

Sierra Remote Observatories Newsletter

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FunLink:

[Follow this link to our video page, which includes a drone overflight of SRO, as taken by Planewave while installing a 24" CDK \(while the new observatory was in early construction\).](#)

Visit us at:

<http://www.sierra-remote.com>



Above: Sierra Remote Observatories August 2015

"For really great imaging you need really great seeing"
Mel Helm, 2014

The New Warm Room and New Multi-Telescope Building Update

SRO is a clear, dark and secluded imaging site which differs from many sites in that we do not encourage late night "gatherings" or public use. For us, it's all about maintaining the best possible imaging conditions and we have gone to extreme measures to ensure the site remains private and thermally neutral. However, we recognize that there are times when members need to work on their telescopes during the evening hours and when it is cold, whether that be for equipment changes or collimation. To make this a less painful experience, we are placing a "warm room" for breaks and rest, as well as a comfortable place to work. The room will be constructed as a separate building away from the observatories and will have a work area, kitchen and bathroom. It will be available to all members. This will not take the place of places to stay, either locally or in the nearby



Sierra Remote Observatories

Shaver Lake area (see article on page 2), but will enhance the experience of members who might be working late into the night. The warm room will be insulated and heated, but will be as thermally neutral as we can make it and will be located on the north-east corner of the observatory property down from Larry's shed.

You may also have noticed that construction on the

second large multi-telescope building is now complete. The first scopes will be installed in the next few months. As with the previous buildings the roof is computer controlled, closing and opening depending on local weather conditions. We have also upgraded the networking infrastructure and added some new warm air evacuation fans. Stay tuned for additional news as it becomes available.

In the Spotlight: Paul Mortfield

Paul Mortfield was one of SRO's original members, joining in 2007. His imagery collected at SRO have produced APODs, calendar covers, and photos for science centers and museums in Canada, Hong Kong and Europe. He is an experienced lecturer at the AIC and other astronomical conferences.

He created SRO's Minor Planet Center code G80 and has discovered four asteroids at SRO, of which two have already been designated. He's quick to note that under SRO skies he's been able to photograph down to magnitude 24.7.

Lately he's been doing

photometry of exoplanet transits and giving talks on the techniques involved, inspiring others to perform meaningful science using modest equipment.

Paul is Director of the David Dunlap Observatory (DDO) just outside Toronto with its 1.9 meter telescope. Visit the DDO at <http://www.theddo.ca>

You can see a few of Paul Mortfield's many APODs on the left side of page two.

Some of Paul Mortfield's
APODs from SRO:

Melotte 15: "In the Heart"
By Paul Mortfield and Stefano
Cancelli
APOD: November 9, 2012



The Eastern Veil Nebula
By Paul Mortfield and Stefano
Cancelli
APOD: November 1, 2008



The Triangulum Galaxy
By Paul Mortfield and Stefano
Cancelli
APOD: September 13, 2008



The Fetus Nebula
By Paul Mortfield, Don
Goldman and Dietmar Hager
APOD: August 25, 2008



Where to Stay Near SRO

One of the great advantages of SRO is its proximity to the amenities of civilization. SRO's location near the first mountain ridges which open up into the Sierra Nevada Mountains results in laminar airflow and excellent seeing, often sub-arcsecond during the night. And though only an hour from the Fresno-Yosemite International Airport, it is dark and secluded. Nonetheless there are places within minutes of SRO in which one can stay, including the town of Shaver Lake, no more than 20 minutes from SRO. The

town is a miniature version of Lake Tahoe. There is a beautiful lake and a number of inns and restaurants.

Even closer than Shaver Lake, members have a unique opportunity to stay at the home of Geoffrey Stone, one of SRO's accomplished astrophotographers. When not imaging he heads corporate development and venture work for Dell Computers. Geof offers a private lower level suite with its own entrance. The suite has two bedrooms and bathroom with high speed

internet. You can book his place with AirBnB at: <https://www.airbnb.com/rooms/7894884>.

Other places to stay include the Elliot House B&B Inn and The Shaver Lake Village Motel. The Elliott House rents small cozy rooms. They also rent small houses for those who need a little more room. Shaver lake Village Hotel has a great selection of hotel rooms and picturesque cabins. For those who prefer stand-alone cabins, this is a great choice. Lastly, you can get a great dinner at the Trading Post and a hearty breakfast at The Falls, both in Shaver Lake.

Astrophotography Tip

In the last issue we discussed a method of "hiding" stars during image processing, as a method of avoiding saturated and bloated stars. Another approach, and one some would argue a better one, is to differentially process (in this example contrast) portions of your image and avoid the processing of stars.

