

Webb telescope captures 'breathtaking' images of Orion Nebula

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The inner region of the Orion Nebula as seen by the James Webb Space

Telescope's NIRCam instrument. Credit: NASA

The wall of dense gas and dust resembles a massive winged creature, its glowing maw lit by a bright star as it soars through cosmic filaments.

An international research team on Monday revealed the first images of the Orion Nebula captured with the James Webb Space Telescope, leaving astronomers "blown away."

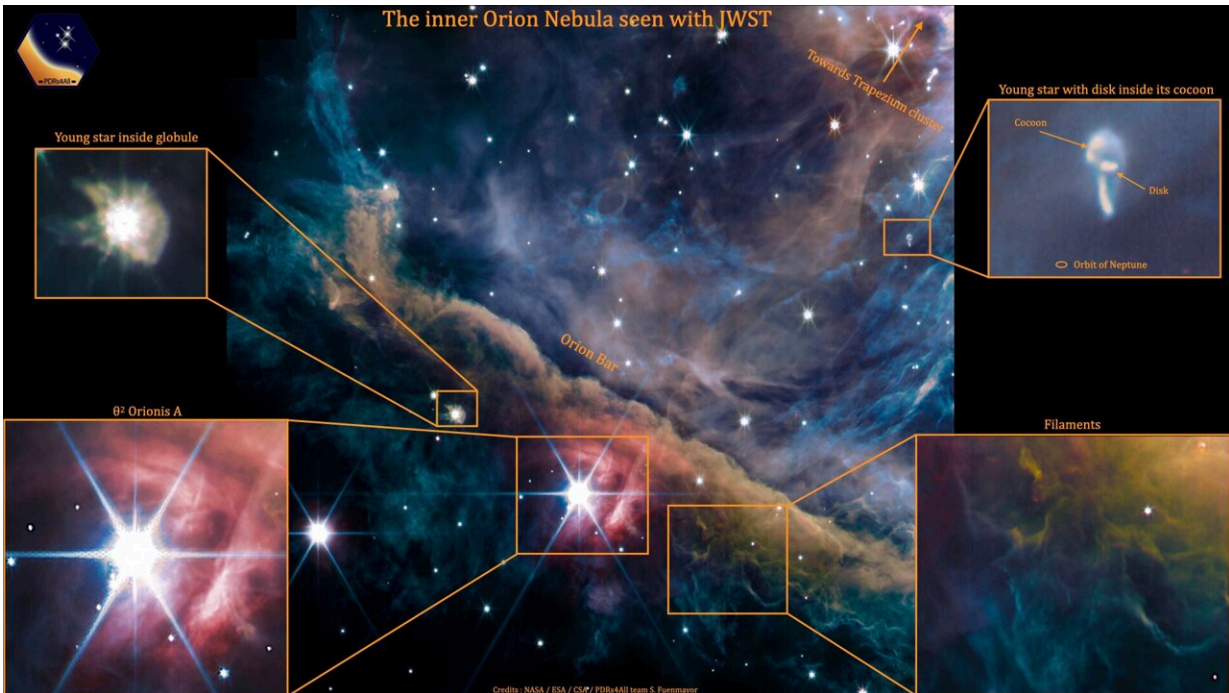
The stellar nursery is situated in the constellation Orion, 1,350 light-years away from Earth, in a similar setting in which our own solar system was birthed more than 4.5 billion years ago.

Astronomers are interested in the region to better understand what happened during the first million years of our planetary evolution.

The images were obtained as part of the Early Release Science program and involved more than 100 scientists in 18 countries, with institutions including the French National Center for Scientific Research (CNRS), Western University in Canada, and the University of Michigan.

"We are blown away by the breathtaking images of the Orion Nebula," Western University astrophysicist Els Peeters said in a statement.

"These new observations allow us to better understand how massive stars transform the gas and dust cloud in which they are born," she added.

