NISE Net Online Workshop

Webb Space Telescope First Images - How to Engage Audiences with New Discoveries

August 2, 2022

Today's Presenters:

Christopher Britt, PhD, Space Telescope Science Institute, Baltimore, MD

Yesenia Perez, Space Telescope Science Institute, Baltimore, MD

Welcome!

As we wait to get started with today's discussion, please:

Introduce yourself! Type your name, institution, and location into the Chat Box

Questions? Feel free to type your questions into the Chat Box at any time throughout the webinar or use the raise your hand function in the participants list and we'll unmute your microphone.

Today's discussion will be recorded and shared on nisenet.org at: nisenet.org/events/online-workshop

Future Online Workshops

See you later this fall!

Tuesday, October 25, 2022

Kick-Start Your Planning for 2023 and 2024 Solar Eclipse Events

Solar Eclipse Resources:
https://www.nisenet.org/solareclipse

Learn more at nisenet.org/events

NISE NETWORK
ONLINE WORKSHOPS

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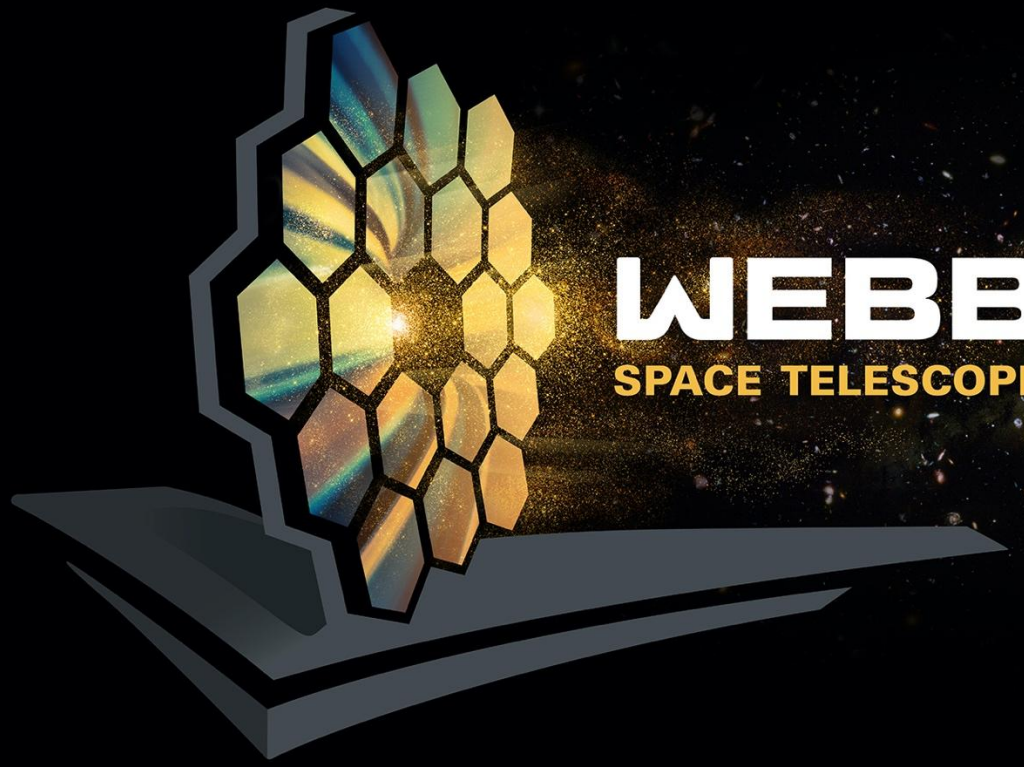
Icebreaker in the chat:

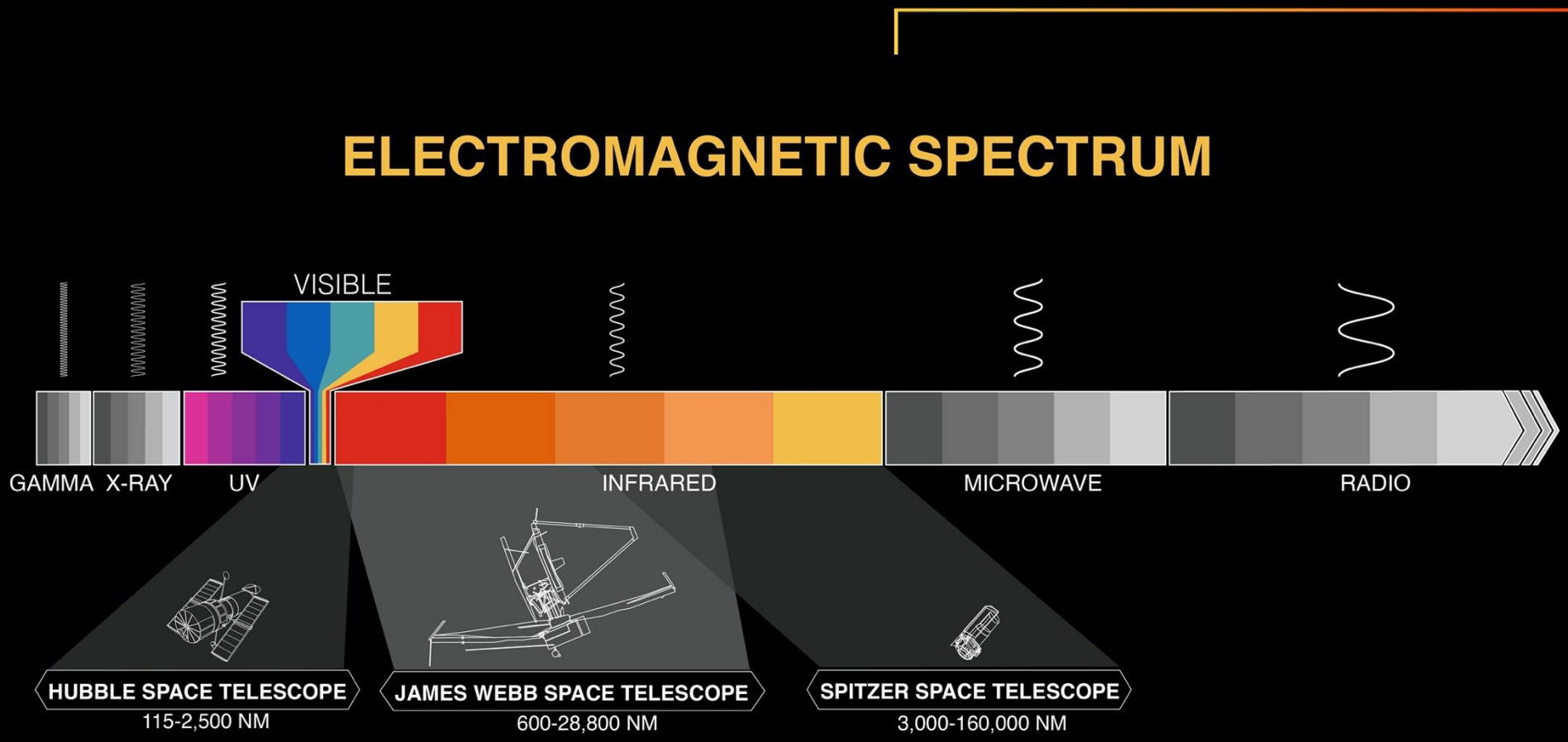
If you held an event for the first image release or are using the images to engage public audiences, can you please tell us about it?



