

Breaking waves in the stellar lagoon (w/ Video)

September 22 2010



This close-up shot of the center of the Lagoon Nebula (Messier 8) clearly shows the delicate structures formed when the powerful radiation of young stars interacts with the hydrogen cloud they formed from. This image was created from exposures taken with the Wide Field Channel of the Advanced Camera for Surveys on Hubble. Light from glowing hydrogen (through the F658N filter) is colored red. Light from ionized nitrogen (through the F660N filter) is colored green and light through a yellow filter (F550M) is colored blue. The exposure times through each filter are 1560 s, 1600 s and 400 s respectively. The blue-white flare at the upper-left of the image is scattered light from a bright star just outside the field of view. The field of view is about 3.3 by 1.7 arcminutes. Credit: NASA, ESA.

The Advanced Camera for Surveys (ACS) on the NASA/ESA Hubble Space Telescope has captured a dramatic view of gas and dust sculpted by intense radiation from hot young stars deep in the heart of the Lagoon

Nebula (Messier 8). This spectacular object is named after the wide, lagoon-shaped dust lane that crosses the glowing gas of the nebula.

This structure is prominent in wide-field images, but cannot be seen in this close-up. However the strange billowing shapes and sandy texture visible in this image make the Lagoon Nebula's watery name eerily appropriate from this viewpoint too.

Located four to five thousand light-years away, in the constellation of Sagittarius (the Archer), Messier 8 is a huge region of star birth that stretches across one hundred light-years. Clouds of [hydrogen gas](#) are slowly collapsing to form new stars, whose bright ultraviolet rays then light up the surrounding gas in a distinctive shade of red.

The wispy tendrils and beach-like features of the nebula are not caused by the ebb and flow of tides, but rather by ultraviolet radiation's ability to erode and disperse the gas and dust into the distinctive shapes that we see.

In recent years astronomers probing the secrets of the Lagoon Nebula have found the first unambiguous proof that star formation by accretion of matter from the [gas cloud](#) is ongoing in this region.

Young stars that are still surrounded by an accretion disc occasionally shoot out long tendrils of matter from their poles. Several examples of these jets, known as Herbig-Haro objects, have been found in this nebula in the last five years, providing strong support for astronomers' theories about star formation in such hydrogen-rich regions.

The Lagoon Nebula is faintly visible to the naked eye on dark nights as a small patch of grey in the heart of the Milky Way. Without a telescope, the nebula looks underwhelming because human eyes are unable to distinguish clearly between colours at low light levels.

Charles Messier, the 18th century French astronomer, observed the nebula and included it in his famous astronomical catalogue, from which the nebula's alternative name comes. But his relatively small refracting telescope would only have hinted at the dramatic structures and colours now visible thanks to Hubble.

Provided by ESA/Hubble Information Centre

Citation: Breaking waves in the stellar lagoon (w/ Video) (2010, September 22) retrieved 27 April 2024 from <https://phys.org/news/2010-09-stellar-lagoon-video.html>

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.