
SPACE
Ms Aeschlimann

SPACE VOCABULARY

Universe

Galaxy

Light Year

Solar System

Star

Planet

Dwarf Planet

Space Vocabulary 4/29/15

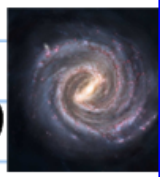
Galaxy

- a huge collection of stars held together by gravity

Universe

-"The whole thing", all of the galaxies and the vast empty space between them

Milky Way



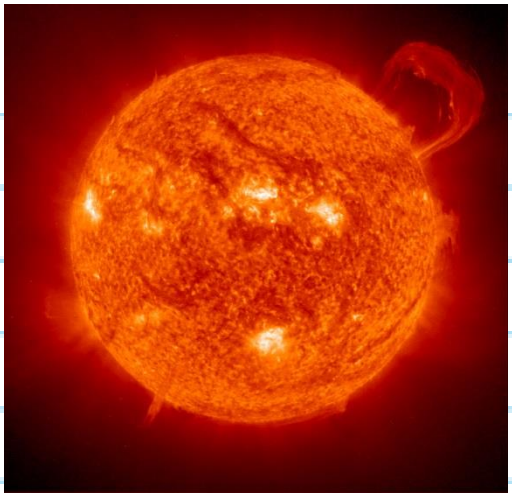
- ***Our galaxy***, flat spiral, (LARGE: 100,000 light years across), looks like a band of white lights across the sky

Solar System

- ***Planets that orbit a sun*** (Our solar system is at the edge of the Milky way)

Light Year

- The distance a ray of light can travel in one year (about 6 trillion miles)



Star: A huge ball of gas in space that gives off light and energy.

Planet: 3 Rules

1. Orbits the Sun
2. Big enough to be a round ball held together by gravity.
3. No space junk around it.

Dwarf Planet: Follows Planet Rules 1 and 2 but NOT 3

Planets vs Dwarf Planets

Planets

- Orbits the Sun directly
- Massive enough to be rounded by its own gravity
- Has cleared the smaller bodies from its orbit

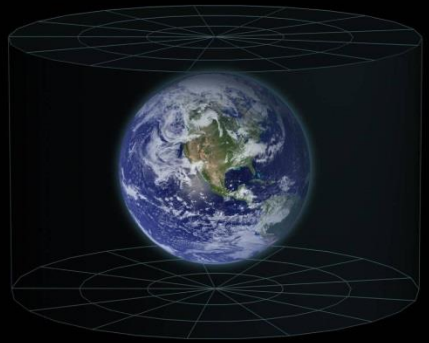
Dwarf Planets

- Orbits the Sun directly
- Massive enough to be rounded by its own gravity
- Has **not** cleared the smaller bodies from its orbit

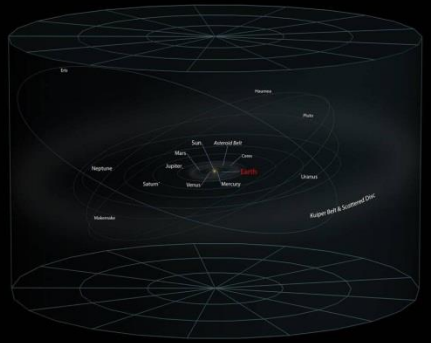
Size Comparison in Space

Smallest

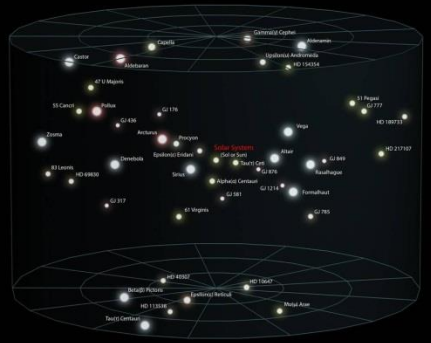
Earth



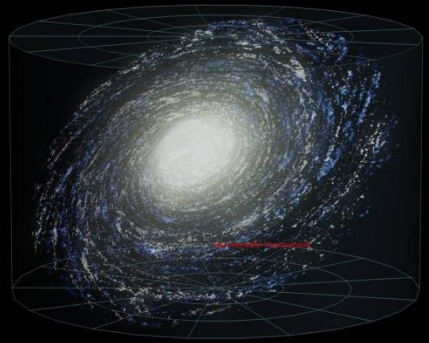
Solar System



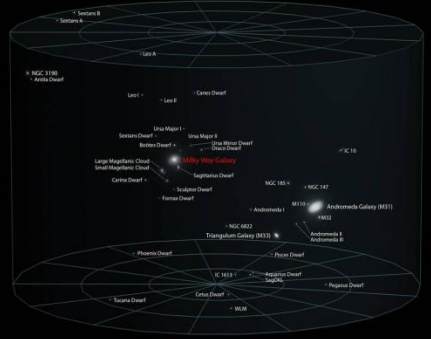
Solar Interstellar Neighborhood



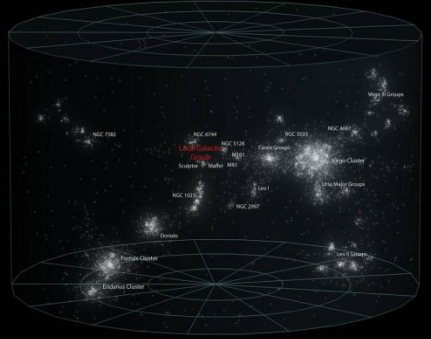
Milky Way Galaxy



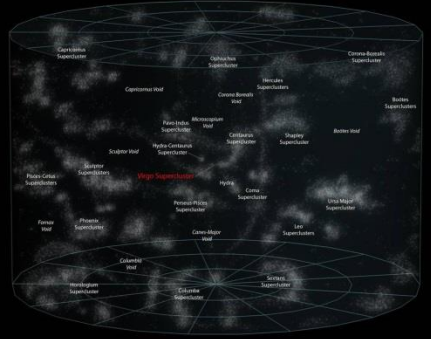
Local Galactic Group



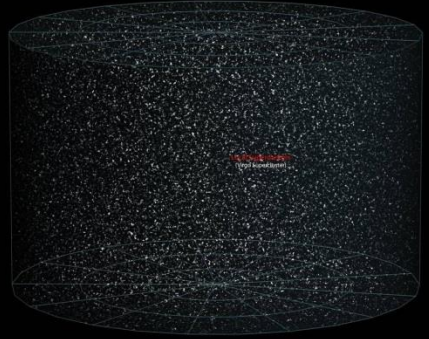
Virgo Supercluster



Local Superclusters



Observable Universe



Largesr

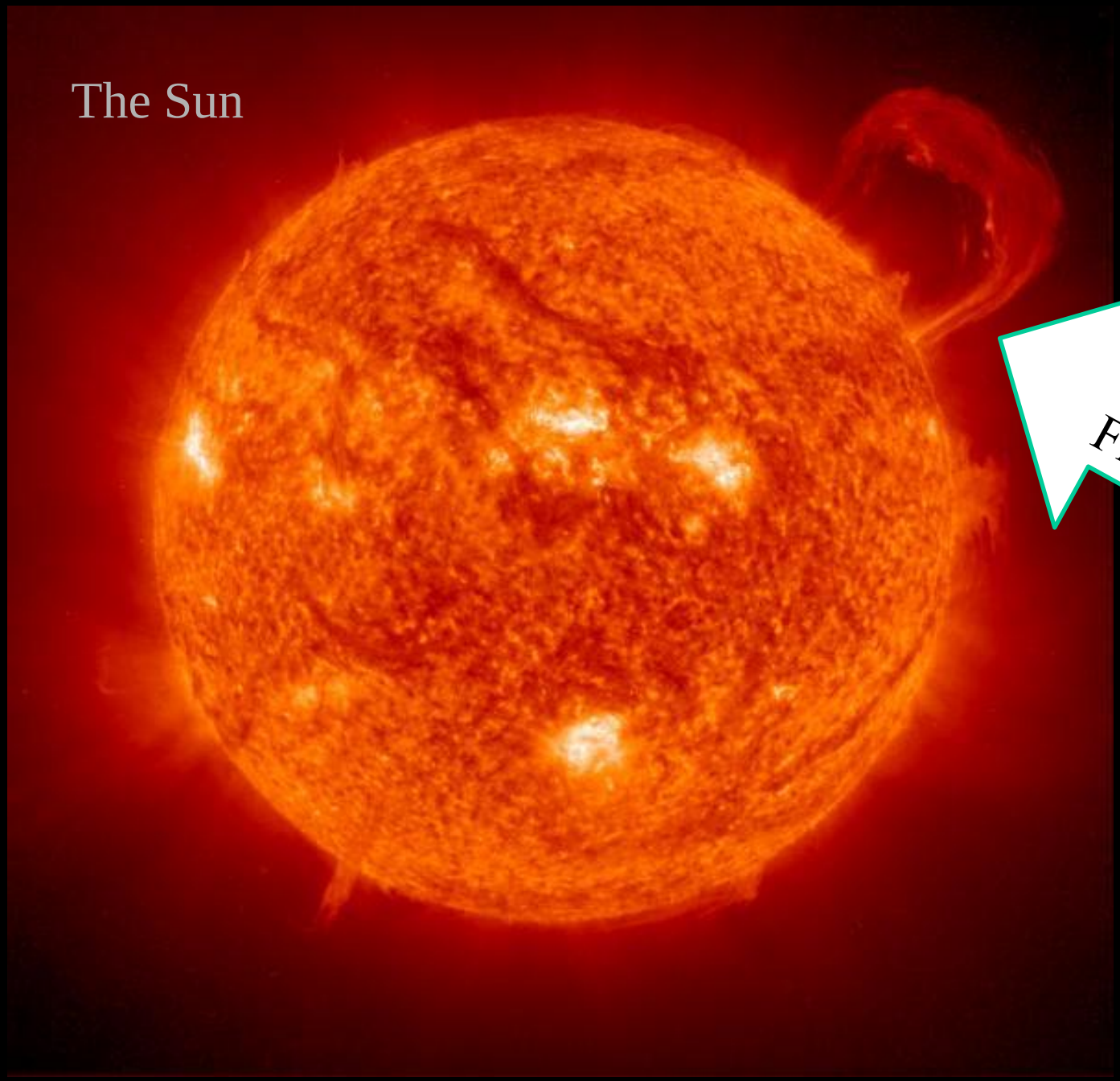

Our Sun is way
out there!
93 million miles from
Earth


Now let's look at
how large our sun is.

