

THE DARK SKY OBSERVER

The Dark Sky Observer is a publication of the North Jersey Astronomical Group (NJAG), whose purpose is to promote the study and knowledge of the science of astronomy.

The Dark Sky Observer needs your input!

Letters, comments, suggestions, book and product reviews, and articles are welcomed and encouraged. Contact the editor at 973-249-1926, kdconod@optonline.net, or at this address:

Dark Sky Observer

North Jersey Astronomical Group
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VISIT OUR WEB PAGE AT

<http://njagweb.tripod.com>.

Mary Lou West also maintains a web page at:
<http://www.csam.montclair.edu/~west/njag.html>

MEMBERSHIP

Dues are only \$15.00 per year (\$20.00 for family and \$10.00 for student memberships). Benefits of membership include: \$10 discount on subscriptions to "Sky & Telescope" or "Astronomy" magazines ("Sky & Telescope" subscribers also get a 10% discount on all books, maps, and products at Sky Publishing); a subscription to this newsletter; an e-mail list for the latest club and astronomy news; use of our dark sky sites; field trips to local planetariums, science centers, and star parties; a lending library of astronomical books; a Telescope Loan Program; and star parties for special celestial events.

Make checks out to the NJAG and mail to: North Jersey Astronomical Group, P.O. Box 1472, Clifton, NJ 07015-1472. If you have any questions regarding membership, contact our Acting Membership Committee Chair, Gigi Inturrisi at: g.inturrisi@verizon.net.

UACNJ

The NJAG is a member of the United Astronomy Clubs of New Jersey (UACNJ), a consortium of more than a dozen astronomy clubs, united to better help support, coordinate, and communicate ideas between stargazers in and around the state. The UACNJ operates an observatory at Jenny Jump State Forest near Hope, NJ which serves as the NJAG's dark sky site.

NJAG ANNUAL DINNER

The NJAG's famous Annual Dinner was held Friday, March 14, at the Russian Hall in Little Falls. The evening featured good food, good friends, door prizes, a great presentation, and the Annual Astrophotography Contest.

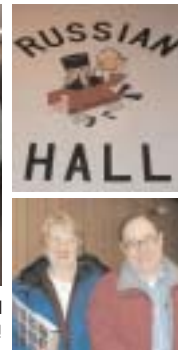
Our special guest speaker was author Kitty Ferguson, a science writer who has completed several astronomical books including *Measuring the Universe*, *Prisons of Light* and *Stephen Hawking*. Her latest book, *Tycho & Kepler: The Unlikely Partnership That Forever Changed Our Understanding of the Heavens*, was the topic of the evening's presentation.



Dr. Mary Lou West and guest speaker Kitty Ferguson



Always a delicious buffet!



Special visitors!



In the annual Astrophotography Contest, Joe Marzulo took Best of Show honors for his photo of Jupiter. We'll feature some of the winning photos in upcoming issues.

Raffle tickets by the arm's length

Improvising around a computer glitch -- great minds at work to solve the problem!



26 raffle prizes = lots of happy winners!



APRIL MEETING

Wednesday, April 9

Our guest speaker will be Jeremy Carlo who is a graduate student in the physics department at Columbia University in the City of New York, where he is pursuing research in astrophysics. Jeremy will present "Hunting for X-Ray Pulsars" at the April 9th meeting. Using x-ray telescopes in space, astronomers have greatly increased their knowledge of processes involving high energy photons, including that of pulsars, the enormously dense remnants of massive stars that form as a result of supernova explosions. Jeremy will talk about the history of x-ray astronomy and its relation to astronomy as a whole, about stellar endstates including neutron stars/pulsars, and what we have learned.

UPCOMING SPEAKERS

Lonny Buinis of Raritan Valley Community College will give presentation at the May 14th meeting.

The search for Earth-like extrasolar planets will be the focus of the June 11th meeting. Our guest speaker will be Dr. Robert Vanderbei of Princeton University.

ELECTION RESULTS

Elections were held at the February meeting. Congratulations to the following candidates:

President - Joe Marzullo

Vice President - Kevin Conod

Treasurer - Gigi Inturrisi

Recording Secretary - Jim Piombino

Corresponding Secretary - Heidi

Cramer

Trustee - Angelo Restivo

NASA STUDY SHOWS HOW WATER MAY HAVE FLOWED ON ANCIENT MARS

NASA scientists have discovered how an intricate martian network of streams, rivers and lakes may have carried water across Mars.

