Howard Astronomical League Monthly Meeting

November 16th, 2023

Tonight's Agenda, November 16th, 2023

- Introductions
- Announcements
  - 2024 HAL Board of Director Elections
  - Star Parties & Outreach
  - Book of the month – Krystal Rolon
- Featured speaker – Dr. Debra Buczkowski, JHU-APL
- What's Out in the Sky This Month…
  - Shallow Sky – Jim Tomney
  - Space-Based Astronomy – Wayne Baggett
- Members' Astro-Images and Sketches
- Wrap-up & Discussion

2024 HAL Elections

Election Committee Chair: Jim Johnson

Elections held at the January 18th, 2024 HAL annual meeting to elect the 2024 Board of Directors

President	2nd Vice President	Treasurer
1st Vice President	Secretary	Event Coordinator

All offices are considered open to all interested HAL members. Send nominations (self or others) to election@howardastro.org by 7pm on January 17th, 2024

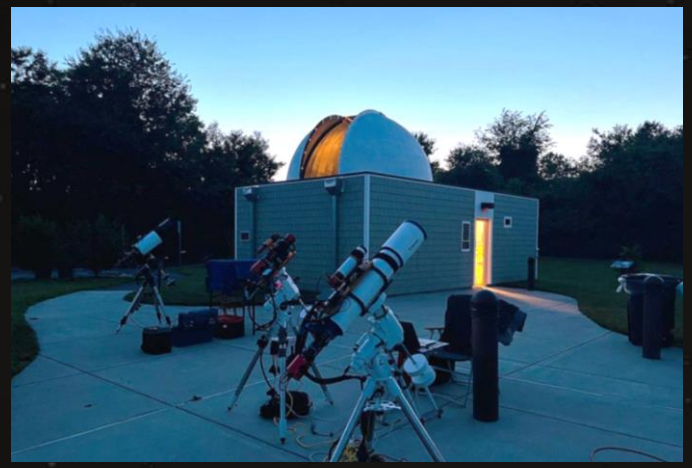
New Board's term begins February 1st, 2024

Star Parties…

HAL's 2024 Scheduled Star Parties (Stay Tuned for Date Announcement/s)

Month	Date	Invitees
March	18	Members
March	25	Public
April	15	Members
April	22	Public
May	[illegible]	[illegible]mbers
May	27	Public
June	[illegible]	Members
June	24	Public
July	[illegible]	Members
July	22	Public
August	12	Members
August	26	Public
September	9	Members
September	23	Public
October	14	Members
October	21	Public
November	04	Members
November	11	Public

TBD



Note about Impromptu Star Parties & "Remote" Impromptu Star Parties

Don't forget to keep an eye out for impromptu events as we are due for some good weather

Note: if you're not already on the impromptu mailing list and would like to join there are instructions on the howardastro.org

Impromptu Mailing List (howardastro.org)

(you can find a link to this page from the website home page under the "Hal Info" dropdown menu)

Regional Star Party info…
https://skyandtelescope.org/astronomy-resources/annual-stargazing-events/

Nov. 11th Public Star Party at Alpha Ridge

Book of the Month

Title:

- Space Exploration: A History in 100 Objects

Author:

