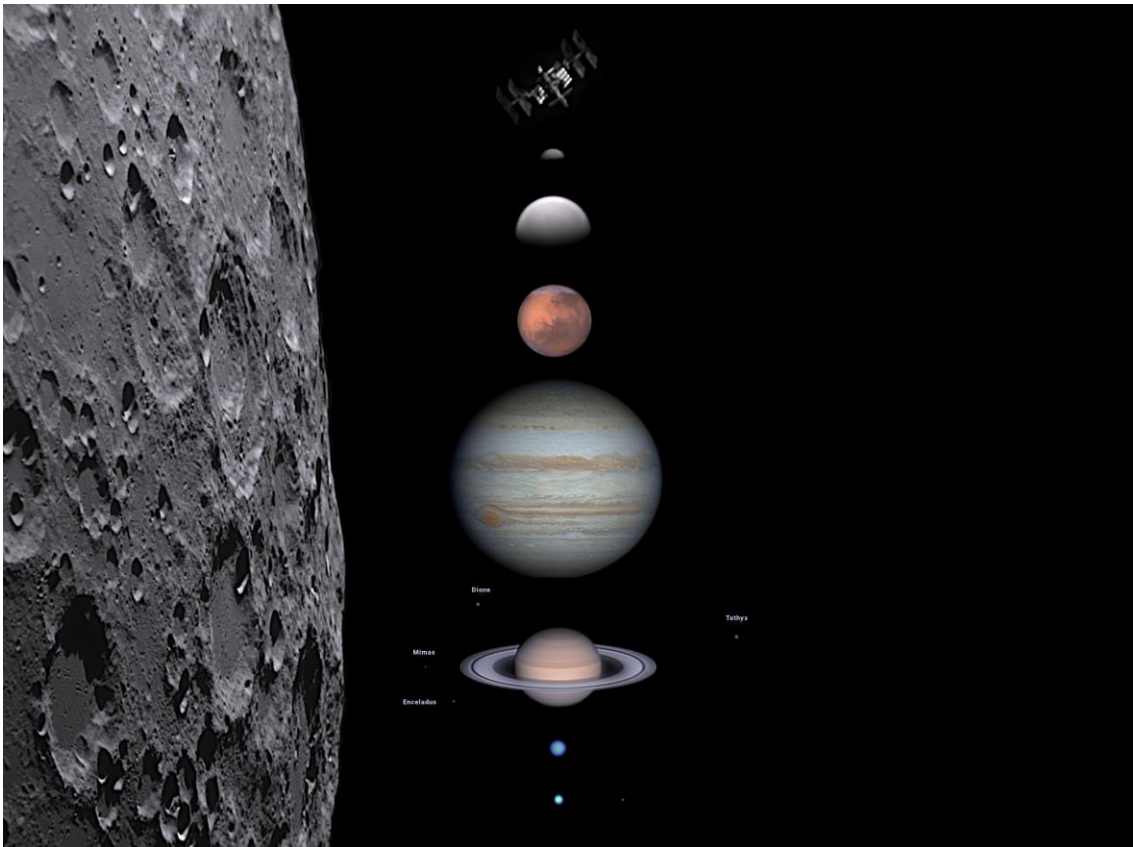


Damien Kilmartin's Astrophotography Story

September 2023



***Hubble Optics (HO):** Hi Damien, thanks for agreeing to do this interview, we really like the images you are producing with your Hubble Optics UL Dobsonians and would love to talk about them and*

your process. But could you please introduce yourself to the readers and maybe have a look at your images as you go if that is OK?

Damien: Thanks for contacting me about this, I am very glad to do this interview and happy to share with the readers my learnings of imaging with my Dobsonians and I am happy to show some images as we go that's no problem.

My name is Damien Kilmartin, I live in Newcastle Australia with my wife and 4 kids. A bit over 2 years ago I started using my 16" F4.5 UL Hubble Optics Dobsonian with my home made equatorial platform and planetary camera to image the planets, moon and night sky. This was a big change from using just my manual 10 inch dobsonian and phone, which I had been doing for the previous year. I realized from the first night I used the 16" UL dob and dedicated astronomy camera, that a lot better results could be achieved if used the 16" rather than continuing with my 10" Dobsonian. After a fair bit of reading and watching videos, to try and learn the "art" of planetary imaging I started to get some nicer images which spurred me on even more.

HO: How long have you enjoyed astrophotography?

Damien: I grew up in a small town called Lightning Ridge, which is the home of the World renowned Black Opal gemstone here north west New South Wales. We had superb dark skies but as a young boy I was oblivious to what lied beyond the stars at night. I did have an interest in the planets and space as most boys do, but when I was young you could only buy groceries and the basic stuff in the small town of Lightning Ridge. So there was no real chance of an impulse purchase of a telescope at that time,

my space journey would have to wait another few decades to get started, luckily nothing moves very fast in space and imaging wasn't really a thing so I didn't miss too much.



