

When it is cold it can be very clear.

Solar System: Clif Ashcraft imaged the first quarter Moon showing a clear image of the diamond near the young impact Crater Proclus, near Mare Crisium. The bright asymmetric rays indicate a low angle oblique approach by the meteor which made this crater. These rays extend 600 km from the crater which is only second in brightness after Crater Aristarchus.

Nebulae: Bobby Marinov imaged the Horsehead Nebula, the Orion Nebula M42, and NGC 2244, the Rosette Nebula in Monoceros, from a dark observing site an hour outside of Houston, Texas.

Tony Sharfman imaged the *California Nebula*, the Elephant Trunk Nebula, the North American Nebula (NGC 7000), the Flaming Star Nebula, the Heart Nebula, and the region around Sadr (Gamma Cygni) which contains the Crescent Nebula. He used RGB filters to show the colors of the stars and a narrowband hydrogen alpha filter to show the gas between the stars. He assured us that the Ha filter is MAGIC! It reveals intricate swirling gas clouds in regions where the other filters show only our New Jersey local light pollution.



Stars: Mark Zdziarski is learning to use his iphone to take snapshots of Orion rising in the cold night air. He can compare subsequent images to show the current fainting spell of Betelgeuse.

Galaxies: Mary Ducca went on a photography tour to Morocco with some friends and took a beautiful picture of the *Milky Way over a desert village*. Not much air pollution there.



Bobby also captured a wonderful image of the *Andromeda Galaxy, M31* showing the dark dust lanes in its spiral arms.

Presentations: Bob Vanderbei presented “Hertzsprung Russell Diagrams” on The Astro Imaging Channel on Sunday, December 15. (<https://www.youtube.com/watch?v=jj-RrXmE5Gw>). There was a great deal of interest in his method and code for constructing HR diagrams from RGB images of star clusters.

Respectfully, Mary Lou West, Research Chair

