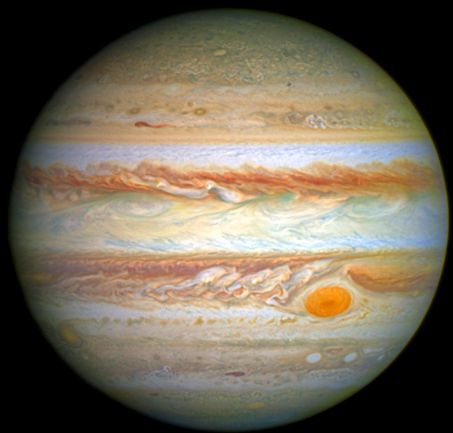


Planets!



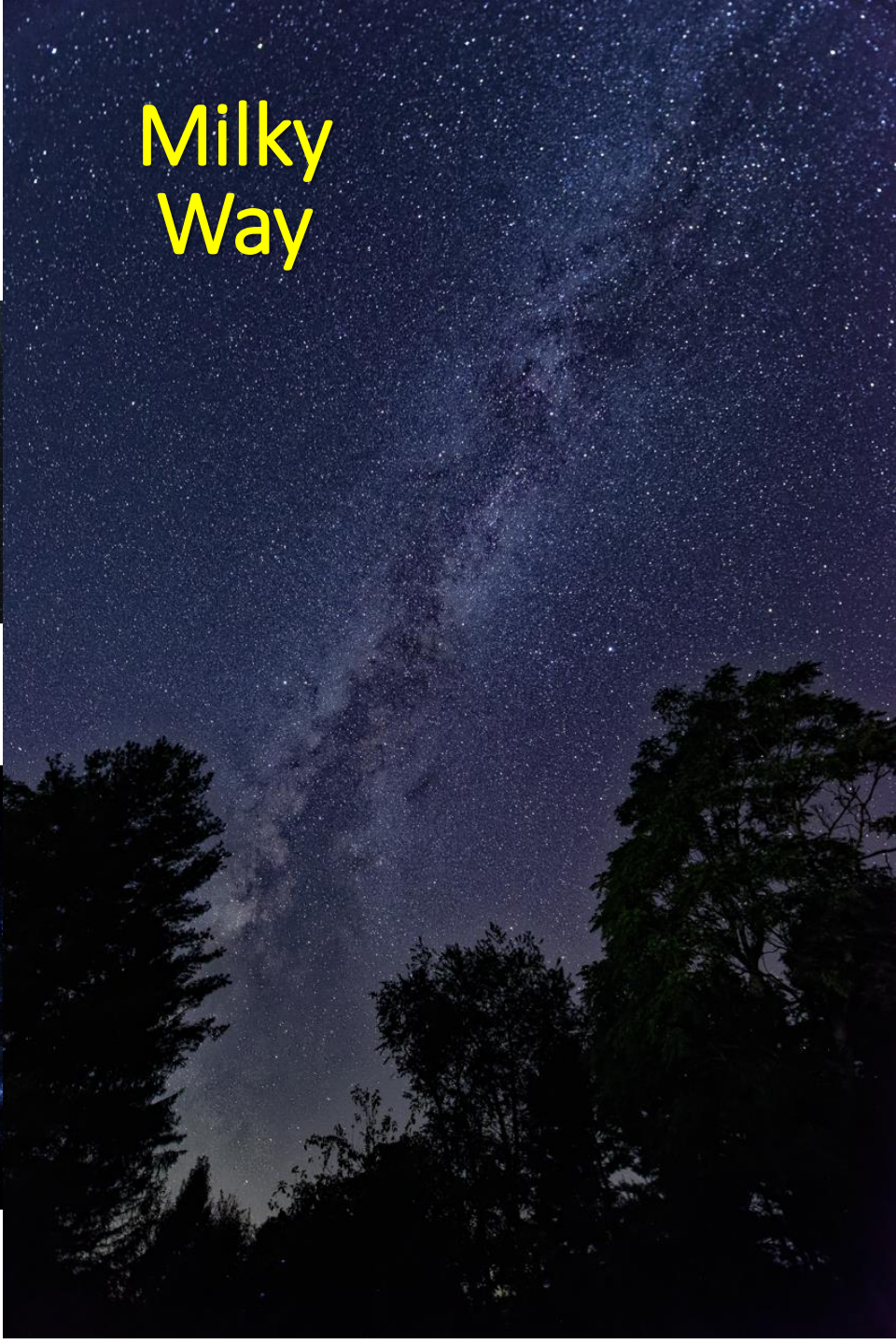