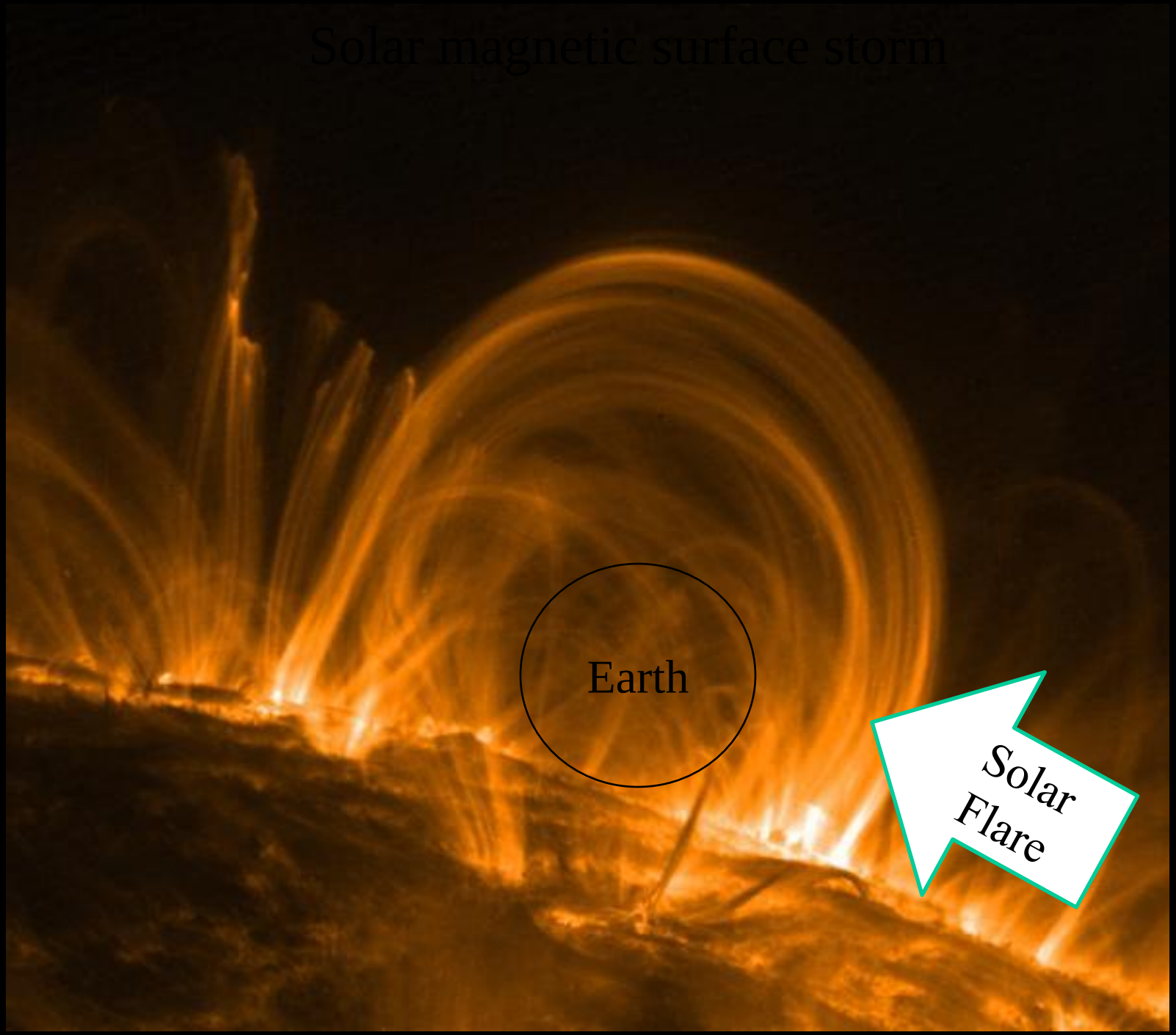

Can you find
the planet Mercury?

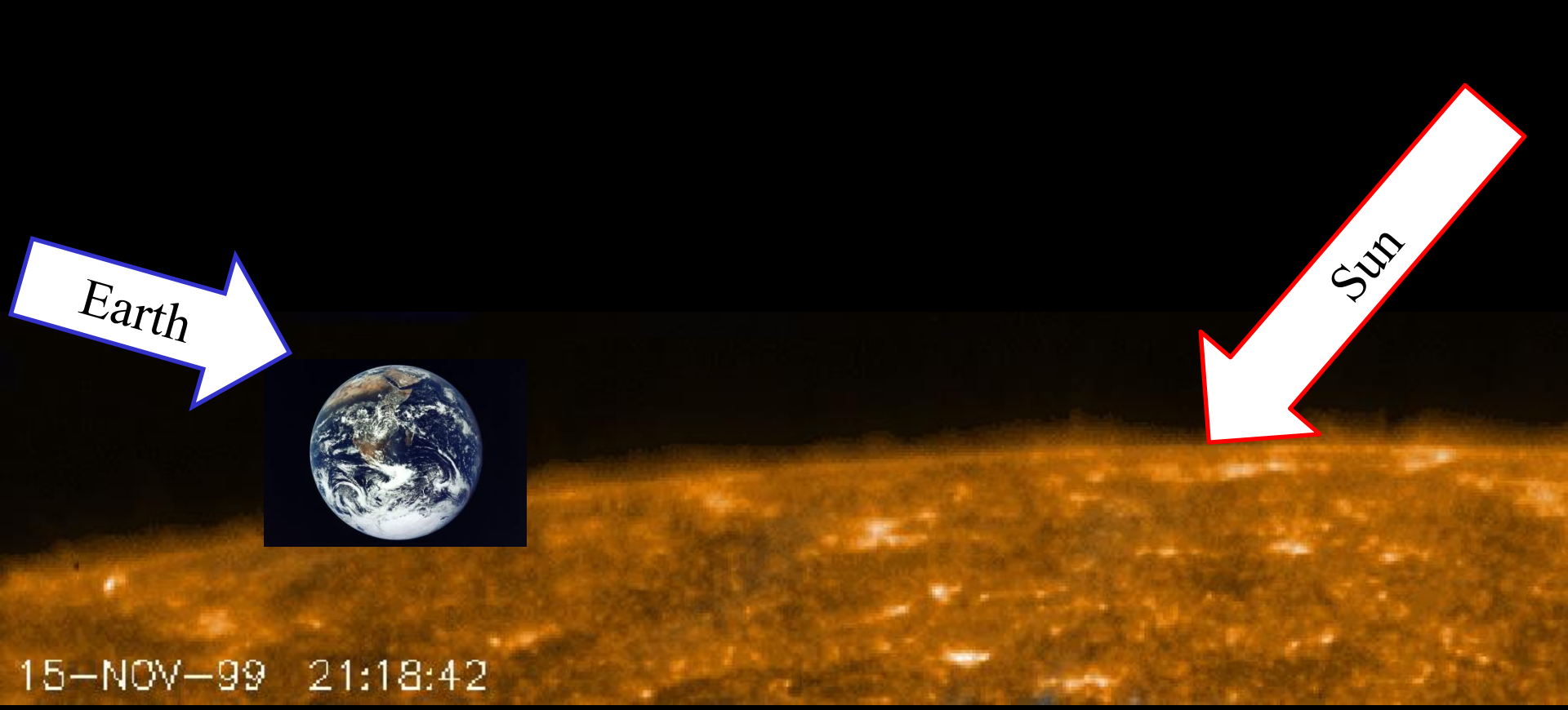

Right!

The Sun



Solar magnetic surface storm



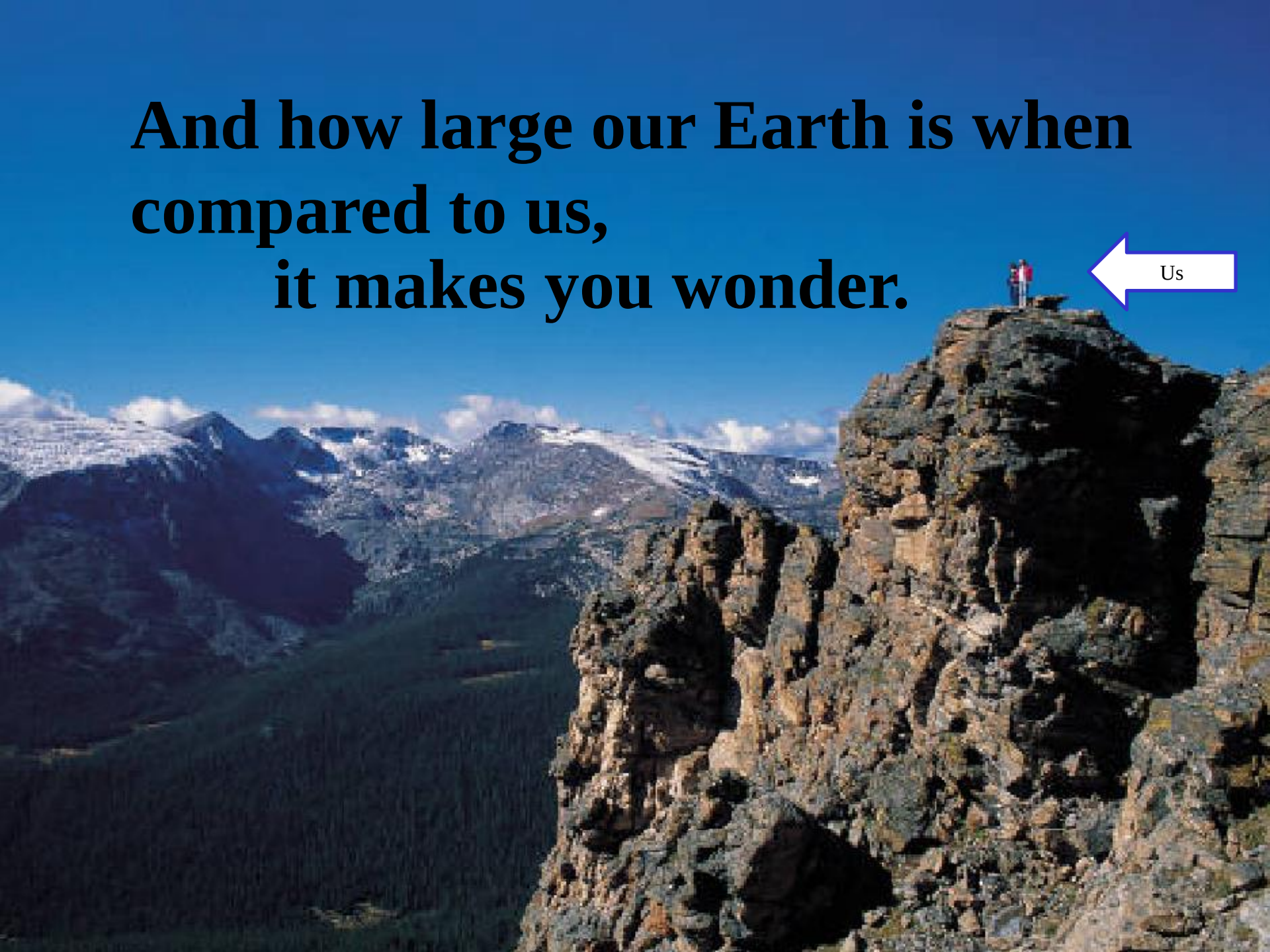


And how large our Sun is when compared to the Earth...

