

Dear Cassini Scientists at the Jet Propulsion Lab,

I think the target that would have most scientific value would be target 2; Tethys and Saturn's F and E and part of the A ring.

There are a number of reasons I chose this target. Firstly because there were only 2 flybys of Tethys so far and there is so much more to discover and so many mysteries to solve there.

Also we might get a look at the biggest crater on Tethys 'Odysseus'. Odysseus, sometimes called the 'Great Basin' dominates two-fifths of Tethys and is four hundred Km in diameter. Some moons would not have survived an impact this great, why did Tethys survive?

We could also get a close up look at the gigantic valley on Tethys called "Ithaca Chasma". This valley is 65 Km wide and several Km deep. Scientists believe that Ithaca Chasma was created when the ice on Tethys formed making the great gap as the ice expanded. Another theory is that the Ithaca Chasma was formed at the same time as Odysseus, which is on the opposite side of the moon.

Secondly Saturn's rings would be a good chance to see the micro moons that scientists believe exist and what if they had life forms on them, that would be an amazing discovery! As the rings are covered in icy particles and in 1997 on the sea floor in the Gulf of Mexico, life forms called "methane ice worms" were found in harsh, cold conditions. Maybe there is a chance similar 'worms' live in the icy particles on Saturn's rings.

Three rings are included in this target, but I find the F ring really interesting. It is a narrow ring off the outer edge of the A ring and its features can change within hours. It has two shepherd moons "Prometheus" and "Pandora", which orbit inside and outside of it. The undiscovered micro moons, mentioned above, cause changes in the ring, such as kinks and bumps because of the effect of their gravity.

The E ring is mostly formed from particles from the moon Enceladus but scientists believe Tethys may be adding a small amount of particles to the E ring. Another mystery to uncover here.

Only this month a new giant ring was discovered around Saturn. This massive ring is ten times the diameter of Saturn and only shows up in infra-red light. Wouldn't it be great to make some more new discoveries, if these tiny moons exist near the F ring and the E ring is being added to by Tethys? How did Tethys survive the great impact of the crater Odysseus and how did the Ithaca Chasma form?

Lastly, because Giovanni Cassini discovered Tethys in 1684, it would be a great honour to point the Cassini cameras at Tethys in memory of him. He only had a telescope and yet he made great discoveries.

Here's hoping you choose target 2, Tethys and Saturn's rings!

Finn Bradley
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