Using new three-dimensional data from the Mars Global Surveyor spacecraft and a powerful state-of-the-art computer code that 'models' overland water flow, scientists visualized the complex flow of martian water. These data, acquired by the laser altimeter on board the spacecraft, provided highly accurate, three-dimensional topographic views of Mars.

"We've known for some time that Mars contains lakebed and stream-like surface features, and that many of these stream features run into depressions, then end abruptly," said Marc G. Kramer, a scientist at NASA Ames Research Center in California. "A new aspect of this study shows how these two features link to one another as a single, integrated water network that may have existed on Mars at some time in the past," he said.

Scientists have long been puzzled as to why some ancient river-like features on the red planet do not seem to connect to one another and often lack smaller stream features.

"If you look at a photograph of the surface of Mars, the river features begin and end abruptly, and often lack small-scale features," Kramer said. "Many scientists have argued that these features were formed from localized groundwater seeping to the surface. Others have argued that these features formed from precipitation during a time when Mars may have had a thicker atmosphere."

"What we found in this study, is that many of these apparently fragmented river features may have connected or flowed into depressions that resemble ancient lake beds," Kramer explained. "Some of the larger depressions are comparable in size to the Great Lakes in North America in terms of surface area."

Large lakes and rivers on Mars once may have formed water systems that included many streams and smaller lakes, according to the scientists. The study found that the areas near the Great Lakes on Earth bear a strong resemblance to features on Mars. Although the areas appear to be similar, they formed in different ways, according to Kramer.

The study of surface depressions in conjunction with river features, provides a more complete picture of a surface water network that may have existed on what must have been a warmer early Mars. "Still unclear is how long such a water system may have persisted, and under exactly what climate conditions. The answers to these questions may lie in further examination of the sediments that have accumulated across the depressions of the surface water network."

With an abundance of ice recently detected just below the surface of Mars, the possibility that life has existed or still may exist may hinge on its past climate and the duration of surface water flows. Was Mars ever a warm and wet planet, or has it always been cold and dry?



Mamers Vallis (Released 21 February 2003)

This sinuous channel begins at the edge of Cerulli Crater in northern Arabia and snakes its way across 1000 km of cratered highlands before reaching Deuteronilus Mensae at the boundary of the northern lowlands. The fluid that carved the channel, either lava or water, flowed from the bottom of this scene to the top. The quasi-streamlined features on the channel floor may have nothing to do with flow and instead may be due to a permafrost creep process.

[Source: ASU THEMIS Science Team] Image Credit: NASA/JPL/Arizona State University

TELESCOPE NIGHTS

January 16 - April 24 (except March 13)

Join us on Thursday Nights in front of Richardson Hall at Montclair State University for some free stargazing! Weather permitting, telescopes will be set up from 8:00 to 9:00 p.m. Bring your friends, bring the family!

Note: Our telescopes cannot see through clouds! Telescopes will be set up only if the weather permits (it is "clear" if you can see the moon or ten stars).

PUBLIC PROGRAMS AT JENNY JUMP

Public programs at the observatories at Jenny Jump State Forest will resume on April 5. Every Saturday through October 26 there will be a free lecture at 8:00 p.m. and, weather permitting, the observatory will be open for viewing until 10:00 p.m. See the UACNJ web page for more info: <http://users.erols.com/njastro>

SKYWATCH

Join us at Riker Hill Park in Livingston for some free stargazing with our telescopes.

May 15, 2003

9:00 P.M. - 12 Midnight

Jupiter and other wonders of the spring sky will be in the spotlight. The highlight of the evening will be a total eclipse of the Moon.

For directions, see: njagweb.tripod.com

Note: Our telescopes cannot see through clouds! Telescopes will be set up only if the weather permits.

Cosponsored by the Newark Museum and the Essex County Department of Parks.

NASA RELEASES STUNNING IMAGES OF OUR INFANT UNIVERSE

NASA recently released the best "baby picture" of the Universe ever taken; the image contains such stunning detail that it may be one of the most important scientific results of recent years.

Scientists using NASA's Wilkinson Microwave Anisotropy Probe (WMAP), during a sweeping 12-month observation of the entire sky, captured the new cosmic portrait, capturing the afterglow of the big bang, called the cosmic microwave background.

