

## Amateur Astronomy Society of Kenya

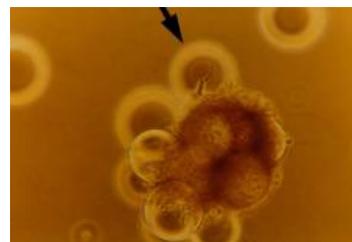
Kyle Doane, a DFW planetarian, is raising money to send a planetarium to Kenya and is asking for your help! Here's what he has to say about the project.

"I would like to announce that my dream of taking a planetarium to Kenya is on the verge of becoming reality. If you would like to help, please see my fun(d)raising site on Start Some Good: <http://startsomegood.com/NomadDomeKenya>.

There you can also read about my personal connection to this project and feel free to choose one of the fun thank-you gifts that I've created.

Here are the quick details: I am raising money to ship a projection system and dome to the Amateur Astronomy Society of Kenya (A ASK). I will stay in Kenya for about a month to provide training for the A ASK educators and I will provide ongoing support for them.

The project has already received amazing support from several sponsors; the [Perot Museum](#) of Nature and Science in Dallas agreed to donate their Digitalis Alpha 2+ portable projection system if I can raise the money to ship it to Kenya; [Digitalis](#) Education Solutions is donating a complete cleaning and hardware/software upgrades to the system and Leo Planetaria of Delhi, India is donating an



## Fighting Cancer With Microgravity Research

For lab-coated cancer biologists, peering through microscopes at stained tissue samples under fluorescent lights, the [International Space Station](#) may be the last thing that comes to mind. But 40 years of microgravity research proves cancer biologists may indeed want to look 220 miles up. Space provides physical conditions that are not possible on Earth, and as it turns out, those conditions may be ripe for studying cancer along with a wide range of other diseases.

Cells in the human body normally grow within support structures made up of proteins and carbohydrates, which is how organs and tumors maintain their three-dimensional shapes. In lab settings, however, cells grow flat, spreading out in sheets. Because they don't duplicate the shapes they normally would make in the body, they don't behave the way they would in the body, either. This poses problems for scientists who study cancer by examining genetic changes affecting cell growth and development.

Scientists have devised several laboratory methods to mimic normal cellular behavior, but none of them work exactly the way the body does. In space, however, cells that are not inside a living organism still arrange themselves into three-dimensional groupings, or aggregates. These aggregates more closely resemble what happens in the body. Cells in microgravity also can clump together more easily, and they experience reduced fluid shear stress - a type of

inflatable dome.”

Don't forget to make your donation [here](#)! Donations can be as small as \$5 and will go a long way to seeing this project through.

turbulence that can affect their behavior. All these factors can help scientists study cell behavior, and how changes in that behavior can lead to cancer, in a state more closely resembling cells in the body.

Find out more about [this project](#) on [NASA's](#) website.



## Four Largest Texas Cities Seen From Space

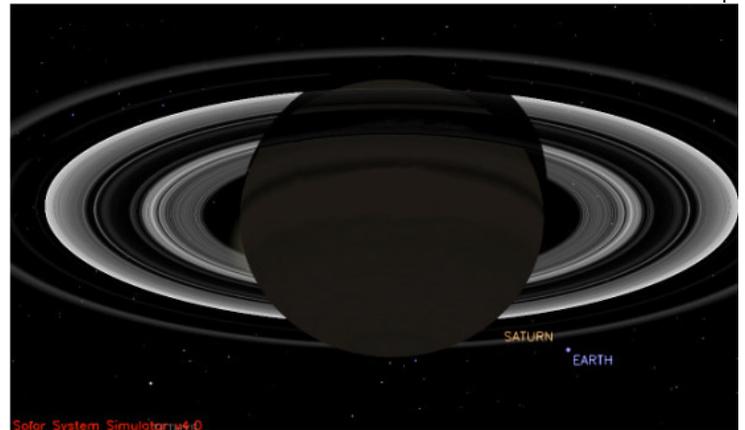
This striking astronaut photograph taken from the International Space Station (ISS) shows the four largest cities in Texas at night.

The extent of the metropolitan areas is readily visible at night due to city and roadway lighting networks.

The largest metro area, DFW (population over 6.5 million), is visible at image top center. The lighting pattern appears less distinct due to local cloud cover. Four brightly illuminated cloud tops to the northwest (image top center) indicate thunderstorm activity over neighboring Oklahoma.

