shoot the M-W Catalogue (on the web site)**
 - **Tired of M42, try MW 2!**
- **Take dust extinction into account?**
- **Take a professional astronomer to lunch!**

Future Plans for UNP

- **Use Windhorst filters – all 15 of them**
- **Study ERE to determine extent**
- **Southern Hemisphere studies**
- **Identify and image other IFN**
- **Build the Mandel-Wilson catalog**

Supported by:

- **Tzec Maun Foundation**
 - Mandel-Wilson Catalogue of Unexplored Nebula
- **SBIG**
- **RCOS**
- **New Mexico Skies**
- **WHAM**
- **Dusty Astronomical Systems Group**
 - Dr. Adolf Witt

The Unexplored Nebula Project

Thank You

Steve Mandel

www.galaxyimages.com/UNP1.htm

I