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PHOTO RELEASE
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Photo release:

Supernova blast bonanza in nearby galaxy

03-February-2004 **The nearby dwarf galaxy NGC 1569 is a hotbed of vigorous star birth activity which blows huge bubbles and super-bubbles that riddle the main body of the galaxy. The galaxy's vigorous 'star factories' are also manufacturing brilliant blue star clusters. This galaxy had a sudden and relatively recent onset of star birth 25 million years ago, which subsided about the time the very earliest human ancestors appeared on Earth.**

In this new image, taken with the NASA/ESA Hubble Space Telescope, The bubble structure is sculpted by the galactic super-winds and outflows caused by a colossal input of energy from collective supernova explosions that are linked with a massive episode of star birth.

Many open questions remain in astronomy as to how and when galaxies formed and how they evolved. Most of today's galaxies seem to have been already fully formed very early on in the history of the Universe (now corresponding to a large distance away from us), their formation involving one or more galaxy collisions and/or episodes of strongly enhanced star formation activity (so-called starbursts).

While most galaxies that are actually forming are too far away for detailed studies of their stellar populations even with Hubble, their local counterparts, nearby starburst and colliding galaxies, are far easier targets.

NGC 1569 is a particularly suitable example, being one of the closest starburst galaxies. It harbours two very prominent young, massive clusters plus a large number of smaller star clusters. The two young massive clusters match the globular star clusters we find in our own Milky Way galaxy, while the smaller ones are comparable with the less massive open clusters around us.

NGC 1569 was recently investigated in great detail by a group of European astronomers who published their results in the January 2004 issue of the British journal, Monthly Notices of the Royal Astronomical Society. The group used several of Hubble's high-resolution instruments, with deep observations spanning a wide wavelength range to determine the parameters of the clusters more precisely than is currently possible from the ground.

The team found that the majority of clusters in NGC 1569 seem to have been produced in an energetic starburst that started around 25 million years ago and lasted for about 20 million years. First author Peter Anders from the Göttingen University Galaxy Evolution Group, Germany says *"We are looking straight into the very creation processes of the stars and star clusters in this galaxy. The clusters themselves present us with a fossil record of NGC 1569's intense star formation history."*

The bubble-like structures seen in this image are made of hydrogen gas that glows when hit by the fierce winds and radiation from hot young stars and is racked by supernovae shocks. The first supernovae blew up when the most massive stars reached the end of their lifetimes roughly 20-25 million years ago. The environment in NGC 1569 is still turbulent and the supernovae may not only deliver the gaseous raw material needed for the formation of further stars and star clusters, but also actually trigger their birth in the tortured swirls of gas.

The colour image is composed of 4 different exposures with Hubble's Wide Field and Planetary Camera 2 through the following filters: shown in blue a wide ultraviolet filter (800 seconds), in green a green filter (930 seconds), in red a wide red filter (550 seconds) and also in red a Hydrogen alpha filter (1600 seconds).

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Notes for editors

The team is composed of Peter Anders (Göttingen University Galaxy Evolution Group, Germany), Richard de Grijs (University of Sheffield, UK), and Uta Fritze-v. Alvensleben (Göttingen University Galaxy Evolution Group, Germany).

This composite image was constructed with data from the ESO/ST-ECF Science Archive. The original Hubble exposures were obtained by Hunter (Proposal 6423).

Animations of the discovery and general Hubble Space Telescope background footage are available from: <http://www.spacetelescope.org/bin/videos.pl?&string=heic0402>

Image credit: European Space Agency, NASA & Peter Anders (Göttingen University Galaxy Evolution Group, Germany)

The Hubble Space Telescope is a project of international cooperation between ESA and NASA.

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