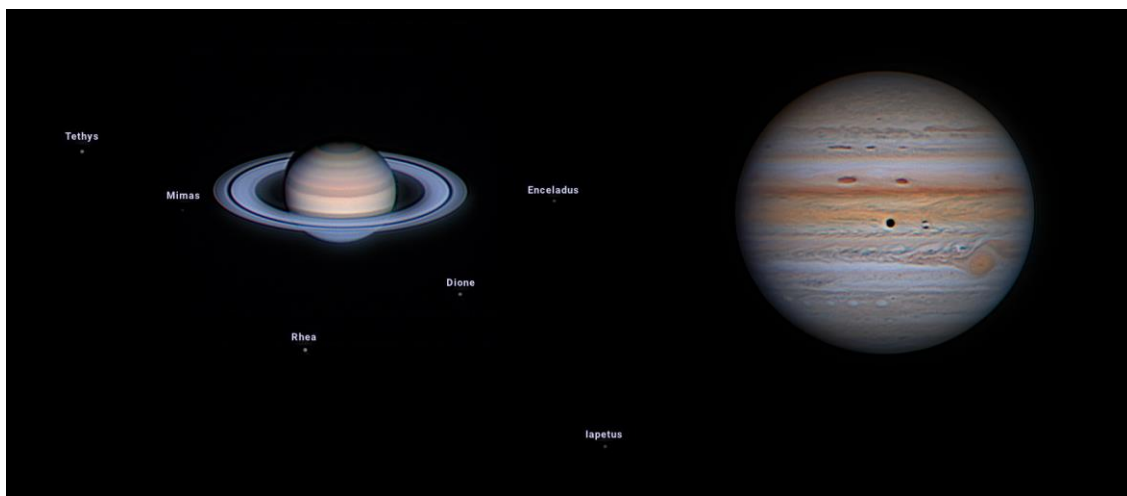
My 1st images of Jupiter and Saturn in 2019 with my phone and 76 700 Nat geo scope

HO: What was your first telescope you owned?

Damien: Due to a detour one night in August of 2019, I went to a different supermarket than we normally used to pick up some groceries. When I was there I came across a cheap 100\$ telescope and thought why not? Looking back I bet my wife wishes we

went hungry that night, I have spent a not insignificant amount of money on my hobby since then hahaha. All with her full support, of course.

The telescope was a 76/700 National Geographic scope on a manual equatorial mount. Basically a 3 inch reflector referred to by people that know as “The Hobby Killer”. Even though it was only 4 years ago now I can only really remember looking at the Moon, Saturn and Jupiter with it. It had a barlow and eyepieces that seemed to be made out of frosted glass, but I can tell you that I will never forget the moment that I saw the rings of Saturn through the eyepiece after finding it in the night sky on my own, I still remember the feeling now, it was amazing and I was hooked.



2 years later after first images I was able to get this - Jupiter on this night for 3.5 hours and for 25 minutes before the end I switched to Saturn and its 6 moons, I'm glad i did.
1st September 2021 16 inch UL16

HO: What do you enjoy the most about your astrophotography?

Damien: Ultimately I enjoyed sharing the night sky with my kids and anyone interested in astronomy. Surprisingly a lot of people are interested, but only mention it after they find out you have a scope yourself. Giving them the rush of seeing Saturn with their own eyes is great, and most of them will look around at the rest of the sky in silence wondering what else is up there after seeing Saturn's amazing rings. For me personally now, I enjoy the challenge of imaging and implementing my constantly changing knowledge base and trying to improve every night out. Some nights are very challenging due to conditions to get a good results but I try to always learn something when imaging. I mostly love the piece and quite of being outside while being close to home and the family. Some nights when doing DSO work with my Nikon camera on the equatorial platform and just lie out looking at the stars in the piece and quite only getting up every hour to reset the platform and reframe the target. Which is as good as it gets for me.

HO: Why did you chose planetary imaging as your focus?

Damien: I live within the skyglow of the city of Newcastle which is the 6th largest city in Australia, so this has probably dictated what would be best for me to target in the night sky. As the inner 5 planets are relatively bright and can be seen at all times in the sky with the naked eye and even Uranus and Neptune can be visible with a set of 7x50 binoculars in most conditions if you know where to look. I started with phone images as just about everyone else does, its just so accessible. Most people have their phones

within arms reach if they have a telescope out, it's quick and so easy and I was no exception. Once you take a photo of Saturn through your telescope you will be hooked, and so it became my primary interest after getting a couple of nice images with my phone. The moon and planets as well as each planets different moons means there is always something new to capture. This year I started imaging the ISS and had an attempt of imaging Hubble Space telescope which went reasonable and I will definitely improve on them later in the year. I also do some deep sky imaging but I'm not as good as with my planetary images so I usually keep the results to myself.



My 4 dobs 24,16,10 and 6 inches all in this image

HO: Can you please tell everyone about the scopes you use?

