

Hawaii Astro News

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 - *Date:* Thu, 19 Jan 2006 07:55:17 -0800
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Star Dust on Your Pizza!

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Greetings Fellow Stargazer,

A spacecraft named Stardust returned to Earth on 15 Jan 06 completing its 7 year-long mission. Stardust flew past a comet and grabbed some pieces of star dust from the comet. The spacecraft then returned these dust particles to Earth so scientists can study them. The scientists hope to learn about the history of our Solar System from this dust. Stardust was launched in 1999 and flew by the comet in January 2004. It snapped the best pictures ever of the nucleus of a comet as it flew past Comet Wild 2. It also grabbed some star dust from the comet's atmosphere using a high-tech material called aerogel.

http://www.nasa.gov/mission_pages/stardust/main/index.html

Speaking of star dust, every year, approximately 100,000 tons of star dust falls into Earth's atmosphere and settles down to the surface of the planet. The largest of these particles would just barely be visible without a microscope, and most are far smaller. Sometimes you can notice these micro-meteorites when you get that little extra crunch when you bite into a pizza at at Star Party!

Americans consume an average of 22.5 pounds of pizza (and who know how much star dust) annually. We as a nation eat about 90 acres of pizza per day... enough to fill Yankee Stadium more than eight times!!!! 60% of all pizza orders are for thin crust; 25% for thick, 13% for pan and 2% for stuffed pizza! So do the math... which is heavier... a year of dust or all the pizza Americans consume in a year. Send me your results.

So bring a pizza and a cosmic dust cover for it and look for me and my little red telescope at this month's Star Party. Speaking to Star Parties, where telescopes and pizzas abound, you are invited to one on January 21st!

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Star Party Invitation for January 21st,
Sponsored by the Hawaiian Astronomical Society

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<http://www.hawastsoc.org>

Dillingham Airfield – before sunset 6:15 pm)

(Star Party Directions are at the end of this message)

Bring:

<http://www.bishopmuseum.org/planetarium/skyWatch/2006/01/jan06.pdf>

Here is where I go to check the weather on a Star Party Night:

<http://www.wunderground.com/radar/radblast.asp?num=6&delay=15&scale=1&noclutter=0&ID=HMO&type=N0R&lat=0&lon=0&label=you>

If it is clear, you will be able to see many astronomical sights. It's now that time of year to see Mars and Saturn, the Orion Nebula, THE TWINS, the Seven Sisters and many other heavenly bodies!

If you won't be in Hawaii, fear not. Check this link for a Star Party near you!

<http://SkyandTelescope.com/resources/organizations/>

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If you miss this month's HAS Star Party then join us at the next:

***** 2006 *****

- February 18th
- April 1st
- May 27th
- June 17th
- July 15th
- August 26th
- September 23rd
- October 14th
- November 11th
- December 23th

***** 2007 *****

- January 20th

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Meteorites fall roughly into three categories:

- (1) Aerolites – the stony meteorites. These are rarely very large and are made up of earthy materials, silicates, and compounds of magnesium with tiny particles of nickel–iron alloys called chondrules embedded in them.
- (2) Siderites – the metallic meteorites. Composed of 80–90 percent iron, 5–15 percent nickel, with occasional small amounts of cobalt the siderites pepper the Earth in all sizes. The great craters in Africa, Canada, United States, Russia, and Australia were all created by siderites, yet they can also be as small as an ounce or two.
- (3) Siderolites – the 'iron–stone' meteorites. Much rarer than the other types, the siderolites are spongy arrangements of iron ores in which the spaces are filled with minerals. They have a mottled often pitted appearance.

Tiny particles called micro-meteorites also penetrate our atmosphere without damage and are made up microscopic parts of any of the above.

