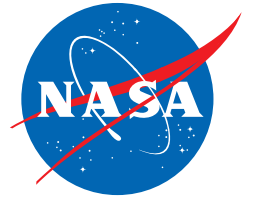


NGC 1333

National Aeronautics and
Space Administration



An Eruption of Star Birth

Hubble's colorful view of a portion of the nebula NGC 1333 unveils an effervescent cauldron of glowing gases mixed with pitch-black dust stirred and blown around by stellar winds from newly forming stars. Located approximately 960 light-years away, the nebula is on the edge of the Perseus molecular cloud, a young region of cold hydrogen with an embedded firestorm of star formation.

Hubble's visible-light view just scratches the surface because most of the star birth is hidden behind clouds of fine dust – essentially soot – that are thicker toward the bottom of the image. The blackness in the image is not empty space, but filled with obscuring dust. This image underscores the fact that star formation is a messy process in our rambunctious universe.

At the top of the image, the fine dust scatters starlight, allowing blue wavelengths to dominate. Ferocious stellar winds from embedded stars in the middle of the image are blowing through a curtain of dust. Farther down, another bright, super-hot star blazes through filaments of obscuring dust, looking like the Sun shining through scattered clouds. A diagonal string of fainter accompanying stars looks reddish because the dust is filtering starlight, allowing more of the red light to get through.

The bottom of the picture offers a keyhole peek into the dark nebula, where Hubble captures the reddish glow of warm, ionized hydrogen. The region looks like a fireworks finale, but it is the opening act for a new generation of stars. Pencil-thin jets of hot gas shooting from newly forming stars outside Hubble's field-of-view cause the region's tangled ball-of-yarn appearance.

These jets are a star's birth announcement. They are the result of powerful magnetic fields that direct beams of hot gas deep into space, sculpting patterns inside the developing star's hydrogen cocoon, like beams from a laser-light show.

These stars are surrounded by circumstellar disks of dust and gas that may eventually condense to build planetary systems. Our sun and solar system likely formed inside such a bustling star factory several billion years ago.

Image Credits: NASA, ESA, STScI



The left image above shows a wider, visible-light view of NGC 1333 with a white box outlining the area that Hubble observed. The picture on the front of this lithograph covers only part of the nebula region, with the blue reflection nebula spreading much further at the top, and the dark dust clouds continuing downward. In contrast, the infrared-light observation of this wide view from NASA's Spitzer Space Telescope is shown on the right. Infrared light shines through most of the dust clouds and reveals numerous newborn stars within.

Credits: Credit: Jim DeLillo (visible light), NASA/JPL-Caltech (infrared light)

VOCABULARY

Star Formation: The process by which stars form from a cloud of cool, dense gas contracting under gravity until the core heats up to a temperature and pressure that triggers nuclear fusion.

Stellar Wind: Streams of charged particles flowing from a star at millions of miles per hour (millions of kilometers per hour).

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