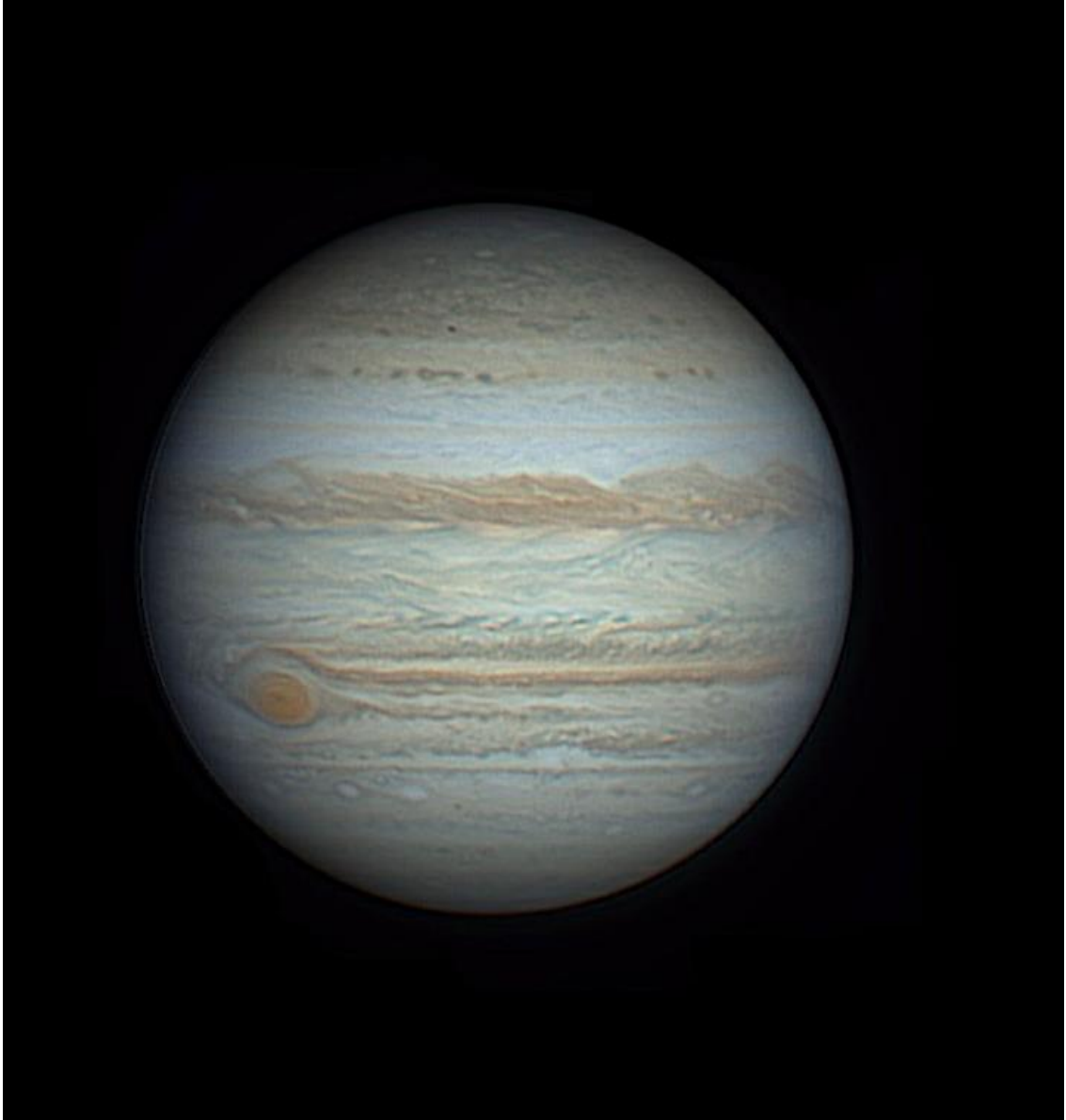
Damien: The vast majority of my images people have seen will have been taken through my manual 16" F4.5 UL Hubble Optics Dobsonian on my home made equatorial platform. I really like the images it produces and will continue to use it going forward, as I am confident of its ability when conditions are favourable and with new knowledge gained its best images are yet to be seen. I made the decision around the middle of 2022 that I would buy a new UL Dobsonian to image with, and because I don't usually do anything by halves I decided on the Hubble Optics 24" F3.3 UL Dobsonian. So in late 2022 I took delivery of my new 24" F3.3 UL Dobsonian. It will start getting a lot of use this year as my primary imaging scope and it will open up some possibilities that smaller aperture scopes are not able to do. I have had first light which went well and as you know I upload the results to Twitter and YouTube for all interested people to see.

HO: Traditionally these scopes are purchased more for visual use, did you have the same plans?

Damien: I think it's fair to say this scope is not designed to do this type of imaging work but it is clear that they are 100% capable. You just need to think a little laterally, apply yourself and if you are willing to learn good things will come. The 16" F4.5 Hubble Optics scope was purchased about 3 years ago as a visual scope. The reason was that I enjoyed the nights doing visual with my 2nd hand 10" Dobsonian from Bintel and wanted to take the next step for a bigger scope. I remember having the 16" and 10"

set up next to each other and looking at the Globular cluster 47 Tucanae (1 million star globular cluster), this is one of the Jewels of the southern skies. As much as I loved my 10" Dobsonian and thought it really shined when it came to globular clusters (and it did) the reality was when side by side with the 16" dob everything just looked a little muddy in comparison. I could see where the money had gone which made me very happy and satisfied with my purchase.

I had only done a few images using my phone on the 10" Dobsonian so imaging wasn't even on my horizon at this stage of my astronomy journey. I was interested though in developing that part of the hobby because you can show the friends and family what you could see and remind yourself why we freeze in winter when we have the scope out. I was looking at lots of equatorial platform designs and after deciding that I would build my own simpler design, it then started to dawn on me that the base of the 16" UL and its centre of gravity was actually better than the 10" dob. I used the 10" Dobsonian on the platform for one night and then for the next 18 months it never got a turn back on the platform, after that decision my imaging journey and results ultimately began to take a step forward. There were a lot of people talking negatively about buying a 16 inch scope while living in a relatively large city but I am happy with my choice and think it is working for me. I have friends and peers that are enjoying my images and now videos, I think they will agree the 16" UL is a very capable planetary imaging scope.



A nice Jupiter and GRS from November 2022 using 16 inch UL16 Dobsonian



8 panel mosaic moon image using the 16 inch UL16 Dobsonian

HO: We like your images very much and your work has continued to improve, can you keep this trend up?

Damien: I will keep experimenting with different techniques and will continue to talk to my peers about their learnings and sharing information, this as you can imagine will help a lot. Together we all move forward as a group and learn more quickly than each of us could on our own over a similar period of time. This is not always black and white, because we all use different equipment and sometimes it does not translate to your set up, so as usual have to see what will work for your setup and skies. But I

frequently share conversations about imaging with Tom Williams, Martin Lewis and Andy Casely and its fair to say that one of the reasons my imaging is progressing as fast as it has is the willingness of them to discuss their findings openly and offer information of their years of practicing imaging. This says a lot about them and teaches me to do the same and I try to frequently help people starting out or if they are stuck somewhere with their imaging I will be always happy to help if I can.

I think another area of improvement will be if I can find a more accurate EQ platform for the 16" Dob, i'm sure this alone would improve my images. At the moment I am compromised at keeping the planet on the chip instead of focusing on settings and capture. I would probably get 30% more captures if I wasn't constantly adjusting the scope to keep the planet on the chip. This is at about 7000mm though so the home made platform is not going too bad really and to be fair it has got me to here which is amazing.