NASA on Hazardous Objects

It is the brush with an large meteorites that I worry about. The general awareness generated by movies, have generated fallout from NASA. The space agency announced that the Jet Propulsion Laboratory will be home for the Near-Earth Object Program Office. The department will be responsible for detecting, tracking, and studying potentially hazardous comets and asteroids. Its goal is to find at least 90 percent of the estimated 2,000 objects larger than about 1 kilometer in diameter that approach the Earth, and to do so by the year 2010. In addition, the science director for solar-system exploration in NASA's Office of Space Science, the new office will also take charge of reporting findings to the public, should a potentially hazardous objects be found.

HOW MUCH OF A HAZARD?

The most dangerous asteroids, those capable of causing major regional or global disasters, are extremely rare. These bodies impact the Earth only once every 100,000 years on average. Comets in this category are thought to impact even less frequently, perhaps once every 500,000 years or so.

The risk from NEO impacts increases with the size of the projectile. The greatest risk is associated with objects larger than a half-mile to a mile, which are large enough to perturb Earth's climate on a global scale by injecting large quantities of dust into the stratosphere. Such an event could depress temperatures and the amount of surface sunlight around the globe, leading to a loss of food crops and related problems. An ocean impact could trigger large ocean waves, or tsunamis.

Such global catastrophes are qualitatively different from other more common hazards that we face daily, given that these common events occur with much greater frequency but affect fewer people. No individual person should worry about being struck by a comet or asteroid. The daily threat to an average person from disease, car accidents, home accidents, and other natural disasters is much higher.

For further information on this topic, see the NASA Ames Research Center's Asteroid & Comet Impact Home Page at the following Web address:

<http://impact.arc.nasa.gov/>

It is entirely feasible that we could divert a large asteroid or comet that may collide with Earth from its orbit using existing technologies. The potential response depends on the lead time. If we can predict the event long in advance, by at least 10 to 100 years, then conventional

rockets and explosives would probably be adequate, even for bodies as large as a half-mile. However, if we discover the object only a few years before impact, these technologies might not be adequate. Such a response would be coordinated in the United States by the Departments of Defense and Energy, and likely would include international partners.

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Asteroids, Comets, and NASA Research

Asteroids and comets are believed to be ancient remnants of the earliest years of the formation of our solar system more than four billion years ago. From the beginning of life on Earth to the recent spectacular impact of Comet Shoemaker-Levy 9 with Jupiter, these so-called "small bodies" play a key role in many of the fundamental processes that have shaped the planetary neighborhood in which we live.

Comets are bodies of ice, rock, and organic compounds that can be several miles in diameter. Comets are thought to originate from a region beyond the orbits of the outermost planets. Scientists believe that gravitational perturbations periodically jar comets out of this population, setting these "dirty snowballs" on orbital courses that bring them closer to the Sun. Some, called long-period comets, are in elliptical orbits of the Sun that take them far out beyond the planets and back. Others, called short-period comets, travel in shorter orbits nearer the Sun.

When comets venture into the more intense sunlight of the inner solar system, the ices in the comet nucleus begin to vaporize and fall away. The evolved gas forms a tenuous atmosphere around the nucleus called a coma, while the dust previously in the nucleus forms a tail that can be thousands of miles long and sometimes can be seen from Earth. While striking the early Earth billions of years ago, comets are thought to have created major changes to Earth's early oceans, atmosphere, and climate, and may have delivered the first carbon-based molecules to our planet, triggering the process of the origins of life.

Most asteroids are made of rock, but some are composed of metal, mostly nickel and iron. They range in size from small boulders to objects that are hundreds of miles in diameter. A small portion of the asteroid population may be burned-out comets whose ices have evaporated away and been blown off into space. Almost all asteroids are part of the Main Asteroid Belt, with orbits in the vast region of space between Mars and Jupiter.

Some asteroids pass very close to Earth's orbit around the Sun. Scientists have found evidence that asteroids have hit our planet in the past. Usually, asteroids and smaller debris called meteoroids are too small to survive the passage through Earth's atmosphere. When these burn up on their descent, they leave a beautiful trail of light known as a meteor or "shooting star." Larger asteroids occasionally crash into

Earth, however, and create craters, such as Arizona's mile-wide Meteor Crater near Flagstaff. Another impact site off the coast of the Yucatan Peninsula in Mexico, which is buried by ocean sediments today, is believed to be a record of the event that led to the extinction of the dinosaurs 65 million years ago. Fortunately for us, these big asteroid impacts are rare. A smaller rocky meteoroid or comet less than 100 yards in diameter is believed to have entered the atmosphere over the Tunguska region of Siberia in 1908. The resulting shockwave knocked down trees for hundreds of square miles.