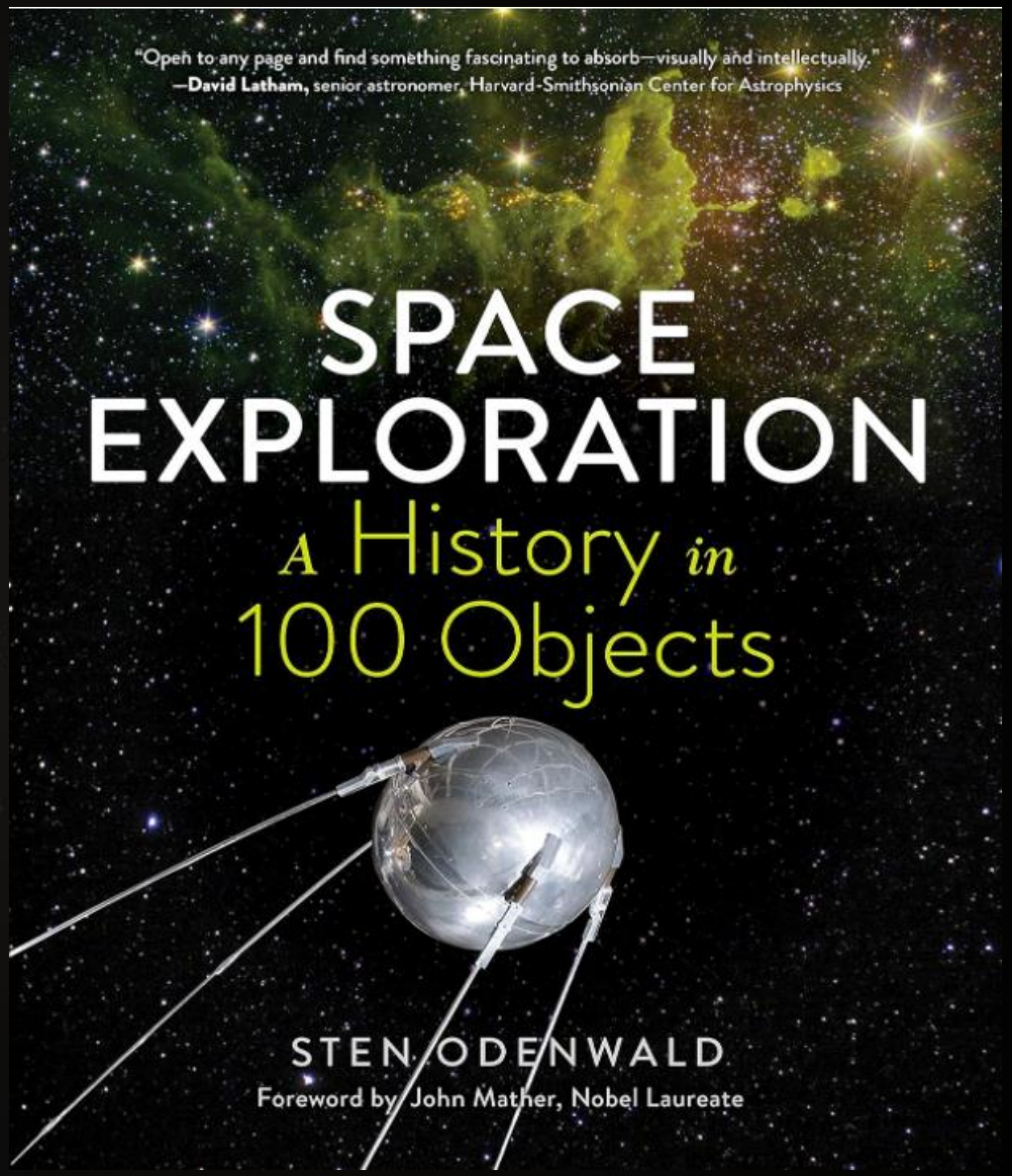
- Sten Odenwald

Length:

- 224 pages

Audience Level:

- Beginner Friendly
- Intermediate
- Advance/Experienced



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Debra Buczkowski

Johns Hopkins Applied Physics Laboratory

Principal Professional Staff

Space Exploration Sector
Research Branch
Moon and Rocky Planets Group
Planetary Surface Geology Section

Dr. Debra Buczkowski - Senior Staff Scientist Johns Hopkins Applied Physics Laboratory

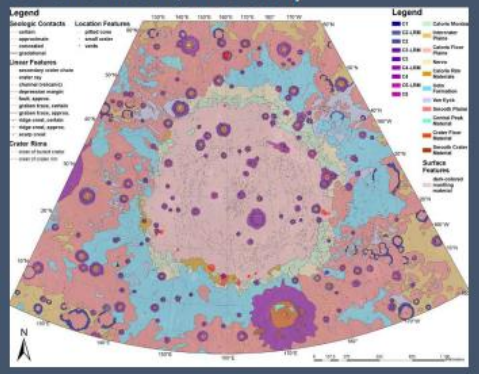
Venus Tectonism

Debra Buczkowski

- Dr. Buczkowski is a structural geologist and planetary geologic mapper who has completed projects on the rocky bodies of the Solar System, including Mercury, Venus, the Moon, Mars, Eros, Vesta and Ceres (and Earth!).

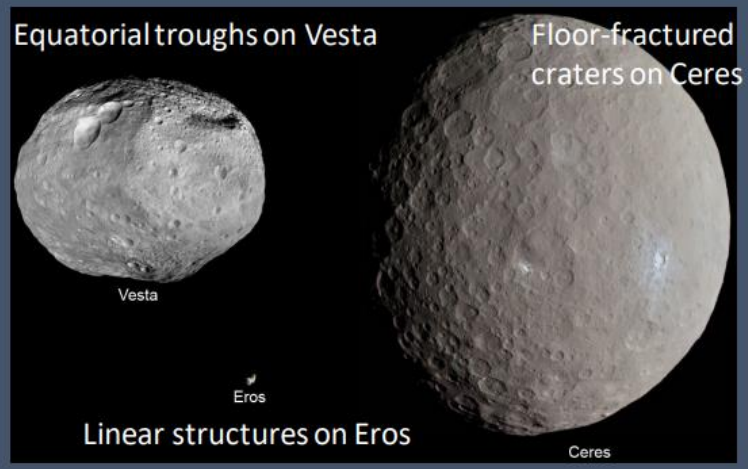
Research: structural analysis and geologic mapping of rocky planetary bodies