As always having the right equipment for the job is essential, I have just purchased a new barlow from Siebert Optics in the US, Harry (the owner) was extremely helpful and with measurements of my image train he custom made a barlow to give me my desired multiplication factor with an excellent transmission of the light spectrum starting from 320nm all the way above 1 micron. This on its own is a big help to imaging as the better transmission you have with your light entering and exiting your scope means you can use less Gain to image with thus giving you a cleaner and better signal.

I am also interested in imaging with the new smaller pixel cameras as well and would love to do some testing against my 2.9um pixel size cameras, using the bigger dobs to

see where they could fit in to the imaging puzzle. I mean with the 24" dob targeting 10000mm FL I still have plenty of light to play with, so traditionally the downfall of smaller pixelated cameras ability to gather light would not be a limiting factor here. Looking forward to find out when I can get my hands on a camera that fits this criteria.

I have only been imaging for a relatively short period of time compared to my peers and now I feel I have a better understanding of the night sky in Newcastle and what to expect when I see a certain set of conditions, so this alone should also improve my images by putting myself in the right place at the right time.

And not least just continuing and really fine tune my imaging processing knowledge, this is a big part of the imaging puzzle.

HO: What tips do you have on planetary imaging to help our readers improve their images?

Damien: We all use such different gear to image with and there are lots of things that don't apply equally. But there are a lot of good habits to get into that will help your imaging. A saying that I applied to my competitive sport as a kid was to reduce the differences between your best and worst days, this will keep you in good stead for constant improvement. So while most of the information below is basic in its nature when starting out these would be good practices to put into place and each topic below will improve your imaging if you are not currently doing something similar at the moment.

1. Plan you imaging session, lots of good material online to see where the planets are in the sky or the objects you would like to target. Focus on the ones that are higher in the sky because you look through a lot less atmosphere. I use Stellarium.org to plan my night and targets to image.
2. Look for a high pressure systems to image under if possible, more often than not this will produce better images. Also look to apps like Windy.com and similar to plan your imaging, they can show you the condition of the wind and Jetstream in your area. Wind speed in different layers of the atmosphere will detrimentally affect your imaging especially if those layers of wind are going in different directions like they frequently do, this creates turbulence. Living near the ocean I benefit from better seeing conditions when the wind at lower levels is coming from the oceans direction (easterly), a warmer moist air is more stable than my predominantly westerly colder winds. And more often than not I do have better seeing when I battle the clouds coming from the east, so for this reason I am never scared of setting up under the clouds. Each location can be different for best results, screenshot your nights forecast before going out and then you will be able to store each forecast with each session and a pattern will start to appear on your better and worst nights. This will lead you to make better decisions to image under.
3. Get yourself an electronic focuser - A lot of people believe that they don't need one but the moment you stop touching the scope to get focus is the moment you will have the correct focus more often. Controlling the focus with your hands is problematic and I have never heard of anyone going from an electronic focuser back to manual focusing in order to do a better job. In average seeing it is

difficult to get accurate focus and I will still miss focus on occasion. A more efficient system of focussing will yield better results more often than not using one. Take your time with focus 1 capture in focus is better than 50 captures out of focus. Correct focus is critical to good images.

4. Are you at the desired focal length for your set up? It's just a general rule but one that should be adhered too for best results. A focal ratio to target for best performance of your mirror for lucky imaging. This should be along the lines of 5x the pixel size in microns for mono cameras and up to 7x the pixel size for colour cameras this rule is for good seeing condition. For example with my 2.9um pixels in my QHY5iii585c I should multiply this by 5 to 7 times for the target FR for the scope to be used. In average conditions the multiplication factor should be lowered. Most people image at a scale that is too small, if your Jupiter image is only 200 pixels across you are not going to get a lot of detail in your images. For people with smaller scopes this is unavoidable but as your aperture increases so should the size of your planets in pixels if you are using the same camera to get the best results. My Jupiter images are around 500 pixels at opposition and will be bigger again imaging with the 24" UL Dobsonian, this will allow on good nights much more detail to be captured.
5. Barlows unless telecentric will give you a multiplication factor above the number that it is advertised. The further away your camera sensor moves from the top surface of the barlow the larger this number gets. So for myself I currently am getting around 3.6x out of a 2.5x barlow I am imaging with an Atmospheric Dispersion Corrector in between the barlow and camera, the camera sensor is almost 100mm above the top surface of the barlow. My new

Siebert optics UV pass barlow can range from 4x to 5x with spacers which is very helpful depending on conditions to try and get the best results possible.

