

IO - May 2009

Issue 2009-05
Eugene Astronomical Society

Eugene Astronomical Society
Annual Club Dues \$25
President: Sam Pitts - 688-7330
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Jacob Strandlien, Tony Dandurand.

www.eugeneastro.org

EAS is a proud member of:

The Astronomical League
The World's Largest Federation of Amateur Astronomers



Next Meeting: May 28th

400 Years After Galileo: Backyard Astronomy with a Small Telescope

by Jeff Phillips

The cheapest telescope you can buy today is probably an order of magnitude better than what Galileo used. Jeff Phillips will show us what a person can accomplish with one of today's small telescopes.

Jeff's talk will include astrophotography. Jeff takes some amazing photographs with inexpensive cameras through modest telescopes. You can too! Come to our May 28th meeting and learn how he does it.

In Jeff's own words: "One evening as I looked at the Moon with my telescope, I had the distinct impression of looking through clear Jello. The lunar surface seemed to wobble and wave in front of me. The Jello of course is our own atmosphere, and countering the effects of the atmosphere is the reason for launching the Hubble space telescope and for developing adaptive optics for land based telescopes.

"Registax is a free software program by Cor Berrevoets of Holland that allows pictures of the Moon and planets to be processed as though you had adaptive optics at home. The newest version, Registax-5,

(Continued on p.5)



Archimedes and Hadley Rille region. Photo by Jeff Phillips

The Eugene Astronomical Society meets at EWEB 500 E. 4th Avenue in Eugene.

Our next meeting will be on Thursday, May 28th, at 7:00 in the north building's Community Room. This is in the semicircular building to the north of the fountain at EWEB's main campus on the east end of 4th Avenue.

Meeting dates for 2009: (All meetings are at 7:00 in the Community Room)

