Admire the majestic spectacle of swirls of dust and gas in nearby galaxies

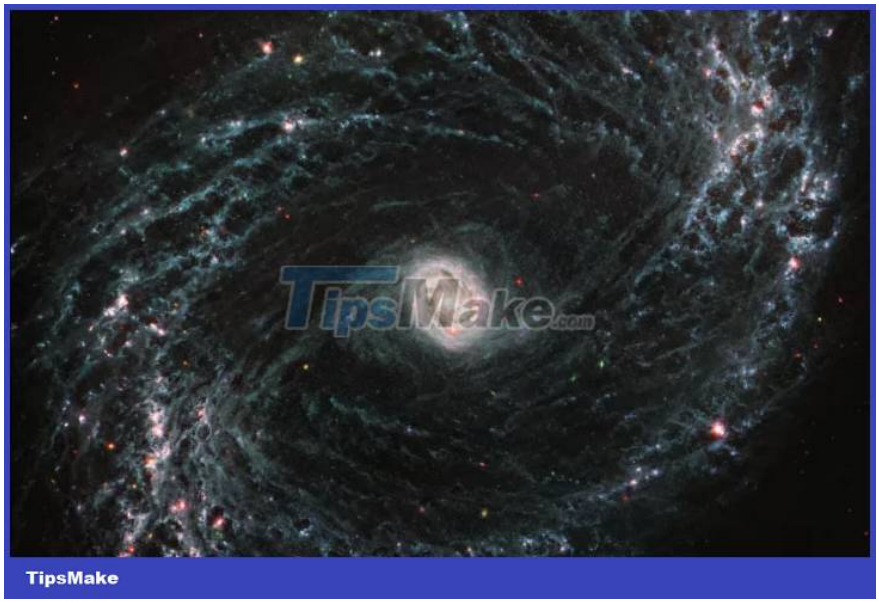
The James Webb Space Telescope is playing the role of a powerful assistant helping astronomers observe a series of galaxies 'neighbors' of the Milky Way.

In it, the study of the complex structures of dust and gas created and necessary for star formation plays a key role and is of particular importance.

In the past, using telescopes like the Hubble Space Telescope and the Atacama Large Millimeter/submillimeter Array, researchers were able to collect data at a variety of wavelengths, such as visible light. ants and radio wavelengths. Now with the contribution of the world's most modern Space Telescope James Webb, scientists also have the opportunity to have more access to precious data from infrared wavelengths. Infrared observations of the universe allow us to see through clouds of opaque dust at visible light wavelengths, through which structures such as gas and dust surround galaxies.

> 'James Webb's powerful infrared ability can penetrate dust to connect missing pieces. For example, the specific wavelengths that can be observed by MIRI (7.7 and 11.3 microns) are sensitive to emissions from polycyclic aromatic hydrocarbons, which play an important role in the formation of stars. stars and planets. These molecules were discovered by James Webb in the first observations'.

Example: This picture of galaxy NGC 1433, taken with Webb's MIRI instrument, shows the bright light from the numerous young stars located in the galaxy's spiral arms. These stars emit radiation that blows away dust and gas, 'sculpts' them into various shapes, and then glows in the infrared range in which James Webb operates.



The next image below shows galaxy NGC 7496, also taken with the MIRI instrument of the James Webb Space Telescope. This barred spiral galaxy possesses a busy central region known as the active galactic nucleus that is glowing brightly, and is surrounded by two glowing spiral arms. The shape of the spiral arms originates from the filaments of gas that spread around the giant air bubbles.

So far Webb has collected data from five neighboring galaxies, with more observations of a total of 19 neighboring galaxies expected to be published in the future. This will be a valuable source of research data for astronomers worldwide.

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