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NGC 1300

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First Look Inside A Comet!

(NASA/JPL) What’s deep inside a comet? Comets are time capsules that hold clues about the formation and evolution of the solar system. They are composed of ice, gas and dust, which is the primitive debris from the solar system’s earliest and coldest formation period about 4.5 billion years ago. *Deep Impact*, a NASA Discovery Mission, is the first space mission to probe beneath the surface of a comet and reveal the secrets of its interior.

On July 4, 2005, the *Deep Impact* spacecraft arrives at Comet Tempel 1 to impact it with a 370-kilogram (~820-lbs) mass. On impact, a crater will be produced expected to range in size from that of a house to that of a football stadium, and two to fourteen stories deep. Ice and dust debris will be ejected from the crater revealing fresh material beneath. Sunlight reflecting off the ejected material will provide a dramatic brightening that will fade slowly as the debris dissipates into space or falls back onto the comet. Images from cameras and a spectrometer will be sent to Earth covering the approach, the impact and its aftermath. The effects of the collision with the comet will also be observable from certain locations on Earth and in some cases with smaller telescopes. The data will be analyzed and combined with that of other NASA and international comet missions. Results from these missions will lead to a better understanding of both the solar system’s formation and implications of comets colliding with Earth.

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Editor: Dr. Dale Etheridge, CCSN Planetarium Director
Co-editor: Sherri Del Soldato, Fleischmann Planetarium Assoc. Director • Circulation Manager: Daisy Polidoro
Beautiful Barred Spiral Galaxy NGC 1300

(NASA/STScI) One of the largest Hubble Space Telescope images ever made of a complete galaxy was unveiled in January at the American Astronomical Society meeting in San Diego, Calif.

The Hubble telescope captured a display of starlight, glowing gas, and silhouetted dark clouds of interstellar dust originally rendered as a 4-foot-by-8-foot image of the barred spiral galaxy NGC 1300. NGC 1300 is considered to be prototypical of barred spiral galaxies. Barred spirals differ from normal spiral galaxies in that the arms of the galaxy do not spiral all the way into the center, but are connected to the two ends of a straight bar of stars containing the nucleus at its center.

At Hubble’s resolution, a myriad of fine details, some of which have never before been seen, is seen throughout the galaxy’s arms, disk, bulge, and nucleus. Blue and red supergiant stars, star clusters, and star-forming regions are well resolved across the spiral arms, and dust lanes trace out fine structures in the disk and bar. Numerous more distant galaxies are visible in the background, and are seen even through the densest regions of NGC 1300.

In the core of the larger spiral structure of NGC 1300, the nucleus shows its own extraordinary and distinct “grand-design” spiral structure that is about 3,300 light-years (1 kiloparsec) long. Only galaxies with large-scale bars appear to have these grand-design inner disks, a spiral within a spiral. Models suggest that the gas in a bar can be funneled inwards, and then spiral into the center through the grand-design disk, where it can potentially fuel a central black hole. NGC 1300 is not known to have an active nucleus, however, indicating either that there is no black hole, or that it is not accreting matter.

The image was constructed from exposures taken in September 2004 by the Advanced Camera for Surveys onboard Hubble in four filters. Starlight and dust are seen in blue, visible, and infrared light. Bright star clusters are highlighted in red by their associated emission from glowing hydrogen gas. Due to the galaxy’s large size, two adjacent pointings of the telescope were necessary to cover the extent of the spiral arms. The galaxy lies roughly 69 million light-years away (21 megaparsecs) in the direction of the constellation Eridanus.

Infant Stars

(NASA/STScI) Hubble astronomers have uncovered, for the first time, a population of infant stars in the Milky Way satellite galaxy, the Small Magellanic Cloud (SMC, visible to the naked eye in the southern constellation Tucana), located 210,000 light-years away.

Hubble’s exquisite sharpness plucked out an underlying population of infant stars embedded in the nebula NGC 346 that are still forming from gravitationally collapsing
gas clouds. They have not yet ignited their hydrogen fuel to sustain nuclear fusion. The smallest of these infant stars is only half the mass of our Sun.

Although star birth is common within the disk of our galaxy, this smaller companion galaxy is more primeval in that it lacks a large percentage of the heavier elements that are forged in successive generations of stars through nuclear fusion.

Fragmentary galaxies like the SMC are considered primitive building blocks of larger galaxies. Most of these types of galaxies existed far away, when the universe was much younger. The SMC offers a unique nearby laboratory for understanding how stars arose in the early universe. Nestled among other starburst regions with the small galaxy, the nebula NGC 346 alone contains more than 2,500 infant stars.