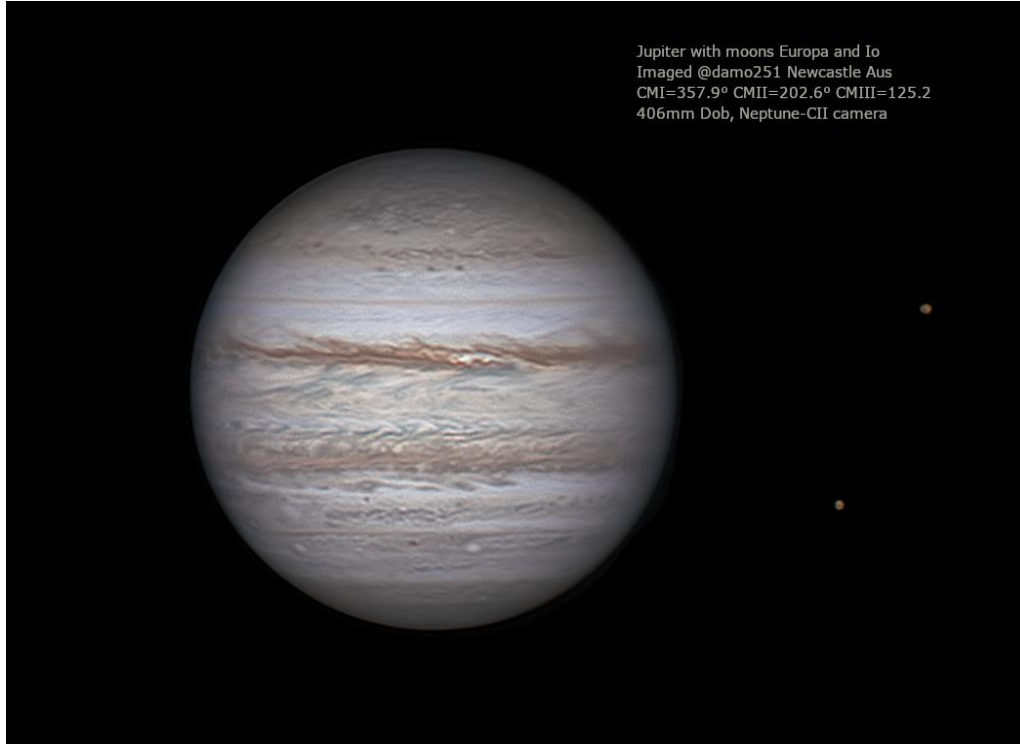
6. Ensure your telescope is collimated to get the best results. Best collimation results will come after your telescope is cooled to ambient conditions. I will always point my telescope to my target or its altitude and then collimate it so everything is equal and as close to perfect as you can get. If your scope has a tendency to collimation shift throughout the night then make sure you recheck your collimation to for best chances of nice images.
7. Atmospheric Dispersion Correctors - buy one and learn how it works, targets below 60 degree elevation will be affected by atmospheric dispersion. An ADC will benefit your imaging 100 percent guaranteed if you are shooting below 60 degrees. And lets face facts, unless you live on the equator we all have targets that are below 60 degrees.
8. Use your histogram to your advantage, keep your planets at around 80% or less, each one has different characteristics so try some different levels to see what works for you and your system. Don't overexpose your planets in capture as you can never get them back in processing, when you apply any sharpening it overexposes the image even more. Saturn has low surface brightness and should be imaged closer to 65% histogram level. You can align your capture colour with the histogram levels for each of the Red, Green and Blue channels when shooting with a colour camera.
9. Don't use the fastest fps you can get as your ultimate goal, use your exposure time to freeze the motion of the atmosphere. In good conditions you will be able to use a much lower fps to capture and when conditions get worse in average to

poor seeing a faster frame rate will be beneficial. Once exposure time is set use the gain to keep the image exposed correctly. If in excellent seeing don't be afraid to use 80fps or below for the big 2, this will allow you to reduce gain and noise as a result. Feed the camera details is the name of the game. But for most people just starting out without much experience a 10ms (100fps) exposure time is a good place to start. And then you can concentrate on correctly exposing the planet using your gain. In poorer seeing you have the option to use Infrared filters to try and improve your results. As Infrared wavelengths of light will cut through the turbulent atmosphere better and give more detail than visible light will allow. Using higher framerates is not a bad thing and is sometimes necessary, but as long as you understand that the higher framerate will also mean a higher gain to expose the target correctly which in turn outputs more noise and less dynamic range from the camera.

10. Capture length as a basic rule is stay under 3 minutes for most people and their scopes for Jupiter and Saturn (3000mm) and the other planets can be a bit more if you like. If you image over 5000mm maybe look to limit your captures to 2 minutes for the big 2. I mostly stay under 90 seconds with the 16" UL and will maybe reduce that to 1 minute for the 24" UL and the 10000mm FL. I will do some testing and see if I can tell the difference.
11. Post processing is a hugely underrated part of imaging. Practice it learn it and improve it, then all your images will be better. I have a basic Autostakkert, Registax and Winjupos tutorials on Youtube for people to get there feet wet with most people picking up a thing or 2 after watching. Processing is a huge part to the puzzle and something you should practice more than you image to be honest.

There is lots of different tools to process your images these days and being competent with them is a good thing. Do not use the same set of sliders for all your images eg. saved wavelet settings,. It is not possible to correctly process each different nights imaging with one set of slider or settings. Just the seeing alone will render saved settings useless for different nights imaging. Each night or different sessions require different amounts of sharpening and adjustments to get the best out of your planetary images.

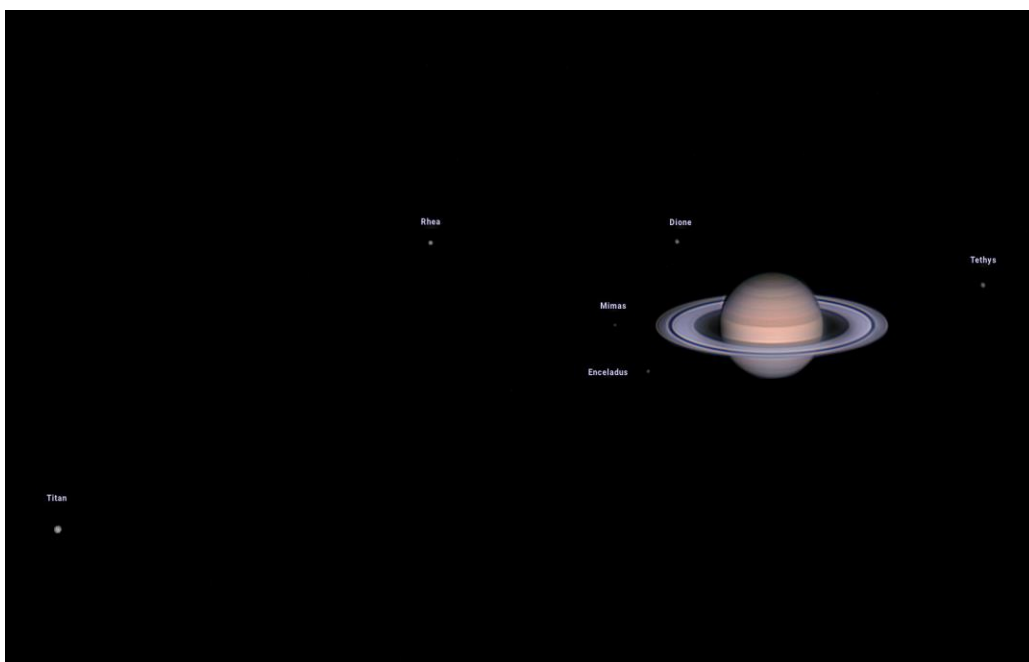
12. Start to improve your planning and details of the nights and corresponding images. For examples don't go outside and image Jupiter at 15 degrees above the horizon if you can do it 2 hours later at 40 degrees elevation.
13. A superb resource is Martin Lewis's planetary focused website <https://skyinspector.co.uk/>, if you are looking to improve your imaging a trip to this website will speed your journey by a lot.



