

Who I am: Dr. Steve Kuhlmann

What I do: Scientist (astrophysicist)

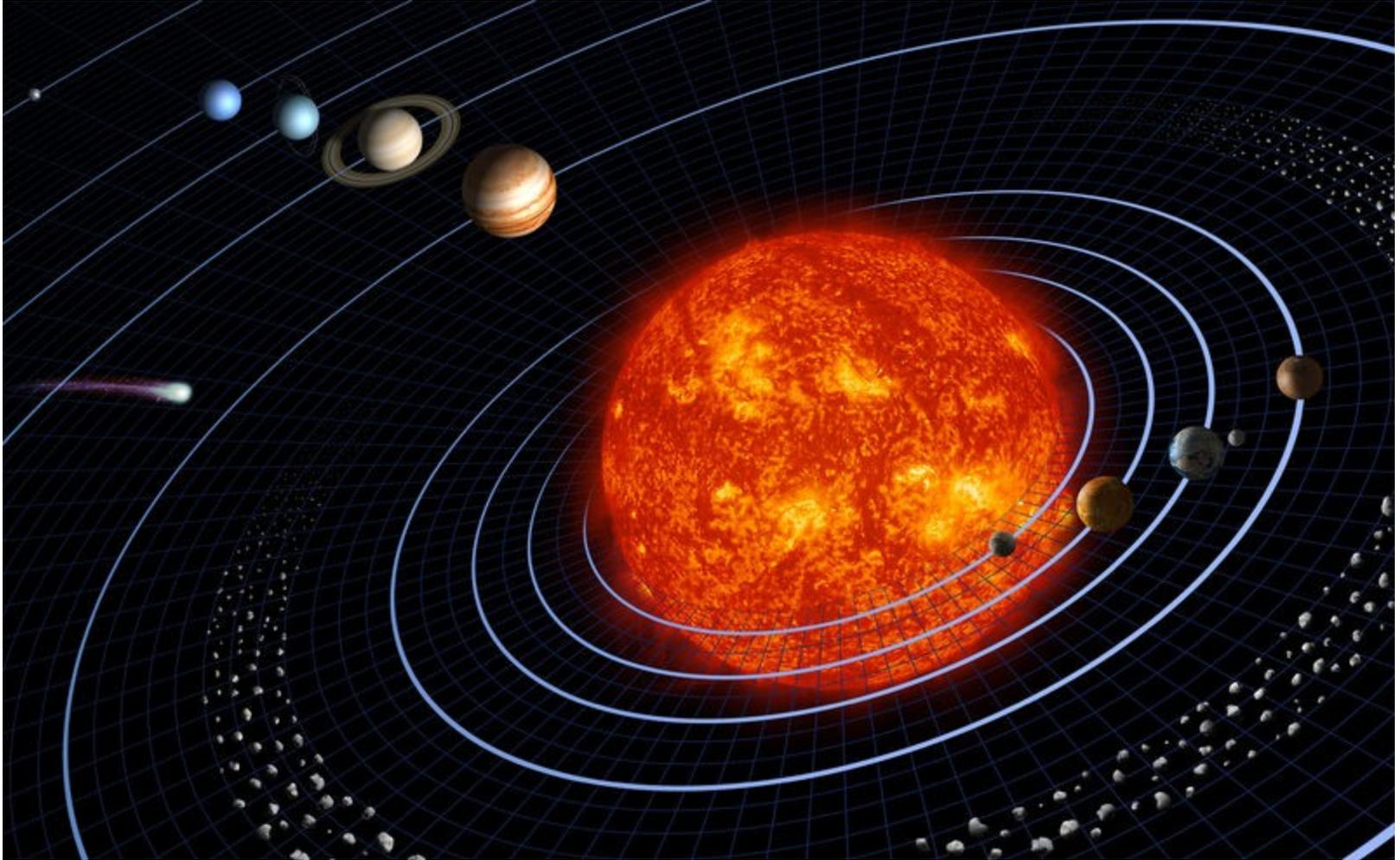
Why I do it: It's fun and never boring!

How long I've been doing it: 20 years

How can you do it too? Study hard, learn a lot of math and science, go to college, go to graduate school, get a scientist's job!



Your solar system, 1 star called the Sun and many planets. Scientists believe water is necessary to support life; which planets have water?

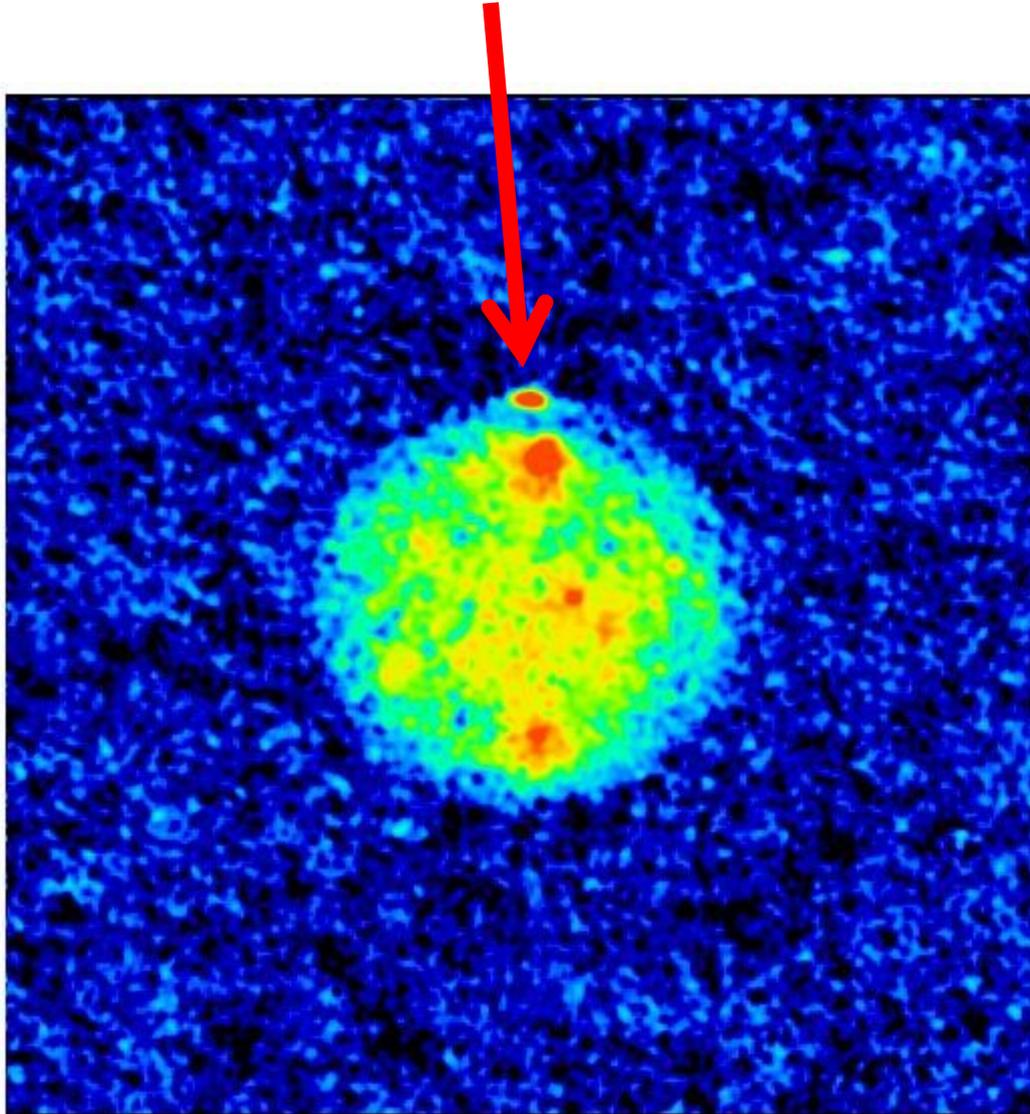


Mercury, closest planet to sun and very hot (800 degrees F), how can it have water?
What is boiling temperature of water?



New NASA MESSENGER
satellite arrived at Mercury
last Thursday

Scientists believed they discovered ice on Mercury in 1991! This is a radar image of Mercury, the bright red spots indicate ice. Scientists believe these are very deep craters that never see the sun.