Unfold the Universe with the Webb Space Telescope

Dr. Christopher Britt
Space Telescope Science Institute

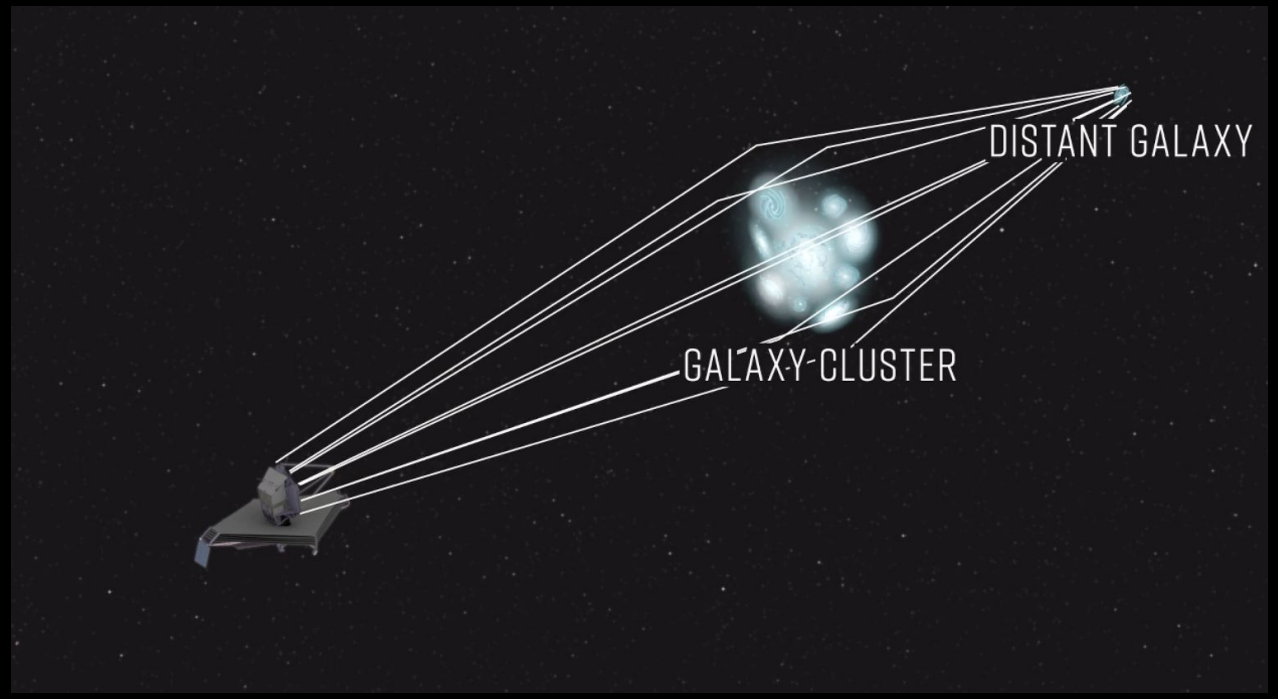
Webb's Specialization in Infrared Light



Webb's First Deep Field
SMACS 0723

Near-Infrared Light
NIRCam Image

The power of gravitational lensing

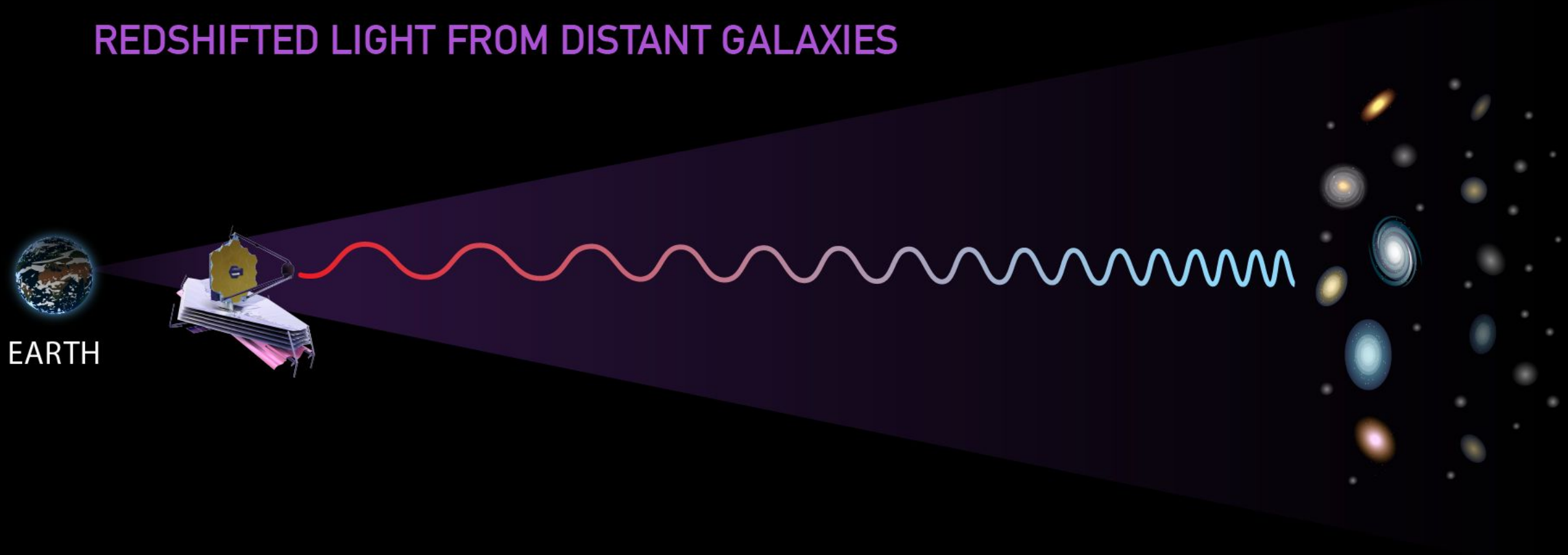


SMACS 0723 (NIRCam)

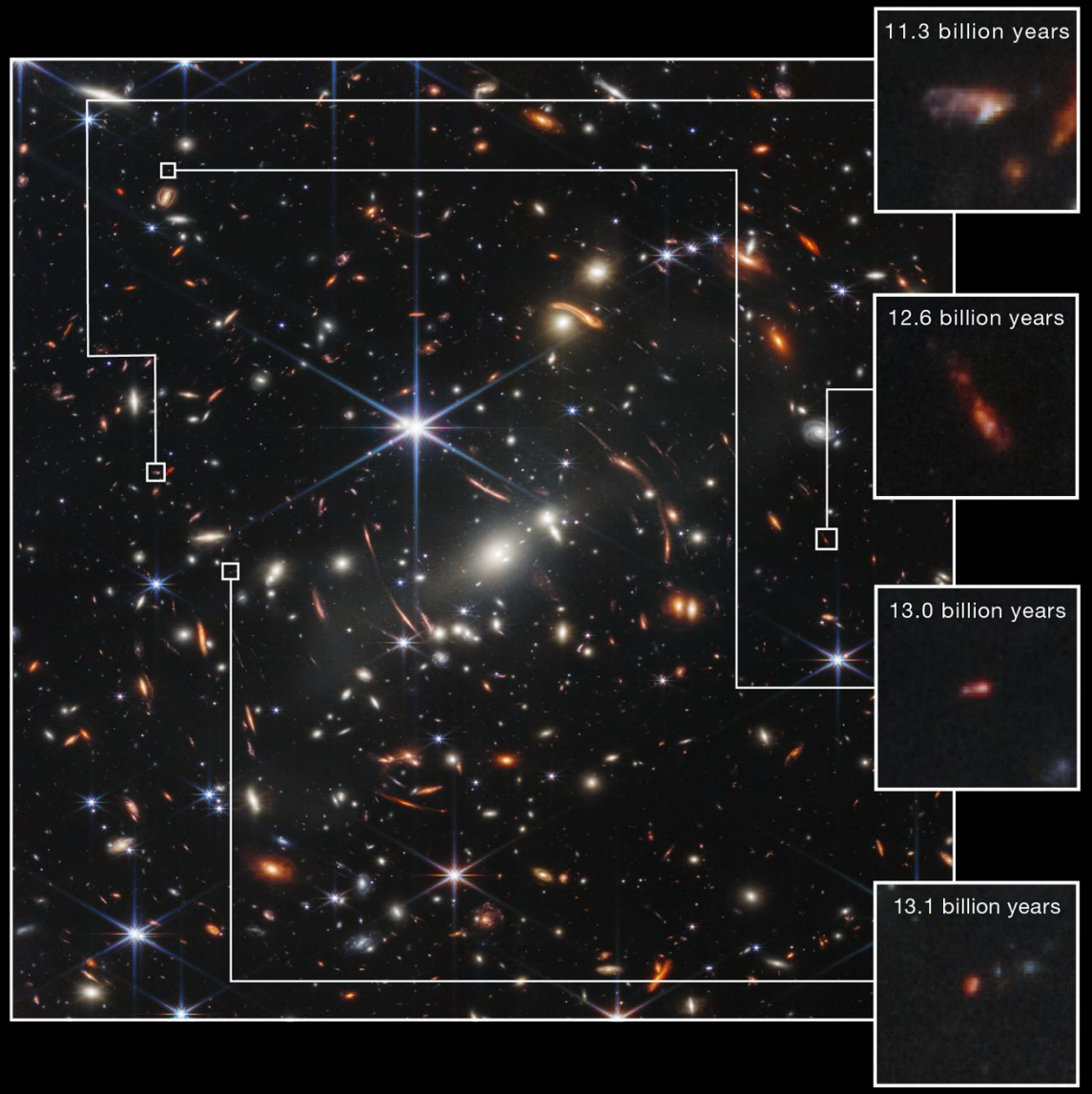
Light is bent, stretched and magnified.
-- can resolve individual star forming regions in giant arcs
-- makes intrinsically faint, distant galaxies appear brighter

