STRATFORD ASTRONOMY GROUP

MAY 6TH, 2025

AGENDA

- Meet and Greet
- Club NEWS and Activities
- Club Q & A
- Equipment Lessons
- Software and Imaging Information
- Latest Astronomy NEWS
- What's UP this Month
- Show and Tell
- Astronomy Lessons / Talks
- Cosmology Lessons
- Conclusion

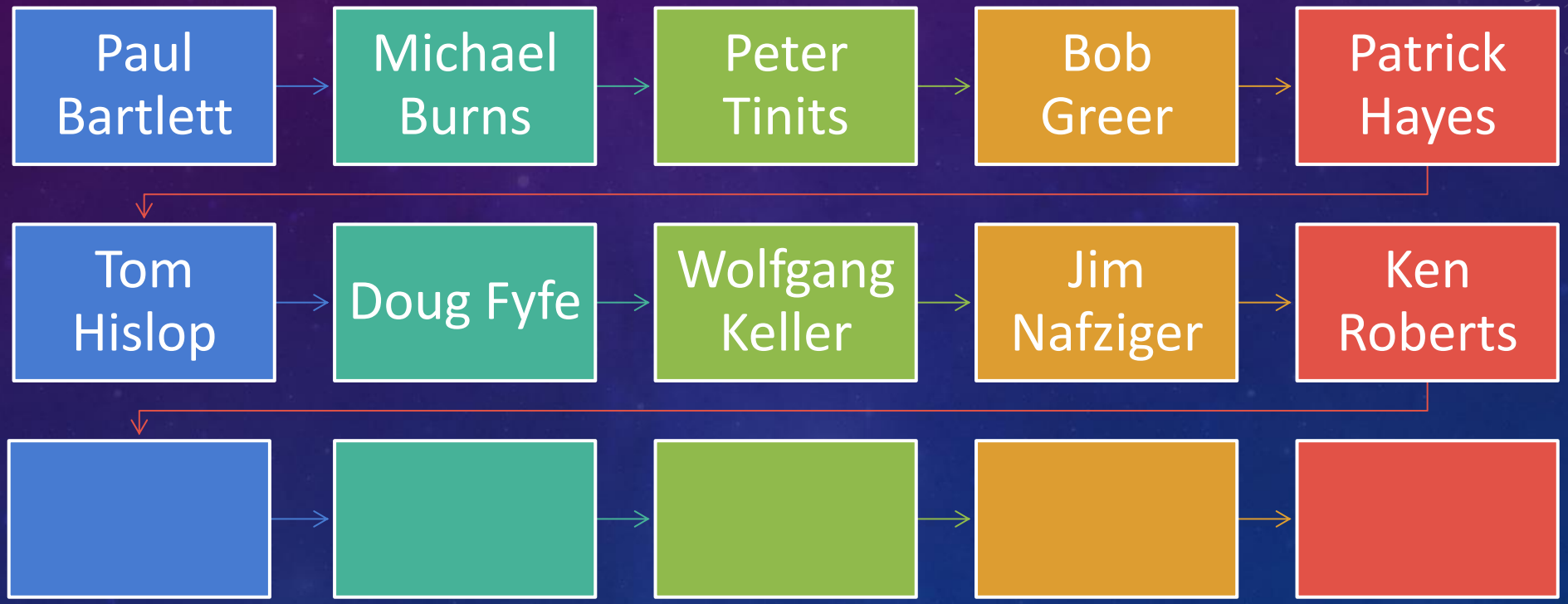
MEET AND GREET

Welcome

New Visitors

Regrets

LAST MEETING



UPCOMING MEETINGS

NEXT MEETING DATES

Date	Room	Location
~~Sept 17th, 2024~~	~~104~~	~~St. Michael's~~
~~Oct 1st, 2024~~	~~104~~	~~St. Michael's~~
~~Nov 5th, 2024~~	~~104~~	~~St. Michael's~~
~~Dec 3rd, 2024~~	~~104~~	~~St. Michael's~~
~~Jan 7th, 2025~~	~~104~~	~~St. Michael's~~
~~Feb 4th, 2025~~	~~104~~	~~St. Michael's~~
~~March 4th, 2025~~	~~104~~	~~St. Michael's~~
~~April 1st, 2025~~	~~104~~	~~St. Michael's~~
~~May 6th, 2025~~	~~104~~	~~St. Michael's~~
June 3rd, 2025	104	St. Michael's

CLUB NEWS AND ACTIVITIES

Group Funds

Total = $1057.70

- If you would like to contribute to the group, then please e-transfer Tim at:

timannemariepauli@gmail.com

or by cheques:

Tim Pauli

96 Front Street

Stratford, ON

N5A4H2

CLUB NEWS AND ACTIVITIES

EQUIPMENT:

New Equipment Donation: Tim

STRATFORD ASTRONOMY CLUB EQUIPMENT

CLUB EQUIPMENT LOCATION:

Paul Bartlett is now storing all the group's equipment. If you wish to borrow an item, then please contact him at:

1948paul.bartlett@gmail.com

519-274-2010

CLUB NEWS AND ACTIVITIES

- New Web site: (https://stratfordastronomy.com/)
  Tim Pauli - Owner/Administrator
  Ken Roberts - technical contact
  Tom Kimber - Administrator/Editor
  Doug Fyfe - Administrator
  Michael Burns- Administrator
  Tom will build it on WordPress.

CLUB Q & A

WHAT'S UP

STRATFORD ASTRONOMY GROUP

WHAT'S UP FOR MAY

HEY, THERE BE A MOON OVERHEAD

MOON PHASES FOR THE MONTH OF MAY

« May 2025 »

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 Conjunction of Saturn and Ceres	2 Asteroid 4 Vesta at opposition	3 Conjunction of the Moon and Mars Close approach of the Moon and Mars Conjunction of Venus and Neptune
4 Moon at First Quarter	5 Close approach of Mars and M44	6 η-Aquariid meteor shower 2025 Equinox on Saturn	7	8 η-Lyrid meteor shower 2025	9 Asteroid 9 Metis at opposition Conjunction of Mercury and Eris	10 Lunar occultation of Spica Conjunction of Neptune and Ceres The Moon at apogee
11 Messier 5 is well placed	12 Full Moon	13	14 Lunar occultation of Antares The Moon at aphelion	15	16	17 Uranus at solar conjunction
18	19	20 Moon at Last Quarter	21	22 Close approach of the Moon and Saturn Conjunction of the Moon and Saturn	23 Close approach of the Moon and Venus Conjunction of the Moon and Venus	24
25 The Moon at perihelion The Moon at perigee	26 New Moon	27	28 Conjunction of the Moon and Jupiter Messier 4 is well placed	29	30 Mercury at superior solar conjunction	31 Mercury at perihelion Venus at greatest elongation west

LUNAR OCCULTATION OF SPICA (CLOSE FOR US)
SAT, 10 MAY 2025 FROM 01:53 EDT (05:53 UTC) TO 06:18 EDT (10:18 UTC)

The Moon will pass in front of Spica (Alpha Virginis), creating a lunar occultation visible from Oceania and south-western Chile. Although the occultation will only be visible across part of the world – because the Moon is so close to the Earth that its position in the sky varies by as much as two degrees across the world – a close conjunction between the pair will be more widely visible.

Unfortunately, the occultation will not be visible from Stratford.

The sky on 10 May 2025

THE SKY ON 10 MAY 2025

Sunrise	06:02
Sunset	20:35
Twilight ends	22:34
Twilight begins	04:04

Waxing Gibbous

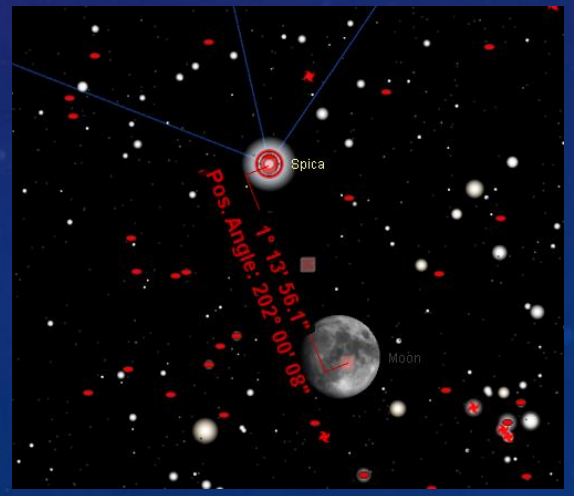
96%

13 days old

Planets

	Rise	Culm.	Set
Mercury	05:25	12:03	18:42
Venus	04:20	10:32	16:43
Moon	17:58	--:--	04:46
Mars	11:37	18:58	02:20
Jupiter	07:59	15:37	23:16
Saturn	04:13	10:06	16:00

All times shown in EDT.