The Hubble images, taken with the Advanced Camera for Surveys, identify three stellar populations in the SMC and in the region of the NGC 346 nebula, a total of 70,000 stars. The oldest population is 4.5 billion years, roughly the age of our Sun. The younger population arose only 5 million years ago (about the time Earth’s first hominids began to walk on two feet). Lower-mass stars take longer to ignite and become full-fledged stars, so the protostellar population is 5 million years old. Curiously, the infant stars are strung along two intersecting lanes in the nebula, resembling a “T” pattern in the Hubble plot.

The observations, by Antonella Nota of the European Space Agency (ESA) and the Space Telescope Science Institute (STScI), Baltimore, Md., were presented in January at the meeting of the American Astronomical Society in San Diego, Calif.

The other science team members are: M. Sirianni (STScI/ESA), E. Sabbi (Univ. of Bologna), M. Tosi (INAF-Bologna Observatory), J. S. Gallagher (Univ. of Wisconsin), M. Meixner (STScI), M. Clampin (GSFC), S. Oey (Univ. of Michigan), A. Pasquali (ETH Zurich), L. Smith (Univ. College London), and R. Walterbos (New Mexico State Univ.).

Opportunity Finds a Meteorite

(NASA/JPL) NASA’s Mars Exploration Rover Opportunity has found an iron meteorite, the first meteorite of any type ever identified on another planet.

The pitted, basketball-size object is mostly made of iron and nickel according to readings from spectrometers on the rover. Only a small fraction of the meteorites fallen on Earth are similarly metal-rich. Others are rockier. As an example, the meteorite that blasted the famous Meteor Crater in Arizona is similar.
in composition.

“This is a huge surprise, though maybe it shouldn’t have been,” said Dr. Steve Squyres of Cornell University, Ithaca, N.Y., principal investigator for the science instruments on Opportunity and its twin, Spirit.

The meteorite, dubbed “Heat Shield Rock,” sits near debris of Opportunity’s heat shield on the surface of Meridiani Planum, a cratered flatland that has been Opportunity’s home since the robot landed on Mars over one year ago.

“I never thought we would get to use our instruments on a rock from someplace other than Mars,” Squyres said. “Think about where an iron meteorite comes from: a destroyed planet or planetesimal that was big enough to differentiate into a metallic core and a rocky mantle.”

Rover-team scientists are wondering whether some rocks that Opportunity has seen atop the ground surface are rocky meteorites. “Mars should be hit by a lot more rocky meteorites than iron meteorites,” Squyres said. “We’ve been seeing lots of cobbles out on the plains, and this raises the possibility that some of them may in fact be meteorites. We may be investigating some of those in coming weeks. The key is not what we’ll learn about meteorites, we have lots of meteorites on Earth, but what the meteorites can tell us about Meridiani Planum.”

The numbers of exposed meteorites could be an indication of whether the plain is gradually eroding away or being built up.

NASA Chief Scientist Dr. Jim Garvin said, “Exploring meteorites is a vital part of NASA’s scientific agenda, and discovering whether there are storehouses of them on Mars opens new research possibilities, including further incentives for robotic and then human-based sample-return missions. Mars continues to provide unexpected science ‘gold,’ and our rovers have proven the value of mobile exploration with this latest finding.”

Initial observation of Heat Shield Rock from a distance with Opportunity’s miniature thermal emission spectrometer suggested a metallic composition and raised early speculation that it was a meteorite. The rover drove close enough to use its Mössbauer and alpha particle X-ray spectrometers, confirming the meteorite identification.

Opportunity and Spirit successfully completed their primary three-month missions on Mars in April 2004. NASA has extended their missions twice because the rovers have remained in good condition to continue exploring Mars longer than anticipated. They have found geological evidence of past wet environmental conditions that might have been hospitable to life.

Opportunity has driven a total of 2.10 kilometers (1.30 miles). Minor mottling from dust has appeared in images from the rover’s rear hazard-identification camera since Opportunity entered the area of its heat-shield debris, said Jim Erickson of NASA’s Jet Propulsion Laboratory, Pasadena, Calif., rover project.
manager. The rover team planned to begin driving *Opportunity* south toward a circular feature called “Vostok” in February.  

*Spirit* has driven a total of 4.05 kilometers (2.52 miles). It has been making slow progress uphill toward a ridge on “Husband Hill” inside Gusev Crater.

