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ASTRONOMY

Japanese satellite promises to provide new look at moon

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Imagine two planets colliding. Some of the debris would be ejected into space and the rest would be molten lava from the energy release, eventually merging into a single planet.

At first, debris would orbit the new planet. Over time, gravity would collect the debris into a smaller "planetoid." Actually, this is the leading theory of how our moon was formed about 4.5 billion years ago.

The colliding-planets theory only came into vogue after the Apollo missions, when moon rocks were brought back and were found to be remarkably similar to the oldest rocks on Earth.

However, we still have a lot to learn about the moon.

A few weeks ago, the Japan Aerospace Exploration Agency, or JAXA, sent a sophisticated satellite to orbit the moon. Japan became the first Asian country to manage this feat.

Its purpose is to map out, in greater detail than before, the surface of the moon. Minerals there are of great interest to future manned missions.

The Japanese satellite, named Kaguya for a fairy-tale princess, has an array of advanced surveillance equipment, including optical cameras, radar (for surface and subsurface features) and a magnetometer (to map the moon's weak magnetic field).

Similar measurements were made by NASA's lunar prospector, but not with the precision and coverage that Kaguya is expected to provide.

There are still unsolved problems with the moon. For example, it remains a mystery why there are more impact craters -- called maria -- on the near side of the moon. Also, the moon's mass is off-center, but we don't know why.

New, precise measurements from Kaguya will help us to understand more about Earth's nearest neighbor. Will the colliding-planets theory survive? We'll see.

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