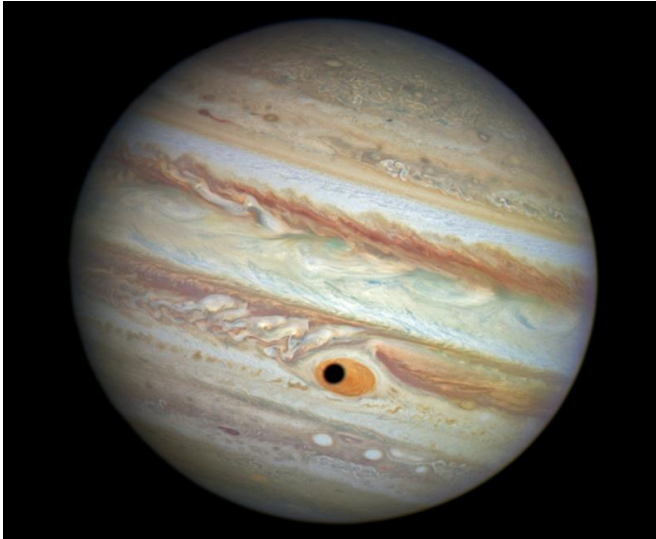


Is Jupiter our friend or enemy?

6 October 2015, by Fraser Cain



Jupiter's Great Red Spot and Ganymede's Shadow.
Credit: NASA/ESA/A. Simon (Goddard Space Flight Center)

Does Jupiter protect us from harm, or cause more objects to change trajectory and head towards Earth?

Like me, you're probably a little ego-geocentric about the importance of Earth. It's where you were born, it's where you keep all your stuff. It's even where you're going to die – I know, I know, not you Elon Musk, you're going to "retire" on Mars, right after you nuke the snot out of it.

For the [rest](#) of us, Earth is the place. But in reality, when it comes to [planets](#), this is somebody else's racket. This is Jupiter's solar system, and we all sleep on its couch.

Jupiter accounts for 75% of the mass of the planets of the solar system, nearly 318 times more massive than Earth, and isn't just the name of everyone's favorite secret princess. It's the 1.9×10^{27} kilogram gorilla in the room. Whatever Jupiter wants, Jupiter gets. Jupiter hungry?

JUPITER HUNGRY.

What Jupiter apparently wants is to throw our stuff around the solar system. Thanks to its immense gravity, Jupiter yanks material around in the asteroid belt, preventing the poor space rocks from ever forming up into anything larger than Ceres.

Jupiter gobbles up asteroids, comets, and spacecraft, and hurtles others on wayward trajectories. Who knows how much mayhem and destruction Jupiter has gotten into over the course of its 4.5 billion years in the solar system.

Some scientists think we owe our existence to Jupiter's protective gravity. It greedily vacuums up dangerous asteroids and comets in the solar system.

Other scientists totally disagree and think that Jupiter is a bully, perturbing perfectly safe comets and asteroids into dangerous trajectories and flushing [earth](#)'s head in the toilet during recess.

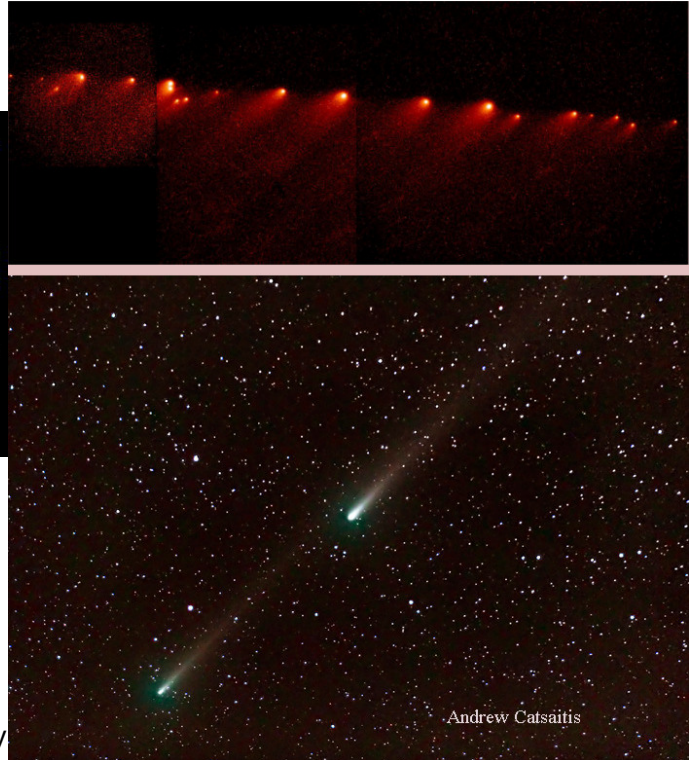
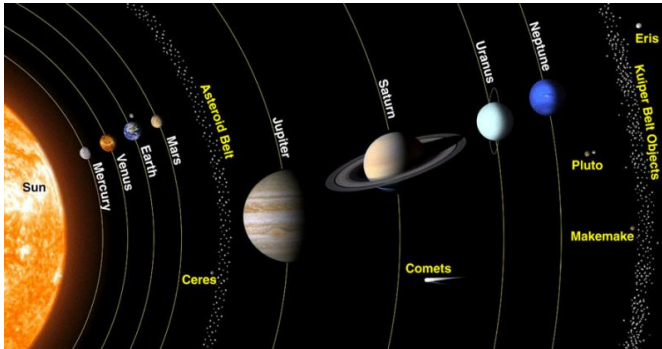
Which is it? Is Jupiter our friend and protector, or evil enemy. We've already figured out how to dismantle you Jupiter, don't make us put our plans into action.

Some of the most dangerous objects in the solar system are long-period comets. These balls of rock and ice come from the deepest depths of the Oort cloud. Some event nudges these death missiles into trajectories that bring them into the inner solar system, to shoot past the sun and maybe, just maybe, smash into a planet and kill 99.99999% of the life on it.

There's a pretty good chance some of the biggest extinctions in the history of the Earth were caused by impacts by long period comets.

As these comets make their way through the [solar system](#), they interact with Jupiter's massive gravity, and get pushed this way and that. As we saw with Comet Shoemaker-Levy, some just get consumed

entirely, like a tasty ice-rock sandwich.



Credit: NASA

The theory goes that Jupiter pushes these dangerous comets out of their murder orbits so they don't smash into Earth and kill us all.

But a competing theory says that Jupiter actually diverts comets that would have completely missed our planet into deadly, Earth-killing trajectories.

Will the Sailor Scouts provide us any clues? Who can say?

At top, an image of the comet Shoemaker-Levy 9 (May 1994) after a close approach with Jupiter which tore the comet into numerous fragments. An image taken by Andrew Catsaitis of components B and C of Comet 73P/Schwassmann–Wachmann 3 as seen together on 31 May 2006. Credit: NASA/HST, Wikipedia, A.Catsaitis

Here's friend of the show, Dr. Kevin Grazier, a planetary scientist and scientific advisor for many of your favorite sci-fi TV shows and movies.

So which is it? Is Jupiter our friend or enemy? We'll need to run more simulations and figure this out with more accuracy. And until then, it's probably best if we just tremble in fear and worship Jupiter as a dark and capricious god until the evidence proves otherwise. It's what Pascal would wager.

Source: [Universe Today](#)

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