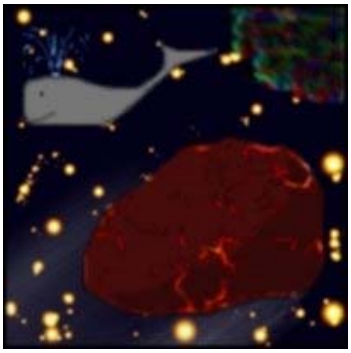
Asteroids, Comets, and Meteors - Clearing Up Confusion

- Front Page
- What is h2g2?
- Who's Online
- Write an Entry
- Browse
- Announcements
- Feedback
- h2g2 Help
- RSS Feeds

Contact Us

Like this page?
Send it to a friend!

Asteroids



When someone hears the word asteroid, one of many images may come to mind. Some will think of earthly destruction, others might picture a scene from the movie *Star Wars*, and yet more will picture the Asteroid Belt. First, there are some facts about asteroids that are commonly mixed up, in an immense, hugely wrong sort of way. For example, in *Star Wars*, the asteroids are *very* close to one another. In reality, you'd be lucky to see one in a vast distance.

The Asteroid Belt

The Asteroid Belt right in between Mars and Jupiter. Lots of asteroids are located there. A common mistake people make is that the Asteroid Belt was a planet that was smashed to big pieces by Jupiter's immense gravity. This is possible, but is not always the theory of choice. The more likely theory is that the asteroids were just leftover stuff that never formed anything really large due to Jupiter's gravity and that there isn't a whole lot of it, compared to the larger planets.

Other Locations and Components

However, not all asteroids are located in the Asteroid Belt. Some actually orbit the Sun separately and cross the Earth's path often. The chances of actually coming into contact with these large rocky/metallic blobs are slim, but they make for great movies with lots of sickening mushy scenes involving people wishing farewell to each other only coming to find out that the world really isn't going to end. But seriously, they can be a big threat. An asteroid or meteorite was thought to have taken out the dinosaurs, so the threat of them might be cause for some preparations. Maybe we could hide under our desks and chairs with a paper bag over our heads, or maybe we could identify it early enough to blow it up (like in the mushy movies). Anyhow, asteroids are made up of two different materials. Some contain only rock, some contain only iron, and some are a mixture of both. The percentages are as follows:

- **Rocky** - 75% of all asteroids
- **Iron** (metallic) - 7% of all asteroids
- **Mixed** (as in rock and iron mixed and/or well blended) - 18% of all asteroids

Asteroid Dust

When asteroids cross the path of Earth (aka Earth's orbit), they leave dust behind, therefore making what is known as a 'meteor shower/storm' when Earth passes through this dust. Comet dust also causes these showers, and many of the showers have been identified as specific asteroid and comet trails. Being that asteroids are far too common and not all that exciting, let's move on to those dirty ice balls - comets.

Comets

Components and Distances

Comets are actually just large balls of ice and rock, which gains them the nickname 'dirty ice balls', or 'dirty snowballs'. Comet orbits are much larger than those of asteroids. Comets originate in the Oort Cloud, which is really, really far away and has a funny name[1].

However, there are also other comets that come from a little bit closer, actually from quite a bit closer. There is another belt (as if the solar system's pants weren't tight enough already) just outside of Pluto's orbit called the Kuiper Belt, which is where other comets can come from. In fact, even though some comets come from closer than others, none can be identified as comets until they reach Jupiter (near the Asteroid Belt, which is totally unrelated to the Kuiper Belt). This is when their beautiful tails begin to form.

Tails and Debris

Once comets get closer to the Sun, the ice that they are made of starts to vaporize, leaving a big tail of icy stuff. Many comets also have a tail composed of just plain old dusty-type debris. These comets are quite lovely, because they appear to have one bluish tail and one brownish tail. The icy tail always points away from the Sun. The debris that falls off of comets can also create meteor showers, exactly like those from asteroids.

World Destruction

Similar to asteroids, there is also a fear of a comet one day hitting the Earth (spawning those aforementioned corny movies). But the supposed 'destruction of the world' became a scary reality when *Shoemaker/Levy* struck Jupiter creating devastation to the non-existent beings living there. Actually though, the effects are still being carried out upon Jupiter's immense mass, proving that just one little comet could possibly wipe out the Earth. Although this doesn't happen often, it does happen, and could wipe out almost all life as we know it (and no longer would know it if it wiped us out).

Meteors, Meteor Showers, and Meteorites

Meteor Showers and Meteors

How about these meteor showers, then? You've been hearing about them all throughout this entry; well, here's your chance to get the facts! Meteors are basically just the gunk that falls off of comets and asteroids. Of course, they are usually the size of dust or peas or really tiny little thingies. Some can get rather large though; if one got big enough, it could hit the Earth with more energy than a nuclear warhead. But the chances of that happening are also slim. When the tiny particles hit the Earth's atmosphere, they burn up in bright flashes of light normally referred to as shooting stars or falling stars.

Meteorites and Craters

Meteorites are just meteors that survive to actually hit the Earth. They usually burn up quite a bit and don't come much bigger than a golf ball. These small objects hit the planet everywhere, but the best place to find them would be at the poles, because the black and brown rocks that crash-land stick out in the white snow. Bigger meteorites are a little more famous, such as the one thought to have destroyed the dinosaurs. Also, a meteorite created the large crater in Arizona. The craters on Earth aren't as visible as the ones on the Moon are because on the Moon there isn't any weather to erode them away, such as there is on Earth.

The True Threat

Even if this Entry makes it seem as if the threat of an actual impact is just an insignificant one, the threat is real. It isn't something you will just see in the movies, it can, has, and will happen. Maybe we can stop it, maybe we can't, it all depends on how early the object (comet, asteroid, etc) is discovered. It might strike at any moment. There is a danger, no matter how much this Entry jokes about it.

Conclusion

To sum all of this all up, comets, asteroids, and meteors are similar in that everyone is afraid that they will hit the Earth, and that they all involve rock. They are dissimilar in just about every other sense possible. Here's a quick review:

- **Comets** - Big, from far away, tails from vaporizing ice.
- **Asteroids** - Slightly smaller, from Asteroid Belt.
- **Meteors** - Range from tiny to slightly less tiny, make for a pretty show at night.
- **Meteorites** - Not good if large.

---

[1] By really, really far, that implies about halfway to the nearest star, so that's about two light years away, which is... well, a really long way away. It would take light two years to reach us from there, and light travels extremely fast, around 186,000 miles per second.