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DEMYSTIFYING THE MYSTERIOUS PROPERTIES OF SATURN'S DEAD STAR MOON: MIMAS

Abstract

The Saturnian system has several astonishing properties, and it possesses some of the most mysterious moons among Jovian planets. Mimas is one of the numerous moons of Saturn and it is having an orbital speed of 14.25 km/s. This Saturn's dead star moon has an elongated orbit and is much closer to Saturn than Enceladus which means it should have more tidal heating, but observations predict that it has geysers of water. For the formation of geysers on the moon, there should be a presence of internal heat which contradicts the fact that Mimas have tidal heating. Frozen water on any moon can form cratered surfaces and data suggests that Mimas do have heavily cratered surfaces that are responsible for preserving those craters. In this paper, a detailed study on the atmosphere and different phenomena occurring on Mimas has been presented. Using the data from Cassini-Huygens, detailed study of the various properties has been presented such as temperature variations, orbital motion and physical geography of the moon. This paper also has mentioned the possible reason for the presence of water geysers and reason behind the formation of cratered surfaces. Variations of temperature maps have been also presented with the help of data for better insight into the properties of the moon. Simulations for the orbital motion of mimas have also been presented.