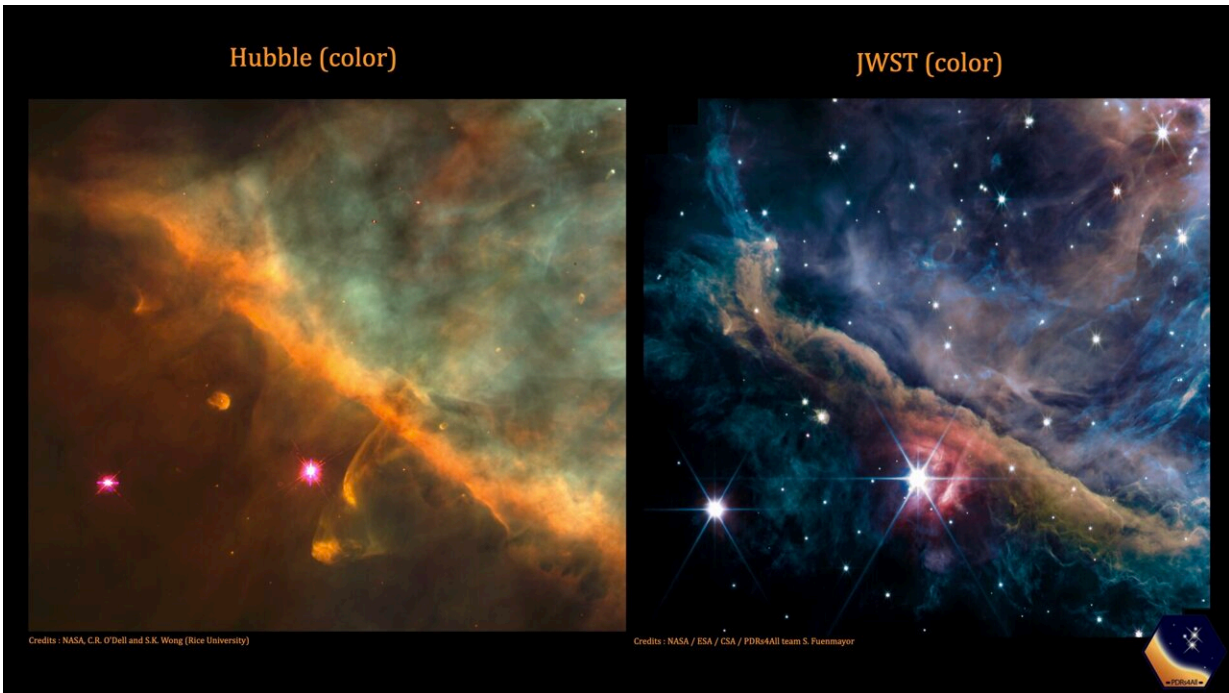


Credit: NASA

Nebulas are obscured by large amounts of dust that made it impossible to observe with visible light telescopes, such as the Hubble Space Telescope, Webb's predecessor.

Webb however operates primarily in the infrared spectrum, penetrating the dust.

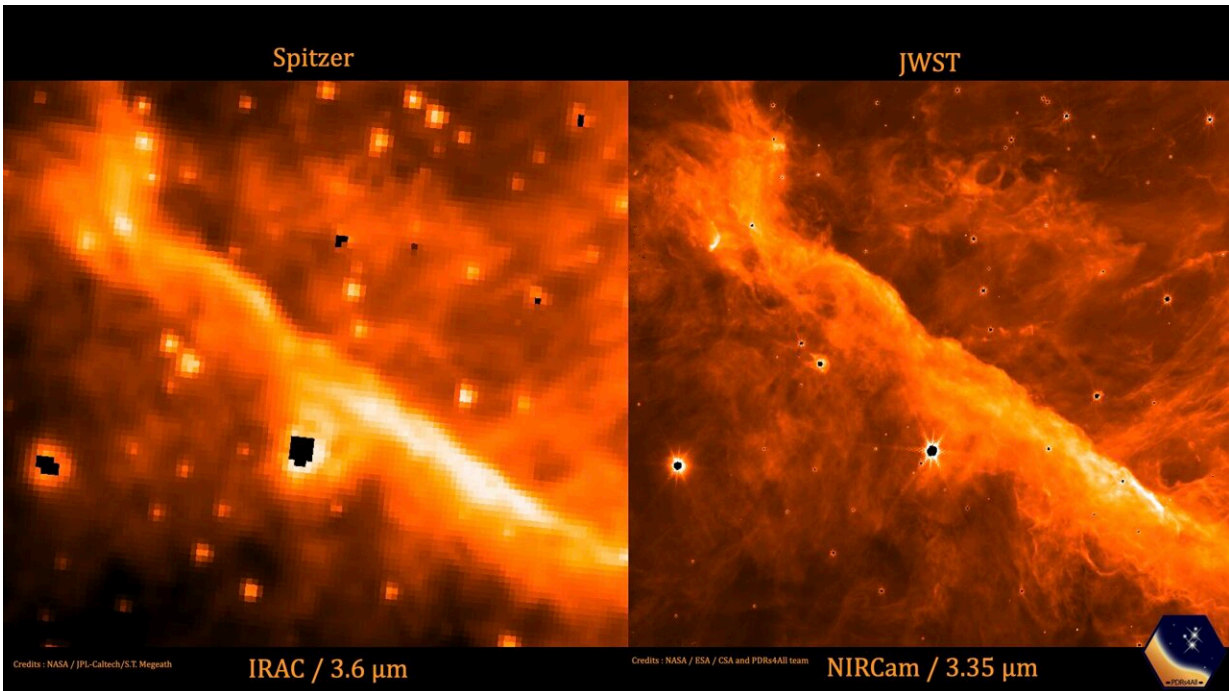
This revealed numerous spectacular structures, down to the scale of 40 astronomical units, or the size of our solar system.



Orion Nebula: JWST versus Hubble Space Telescope (HST). Credit: NASA

These include dense filaments of matter, which could birth new generations of stars, as well as forming stellar systems that consist of a central proto-star surrounded by a disk of dust and gas, in which planets form.

"We hope to gain understanding about the entire cycle of star birth," said Edwin Bergin, University of Michigan chair of astronomy and a member of the international research team.



Orion Nebula: JWST versus the Spitzer Space Telescope. Credit: NASA

"In this image we are looking at this cycle where the first generation of stars is essentially irradiating the material for the next generation. The incredible structures we observe will detail how the feedback cycle of stellar birth occurs in our galaxy and beyond."

Webb is the most powerful space telescope ever built, boasting a primary mirror measuring 6.5 meters (more than 21 feet) that is made up of 18 hexagonal, gold-coated segments, as well as a five-layer sunshield the size of a tennis court.

More information: pdrs4all.org/pdrs4all-first-images-release/

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