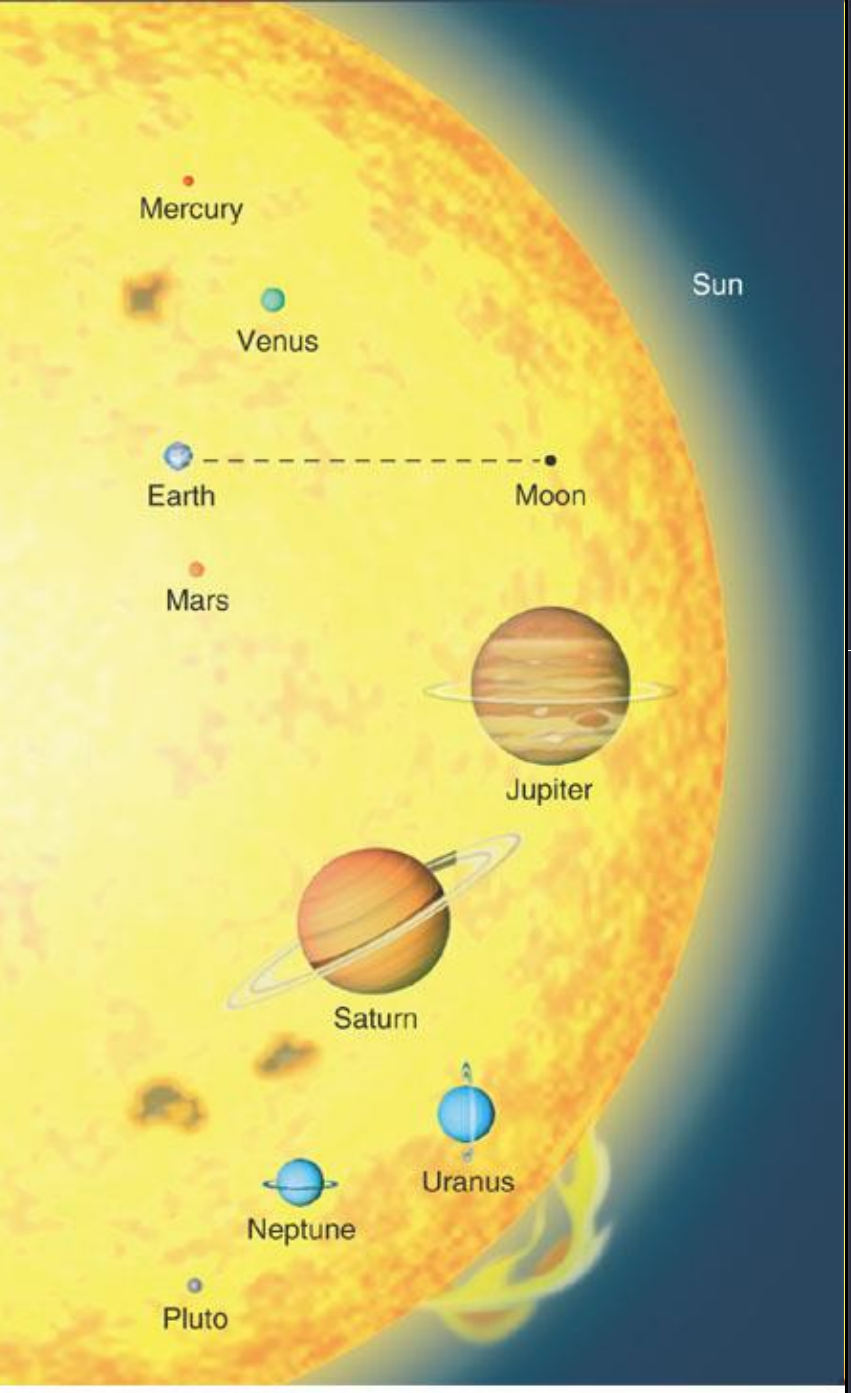

Earth

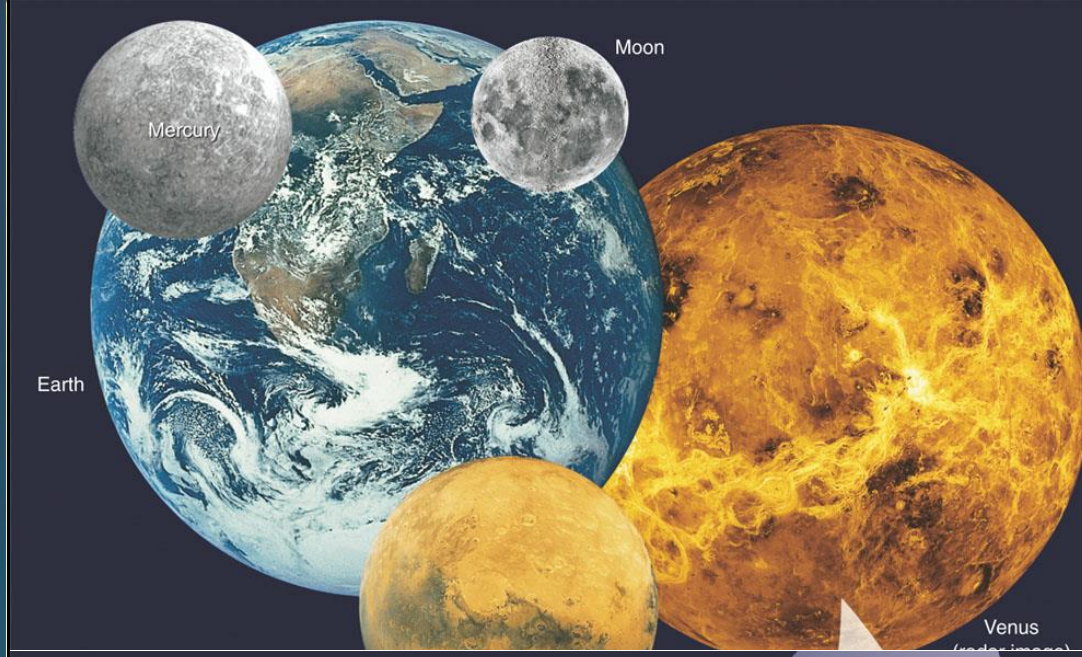
And how large our Earth is when compared to us,

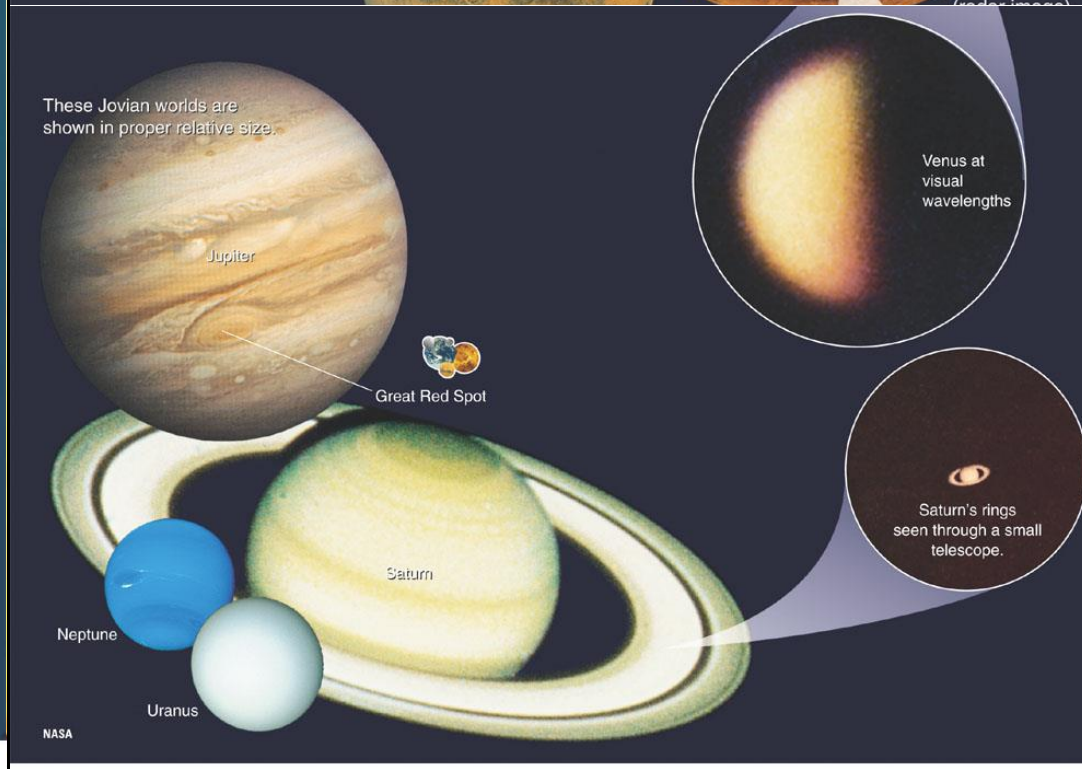
it makes you wonder.



