

The superwind galaxy NGC 4666 (w/ Video)

September 1 2010



This visible light image, made with the Wide Field Imager on the MPG/ESO 2.2-meter telescope at the La Silla Observatory in Chile, shows the galaxy NGC 4666 in the center. It is a starburst galaxy, about 80 million light-years from Earth, in which particularly intense star formation is taking place. The starburst is thought to be caused by gravitational interactions with neighboring galaxies, including NGC 4668, visible to the lower left. A combination of supernova explosions and strong winds from massive stars in the starburst region drives a vast outflow of gas from the galaxy into space -- a so-called "superwind". NGC 4666 had previously been observed in X-rays by the ESA XMM-Newton space telescope, and these visible light observations were made to target background objects detected in the earlier X-ray images. This picture, which covers a field of 16 by 12 arcminutes, is a combination of twelve CCD frames, 67 megapixels each, taken through blue, green and red filters. Credit: ESO/J. Dietrich

(PhysOrg.com) -- The galaxy NGC 4666 takes pride of place at the centre of this new image, made in visible light with the Wide Field

Imager on the MPG/ESO 2.2-meter telescope at the La Silla Observatory in Chile. NGC 4666 is a remarkable galaxy with very vigorous star formation and an unusual "superwind" of out-flowing gas. It had previously been observed in X-rays by the ESA XMM-Newton space telescope, and the image presented here was taken to allow further study of other objects detected in the earlier X-ray observations.

The prominent galaxy NGC 4666 in the centre of the picture is a starburst galaxy, about 80 million light-years from Earth, in which particularly intense star formation is taking place. The starburst is thought to be caused by gravitational interactions between NGC 4666 and its neighbouring [galaxies](#), including NGC 4668, visible to the lower left. These interactions often spark vigorous star-formation in the galaxies involved.

A combination of supernova explosions and strong winds from massive stars in the starburst region drives a vast flow of gas from the galaxy into space — a so-called "superwind". The superwind is huge in scale, coming from the bright central region of the galaxy and extending for tens of thousands of light-years. As the superwind gas is very hot it emits radiation mostly as X-rays and in the radio part of the spectrum and cannot be seen in visible light images such as the one presented here.

This image was made as part of a follow-up to observations made with the ESA XMM-Newton [space telescope](#) in X-rays. NGC 4666 was the target of the original XMM-Newton observations, but thanks to the telescope's wide field-of-view many other X-ray sources were also seen in the background. One such serendipitous detection is a faint galaxy cluster seen close to the bottom edge of the image, right of centre. This cluster is much further away from us than NGC 4666, at a distance of about three billion light-years.

In order to fully understand the nature of astronomical objects,

researchers must study them at several wavelengths. This is because light of different wavelengths can tell us about different physical processes taking place. In this case the Wide Field Imager (WFI) observations were made in [visible light](#) to further investigate these serendipitously detected X-ray objects — a good example of how astronomers using different telescopes work together to explore the Universe.

More information: Science paper: [A&A 449, 837](#)

Provided by ESO

Citation: The superwind galaxy NGC 4666 (w/ Video) (2010, September 1) retrieved 1 April 2023 from <https://phys.org/news/2010-09-superwind-galaxy-ngc-video.html>

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