Coming in a close second, with a population of approximately 6.1 million, the Houston metro area is located along the Gulf of Mexico coastline.

Moving inland, the San Antonio metro area has the third largest population (over 2 million). A band of lighting visible to the southeast of San Antonio marks well pads associated with the Eagle Ford Formation (also known as the Eagle Ford Shale). This geologic formation is an important producer of both oil and natural gas.



## Cassini To Take Rare Earth Photo July 19th

From Earth's surface, it's very hard to visualize how much empty space surrounds us. If we could capture photos of Earth from a distant vantage point – say, the outer solar system – we could perhaps begin to picture it, but those opportunities are rare. We humans have acquired only *two* images of Earth from the outer solar system – ever. The first and most distant was taken 23 years ago by NASA's Voyager 1 spacecraft from 4 billion miles (6 billion kilometers) away, showing Earth as a pale blue dot. The other opportunity was Cassini's image in 2006 from 926 million miles (1.49 billion kilometers). But soon another opportunity will occur. On July 19, 2013, NASA's Cassini spacecraft, now orbiting Saturn and weaving in and among its moons, will be aligned in such a way that Saturn will eclipse the sun as seen from the spacecraft. With the sun's light blocked, space scientists will capture the third-ever picture of Earth from the outer solar system, hundreds of millions of miles away.

Earth will appear as a small, pale blue dot between the rings of Saturn in the image, which will be part of a mosaic, or multi-image portrait, of the Saturn

The capital city of Texas is included within the Austin metro area to the northeast of San Antonio. It ranks fourth in terms of population with more than 1.7 million.

This image was taken with a relatively high viewing angle, as opposed to looking straight down from the ISS towards the Earth's surface, as is typical for most orbital remote sensing instruments. Oblique viewing angles tend to change the apparent distance between objects. For a sense of scale, the actual distance between central Houston and Dallas-Fort Worth is approximately 367 kilometers (228 miles).

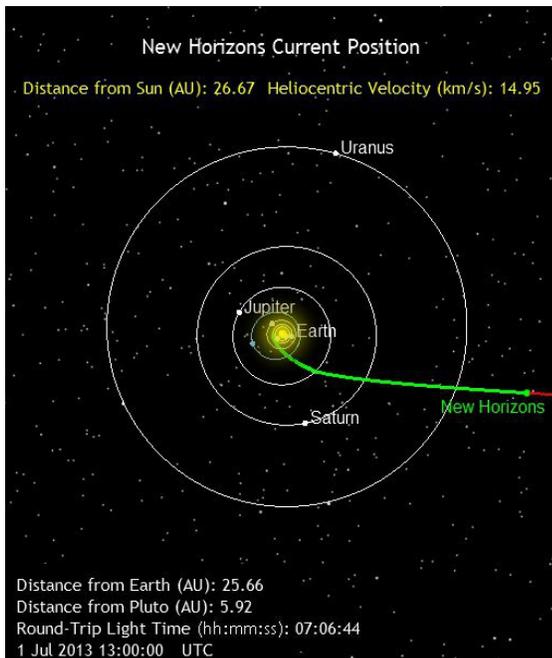
Read more about [this image](#) at [EarthSky.org](#).

system Cassini is composing, [NASA says](#).

Linda Spilker, Cassini project scientist at NASA's Jet Propulsion Laboratory in Pasadena, California said: *While Earth will be only about a pixel in size from Cassini's vantage point 898 million miles away, the team is looking forward to giving the world a chance to see what their home looks like from Saturn.*