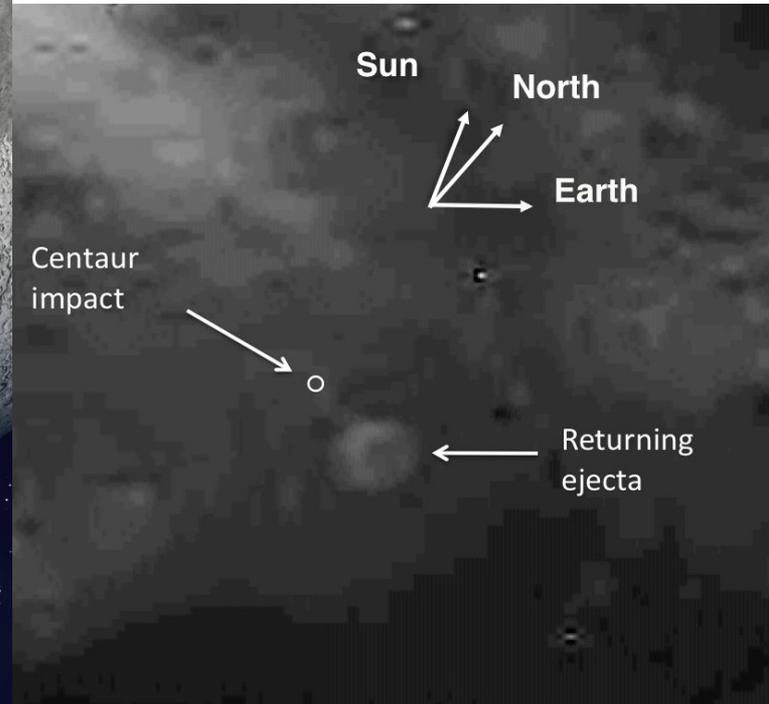
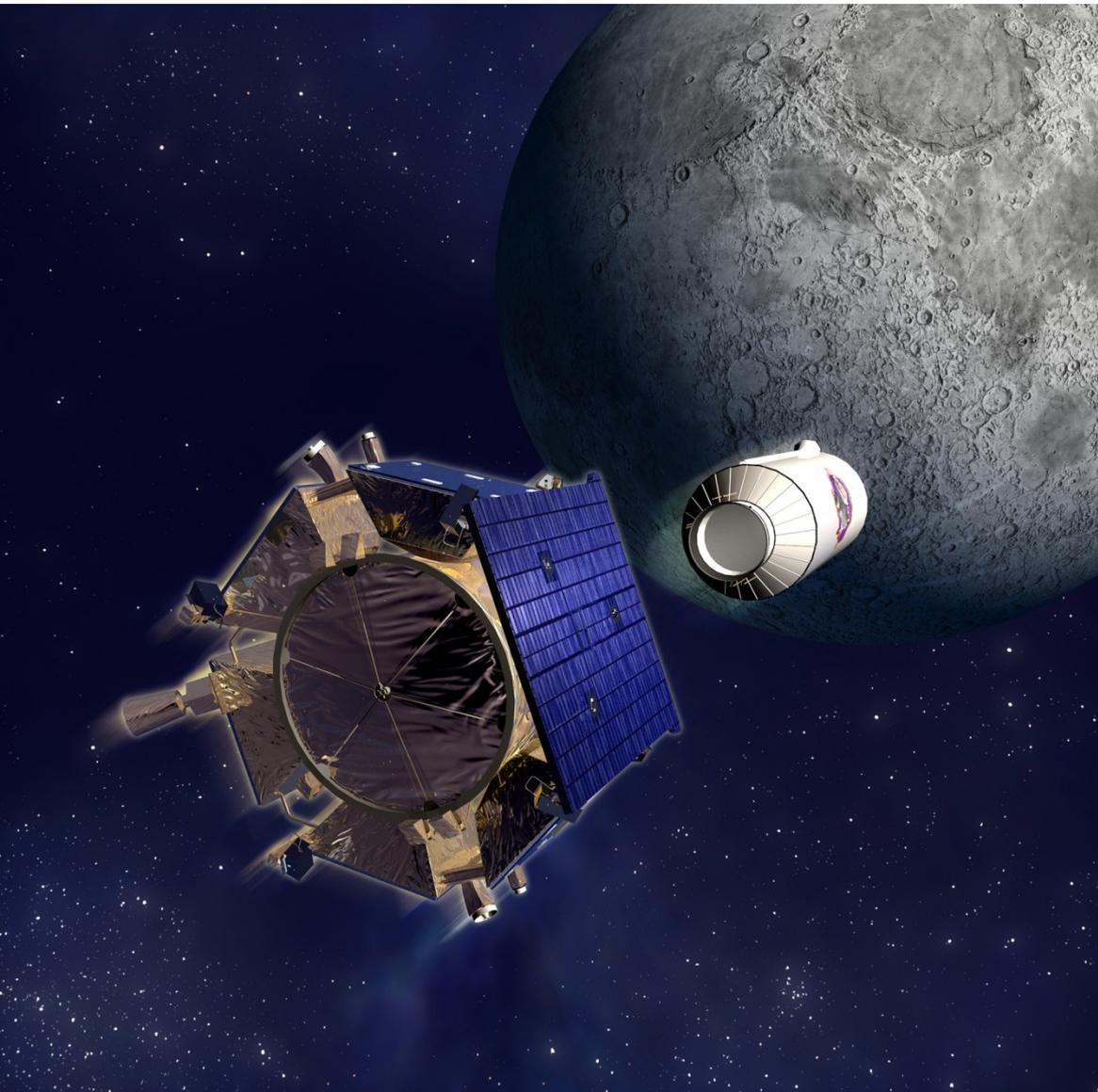
Venus is even hotter on the surface (864 degrees F).
No water has been seen staying on the surface but there is water in clouds and it rains and evaporates as soon as it hits the surface.



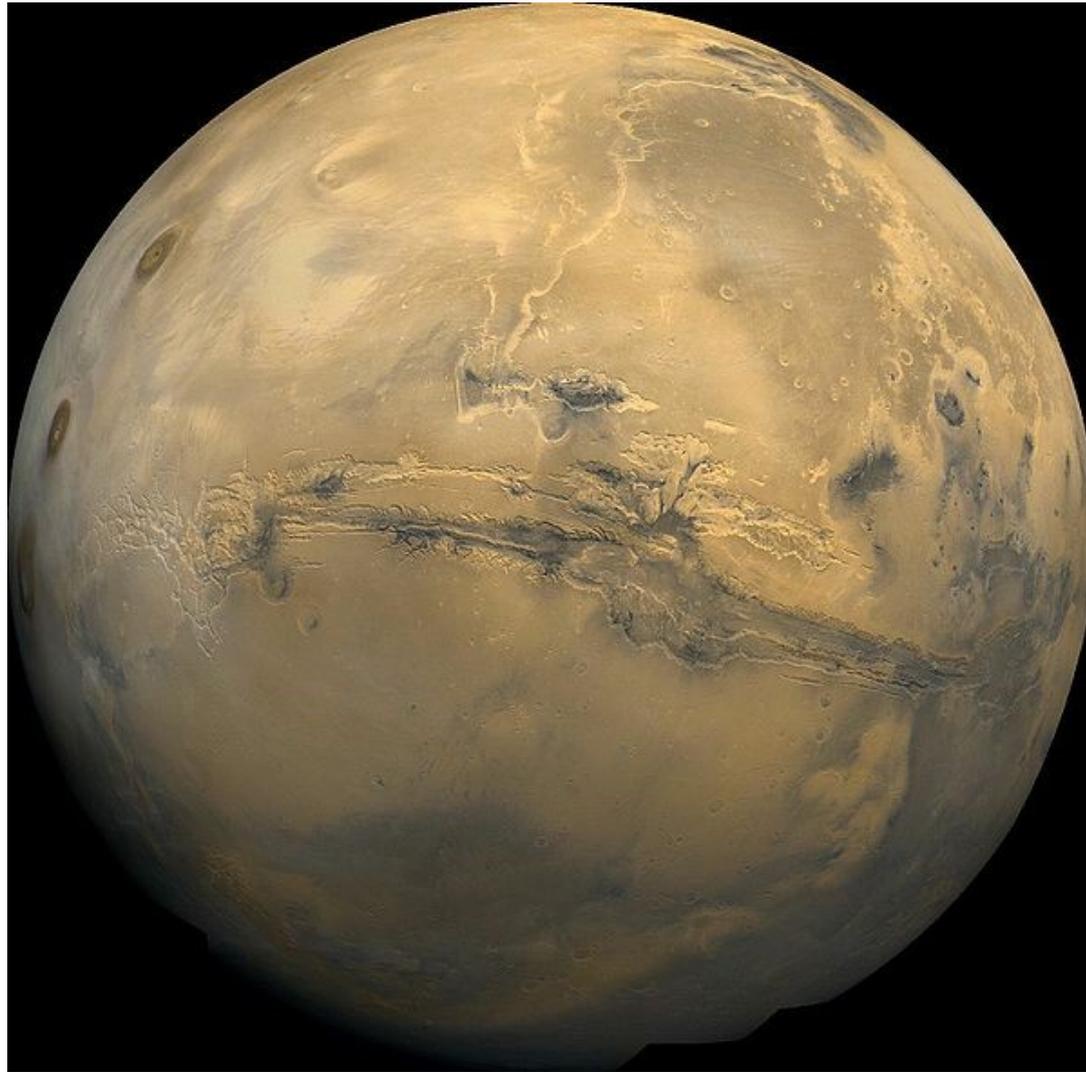
Earth has a lot of water, 100,000 times more than Venus.