JPL, a division of the California Institute of Technology in Pasadena, has managed NASA’s *Mars Exploration Rover* project since it began in 2000. Images and additional information about the rovers and their discoveries are available on the Internet at http://marsrovers.jpl.nasa.gov.

### Suspected Extrasolar Planet

(NASA/STScI) Unique follow up observations carried out with NASA’s *Hubble Space Telescope* are providing important supporting evidence for the existence of a candidate planetary companion to a relatively bright young brown dwarf star located 225 light-years away in the southern constellation Hydra.

Astronomers at the European Southern Observatory’s Very Large Telescope (VLT) in Chile detected the planet candidate in April 2004 with infrared observations using adaptive optics to sharpen their view. The VLT astronomers spotted a faint companion object to the brown dwarf star 2MASSWJ 1207334-393254 (aka 2M1207). The object is a candidate planet because it is only one-seven-hundredth the brightness of the brown dwarf (at the longer-than-Hubble wavelengths observed with the VLT) and glimmers at barely 1800 degrees Fahrenheit, which is cooler than a light bulb filament.

Because an extrasolar planet has never been directly imaged before, this remarkable observation required *Hubble’s* unique abilities to do follow-up observations to test and validate if it is indeed a planet. *Hubble’s* Near Infrared Camera and Multi-Object Spectrometer (NICMOS) camera conducted complementary observations taken at shorter infrared wavelength observations unobtainable from the ground. This wavelength coverage is important because it is needed to characterize the object’s physical nature.

Very high precision measurements of the relative position between the dwarf and companion were obtained with NICMOS in August 2004. The *Hubble* images were compared to the earlier VLT observations to try and see if the two objects are really gravitationally bound and hence move across the sky together. Despite the four months between the VLT and NICMOS observations, astronomers say they can almost rule out the probability that the suspected planet is really a background object, because there was no noticeable change in its position relative to the dwarf.
If the two objects are indeed gravitationally bound together they are at least 5 billion miles apart, about 30 percent farther apart than Pluto is from the Sun. Given the mass of 2M1207, inferred from its spectrum, the companion object would take a sluggish 2,500 years to complete one orbit. Therefore, any relative motion seen between the two on much shorter time scales would reveal the candidate planet to be a background interloper and not a gravitationally bound planet.

“The NICMOS photometry supports the conjecture that the planet candidate is about five times the mass of Jupiter if it indeed orbits the brown dwarf,” says Glenn Schneider of the University of Arizona. “The NICMOS position measurements, relative to VLT’s, indicate the object is a true (and thus orbiting) companion at a 99 percent level of confidence, but further planned Hubble observations are required to eliminate the 1 percent chance that it is a coincidental background object which is not orbiting the dwarf.”

Schneider is presented these latest Hubble observations in January at the meeting of the American Astronomical Society in San Diego, Calif.

The candidate planet and dwarf are in the nearby TW Hydrae association of young stars that are estimated to be no older than 8 million years. The Hubble NICMOS observations found the object to be extremely red and relatively much brighter at longer wavelengths. The colors match theoretical expectations for an approximately 8 million-year-old object that is about five times as massive as Jupiter.

Further Hubble observations by the NICMOS team are planned in April 2005.

“Earth-like” World of Titan

(ESA) On 14 January ESA’s Huygens probe made an historic first ever descent to the surface of Titan, 1.2 billion kilometers from Earth and the largest of Saturn’s moons. Huygens travelled to Titan as part of the joint ESA/NASA/ASI Cassini-Huygens mission. Starting at about 150 kilometers altitude, six multi-function instruments on board Huygens recorded data during the descent and on the surface. The first scientific assessments of Huygens’ data were presented during a press conference at ESA head office in Paris on 21 January.

Mosaic of river channel and ridge area on Titan.

“We now have the key to understanding what shapes Titan’s landscape,” said Dr Martin Tomasko, Principal Investigator for the Descent Imager-Spectral Radiometer (DISR), adding: “Geological evidence for precipitation, erosion, mechanical abrasion and other fluvial activity says that the physical processes shaping Titan are much the same as those shaping Earth.”

Spectacular images captured by the DISR reveal that Titan has extraordinarily Earth-like meteorology and geology. Images have shown a complex network of narrow drainage
channels running from brighter highlands to lower, flatter, dark regions. These channels merge into river systems running into lake beds featuring offshore ‘islands’ and ‘shoals’ remarkably similar to those on Earth.