Over the next 10 years, NASA expects to spend more than \$1 billion gaining a better scientific understanding of asteroids and comets. Major areas of research supported by NASA include detecting and tracking so-called Near Earth Objects (NEOs) that could possibly impact Earth in the future and numerous spacecraft missions to learn more about the physical properties and evolution of asteroids and comets, including returning samples of them to Earth.

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GROUND-BASED RESEARCH: DETECTING, TRACKING, AND CHARACTERIZING

Earth and all the other planets and moons of our solar system have been continuously pelted by asteroids and comets ever since their formation—just look at the Moon's craters through a small telescope or a good pair of binoculars.

NASA supports several ground-based programs and related technology development efforts that use sensitive electronic detectors to scan the skies for undiscovered NEOs. Less than 10 percent of the estimated 2,000 or more NEOs that are larger than about a half-mile in diameter have been detected to date. (Most scientists believe that objects of this size have the potential to cause global effects should they hit Earth.)

Major examples of these programs include the Near Earth Asteroid Tracking (NEAT) system operated by NASA's Jet Propulsion Laboratory (JPL) in conjunction with the U.S. Air Force on Mt. Haleakala, Maui, Hawaii; the Spacewatch program run by the University of Arizona in Tucson at Kitt Peak, Arizona; and the Lowell Observatory NEO Survey (LONEOS) program in Flagstaff, Arizona.

For further information on these programs, see these Internet sites:

<http://newton.dm.unipi.it/cgi-bin/neodys/neoibo?riskpage:0:main>

<http://www.lpl.arizona.edu/spacewatch/index.html>

<http://asteroid.lowell.edu/>

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The Wanderers (The Planets) this Month

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Mercury is "combust": an old astronomical word meaning hidden in the glare of the Sun.

Venus too is very close to the Sun, passing 5.5° north of it at inferior conjunction on January 13-14.

Mars (in Aries) shines yellow–orange high in the south to southwest during evening. It's shrinking and fading into the distance as Earth pulls farther ahead of it in our faster orbit around the Sun.

Jupiter (in Libra) is the very bright "star" in the southeast to south before and during dawn. The much fainter star Alpha Librae appears only about 1° from it.

Saturn (in Cancer) rises in the east–northeast in twilight, below Castor and Pollux. By 9 p.m. it's posing high in the east. Binoculars show the Beehive star cluster just above it.

Uranus and Neptune are disappearing into the evening twilight.

Pluto is hidden in the glow of dawn.

2003 UB313 (magnitude 19, in Cetus) is high in the south during early evening. This is the newly discovered "tenth planet". Advanced amateurs with good CCD setups have been imaging 2003 UB313 and tracking its motion. The discovery team is informally calling the object and its moon Xena and Gabrielle, for the TV warrior princess and her longtime companion. The official names they will eventually get are still tied up in committees of the International Astronomical Union.

Annual Meteor Showers

Quadrantids: January
Virginids: March/April
Lyrids: April
Scorpiids: May
Delta Aquarids: July
Perseids August
Piscids: September
Orionids: October
Leonids: November
Geminids: December

Find what is moving overhead after sunset:

<http://www.bester.com/>

<http://liftoff.msfc.nasa.gov/RealTime/JTrack/3d/JTrack3d.html>

Check out when the next Iridium Satellite is available for you to see:

<http://www.heavens-above.com/Neighbours.asp?PlaceID=593409>

(for non Oahu Star Gazers...)

<http://www.heavens-above.com/selecttown.asp?CountryID=US>

Check out:

<http://www.seds.org/messier/xtra/12months/m-jan-i.html>

and bring the above list...

