



# Mid-Hudson Astronomical Association

## June, 2015

Website: [www.midhudsonastro.org](http://www.midhudsonastro.org)

Yahoo Group: MHAstro

**President :** Willie Yee  
**Secretary:** Jim Rockrohr  
**Newsletter Editor:** Rick Versace  
**Publicity:** Paul Chauvet  
**Parks Liaison:**

**Vice President:** Candace Wall  
**Treasurer:** Ken Bailey  
**Membership Coordinator:** Caryn Sobel  
**Webmaster:** Paul Chauvet  
**College Liaison:** Dr. Amy Forestell

**Directors:** Karl Loatman, Steve Carey, Joe McCagne, and Dave Lindemann

## May MHAA Meeting Minutes 5/19/2015

Meeting came to order at 7:30

There was around 50 + people present but some came in later

Some new members introduced themselves

A motion was made to approve the minutes in the newsletter. It was Approved.

### Officers:

- **Membership-** 2 or 3 in the last month
- **Treasurer's report-** No questions

## Treasurer's Report for the month of May, 2015

Date: 12 June, 2015

|                       |           |
|-----------------------|-----------|
| Bank Balance:         | \$1813.01 |
| Outstanding Checks:   | \$ 0      |
| Outstanding Deposits: | \$ 0      |
| Ending Bank Balance:  | \$1813.01 |
| Checkbook Balance:    | \$1813.01 |
| Balance with Bank:    | Yes       |

Ending balance total: \$1813.01

Notes: There are no outstanding checks or deposits at this time. We are still working on a problem with a check from Olana. After balancing the checkbook, I wrote the check to IDA for our membership renewal.

Respectfully submitted: Ken Bailey  
Treasurer

### Outreach:

- Boyscout discussion
- private wedding
- Relay for life

### Publicity:

- Paul can make fliers if you give him 2 weeks notice

### Webmaster:

- Everything is working fine

Speakers Needed for July/November

### Old Business:

#### Club telescopes

- 4" Newtonian Available

### Awards:

- Joe- Global Astronomy

### New Business:

- Renewal notice of Dark Sky Association

### Outreach Reports:

- Haviland- Saw Jupiter 100 kids, was cloudy
- Earth Day- 5 scopes, was clear until 2 o'clock
- Global Star party- 50 people in attendance
- Avalon- Saw Jupiter
- Cocksackie- Star party for H.S and 2<sup>nd</sup> grade. Was cloudy but they saw Venus/Jupiter and the big dipper
- Celtic Beltane- Solar viewing

Bob Berman started speaking at 8:00

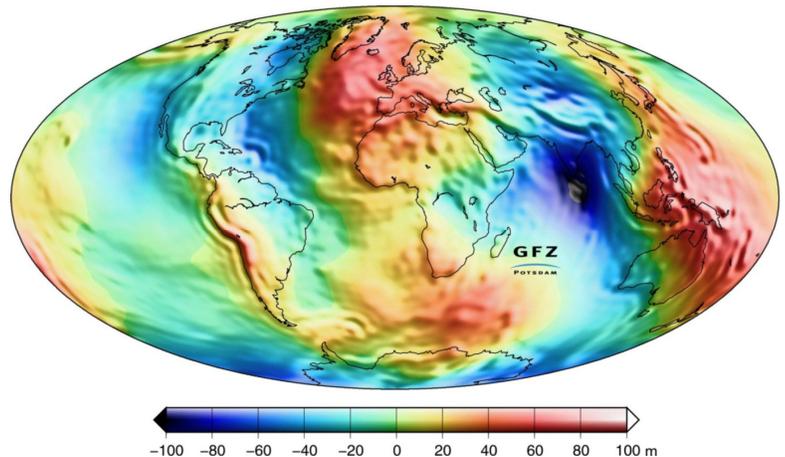


## No Surprise! Earth's Strongest Gravity Lies Atop The Highest Mountains

By Dr. Ethan Siegel

Put more mass beneath your feet and feel the downward acceleration due to gravity increase. Newton's law of universal gravitation may have been superseded by Einstein's, but it still describes the gravitational force and acceleration here on Earth to remarkable precision. The acceleration you experience is directly proportional to the amount of mass you "see," but inversely proportional to the distance from you to that mass squared.

The denser the mass beneath your feet, the stronger the gravitational force, and when you are closer to such a mass, the force is even greater. At higher elevations or even higher altitudes, you'd expect your gravitational force to drop as you move farther from Earth's center. You'd probably also expect that downward acceleration to be greater if you stood atop a large mountain than if you flew tens of thousands of feet above a flat ocean, with nothing but ultra-light air and liquid water beneath you for all those miles. In fact this is true, but not just due to the mountain's extra mass!



