



# THE STAR DIAGONAL

THE JOURNAL OF THE OGDEN ASTRONOMICAL SOCIETY



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## Connect with Us

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## Meeting Announcement

Our Annual meeting of the Ogden Astronomical Society will be held on September 11, 2014 at 7:30pm at the Ott Planetarium. We will have elections and other discussion.

Oct 18            Antelope Island

Our Requested Star Parties (Schools, etc).  
9/5                Park City Girl Scouts

Our Private Star Parties are as follows.  
Sep 18-20        Great Basin Astronomy Festival  
Oct 24-26            Curlew

## Candidates for OAS Executive Committee

President – Lee Priest  
VP – Open  
Secretary – David Dunn  
Treasurer – Doug Say

As you can see, we are still looking for a VP. As an Alternative, if someone wants to serve as secretary, I will run for VP. Please consider serving in the committee, it doesn't take a lot of time and it is fun to contribute to the success of the society.

## Star Party Schedule

Public Star Parties are as follows.  
Sep 27            Antelope Island

## Park City Girl Scout's Star Party

We have a star party for the Girl Scouts in Park City on September 5<sup>th</sup>. Go on I-80 to I-40 toward Heber. Take the Silver Summit exit and turn right. Go about 2 miles, go thru the stop sign and that is the place. The girls are getting a badge for this and the emphasis will be on the Moon and Polaris. We should meet there about 8:00 as sunset is around 8:45. I will be the point man on this and make your "reservations" via OAS\_news. They anticipate approx. 75 people. As always the event is weather contingent.

Ron

## Great Basin National Park Astronomy Festival

We have the Great Basin National Park Astronomy Festival this month. They are looking for Armature astronomers to help out at the star parties. The Festival runs Thursday Sept. 18 through Saturday the 20th each night, with solar viewing and other activities during the day, the link is to the schedule. [www.BestNightSky.com](http://www.BestNightSky.com). They are offering free camping for those that help with the festival. We need to let them know who is coming so they can arrange camping spots for us. If you are interested in going or have any other questions, reply to this message or let me know at [levae@aol.com](mailto:levae@aol.com).

Thanks,  
Lee

## Droughts, Floods and the Earth's Gravity, by the GRACE of NASA

By Dr. Ethan Siegel

When you think about gravitation here on Earth, you very likely think about how constant it is, at  $9.8 \text{ m/s}^2$  ( $32 \text{ ft/s}^2$ ). Only, that's not quite right. Depending on how thick the Earth's crust is, whether you're slightly closer to or farther from the Earth's center, or what the density of the material beneath you is, you'll experience slight variations in Earth's gravity as large as 0.2%, something you'd need to account for if you were a pendulum-clock-maker.

But surprisingly, the amount of *water content* stored on land in the Earth actually changes the gravity field of where you are by a significant, measurable amount. Over land, water is stored in lakes, rivers, aquifers, soil moisture, snow and glaciers. Even a change of just a few centimeters in the water table of an area can be clearly discerned by our best space-borne mission: NASA's twin Gravity Recovery and Climate Experiment (GRACE) satellites.

Since its 2002 launch, GRACE has seen the water-table-equivalent of the United States (and the rest of the world) change significantly over that time. Groundwater supplies are vital for agriculture and

provide half of the world's drinking water. Yet GRACE has seen California's central valley and the southern high plains rapidly deplete their groundwater reserves, endangering a significant portion of the nation's food supply. Meanwhile, the upper Missouri River Basin—recently home to severe flooding—continues to see its water table rise.

NASA's GRACE satellites are the only pieces of equipment currently capable of making these global, precision measurements, providing our best knowledge for mitigating these terrestrial changes. Thanks to GRACE, we've been able to quantify the water loss of the Colorado River Basin (65 cubic kilometers), add months to the lead-time water managers have for flood prediction, and better predict the impacts of droughts worldwide. As NASA scientist Matthew Rodell says, "[W]ithout GRACE we would have no routine, global measurements of changes in groundwater availability. Other satellites can't do it, and ground-based monitoring is inadequate." Even though the GRACE satellites are nearing the end of their lives, the GRACE Follow-On satellites will be launched in 2017, providing us with this valuable data far into the future. Although the climate is surely changing, it's water availability, *not* sea level rise, that's the largest near-term danger, and the most important aspect we can work to understand!

Learn more about NASA's GRACE mission here: [http://www.nasa.gov/mission\\_pages/Grace/](http://www.nasa.gov/mission_pages/Grace/)

Kids can learn all about launching objects into Earth's orbit by shooting a (digital) cannonball on NASA's Space Place website. Check it out at: <http://spaceplace.nasa.gov/how-orbits-work/>

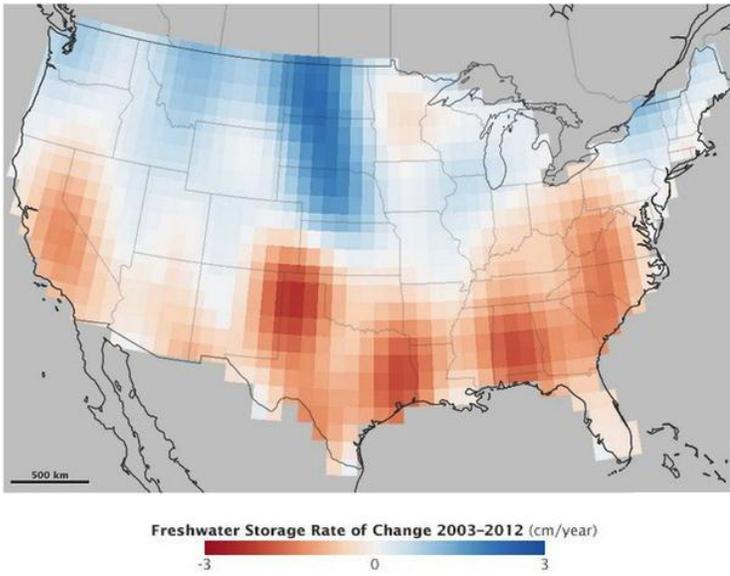


Image credit: NASA Earth Observatory image by Jesse Allen, using GRACE data provide courtesy of Jay Famigleitti, University of California Irvine and Matthew Rodell, NASA Goddard Space Flight Center. Caption by Holli Riebeek.