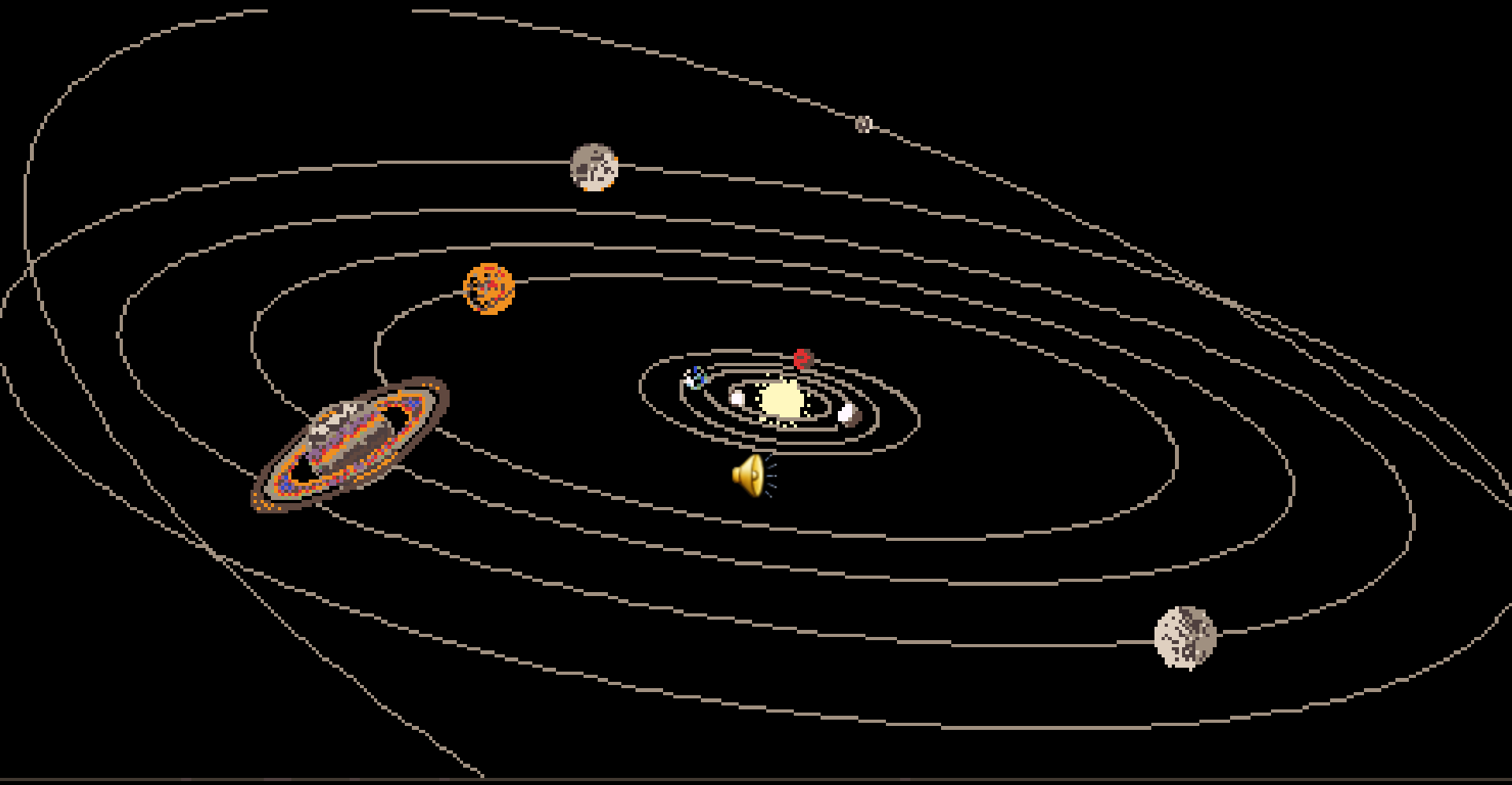
And our sun is NOT the biggest star at all!!!





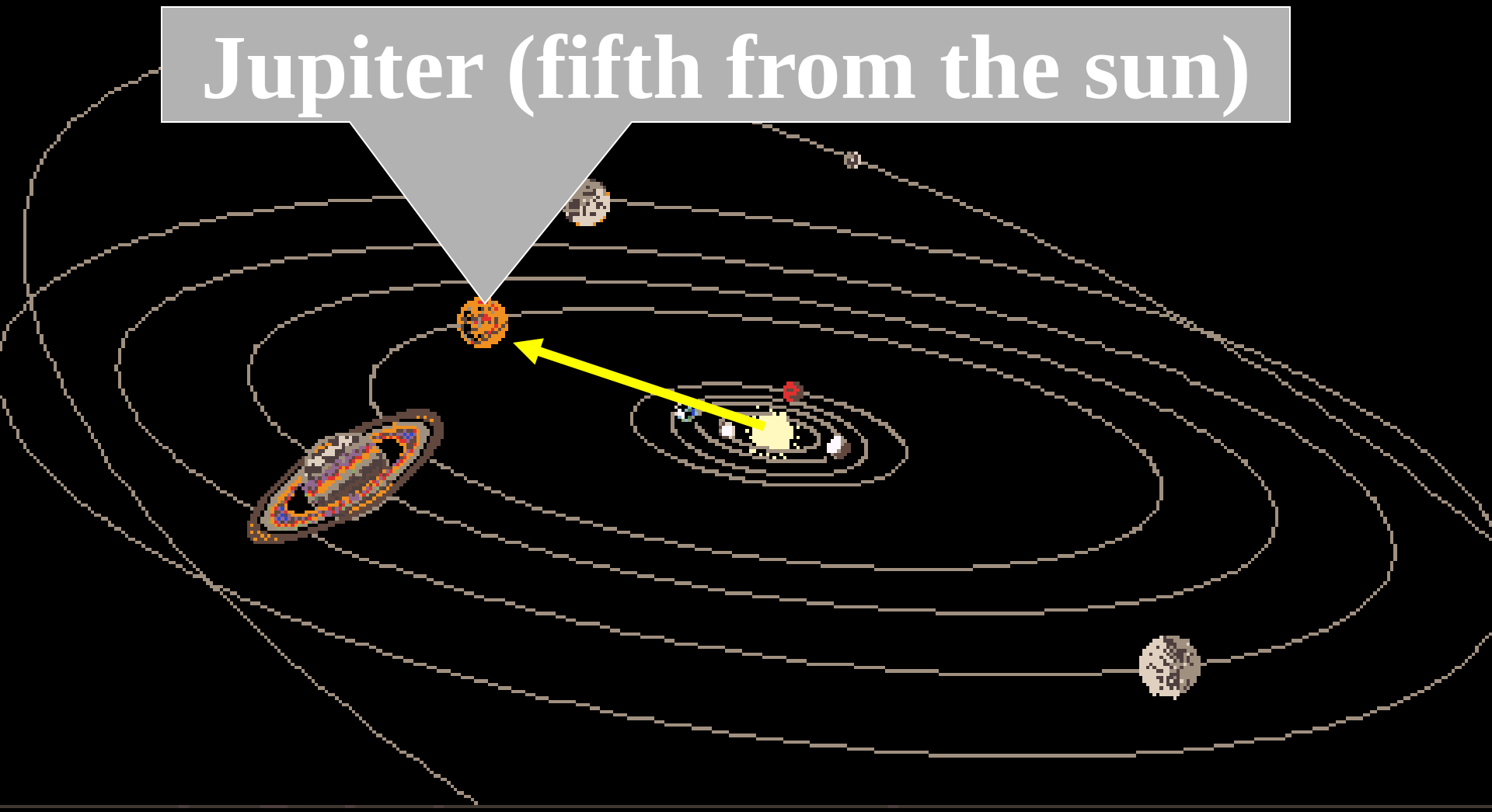


SUN
MERCURY
VENUS
EARTH
MARS
JUPITER
SATURN
URANUS
NEPTUNE
PLUTO
OTHER
MORE QUERY METHODS
NEW RELEASES



Remember our Solar System?

As fast as light travels it still takes light from the Sun 8 minutes to reach Earth...

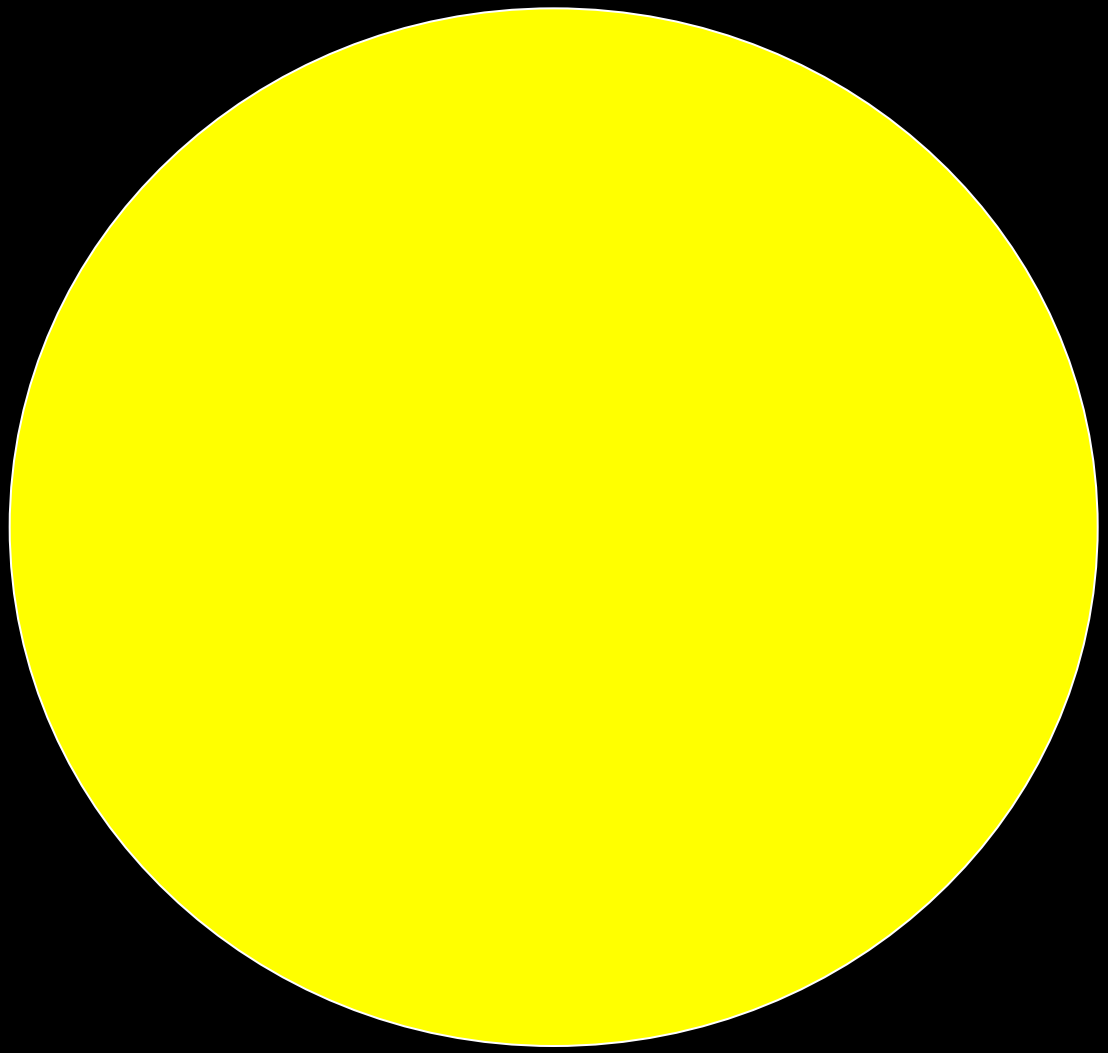


… and 45 minutes to reach Jupiter.