The moon is not a planet, but does it have water? The recent NASA LCROSS mission crashed a rocket into the far side of the moon and saw 5% water.



Mars has been studied for water for a long time.



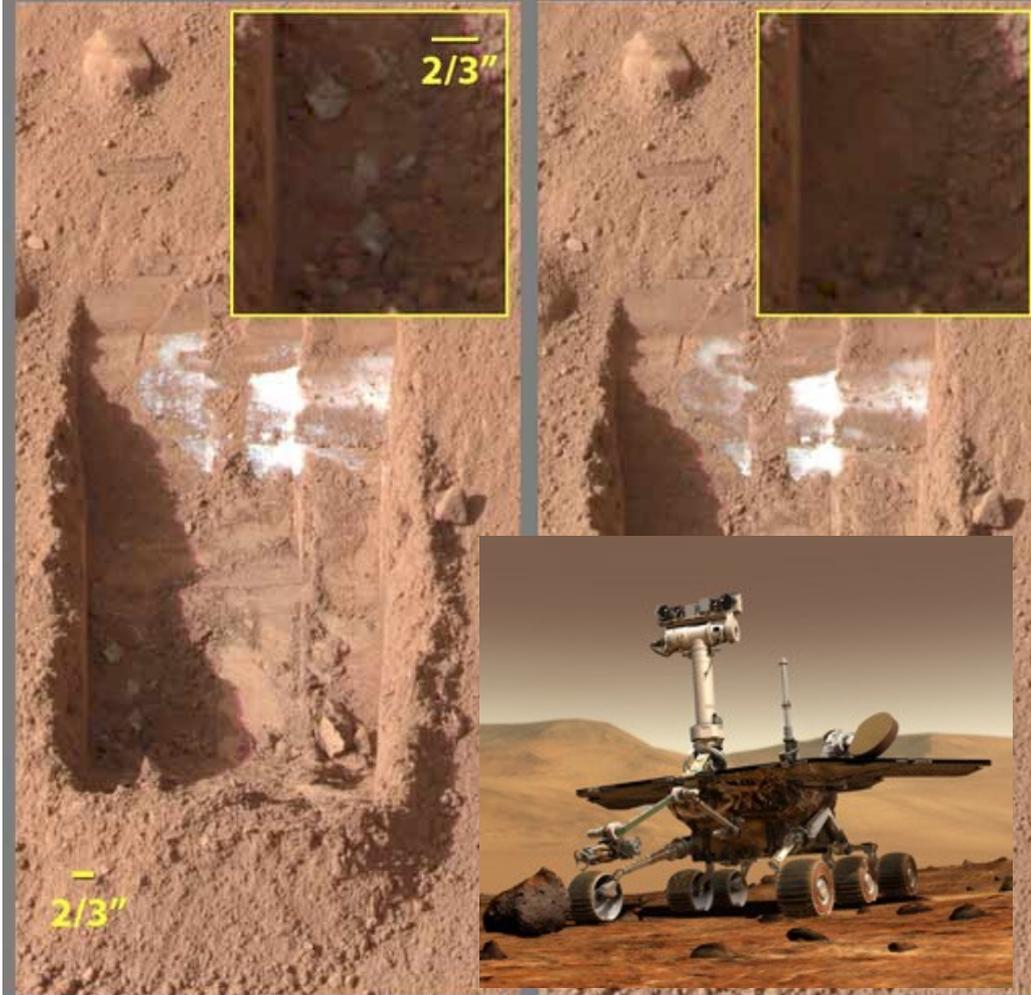
Mars has been searched for water for a long time.
Scientists believe they have seen it in two ways.



This region of Mars showed no river
7 years ago, scientists believe water
came from underground.

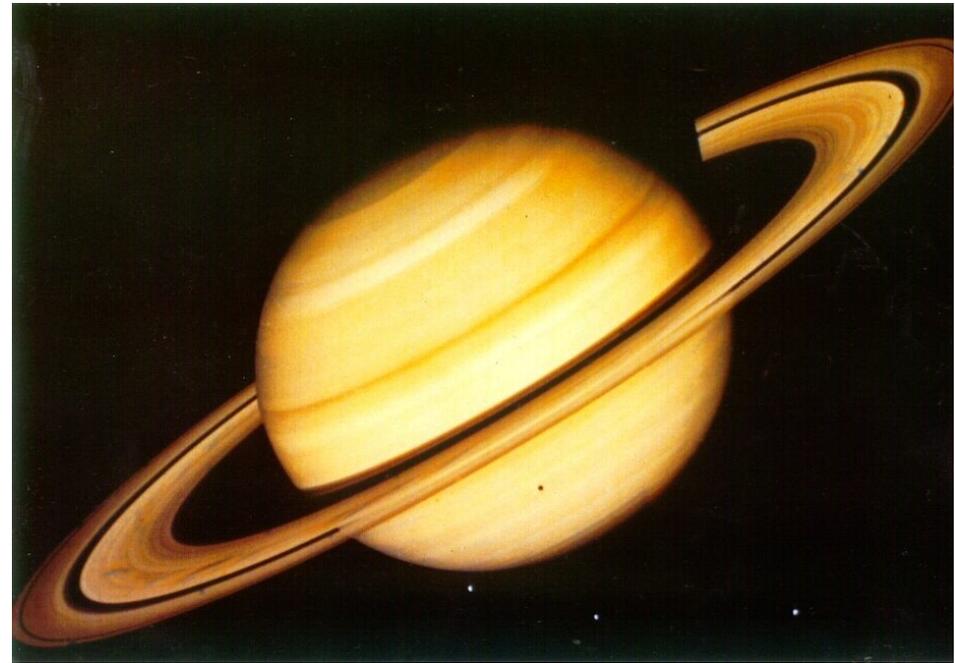
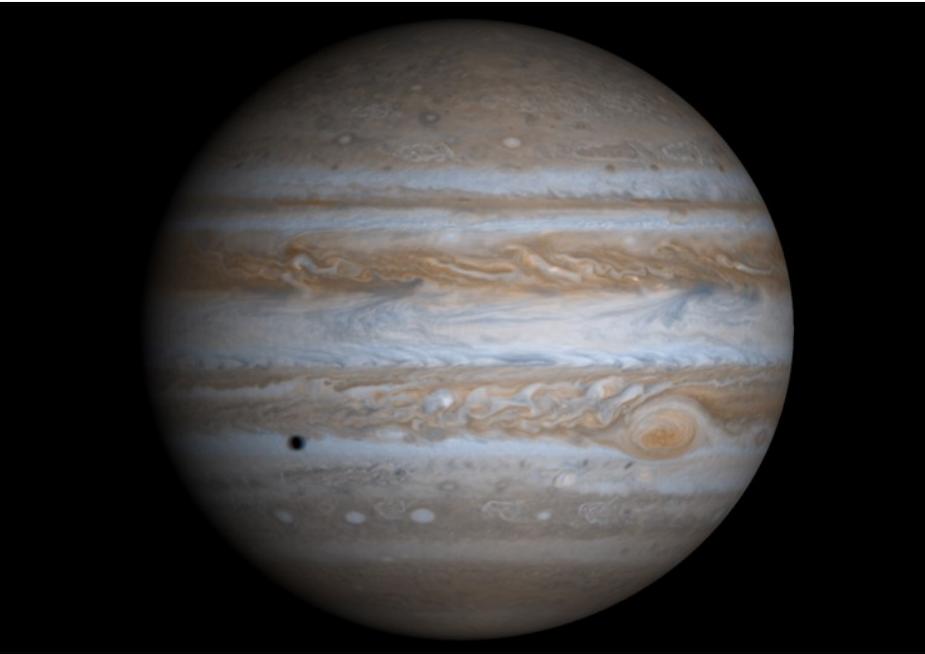
Sol 20