Giant arcs: lens magnified galaxies behind the cluster

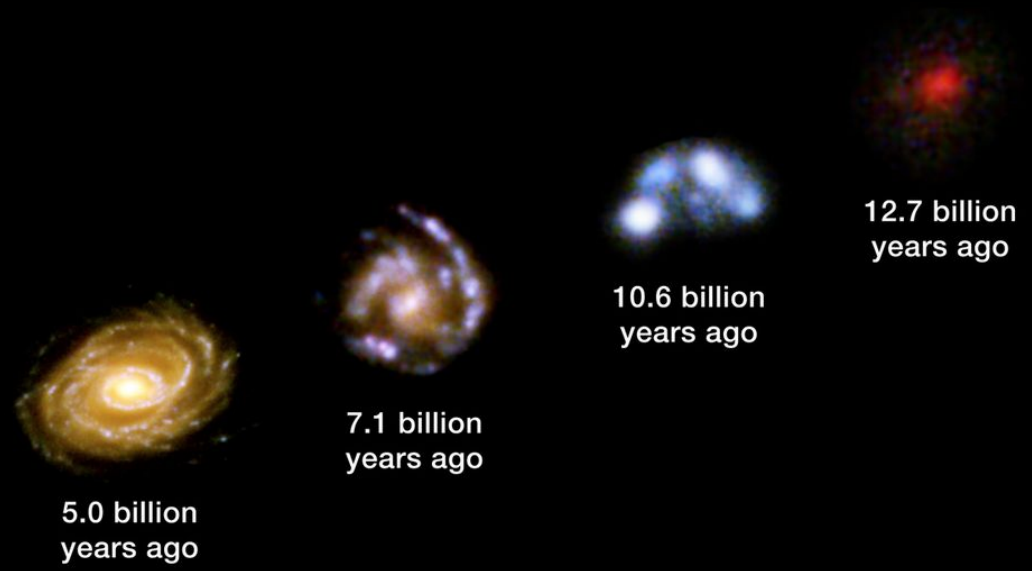
Observing the Ancient Universe



NIRCam Imaging



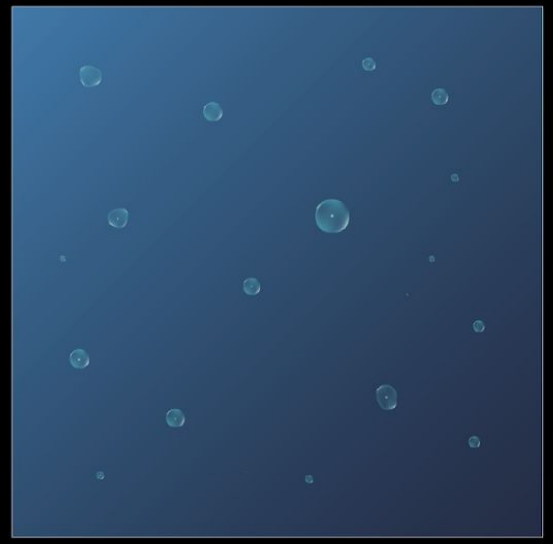
A “Flipbook” of Galaxies over Time



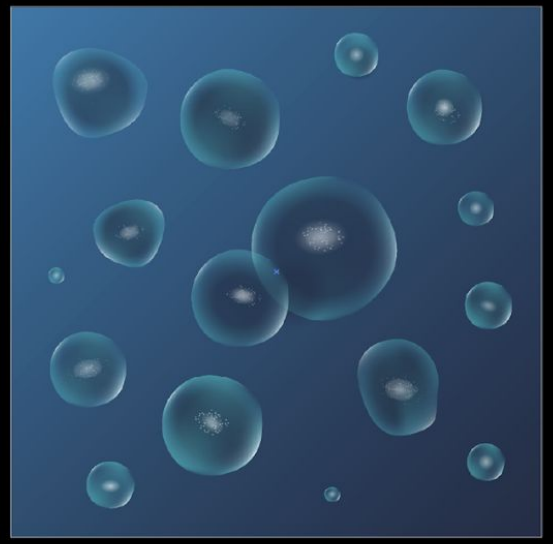
WEBB
SPACE TELESCOPE

Crisscrossing the Early Universe

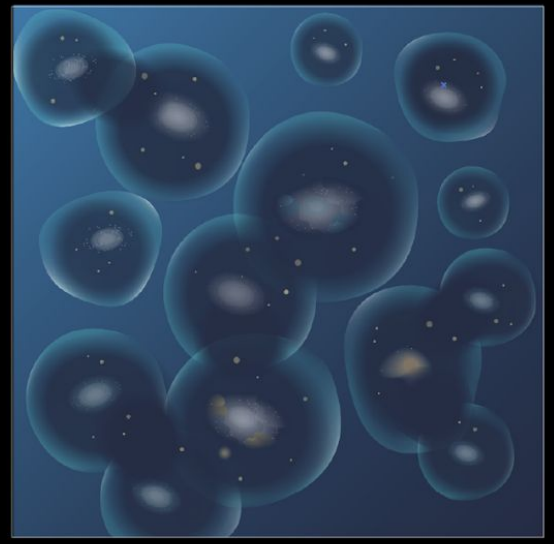
Beginning of reionization



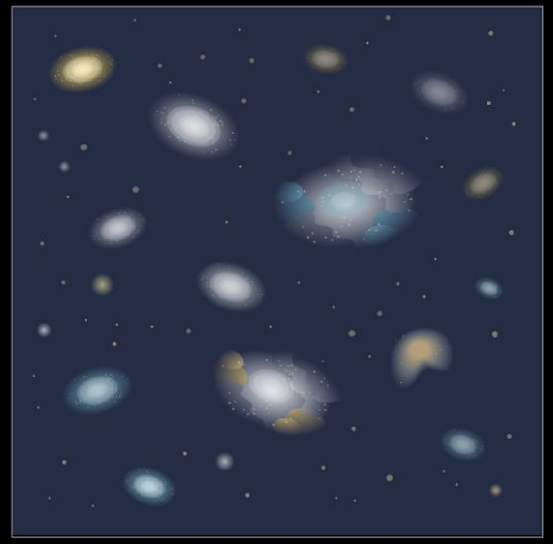
Stars begin forming, heating gas



Stars assemble into galaxies



Galaxies become more massive



Clear universe, end of reionization

Present day


Image credit: NASA/Apollo 17 crew; Schmitt/Evans

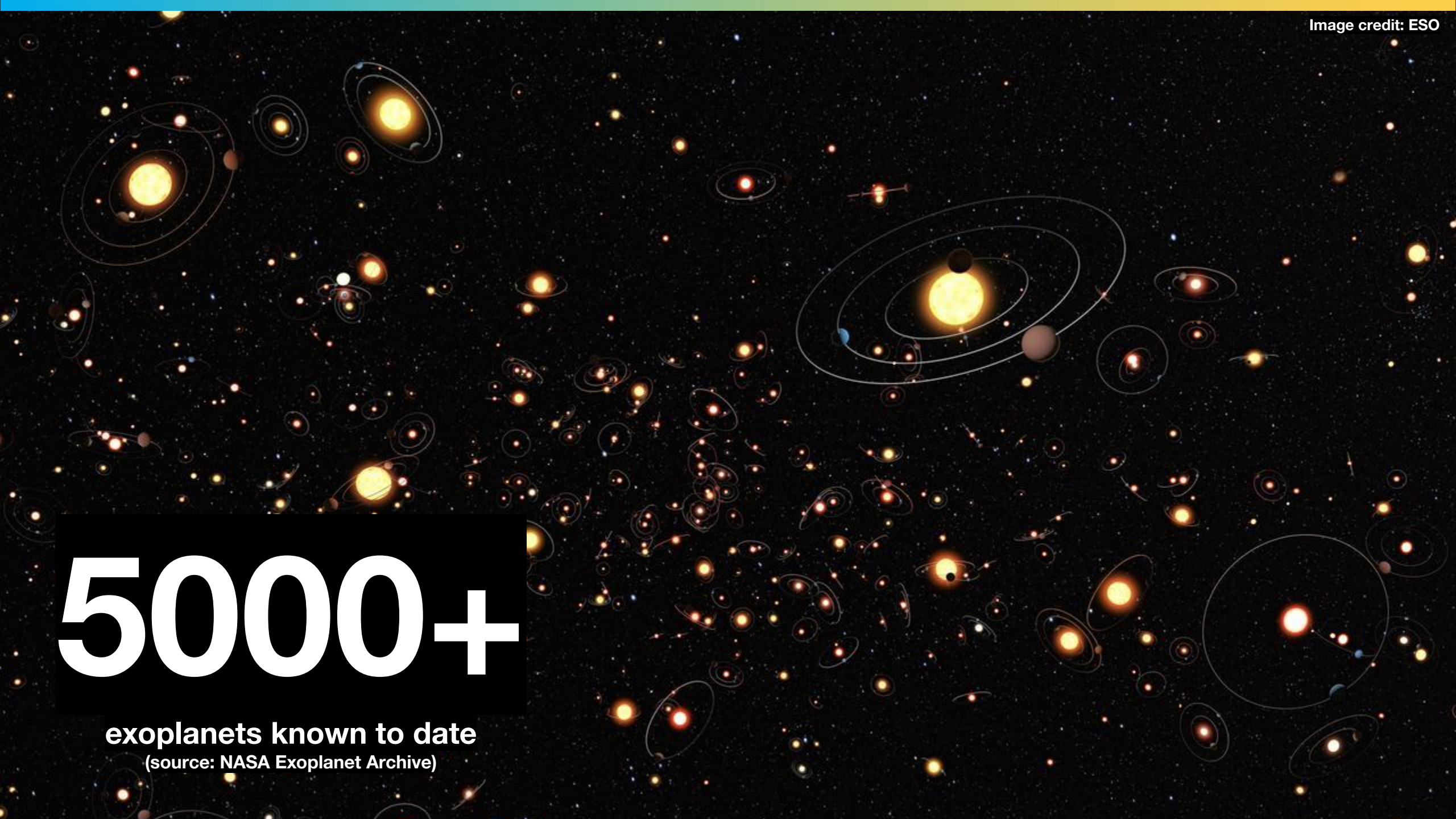


Image credit: ESO
5000+
exoplanets known to date
(source: NASA Exoplanet Archive)