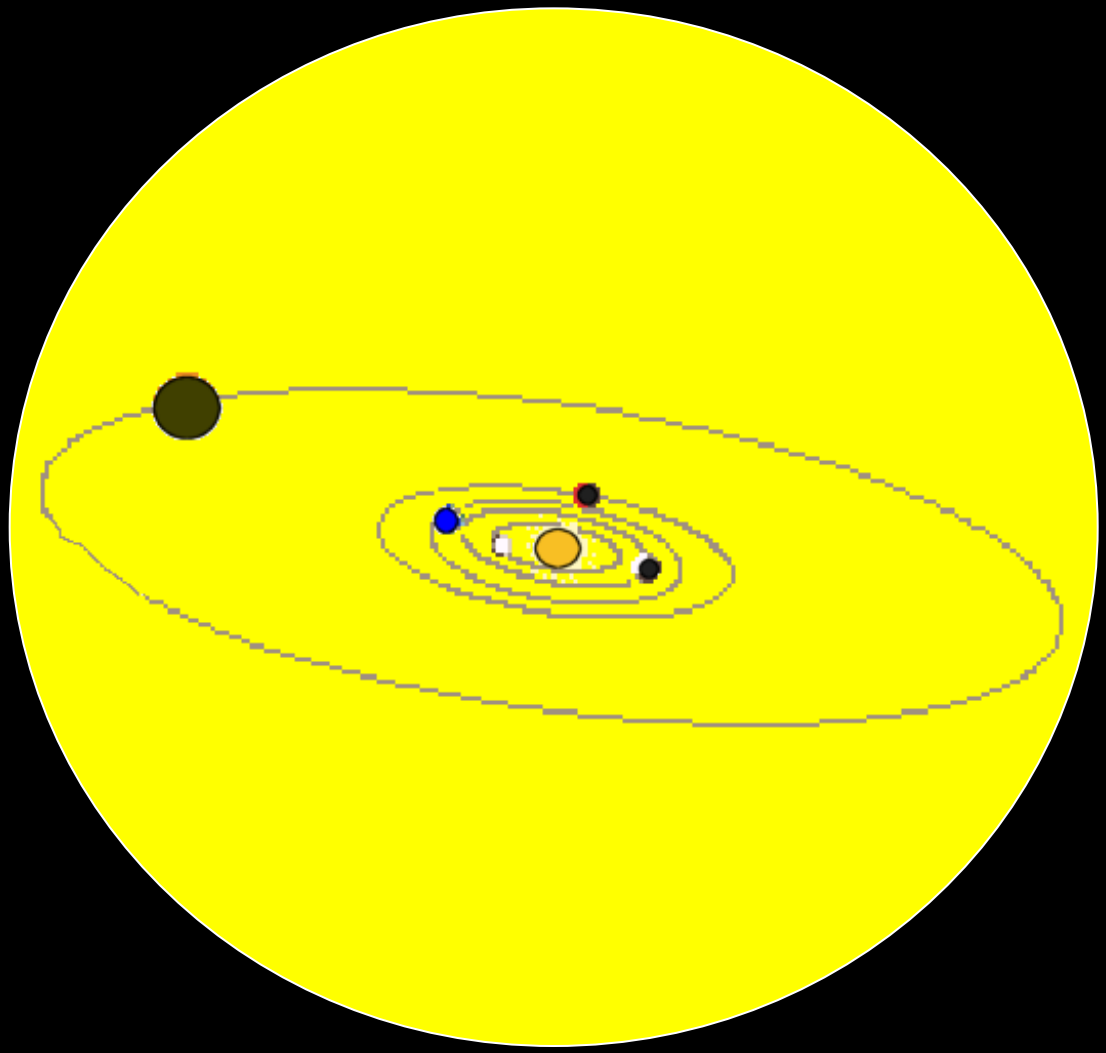

This is what we normally see on a winter's night in the USA.
The Belt
and Sword of
Orion


Let’s take a quick look at this star.
Orion

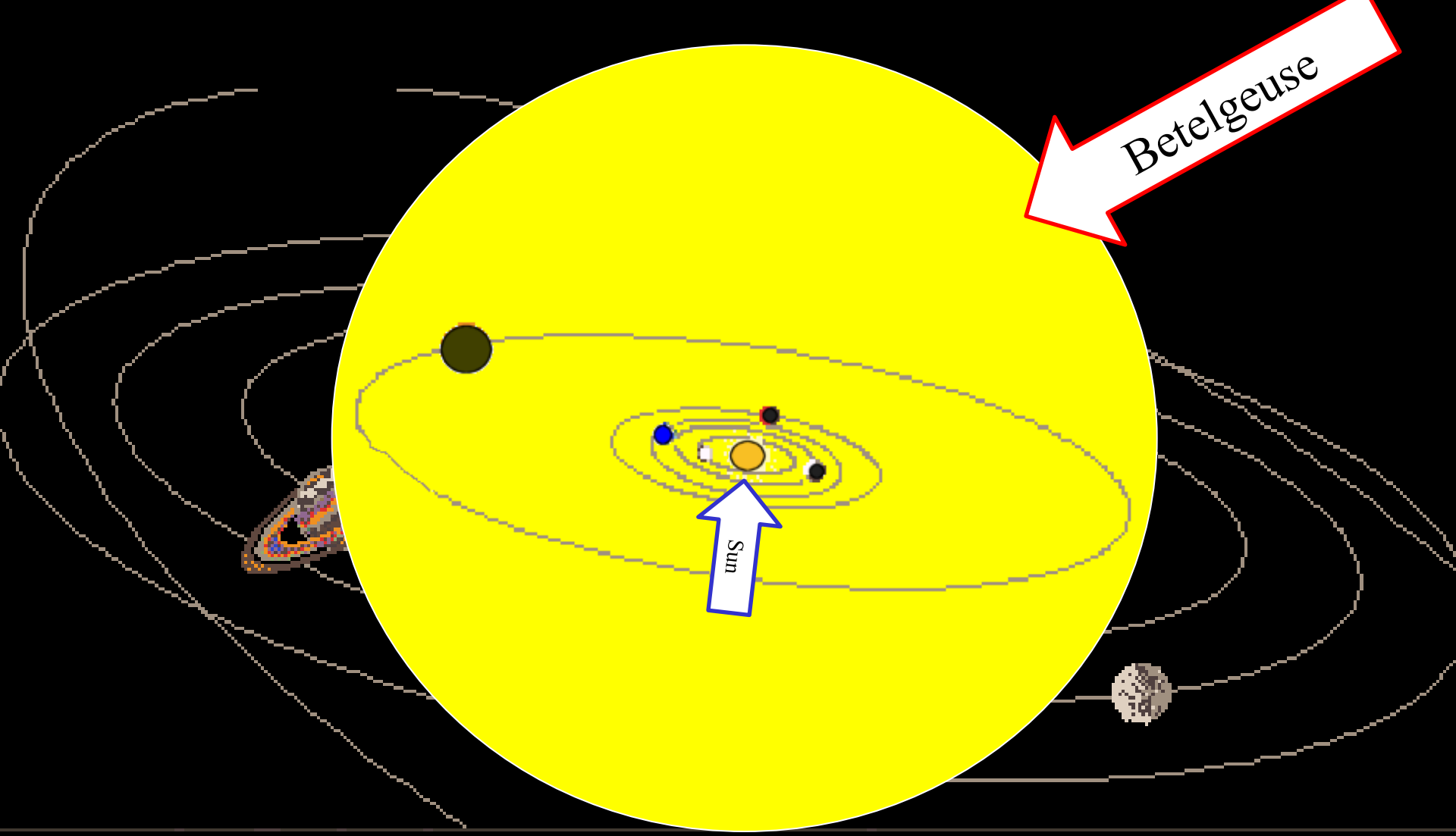

This is a sun called Betelgeuse.
Our Sun is huge, but Betelgeuse is much larger!



So, how big is Betelgeuse?

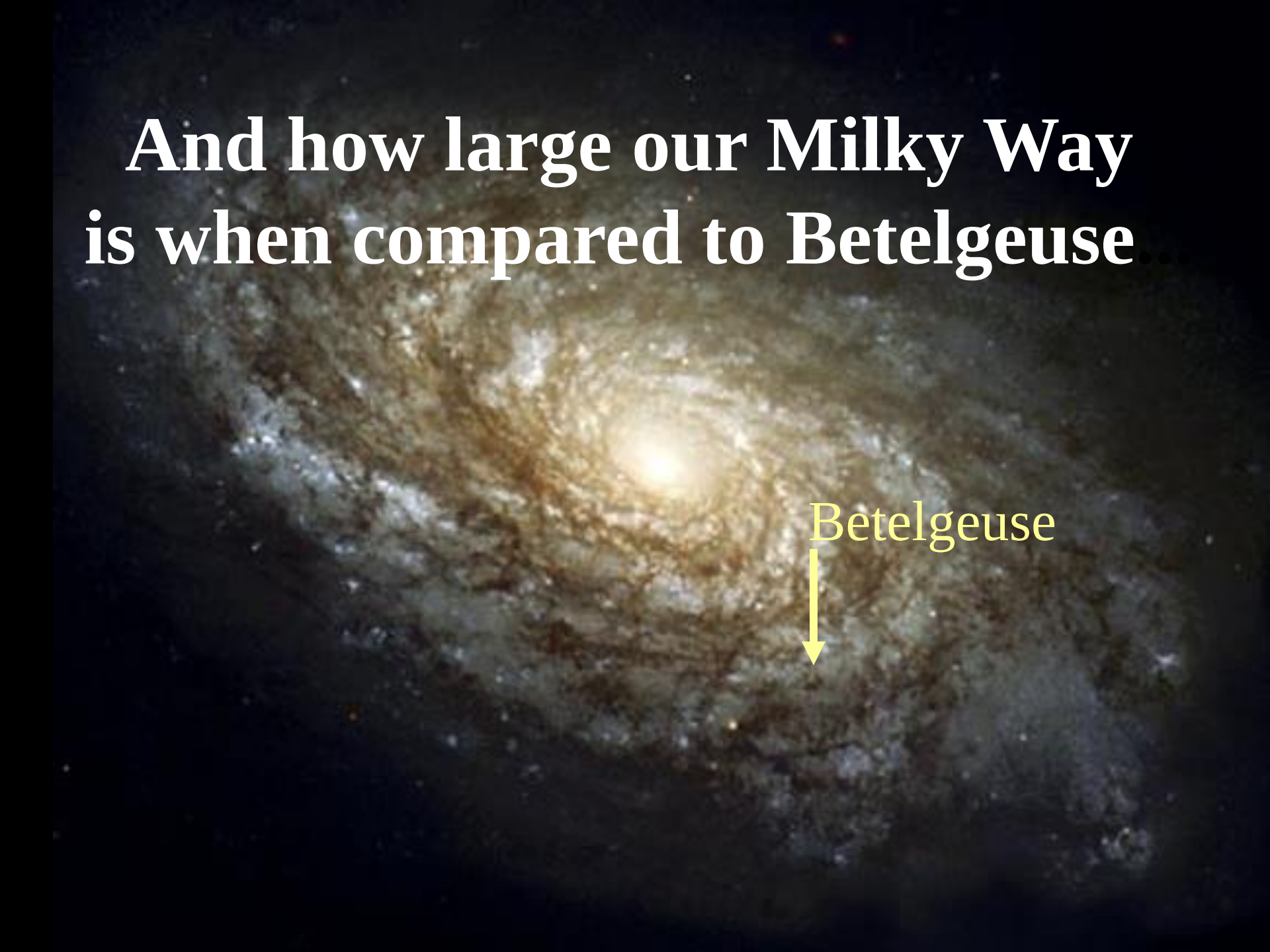


Mercury, Venus, Earth, Mars and Jupiter could all orbit around the Sun <u>inside</u> Betelgeuse.

