

Los Angeles Times CALENDAR weekend

WITH THE KIDS

NASA on collision course

This mission could collect data on what makes a comet tick -- and put on a show.

By Brenda Rees
Special to The Times

June 23, 2005

Comets of the solar system, beware. NASA is coming after you for a good galactic smackdown.

On July 3, the Deep Impact mission will attempt to give scientists and the public a first-ever look inside a comet. And scientists are hoping it will happen with a bang.

Launched in November 1999, the spacecraft has been hurling itself toward Comet Tempel 1 some 83 million miles away. An impactor — loaded with the equivalent of 4 1/2 tons of TNT — is expected to create an explosion near the comet's nucleus that could yield a dramatic brightening for amateur and professional astronomers.

"There's just something about smacking a comet at 6 miles a second that appeals to kids," says Dr. Don Yeomans, member of the Deep Impact Science and Navigation teams at Jet Propulsion Laboratory in La Cañada Flintridge. "Well, I guess for some adults too."

The celestial fireworks — to be seen locally at 10:52 p.m. — is a rare planned accident in the heavens that will have local astronomers (including clubs that are part of the NASA-affiliated Night Sky Network) celebrating the evening in a variety of ways.

Earlier in the day, families in the Big Bear area can participate in a Deep Impact party sponsored by the Big Bear Valley Astronomical Club and StarGazer's Inn and Observatory. While adults learn about the mission and how to view the event in workshops, kids will hear comet storytelling and make edible comets.

Elsewhere, the Planetary Society will host a Comet Bash at Citrus College with speakers, JPL Deep Impact displays, live images on a giant screen and updates from mission control.

And finally, folks will be setting up formal and informal gatherings in the dark sky areas of Mt. Pinos, Joshua Tree, Ojai and Lancaster. The Antelope Valley Astronomical Society will be hosting a public star party at Saddleback Butte State Park in Lake Los Angeles, where members will have telescopes glued on an area about 25 degrees above the horizon and not too far from Jupiter.

"It could be a fantastic display, but we have to realize that it might not happen," says Terry Pedroza of the Antelope Valley Astronomical Society. "But I'm going to be out there in case it does, because I'll probably never see anything like this again in my life."

Yeomans acknowledges there are many variables to the \$333-million mission, likening it to threading a needle in space. "But we are optimistic," he says. "We have to be."

Indeed, Deep Impact could not only open the door to the nature of comets, but also shed light on the origins of life on Earth.

As mysterious extraterrestrial nomads, comets are composed of ice, gas and dust; they contain primitive debris from the solar system's distant and coldest regions that formed 4.5 billion years ago. Comets could very well be the magic wands of creation. Some scientists think comets delivered water for Earth's oceans and carbon molecules that ultimately became the building blocks of life.

In addition, these "dirty snowballs" could have easily wiped out those pesky dinosaurs, paving the way for mammals to take their place as top dog on the planetary food chain.

NASA has had other comet missions — most notably Stardust, which is set to return to Earth in January 2006 with actual comet dust samples — but Deep Impact is the first time scientists are punching a hole in a comet to collect information.

The Deep Impact spacecraft consists of two parts: a flyby and an impactor. When it's near the comet, the flyby will release the impactor for the fun job of creating a crater that scientists think could be the size of the Rose Bowl or maybe a small house. (It all depends on how soft or hard the core matter is.)

That crater, however, would be a relatively small one considering that Tempel 1 is about 10 miles long and 3 miles high. Since Deep Impact is a mere mosquito compared with Tempel 1's jumbo jet, scientists have no worries that the explosion could set the comet careening off course.

While waiting for its impending destruction inside the comet and from the resulting swirling dust cloud from its explosives, the impactor will have one more important job: sending high resolution images back to the flyby, which will also be monitoring and collecting data — at a safe distance of 300 miles from the comet.

If all goes well, the flyby will transmit images and data back to eager folks at JPL as quickly as 20 minutes after impact.

Amateurs and pros from North Dakota to Hawaii will spend their Sunday evening counting down for the potential light show in the sky and logging onto the NASA website (www.nasa.gov/deepimpact) hoping for a glimpse of the first pictures ever to be taken inside a comet.

"The beauty of this mission is that we really don't know what we will find inside," Yeomans says. "We have lots of theories and guesses, but we won't really know until we know. I hope we are astonished."

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Peek performance

Learn more

For background, images, animation and more on what scientists hope will happen at 10:52 p.m. PDT July 3, visit deepimpact.jpl.nasa.gov.

Deep Impact events

- **Antelope Valley Astronomical Club:** Star Party at Saddleback Butte State Park, dusk, 17 miles east of Lancaster on Avenue J East, Lake Los Angeles. Park phone: (661) 942-0662; AVAC (661) 718-3963. Free, but visitors need a state park pass.
- **Big Bear Valley Astronomical Club/StarGazer's Inn and Observatory:** Deep Impact kids party and adult presentations, 1 p.m. and 2:30 p.m., Big Bear Discovery Center, North Shore Drive and Highway 18, Big Bear Lake. Center: (909) 866-3437; BBVAC (909) 878-4496. \$5 suggested donation.
- **Planetary Society:** Comet Bash, 7:30 p.m.-1 a.m., Haugh Performing Arts Center of Citrus College, 1000 W. Foothill Blvd., Glendora. (626) 793-5100. \$20 adults, \$15 children to 18 years.