Sol 24

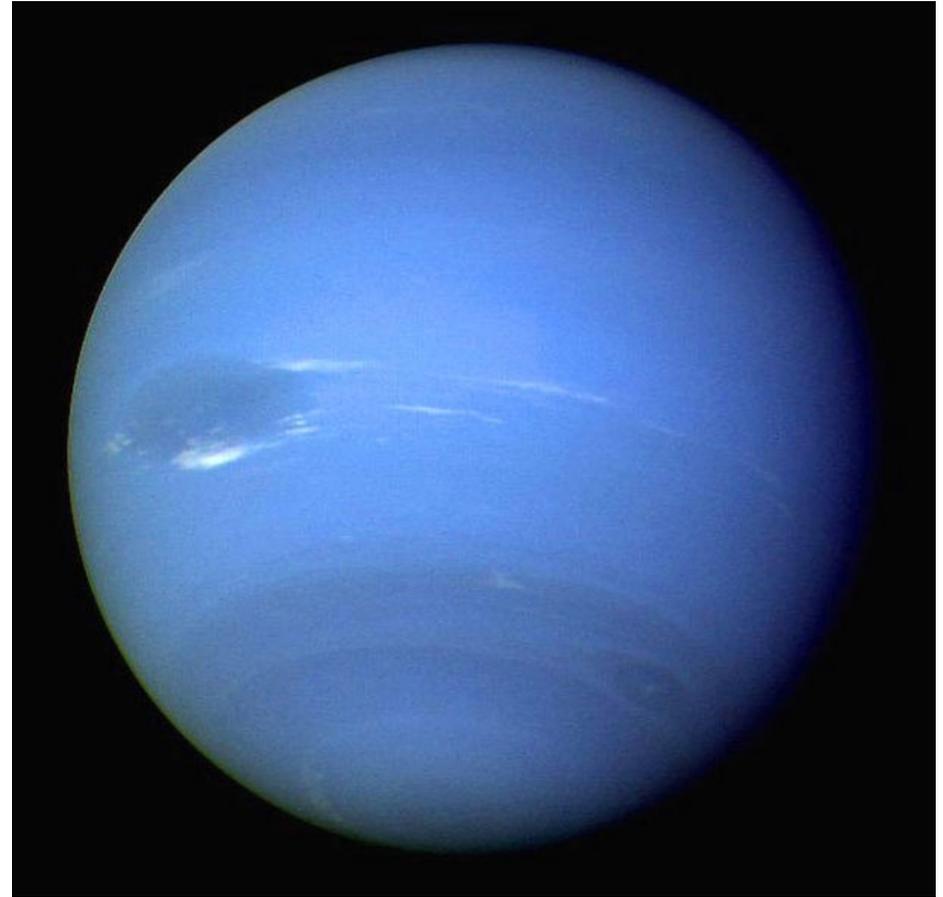
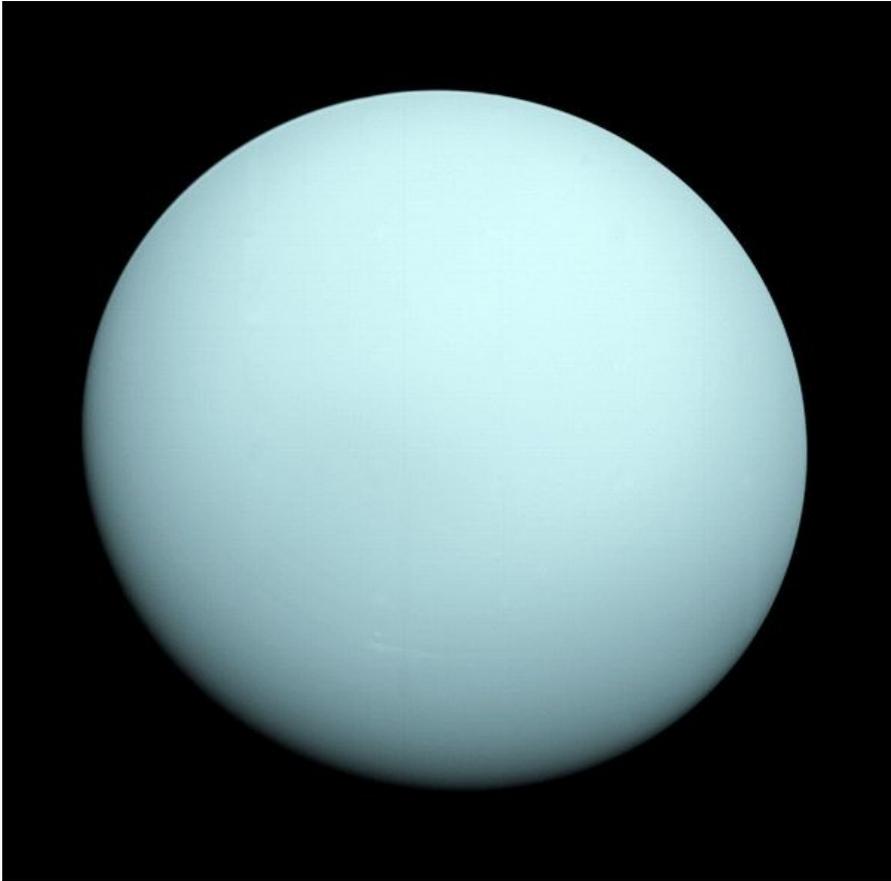


Mars rover dug a hole and found ice.

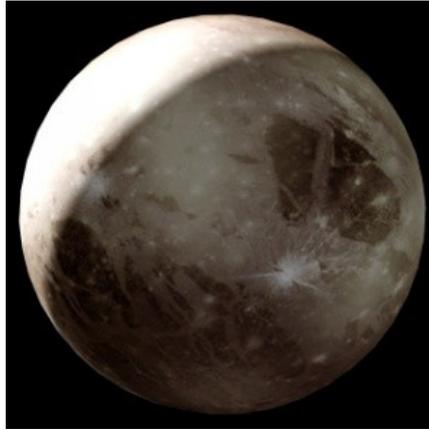
Jupiter and Saturn are gas giant planets, both with small amounts of water. Saturn's rings are mostly big chunks of ice.



Uranus and Neptune are solid planets that are mostly ice.

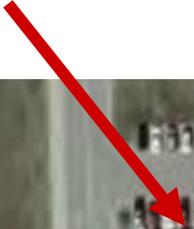


Pluto is not called a planet anymore, but it is almost half ice.
(this is just an artist's conception, it is too far away for good pics)



New Horizons mission half-way to Pluto, arriving 2015.

Mr. Kuhlmann's car!