Data provided in part by the Gas Chromatograph and Mass Spectrometer (GCMS) and Surface Science Package (SSP) support Dr. Tomasko’s conclusions. *Huygens* data provide strong evidence for liquids flowing on Titan. However, the fluid involved is methane, a simple organic compound that can exist as a liquid or gas at Titan’s sub-170°C temperatures, rather than water as on Earth.

Detected bursts of methane gas boiled out of surface material, reinforcing methane’s principal role in Titan’s geology and atmospheric meteorology, forming clouds and precipitation that erodes and abrades the surface.

In addition, DISR surface images show small rounded pebbles in a dry riverbed. Spectra measurements (color) are consistent with a composition of dirty water ice rather than silicate rocks. However, these are rock-like solid at Titan’s temperatures.

**The Astronomy Store**

*The CCSN Planetarium*

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The Astronomy Store features items for sale that are of interest to the patrons of The Planetarium. We carry a wide variety of novelties, toys and observing aids with a space or astronomical theme. When patrons obtain their tickets to planetarium shows, they can also purchase a variety of astronomically oriented items. *Friends of The Planetarium* receive a 10% discount.

Two new Titan features - water ice and methane springs.

Deceleration and penetration data provided by the SSP indicate that the material beneath the surface’s crust has the consistency of loose sand, possibly the result of methane rain falling on the surface over eons, or the wicking of liquids from below towards the surface.

Heat generated by *Huygens* warmed the soil beneath the probe and both the GCMS and SSP Titan landing site seen from Cassini.
Titan’s soil appears to consist at least in part of precipitated deposits of the organic haze that shrouds the planet. This dark material settles out of the atmosphere. When washed off high elevations by methane rain, it concentrates at the bottom of the drainage channels and riverbeds contributing to the dark areas seen in DISR images.

New, stunning evidence based on finding atmospheric argon 40 indicates that Titan has experienced volcanic activity generating not lava, as on Earth, but water ice and ammonia.

Thus, while many of Earth’s familiar geophysical processes occur on Titan, the chemistry involved is quite different. Instead of liquid water, Titan has liquid methane. Instead of silicate rocks, Titan has frozen water ice. Instead of dirt, Titan has hydrocarbon particles settling out of the atmosphere, and instead of lava, Titanian volcanoes spew very cold ice.

Titan is an extraordinary world having Earth-like geophysical processes operating on exotic materials in very alien conditions.

“We are really extremely excited about these results. The scientists have worked tirelessly for the whole week because the data they have received from Huygens are so thrilling. This is only the beginning, these data will live for many years to come and they will keep the scientists very very busy”, said Jean-Pierre Lebreton, ESA’s Huygens Project Scientist and Mission manager.

The Cassini-Huygens mission is a cooperation between NASA, ESA and ASI, the Italian space agency. The Jet Propulsion Laboratory (JPL), a division of the California Institute of Technology in Pasadena, is managing the mission for NASA’s Office of Space Science, Washington DC. JPL designed, developed and assembled the Cassini orbiter while ESA operated the Huygens atmospheric probe.

Huygens Landed with a Splat

(ESA) Although Huygens landed on Titan’s surface on 14 January, activity at ESA’s European Space Operations Centre (ESOC) in Darmstadt, Germany, continues at a furious pace. Scientists are still working to refine the exact location of the probe’s landing site.

While Huygens rests frozen at –180°C on Titan’s landscape, a symbolic finale to the engineering and flight phase of this historic mission, scientists have taken little time off to eat or sleep.

They have been processing, examining and analyzing data, and sometimes even dreaming about it when they sleep. There’s enough data to keep Huygens scientists busy for months and even years to come.

One of the most interesting early results is the descent profile. Some 30 scientists in the Descent Trajectory Working Group are working to recreate the trajectory of the probe as it parachuted down to Titan’s surface.

The descent profile provides the important link between measurements made by instruments on the Huygens probe and the Cassini orbiter.

The surface of Titan from the Huygens probe. Distance from the camera is indicated in blue, size of rocks and pebbles in red. [ESA]
orbiter. It is also needed to understand where the probe landed on Titan. Having a profile of a probe entering an atmosphere on a Solar System body is important for future space missions.

After Huygens’ main parachute unfurled in the upper atmosphere, the probe slowed to a little over 50 metres per second, or about the speed you might drive on a motorway.