Earth is built like a layer-cake, with the less dense atmosphere, ocean, and crust floating atop the denser mantle, which in turn floats atop the outer and inner cores of our planet. An iceberg's buoyancy is enough to lift only about one tenth of it above the sea, with the other nine tenths below the surface. Similarly, each and every mountain range has a corresponding "invisible mountain" that dips deep into the mantle. Beneath the ocean floor, Earth's crust might be only three to six miles thick, but it can exceed 40 miles in thickness around major mountain ranges like the Himalayas and the Andes. It's where one of Earth's tectonic plates subducts beneath another that we see the largest gravitational anomalies: another confirmation of the theory of continental drift.

A combination of instruments aboard NASA's Gravity Recovery and Climate Experiment (GRACE) satellites, including the SuperSTAR accelerometer, the K-band ranging system and the onboard GPS receiver, have enabled the construction of the most accurate map of Earth's gravitational field ever: to accelerations of nanometers per second squared. While the mountaintops may be farther from Earth's center than any other point, the extra mass of the mountains and their roots – minus the mass of the displaced mantle – accounts for the true gravitational accelerations we actually see. It's only by the grace of these satellites that we can measure this to such accuracy and confirm what was first conjectured in the 1800s: that the full layer-cake structure of Earth must be accounted for to explain the gravity we experience on our world!

*Image credit: NASA / GRACE mission / Christoph Reigber, et al. (2005): An Earth gravity field model complete to degree and order 150 from GRACE: EIGEN-GRACE02S, Journal of Geodynamics 39(1),1–10. Reds indicate greater gravitational anomalies; blues are smaller ones.*

## 2015 Star Party Schedule

| Date           | Time    | Sunset  | End Civil Twilight | Nearest New Moon |
|----------------|---------|---------|--------------------|------------------|
| January 16th   | 7:30 PM | 4:51 PM | 5:22 PM            | January 20th     |
| February 13th  | 7:30 PM | 5:26 PM | 5:55 PM            | February 18th    |
| March 20th     | 8:00 PM | 7:08 PM | 7:36 PM            | March 20th       |
| April 17th     | 8:30 PM | 7:39 PM | 8:08 PM            | April 18th       |
| May 15th       | 8:30 PM | 8:09 PM | 8:41 PM            | May 17th         |
| June 19th      | 8:30 PM | 8:34 PM | 9:09 PM            | June 16th        |
| July 17th      | 8:30 PM | 8:28 PM | 9:01 PM            | July 15th        |
| August 14th    | 8:30 PM | 7:58 PM | 8:28 PM            | August 14th      |
| September 11th | 8:00 PM | 7:13 PM | 7:41 PM            | September 12th   |
| October 9th    | 7:30 PM | 6:25 PM | 6:52 PM            | October 12th     |
| November 13th  | 7:30 PM | 4:37 PM | 5:07 PM            | November 11th    |
| December 11th  | 7:30 PM | 4:25 PM | 4:56 PM            | December 11th    |

### Directions To The Star Party Site—

[Lake Taghkanic State Park](#) is in the town Ancram, NY. The park entrance is on the Taconic Parkway 10 minutes north of the exit used for Wilcox park.

Star Parties at Lake Taghkanic are held in the West Parking lot, next to the beach. The skies are darker than in Wilcox, with less stray light to deal with. The horizon is also much lower, especially to the south and east, making many more targets possible.

**IMPORTANT:** all events at Lake Taghkanic State Park require an **RSVP** which includes license plate number of the car you are bringing (please do so via [Meetup](#)). The park is patrolled by state police, and all non registered cars will be ticketed and risk our use of the park.

### General Information:

- ♦ For the foreseeable future, all indoor meetings will be held on the 3<sup>rd</sup> Tuesday of each month in Coykendall Science Bldg., SUNY New Paltz (directions above) at 7:30 PM. All indoor events are FREE! All are welcome. The presentations are generally geared towards teenagers and up. For more information, call the Club Hotline.
- ♦ Dates listed for star parties are the primary dates. The rain date is the following night unless otherwise noted. Only one session is held for a given weekend, usually on the primary date, Friday, unless postponed (usually due to inclement weather) to the backup date, Saturday. Exceptions to this are noted in the “Scheduled Events” section above.
- ♦ All outdoor events are FREE! All are welcome. If you bring small children, it is **your** responsibility to keep a close eye on them. Please do not bring white-light flashlights. Instead, bring a red astronomer’s flashlight or an ordinary flashlight covered with several layers of red cellophane. If in doubt about the weather, check the status of the event at [www.midhudsonastro.org](http://www.midhudsonastro.org).