Once you have your image assembled go to Layer and choose Duplicate Layer. Then select the High Pass

filter with a relatively low value of 5-7%. Then go to Layers and select Layer Mask and choose "Hide All". Now the more contrasted image is hidden and can be exposed by choosing the brush and brushing over the areas, not stars, that you wish to enhance (add contrast).

Once you're done just flatten the image and that's it. If overdone this method will result in an over contrasted image but if used sparingly

will allow you to enhance the nebulosity of your image without the problem of bloated stars.

Although the high pass filter was used in this example, other filters can be used in order to enhance other characteristics of your image. As with all methods of processing the trick is not to overdo it.

Current SRO Members

Everyone from SRO is in contact through the Yahoo users group, but it's always great to see everyone's name in one list.

In the original 8 private observatories (building 1-8) we have Mel Helm (Building 1), Keith Quattrocchi (Building 2), Holly Bertrand (Building 3), Larry Van Vleet (Building 4), Sandy Barnes (Building 5), Geoff Stone (Building 6), Dr. Fred Ringwald (Building 7), and R. Jay Gabany (Building 8). In the multi-telescope building

we have Warren Keller (Pier 1), Mike Miller (Pier 2), Samuel Kong Yue Lising (Pier 3), John Kasianowicz+Daniele Malleo+Leonardo Prazi+Rob Pfile+Rick Stevenson+Jerry Yesavage (Pier 4), Paul Mortfield (Pier 5), Dick Post (Pier 6), Rick Hendrick (Pier 7), Juergen Wolf+Karssten Schindler (Pier 8), David Weiner (Pier 9), Brad Moore (Pier 10), Murray Kenney (Pier 11), Mike Hankey (Pier 12), Tom Carrico (Pier 13) and Martin Pugh (Pier 14).

We are proud to note you will recognize some important names from a diverse spectrum of astrophotography, from Astrophysicists to telescope manufacturers and high end astrophotographers..

SRO: What It Offers

SRO is dedicated to providing an outstanding environment for image acquisition and research photometry.

When we first discovered the site of SRO, we knew the site was a good one for imaging. The area obviously had clear skies and little wind, was dark and relatively rainless. We also knew the site was unique in being easily accessible (1 hour from the Fresno-Yosemite International Airport). But then we collected our

weather and seeing data over 5 years found the site was better than we had originally expected. We discovered we had 1.0 arcsecond summer and 1.2 arcsecond winter seeing, 237 photometric days/year, average wind speeds of 1 mph and darkness of 21.78 magnitudes/sq arcsecond, V band. These conditions were clearly conducive to advanced imagery and photometry.

Within a year the word was out and SRO grew. We filled

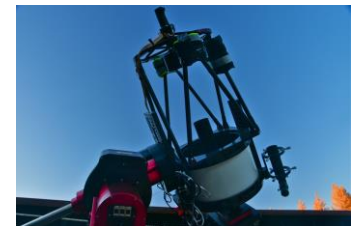
the first 8 telescope buildings and a new large multi-telescope building. In response to demand, we've just completed our second large building. We are also setting up platforms the first few [AstroHaven](#) domes to be placed at SRO. Currently we have both dedicated astrophotographers and professionals doing serious photometric research.

Although we've grown, we feel that everyone at SRO is part of a close knit community and we value providing friendly and timely support to our "family" of researchers and amateur imagers.

A few of SRO's telescopes:



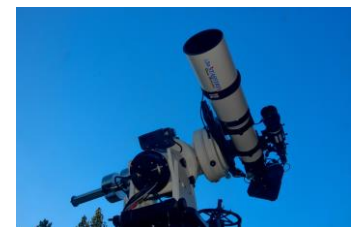
Inside of the First Multi-Telescope Building



Jack Kenney's 14" RC



24" PlaneWave CDK of iTelescope



Astrophysics 130 Starfire of Samuel Kong Yue Lising)



Juergen Wolf's 24" Officina Stellare (left) and Dick Post's 24" Planewave (right)

Our View of Equipment Trends

Over the years, we have certainly seen a remarkable evolution in the equipment we've seen used at SRO. These changes not only reflect changes in telescope manufacturing, camera sensitivity and an understanding of the importance of the site one images from, but also in how our hobby is now able to take advantage of some very sophisticated software to tie everything together. Much of this started with Ron Wodaski's "The New CCD Astronomy". Over time many of the things mentioned in this book are now taken for granted. Accurate mounts (such as the Paramount ME, [PlaneWave](#) Ascension 200, [Astrophysics](#) GTO and [Chronos](#) Mounts) are now the norm for

most serious imagers. Automation programs, such as ACP and CCD-AP appeared and programs such as Software Bisque's T-point and periodic error correction increased the accuracy of pointing and guiding. Camera sensitivity and production of low "dark" current cameras also appeared and have only gotten better as time has gone by. With all these changes, scopes of quite modest aperture began producing amazing images and useful science. Just go look at some of the outreach images published by Kitt Peak and Palomar in the 80's and 90's to see how far things have come. But with the advent of ever more available equipment, we've also seen

