

Galactic center picture caption

In celebration of the International Year of Astronomy 2009, NASA's Great Observatories -- the Hubble Space Telescope, the Spitzer Space Telescope, and the Chandra X-ray Observatory -- have produced a matched trio of images of the central region of our Milky Way galaxy. Each image shows the telescope's different wavelength view of the galactic center region, illustrating the unique science each observatory conducts. In this spectacular image, observations using infrared light and X-ray light see through the obscuring dust and reveal the intense activity near the galactic core. Note that the center of the galaxy is located within the bright white region to the right of and just below the middle of the image. The entire image width covers about one-half a degree, about the same angular width as the full moon. Each telescope's contribution is presented in a different colour: Yellow represents the near-infrared observations of Hubble. The galactic center is marked by the bright patch in the lower right. Along the left side are large arcs of warm gas that have been heated by clusters of bright massive stars. In addition, Hubble uncovered many more massive stars across the region. Winds and radiation from these stars create the complex structures seen in the gas throughout the image. This sweeping panorama is one of the sharpest infrared pictures ever made of the galactic center region. Red represents the infrared observations of Spitzer. The swirling core of our galaxy harbors hundreds of thousands of stars that cannot be seen in visible light. These stars heat the nearby gas and dust. These dusty clouds glow in infrared light and reveal their often dramatic shapes. Some of these clouds harbor stellar nurseries that are forming new generations of stars. Like the downtown of a large city, the center of our galaxy is a crowded, active, and vibrant place. Blue and violet represent the X-ray observations of Chandra. In this image, violet represents lower energy X-rays and blue indicates higher energy. Hundreds of small dots show emission from material around black holes and other dense stellar objects. A supermassive black hole -- some four million times more massive than the Sun -- resides within the bright region in the lower right. The diffuse X-ray light comes from gas heated to millions of degrees by outflows from the supermassive black hole, winds from giant stars, and stellar explosions. This central region is the most energetic place in our galaxy. When these views are brought together, this composite image provides one of the most detailed views ever of our galaxy's mysterious core.