Caloris basin, Mercury



Equatorial troughs on Vesta

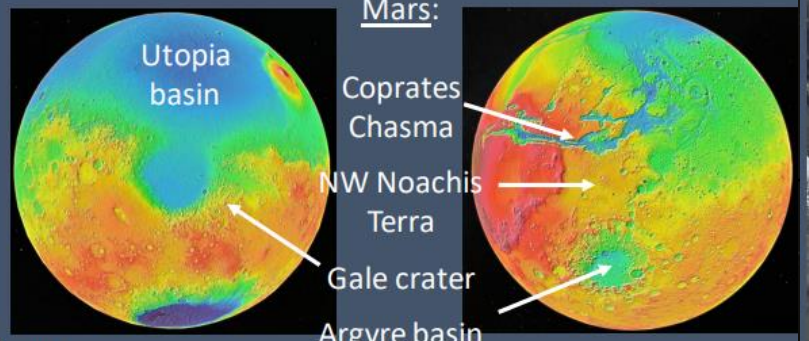
Floor-fractured craters on Ceres



Linear structures on Eros

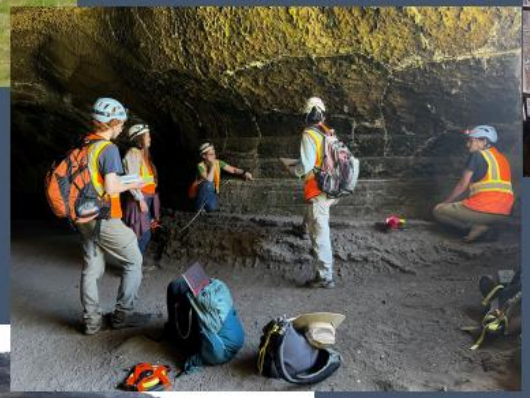
Irnini Mons and Lachesis Tessera, Venus

Mars:



Field work in Montana

Field work in Lavabeds National Monument



At Meteor Crater, Arizona

Layered volcanic flow materials on Oahu

Field work in Iceland

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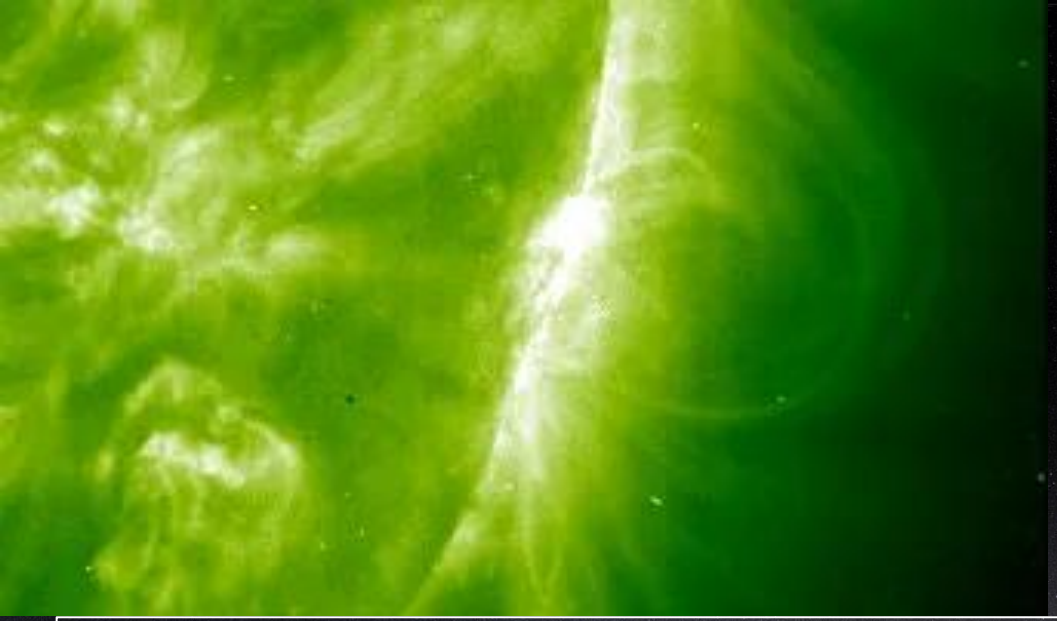


Solar Flares

The most powerful flare measured with modern methods was in 2003, during the last solar maximum, and it was so powerful that it overloaded the sensors measuring it. The sensors cut out at X28. Later estimated to be about X45.
SOHO/EIT (ESA & NASA)

Solar Flare Classes
X – Can create long lasting radiation storms which can harm satellites, airplanes flying near the poles, potential to create global transmission problems, and worldwide blackouts.
M – Can cause brief radio blackouts at the poles and minor radiation storms that might endanger astronauts.
C – Too weak to noticeably affect earth
B – Very weak
A - Weakest

An X-class flare produces 10 times the energy output of a C-class flare and 100 times the energy output of an M-class flare.