LATEST ASTRONOMY NEWS

APRIL

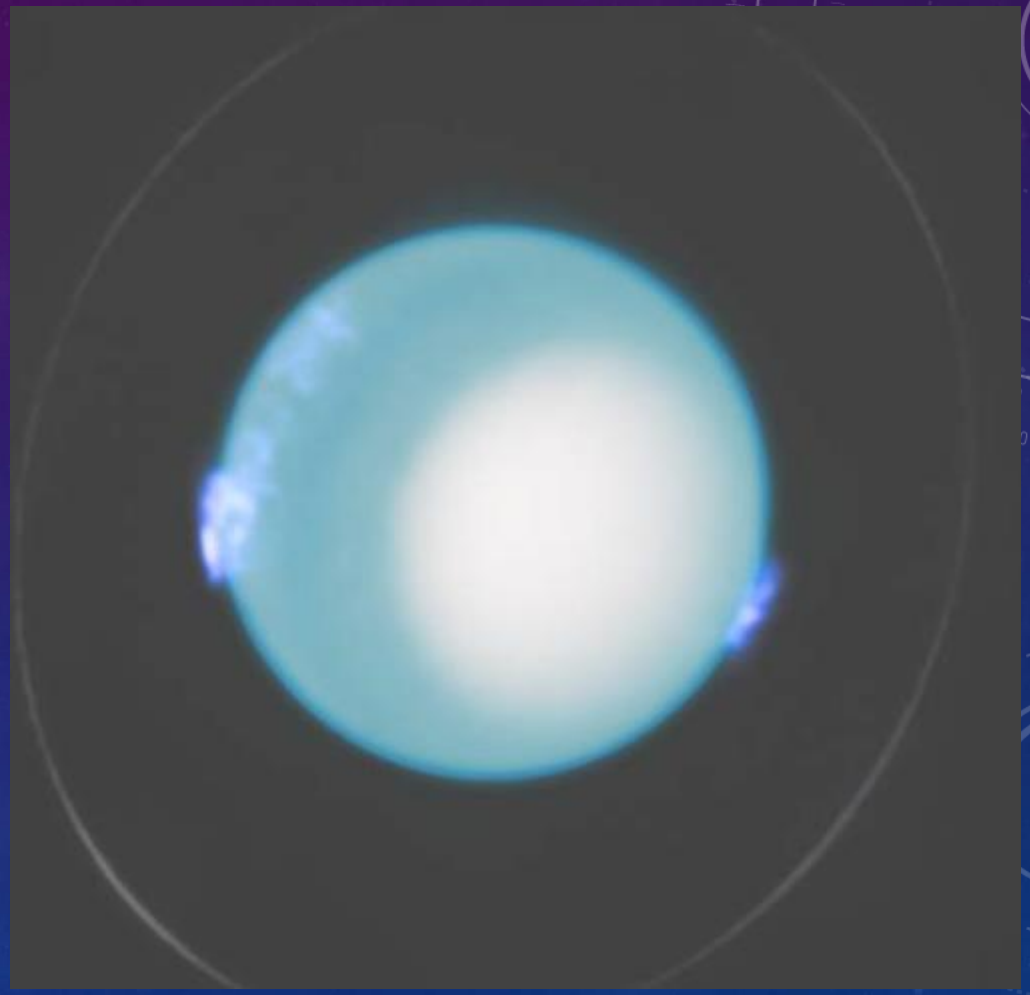
DAY AT URANUS JUST GOT 28 SECONDS LONGER

- APRIL 7TH

Scientists reported Monday that observations by the Hubble Space Telescope have confirmed it takes Uranus 17 hours, 14 minutes and 52 seconds to complete a full rotation. That's 28 seconds longer than estimates by NASA's Voyager 2 spacecraft in the 1980s.

A French-led team studied a decade's worth of aurora observations at the ice giant to track its magnetic poles. That long-term tracking provided a more precise rotation period for Uranus, the seventh planet from the sun. From that distance, it takes about 84 Earth years for Uranus to orbit the sun.

"The continuous observations from Hubble were crucial," lead author Laurent Lamy of the Paris Observatory said in a statement.



A SLOWLY SPINNING UNIVERSE COULD SOLVE THE HUBBLE TENSION

APRIL 14TH

•A new study in *Monthly Notices of the Royal Astronomical Society* by researchers including István Szapudi of the University of Hawai'i at Mānoa Institute for Astronomy suggests the universe may rotate—just extremely slowly. The finding could help solve one of astronomy's biggest puzzles.

•Current models say the universe expands evenly in all directions, with no sign of rotation. This idea fits most of what astronomers observe. But it doesn't explain the so-called Hubble tension—a long-standing disagreement between two ways of measuring how fast the universe is expanding.

One method looks at distant exploding stars or supernovae, to measure the distances to galaxies, and gives an expansion rate for the universe throughout the past few billion years. The other method uses the relic radiation from the Big Bang and gives the expansion rate of the very early universe, about 13 billion years ago. Each gives a different value for the expansion rate.

Szapudi's team developed a mathematical model of the universe. First, it followed standard rules. Then they added a tiny amount of rotation. That small change made a big difference.

THE WEBB TELESCOPE IS MAKING INCREDIBLE DISCOVERIES: IT MAY GO DARK APRIL 23RD

President Donald Trump's administration has removed NASA's top scientist and proposed a nearly 50% budget cut to the agency's Science Mission Directorate, which oversees planetary science, astrophysics research and more.

The White House reportedly is pushing to scrap the Nancy Grace Roman Space Telescope, a wide-view instrument undergoing final testing and assembly that is scheduled for launch within two years. Next-generation satellites meant to improve human understanding of the planet are on the chopping block as well.

While NASA's proposed budget retains some funding for the Hubble and Webb telescopes, they could become practically useless given the cuts planned for the agency's science staff.

WEBB: STRONGEST EVIDENCE OF ALIEN PLANET LIFE FOUND ON K2-18B

APRIL 17

•Are we finally close to proving that we're not alone in the universe? A recent discovery on K2-18b, a distant exoplanet, may hold the answer. Scientists from Cambridge University detected chemical signatures on this alien planet that could indicate life—specifically, dimethyl sulfide, a gas mainly produced by marine organisms on Earth. This potential sign of alien planet life, spotted using NASA's James Webb Space Telescope, is now considered the strongest evidence yet of biological activity beyond our solar system.

•On April 17, 2025, scientists revealed that they found dimethyl sulfide (DMS) in the atmosphere of K2-18b, a planet 124 light-years from Earth. On Earth, DMS is mainly produced by algae and seaweed—raising the possibility that life could exist on this distant world.

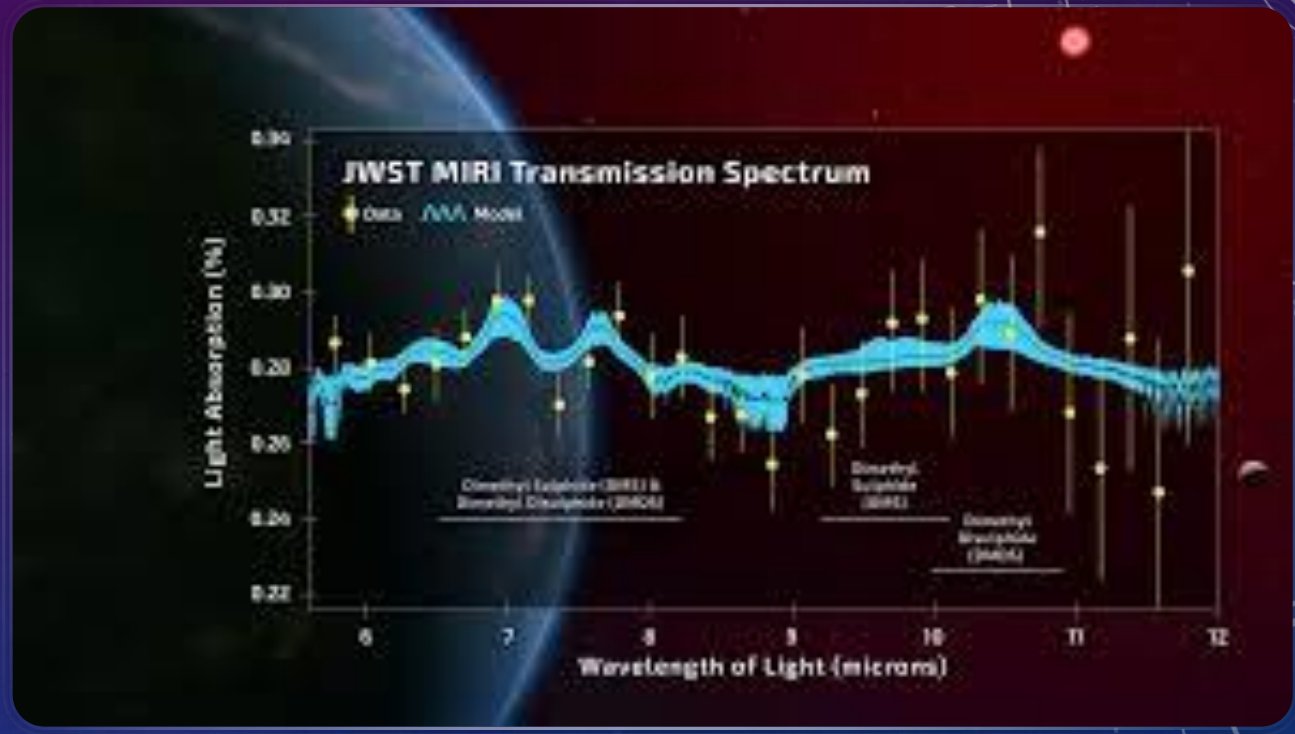
•The signals came from NASA's James Webb Space Telescope (JWST), which analyzed starlight passing through the planet's atmosphere. This chemical pattern is the strongest biosignature detected so far beyond our solar system.

