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Kitt Peak Docent Program

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Docent Forum: <http://groups.yahoo.com/group/docentforum/>

Docent Calendar: <http://groups.yahoo.com/group/docentforum/>

Volunteering at Kitt Peak: <http://www.noao.edu/outreach/kpoutreach.html>

www.noao.edu



Next Docent Meeting September 19

The next docent meeting will be held on Monday, September 19. The meeting will convene at 6:00 in the main conference room and will feature dinner and a speaker. Docents should visit the docent forum calendar to schedule their hours for July and August. Docents who do not have web access may contact Nick Petrosino. See the URL for the docent calendar at lower left.

«First Name» «Last Name»
«Mailing Address»
«City» «State» «Zip Code»

Kitt Peak Docent Program

DOCENT NEWS

Number 93

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LARGE GROUP FROM RAYTHEON COMING IN JULY

On July 10 to 13, Tucson will host the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit. The AIAA is the American Institute of Aeronautics and Astronautics. At the conclusion of the conference, Raytheon plans to bring to Kitt Peak 165 people for a day of telescope tours.

A group this large requires logistical planning, and additional docents will be needed to assist with the group. So far only two docents are scheduled for that day.

The plan for this huge group is as follows: they will be separated into three smaller groups and each group will tour each of the three telescopes for an hour and a half. The time of the tours will be altered so that the first tour runs from 10:30 to noon, the second tour runs from 1:00 to 2:30, and the third tour runs from 2:30 to 4:00.

To expedite the 4-meter tour, the guests may be driven up in vans. That plan is still being evaluated and may depend on whether vans are available.

In addition to the Raytheon group, there will likely be regular tourists visiting. They will be included in the larger groups if they wish to take the docent-led tours. If not then they may tour on their own as usual.

The group plans to have lunch on the mountain, and the hour between 12:00 and 1:00 will be devoted to eating (the kitchen is making box lunches), shopping, and exhibits.

The program coordinator will assist with the tours and other facets of crown control. Two additional docents will be needed for the other groups, each of which will contain about fifty-five people. That will leave one docent in the visitor center to work the floor and exhibits, including the 12:30 demonstrations.

Anyone available to help on July 14 should put his/her name on the forum calendar or if access is not available to you call Nick to have him put your name on the calendar.

DEEP IMPACT JUST A FEW DAYS AWAY

The collision with Comet Tempel-1 happens this Sunday night. The Kitt Peak Visitor Center is hosting a special event for the occasion. Fifty-five guests will attend lectures, enjoy a bar-be-cue, and observe with the telescopes, including a look at the impact, from 6:00 p.m. to 12:45 a.m.

The schedule for the evening looks like this:

6:00—Arrival and check in
6:15 to 7:00—Dinner
7:00 to 7:30—Lecture
7:30 to 8:00—Mission Overview
8:00 to 9:00—Comet making activity
9:00 to 9:30—Star charts and binoculars

9:30 to 10:30—Telescope observing
10:30 to 11:30—Impact viewing
11:30 to 12:45—Telescope observing
12:45—Departure

Docents who are interested in assisting with this event should contact the program coordinator. Extra people to help with crowd control will be appreciated.

Docents who wish to try observing the comet and impact from other locations may refer to the finder chart on the docent forum files. NOAO plans to image the impact and feed the images to the web site as an animation.

Points of Interest:

- The docent meetings will resume September 19, featuring dinner and a presentation.
- July 3: Deep Impact, impactor release.
- July 4: Earth at aphelion 1.017 AU from the Sun.
- July 9: Mercury at greatest eastern elongation of 26°.
- July 13: Moon occults Jupiter.
- July 21 to 23: 6th Annual Return to The Moon Conference, Las Vegas, Nevada.
- July 22: Asteroid 2000 AG6 near-Earth flyby at 0.022 AU.
- July 26: Asteroid 54509 (2000 PH5) near-Earth flyby at 0.036 AU.
- July 30: 395th anniversary—Galileo Observes Saturn's Rings.

For additional information about these points of interest, visit <http://www2.jpl.nasa.gov/calendar/>.

MARYLAND-LED DEEP IMPACT DETECTS COMET NUCLEUS

For the first time, scientists have processed images from NASA's Deep Impact spacecraft and clearly seen the solid body, or nucleus, of the comet through the vast cloud of dust and gas that surrounds it. The new images provide important information about the mission's target: the "heart" of comet Tempel 1.

The images were taken at the end of May with the spacecraft's medium resolution camera, at a distance of some 20 million miles from the comet. Unprocessed, the images are dominated by the comet's huge cloud of dust and gas, which scientists call the coma. However, scientists used a neat photometric trick to isolate the relatively small (3-mile by 9-mile) nucleus from the comet's coma, or atmosphere. The much larger, but less dense atmosphere was mathematically identified and then subtracted from the original images leaving images of the nucleus, the bright point in the center of the coma.

"Its exciting to see the nucleus pop out from the coma," said University of Maryland astronomer Michael A'Hearn, who leads the Deep Impact mission. "And being able to distinguish the nucleus in these images helps us to better understand the rotational axis of the comet's nucleus, which is helpful for targeting this elongated body."

"This is an important milestone for the Deep Impact team," explained Carey Lisse, a member of the Deep Impact team and leader of the effort to extract views of the nucleus from the spacecraft images. "From here on in we just watch the nucleus grow and grow and become brighter and bigger as the spacecraft closes in on the comet. We detected the nucleus a lot sooner than expected, but now we'll be watching the nucleus all the way to impact!"