Jupiter with moons Io and Europa from August 2022 16 inch UL Dobsonian



The great craters of Clavius and Tycho June 2023 using my 16 inch UL16 Dobsonian

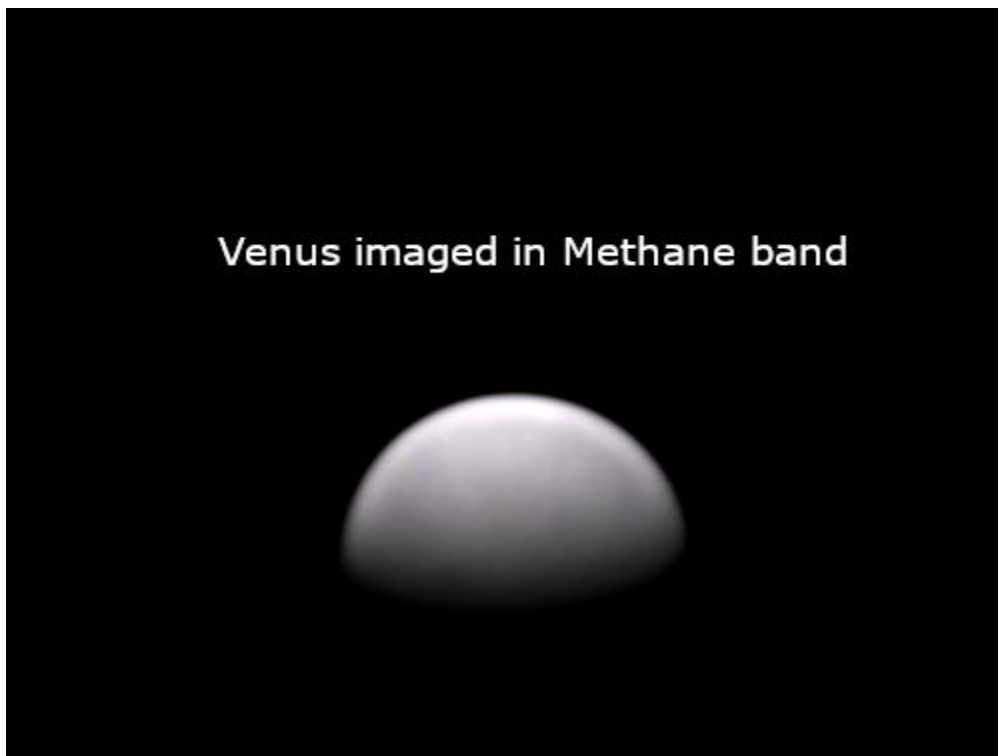


A nice Saturn, this time with 6 of its larger moons from the 27th Aug. 22 using my UL16

Saturn 2021 - August 5th to 13th December



Here are all the Saturn images i was able to capture from August 5th to December 13th with my favorites being the bottom 2 on the far left using the 16 inch UL dobsonian 2021



Venus in methane band using 16 inch UL16 Dobsonian

HO: Which cameras do you have? How do they perform?