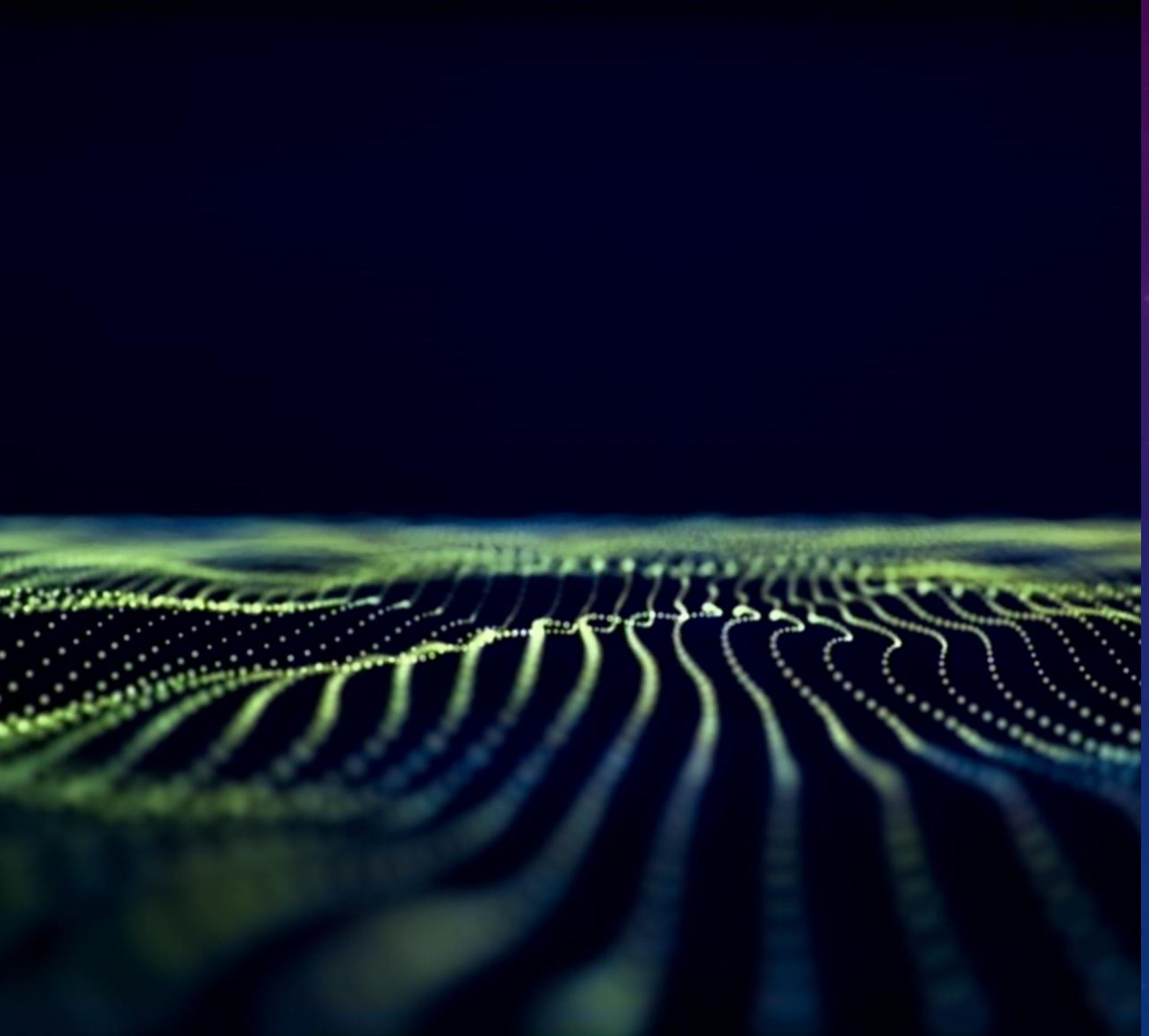
SIGNS OF ALIEN LIFE ON EXOPLANET K2-18B ARE BASED ON BAD DATA

APRIL 28

•Recently, a team of University of Cambridge-led astronomers made global headlines after announcing they'd found the "strongest evidence yet" of life beyond our solar system. Their claims were based on the detection of sulfur-based gases in an alien planet's atmosphere — gases typically linked to biological processes on Earth. However, a quick independent analysis of the data now casts doubt on the validity of these findings.

•Jake Taylor of the University of Oxford in the U.K., who studies atmospheres of exoplanets, used a basic statistical test to identify telltale signs of gas molecules in the atmosphere of the exoplanet at hand, K2-18b. Taylor did this in such a way that the test didn't assume which gases might be present. Instead of the distinct bumps that typically indicate the presence of detectable gas molecules, Taylor saw the data appearing consistent with a "flat line," according to the new study, which was posted to the preprint archive on April 22 and has yet to be peer reviewed. What this means is the data is likely too noisy — or the signal too weak — to draw definitive conclusions.





