



May 20, 2002



September 2, 2002



October 28, 2002



December 17, 2002



February 8, 2004



October 23/24, 2004

V838 Mon Light Echo

In January 2002, a faint red star (seen in the middle of the dust clouds) suddenly became 600,000 times more luminous than our Sun, temporarily making it the brightest star in our Milky Way galaxy. The mysterious star - called V838 Monocerotis (V838 Mon) - has since faded back into relative obscurity, but it left behind a rare and spectacular sight called a "light echo." In this phenomenon, the outward racing wavefront of starlight from a stellar outburst encounters concentric shells of gas and dust surrounding the star. As it does, these shells are illuminated and reflect (echo) that light back to Earth.

The echoing of light through space is similar to the echoing of sound through air. As light from the outburst continues to propagate outward, different parts of the surrounding dust are illuminated, just as a sound echo bounces off of objects near the source, and later, objects further from the source. The illuminated dust shells are likely remains from previous violent eruptions of the star.

The outburst of V838 Mon was similar to, but different from a typical nova. A nova is the titanic nuclear explosion resulting from a pile-up of mass accreted from a companion star. In such cases, the nova expels its outer layers and exposes a searing stellar core that has a temperature of hundreds of thousands of degrees Fahrenheit. In contrast, V838 Mon did not throw off its outer layers, but instead, simply swelled enormously in size. In doing so, its surface temperature actually dropped to a temperature not much hotter than a light bulb! V838 Mon is a very unique star and may represent a rarely seen transitory stage in stellar evolution.

Hubble Space Telescope - Advanced Camera for Surveys

NASA, ESA, H. E. Bond (STScI), and The Hubble Heritage Team (STScI/AURA)