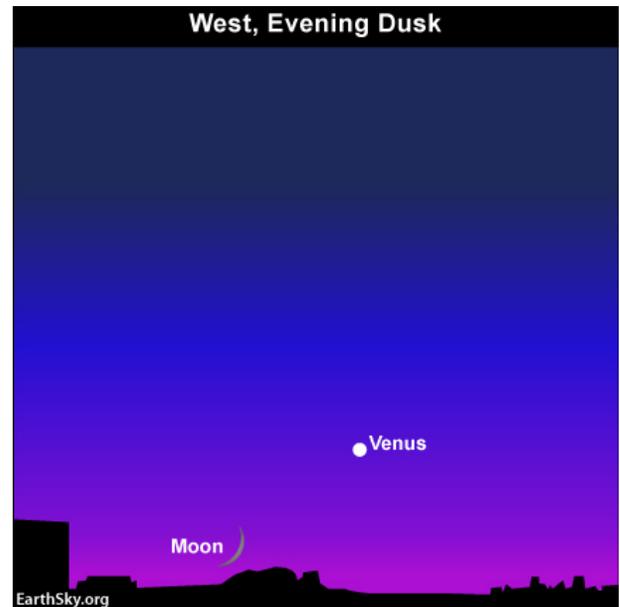
Cassini will start obtaining the Earth part of the mosaic at 2:27 p.m. PDT (5:27 p.m. EDT or 21:27 UTC) on July 19 and end about 15 minutes later, all while Saturn is eclipsing the sun from Cassini's point of view. The spacecraft's unique vantage point in Saturn's shadow will provide a special scientific opportunity to look at the planet's rings. At the time of the photo, North America and part of the Atlantic Ocean will be in sunlight.

Read more about this rare opportunity and see the first images taken from the outer solar system [here](#).



## Update on New Horizons Mission to Pluto

Earth passes between the sun and Pluto tonight – or as nearly between as can happen with an object whose orbit is inclined 17 degrees to the plane of the



## July Guide to the Visible Planets

Two planets appear in the July evening sky all month long: Venus and Saturn. Venus beams in the west at dusk, and sets roughly one and one-half hours after [sunset](#) all month long at mid-northern latitudes. Saturn shines moderately high in the south to southwest at nightfall and stays out all evening

solar system. This is Pluto's yearly opposition. It happens on July 2 at 1 [UTC](#) (July 1 at 9 p.m. EDT). On this special day for Pluto, you can also imagine a spacecraft called New Horizons, which launched from Earth in 2006, and is now aimed toward the dwarf planet. New Horizons is now past the orbits of Saturn and Uranus, but still inside Neptune's orbit. It's due to arrive closest to Pluto, to sweep past it, on July 14, 2015. Some months back, we reported that Pluto scientists feared the spacecraft might be in danger of collisions with debris in Pluto's vicinity. More recently, though, the way has been cleared by these scientists for Pluto to stick to its original course, which means the closest possible sweep past the planet.

Will dust and debris create a hazard for the New Horizons spacecraft, when the craft sweeps past Pluto in 2015? Pluto resides in the icy realms of the solar system and remains very much a mysterious world. Much to the surprise of astronomers, Pluto now has five known moons. Two of them were discovered after New Horizons launched from Cape Canaveral in Florida in January 2006. Astronomers had some fear that debris hitting the moons might have created dangerous dust clouds that in turn would slam into and damage New Horizons as it sweeps past Pluto in 2015, moving at some 30,000 miles per hour (more than 48,000 kilometers per hour). There was some talk of the possibility of course adjustments, which would carry the craft farther from Pluto, at what might be a safer distance.

On June 21, 2013, though, we began hearing about the results of an impact assessment study of the Pluto system. As a result of the study, space engineers have now decided to stay the course – that is, stick with the originally planned trajectory – for New Horizons. They say the danger posed by dust and debris is much less than originally feared. [Read more about the assessment study from UniverseToday.com here.](#)

What more will astronomers find out when the New Horizons probe passes Pluto in 2015? At this point, it's anyone's guess, but Pluto fans are sure to enjoy the encounter.

See more photos of Pluto in the original article from [EarthSky.org](#).

long. While these two worlds should be pretty easy to spot in the evening sky all throughout July 2013, the morning planets won't really become very noticeable until the second half of the month.

Mars and Jupiter sit low in the glow of morning twilight at the beginning of July, but climb upward and away from the glare of sunrise throughout the month. These two worlds will probably be visible to the unaided eye around the end of the first week of July, though Jupiter and Mars will be much easier to view when they exhibit their stunning conjunction in the predawn sky on and around July 22. By late July, you can use Jupiter and Mars to locate Mercury at early dawn (about 80 minutes before [sunrise](#)).

Special planetary events coming up in July 2013:

- [Saturn stationary in front of Virgo on July 8, 2013](#)
- [Crescent moon and Venus beautify evening dusk on July 10](#)
- [Moon, Venus and Regulus adorn western sky after sunset July 11](#)
- [Waxing moon near star Spica and planet Saturn on July 15](#)
- [Waxing gibbous moon near the planet Saturn on July 16](#)



Read more about the visible planets this month [here](#).