May 28

July 23

September 24

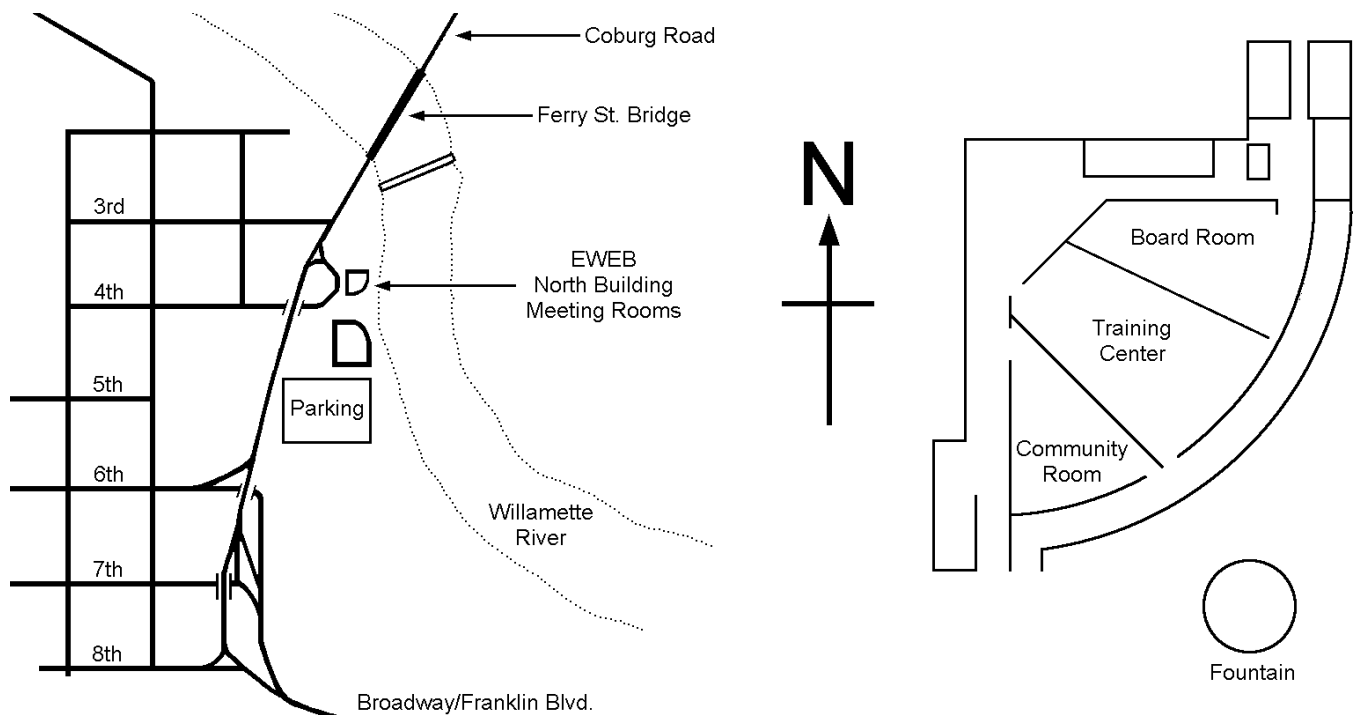
November 19

June 25

August 27

October 22

December 17



EWEB is located at 500 E. 4th Avenue.

EAS meets in the first room in the semicircular building to the north of the fountain.

CASTLE STORAGE

Unit _____
Code _____

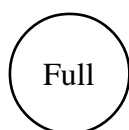
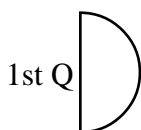
120 S. Danebo • Eugene, OR 97402 • 541.607.3800

Thank You Castle Storage

For over a year now, Castle Storage has generously provided EAS a place to store its telescopes and equipment. EAS would like to thank Castle Storage for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. They are great people and offer secure and quality storage units.



Observing in May



May 1	May 8	May 17	May 24
Mercury Set: 10:03 PM	Mercury Set: 9:36 PM	Mercury behind Sun	Mercury Rise: 5:25 AM
Venus Rise: 4:29 AM	Venus Rise: 4:16 AM	Venus Rise: 4:00 AM	Venus Rise: 3:48 AM
Mars Rise: 4:52 AM	Mars Rise: 4:35 AM	Mars Rise: 4:15 AM	Mars Rise: 3:59 AM
Jupiter Rise: 3:14 AM	Jupiter Rise: 2:48 AM	Jupiter Rise: 2:15 AM	Jupiter Rise: 1:49 AM
Saturn Set: 4:17 AM	Saturn Set: 3:49 AM	Saturn Set: 3:13 AM	Saturn Set: 2:46 AM
Uranus Rise: 4:25 AM	Uranus Rise: 3:58 AM	Uranus Rise: 3:23 AM	Uranus Rise: 2:56 AM
Neptune Rise: 3:18 AM	Neptune Rise: 2:51 AM	Neptune Rise: 2:15 AM	Neptune Rise: 1:48 AM
Pluto Rise: 11:52 PM	Pluto Rise: 11:24 PM	Pluto Rise: 10:48 PM	Pluto Rise: 10:20 PM

All times: Pacific Standard Time (Nov 2, 2008-March 8, 2009) = UT -8 hours or U.S. Pacific Daylight Time (March 8-November 1, 2009) = UT -7 hours.