Stars



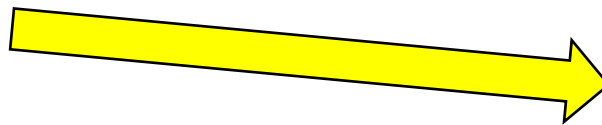
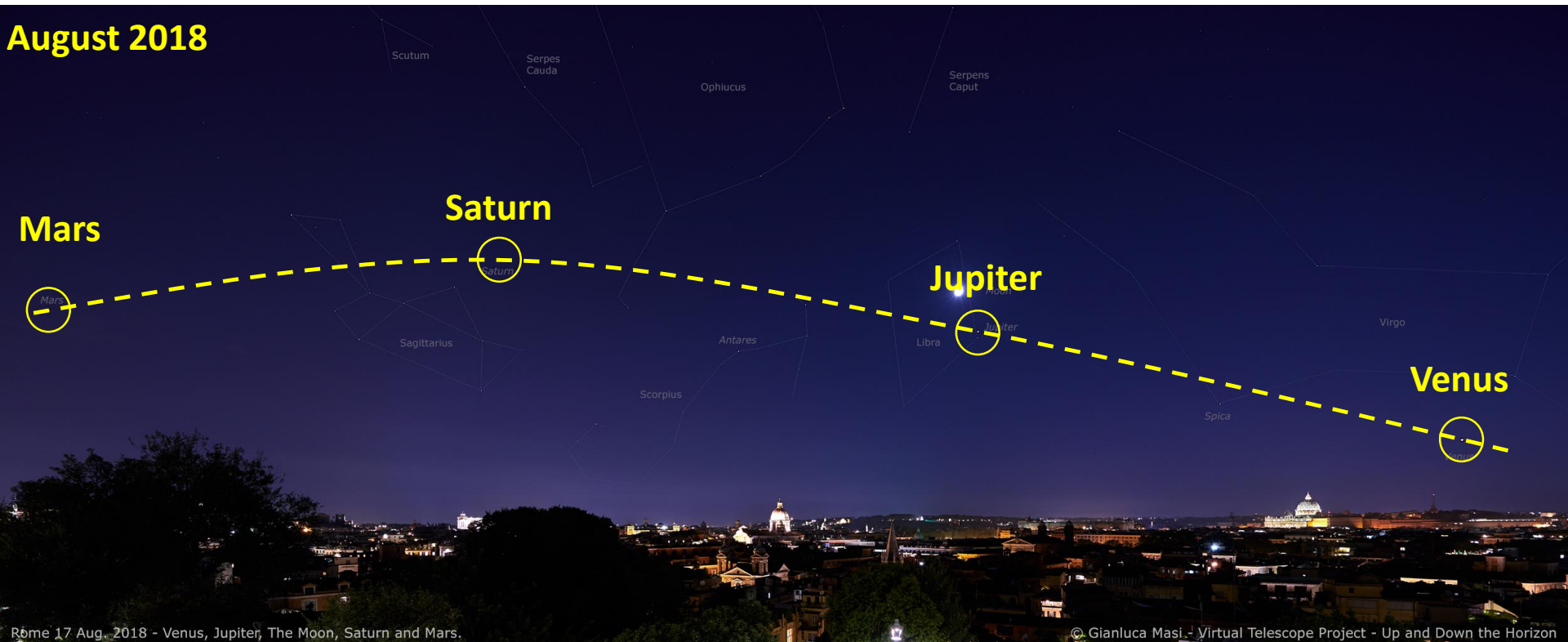
Galaxies



