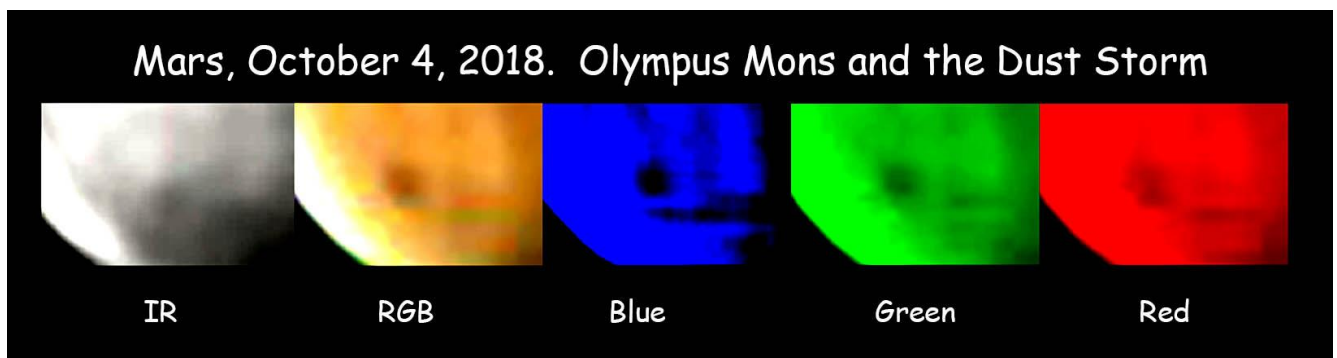


Hurricane Michael and the first Nor'easter of the season have spawned thick clouds and poor seeing, making imaging from New Jersey a real challenge.

Solar system: The main news this month is Clif Ashcraft's committed campaign to image Mars, and to capture the end of its planet-wide dust storm which has already lasted five months. Although the dust is gradually settling, visible light cannot penetrate to ground level very well. However, infrared light can see down to the surface, so Clif uses a deep red near-IR filter on his camera. This has allowed him to see details such as Syrtis Major, Valles Marineris, and Olympus Mons. Here is a set of his *images of Olympus Mons taken in different wavelength bands* taken on Oct 4. Note that the first image (IR) shows the huge mountain as sunlit on its upper left side and shadowed on its lower right side. Each of the other pictures shows only a dark spot, the very top of the mountain poking up through the atmosphere.



Clif may also have caught the start of a *new dust storm* on October 3, 4 near Mars' South Polar Region. Look near the top right of these two images to see a pale streak cutting through the upper dark band, brighter in the second image taken a half hour later than the first image. He has sent his images to Roger Venable at ALPO (Association of Lunar and Planetary Observers) to be compared with other people's observations to look for evidence of motions and durations of dust clouds and storm fronts. Clif generally uses only the best 5% of each set of his images since atmospheric turbulence spoils most of the frames. Mars is now shrinking in our view as Earth pulls away from it on our faster orbit around the sun.



Stars: In two hours Helder Jacinto has imaged the Double Cluster in Perseus. These open star clusters are 7500 light years away and coming toward us at about 38 km/s. I can imagine them as two grainy headlights in the distance on a dark country road, which is kind of scary.

Steve Lowe has taken 90 spectra of one of our roAp stars in one night. I am corresponding with Tom Field of RSpec software on the time series analysis of these lovely spectra.

Nebulae: Helder has also imaged IC 5146, the *Cocoon Nebula* in Cygnus. He took five hours of data in Ha, OIII and SII with his new APM after he corrected some guiding problems.

Presentations: I spoke on "Exoplanets" at a STEM (Science, Technology, Engineering, and Mathematics) Colloquium at Immaculata University near Philadelphia on October 4.



Clif has agreed to have some of his images showing a comparison of good and poor seeing appear in the Journal of the British Astronomical Association.

Other: Clif pointed out an article on lucky spectroscopy of hot O stars. This should help Steve, Jack Cleeve, and I do better spectral observations of our slightly cooler A stars.

Tony Sharfman commented on the October 11 near-disaster when a Soyuz spacecraft failed. American astronaut Nick Hague and Russian cosmonaut Alexey Ovchinin were reported to be shaken up but in "good condition" after the booster on their Soyuz MS-10 spacecraft failed and they plummeted to Earth. Although this is an embarrassing failure, it was a big success for the launch abort system. It did its job and got them home safely. Currently, the Soyuz is the only way people get to or from the International Space Station. See

<https://www.buzzfeednews.com/article/hazelshearing/two-astronauts-just-survived-an-emergency-landing-from-space>

Respectfully submitted, Mary Lou West, Research Chair