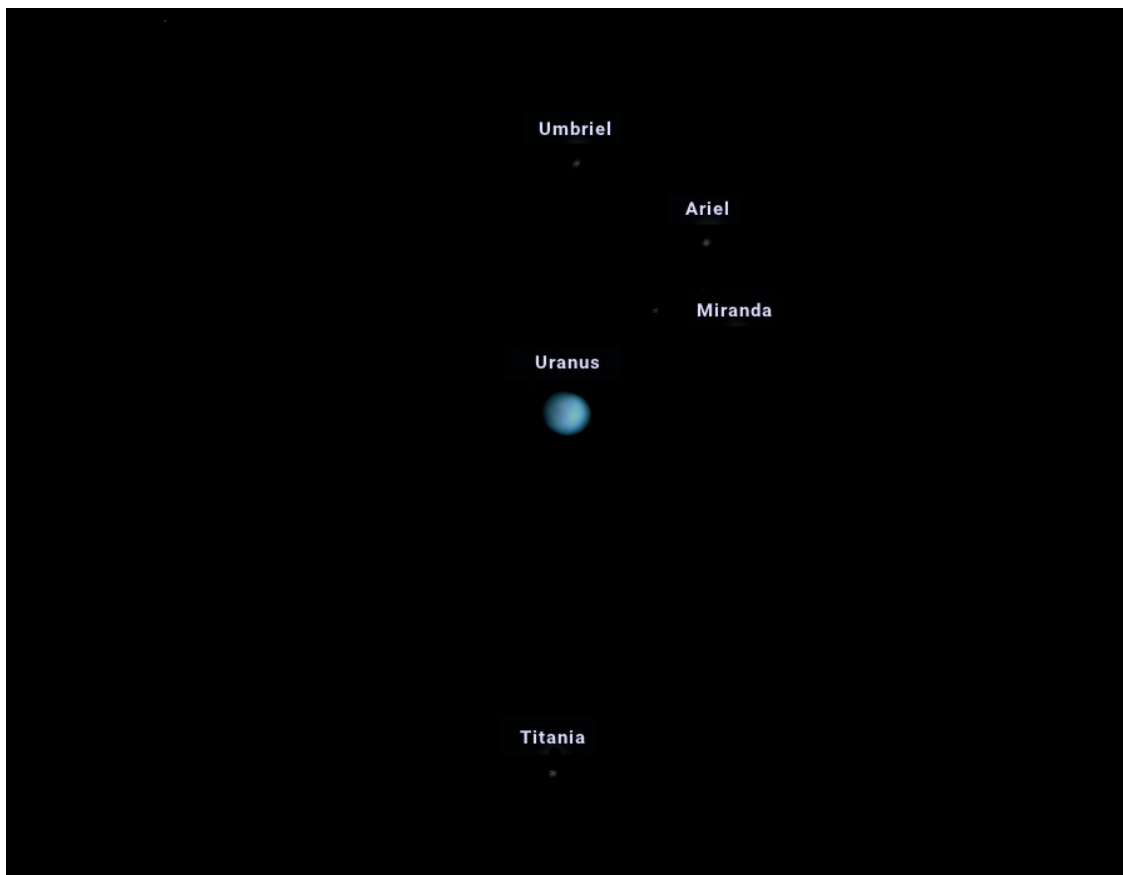
Damien: The QHY5iii585c, a color camera with a larger sensor with a very good colour response and pretty good IR response, It has quite a large sensor which means it gives flexibility if there are tracking issues with your mount or Equatorial Platform for me as FireCapture will allow you to go to a small ROI but automatically track the planet around the sensor while only showing you a small part of the sensor. This allows you to hit your 100+ fps but use the large sensor to your advantage. I use the 585c for ISS passes as well, with that extra sensor size helping out.

The Playerone Neptune Cii is essentially the excellent 462c color camera but with a chip double the size of the original 462c, its IR performance is as good as it gets from the big 3 camera OEM's as a color cam, it also has very good FPS capability, all the way from any ROI to full chip size of 2712x1538 @ 93fps

And my new camera is the Playerone Mars II mono camera, this is a great camera and Playerone has really tuned it for IR and UV imaging. It has a very well thought out front protective glass that has an exceptional transmission rate above 310nm all the way past 1100nm.

I have also owned in the past but sold to friends the QHY5iii462c and QHY5iii485c I really liked both of these cameras but bought something that supersedes the same format in each case. All the above cameras have 2.9um pixels which means the data can be interchangeable if required and captured at the same focal length.

And as I mentioned before the smaller pixelated cameras are an interesting prospect and something I would like to try going forward



2022-12-27-1054_7-D-IR-Uranus using 24 inch UL24

HO: Do you think big Dobsonians can be the future of planetary imaging?

Damien: Dobsonians are a simple concept and designs that differ from manufacturers to manufacturers. Traditionally Dobsonians are telescopes with larger aperture mirrors at a more budget friendly price than other scope designs. Physics tells us the bigger the mirror the more resolution it can resolve, and when we use lucky imaging techniques and the amazing software (most free) that has been developed for planetary imaging. Using Lucky Imaging techniques and its software we have found that in good conditions we can actually resolve beyond the abilities of the scopes mirror size.

Consumer telescope sizes are constantly increasing year after year and the camera technology improves rapidly as well. Mainstream camera manufacturers of QHY, Playerone and ZWO ASI as well as other lesser known camera manufacturers continue to bring new and improved products to market allowing everyone to constantly improve their imaging. I have owned and used QHY and P1 cameras with total satisfaction and they are moving the planetary imaging game forward very fast. It is amazing what we are able to achieve with these camera when good conditions align with knowledge and skill that has been acquired.

Lots of my peers are using Dobsonians to achieve superb Planetary Imaging results with friends Martin Lewis and Tom Williams using 17" and 16" Dobsonians respectively. These two well renowned imagers with large dobs that continue to produce top quality images and move the game forward. They are also have been very generous with their imaging information, that on its own will continue to drive the hobby forward and we will all benefit. Other well renowned imagers like Damien Peach, Andy Casely, Niall MacNiell and many more continue to use the more tradition and proven Celestron C14 Schmdit Cassegrain (SCT) telescopes. For many years now these have been hailed as the scalpel in the planetary imaging hobby and with good reason. On good nights these guys have been drawing amazing detail out of their scopes while imaging.

I have seen a talk where Damien concedes that with the ongoing technical advance of cameras, software and large Dobsonian designs it is possible to see a future that large Dobsonians will lead the way in planetary imaging going forward for amateurs. Damian himself collaborates with the Pic du Midi 1 metre telescope and Observatory as well as some slightly smaller scopes to achieve great images. This should tell you all you need

to know, that size does in fact matter and on nights of good seeing this will translate into jaw dropping images.

HO: How do you combat field rotation when imaging with Alt Az scopes?

Damien: Doing planetary imaging field rotation isn't really a major problem, using our normal techniques to capture images also combat field rotation to a degree. We address it on set up and capture, already having to take precautions with capture length for Jupiter and to a lesser extent Saturn's 10hr days. I personally don't exceed 2 minutes of capture length with the 16" Dobsonian and I will probably stay around 1 minute under good conditions on the 24" this year. 2 minutes of field rotation is less than 0.5 of a degree or at the scale I am currently imaging it is less than 1 pixel at planets edge. Which Autostakkert 3 will more than compensate for when stacking. Or you could also use the "limit" function in Autostakkert 3 to break up longer captures into smaller length captures to stack. Over time you will see field rotation show itself outside of single captures but if we keep the capture lengths short each capture will be free of detectable field rotation.