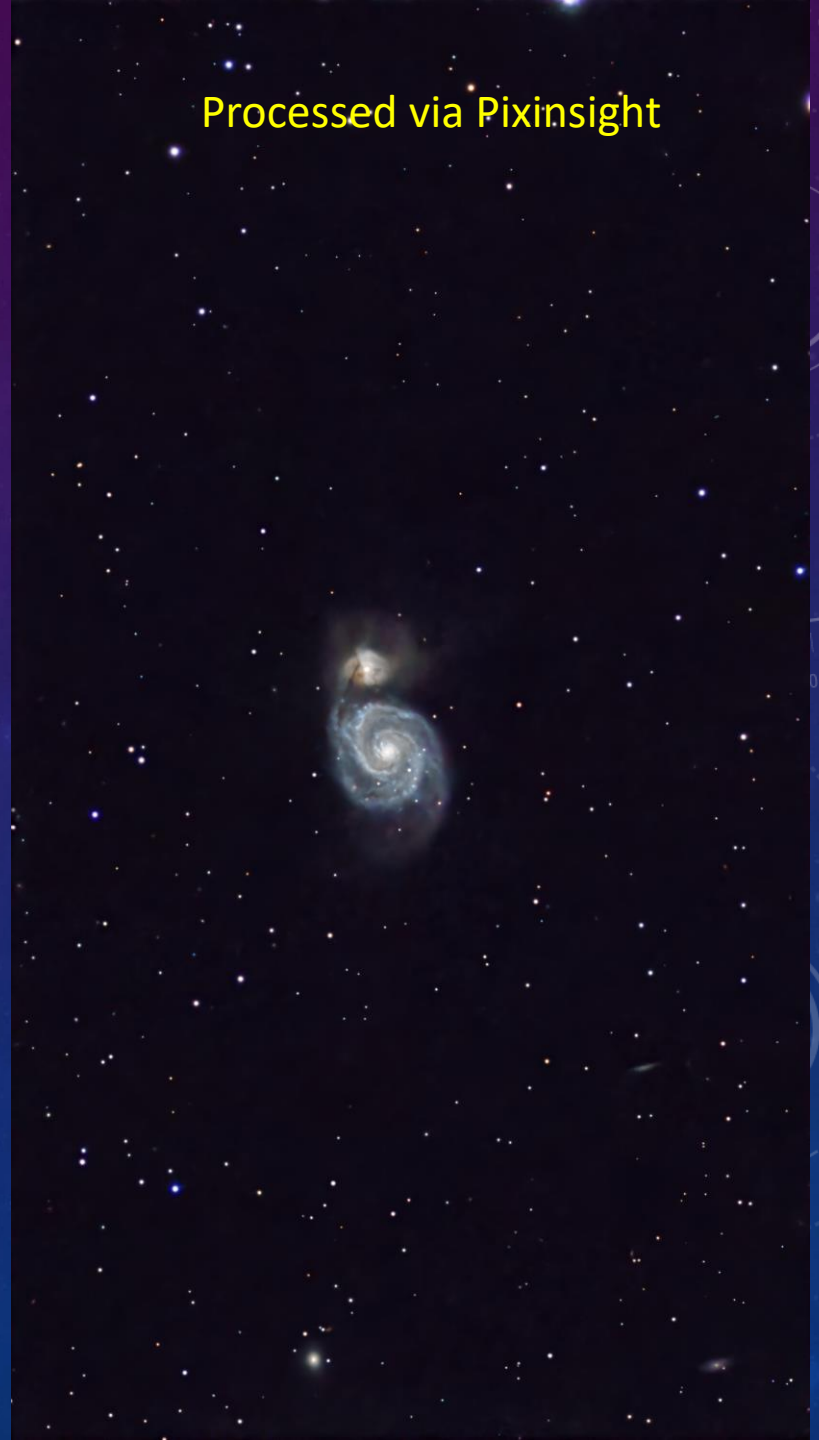
LATEST WEBB/HUBBLE/S50 IMAGES

Last Month’s S50 Images

S50
Michael Burns
Black Eye
Galaxy

Processed via Pixinsight

S50
Michael Burns
Whirlpool Galaxy
Last Month’s Challenge



S50
Michael Burns
M104

Processed via Pixinsight

Next Month's S50 Challenge
The Eastern Veil Nebula (the Alien Mouth)

Hubble NGC 5530 – April 4th

The subject of today's NASA/ESA Hubble Space Telescope Picture of the Week is the stunning spiral galaxy NGC 5530. NGC 5530 is situated 40 million light-years away in the constellation Lupus (The Wolf). This galaxy is classified as a "flocculent" spiral, meaning that its spiral arms are patchy and indistinct.

While some galaxies have extraordinarily bright centers where they host a feasting supermassive black hole, the bright source near the center of NGC 5530 is not an active black hole but instead a star within our own galaxy, only 10,000 light-years from Earth. This chance alignment gives the appearance that the star is at the dense heart of NGC 5530.

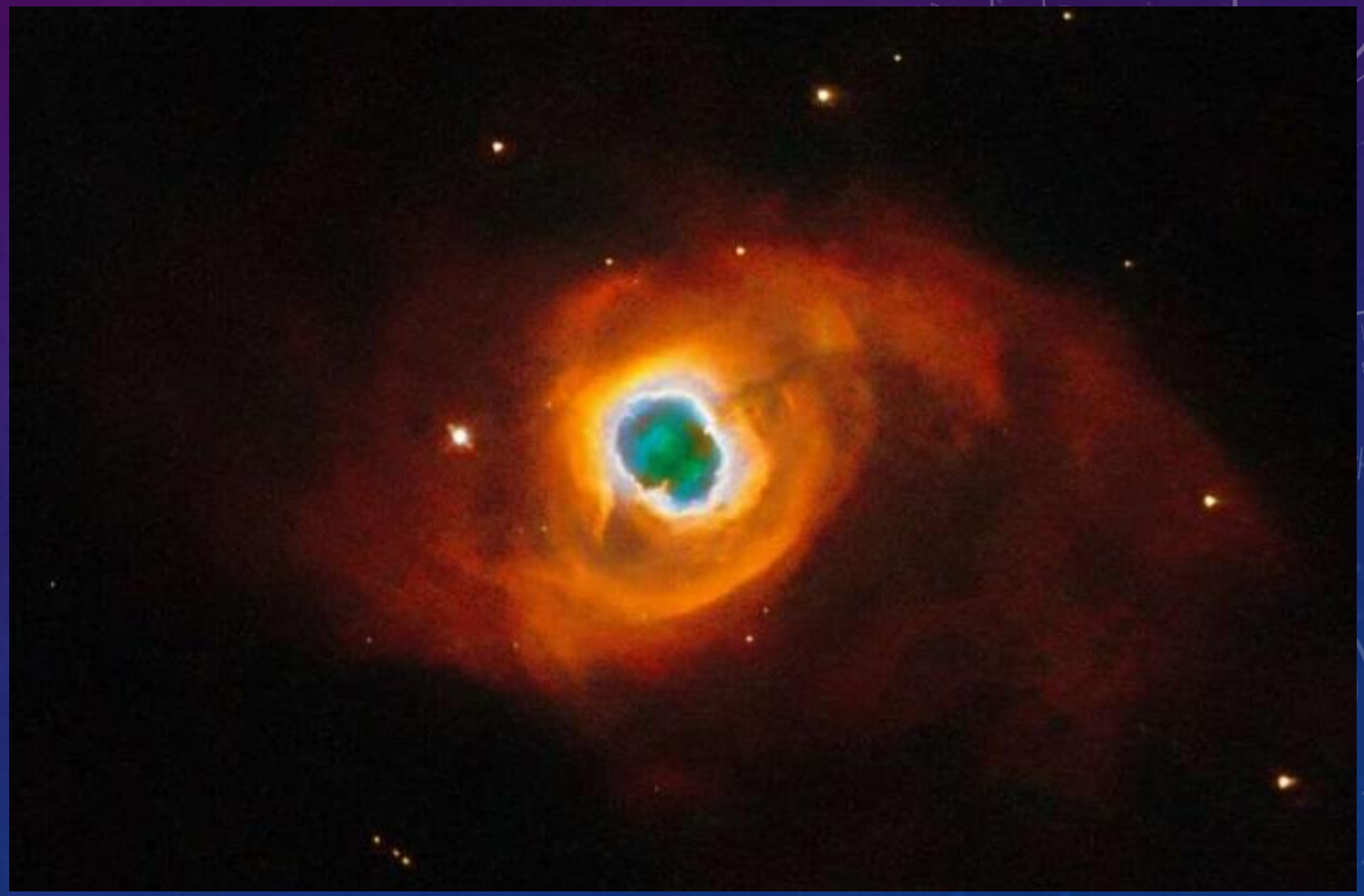
HUBBLE STUDIES A NEARBY GALAXY'S STAR FORMATION

APRIL 9TH

•This NASA/ESA Hubble Space Telescope image features the picturesque spiral galaxy NGC 4941, which lies about 67 million light-years from Earth in the constellation Virgo (The Maiden). Because this galaxy is nearby, cosmically speaking, Hubble's keen instruments are able to pick out exquisite details such as individual star clusters and filamentary clouds of gas and dust.

HUBBLE CAPTURES A STAR'S SWAN SONG IN PLANETARY NEBULA KOHOUTEK 4-55 APRIL 11TH

The swirling, paint-like clouds in the darkness of space in this stunning image seem surreal, like a portal to another world opening up before us. In fact, the subject of this NASA/ESA Hubble Space Telescope image is very real. We are seeing vast clouds of ionized atoms and molecules, thrown into space by a dying star. This is a planetary nebula named Kohoutek 4-55, a member of the Milky Way galaxy situated just 4,600 light-years away in the constellation Cygnus (the Swan).



WEBB BRINGS DYING STARS'S ENERGETIC DISPLAY INTO FULL FOCUS APRIL 15TH

Gas and dust ejected by a dying star at the heart of NGC 1514 came into complete focus thanks to mid-infrared data from the James Webb Space Telescope. Its rings, which are only detected in infrared light, now look like fuzzy clumps arranged in tangled patterns, and a network of clearer holes close to the central stars (yep, stars, what looks like one star at the centre is actually two) shows where faster material punched through.

SHOW AND TELL

SEESTAR S50

The SeeStar has been crafted with three distinct target audiences in mind:

1. Individuals who are new to astronomy and wish to capture real-time images of celestial events and are intimidated with the concept and even the astronomy equipment and processes.

2. Individuals whose confidence and comfort level has grown to the level where they want to take more detailed images and push the exposure time and even thinking about printing their images to show off their successes.

3. Individuals who want to push everything to the highest level and use third party software to enhance their images. They may want schedule a sequence of images for the Seestar to automatically take overnight, while they sleep comfortably in the their warm, bed.

