



Are Comets Actually Responsible for Life on Earth?

Speculation about a possible connection between comets and the origin of life has been around for decades. The discovery of a cloud of debris near a star 60 light years away has been the latest occasion for such speculations. Headlines have described the discovery in quite sensational terms; for example, FoxNews.com brazenly declared, "[Strong Evidence Life Spread by Comets, Astronomers Say](#)." However, the finding, though intriguing, is far less dramatic.



The discovery of a band of dust around Eta Corvi hundreds of trillions of miles from Earth has led astronomers to speculate how that band was formed. NASA's Spitzer Space Telescope was responsible for spotting the band, and the facts were [more modestly described by the American space agency](#):

Now Spitzer has spotted a band of dust around a nearby bright star in the northern sky called Eta Corvi that strongly matches the contents of an obliterated giant comet. This dust is located close enough to Eta Corvi that Earth-like worlds could exist, suggesting a collision took place between a planet and one or more comets. The Eta Corvi system is approximately one billion years old, which researchers think is about the right age for such a hailstorm.

"We believe we have direct evidence for an ongoing Late Heavy Bombardment in the nearby star system Eta Corvi, occurring about the same time as in our solar system," said Carey Lisse, senior research scientist at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md., and lead author of a paper detailing the findings....

Astronomers used Spitzer's infrared detectors to analyze the light coming from the dust around Eta Corvi. Certain chemical fingerprints were observed, including water ice, organics and rock, which indicate a giant comet source.

NASA's actual summary of the discovery at Eta Corvi was quickly recast for public consumption; thus, for example, the aforementioned Fox News article declared: "A dust cloud around a nearby star appears to be the debris from a collision between a giant comet and an Earth-like planet — possibly a re-enactment of the comet barrage that struck Earth 4 billion years ago and presumably seeded our planet with water and other necessities for life as we know it." What is not explained in such a lead sentence is that the astronomer's definition of "Earth-like" is vastly different from that which would be employed by the average human being. For an astronomer, an "Earth-like" world can be a bare rock with gravity which is significantly more or less than that of Earth, which happens to orbit its star at a distance where scientists believe liquid water could exist, in the presence of an atmosphere. (That the "Earth-like" definition can include planets which lack a breathable atmosphere should provide a clue to the difference between the technical and popular usages of such a term.)



Written by [James Heiser](#) on October 20, 2011

In point of fact, there is not yet any evidence that any planets are in orbit around Eta Corvi. Carey Lisse is quoted in the FoxNews article as speculating, "I'd bet a case of beer that in five years we'll have found planets around Eta Corvi," but his reasonable speculation is far removed from speculations about life being "spread" by comets. And other examples of overstatement are scattered throughout coverage of the news regarding Eta Corvi. An article at io9.com ("[Comets are raining down water on a faraway planet](#)") not only overstates the case in the headline, but runs even further astray in the body of the article:

The Eta Corvi solar system is like a window into how our own solar system looked billions of years ago. All of Eta Corvi is being bombarded by giant comets — the *exact same process* that created Earth's oceans....

We can't be sure, but it's certainly possible that this comet actually hit a planet located in Eta Corvi's habitable zone. If that's the case, then we're witnessing what is *essentially a reenactment* of the formation of our planet's oceans. Earth got huge amounts of its water and carbon-based organic compounds during an epoch known as the Late Heavy Bombardment, in which comets from the Kuiper Belt beyond Neptune began hurtling towards the inner solar system due to gravitational disturbances from Jupiter and Saturn.

We probably owe the existence of life as we know it to a bunch of comets, and now the Eta Corvi system is in the middle of the *exact same process*. [Emphasis added.]

It is irresponsible to use phrases such as "exact same process" and "essentially a reenactment" regarding processes that remain speculative (at best) when applied to descriptions of Earth itself — let alone what might be happening around a star where it remains unknown whether there are even any planets present for the hypothetical "bombardment" to take place.

Coverage of the dust cloud of Eta Corvi is yet another opportunity for readers to reflect on the disjuncture between scientific discoveries and the coverage of such discoveries. Trying to find the greater "meaning" to be extracted from minor events of scientific significance, the self-appointed popularizers fail to serve the public when their "coverage" of such discoveries far outstrips the established facts. Readers must be careful to track such stories back to the facts — which, although far less sensational, are often far more informative. And where the origin of life is concerned — a topic that is inherently metaphysical — popular reporting is most likely to go the farthest astray.



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