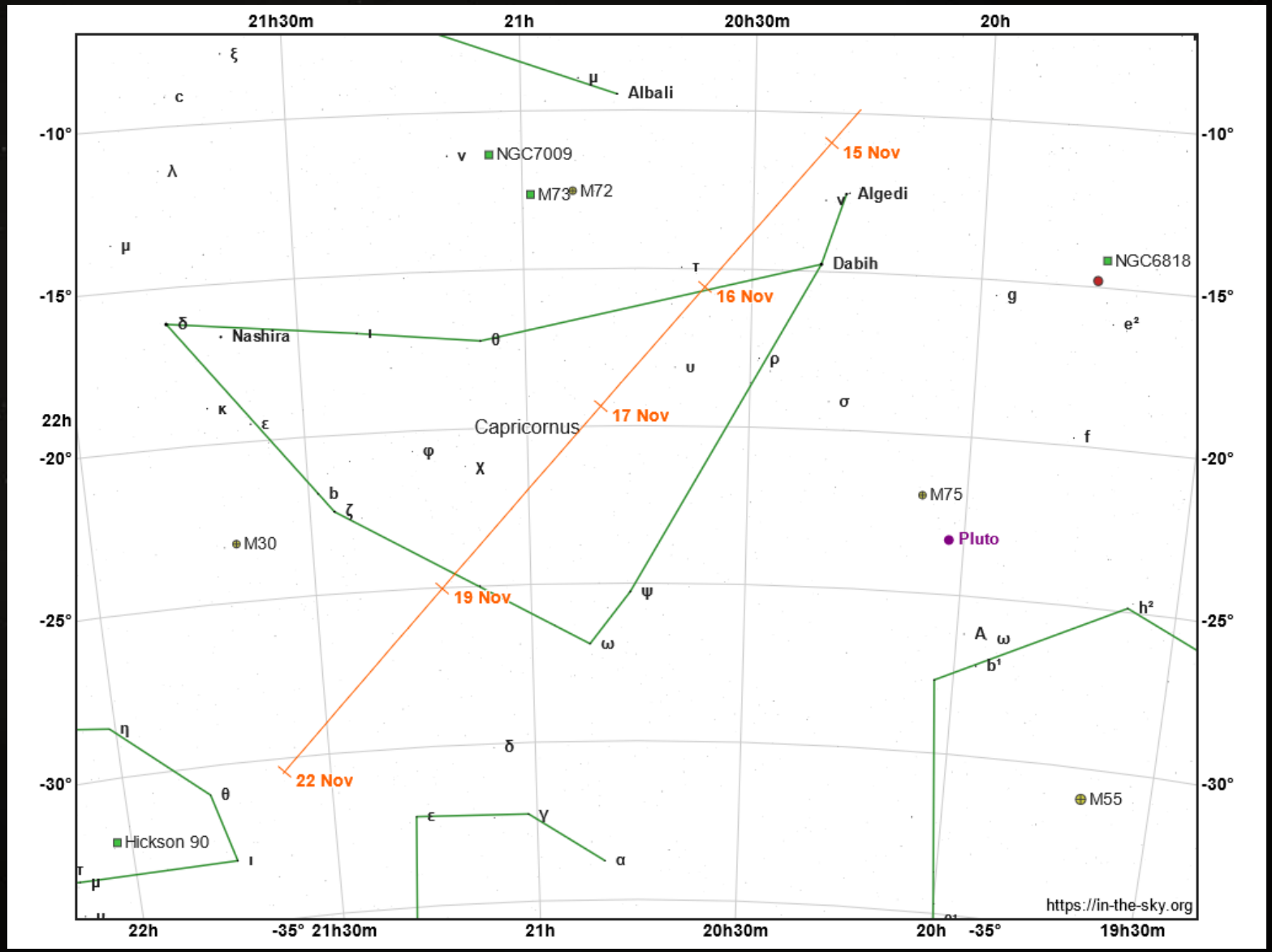
The energy release during a flare is typically on the order of 10^{27} ergs per second. Large flares emit up to 10^{32} ergs of energy.
Ten million times the energy released from a volcanic explosion. Less than one-tenth of the total energy of the Sun released every second.

Shallow Sky Highlights for Nov-Dec 2023

- *Mercury & Mars poor targets currently*
- *Venus continues to be a great pre-dawn object, still 40°+ in western elongation. It's gibbous phase will shrink some over the next 4 weeks from 22" to 18".*
- *Jupiter reached opposition amid Aries on Nov 3rd and is a prime observing target. You may want to consider trying to catch the GRS – it may be one day that you'll tell your grandkids how you got to see it before it shrank into oblivion ☺*
- *Saturn is still a great target but now is past the meridian once it emerges from twilight. The planet's tilt continues to close up the rings to our view, so get your fix now as next season it'll be hard to even discern Cassini's division*
- *Leonid Meteor Shower will occur this Friday night. While not as prolific as the Perseids or Geminids, it is a proven performer with roughly 10-15 meteors per hour. Best time is 2-5 a.m., so cancel your plans for Saturday morning so you can sleep in 😌*

Comet C/2023 H2 (Lemmon)

