

JUPITER: FRIEND OR FOE

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It has long been believed that the planet Jupiter has played an important role in the development of life on Earth. Without the particular size and placement of Jupiter, it is argued, the Earth would have experienced a greatly enhanced flux of impacts from asteroids and comets, hindering or entirely preventing the development of life. Despite the vigour with which this belief is held, very little work has been performed to examine the effect of Jupiter on the terrestrial impact flux. We have now completed the first detailed study on the effect of Jupiter's mass on the impact rate of the three types of potentially hazardous objects - the Near Earth Asteroids, the Short Period Comets, and the Long Period Comets. Although a massive Jupiter does act to whittle down the population of Long Period comets threatening the Earth, its role in managing the threat from Near Earth Asteroids and Short Period Comets is much less clear. Indeed, it seems that the impact risk from these families of object is significantly higher in Solar Systems with a Jupiter-mass planet than in those without, although the greatest level of "threat" is posed by a planet in a Jupiter-like orbit with a mass similar to that of Saturn. Above this mass the hazard falls away significantly."