Admire the rare brilliant light show on Jupiter

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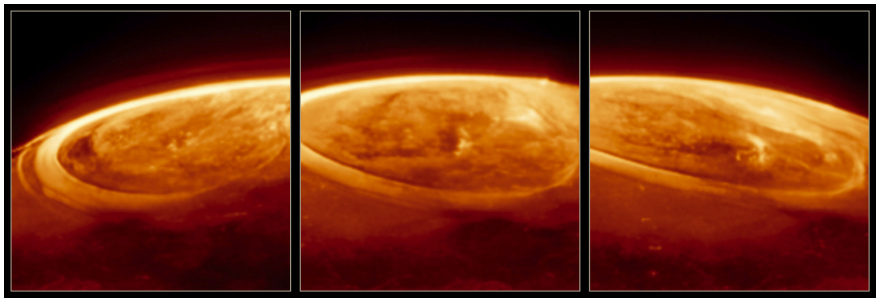
On Earth, we occasionally witness stunning auroras caused by solar activity – the most famous being the Northern Lights. But Earth isn't the only planet to experience this phenomenon, as auroras also appear on planets like Mars and Neptune. The James Webb Space Telescope recently captured a spectacular example of a rare aurora on Jupiter, where the light show appeared hundreds of times brighter than on Earth.

Auroras occur when energetic particles from the Sun interact with a planet's atmosphere, and they often appear around the magnetic poles. Observing this effect on Jupiter is not only visually stunning, but also allows astronomers to study the planet's massive and complex magnetosphere.

Initially, scientists *expected* Jupiter's aurora *to fade or flare slowly, perhaps over the course of about 15 minutes. Instead, the entire aurora field flickered and flashed, sometimes changing every second.*



Jupiter's auroras aren't just caused by solar storms – they're also amplified by the planet's powerful magnetic field, which attracts charged particles from both the Sun and its volcanic moon Io. As these volcanoes spew material into space, they're pushed with enough force to escape Io's gravity and are pulled into Jupiter's orbit. Under the influence of its enormous gravity, these particles accelerate and hit Jupiter's atmosphere at high speeds, creating a glowing effect in the layers of gas.

Researchers are now puzzled by the discrepancy between data from James Webb and Hubble – the two telescopes observe at different wavelengths but record regions of brightness that do not match.

Curiously, the brightest region detected by James Webb does not appear in the Hubble image. This has puzzled scientists. To produce the combination of brightness observed by both Webb and Hubble, a massive stream of extremely low-energy particles would have to hit the atmosphere – something previously thought impossible. This mechanism has yet to be satisfactorily explained.