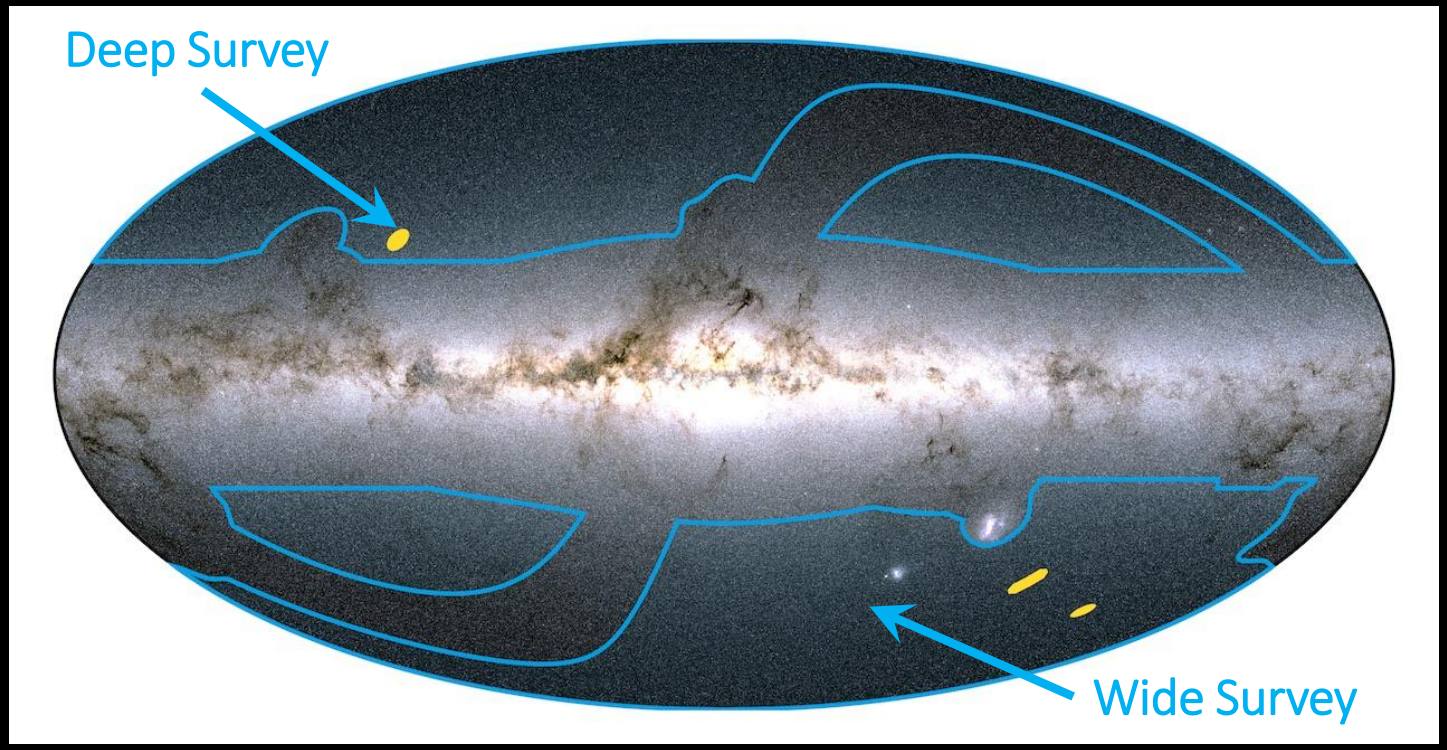
Date	Mag
2023 Nov 15	6.2
2023 Nov 17	6.7
2023 Nov 22	7.9
2023 Nov 27	9.0
2023 Dec 1	9.7



What's Up in Space: Euclid's First Science Images

- Euclid released its first science images on November 7, 2023
  - European Space Agency (ESA) mission with contributions from NASA
  - Launched to Sun-Earth L2 on July 1, 2023 on a SpaceX Falcon 9
  - Mission is to survey 1/3 of sky to deep limits over six years
    - Purpose is to learn about Dark Matter and Dark Energy
    - Will create the largest 3D map of the Universe yet made
- Two instruments
  - Visible Instrument, VIS
    - Sees 100x more area than JWST NIRCam
  - Near-Infrared Spectrometer and Photometer, NISP