When de - rotating in Winjupos the wire frame alignment has a huge amount of adjustment in the field rotation axis of about 1300 different positions over a 24 hour period (360 degrees) giving about 9 rotation steps every 10 minutes of captures. This is a very basic although time consuming way to combat field rotation, the more technologically advanced way to combat field rotation is a software based approach with scripts to orientate all images to the same positional alignment. I was very kindly put on to this by a friend who is a bit more switched on with the newer ways to process our planetary images, "work smarter, not harder" comes to mind. I will only use this

technique when imaging on the 24" as when I image with the equatorial platform with the 16" this is automatically corrected with equatorial platforms removing all field rotation due to their design, when resetting after each hour of use I will usually adjust the camera orientation back to horizontal to make things easier post processing.



**Keyhole Nebula and Eta Carinae using my 16 inch UL16 Dobsonian and 2 second subs with
22 minutes total of integration time**



Omega Centauri imaged with my 16 inch UL16 Dobsonian using 2sec subs and stacked 18 minutes of integration time

HO: Can big Alt Az Dobsonians be used for DSO imaging?

Damien: Yes, I believe so and I will be using the 24" F3.3 UL dob for DSO work as well as my preferred planetary imaging, I have contacted Starizona for their .75 coma corrector and reducer which they are quite confident that it will flatten the F3.3 field and should also reduce my F ratio down to an amazing F2.55 and 1540mm FL which it will be quite the monster if those numbers are accurate. The combination of shorter subs and software advancements will see this be a totally feasible thing even in my Bortle 6-7 backyard in Newcastle Australia. I am currently saving for a few items one of which is the larger sensor DSO camera as I only have planetary cameras at this stage to start with, we will really get to work when I have these items at hand and with a 24" F2.55 maybe we can truly attempt some DSO "Lucky Imaging".

Dr Robin Glover the founder and developer of SharpCap, does a 50 minute talk that can be found on Youtube using real numbers and data acquired with the built in camera sensor noise analysis tool in SharpCap that he developed. During the talk he shows a graph with calculations taking into account the Bortle skies from 1 – 9 areas and F ratios for best practical sub length based on your local light pollution numbers from a scientific perspective. This shows that a sub length of only 8 seconds in my skies may be the most beneficial and optimum to saturate the signal to noise ratio. I advise people if you haven't seen this video to go and watch it regardless of the type of scope you use. For a while now software has been available that will stack and de-rotate images quite easily of all Alt Az scopes. So moving forward I believe we will see more and more of Alt Az scopes moving in to imaging areas that were traditionally the stomping ground for only Equatorial mounted telescopes not to long ago. Are they the best scope for the job? No. Do they need to be? No. It's about finding the best balance for all the disciplines you are interested in. Also de-rotating focuser solutions are available for reasonable prices now and if you are happy with this complexity they will totally remove the issue of field rotation for Planetary and DSO imaging.

HO: You have recently started uploading videos to YouTube; do you enjoy doing them?

Damien: Yes I am currently putting videos of my Telescope adventures on Youtube. This mostly is content of my capture videos, imaging tutorials and reviews. I originally enjoyed editing our family holidays and uploading them to Youtube so family members could watch. So the transition into telescope videos was not a big deal, although the production quality is limited sometimes haha. But the real reason I am doing the

astrophotography videos is because it was tough to find information on the products I was interested in purchasing when I was researching telescope products myself. I probably watched the Dakota Starry Nights video on Youtube 50 times of his 16" UL Hubble Optics Dobsonian, it was the only place I could find the scope in action (thanks Richard!). So knowing that, I thought this would be a good way to share my experience and give some back to the community because I am now in a position to do so. Lots of people have been enjoying the videos and I have picked up a following of interested people. So now as well as tutorial videos I started uploading capture videos and results of my imaging as well, so hopefully people continue to enjoy the content and if it is helping people make decisions with their purchases I will continue to create them.

HO: What are your plans for the upcoming season?

Damien: Continuing to improve and learn, with one of the biggest things for me would be having some holidays from work this year to image. My type of work and the shifts I do is terrible for the actual part of imaging the night sky. Eighty percent of the week I am unable to image so I miss out on a lot of good nights and imaging opportunities. I have lots of leave available and I intend to use it this year and will hopefully this at least double my nights imaging in the opposition windows which compared to the previous years would not be all that hard. Then in theory if I double the amount of sessions I image in that should translate to better images this year which would be a nice result.

HO: Damien, you have some good size scopes now but, do you plan to use an even bigger scope in the future?

Damien: I hope my wife doesn't read this but you can never say never hahaha. Bigger

scopes opens up flexibility as far as light gathering is concerned and ability to resolve detail when the conditions are going to be favorable. The thing I would need to do to make any kind of bigger Dobsonian purchase stack up is to build an Observatory in the backyard and also prove my idea and technique of DSO imaging with the 24" first, That way I could make the argument with my wife that she will have the house to herself for most of the year and I could be outside more often. I am sure she will come up with the deposit herself if these were the conditions proposed about the new scope hahaha.

HO: Damien, thank you for participating in this interview with us today, we wish you all the best and continued clear skies and please continue to share your wonderful images with us as you go forward.

Damien: It was my pleasure and thank you for speaking to me and allowing me to share some of my work with your audience. I hope I was able to provide them with a few ideas to help their imaging journey, if they have any questions drop by my YouTube or Twitter and say Hi. Thank you and bye for now.

You can follow [Damien K's Astrophotography on Twitter](#) and his [YouTube channel](#)