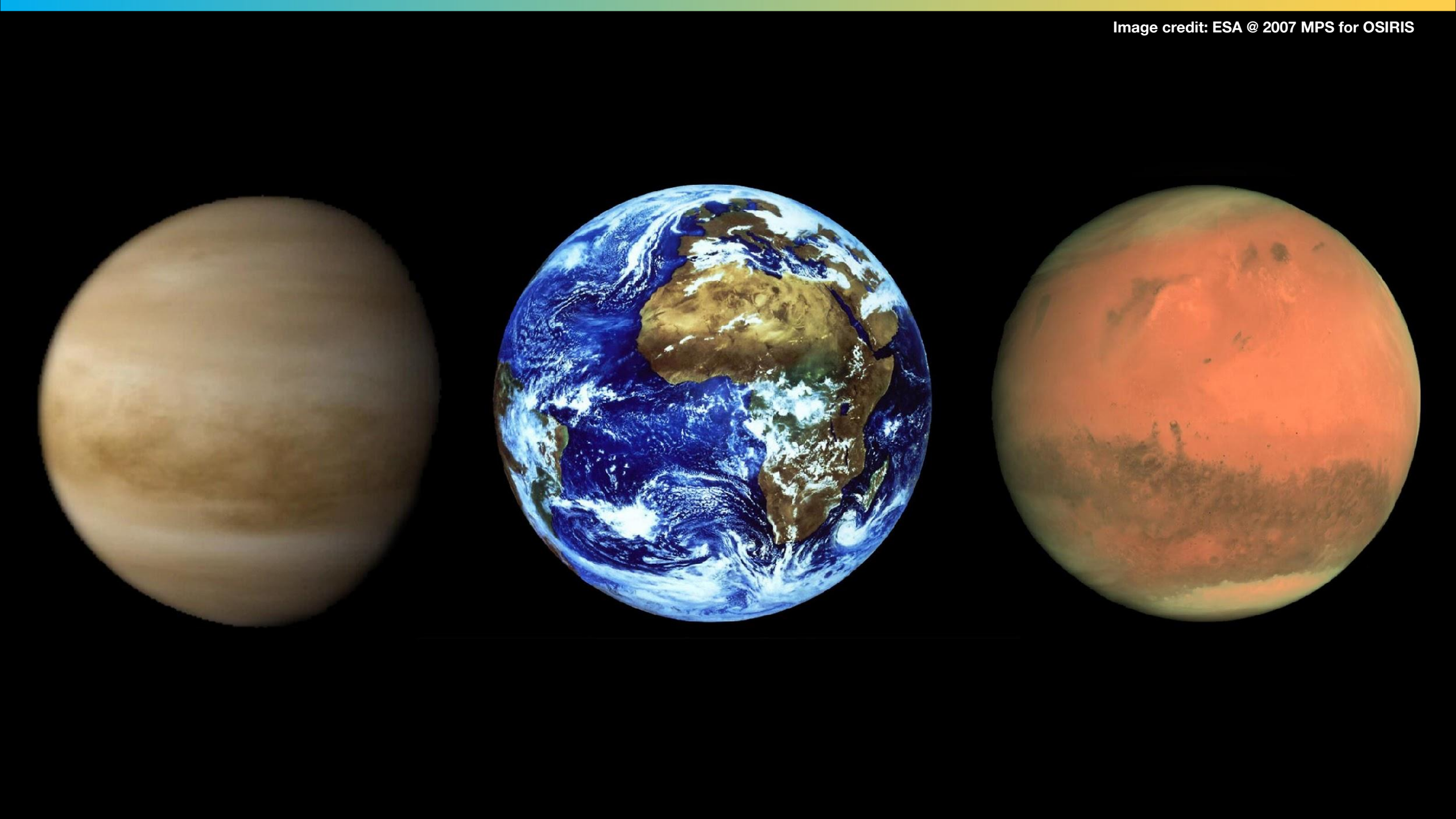
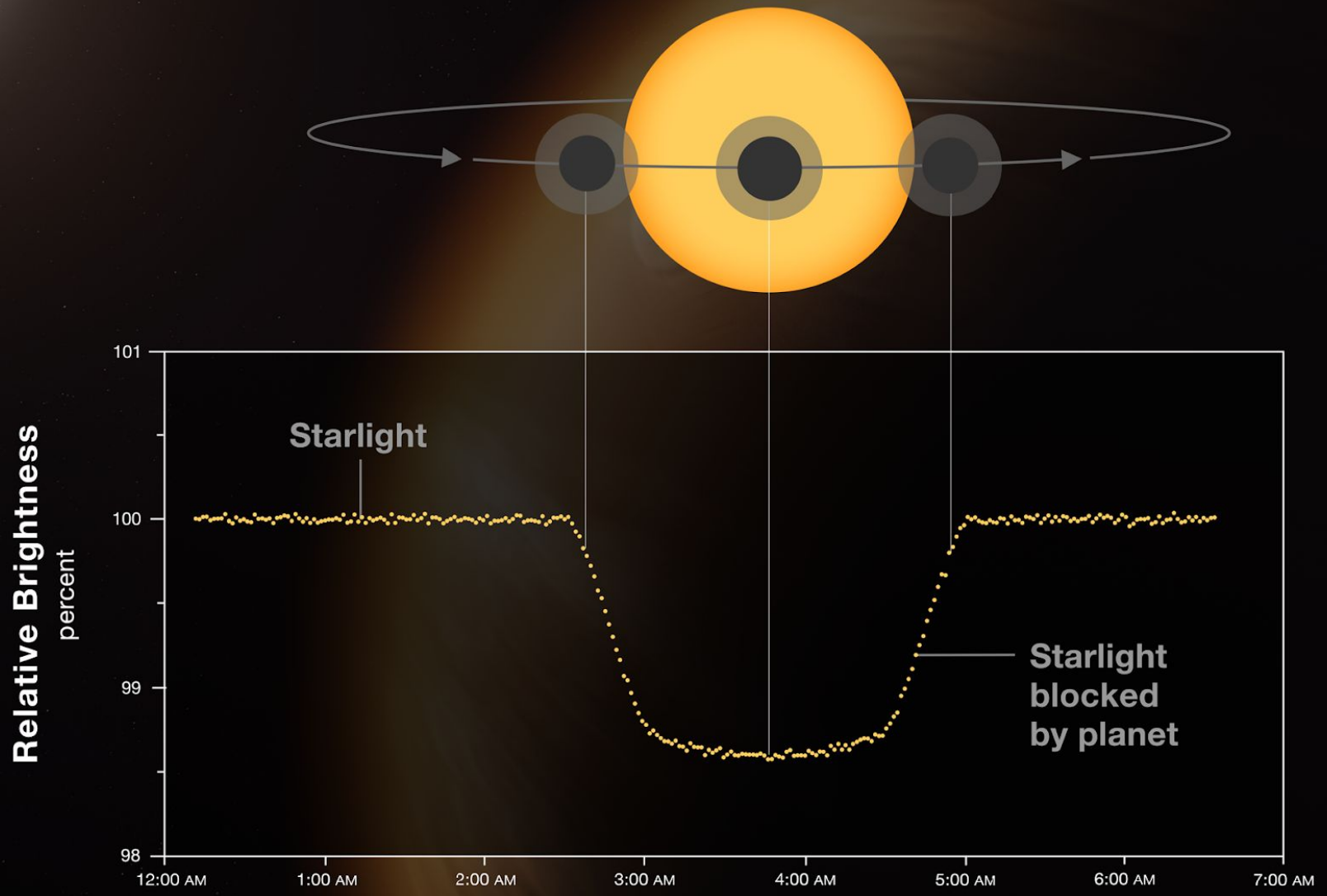