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
5/1/2009	12:17	02:20	06:03	20:16	04:09	22:11
5/2/2009	13:33	02:50	06:02	20:17	04:07	22:13
5/3/2009	14:46	03:14	06:01	20:19	04:05	22:15
5/4/2009	15:57	03:36	05:59	20:20	04:03	22:17
5/5/2009	17:07	03:58	05:58	20:21	04:01	22:19
5/6/2009	18:17	04:19	05:57	20:22	03:59	22:21
5/7/2009	19:26	04:43	05:55	20:23	03:57	22:23
5/8/2009	20:35	05:10	05:54	20:24	03:55	22:24
5/9/2009	21:40	05:42	05:53	20:26	03:53	22:26
5/10/2009	22:40	06:21	05:52	20:27	03:51	22:28
5/11/2009	23:32	07:07	05:50	20:28	03:49	22:30
5/12/2009		08:01	05:49	20:29	03:47	22:32
5/13/2009	00:16	09:00	05:48	20:30	03:45	22:34
5/14/2009	00:52	10:02	05:47	20:31	03:43	22:36
5/15/2009	01:21	11:06	05:46	20:32	03:41	22:38
5/16/2009	01:46	12:10	05:45	20:33	03:39	22:40
5/17/2009	02:08	13:14	05:44	20:34	03:38	22:42
5/18/2009	02:29	14:19	05:43	20:36	03:36	22:43
5/19/2009	02:48	15:26	05:42	20:37	03:34	22:45
5/20/2009	03:09	16:36	05:41	20:38	03:32	22:47
5/21/2009	03:32	17:50	05:40	20:39	03:31	22:49
5/22/2009	04:00	19:07	05:39	20:40	03:29	22:51
5/23/2009	04:35	20:26	05:38	20:41	03:27	22:53
5/24/2009	05:19	21:40	05:37	20:42	03:26	22:54
5/25/2009	06:17	22:46	05:37	20:43	03:24	22:56
5/26/2009	07:26	23:38	05:36	20:44	03:23	22:58
5/27/2009	08:44		05:35	20:45	03:21	22:59
5/28/2009	10:04	00:19	05:35	20:45	03:20	23:01
5/29/2009	11:22	00:52	05:34	20:46	03:18	23:03
5/30/2009	12:37	01:18	05:33	20:47	03:17	23:04
5/31/2009	13:49	01:41	05:33	20:48	03:16	23:06

All times are for Eugene, Oregon, Latitude 44° 3' Longitude 123° 06' for listed date

Other Items of Interest This Month

First week of May: last good chance at Mercury

5/1 First Quarter Friday Star Party

5/14, 10:21 PM to early AM 4/15: Titan's shadow transits Saturn

5/17, 1:00 AM - 2:15 AM: Double shadow transit on Jupiter (Io and Callisto)

5/21 early AM: Moon near Venus and Mars

5/25 Jupiter 0.4° south of Neptune

5/29 First Quarter Friday Star Party

5/30, 9:30 PM: Titan's shadow transits Saturn

For Current Occultation Information

Visit Derek C. Breit's web site

“BREIT IDEAS Observatory”

<http://www.poyntsource.com/New/Regions/EAS.htm>

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often.

Observing Highlight: Rinnan's Run

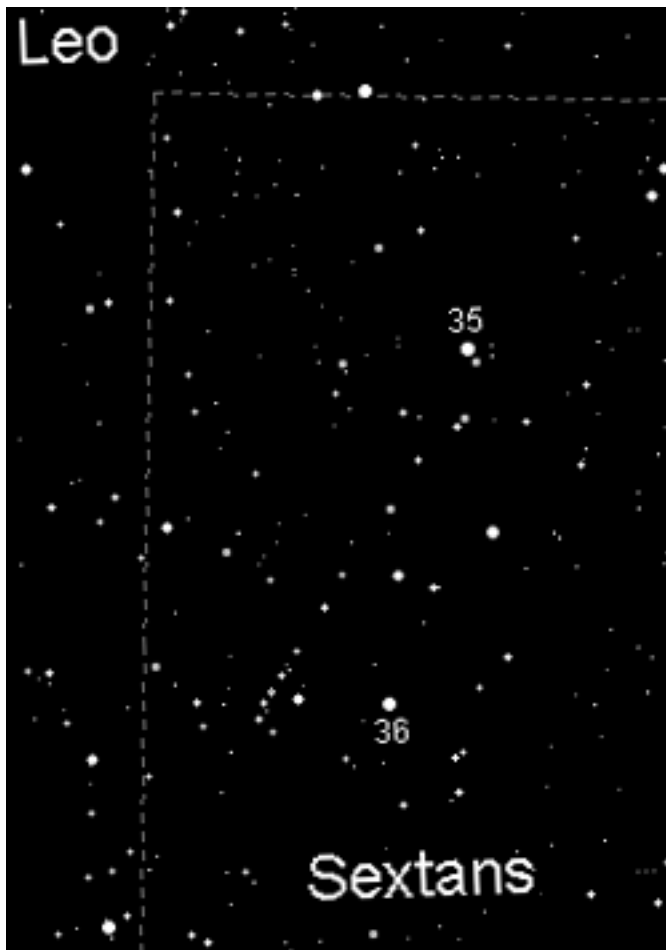
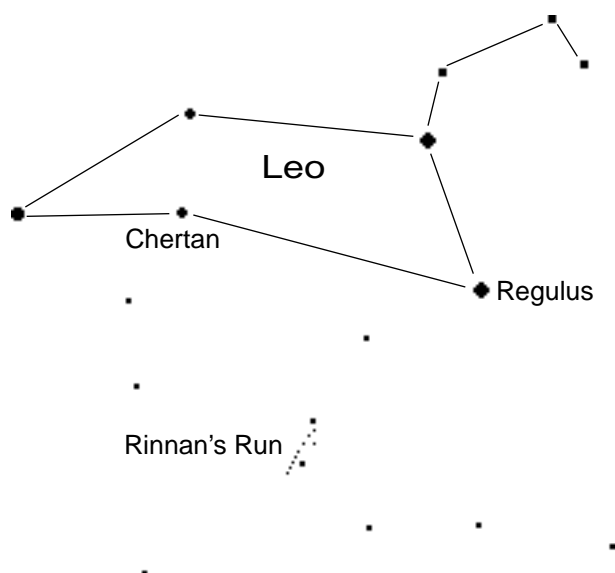