As for the rest of the Messiers, check out

<http://www.hawastsoc.org/deepsky/messier.html> It also has a link to:

<http://www.hawastsoc.org/messier/index.html>

(all the Messier Objects as photographed by HAS's local Jay Wrathall)

Star Party Directions

(<http://www.hawastsoc.org/directions/dillingham.html>)

To reach the Dillingham observing site, take the H2 to the end at Schofield Barracks. Drive past Schofield and follow the signs to Waialua. At the Y intersection at Waialua, bear left and pass under the bridge. Drive out of town a few miles until you reach Dillingham Airfield. Dillingham is several miles long. It has three gates. You need to drive to the far end to the third gate (marked as Gate 1 on the color map). When you enter the gate, the road will curve left behind some hangars. It will then take you through a very sharp S curve. 1/4 mile beyond that is a stop sign in the middle of nowhere. Turn right at the stop sign, and you will be there. You can find me by looking for the big red telescope in the corner with a table with lots of pizza on it.

You will need to reach the site before sunset in order to find the gate open!!!

A few words on light. We try to maintain dark conditions at the site. Therefore we have certain rules about light. First, no white flashlights. The only flashlights that you should use are not too bright, red ones.

When entering and exiting the site, do not use headlights. Some cars now can't turn off their headlights. If you have a car like that please park nearer the windsock than the telescopes. Point it away from the telescopes. Headlights make you lose your night vision for up to 30 minutes. It immediately ruins any astro photography that might be in progress.

Bring some warm clothes, something to sit on, some real powerful bug spray, a dim or red covered flashlight and some munches to share with your friends.

Remember there is an absolute need to remain clear of the runway, and anyone attending the star party needs to remain in the immediate star party area. Do not be wandering around in areas where we are not

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permitted. Especially near any planes (parked or moving)!

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Bishop Museum Planetarium Happenings
<http://www.bishopmuseum.org/visitors/dailyschedule.html>

Daily Planetarium schedule:
(808) 848-4136 for pre-recorded planetarium schedule.

- 12:00 a.m. The Stars Tonight (30 Minutes)
- 12:45 p.m. Explorers of Polynesia in Japanese, (30 Minutes)
- 1:30 p.m. Explorers of Mauna Kea, (30 Minutes)
- 2:30-3:15p.m. Observatory is open for solar viewing
- 3:30 p.m. Explorers of Polynesia in English, (45 Minutes)

Barry Peckham will host the Sky Tonight program on the first Friday of each month. Reservations are required as there is limited seating in the planetarium. Call 848-4168 for information and reservations. Tickets cost \$4 for adults, \$3 for kids, free to Bishop Museum members and Hawaiian Astronomical Society members.

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After Dark with Stars in the Park
Waikele Community Park
OR... Kahala Park
(Weather permitting)

***** 2006 *****

- February 4th
- March 4th
- April 8th
- May 6th
- June 3rd
- July 29th
- September 30th
- October 28th
- November 25th
- December 30th

***** 2007 *****

January 27th

FROM DUSK to 9:30 PM
Bring your children! Tell your friends!

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Visit the cosmos via:

The HAS HomePage: <http://www.hawastsoc.org/> or go to
(or show up at meeting 7:30pm first Tue of month)
and check out the Bishop Museum Planetarium Home Page
<http://bishopmuseum.org/exhibits/planetarium/planetarium.html>
and the Institute for Astronomy Colloquia/Seminars

<http://www.ifa.hawaii.edu/>
http://apollo-society.org/launchpad39_A.html

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Keep Looking Sky Ward

Namaste...Gary "MacYoda" Ward

<http://homepage.mac.com/macyoda/PhotoAlbum6.html>
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The Lone Sidewalk Astronomer of Rosamond
Telescope Buyers FAQ
<http://home.inreach.com/starlord>
Astronomy Net Online Gift Shop
http://www.cafepress.com/astronomy_net
In Garden Online Gift Shop
<http://www.cafepress.com/ingarden>
Blast Off Online Gift Shop
<http://www.cafepress.com/starlords>

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