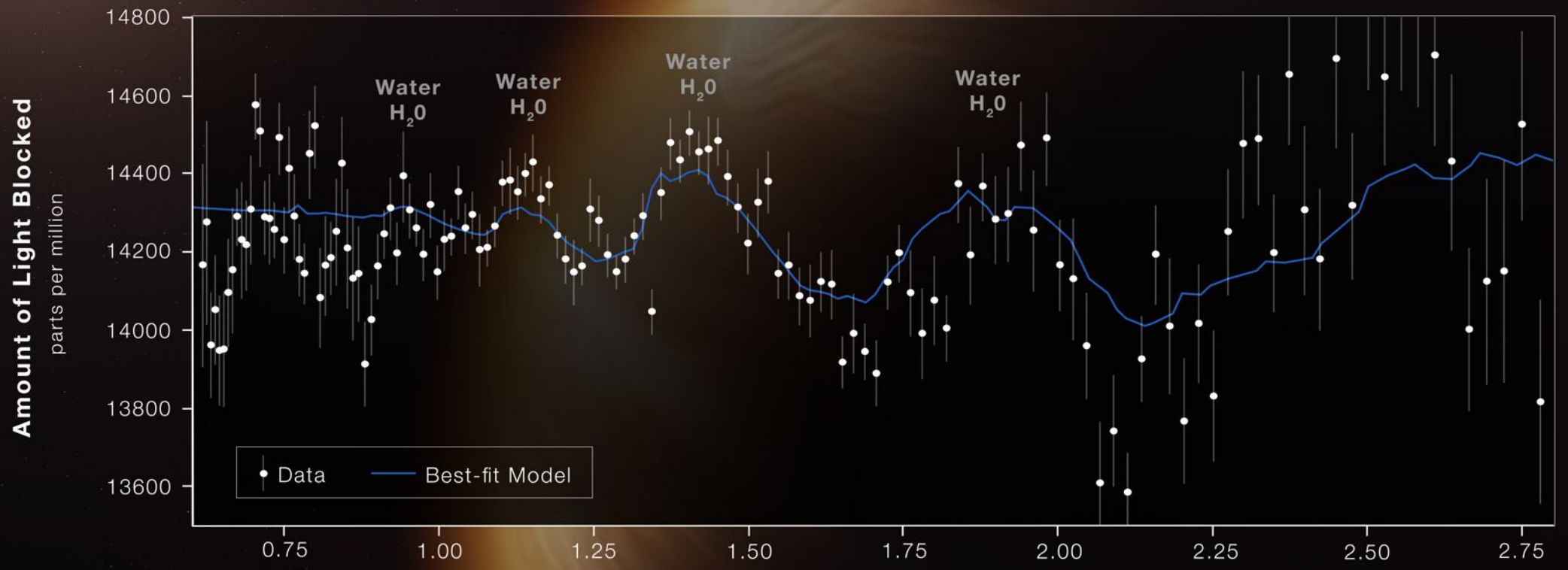
Image credit: ESA @ 2007 MPS for OSIRIS


Image credit: STScI (D. Player)
WASP-96b
A hot “puffy” exoplanet



NASA'S JAMES WEBB SPACE TELESCOPE

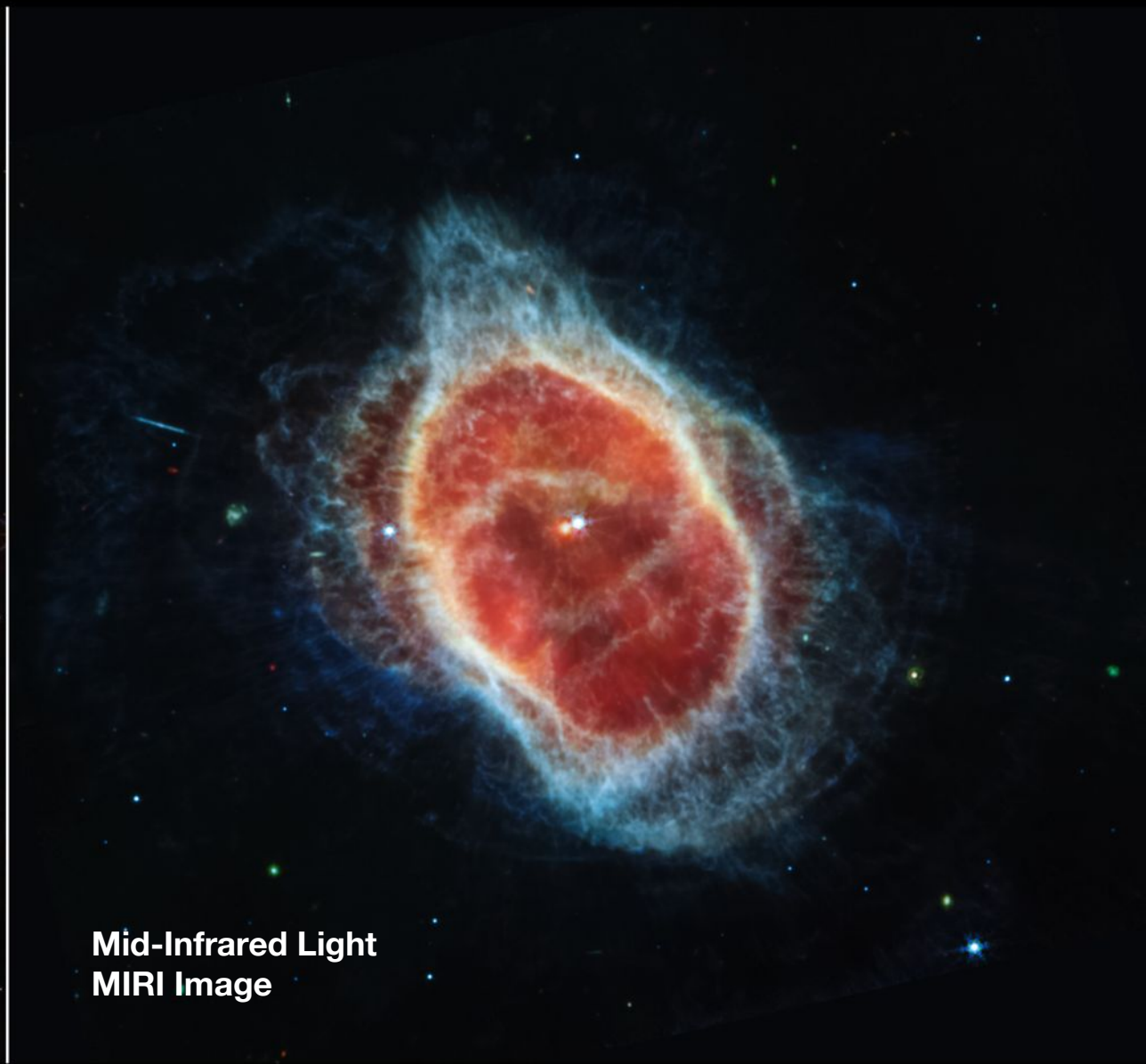
Exoplanet | WASP-96 b



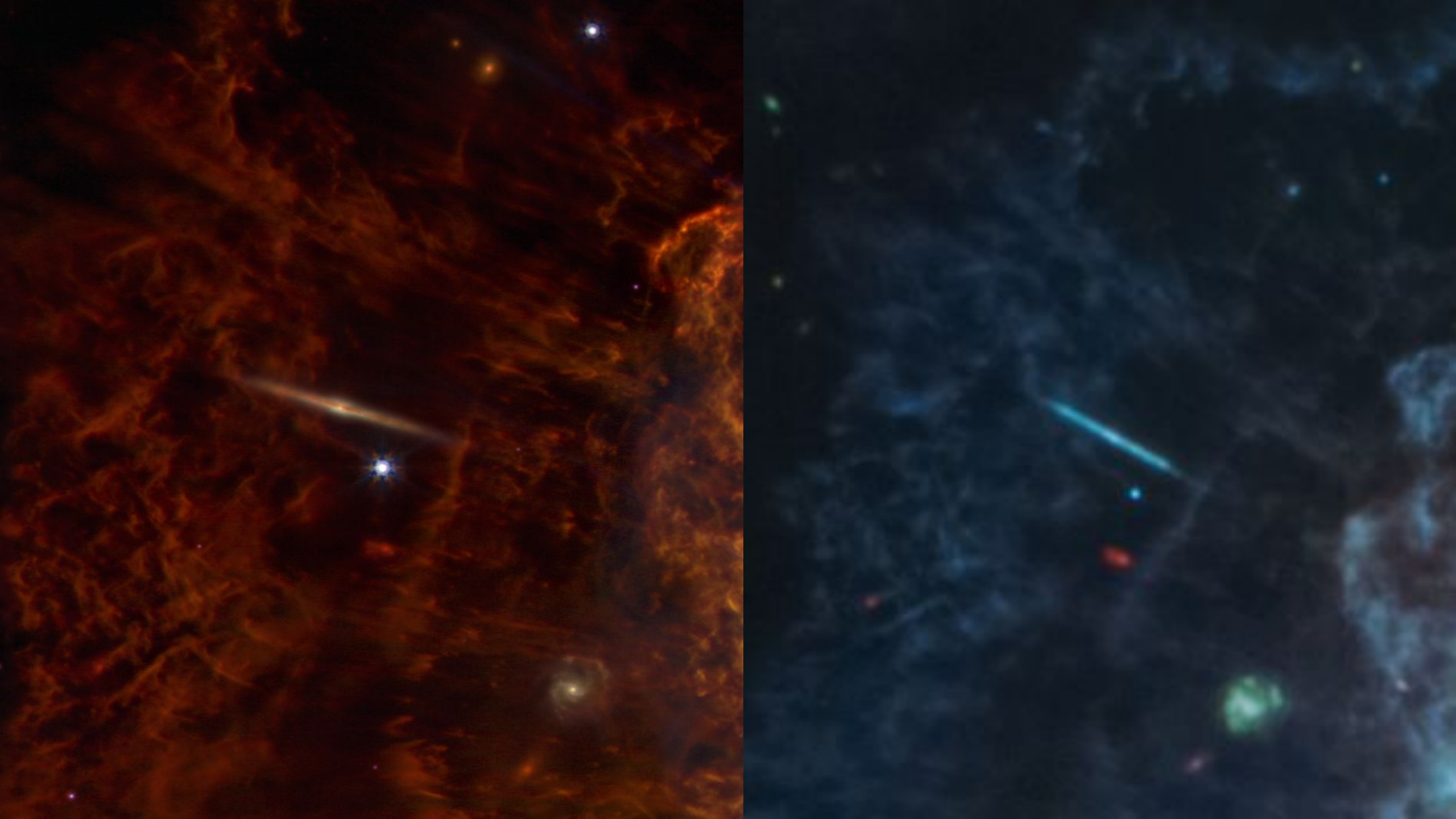
Transmission Spectrum
NIRISS Single-Object Slitless Spectrum