many astrophotographers move up to larger aperture telescopes as these become more capable and affordable. For example, [PlaneWave](#) now offers not only their standard 12.5 to 24" scopes in both CDK and RC configurations, but also a beautiful 28" CDK700 in an Alt/Az configuration. They are even starting to produce some very affordable one meter scopes which one day we hope to see hosted at SRO. Adaptive Optics is another trend we are starting to see raise the imaging bar particularly in really good seeing environments such as SRO. So who knows what else will be coming down the pike, but we do expect to see continued improvement in the phenomenal technology that continues to amaze us all.

Tips and Etiquette

In the last issue we discussed issues of the nighttime use of flashlights and how to park cars for a dark getaway. Another source of light pollution are the many LEDs that grace our various pieces of equipment. These are everywhere and often look quite bright on the various site webcams.

Keep in mind, however, that when you look at the cams on our site that even the

slightest light will look like the "Beacon of Gondor" (to quote the amazing Martin Pugh). Still, it's wise to cover up your various LEDs with tape whenever possible. This includes the telescope, camera, APC backup, power supply and network hubs. Anything with a light. The less light the better.

And although we reviewed this in the last issue its worth repeating that where you park your car at night is

critical. It's best that you park at the end of the loop, near the main driveway. That way when you leave, your running lights will not be aimed at any of the buildings and you will be quickly away from the site. Also remember to drive slowly, so as not to kick up any dust. Thanks to everyone for doing this and keeping SRO quiet and dark.

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We're on the Web!

www.sierra-remote.com



A BRIEF SUMMARY OF SIERRA REMOTE OBSERVATORIES

Sierra Remote Observatories (SRO) is a dedicated site for state-of-the-art robotic/remote astronomical data acquisition and imaging. We are uniquely located in the center of California's Sierra Nevada Mountains, about 50 miles south of Yosemite National Park. In addition to having excellent darkness and seeing, SRO's location is unique in being within an hour of a major metropolitan area and international airport, making access to the facility and to expert personnel unusually easy. At nearly 5000 feet, on top of Bald Mountain, the site was chosen for its excellent seeing conditions and accessibility. Summer intrinsic seeing quality FWHM measure 1.0 arcsecond. The site is very dark at 21.78 magnitudes/sq arcsecond, V band. With excellent seeing, an extremely low incidence of thunderstorm activity, average wind speeds of only 1 mph, maximum wind gusts averaging only 10 mph, on-site services, an average of 237 photometric nights each year and easy access, Sierra Remote Observatories offers the professional scientist and amateur imager an excellent imaging location. Since first light in May of 2007, SRO has continuously operated multiple observatories for both professional research and amateur imaging.

There are 8 individual observatories which each house one or two telescopes and larger observatories which each contain 14 telescopes of various sizes, ranging from 24" [PlaneWaves](#), to smaller refractors. The larger observatories are uniquely designed with 9 foot ceilings, making any contact of the ceiling and telescope virtually impossible, regardless of the position of the telescope. The operation of the roof in each building is automated and will close under any adverse weather conditions and reopen when the weather improves. Custom [AstroHaven](#) clamshell dome observatories for 1 meter class telescopes have been designed and can be made available within 3-6 months. Machine shop services and on-site technical personnel for repairs are available.

A Word From the Owners

We hope you've enjoyed SRO's second newsletter. They will be coming out every 6 months (biannual), giving us a chance to update everyone on what's new at SRO. The three of us (Keith Quattrocchi, Mel Helm and Larry Van Vleet) appreciate the many kind words and great work that has come out of SRO. We never imagined that APODs would be weekly events. And we never thought that serious peer reviewed studies would emerge from SRO. What we did hope was we'd find a quiet, dark and clear place to image.

That we found, and much more.

One of the most rewarding aspects of our work at SRO is getting to know all the members and seeing the remarkable work they produce. With clear skies it seems everyone becomes an advanced imager and most far surpass any skills we (the owners) might collectively have. It is equally rewarding to see the incredible research produced at SRO by our professional astrophysicists.

We have focused on perfecting our

infrastructure and getting the word out regarding what we offer. We have spent a lot of time with roof control, with Larry adding a great deal of expertise in the area of programming and networking. Mel has upgraded our roof motors and has everything backed up on virtual computers. I have spent a lot of time with marketing issues. Sam, our technical expert, has done a lot to help those who need it, and is on-site whenever he's needed. Together we hope to make SRO better and better as time goes by. Most of all we want it to remain a friendly and collegial site known for its clear and dark skies.