The Seestar's primary goal was with audience 1 in mind, so this quick introduction will take you through those steps so you can take your first images (with as little intimidation as possible). The goal here is quick and simple, and let the Seestar do the work for us. The next slide gives the 12 steps to image, but the following slides go into more detail with each step along with screen images (and some video links) so you can follow along. The first 10 steps are simply getting us to the levelling automation (it is in a different screen location, so that is why there are a 10 steps to get to the correct screen. With practice the leveling process takes about 1 minute or less)

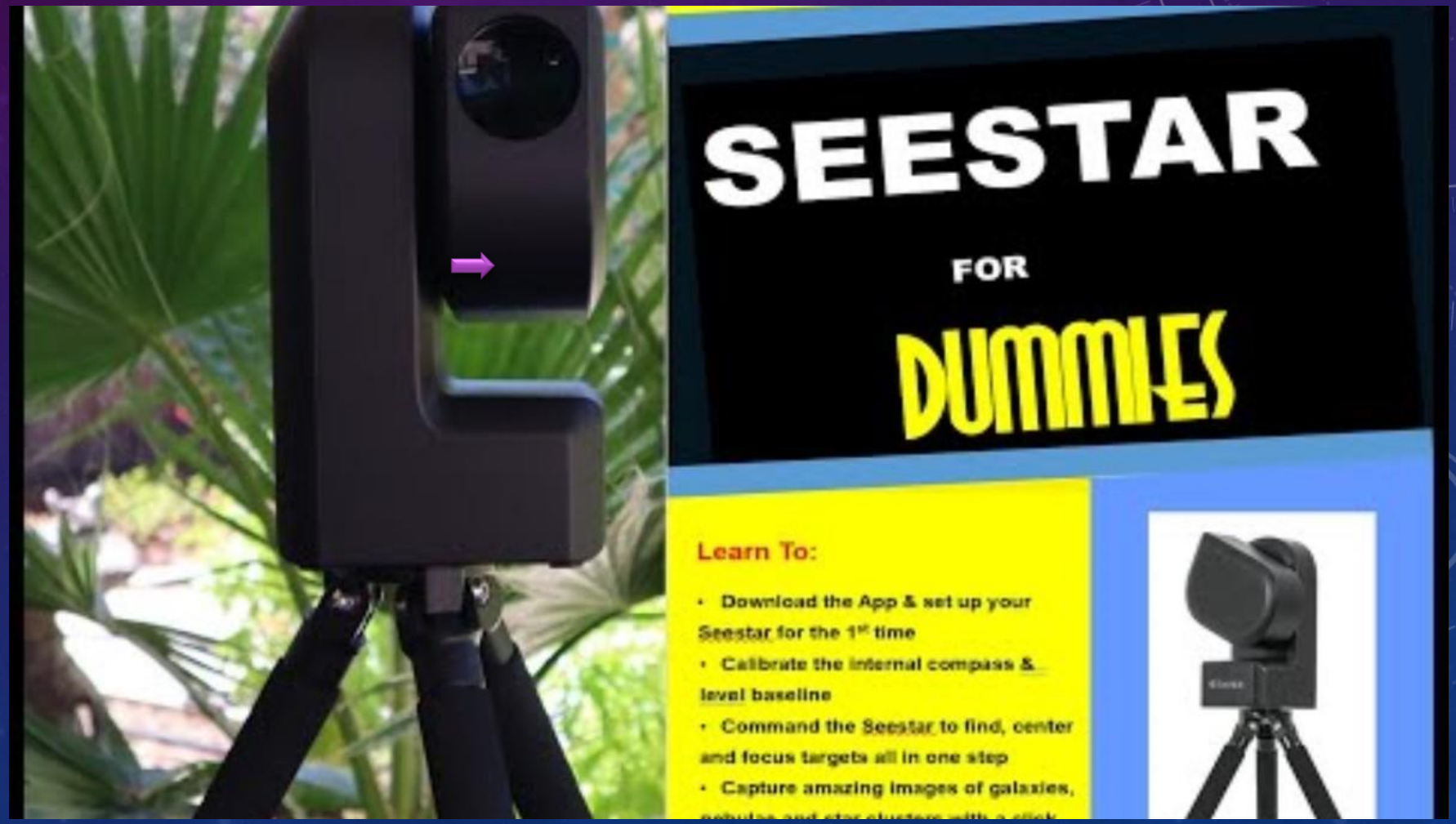
STARTING SEESTAR S50

https://www.youtube.com/watch?v=x3TXn5GT8SQ

Start Video at about 13:30

(the first 13 minutes talks about your first time using and registering your Seestar and how to assign it to your iPad for the first time, we have done that for you).

Next slide will present steps in getting the S50 ready to image.



Step by Step

1. Attach Seestar to leveler and then to the Tripod
2. Hold power button on Seestar until it beeps twice (in about 2 seconds)
3. Start Seestar app on iPad
4. On app, click on the red Connect button
    a) App will display available Seestars, click on red Connect word
    b) On next popup screen, click on Join
5. Click on Open Arm button (remove dust cover after arm has stopped moving)
6. Click on Me icon on bottom on app window (we are now going to get Seestar level)
7. Click on Advanced Features
8. Click on Calibrate
9. Click Adjust Level and adjust the 3 red thumb wheels on tripod until two green balls are mostly aligned
    a) When done, click on the < button on top left of screen enough times until icons appear on bottom
10. Click on the Star button on bottom of app screen to go back to Main screen
11. Click on Stargazing to select object and start imaging (hopefully next month is clear for this demonstration)
12. To power down (put on dust cap), hit the Me icon on bottom of screen
    a) Slide the red “Slide to Shut Down” button to the right (Seestar will close arm and power down)
    b) Shut down app and iPad (you are done like dinner)

1. ATTACH SEESTAR TO LEVELER AND THEN TO THE TRIPOD

- Simply screw in the red leveller onto the tripod (snug but not over tightening it as hard as you can go)
- Now screw the Seestar to the Tripod leveller combo. (again, snug but not overtightened)

Watch the following video for a more detailed instruction. In fact, this this video goes through Steps 1 through 9, but I would watch it for Step 1 in particular:

https://www.youtube.com/watch?v=WJi0Z8Ygbuo

2. HOLD POWER BUTTON ON SEESTAR UNTIL IT BEEPS TWICE (ABOUT 2 SECONDS)

- Just hold in the power button until the Seestar Beeps twice. Then wait about 30 seconds while the Seestar powers up. It will tell you (it actually talks) when it is ready to do the next step (you will hear its motors resetting when it is finished).

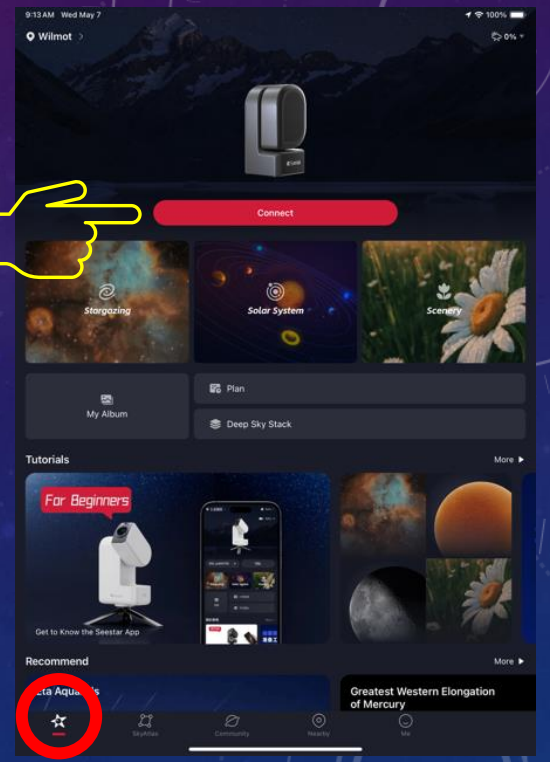
- See video "Seestar for Dummies (3 slides back) video at time: 7:40 -> 7:57
https://www.youtube.com/watch?v=x3TXn5GT8SQ

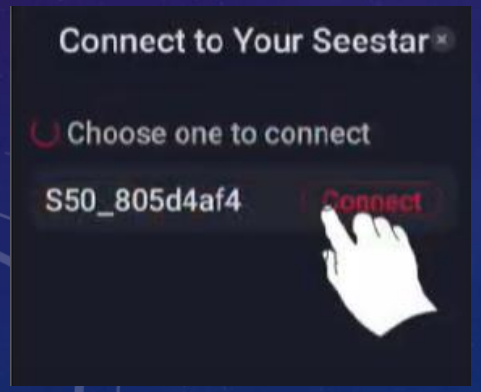
3. START SEESTAR APP ON IPAD

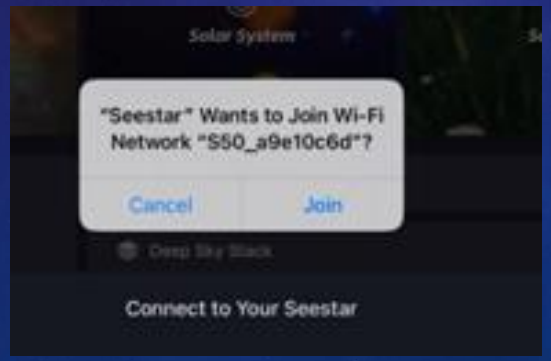
- We have installed the Seestar app on the club's iPad. Just double click on the app icon (looks like a star) to activate the program.

