

Umpqua Community College, Morgan Observatory

Annual Report 2022.

A YEAR OF OUTREACH

As active cases of Covid 19 continued in Douglas County, the Observatory used new strategies for U.C.C astronomy students as well as middle and high school students. New viewing capabilities tested briefly in 2021 were successfully employed for community outreach.

- February began a new winter and spring school outreach program using a subscription to remote telescopes (SLOOH) in the Canary Islands. Students from the Geneva Academy and Oakland High School were able to observe in real time during school hours images of stars, nebula, star clusters, and galaxies using Zoom. Each observing session had explanatory commentary to assist teachers and students understand what they were observing and allowing for questions. In late March, SLOOH Zoom observations included several local home-schooled students and parents.
- April was a busy month preparing the observatory for outreach. Doug Pieschel volunteered many hours of work helping to organize the cables and switches from multiple cameras per telescope on the 2 mounts. Various cameras were tested and software updated for imaging. Roof opening and closing tracks were improved for safe operation. Early and late April both mounts were accessed for reliability of locating astronomical targets across the sky. Both mounts needed adjustment. First, mount number one with C11 and C 9.25 telescopes was run through a special process to measure and correct inaccurate positions around 360 degrees of sky. A model was developed to compensate for misalignments that produced reliable target location within tolerance of astronomy cameras. The process required a few nights and some long hours to successfully measure and build a reliable model. In late April, Mount Number Two with C14 and Sky Watcher 4-inch refractor was successfully completed with a new targeting model. Doug was invaluable helping with the long hours of running and completing these targeting models.

- **Total Lunar Eclipse
May 2022**

- May was the beginning of on-site outreach. May 3rd, Rachel Pokrandt, Suzi Pritchard and other U.C.C administrators were given a tour of the observatory. A few days later, 3 long HDMI



cables and HDMI switches were installed for the outside projector system. All three imaging

computers are now capable of displaying images from the four telescopes onto an 8-foot pull down screen attached to the north wall of the observatory. May 15th was the night of a total lunar eclipse. The community was invited by the U.C.C. Marketing and Communication Department to come, bring a folding chair, and watch the eclipse. A large crowd of over 100 people came to the observatory to observe our 8-foot moon on a mild spring evening. The crowd was diverse with many age groups, from families with young kids to seniors. This was the start of an amazingly successful 4 ½ month public outreach program.

- Summer to early fall had six more outdoor public events with a total estimated attendance of nearly 700 people. The outdoor projector and large viewing screen showing stars, nebula, star clusters, galaxies, the moon and planets, became a twice monthly event for several regular and many new visitors. Most had never been to an observatory or had little knowledge about astronomy but were excited to see large images of galaxies to planetary nebula. Doug was tasked with operating the projector and providing commentary about the images. He had a lively and comfortable style that the crowds enjoyed. During July and August, the observatory hosted U.C.C. astronomy students for 7 lab sessions on site or online via ZOOM. Nearly 100 student visits were accomplished during the 8-week class. Students observed live images of Solar System targets like the moon or Saturn or Jupiter. Other topics studied included emission and planetary nebula, open and globular clusters and various types of galaxies.

Crowd outside PMO



- From May to the end of September the observatory set a new record of hosting 35 people in small group observations inside the observatory, over 100 students on Zoom observing sessions from various groups e.g., as the City of Riddle Library to GS 107 U.C.C. students, to nearly 700 on site community visitors using the outdoor observation system. In comparison, the best

outreach numbers prior to the Covid-19 shutdowns of 2020 and 2021 using only the inside TV monitors was less than 100 visitors total.