Chart from Orion's "The Sky" planetarium program



On April 19, 2009, while several members of the EAS were observing at Eagle's Ridge, Dan Rinnan leaned back in a chair with a pair of image-stabilized binoculars and scanned around in the west below Leo. There he found a remarkably straight line of stars in the northeast corner of Sextans.

The line consists of about a dozen mag 8-9 stars (up to 16 if you count fainter ones) stretching NW-SE between 35 and 36 Sextans. 35 is at the northern end with 36 a little to the west of the bottom end of the chain. The chain is about 3 degrees long and easily identifiable in binoculars or a finder scope. It also rewards study at low power in a telescope, since many more faint stars add to the chain with greater aperture.

The chain is reminiscent of "Kemble's Cascade" in Camelopardalis. When Dan pointed it out to Jerry and Gordon and Aaron and Jim, they immediately dubbed it "Rinnan's Run." Jerry emailed Sue French at *Sky & Telescope* and asked her if she knew of this asterism, and if anyone else had already named it. She replied that the lower portion has been noted before, and bears such prosaic names as "ANR 1048+02" and "TL-23," but to her knowledge we are the first to name the entire chain.

Sue said she would add Dan's discovery to her collections of asterisms. You can't ask for a more official endorsement than that, so "Rinnan's Run" it is!

How do you find this beautiful little starfall? Start in Leo and make an equilateral triangle with Regulus and Chertan (Theta Leonis) at the top. From the lower point of that triangle, scan a couple degrees to the northwest.

For go-to people whose Autostars haven't yet been updated for major new finds like this, the center of the chain is at about RA 10h 45m and Dec +3 degrees 30'.



(Continued from p.5)

has an effective routine for “multi-point alignment” which compensates for the fact that a video of the Moon seems to bend and stretch as you watch.

“It’s only been two weeks since I downloaded Registax-5, but I really like the results compared to earlier versions of Registax. The pictures I took with an inexpensive Orion 130mm (5.1 inch) Newtonian reflector are amazing. In one picture I can clearly see Hadley Rille next to the landing site of Apollo 15. Another picture shows the craterlets next to Copernicus in surprising detail.

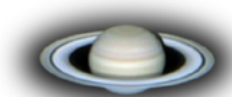
“The Moon is a lot more interesting since I started taking pictures, and it gives me something satisfying to look at on those clear nights when the Moon is up!”

This should be an excellent evening’s program. In addition to Jeff’s talk, Jacob Strandlien will recap the last several months of astronomy news.