As illustrated in the figure (see on web release at: <http://www.newsdesk.umd.edu/scitech/release.cfm?ArticleID=1087>), Deep Impact images taken on May 29-31 contain a well-formed coma with a detectable point source at the position of the brightest pixel. The brightness of the nucleus as determined from these images was close to that predicted from earlier observations with the Hubble and Spitzer space-telescopes and observations from large telescopes on the ground. At present, the nucleus contributes about 20 percent of the total brightness near the center of the comet.

"The early detection of the nucleus in these images helps us to set the final exposure times for our encounter observations," said Michael Belton, deputy principal investigator for the Deep Impact Mission. "Next we need to determine, using additional nucleus detections, how the comet is rotating in space, so we can figure out what part we will hit on July 4th."

5 - 4 - 3 - 2 - 1 - IMPACT

Deep Impact -- which consists of a sub-compact-car-sized flyby spacecraft and a five-sided impactor spacecraft about the size of a washing machine -- carries four instruments. The

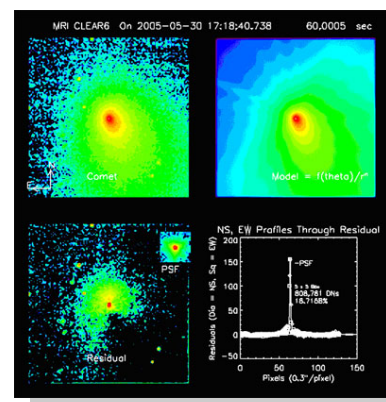
flyby spacecraft carries two imaging instruments, the medium resolution imager and the high resolution imager, plus an infrared spectrometer that uses the same telescope as the high-resolution imager. The impactor carries a single imager. Built to science team specifications by Ball Aerospace & Technologies Corp., the three imaging instruments are essentially digital cameras connected to telescopes. They record images and data before, during, and after impact.

At the beginning of July, after a voyage of some 268 million miles, the joined spacecraft will reach comet Tempel 1. The spacecraft will approach the comet and collect images and spectra of it. Then, some 24 hours before the 2 a.m. (EDT) July 4th impact, the flyby spacecraft will launch the impactor into the path of the onrushing comet. Like a copper penny pitched up into the air just in front of a speeding tractor-trailer truck, the 820-pound impactor will be run down by the comet, colliding with the nucleus at an impact speed of some 23,000 miles per hour.

A'Hearn and his fellow mission scientists expect the impact to create a crater several hundred feet in size; ejecting ice, dust and gas from the crater and revealing pristine material beneath. The impact will have no significant effect on the orbit of Tempel 1, which poses no threat to earth.

Nearby, Deep Impact's 'flyby' spacecraft will use its medium and high resolution imagers and infrared spectrometer to collect and send back to Earth pictures and data of the event. In addition, the Hubble and Spitzer space telescopes, the Chandra X-ray Observatory, and large and small telescopes on Earth also will observe the impact and its aftermath.

The University of Maryland, College Park, conducts the overall mission management for Deep Impact, which is a Discovery class NASA program. NASA's Jet Propulsion Laboratory (JPL) handles project management for the Deep Impact mission. The spacecraft was built for NASA by Ball Aerospace & Technologies Corporation, Boulder, Colorado.



A false color image of the comet, taken on 30 May 2005, is shown in the upper left. To its right is a mathematical model of the comet's atmosphere. The bottom left image is the difference between the two upper images and shows the nucleus. In the bottom right a trace through the center of the comet shows the brightness of the nucleus. The picture is about 100,000 miles across.

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July 2005

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Doug	2 Jim O.
3 Anna	4 Need Docent	5 Jim M.	6 Sheila	7 Gene	8 Barbara, Doug	9 Eugene, Jim O.
10 Anna	11 John	12 Jim M.	13 Sheila	14 Laura, Gene Raytheon 150	15 Doug, Joyce	16 Jim O.
17 Eugene	18 Need Docent	19 Jim M., Joyce	20 Sheila School grp. 30	21 Gene	22 Doug	23 Jim O.
24 Mark	25 Need Docent	26 Joyce	27 Sheila	28 John	29 Doug	30 Eugene, Jim O.
31 Anna						

DOCENT MENTOR PROGRAM BEGINS WITH CURRENT CLASS

For some docents the most difficult part of attaining full docent status occurs between completing the training class and settling into their routine on the mountain. As a way to smooth the transition from trainee to docent, a mentor program has been proposed. The idea has merit.

The mentor program will begin with this class and will accept volunteers from among the current docents. They will be assigned to one or more trainees upon completion of docent training and will work with those new docents through September 30, at which time the new docents will assume their duties. Mentors should have at least one full year of experience on Kitt Peak.

During the mentoring period, mentors and trainees will work the same shifts. That way the new docents have someone to teach them the nuances of CFO and answer their ques-

tions about routines on Kitt Peak. Mentors will also let the trainees conduct tours and offer constructive criticism about their performance. One of the hardest things for many new docents to do is stand in front of the visitors for the first time. Having someone in the audience whom they trust will alleviate some of the anxiety that accompanies that experience.

The mentor program will replace the current practice of shadowing. Shadowing, in some cases, becomes a crutch and actually delays the trainees transition into the ranks of active docents. Additionally, because of the unstructured nature of shadowing, it lacks the personal commitment and continuity that mentoring offers.

Interested docents should contact the program coordinator. The current class has ten trainees, so at least five volunteers are needed to get this program started successfully.