Planetary Nebula | Southern Ring Nebula

Near-Infrared Light
NIRCam Image



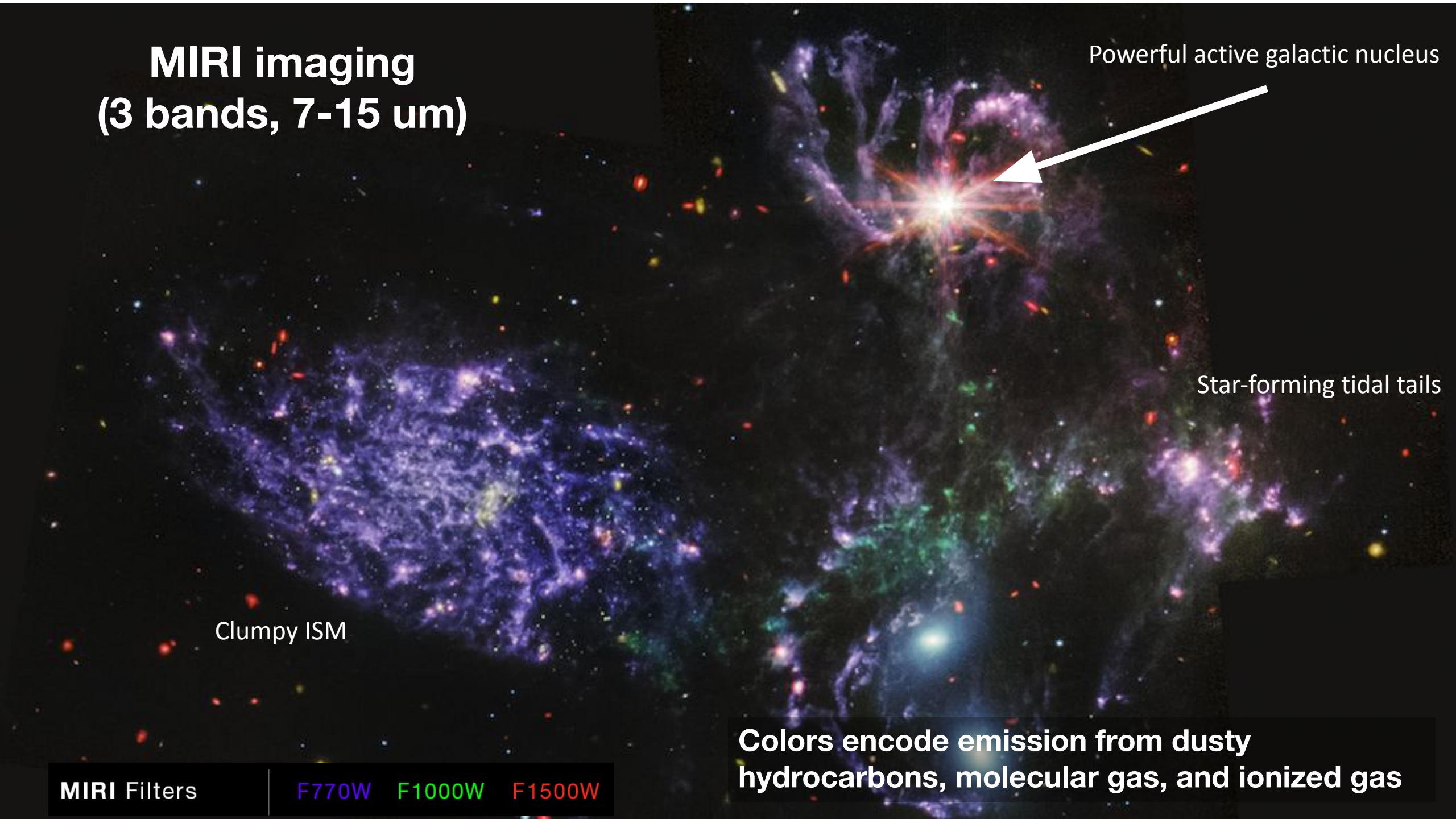
Mid-Infrared Light
MIRI Image



Interacting Galaxies
Stephan’s Quintet

Near- and Mid-Infrared Light
Combined NIRCam and MIRI Image

Webb shows stars in nearby galaxies in stunning detail


MIRI imaging
(3 bands, 7-15 um)
Powerful active galactic nucleus
Star-forming tidal tails
Clumpy ISM
MIRI Filters
F770W
F1000W
F1500W
Colors encode emission from dusty hydrocarbons, molecular gas, and ionized gas

Star-Forming Region I Carina Nebula

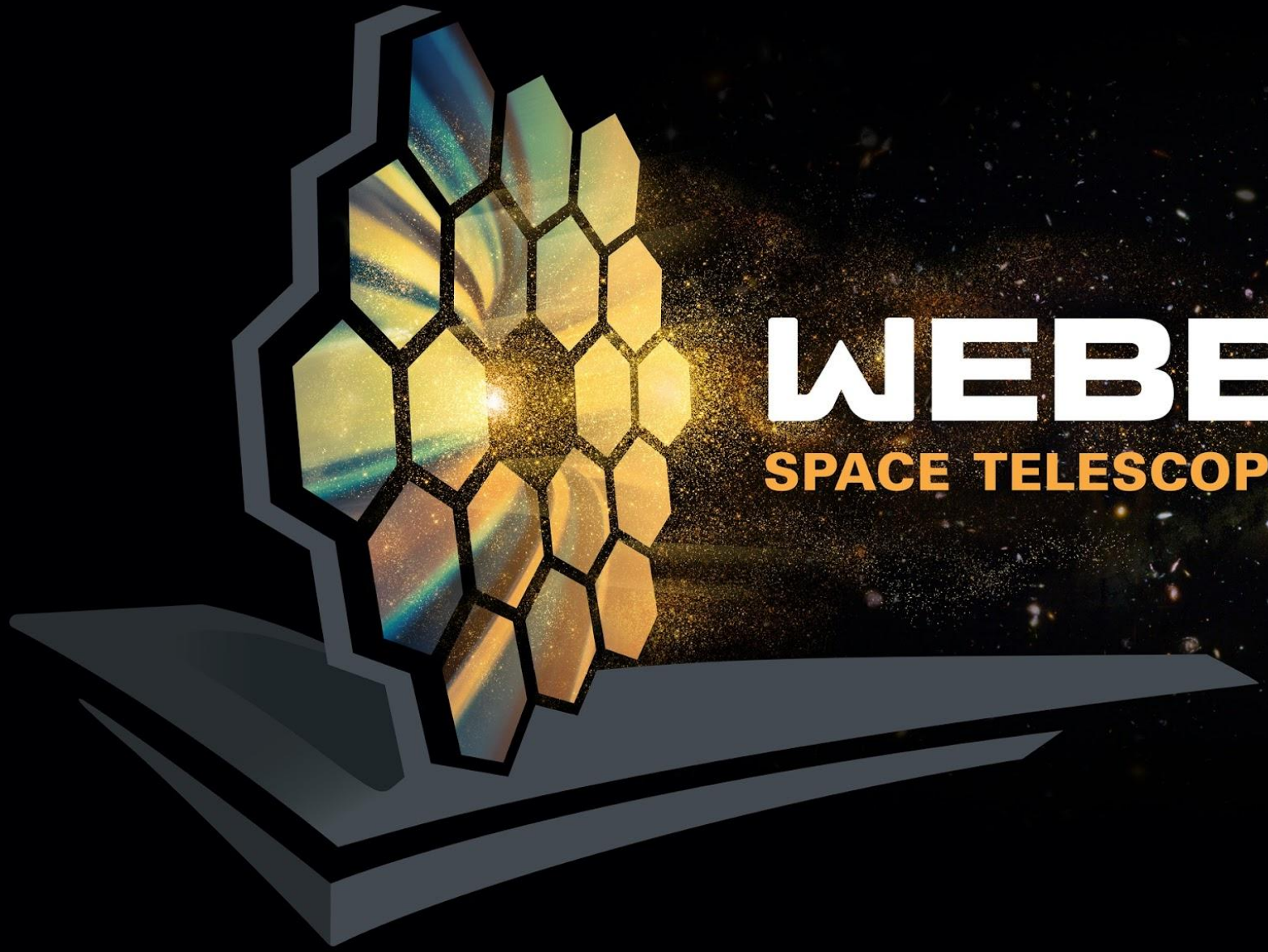
Near-Infrared Light
NIRCam Image


Shocks
Shocks
Shocks
Shocks
Jets and outflows
Jets and outflows
Very dense regions
NIRCam
NIRCam

JAMES WEBB SPACE TELESCOPE

CARINA NEBULA | NGC 3324

NIRCam Filters	F090W	F200W	F444W	
MIRI Filters	F770W	F1130W	F1280W	F1800W



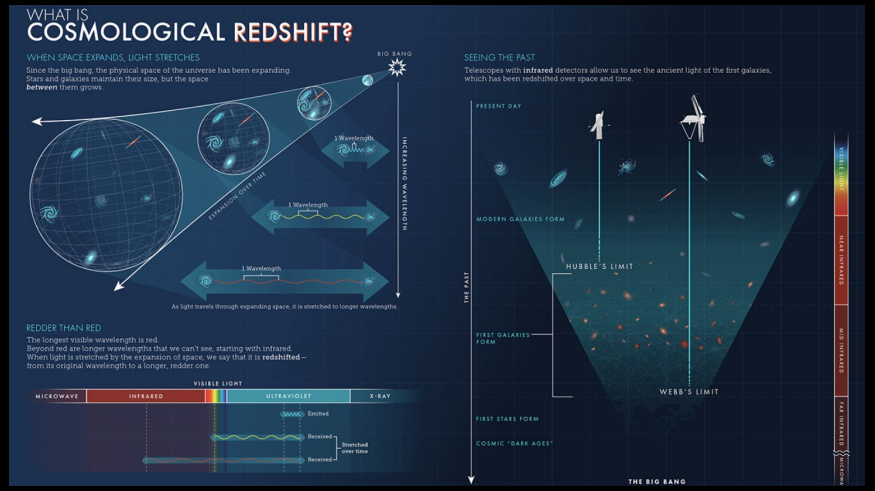
WEBB
SPACE TELESCOPE

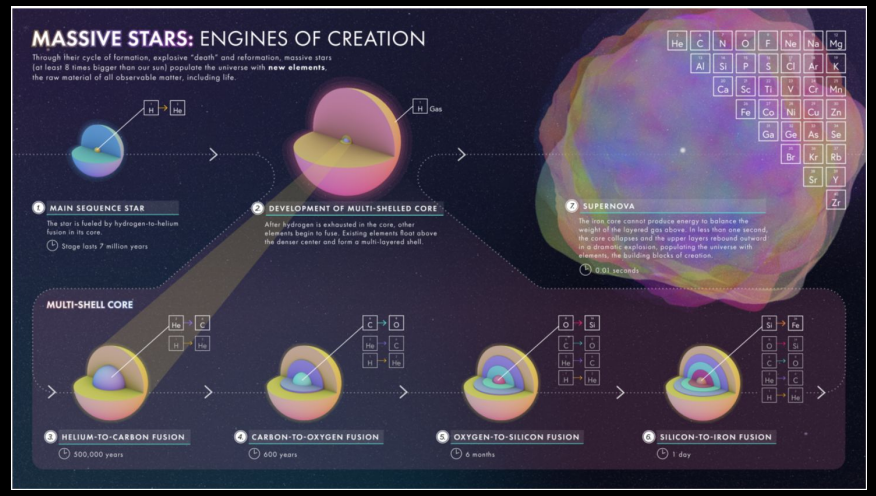
Webb Mission

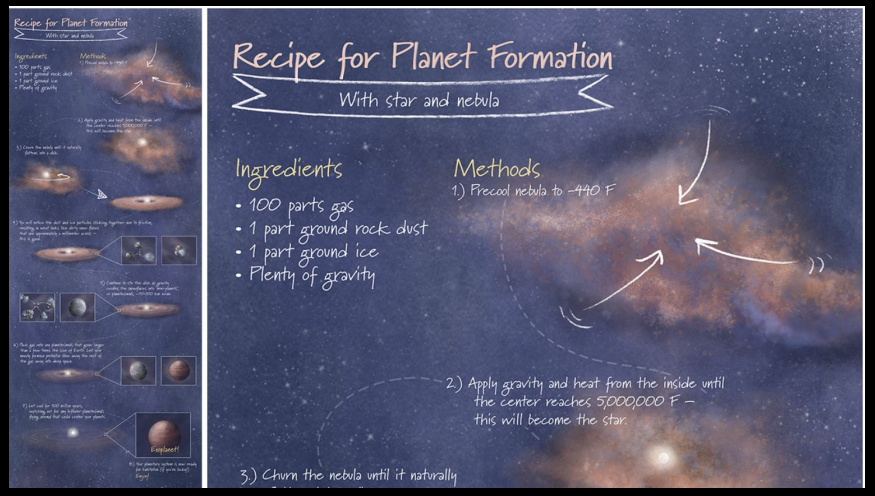
Explore the latest resources, image releases, videos, and up to date news from the Webb mission at it's science communication website for the public.