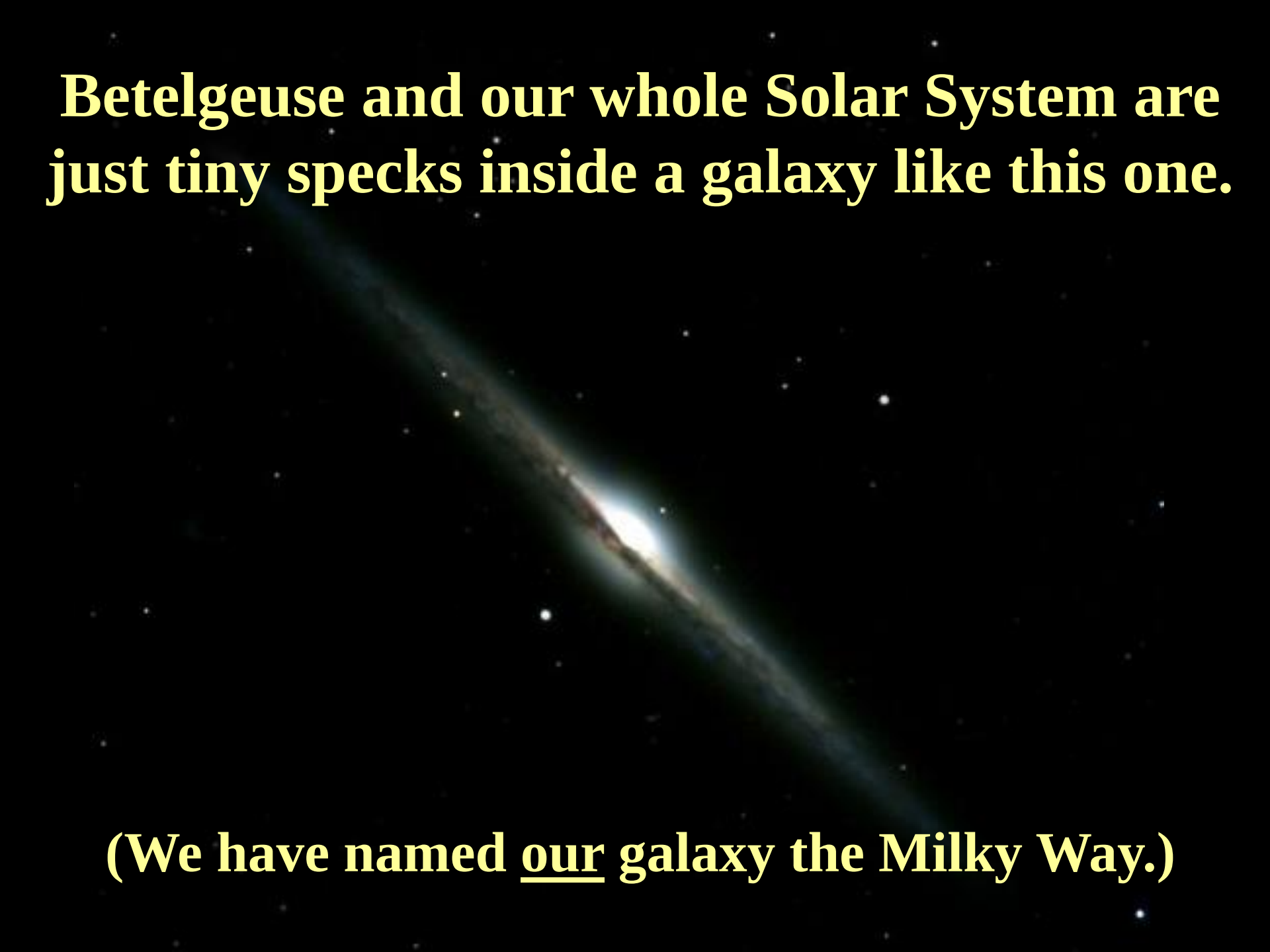


And how large Betelgeuse is when compared to our Sun...

And how large our Milky Way is when compared to Betelgeuse…



Betelgeuse and our whole Solar System are just tiny specks inside a galaxy like this one.



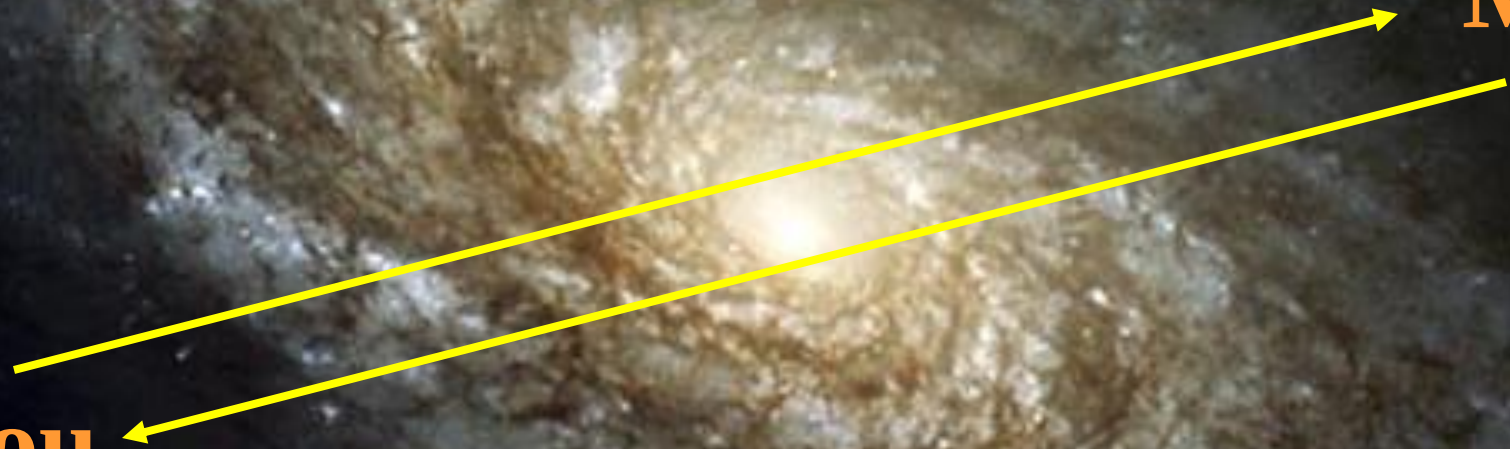
(We have named our galaxy the Milky Way.)

Our Milky Way Galaxy would look something like this if viewed from edge-on and from very far away.


Our Milky Way Galaxy would look something like this if we could view it from above or below the disk.
which we cannot do because of it's size, as you will see shortly)

Just how large is our Milky Way Galaxy?

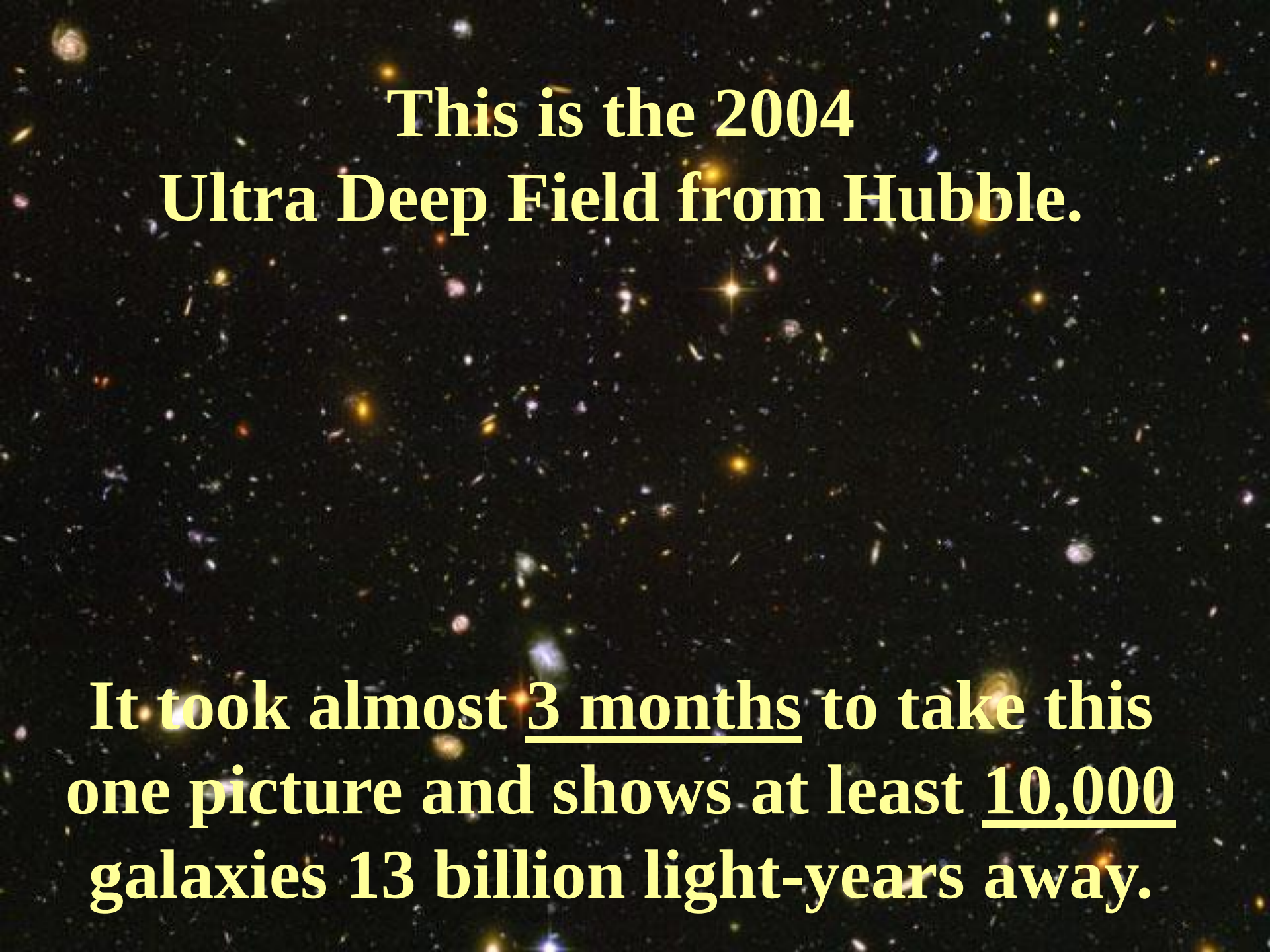
If you & mom were on opposite sides and you called her on the telephone it would take over