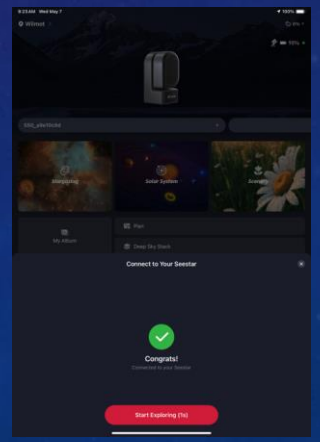
4. WITH APP RUNNING, CLICK ON THE RED CONNECT BUTTON

- The app should start at the main screen. It have a big button that says “Connect”.
- If you do not see the Big Red Connect button, the app is not at the main screen. Don’t worry, just click on the Star icon at the left bottom of your screen, and the Main Menu will be displayed.
- Click on this Connect button to start the connection process to our Seestar. When this button is tapped, the app will look for all of the Seestars around it. There should only be ours, unless you are with other people and they have there own Seestars.
- The app will display a list of Seestars it found under the title “ Choose one to connect”, choose ours (it should be the only one listed) with a red word that says Connect. Press on the Connect word.
- The app just need permission to connect, so click in the Join popup screen. The app will take a few seconds to connect, when done you will see a green congrats check mark on your screen.









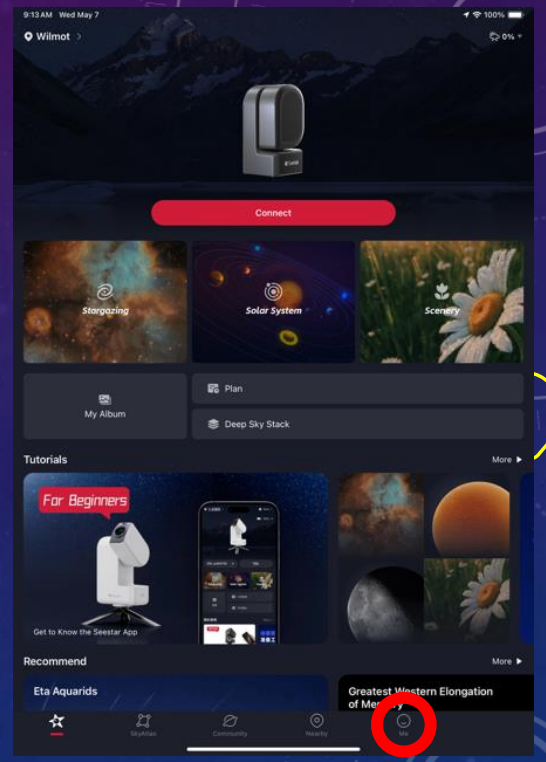
5. CLICK ON OPEN ARM BUTTON (REMOVE DUST COVER AFTER ARM HAS STOPPED MOVING)

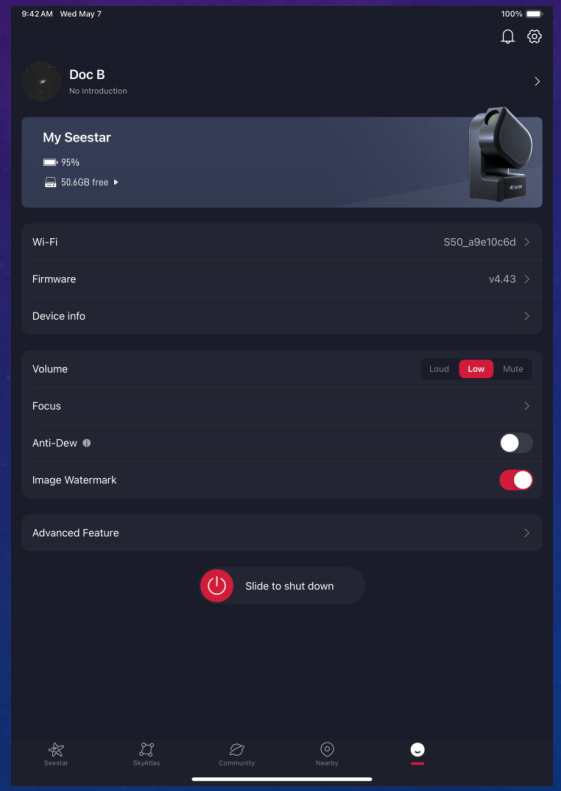
- We now want to remove the dust cap on the Seestar. To do this we need to tell the Seestar to open its arm.
- Click on the Open Arm button of the app.

The Seestar will slowly open its arm. When it has stopped moving (about level to ground), you can remove the dust cap.

6. CLICK ON ME ICON ON BOTTOM ON APP WINDOW

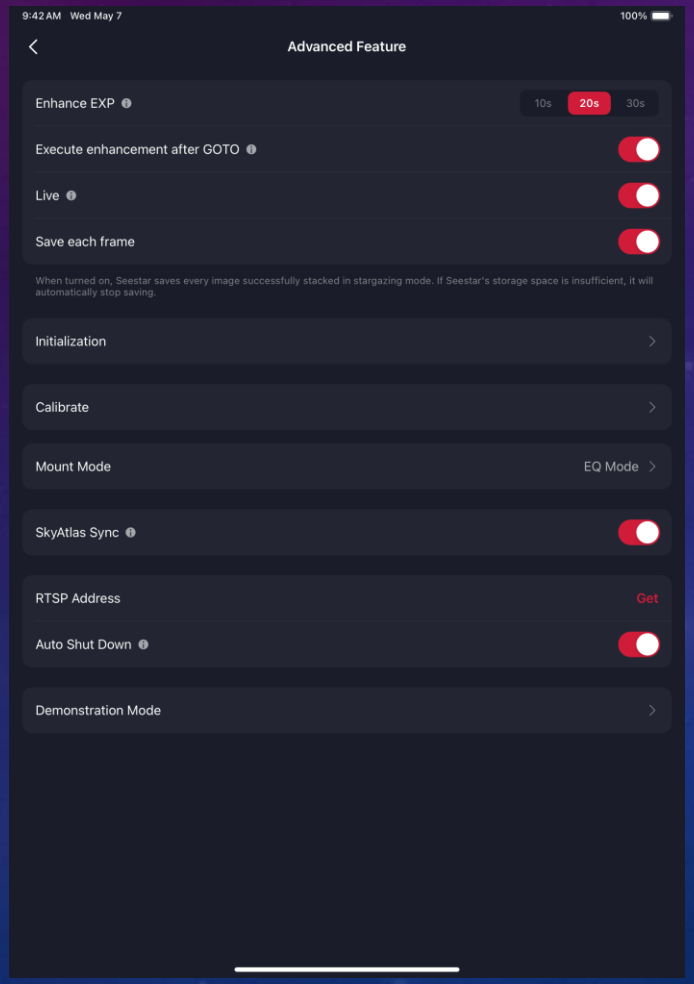
- We now want to level the Seestar. You have the Seestar on a table (or ground), and it looks level, but the Seestar needs to guide you in perfecting the level. We nee to go into the adjustment screen.
- Click on the Me icon on the bottom right of the screen.
- The app will then display the adjustment screen for you.