https://webbtelescope.org

Infographics







Videos


ASTRONOMERS READ
THE RAINBOW OF LIGHT
TO LEARN ABOUT:
PLANETS

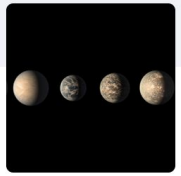
Hands-on Activities

The Electromagnetic Spectrum

Activity guidebook. Some telescopes can see light–or electromagnetic radiation–that our eyes cannot, like infrared and X-rays. They reveal hidden wonders of the universe, and together give us a more complete picture. This guidebook is designed for program facilitators, but available to all.

The Expanded Universe: Playing with Time

Model activity. Learn about the expansion of the universe with balloons, and observe how expansion affects light and distances between galaxies.



TRAPPIST-1 Planetary System

Create a scale model of the TRAPPIST-1 system, where seven Earth-sized planets orbit a dim red dwarf star at a distance where liquid water is possible. Discover its similarities to, and differences from, our solar system.

Exoplanet Trading Cards

Discover four types of exoplanets in these activities designed for small groups.

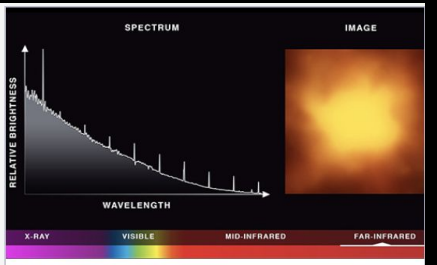
Digital Activities

Webb's Microshutters Interactive

Analyze the makeup and composition of distant galaxies

The James Webb Space Telescope Virtual Experience

Explore the universe in this fully immersive experience (VR equipment required).

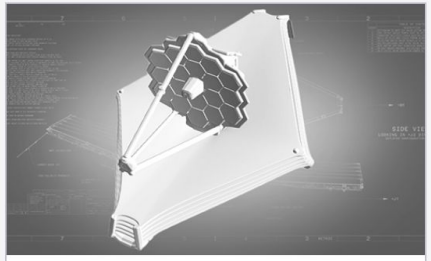


ViewSpace Interactives

Explore the universe at your own pace.

Eyes on Exoplanets

Explore an immersive app that presents information on planets orbiting stars other than our sun.



3D Model: All-in-One Version

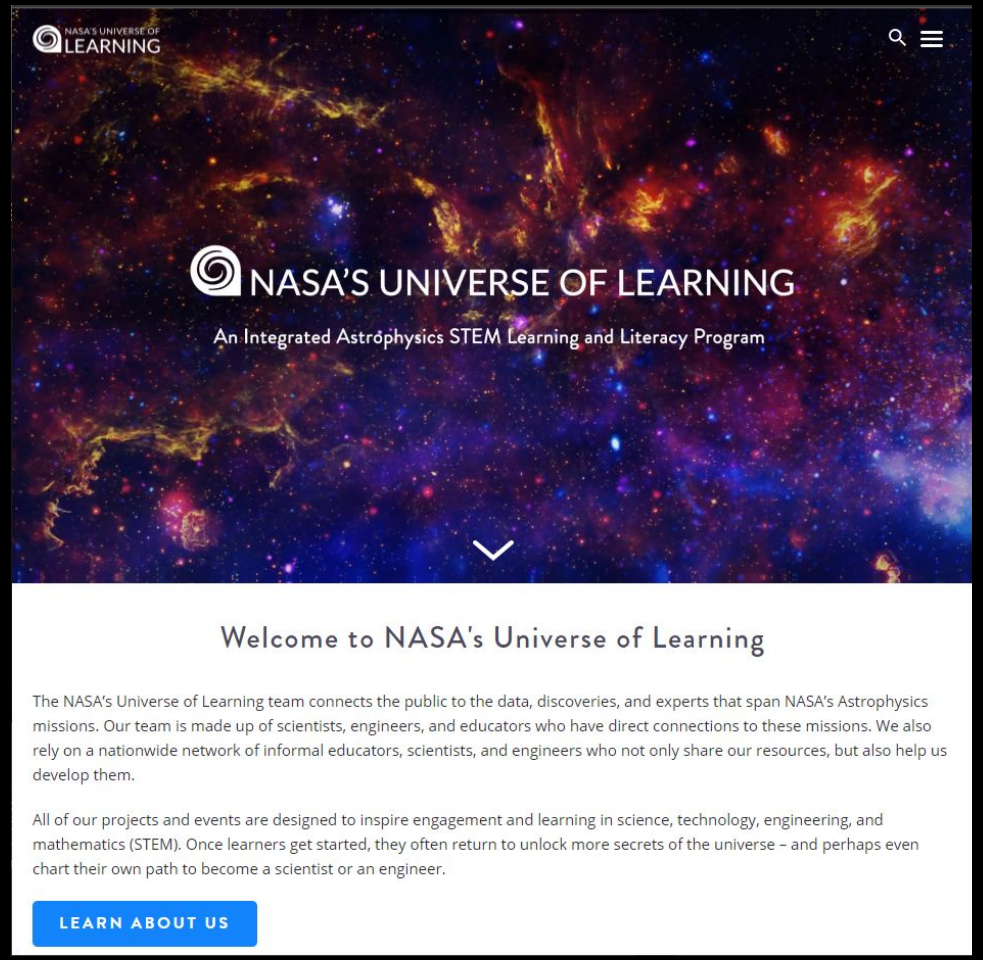
STL format for 3D printing.

NASA's Astrophoto Challenges

Try your hand at processing images from NASA's telescopes, or capture and process your own!

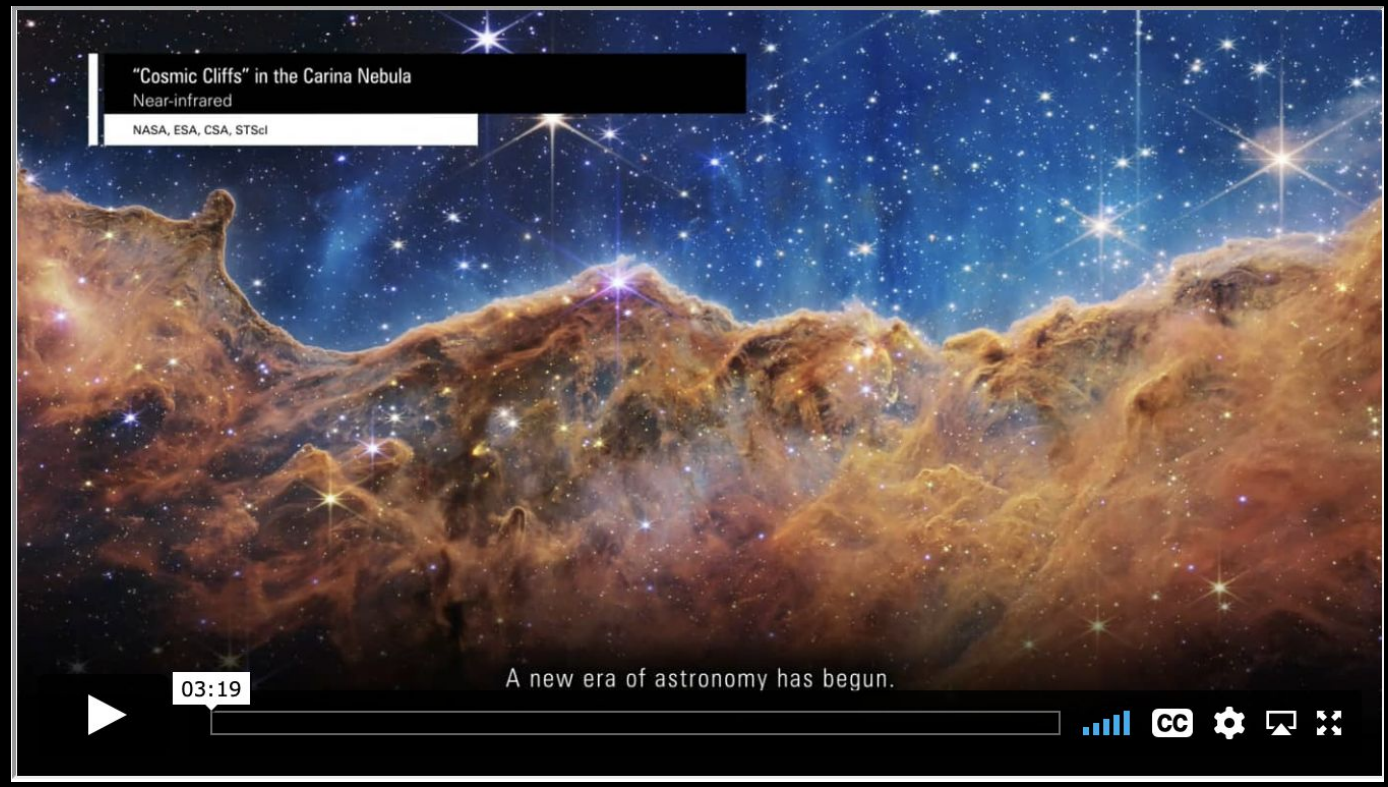
NASA's Universe of Learning

- ViewSpace
- NASA's AstroPhoto Challenges
- Science Briefings, in partnership with:
  - Museum and Informal Education Alliance
  - Solar System Ambassadors
- Connecting with Subject Matter Experts