And as always, we encourage the sharing of astronomy-related questions, news, or projects with other members of the club.



Copernicus. Photo by Jeff Phillips



Next First Quarter Friday: May 29th

Our next First Quarter Friday star party will be May 29th. Our last two were clouded out, so Nature owes us a clear one, right? If it’s clear, we’ll probably have a pretty good crowd. Bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up.

Here are the dates for First Quarter Fridays through December of 2009.

May 29, 2009

June 26, 2009

July 31, 2009

August 28, 2009

September 25, 2009

October 23, 2009

November 27, 2009

December 25, 2009

(Yes, Christmas night!)

Pine Mountain Observatory Opens for the Summer

by Rick Kang

Pine Mountain Observatory, the University of Oregon's astrophysical observatory in Central Oregon, about an hour east of Bend, will be open again shortly to host drop-in and pre-scheduled sky viewing.

Drop-in public viewing starts Memorial Day weekend (end of May), and continues each Friday and Saturday night through September (not open on Sundays). Classes and other groups over 8 people can schedule tours by contacting Mark Dunaway, 541-382-8331, or markpmo@oregon.uoregon.edu. School tours start in May. Programs start at dusk, around 9:00 PM in summer, then moving back toward 8:00 PM when sky gets dark earlier toward Fall.

Primary viewing is through a Cassegrain reflecting telescope that has a 24" diameter mirror, so very capable of showing you faint distant galaxies as well as details of Solar System planets. Come up when the Moon isn't in the sky; this can be one of the darkest-sky sites in Oregon. The altitude is 6500 feet, so be prepared for sub-freezing temperatures any night, even in middle of summer. White lights are banned, so be sure to have red covering on all lights to protect everyone's night vision.

EAS members and all other amateur astronomers are welcome to bring their own telescopes. There's an "upper deck" area of gravel near the 24" dome available for portable scopes, with electrical power accessible.

Want to stay overnight? There's a primitive Forest Service campground right next door to the Observatory, no reservations, no fees, no water, and please comply with posted Forest Service Fire Regulations.

Want to learn how to run one of the Observatory's scopes? (We're working on getting a new 15" online in another dome; the third domed telescope is the 32" Cassegrain that Professor Bothun uses for research.) We hold training sessions on some Saturdays preceding and during the tour season. (See below.)

We're always looking for Tourguides, people willing to work with the public in the outdoor environment through the night. If you'd like to get involved, contact Kent Fairfield, tualatinkent@aol.com or talk to him in person at PMO. He's up there most tour nights.

There's a Meetup group based in Bend that meets during the offseason to plan for the upcoming season and is where the Tourguides receive information online during the ongoing season. Subscribe at <http://astronomy.meetup.com/116/>. Tourguides serve as meeters/greeters, skyguides, gift shop operators, lecturers, and large telescope operators. You don't have to know a lot about the sky to volunteer. Training and experience is provided. There is some funding available to offset travel costs.

See weather conditions and webcam views at <http://pmo-sun.uoregon.edu/> where there's also a link to a virtual tour. Enjoy clear dark skies at Oregon's Observatory in Central Oregon while sharing your interest in the sky with visitors from around the State and around the world.

A note from Kent Fairfield on training sessions: "We will hold a required training session on Saturday, May 9th, for volunteers who expect to be working at PMO this season. Both new volunteers and old hands should attend. We will begin at 12:00 noon at Pine Mountain with a pot luck lunch, so bring what you like.

"At 1:00pm we will start the formal training program, which should not take more than a couple of hours. Individuals who want to operate the 24-inch telescope will be trained as individuals on dates mutually agreed upon. We expect to have an entirely new control system on that scope shortly.

"VERY IMPORTANT: Please RSVP regarding your attendance to Kent Fairfield, tualatinkent@aol.com or to the Meetup list if you're a member of that. Thanks! Kent Fairfield LaPine 541-536-5795."