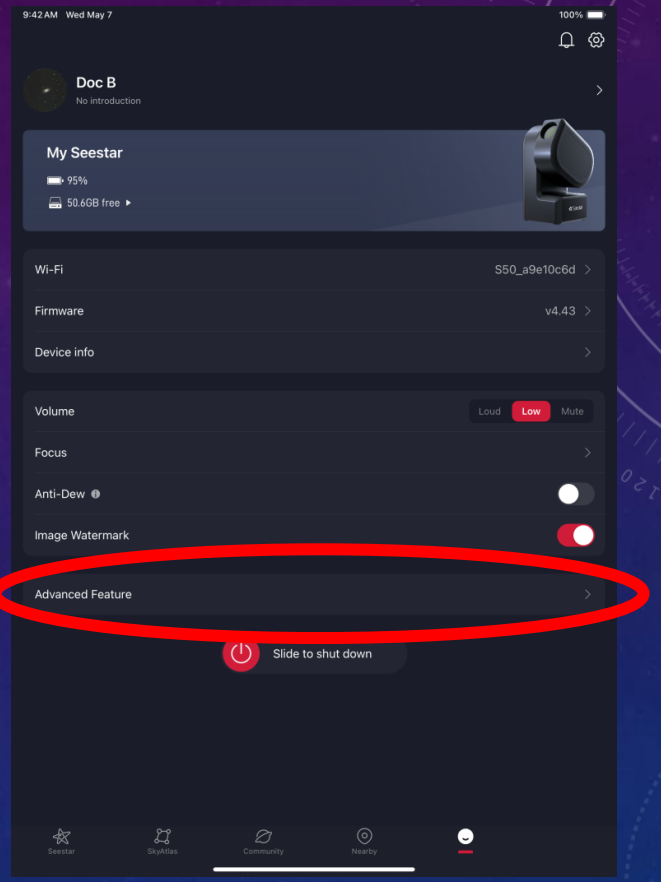




7. CLICK ON ADVANCED FEATURES BUTTON

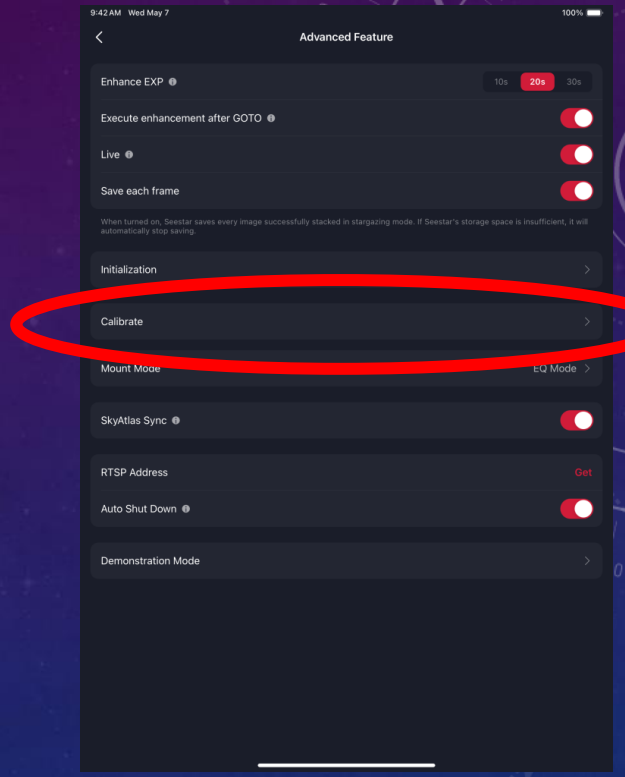
- Click on the Advanced Features “>” to open window.
- The app will then display the Advance Features screen for you.

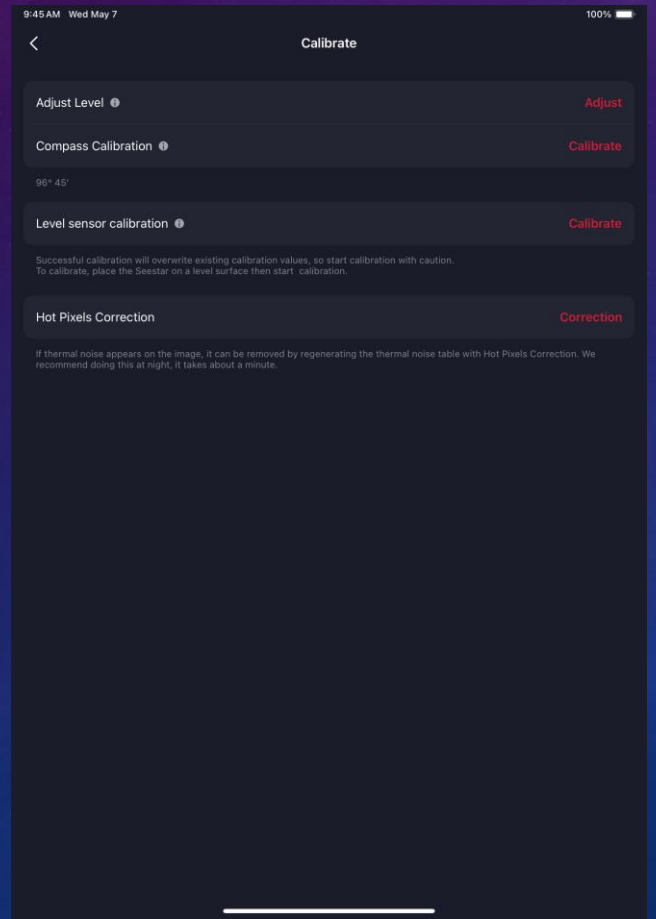




8. CLICK ON CALIBRATE

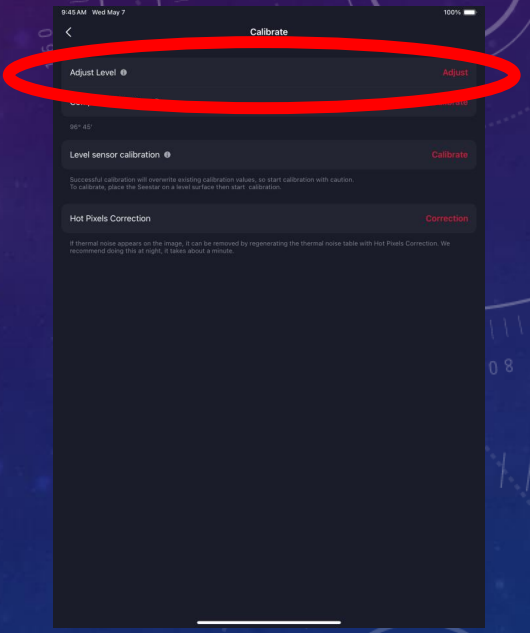
- Click on the Calibrate “>” to open window.
- The app will open up the Calibrate window (the levelling window).

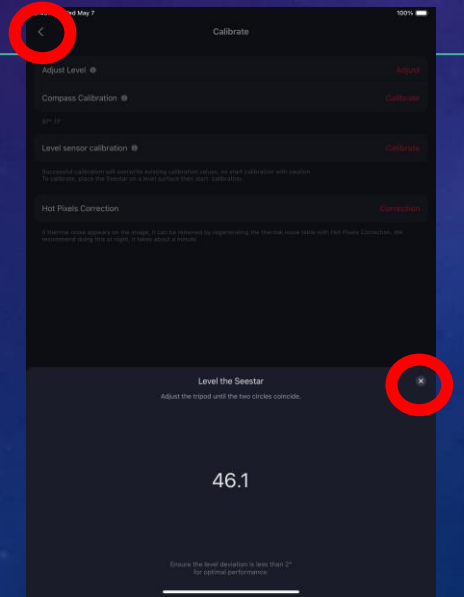




9. CLICK ADJUST LEVEL AND ADJUST THE 3 RED THUMB WHEELS ON TRIPOD UNTIL TWO GREEN BALLS ARE MOSTLY ALIGNED

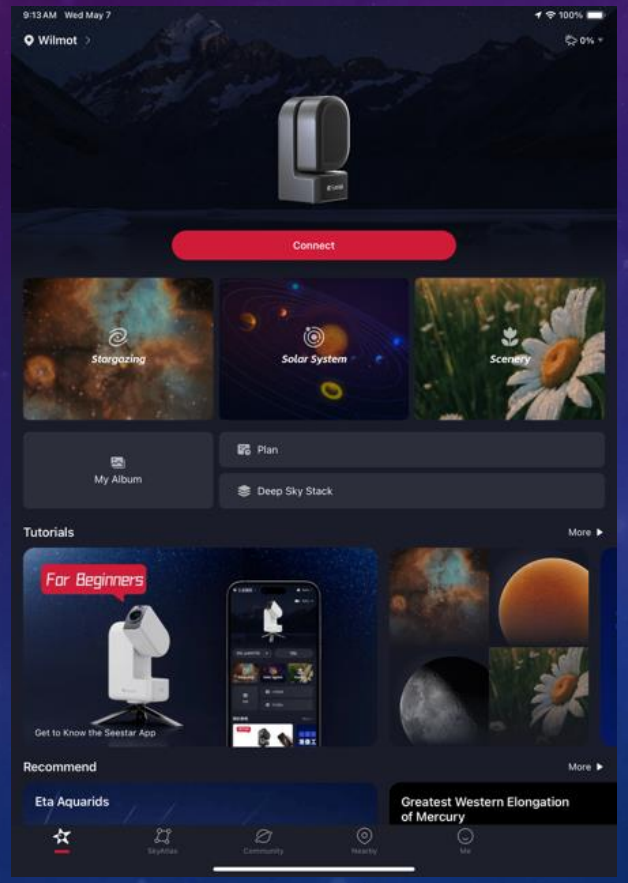
- Click on the word Adjust on the Adjust level
- The app will open up the Levelling window (the levelling window).
- Adjust the three levels on the tripod until you get the two green circles as close together as you can.
- It take a minute to get comfortable with the dials on the leveler but getting a score of 0.5 or better is very good.
- Again, watch Cuiv go through the process on the video :
- https://www.youtube.com/watch?v=WJi0Z8Ygbuo
- Once levelled click on the X to close the levelling box window
- Now on the < button on top left of screen enough times until icons appear on bottom of screen

