Cassini imaging lead hopes for planet-wide celebration of the Pale Blue Dot

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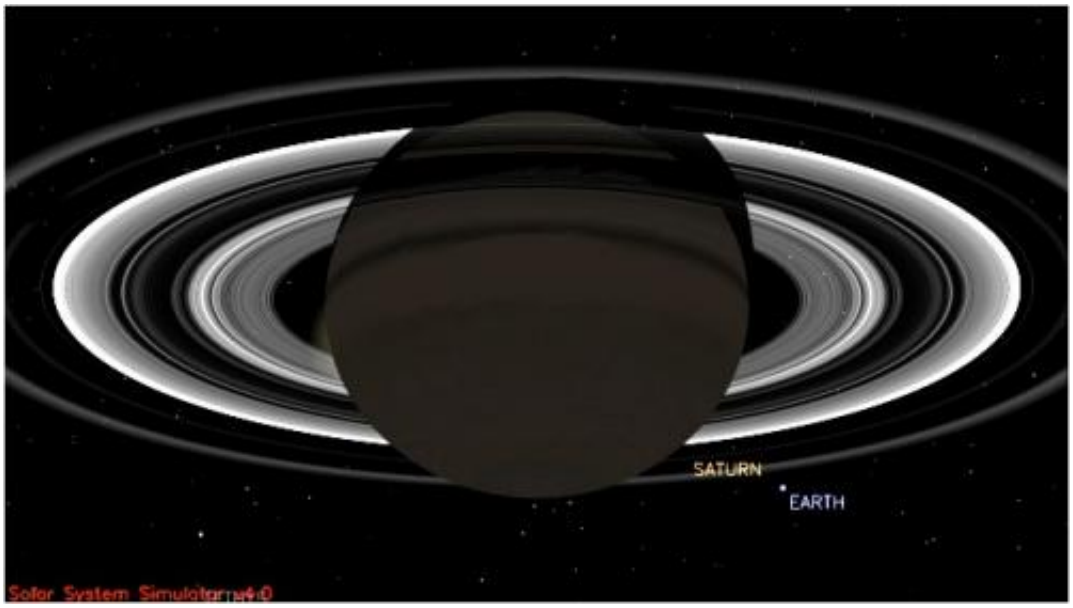

This simulated view from NASA's Cassini spacecraft on July 19, 2013, shows the expected positions of Saturn and Earth around the time Cassini is taking Earth's picture.

(Phys.org) —On July 19, 2013, NASA's Cassini spacecraft will be turned to image Saturn and its entire ring system during a total eclipse of the sun, as it has done twice before during its previous 9 years in orbit. But this time, the images that will be collected have been specifically designed for something very special. They will capture, in natural color, a glimpse of our own planet next to Saturn and its rings, during an event that will be the first time Earthlings know in advance their picture will

be taken from a billion miles away.

'It will be a day', says Cassini imaging team leader, Carolyn Porco of the Space Science Institute in Boulder Colorado, 'for all the world to celebrate.'

'Ever since we caught sight of the Earth among the rings of Saturn in September 2006 in a mosaic that has become one of Cassini's most beloved images, I have wanted to do it all over again, only better', said Porco. 'And this time, I wanted to turn the entire event into an opportunity for everyone around the globe, at the same time, to savor the uniqueness of our beautiful blue-ocean planet and the preciousness of the life on it.' Porco was involved in co-initiating and executing the famous "Pale Blue Dot" image of Earth taken by NASA's Voyager 1 from beyond the orbit of Neptune in 1990.

"While Earth will be only about a pixel in size from Cassini's vantage point 898 million miles [1.44 billion kilometers] away, the Cassini team is looking forward to giving the world a chance to see what their home looks like from Saturn," said Linda Spilker, Cassini project scientist at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "With this advance notice, we hope you'll join us in waving at Saturn from Earth, so we can commemorate this special opportunity."

The intent for the upcoming mosaic is to capture the whole scene, Earth and Saturn's rings from one end to the other, in those particular camera filters - red, green and blue—that can be composited to form a natural color view, or what human eyes might see at Saturn. It also includes imaging the Earth and the Moon with the high resolution camera, something not yet done by Cassini.

Three years ago, Porco and her staff members at CICLOPS began carefully examining Cassini's planned trajectory for the remainder of its

Saturn mission in search of the best time to image the Earth when it was unobstructed by Saturn or its rings, and when there weren't other pressing scientific observations that rendered the idea impossible. Imaging any planetary body close to the sun necessitates doing so when the sun is completely blocked, so that no undiluted sunlight can enter the cameras or other Cassini instruments and damage their sensitive detectors. Such opportunities during Cassini's orbital tour are rare.

When all was considered, the best time for this event was found on July 19, 2013. For several hours on that day, the spacecraft was once again going to be in Saturn's shadow as a result of the planning work of the project's rings working group and the spacecraft team. The intent was to duplicate the eclipse geometries from earlier in the mission to collect, for scientific purposes, both visible and infrared imagery of the planet and its ring system.

Grabbing the chance to image the Earth within the mosaic of scientific images already being planned by both the imaging and infrared mapping teams involved special care and a lot of work to ensure a mosaic without gaps and an unobscured image of the Earth without the overwhelming glare from nearby rings.

It was a big challenge and turned into a fine example of teamwork.

'My colleagues on the VIMS team were great sports about it, and allowed us to tweak their mosaic to find the best placement of mosaic images and the best times for the high resolution Earth images', said Porco. 'In the end, we all got what we wanted.' Unlike previous images of Earth by NASA interplanetary spacecraft since the days of Voyager, this will be the first time that the world's people will know ahead of time that their picture is being taken.

Porco is hoping for a memorable event.

'My sincere wish is that people the world over stop what they're doing at the time the Earth picture is taken to revel in the sheer wonder of simply being alive on a pale blue dot of a planet, and to appreciate the ever-widening perspective of ourselves and our world that we have gained from our interplanetary explorations. We are dreamers, thinkers, and explorers, inhabiting one achingly beautiful planet, yearning for the sublime, and capable of the magnificent. Let's celebrate that, and make this one day a day the whole Earth smiles in unison.'

Cassini's images of Earth, both wide angle and narrow angle, will be captured between 21:27 to 21:42 on July 19 UTC, or 14:27 and 14:42 PDT. During these times, North America and part of the Atlantic ocean will be in sunlight. The illuminated parts of the Earth and the Moon will each be no more than one pixel across.

Graphics illustrating the position of Earth with respect to Saturn and its rings, and the part of the Earth viewable during this event are available at: ciclops.org/view_event/193, saturn.jpl.nasa.gov/waveatsaturn, and www.nasa.gov/cassini

Provided by NASA

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