Active Mercury

from Science@NASA.gov

A NASA spacecraft gliding over the surface of Mercury has revealed that the planet's atmosphere, magnetosphere, and its geological past display greater levels of activity than scientists first suspected. The probe also discovered a large impact basin named "Rembrandt" measuring about 430 miles in diameter.

These new findings and more are reported in four papers published in the May 1 issue of Science magazine. The data come from the Mercury Surface, Space Environment, Geochemistry, and Ranging spacecraft — MESSENGER for short. On Oct. 6, 2008, MESSENGER flew by Mercury for the second time, capturing more than 1,200 high-resolution and color images of the planet.

"This second Mercury flyby provided a number of new findings," said Sean Solomon, the probe's principal investigator from the Carnegie Institution of Washington. "One of the biggest surprises was how strongly [Mercury's magnetosphere] had changed from what we saw during the first flyby in January 2008."

The magnetosphere is a region of space around Mercury enveloped by the planet's magnetic field. Gusty solar wind buffeting the global bubble of magnetism can potentially trigger magnetic storms and other space weather-related phenomena.

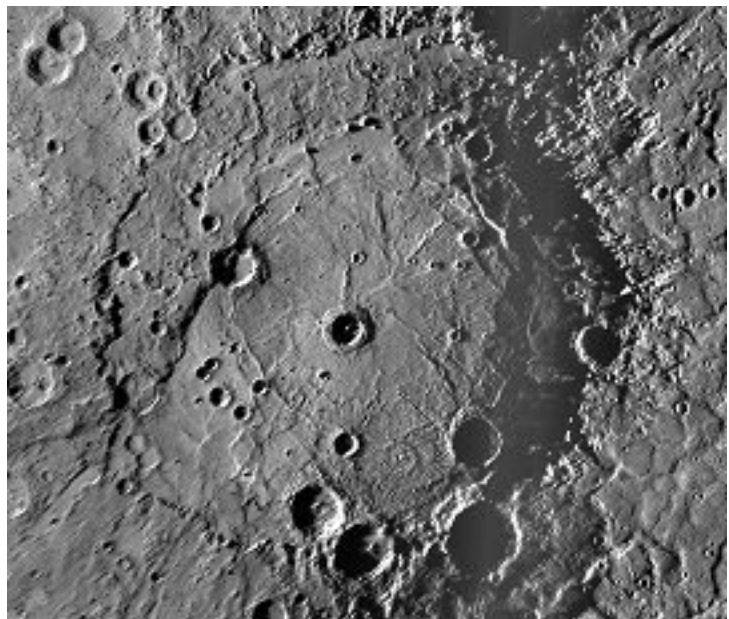
"During the first flyby, MESSENGER measured relatively calm dipole-like magnetic fields close to the planet. Scientists didn't detect any dynamic features other than some Kelvin-Helmholtz waves," said James Slavin of NASA's Goddard Space Flight Center. Slavin is a mission co-investigator and lead author of one of the papers.

"But the second flyby was a totally different situation," he says. MESSENGER observed a highly dynamic magnetosphere with "magnetic reconnection" events taking place at a rate 10 times greater than what is observed at Earth during its most active intervals. "The high rate of solar wind energy input was evident in the great amplitude of the plasma waves and the large magnetic structures measured by the spacecraft's magnetometer throughout the encounter."

Another exciting result is the discovery of a previously unknown large impact basin. The Rembrandt basin is more than 700 kilometers (430 miles) in diameter and if formed on the east coast of the United States would span the distance between Washington, D.C., and Boston.

Rembrandt formed about 3.9 billion years ago, near the end of the period of heavy bombardment of the inner Solar System, suggests MESSENGER Participating Scientist Thomas Watters, lead author of another of the papers. Rembrandt is significant, not only because it is big, but also because it is giving researchers a peek beneath the surface of Mercury that other basins have not.

"This is the first time we've seen terrain exposed on the floor of an impact basin on Mercury that is preserved from when it formed,"



The Rembrandt impact basin.
Credit: NASA/Johns Hopkins University

explains Watters. “Landforms such as those revealed on the floor of Rembrandt are usually completely buried by volcanic flows.”