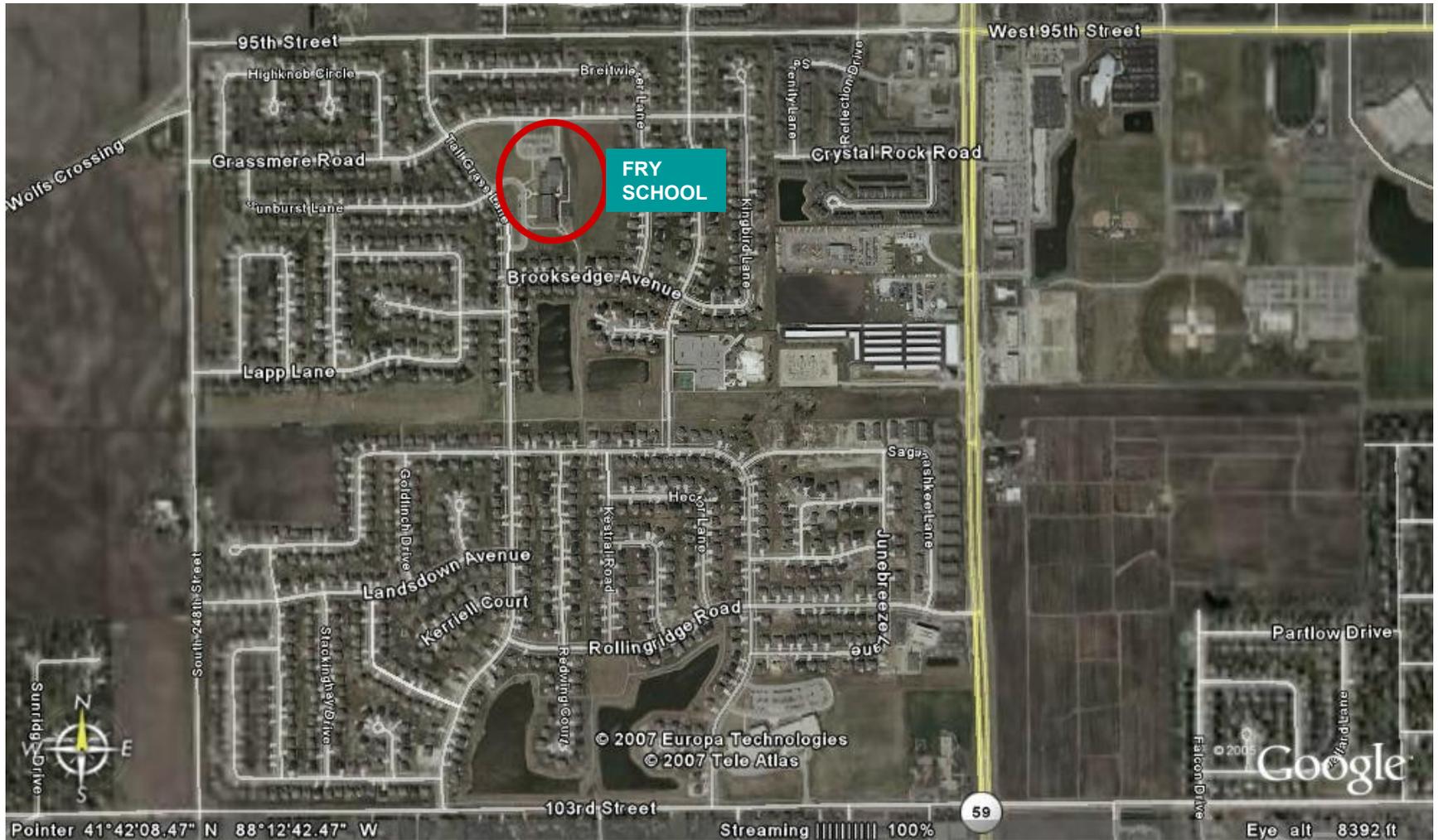
Pointer 41°42'24.83" N 88°12'57.35" W

Streaming 100%

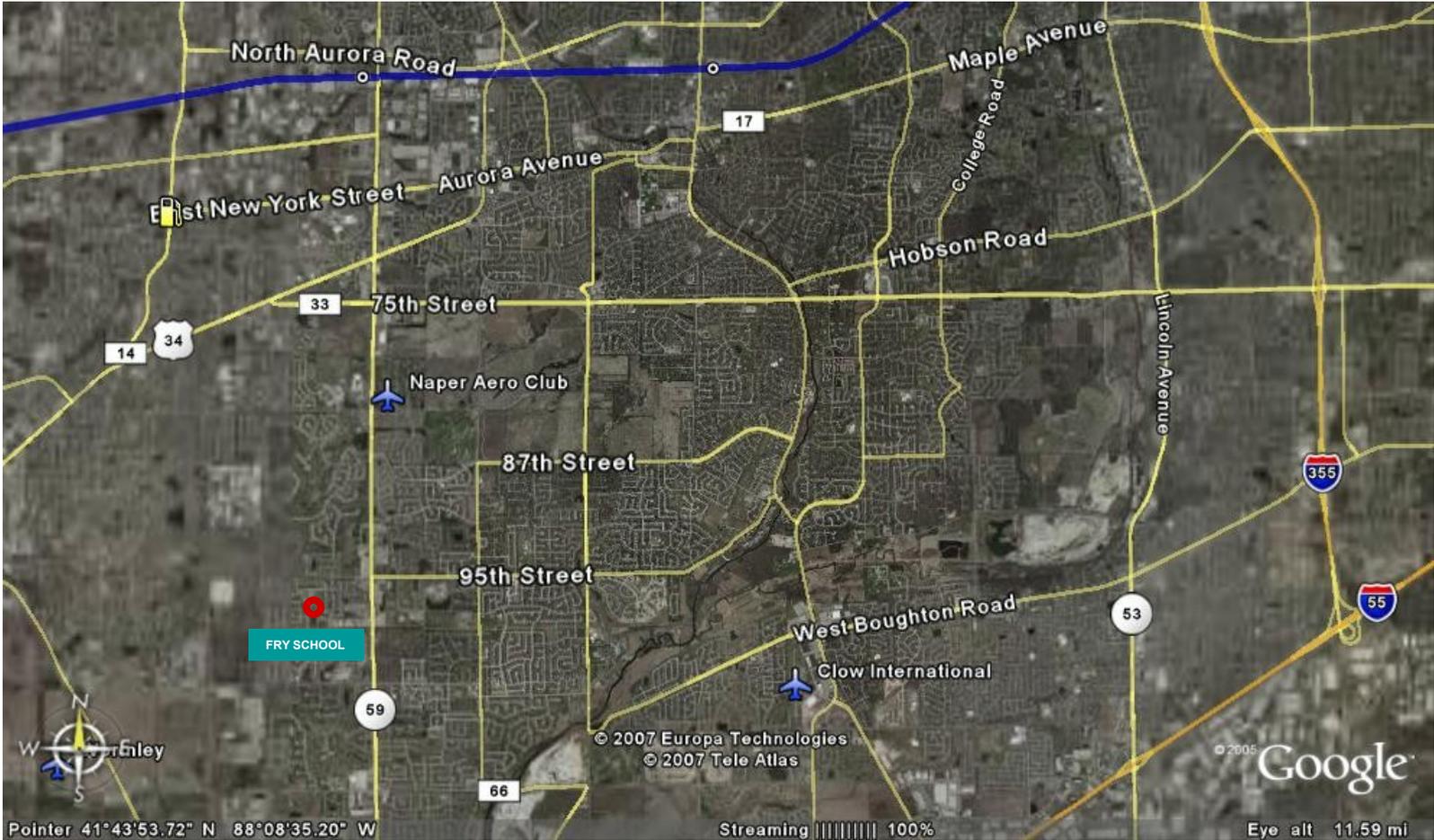
© 2005 Google

Eye alt 976 ft

Your neighborhood, Tall Grass

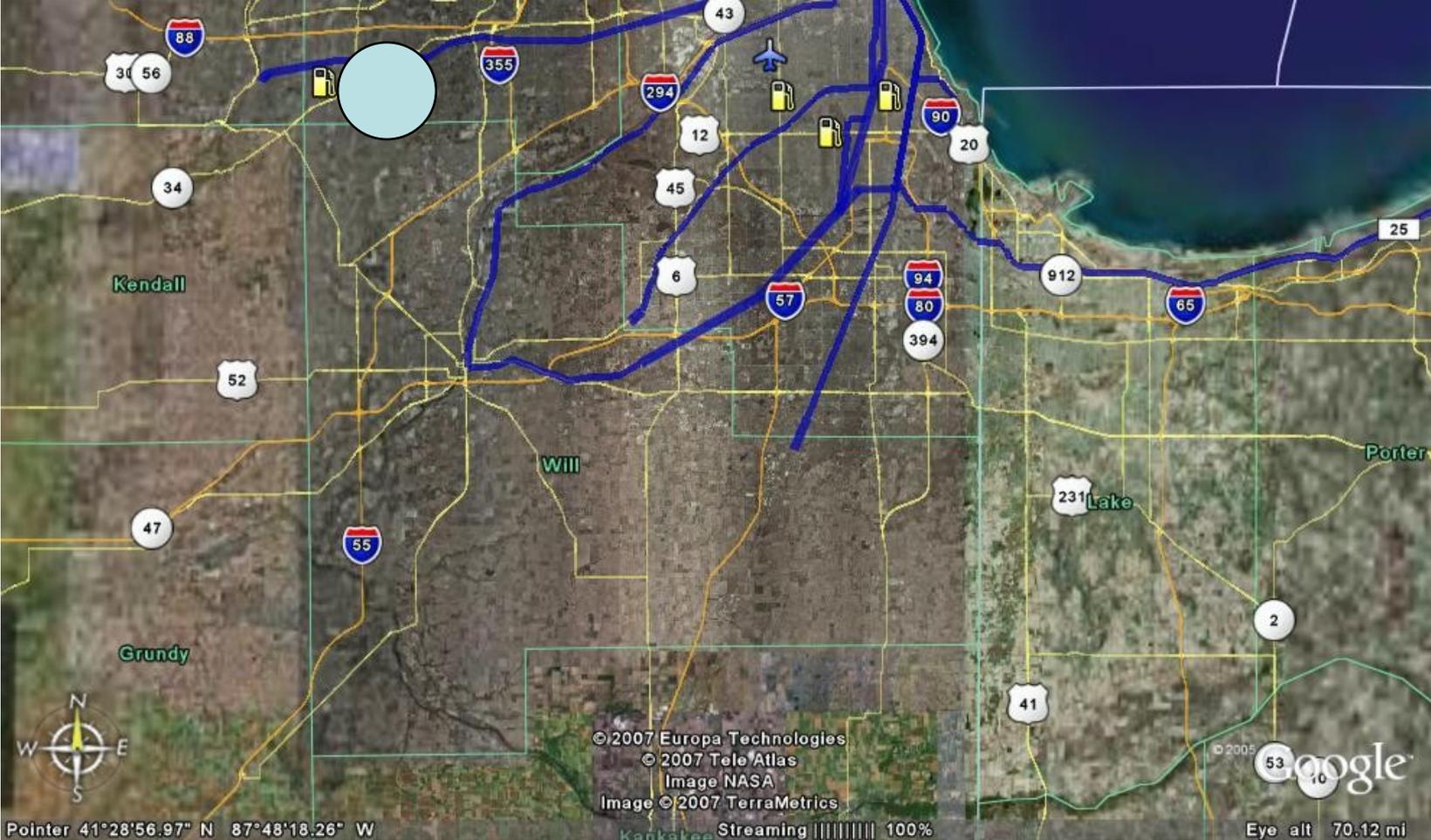


Your city, Naperville



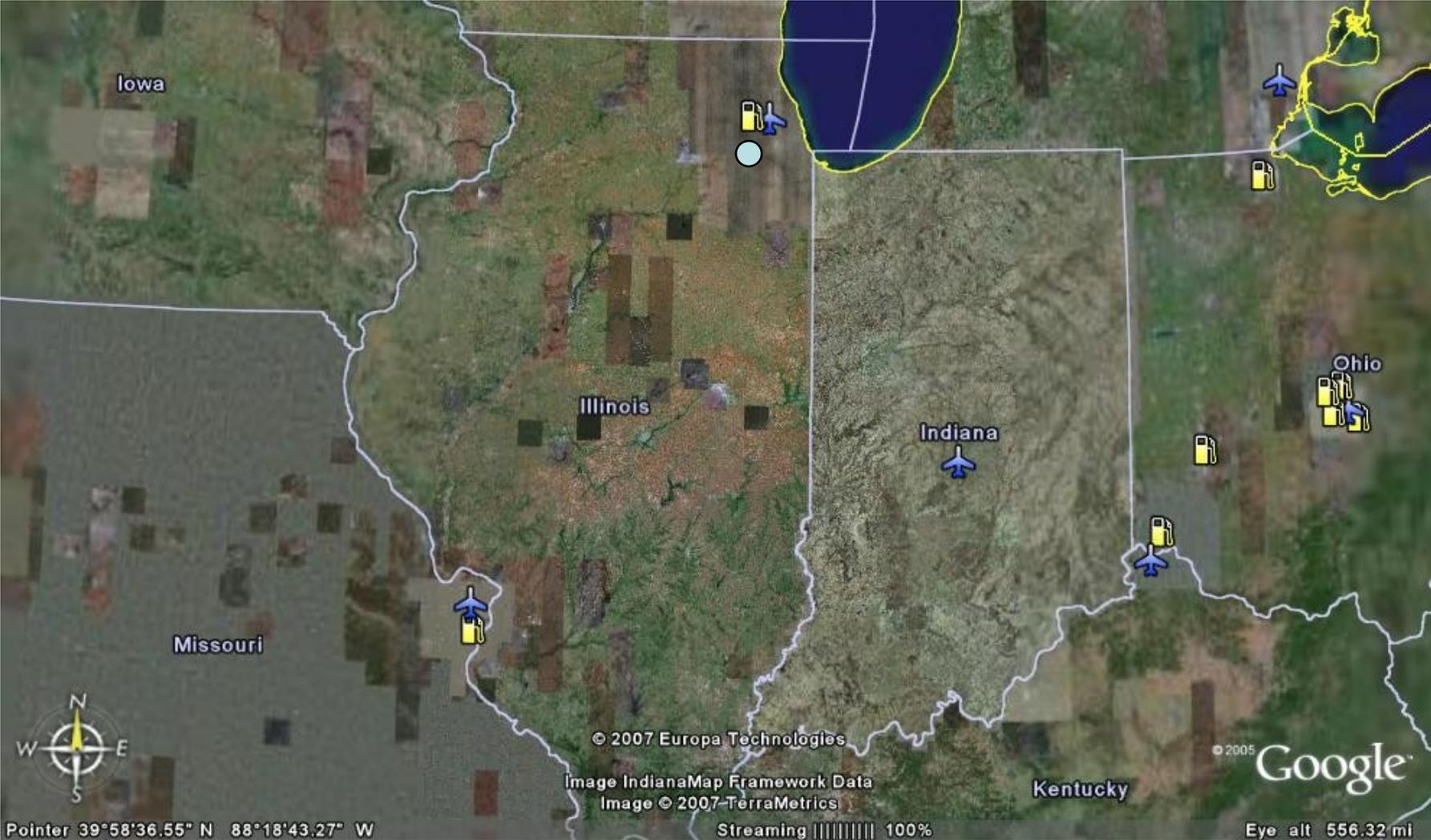