In the lower atmosphere, the probe decelerated to approximately 5.4 metres per second, and drifted sideways at about 1.5 metres per second, a leisurely walking pace.

“The ride was bumpier than we thought it would be,” said Martin Tomasko, Principal Investigator for the Descent Imager/Spectral Radiometer (DISR), the instrument that provided Huygens’ stunning images among other data.

The probe rocked more than expected in the upper atmosphere. During its descent through high-altitude haze, it tilted at least 10 to 20 degrees. Below the haze layer, the probe was more stable, tilting less than 3 degrees.

Tomasko and others are still investigating the reason for the bumpy ride and are focusing on a suspected change in wind profile at about 25 kilometers altitude.

The bumpy ride was not the only surprise during the descent.

Scientists had theorized that the probe would drop out of the haze at between 70 and 50 kilometers. In fact, Huygens began to emerge from the haze only at 30 kilometers above the surface.

When the probe landed, it was not with a thud, or a splash, but a ‘splat’. It landed in Titanian ‘mud’.

“I think the biggest surprise is that we survived landing and that we lasted so long,” said DISR team member Charles See. “There wasn’t even a glitch at impact. That landing was a lot friendlier than we anticipated.”

DISR’s downward-looking High Resolution Imager camera lens apparently accumulated some material, which suggests the probe may have settled into the surface. “Either that, or

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Shows available for all grade levels are offered Monday thru Friday at both the Fleischmann Planetarium and the CCSN Planetarium.

For information, call 702-651-4505 in Las Vegas or 775-784-4812 in Reno.
we steamed hydrocarbons off the surface and they collected onto the lens,” said See.

“The probe’s parachute disappeared from sight on landing, so the probe probably isn’t pointing east, or we would have seen the parachute,” said DISR team member Mike Bushroe.

When the mission was designed, it was decided that the DISR’s 20-Watt landing lamp should turn on 700 metres above the surface and illuminate the landing site for as long as 15 minutes after touchdown.

“In fact, not only did the landing lamp turn on at exactly 700 metres, but also it was still shining more than an hour later, when Cassini moved beyond Titan’s horizon for its ongoing exploratory tour of the giant moon and the Saturnian system,” said Tomasko.

Dust on Mars: Before and After (Spirit)

(NASA/JPL) Since landing on Mars a year ago, NASA’s pair of six-wheeled geologists have been constantly exposed to martian winds and dust. Both rovers have been coated by some dust falling out of the atmosphere during that time, with estimates of the dust thickness ranging from 1 to 10 micrometers, or between 1/100th and 1/10th the width of a single human hair. Of the two, NASA’s Mars Exploration Rover Spirit is definitely the more dust-laden. As a result, Spirit has gradually experienced a decline in power as the thin layer of dust has accumulated on the solar panels, blocking some of the sunlight that is converted to electricity. Spirit took the left image on martian day, or sol, 9 (Jan. 11, 2004), and took the right image nearly a year later, on sol 357 (Jan. 3, 2005), using the panoramic camera. The images show the camera’s calibration target, which is used as a reference point for calibrating the colors on Mars. In the later image a semi-transparent layer of reddish martian dust coats the surfaces. The panoramic camera team’s analysis indicates that the layer of dust on Spirit’s calibration target is about 70 percent thicker than that on Opportunity’s. Both images represent the panoramic camera team’s best current attempt at generating true color views of what these scenes would look like if viewed by a human on Mars. They were each generated from a combination of six calibrated, left-eye Pancam images acquired through filters ranging from 430-nanometer to 750-nanometer wavelengths. The square base of the calibration target is 8 x 8 centimeters (3.15 inches).
Give a Star

A popular service of The CCSN Planetarium lets you dedicate a star to a loved one. For a donation of $35, we will provide an attractive certificate that proclaims your dedication of the star of your choice to any other person. The certificate will have a chart of the constellation containing the star and complete information about the star. Accompanying the certificate will be The Sky Challenger, which contains a series of adjustable charts of the sky as seen from North America to help you find your star. A donation of $100 will give you an exclusive dedication.

Call 651-4138 or 651-4505 for further information.
Sky Calendar

All times are Pacific Standard Time. Rise and set times are for the astronomical horizon at Las Vegas or Reno as noted.

The Moon

Each day the moon rises about one hour later than the day before. The New Moon (not visible) is in the direction of the sun and rises and sets with the sun. The first quarter moon rises at about noon and sets near midnight. The full moon is opposite the sun in the sky and rises at sunset and sets at sunrise. The last quarter moon rises near midnight and sets near noon. Perigee is when the moon is closest to the earth and apogee is when it is farthest. The distance varies by ±6% from the average.