"We've captured the infant universe in sharp focus, and from this portrait we can now describe the universe with unprecedented accuracy," said Dr. Charles L. Bennett of the Goddard Space Flight Center (GSFC), Greenbelt Md. "The data are solid, a real gold mine," he said.

One of the biggest surprises revealed in the data is the first generation of stars to shine in the universe first ignited only 200 million years after the big bang, much earlier than many scientists had expected.

In addition, the new portrait precisely pegs the age of the universe at 13.7 billion years old, with a remarkably small one percent margin of error.

The WMAP team found that the big bang and Inflation theories continue to ring true. The contents of the universe include 4 percent atoms (ordinary matter), 23 percent of an unknown type of dark matter, and 73 percent of a mysterious dark energy. The new measurements even shed light on the nature of the dark energy, which acts as a sort of an anti-gravity.

"These numbers represent a milestone in how we view our universe," said Dr. Anne Kinney, NASA director for astronomy and physics. "This is a true turning point for cosmology."

The light we see today, as the cosmic microwave background, has traveled over 13 billion years to reach us. Within this light are infinitesimal patterns that mark the seeds of what later grew into clusters of galaxies and the vast structure we see all around us.

Patterns in the big bang afterglow were frozen in place only 380,000 years after the big bang, a number nailed down by this latest observation. These patterns are tiny temperature differences within this extraordinarily evenly dispersed microwave light bathing the universe, which now averages a frigid 2.73 degrees above absolute zero temperature. WMAP resolves slight temperature fluctuations, which vary by only millionths of a degree.

Theories about the evolution of the universe make specific predictions about the extent of these temperature patterns. Like a detective, the WMAP team compared the unique "fingerprint" of patterns imprinted on this ancient light with fingerprints predicted by various cosmic theories and found a match.

WMAP will continue to observe the cosmic microwave background for an additional three years, and its data will reveal new insights into the theory of Inflation and the nature of the dark energy.

"This is a beginning of a new stage in our study of the early universe," said WMAP team member Prof. David N. Spergel of Princeton University, N.J. "We can use this portrait not only to predict the properties of the nearby universe, but can also use it to understand the first moments of the big bang," he said.

WMAP is named in honor of David Wilkinson of Princeton University, a world-renown cosmologist and WMAP team member who died in September 2002. Launched on June 30, 2001, WMAP maintains a distant orbit a million miles from Earth.

For more information, including high-quality images, videos and press products, refer to:

<http://www.gsfc.nasa.gov/topstory/2003/0206mapresults.html>

<http://map.gsfc.nasa.gov>





ASTRONOMY CALENDAR




March

- 10 & 11 Moon near Saturn
- 14 Moon near Jupiter
- 20 Spring Equinox (8:00 p.m.)
- 20 & 21 Moon near Spica
- 28 Venus very near Uranus



April

- 3 Jupiter near Beehive Star Cluster
- 6 Daylight Saving Time Begins
- 7 Moon near Saturn
- 10 Moon near Jupiter
- 16 Mercury at greatest elongation
- 22 Lyrid Meteor Shower
- 28 Moon near Venus



S **TUMP THE ASTRONOMERS**

Have a question about astronomy?
 Send it in to Kevin Conod at the address on page 1
 or to kdconod@optonline.net
 and we'll try to have an answer in the next newsletter.

LATEST IMAGES FROM MARS ODYSSEY

Here are the latest images from the Mars Odyssey spacecraft which has orbited the red planet since October 24, 2001. Mars will be a spectacular sight in the evening sky this summer – the planet will have its closest encounter with Earth in many years.

- Arabia Terra <http://themis.la.asu.edu/zoom-20030210a.html>
- Arabia Terra Streaks <http://themis.la.asu.edu/zoom-20030211a.html>
- A Tale of Two Craters <http://themis.la.asu.edu/zoom-20030212a.html>
- Ice Clouds <http://themis.la.asu.edu/zoom-20030213a.html>
- Layered Deposits in Terby Crater . . . <http://themis.la.asu.edu/zoom-20030214a.html>
- Arsinoes Chaos <http://themis.la.asu.edu/zoom-20030224a.html>
- Valles Marineris - with 3D <http://themis.la.asu.edu/zoom-20030225a.html>
- Lycus Sulci <http://themis.la.asu.edu/zoom-20030226a.html>
- Kasei Vallis <http://themis.la.asu.edu/zoom-20030228a.html>