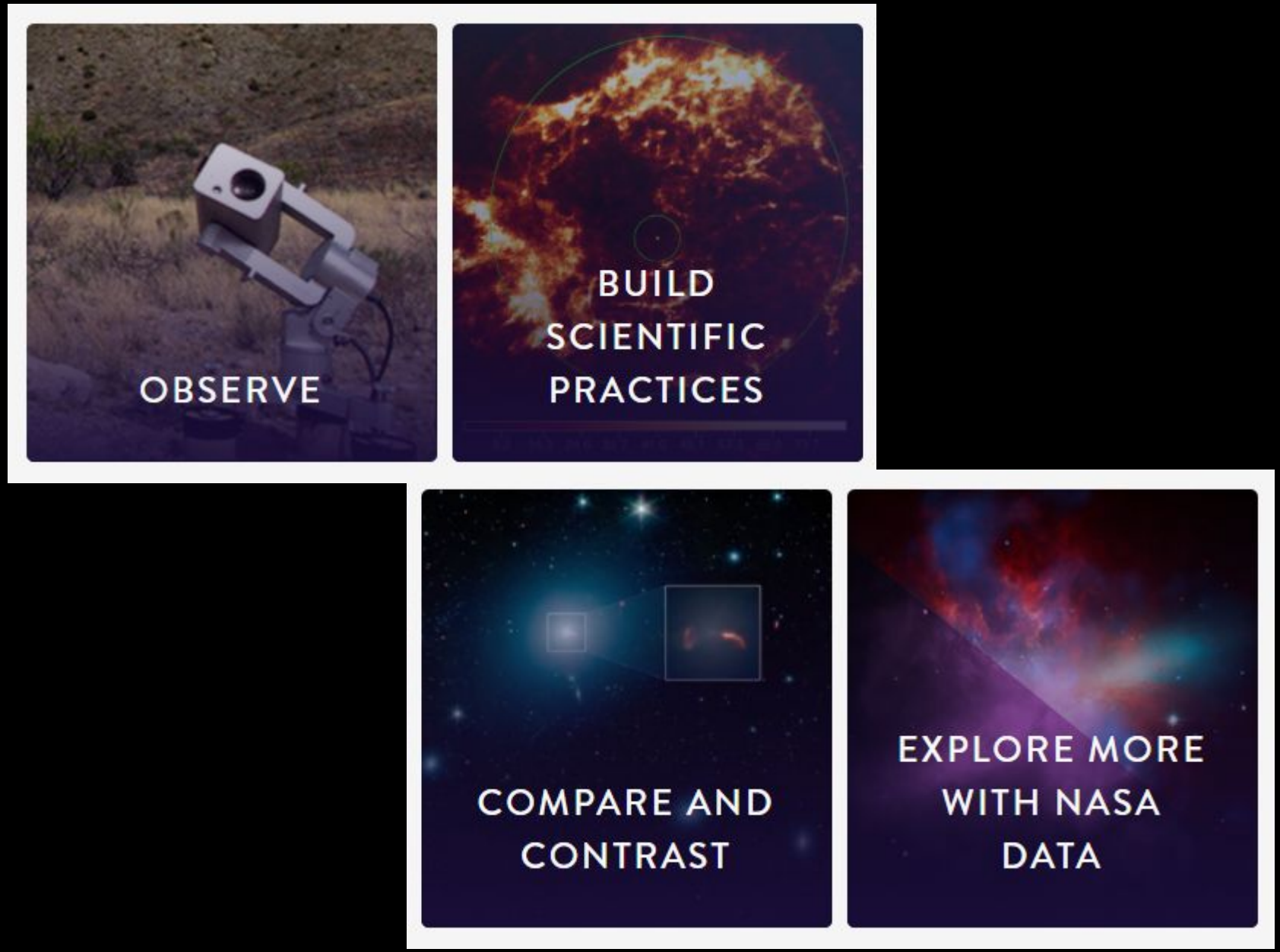
ViewSpace

ViewSpace is a free, web-based collection of dozens of digital interactives and hundreds of videos highlighting the latest developments in astronomy and Earth science.



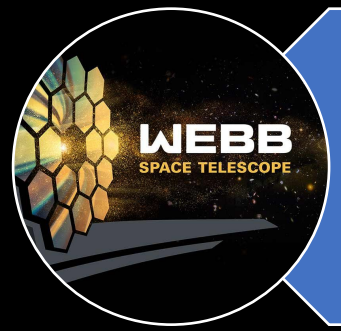
NASA'S ASTROPHOTO CHALLENGES

Try your hand at processing images from NASA's space telescopes, or capture and process your own!

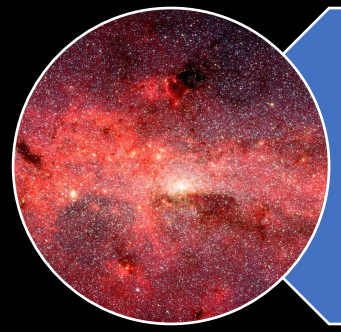


Science Briefings

Attend ongoing professional learning experiences that cover a range of science topics and allow plenty of time for informal educators to ask questions.



The James Webb Space Telescope - Unfolding the Universe

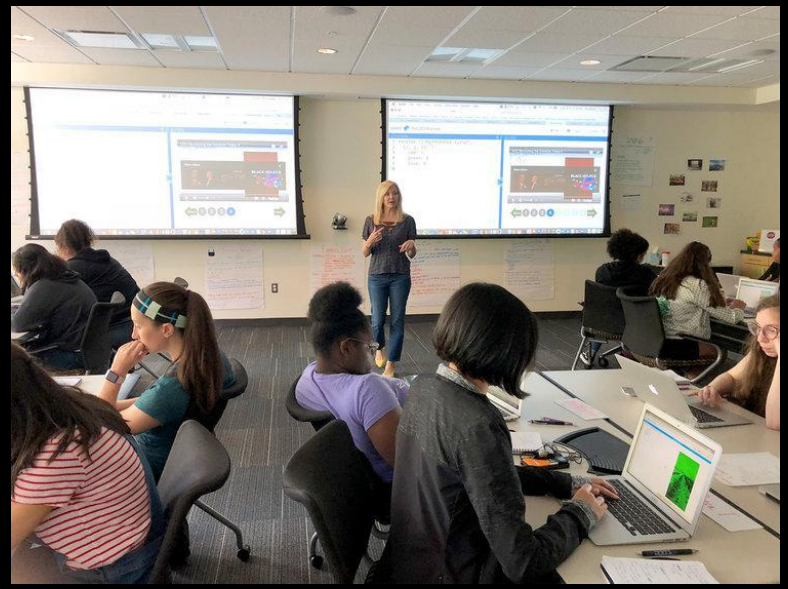


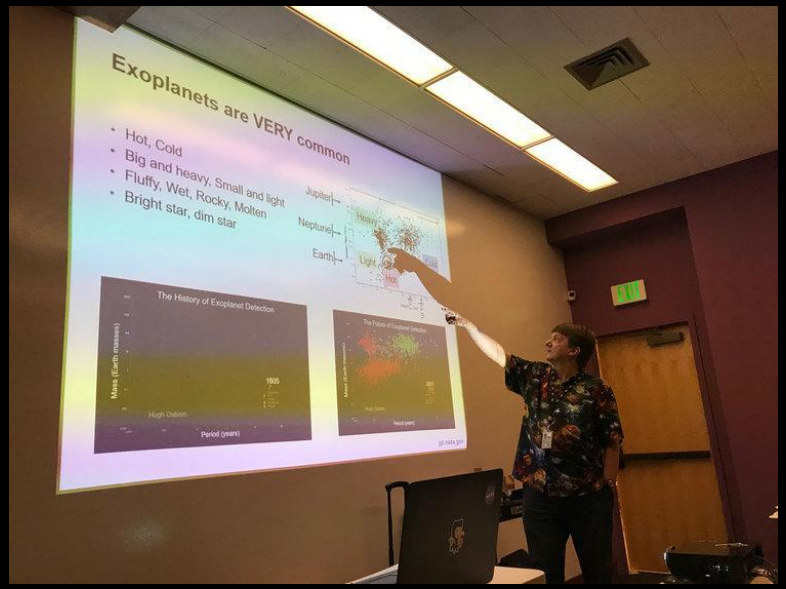
Exploring the Infrared Universe

Exploring Exoplanets Today and Tomorrow

Subject Matter Experts

Connect with an expert on Webb through NASA's Universe of Learning.





Thank you!

If you have any questions on the resources shared today
please reach out to: Yesenia Pérez, yperez@stsci.edu

Wrap-up and Q&A

Future Online Workshops

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Thank You









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