NGC 6992 Veil Nebula Super Nova Remnant

Achievements of 2022 plan

*With Covid-19 hopefully waning, work may be able to begin again at the observatory this spring/summer. Another quick alignment of the mounts is planned. **Alignments Successful.**

- The Skywatcher 4-inch refractor will be permanently mounted and aligned with the view from the C14 telescope permitting simultaneous close-up and wide field views of the same targets. **Done.**

- The Lunt solar telescope will be tested for placement and operation at the observatory with the loaner Celestron mount. Tests will be conducted to operate white light, Hydrogen Alpha and Calcium K wavelength light simultaneously for online and local viewing. **Tests successful.**

- Work will proceed using the subscription to SLOOH funded by the observatory to provide more reliable and unique daytime imaging of the Solar System and Deep space objects for local school online outreach. Outreach testing will occur in late February and into early March 2022. On conclusion of the testing, several astronomy program modules will be available to offer to schools (grades 3-12) combining live images from SLOOH telescopes in the Canary Islands. **SLOOH outreach successful.**

- Work will also resume on using an outdoor projector system to provide safe public observing programs later this spring and during the summer for U.C.C. astronomy GS 107 students. Also, using the outdoor projector system, monthly public observing nights will be hosted in late spring into the early fall. **Very successful. Nearly 700 people came to the observatory.**

Plans for 2023

- The amazing success of the outdoor observing with projector and screen will be enhanced during 2023. A special awning was purchased and will be installed above the observing screen. This retractable awning will provide a contrast enhancing shadow to permit day time observations of the sun, moon and bright planets. It will also allow earlier starts to summer public and student live observing sessions. A permanent enclosure for the pull-down screen is being explored for construction and installation during 2023. Other improvements may include a larger concrete platform for the projector cart with a conduit to place HDMI cables to avoid tripping hazards.
- Work will also proceed on utilizing the unique Solar observing capabilities the observatory offers. A dedicated mount is available now for the 100 mm double stacked Lunt Hydrogen Alpha telescope. This extra mount means that the Sky Watcher four-inch refractor is permanently attached and aligned atop the C-14 telescope permitting quick setup for use of a Lunt Calcium solar filter. Visible (white) light solar filters are available for the C14, C11 and C 9.25 allowing best suited imaging depending of seeing conditions. Test have been conducted to setup and image with these scopes and filters in the fall 2022. Special cabling will be needed to complete this solar observation project.
- The observatory has the largest double stacked Hydrogen Alpha telescope in Oregon and the second largest in the Pacific Northwest. It is the only public observatory on the west coast to offer images with a calcium solar filter. This (3) solar filter-capable system will permit imaging of the upper and lower chromosphere as well as the photosphere of the sun simultaneously. Solar observing sessions will be developed during summer 2023 with public sessions planned. This will be preparation for the Total Annular Solar Eclipse in mid- October 2023. The observatory is well placed for the Solar Eclipse for the longest period of totality of any observatory in Oregon.
- **Annular Solar Eclipse 2023**
- Zoom SLOOH remote telescope observing is also planned for local school beginning in late January and continuing into March. Live observing programs will be offered during school hours featuring programs on the Solar System, stars, clusters, nebula and galaxies.
- Issues with cables and switches from the cameras to the computers will be evaluated. Working with the U.C.C. IT department, more reliable cables and switches will be installed. Better planetary cameras will also be evaluated for purchase and installation. The C9.25 will be removed and installed on a new platform to allow alignment with the C11 as well as remote focusing will be installed to permit better quality images.



- Seek opportunities to expand observatory capabilities with new donations of equipment. Explore expanding construction at the observatory for permanent housing of the Hydrogen Alpha telescope and adding more telescope storage under the roof supports.
- Many people worked to make 2022 a record setting year of astronomy outreach. Thanks, and appreciation to all of the donors that have supported the observatory with generous donations. Your contributions have made the purchase for cables and cameras a reality to improve the ability of the observatory to offer new and better tools for outreach and education. Also, a special thanks is due to the Umpqua Astronomer members that brought telescopes and offered observing opportunities to members of the community on several public nights. Many thanks for Suzi Pritchard and her staff who work tirelessly to support the observatory for all public nights with publicity and transportation for handicap visitors. Extra special thanks to Doug Pieschel and his many hours of volunteer service and his presentations on public nights.



M 27 Dumbbell Nebula