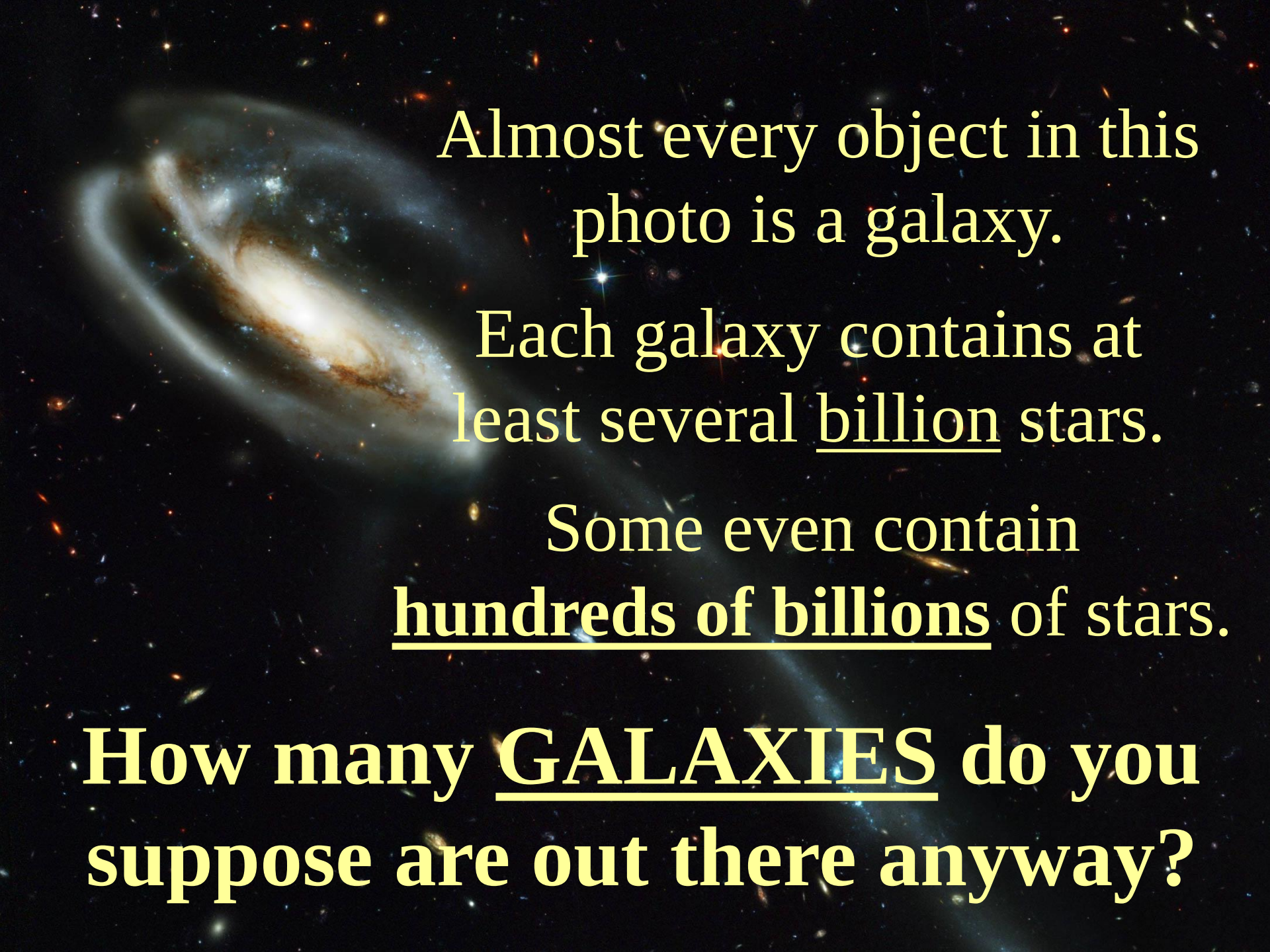


100,000 years for her to answer and another 100,000 before you heard her!


As you can see,
we live on a tiny speck in a
HUGE Galaxy.


Galaxies are not rare either.


This is the 2004
Ultra Deep Field from Hubble.
It took almost 3 months to take this one picture and shows at least 10,000 galaxies 13 billion light-years away.


Almost every object in this photo is a galaxy.
Each galaxy contains at least several billion stars.
Some even contain hundreds of billions of stars.
How many GALAXIES do you suppose are out there anyway?

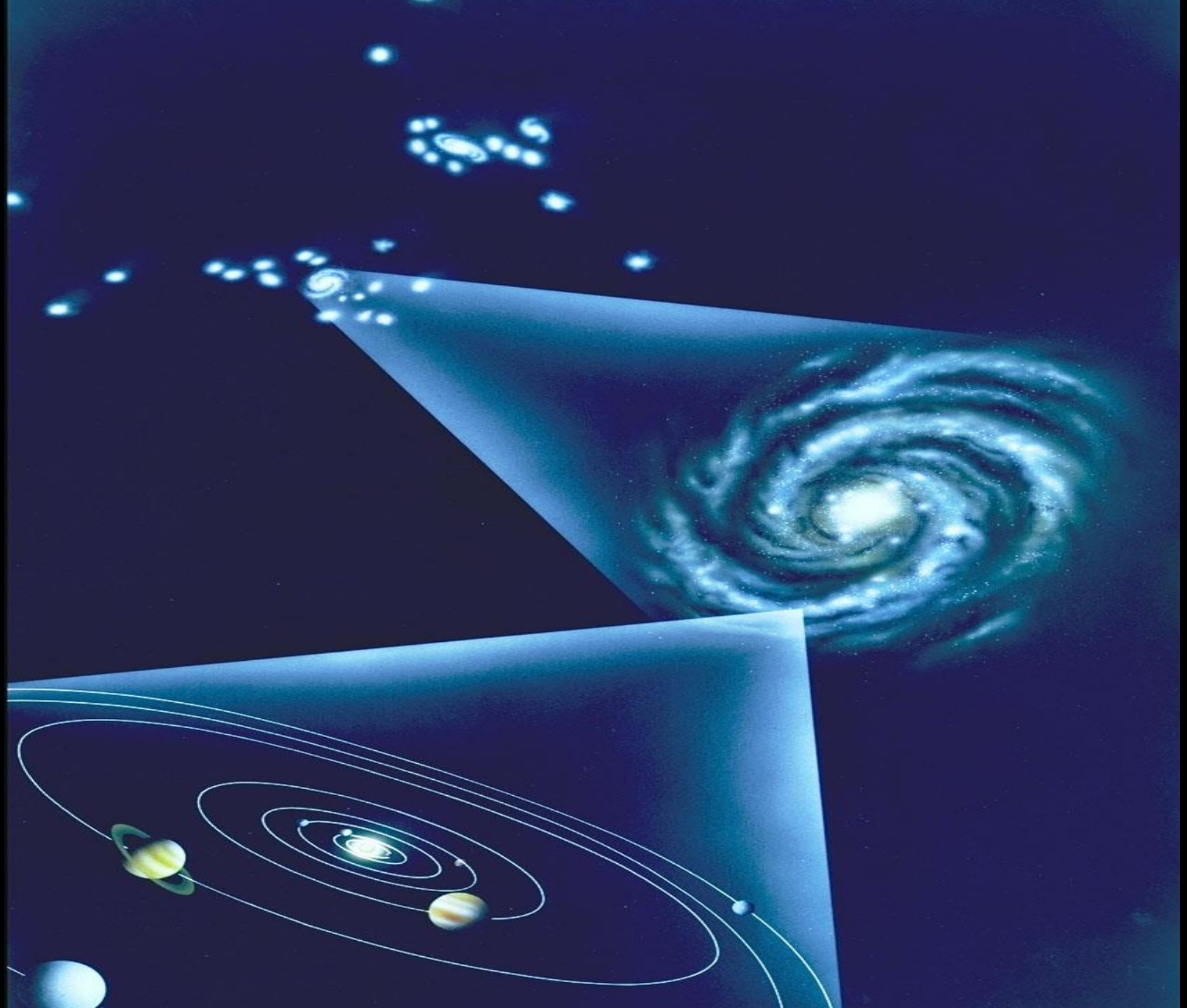

BILLIONS

Galaxies

The Universe is filled with billions of galaxies

- More distant ones appear younger

look-back time due to finite light spee

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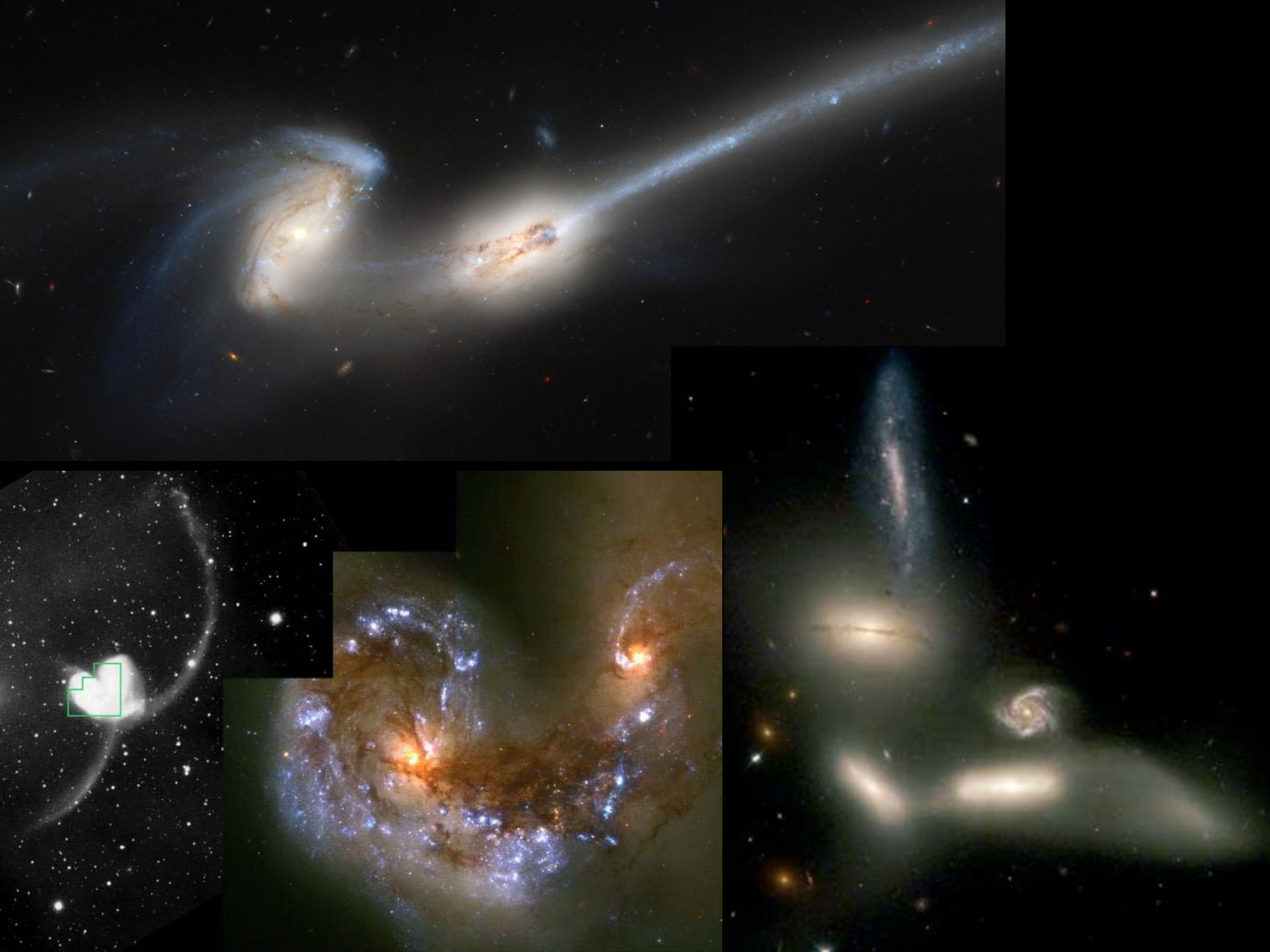
Sombrero Galaxy • M104

