New discovery makes habitable worlds even less likely

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The improbability of a natural origin of life is a well-known difficulty for evolution. Though evolutionists have suggested that the sheer size of the universe guarantees that life will form somewhere, such hopes turn out to be unfounded. Habitable worlds are very difficult to form, and require a number of special conditions.[1] Recently, scientists found yet another way in which a planetary system can be made uninhabitable, by constant bombardment of impacting asteroids, which would likely prevent the evolution of life.

Tau Ceti is a 'sun-like' star of similar size, mass and spectral class as the sun. It is also the closest such sun-like star, at only 12 light-years away. For this reason, it was once a candidate in the search for extraterrestrial intelligence.[2]

Observations in infrared light had previously indicated that Tau Ceti had a disk of matter around it. Astronomers using the world's most sensitive submillimetre camera have recently succeeded in photographing this disk. This new observation revealed a disk of dust, which, it is believed, is produced as a result of collisions between larger objects. Thus, a disk of debris consisting of asteroid- and comet-like bodies and extending to about 55 AU[3] from Tau Ceti is inferred.[4] This disk has been likened to the Kuiper Belt, beyond the orbit of Neptune in our solar system. The difference is that the Tau Ceti system has at least 10 times more material in the form of small bodies, such as asteroids and comets, compared to our system.[4]

The significance of this result is that planets orbiting Tau Ceti (if any exist) would be subject to a constant barrage of impacts comparable to that which supposedly caused the extinction of the dinosaurs.[5] The discoverers of Tau Ceti's debris disk noted that our sun has a '"minimal Kuiper Belt"—a situation which may be beneficial in terms of less bombardment and better stability for life'.[4] Our solar system is thus a safer place than the Tau Ceti system because it has fewer impacting bodies. This confirms once again that our sun and its system of satellites is the exception, not the rule. As one news release noted, 'the tranquil space environment around the earth may be more unusual than previously realized'.[6]

Astronomers had already known that there are many ways for a planet to become uninhabitable, and some evolutionary scientists had concluded that Earth, and the solar system it occupies, could very well be unique.[1] But extrasolar planets are falling short of habitability in ways astronomers had never expected, and the recent findings concerning Tau Ceti indicate that the earth is special in more ways than we could have imagined. It is possible, perhaps probable, that there are still other special conditions on Earth which allow for the existence of life, but which we take for granted. The probability of forming a habitable world could therefore be much smaller than even the lowest current estimates indicate. It seems that the more we know about the subject, the less likely it is that a planet like Earth could form by accident. We are reminded of the words of Isaiah 45:18, which tell us that God 'did not create [the earth] a waste place, but formed it to be inhabited'.

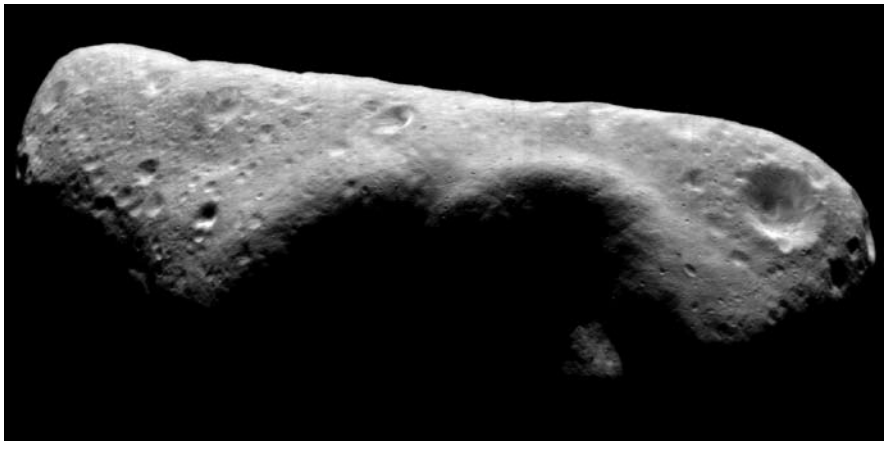

Photo by NASA/JPL-Caltech

The star Tau Ceti has surprising numbers of asteroid-size bodies orbiting it. This image of the asteroid Eros (in our solar system) was taken by the NEAR Shoemaker *spacecraft on 30 November 2000.*

References

1. Taylor, S.R., *Solar System Evolution: A New Perspective*, Second Edition, Cambridge University Press, Cambridge, UK, p. 442, 2001.
2. Alexander, A., The search for extraterrestrial intelligence: a short history, <www.planetary.org/html/UPDATES/seti/history/History05.htm>, 31 July 2004.
3. AU (Astronomical Unit) is the average distance between Earth and the sun—about 150 million km.
4. Greaves, J.S., Wyatt, M.C., Howard, W.S. and Dent, W.R.F., The debris disc around τ Ceti: a massive analogue to the Kuiper Belt, *M.N.R.A.S.* **351**(3):L54, 2004.
5. There are probably ways in which the Tau Ceti system could still be habitable. Perhaps, for example, a gas giant orbits beyond a hypothesized habitable planet, in which case the giant's gravity might deflect the impacting objects (much as Jupiter does in our system). But the real issue here is not whether the Tau Ceti system itself is habitable. The significance of this discovery is that there is another variable, the number of impacting bodies, which must be correctly adjusted to allow life. When this requirement is combined with all the others that were known previously, it serves to further decrease the probability of an accidental emergence of life.
6. Tau Ceti system, Asteroid Alley—an inhospitable neigbour, <www.pparc.ac.uk/Nw/Ateroid_alley.asp>, 6 July 2004.