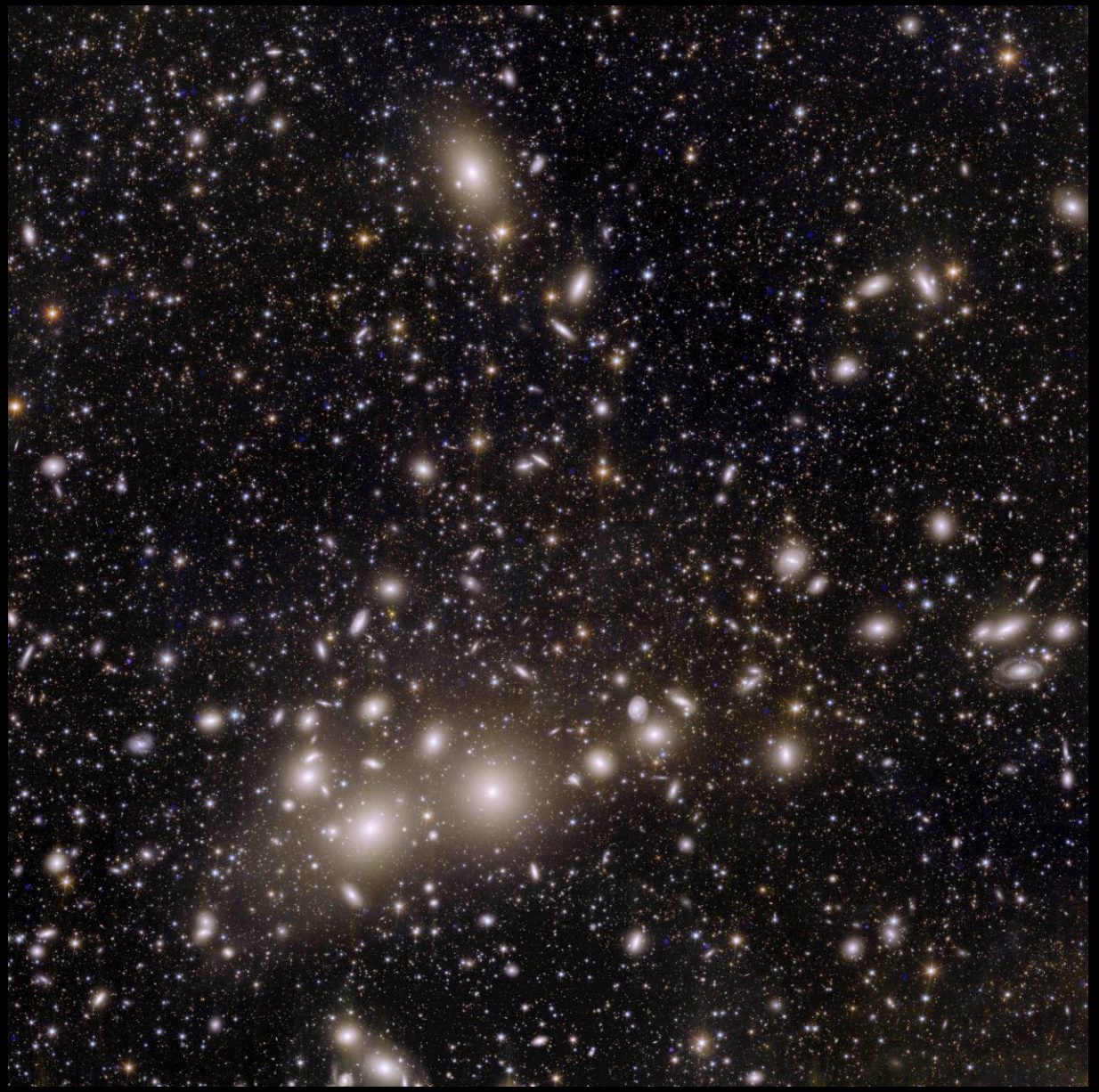
ESA/Gaia/DPAC; Euclid Consortium



What's Up in Space: Euclid's First Science Images

Perseus Cluster of Galaxies

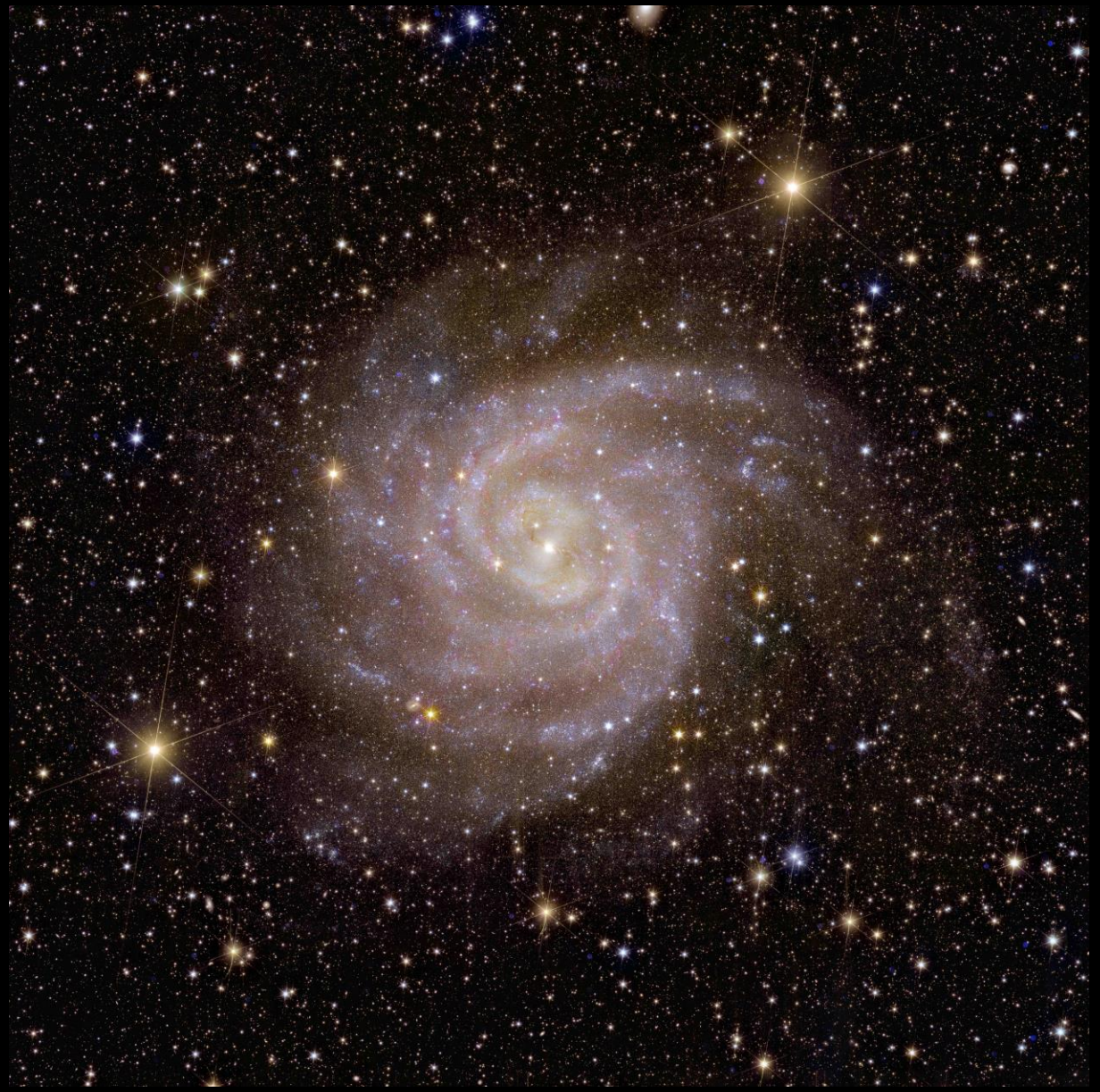
- Perseus Cluster is 240 million light years distant
- Taken with VIS and NISP
  - 0.7, 1.1, and 1.7 μm filters
    - About five hours of exposure time
    - Hα is in the blue channel!
- Shows thousands of galaxies, many never before observed
- Distortions in background galaxies provide information about Dark Matter via weak lensing



What's Up in Space: Euclid's First Science Images

Spiral Galaxy IC 342

- IC 342, the "Hidden Galaxy," lies behind Milky Way dust
  - As large as the Full Moon in the sky
- Taken with VIS and NISP
  - **0.7, 1.1, and 1.7 μm filters**
  - **About 1 hour of exposure time**
- The wide-field view allows detailed study of the star formation history
- Mapping galaxies through space shows us the distribution of Dark Matter



What's Up in Space: Euclid's First Science Images

Globular Cluster NGC 6397

- Globular cluster in the Milky Way
  - 7800ly from the Sun
- Taken with VIS and NISP
  - **0.7, 1.1, and 1.7 μm filters**
  - **About 1 hour of exposure time**
- Images of globular clusters will be used to look for "tidal tails"➔ prior interactions with their host galaxy
- Lack of tidal tails might indicate Dark Matter haloes around the cluster

What's Up in Space: Euclid's First Science Images

Horsehead Nebula (Barnard 33)

- Taken with VIS and NISP
  - 0.7, 1.1, and 1.7 μm filters
  - About 1 hour of exposure time
  - Hα is in the blue channel!
- Astronomers hope to find many Jupiter-sized planets and brown dwarfs in these observations

The ESA website for this release is

https://www.esa.int/Science_Exploration/Space_Science/Euclid/Euclid_s_first_images_the_dazzling_edge_of_darkness

