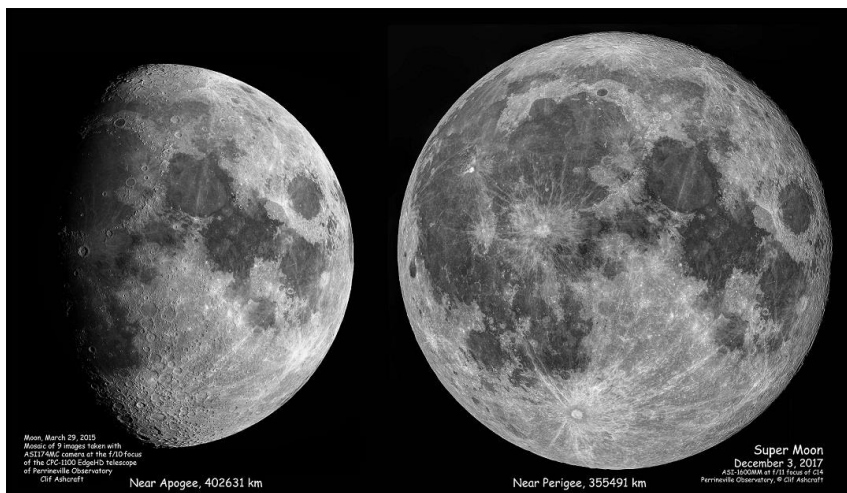


Research Committee Report for December 2017

**This month brought extremely cold temperatures, many in the single digits. (In Vermont the temperatures are also in the single digits, but negative.)** Clif Ashcraft stopped imaging one night saying "It is so cold my brain is numb."

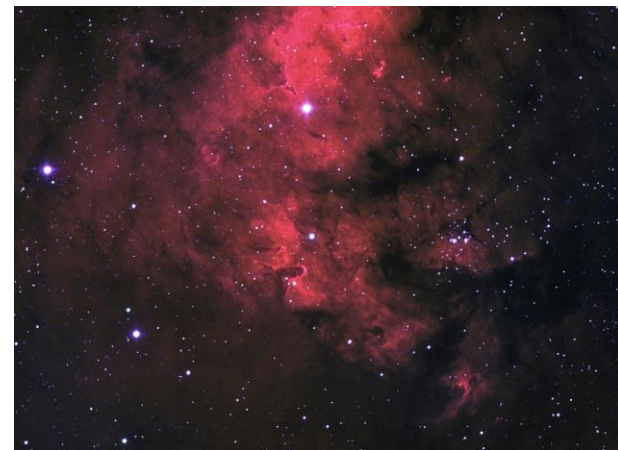
**Solar System:** The December 3 perigee *Super Moon was compared to an earlier moon* at apogee by Clif Ashcraft and also by Bob Vanderbei (<http://www.princeton.edu/~rvdb/images/NJP/SuperMoon.html>). Clif has also imaged the first quarter moon and taken close-ups of the north polar region as well as craters Copernicus and Clavius.

Although the opposition of Mars won't happen until July, one of Clif's friends from Australia has already begun taking images. This will be our largest appearing Mars since 2003.



**Stars:** Tony Sharfman imaged the open star cluster *M45, the Pleiades, or Seven Sisters* in Taurus. He used a 4.2" telescope, taking three hours of LRGB from Jenny Jump.

**Nebulae:** Helder Jacinto has imaged the red *emission nebula NGC 7822*, a star forming complex in Cepheus, 2900 light years from us. He took 13 hours of data in narrowband Oiii (showing nothing), Sii, and H alpha. The younger parts of the complex are only a few million years old. The region has several "pillars" or "Elephant Trunks"



**Galaxies:** Tony Sharfman also spent three hours imaging NGC 891, an edge-on spiral galaxy in Andromeda, and another three hours on spirals M81 and 82 in Ursa Major.

**Presentations:** Dennis Conti will give his online Exoplanet Observing course again starting February 5 for 4 weeks. A description of the course and a link for registration can be found at <https://www.aavso.org/choice-course-descriptions>. Registration is limited to 40 people.

Of the 100 Best Space Photos of 2017 at [www.space.com](http://www.space.com) , three are by Stan Honda (prominences at totality in Madras, Oregon, an eclipse composite, and June's Strawberry Minimoon).

The 53<sup>rd</sup> Best Space Photo at [www.space.com](http://www.space.com) is a picture of Tolga's and my white dome observatory at Jenny Jump with the ISS in the background taken in June by Gowrishankar ("Gowri") Lakshminarayanan (AAA). Later that summer we moved the dome away.

**Other:** Four AAI members had their images included in the UACNJ 2018 calendar: Tolga Gumusayak (Gamma Cygni Nebula), Tolga and me (Rosette Nebula), Helder (Crab Nebula, Transit of Venus), and Stan Honda (Comet Lovejoy with an airplane trail),

Clif pointed out that a team of astronomers from Maryland, Hawaii, Israel, and France has produced the most detailed map ever of the orbits of galaxies in our extended local neighborhood, showing the past motions of almost 1,400 galaxies within 100 million light-years of the Milky Way. Most galaxies between us and the Virgo Cluster will eventually fall into the massive Virgo cluster but we lie slightly beyond the capture zone. However, the Milky Way and Andromeda will collide and merge in about 5 billion years. [http://www.spacedaily.com/m/reports/Galaxy Orbits in the Local Supercluster 999.html](http://www.spacedaily.com/m/reports/Galaxy%20Orbits%20in%20the%20Local%20Supercluster%20999.html)

Clif is making his own on-axis guider (ONAG) with a dichroic beam splitter prism he bought from Surplus Shed. It was for an old color TV camera and splits the incoming light into three channels, RGB. He hopes to use the green beam for guiding and the red beam for imaging. Since the field of view is the same for each of these cameras this device should provide very good autoguiding with no flexure problems, and will be used for some known exoplanet transits and possibly help out in resolving blended targets by speckle interferometry.

*Respectfully submitted, Mary Lou West, Research Chair*