- Last quarter: Mar. 3 9:36 am pst
- New Moon: Mar. 10 1:10 am
- First quarter: Mar. 17 11:19 am
- Full Moon: Mar. 25 12:58 pm
- Last quarter: Apr. 1 4:50 pm
- Perigee: Mar. 7 7:43 pm
- Apogee: Mar. 19 2:55 pm
- Perigee: Apr. 4 3:11 pm

Pluto

Pluto is in the constellation of Serpens Cauda. It is in the morning sky rising near 2:30 am at mid-month. On Feb. 4, the waning crescent moon rises 15° to the right of Pluto shortly before 3:00 am. A telescope of at least 12" diameter is usually required to see this faint planet.

The Planets

Mercury

Mercury is low in the west after sunset for most of this month. Greatest eastern elongation (18° from the sun) occurs on March 12. By the end of the month, it will be too close in direction to the sun with inferior conjunction (between earth and the sun) occurring on March 29.

Venus

Venus is too close in direction to the sun to be seen. Superior conjunction (far side of the sun) occurs on March 30. Venus will again become visible in the evening sky in late May.

Mars

Mars, in Sagittarius, is rising in the east over three hours before the sun. Look for the waning crescent moon to the right of Mars on the morning of March 5.

Jupiter

Jupiter, in Virgo, rises in the early evening and is in the southwest by sunrise. Look for the full moon to rise about 30 minutes before Jupiter on March 25. Jupiter will reach opposition on April 3.

Saturn

Saturn, in Gemini, is high in the south at mid-month. Look for the waxing gibbous moon above Saturn on the evening of March 19.

Uranus

Uranus, in Aquarius, is too close in direction to the sun to be seen. Conjunction (far side of the sun) occurred on February 24.

Neptune

Neptune, in Capricornus, is rising about two hours before sunrise at mid-month. The thin crescent moon rises at the same time and just 10° to the right of Neptune on the morning of March 7.

Vernal Equinox

Spring begins this year at 4:33 am on March 20. On that date, the sun crosses the celestial equator, heading back into our Northern Hemisphere to bring us our beloved Las Vegas summer heat.

Only on this date or on the autumnal equinox does the sun rise directly in the east and set directly in the west. At noon on these two dates, the sun is 36° south of the zenith (39½° in Reno), the angle of our latitude.
We would get exactly 12 hours of daylight today, if refraction by the atmosphere didn’t add 8 minutes.

Two and a half millennia ago, when the Babylonians were tracking the motion of the sun against the background stars, the sun was in Aries on this date. Although you still hear this position referred to as the First Point of Aries, precession of the Earth’s axis has moved the Vernal Equinox point into neighboring Pisces. It’s this same precessional motion that means that the sun was not in the constellation of your astrological sun sign on the date you were born.

On this date, if you head directly away from the Sun at the speed of light, in 31 years you would reach Zavijava, Beta Virginis, a 3.6 magnitude star slightly warmer than our Sun. In 54,800,000 more years, you would be in the midst of the Virgo Cluster of galaxies. Have a good trip. ☮️

**Messier Marathon**

In the late 1700’s, the French astronomer Charles Messier (mess-ee-ay) spent long nights looking for comets. He often came across faint, diffuse objects that could be comets. After watching these objects for a while it was obvious they were nebulae (glowing clouds of gas) because they did not move with respect to the stars.

In order to save time in his comet searches, Messier began a list of these objects. Today, Messier is remembered for his catalog and not for the many comets he discovered. The Messier Catalog contains all of the bright nebulae and galaxies visible from the northern hemisphere.

While Messier’s List originally had 45 objects, other astronomers have added similar objects to the list making the current list of 110 objects. Because of the distribution of the Messier Objects, mid-March is the best time to see most of them in one night.

In theory, by starting right after sunset in the west and slowly working your way eastward across the sky over the night ending at the eastern horizon just before sunrise it is possible to see all 110 objects in one night.

In practice, several objects are difficult. The faint, diffuse galaxy M74 in Pisces sets soon after the sun in March while the faint globular cluster M30 rises just before the sun. Experienced observers can usually detect over 100 Messier objects near the March new moon. The best night for conducting a Messier marathon is the night of the new moon nearest the Vernal Equinox. This year, most will observe on the weekend nights of March 12-13. ☮️
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