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Jared Case

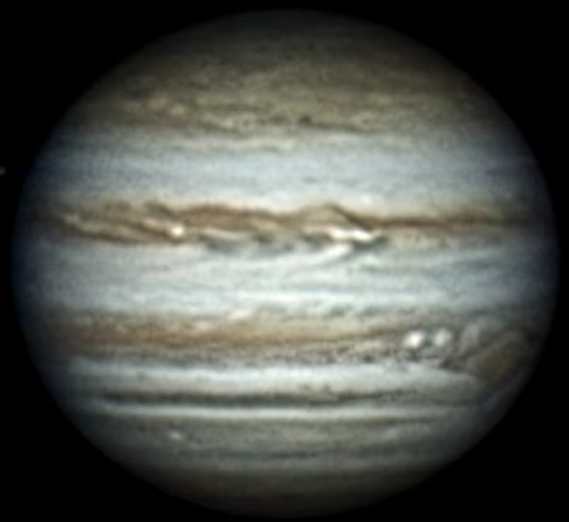

Jared Case

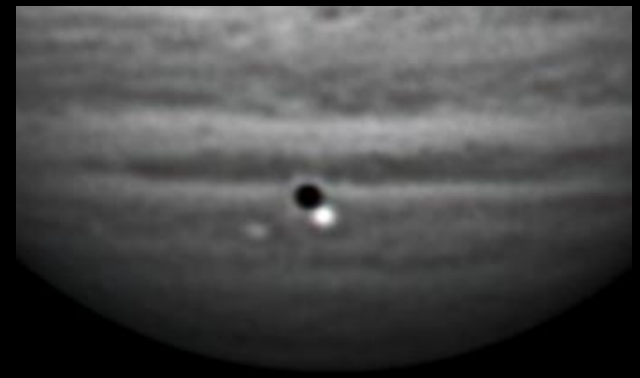
Travis Totten

Travis Totten

Jupiter at Opposition





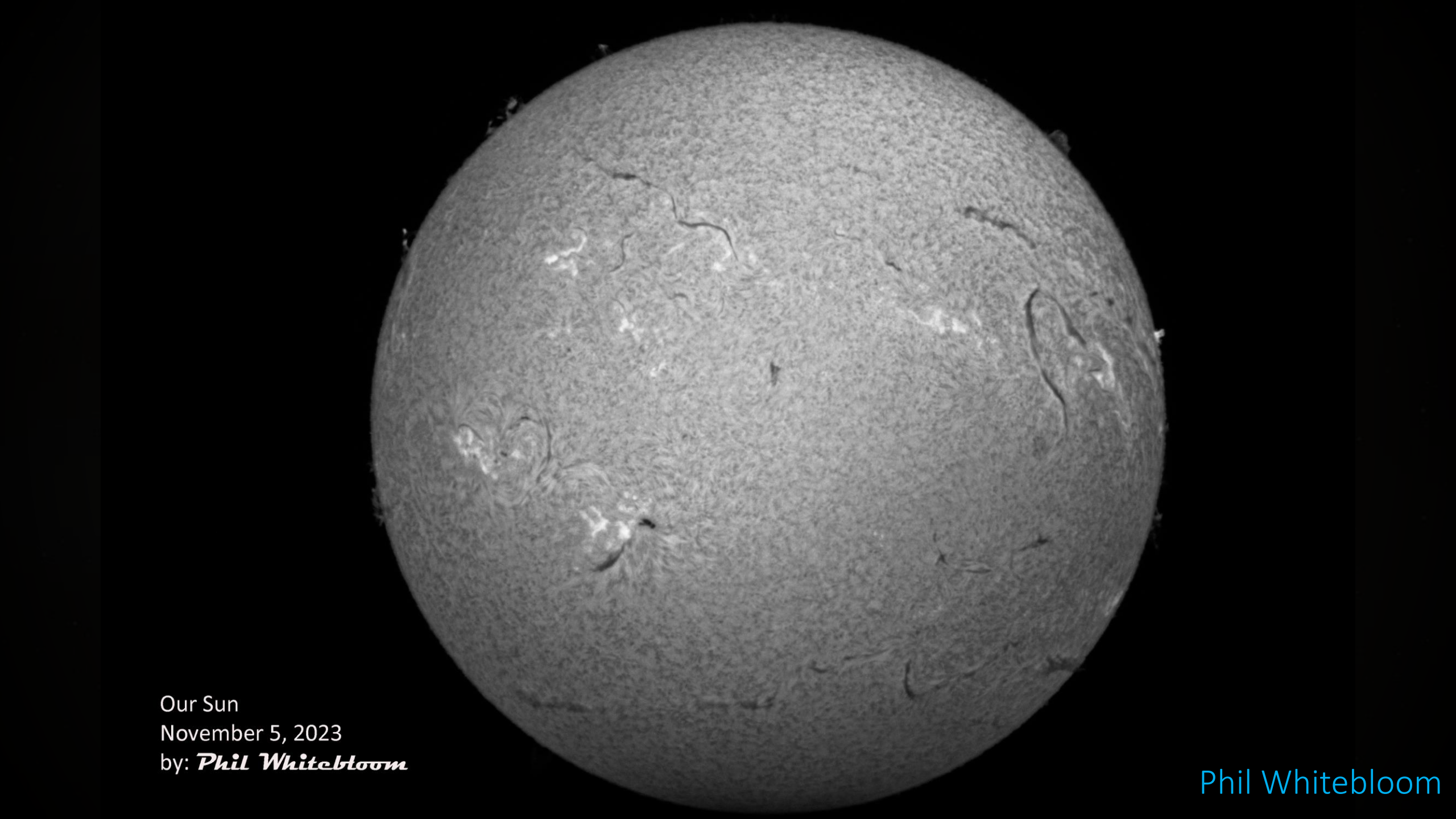
Jim Tomney

Annular Solar Eclipse

October 14, 2023

Albuquerque, NM

Jim Tomney



Our Sun
November 5, 2023
by: Phil Whitebloom

Phil Whitebloom

James Willinghan

James Willinghan

C2023 H2 (Lemmon) showing the tail

IC1396 32 sec exposures with C-14 at f/2 with Hyperstar
Optolong Extreme filter
10 section mosaic

7, 13 Nov 2023

ZWO2600MC

Steven Gauss


Jim Johnson


Victor Sanchez

Victor Sanchez