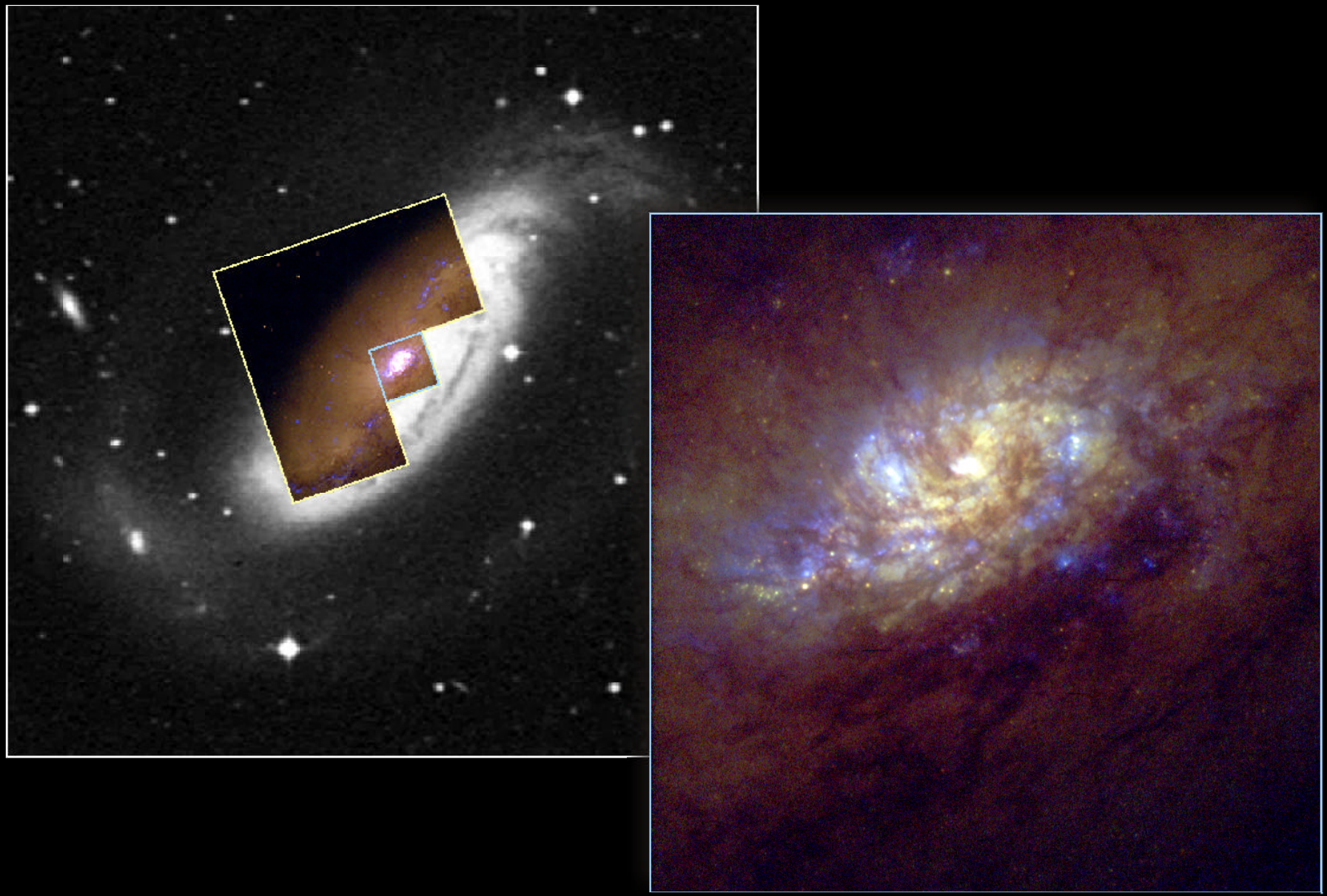

Starburst Galaxy NGC 1808

Hubble Space Telescope • Wide Field Planetary Camera 2

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HUBBLE CAPTURES THE HEART OF STAR BIRTH

NASA Hubble Space Telescope's Wide Field and Planetary Camera 2 (WFPC2) has captured a flurry of star birth near the heart of the barred spiral galaxy NGC 1808.

On the left are two images, one superimposed over the other. The black-and-white picture is a ground-based view of the entire galaxy. The color inset image, taken with the Hubble telescope's Wide Field and Planetary Camera 2 (WFPC2), provides a close-up view of the galaxy's center, the hotbed of vigorous star formation.

The ground-based image shows that the galaxy has an unusual, warped shape. Most spiral galaxies are flat disks, but this one has curls of dust and gas at its outer spiral arms (upper right-hand corner and lower left-hand corner). This peculiar shape is evidence that NGC 1808 may have had a close interaction with another nearby galaxy, NGC 1792, which is not in the picture Such an interaction could have hurled gas towards the nucleus of NGC 1808, triggering the exceptionally high rate of star birth seen in the WFPC2 inset image.

The WFPC2 insetpicture is a composite of images using colored filters that isolate red and infrared light as well as light from glowing hydrogen. The red and infrared light (seen as yellow) highlight older stars, while hydrogen (seen as blue) reveals areas of star birth. Colors were assigned to this false-color image to emphasize the vigorous star formation taking place around the galaxy's center.

NGC 1808 is called a barred spiral galaxy because of the straight lines of star formation on both sides of the bright nucleus. This star formation may have been triggered by the rotation of the bar, or by matter which is streaming along the bar towards the central region (and feeding the star burst).

Filaments of dust are being ejected from the core into a faint halo of stars surrounding the galaxy's disk (towards the upper left corner) by massive stars that have exploded as supernovae in the star burst region. The portion of the galaxy seen in this "wide-field" image is about 35,000 light-years across.

The right-hand image, taken by WFPC2, provides a closer look at the flurry of star birth at the galaxy's core. The star clusters (blue) can be seen (and many more are likely obscured) amid thick lanes of gas and dust. This image shows that stars are often born in compact clusters within star bursts, and that dense gas and dust heavily obscures the star burst region. The brightest knot of star birth seen here is probably a giant cluster of stars, about 100 light-years in diameter, at the very center of the galaxy. The other star clusters are about 10 to 50 light-years in diameter. The entire star burst region shown here is about 3,000 light-years across.

This galaxy is about 40 million light-years away in the southern constellation Columba.

The observation was taken Aug. 14, 1997, and was the last of 13 Hubble Space Telescope amateur programs.

Credits: Jim Flood, an amateur astronomer affiliated with Sperry Observatory at Union College in New Jersey, and Max Mutchler, a member of the Space Telescope Science Institute staff who volunteered to work with Jim.

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3700 San Martin Drive, Baltimore, MD 21218
410-338-4707