12 miles

Your county, Will County



60 miles

Your state, Illinois



600 miles

Your country, United States



3000 miles

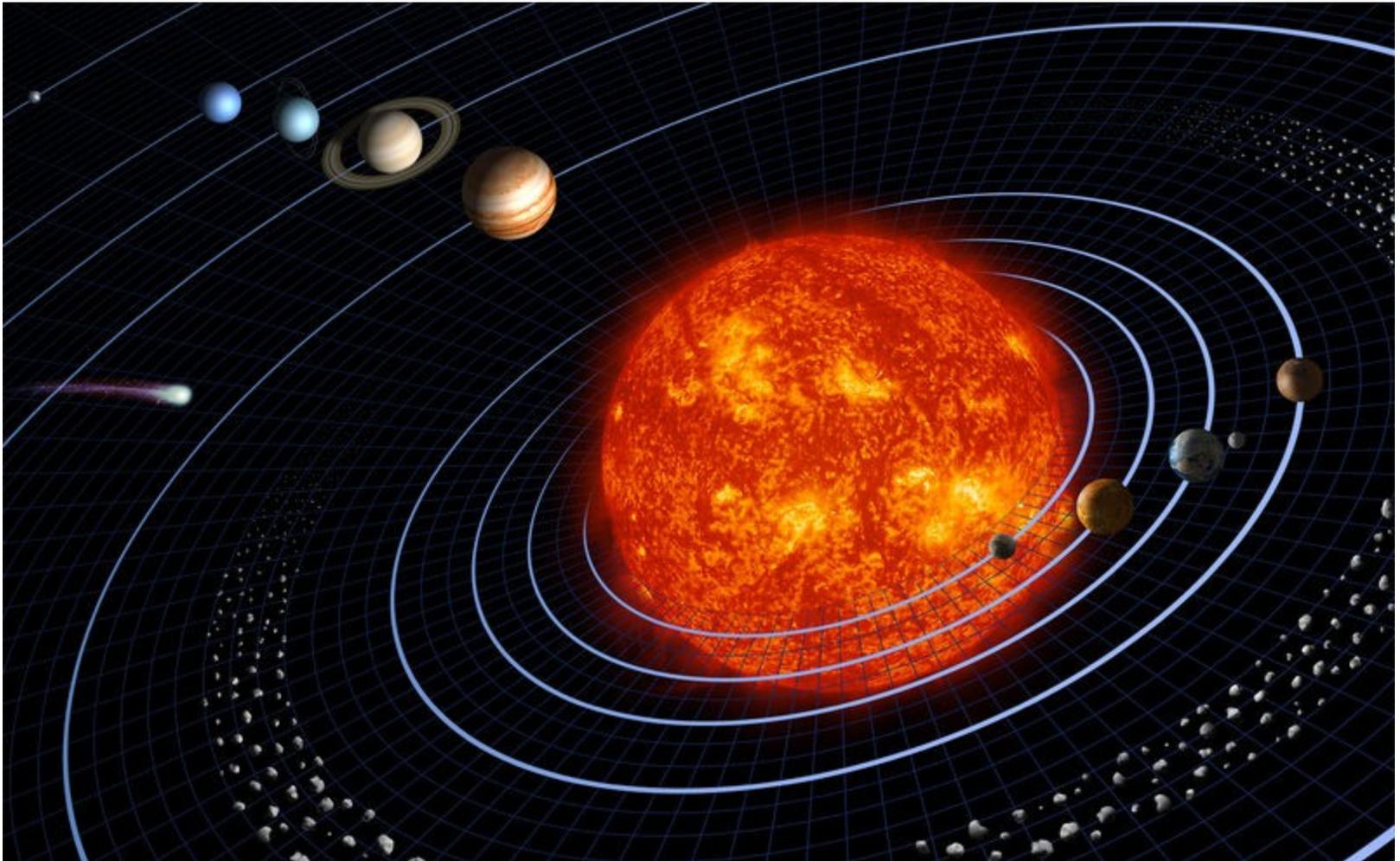
Your planet, Earth



← 13000 miles, about 1 hour on the space shuttle →

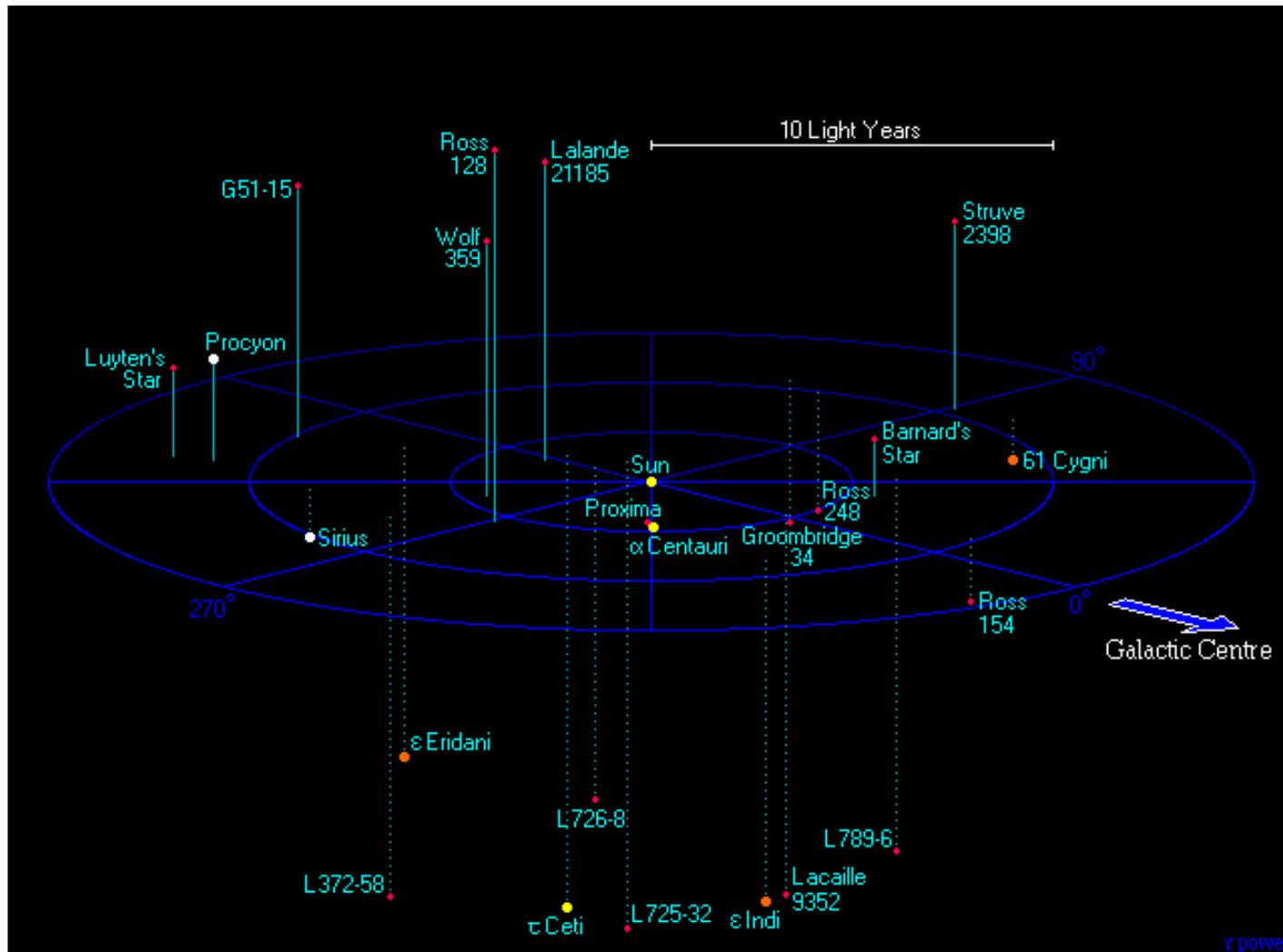