Half of Mercury was unknown until a little more than a year ago. Globes of the planet were blank on one side. Spacecraft images have since revealed 90 percent of the planet’s surface at high resolution. This near-global coverage is showing, for the first time, how Mercury’s crust was formed.

Right: In this interpretive map of Mercury’s surface, shades of yellow denote smooth plains of mainly volcanic origin. This type of terrain covers approximately 40% of the planet. The white (empty) slice is the portion of Mercury not yet photographed.

“After mapping the surface, we see that approximately 40 percent is covered by smooth plains,” said Brett Denevi of Arizona State University in Tempe, a team member and lead author of a paper. “Many of these smooth plains are interpreted to be of volcanic origin, and they are globally distributed. Much of Mercury’s crust may have formed through repeated volcanic eruptions in a manner more similar to the crust of Mars than to that of the moon.”

Another finding of the flyby is the first detection of magnesium in Mercury’s exosphere. The exosphere is an ultrathin atmosphere where the molecules are so far apart they are more likely to collide with the surface than with each other.

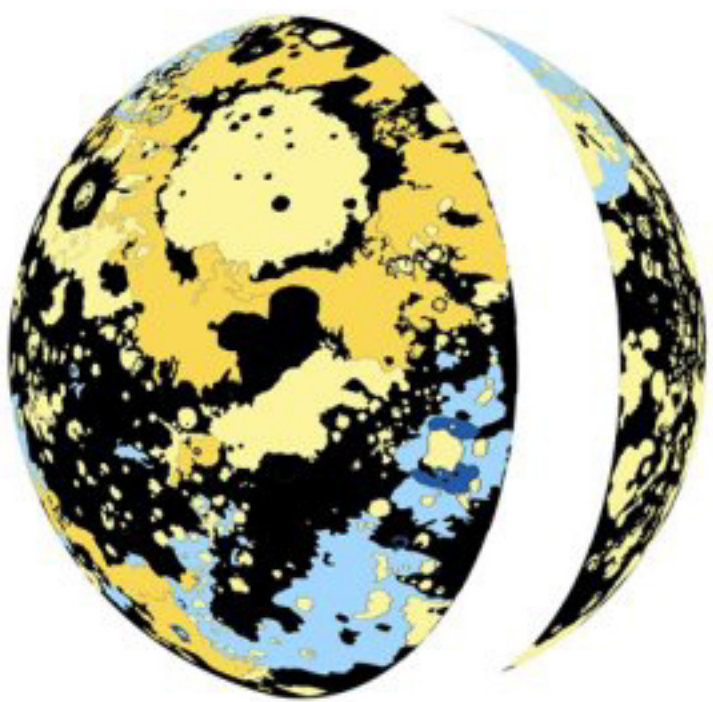
Material in the exosphere comes mainly from the surface of Mercury itself, knocked aloft by solar radiation, solar wind bombardment and meteoroid vaporization:

The probe’s Mercury Atmospheric and Surface Composition Spectrometer instrument detected the magnesium. Finding magnesium was not surprising to scientists, but the abundance was unexpected. The instrument also measured other exospheric constituents including calcium and sodium. Researchers believe that big day-to-day changes in Mercury’s thin atmosphere may be caused by the variable shielding of Mercury’s active magnetosphere.

“This is an example of the kind of individual discoveries that the science team will piece together to give us a new picture of how the planet formed and evolved,” said William McClintock of the Laboratory for Atmospheric and Space Physics at the University of Colorado at Boulder. McClintock is co-investigator and lead author of one of the four papers.

“The third Mercury flyby [coming up on Sept. 29th] is our final dress rehearsal for the main performance of our mission, the insertion of the probe into orbit around Mercury in March 2011,” said Solomon. “The orbital phase will be like staging two flybys per day and will provide continuous collection of information about the planet and its environment for one year.”

“Mercury has been coy in revealing its secrets slowly so far, but in less than two years the innermost planet will become a close friend.”



NASA/Johns Hopkins University Applied Physics Laboratory/
Arizona State University/Carnegie Institution of Washington.