Hubble Heritage



NUMBER OF STARS

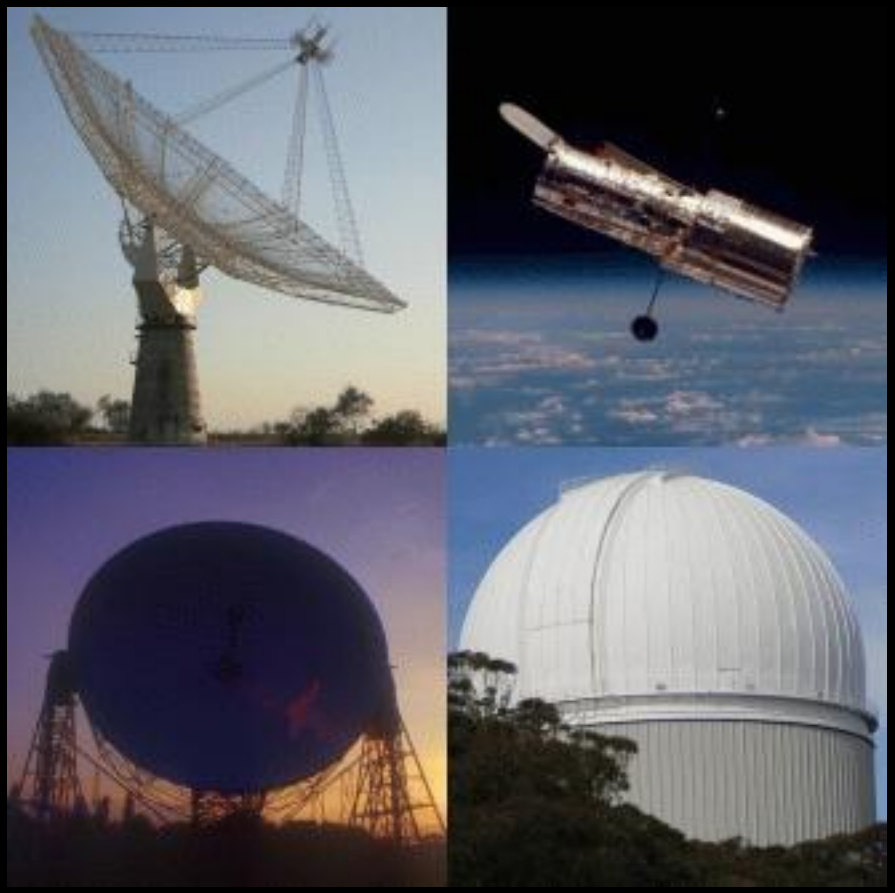
And each Galaxy contains billions of Stars… from the reading "What is a Star?" We know that there are three hundred sextillion stars in the universe. That is 3 followed by 23 zeros.

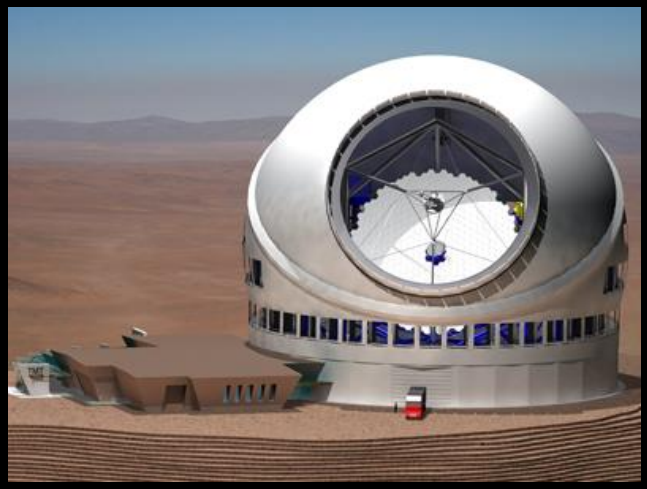
300,000,000,000,000,000,000,000

That means that there are more stars than grains of sand on every beach on Earth!

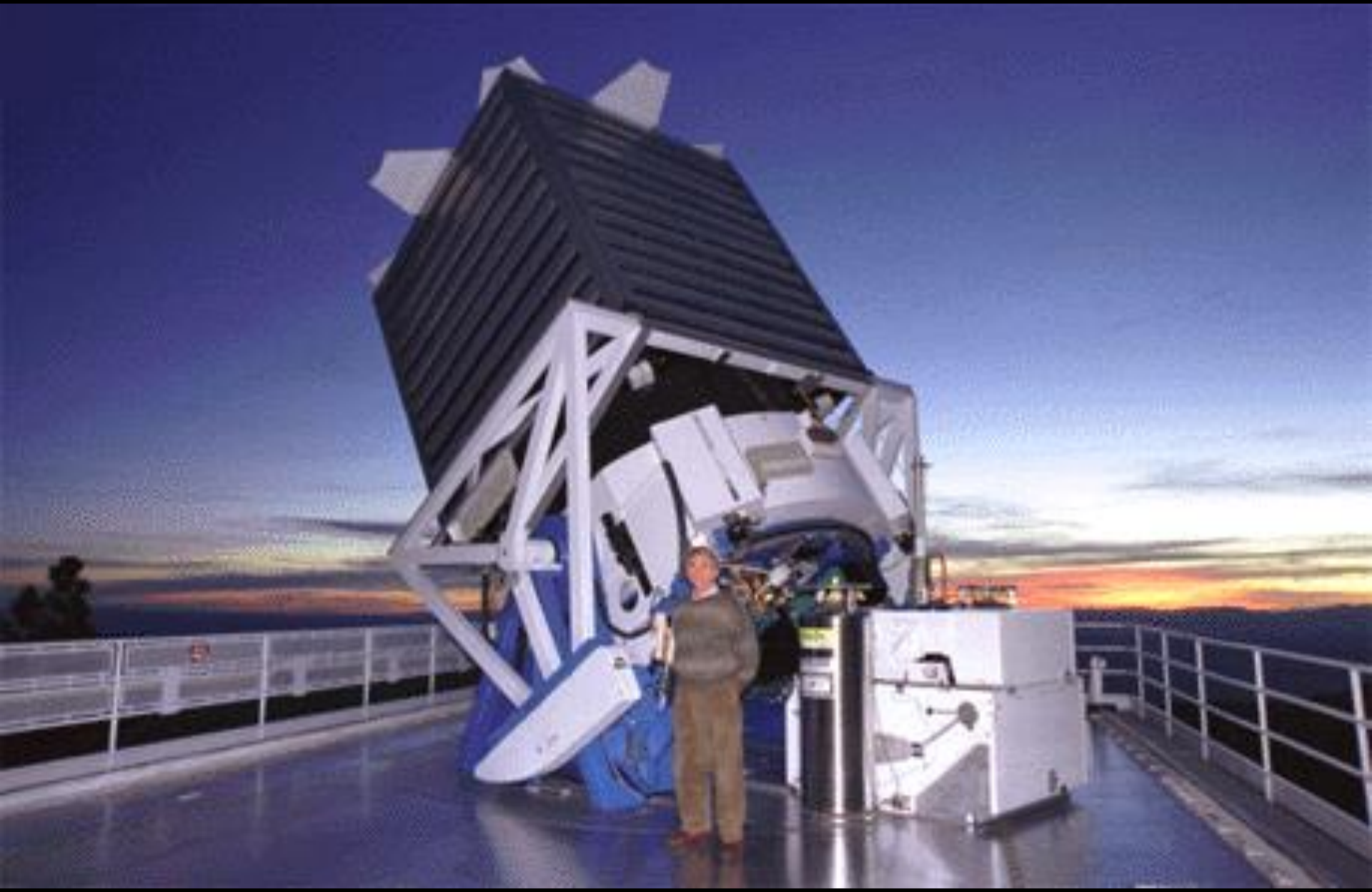
Telescopes

How we see the stars and galaxies…





The world's largest telescope, which could offer a glimpse into the beginning of the universe, will be built on top of the dormant Mauna Kea volcano in Hawaii



Hubble Space Telescope

Are you ready for the TEST?

1. Do you know the vocabulary words and definitions?

2. Can you put these word in order from **biggest** to **smallest**?
   Galaxy, Universe, Solar system, Planet, Star, Dwarf planet

3. Do you know how many stars are
   - In the universe?
   - In a galaxy?
   - In a solar system?

4. Do you know the order of the planets in our solar system?

Are you ready for the TEST?

1. Do you know the vocabulary words and definitions?
   (See the first pages of this document)

1. Can you put these word in order from **biggest** to **smallest**?
   Galaxy, Universe, Solar system, Planet, Star, Dwarf planet

   Universe, Galaxy, Solar system, Star, Planet, Dwarf planet

3. Do you know how many stars are
   In the universe? (300 sextillion)
   In a galaxy? (Billions)
   In a solar system? (One)

4. Do you know the order of the planets in our solar system?
   Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

Are you ready for the TEST?

Watch these videos to refresh your memory from the homework blog:

- How Big is the Universe: https://www.youtube.com/watch?v=AC7yFDb1zOA
- The Stars: https://www.youtube.com/watch?v=Ov5AHcCQtd8
- Discovery Videos
- http://www.discovery.com/tv-shows/other-shows/videos/how-the-universe-works-big-stars/