Your solar system, 1 star called the Sun and many planets



**93,000,000 miles from Earth to Sun,
about 1 year on the space shuttle**

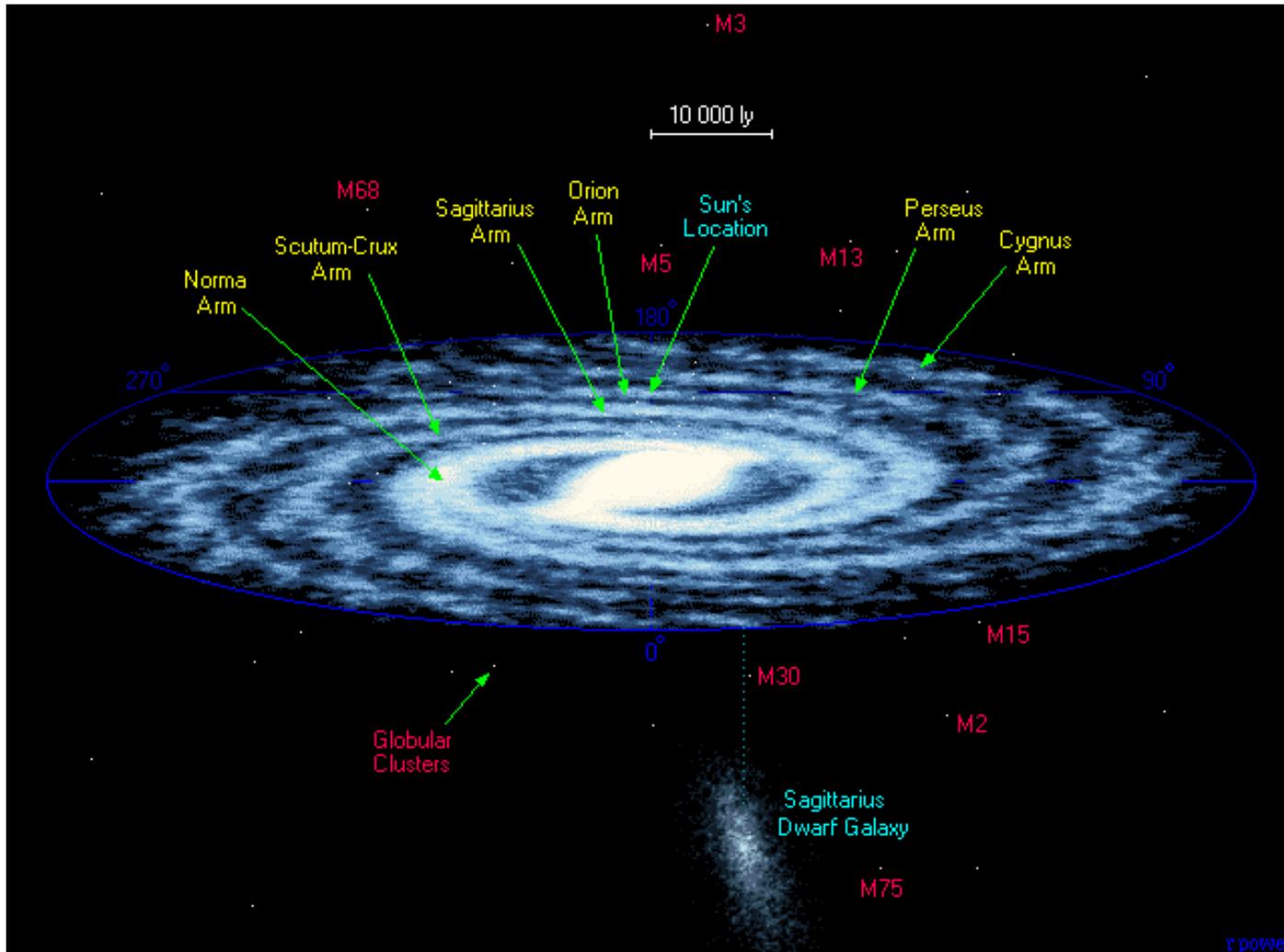
Other nearby stars



120,000,000,000,000 miles (120 trillion),
about 800,000 years on the space shuttle!