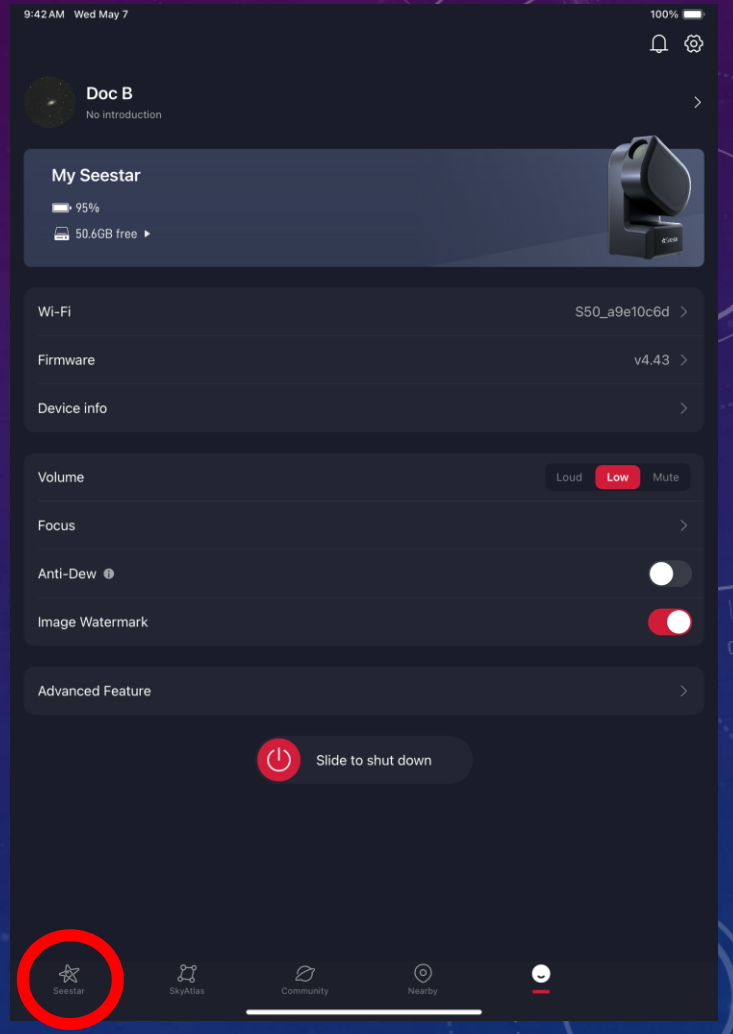




10. CLICK ON THE STAR BUTTON ON BOTTOM SCREEN

- By Clicking on the Star icon on the bottom of the screen you will be taken back to the Main screen.



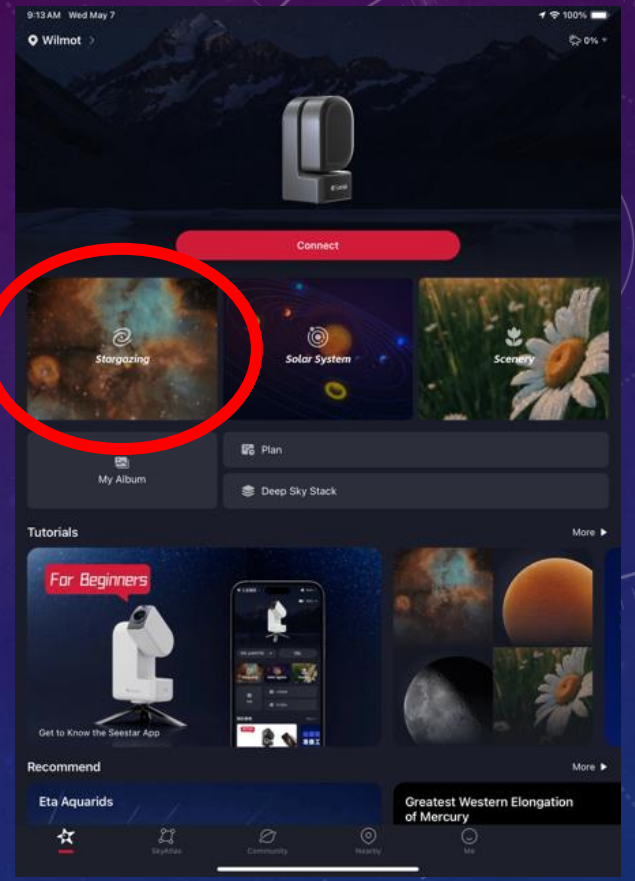


11. CLICK ON STARGAZING TO SELECT OBJECT AND START IMAGING

- By Clicking on the Stargazing picture on top left of window you will be presented with a choice of objects to choose from (tonight's through to planets).

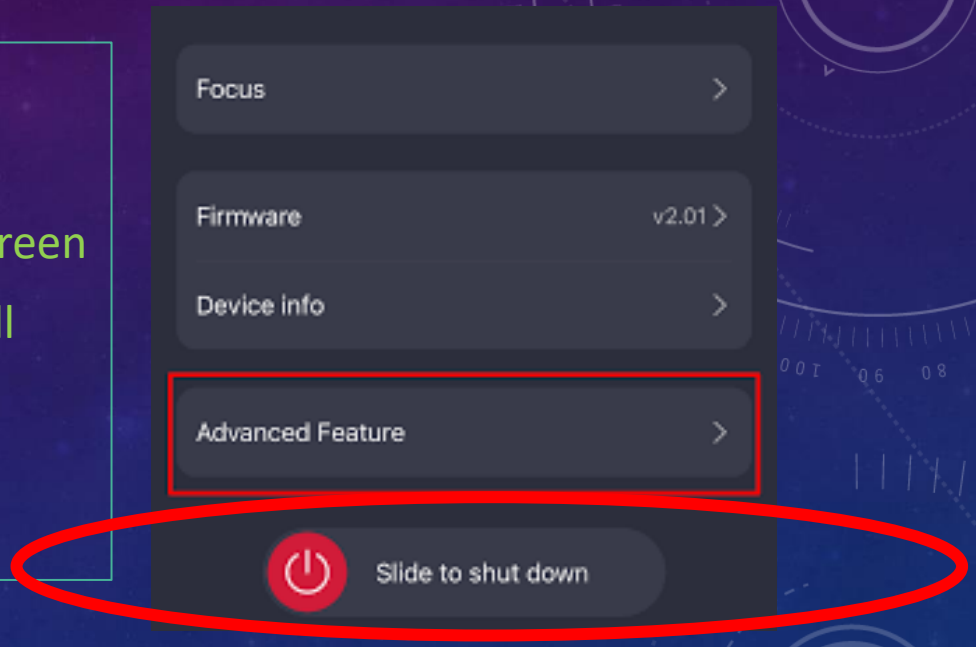
We haven't had time to go outside and demonstrate what to do. But visit the Seestar for Dummies video and watch from 24:40 to 28:40 where he demonstrates how to image an object.

https://www.youtube.com/watch?v=x3TXn5GT8SQ



12. TO POWER DOWN THE SEESTAR

1. You have taken you image and it now time to shutdown the Seestar.
   a) Put on the Dust Cap on the Seestar
   b) Locate and press Me icon on bottom of screen to go to setting screen
   c) Slide the red “Slide to Shut Down” button to the right (Seestar will close arm and power down)
   d) Shut down app and iPad (you are done like dinner)



COSMOLOGY TALK