

'Elephant trunks' in space

March 7 2011



Image credit: NASA/JPL-Caltech/UCLA

(PhysOrg.com) -- NASA's Wide-field Infrared Survey Explorer, or WISE, captured this image of a star-forming cloud of dust and gas, called Sh2-284, located in the constellation of Monoceros. Lining up along the edges of a cosmic hole are several "elephant trunks" -- or monstrous pillars of dense gas and dust.

The most famous examples of elephant trunks are the "Pillars of

Creation" found in an iconic image of the [Eagle nebula](#) from NASA's [Hubble Space Telescope](#). In this WISE image, the trunks are seen as small columns of gas stretching toward the center of the void in Sh2-284. The most notable one can be seen on the right side at about the 3 o'clock position. It appears as a closed hand with a finger pointing toward the center of the void. That elephant trunk is about 7 light-years long.

Deep inside Sh2-284 resides an open star cluster, called Dolidze 25, which is emitting vast amounts of radiation in all directions, along with stellar winds. These stellar winds and radiation are clearing out a cavern inside the surrounding gas and dust, creating the void seen in the center. The bright green wall surrounding the cavern shows how far out the gas has been eroded. However, some sections of the original gas cloud were much denser than others, and they were able to resist the erosive power of the radiation and [stellar winds](#). These pockets of dense gas remained and protected the gas "downwind" from them, leaving behind the elephant trunks. These pillars can also be thought of as rising like stalagmites from the cavern walls.

Sh2-284 is relatively isolated at the very end of an outer spiral arm of our [Milky Way galaxy](#). In the night sky, it's located in the opposite direction from the center of the Milky Way.

The Sh2-284 nebula is classified as an HII region, as is LBN 114.55+00.22 featured in the September 16, 2010 [image](#). HII regions go hand in hand with star formation, and indeed the stars in the central Dolidze 25 cluster have just recently formed. They're hot, young, bright stars, with ages ranging from 1.5 to 13 million years -- infants by astronomical standards. In comparison, the sun is about 4.6 billion years old.

The colors used in this image represent specific wavelengths of infrared

light. Blue and cyan (blue-green) represent light emitted at wavelengths of 3.4 and 4.6 microns, which is predominantly from stars. Green and red represent light from 12 and 22 microns, respectively, which is mostly emitted by dust.

Provided by JPL/NASA

Citation: 'Elephant trunks' in space (2011, March 7) retrieved 3 May 2024 from <https://phys.org/news/2011-03-elephant-trunks-space.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--