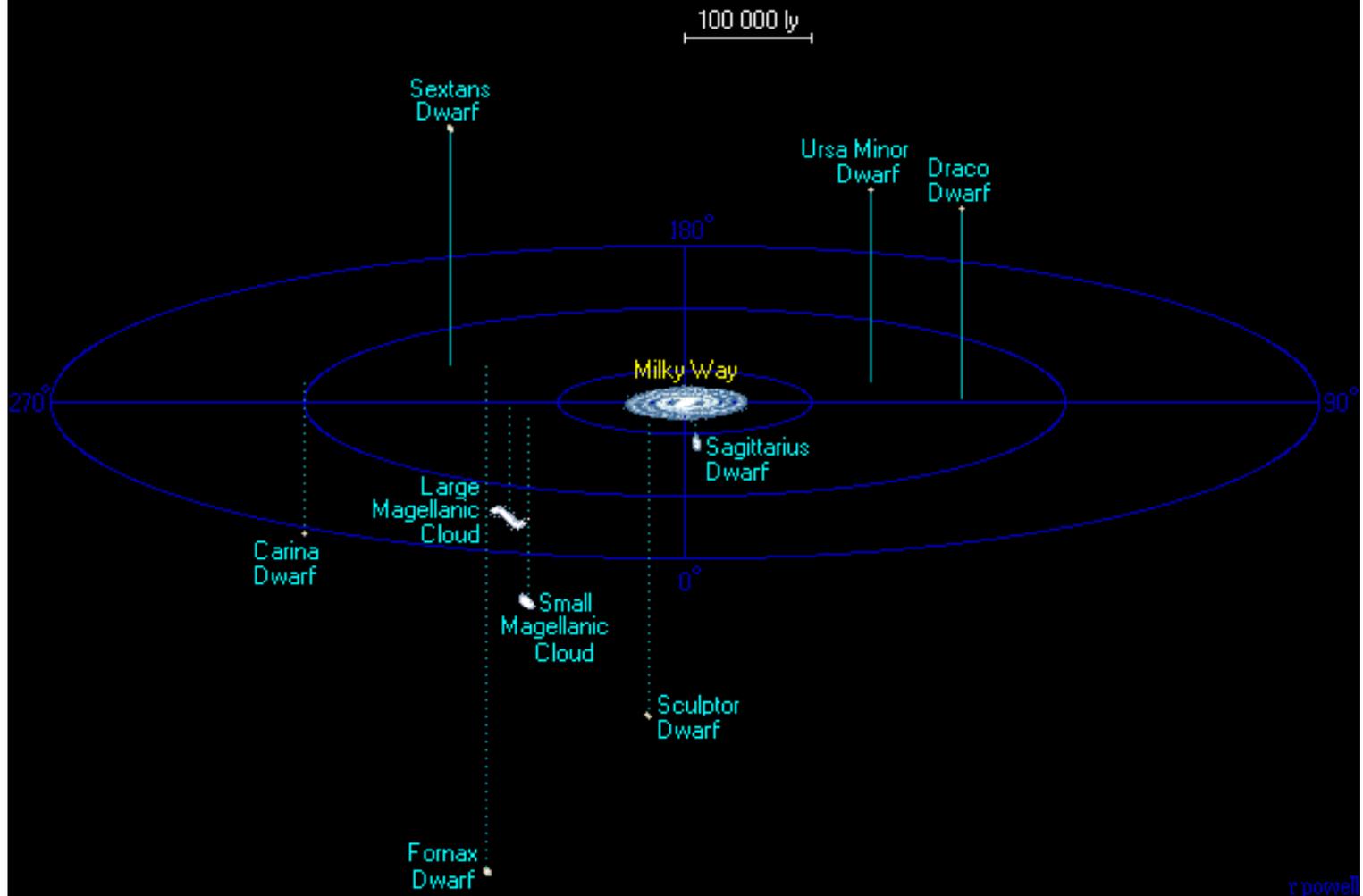
Your galaxy, the Milky Way, has 300 billion stars,
and is 100,000 trillion miles across.

100,000,000,000,000,000 miles

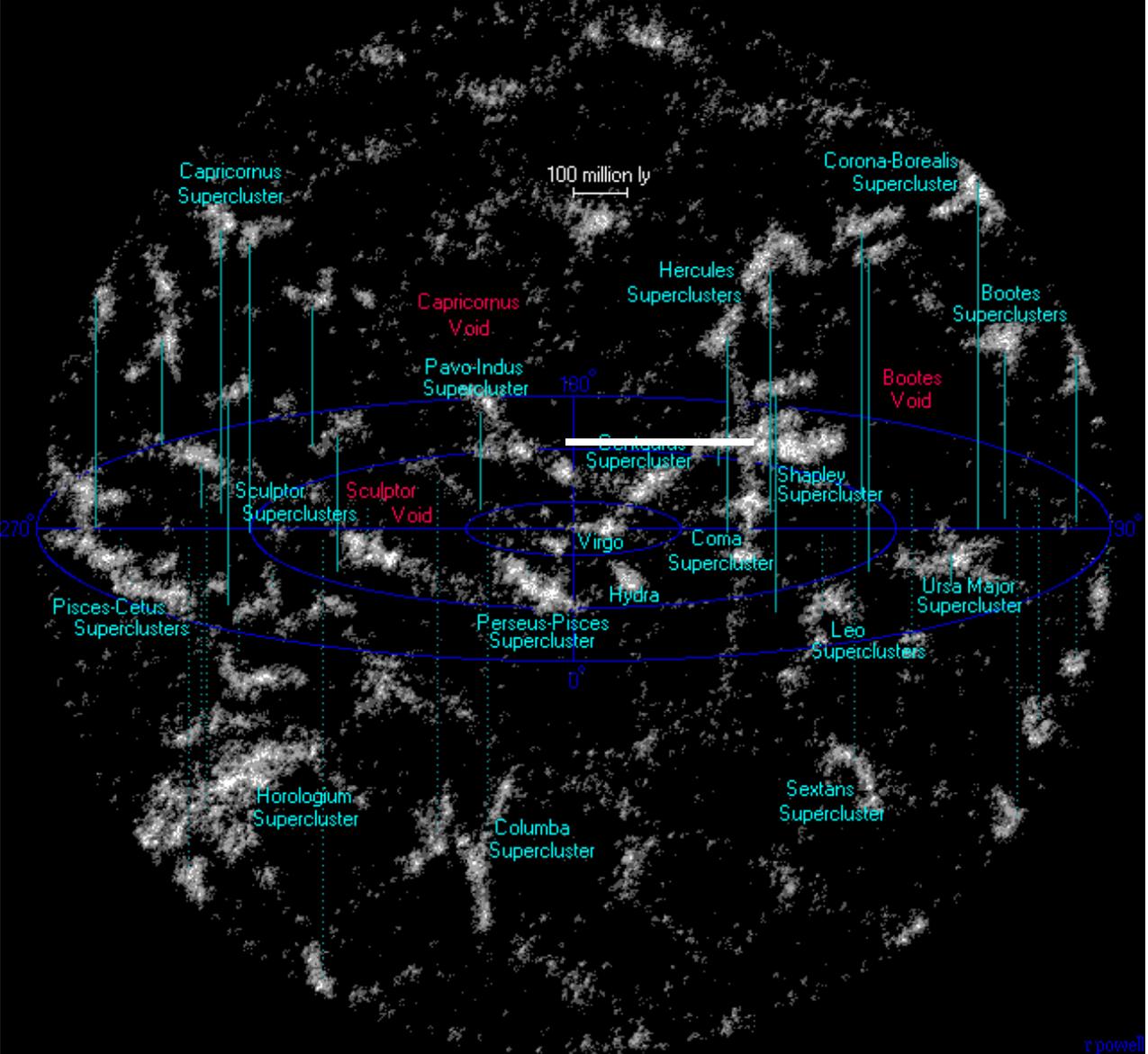


Other nearby galaxies

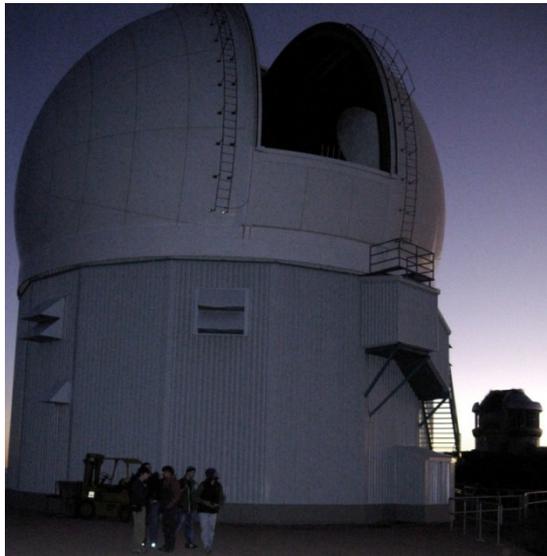
Galaxies



There are about 100 billion galaxies, each white dot is a galaxy.
The universe is a big place!!!



Dr. Kuhlmann is currently studying galaxies at a large telescope in Chile.



North and South America



Dr. Kuhlmann visited our class today and talked about water on other planets and where we are in the world. Here are some websites for you to visit with your parents if you are interested in science.

<http://www.fnal.gov/pub/visiting/tours/>

<http://www.dep.anl.gov/>

<http://www.sdss.org/gallery/>

<http://www.nasa.gov/>