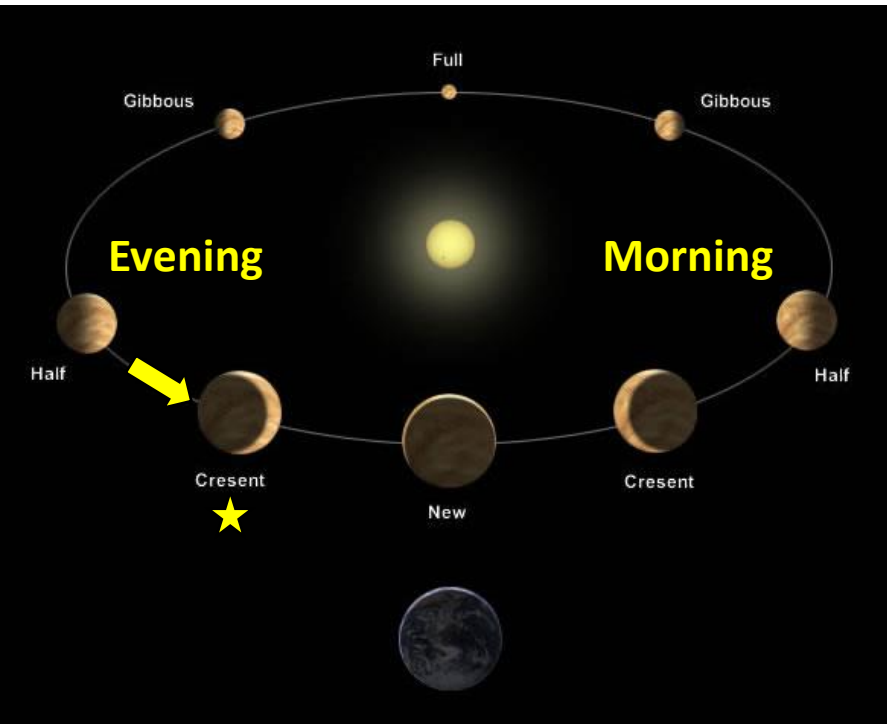
Milky Way



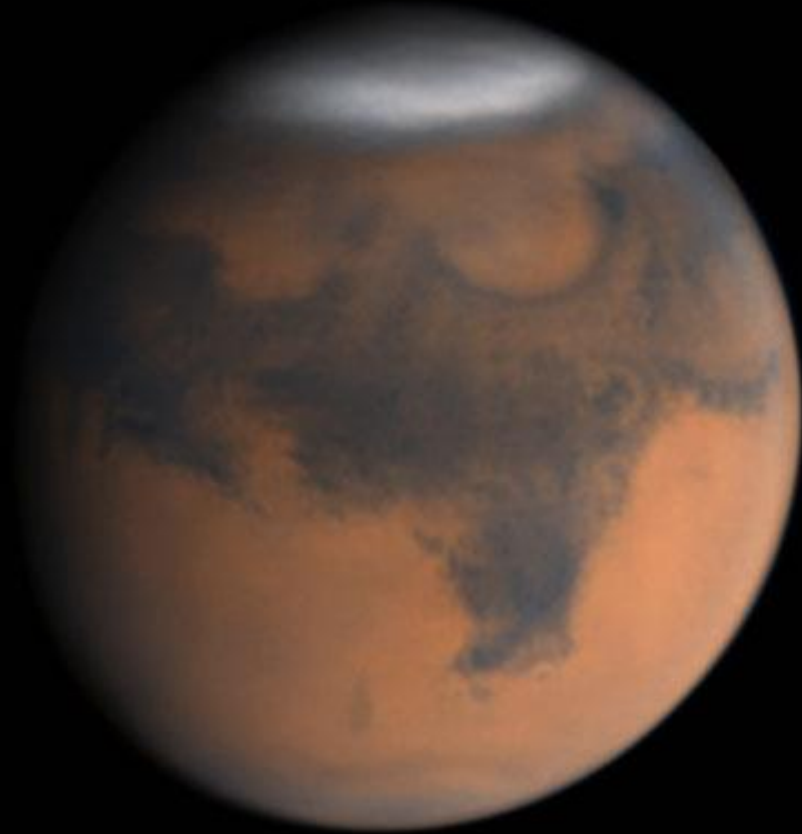
The Evening Planets



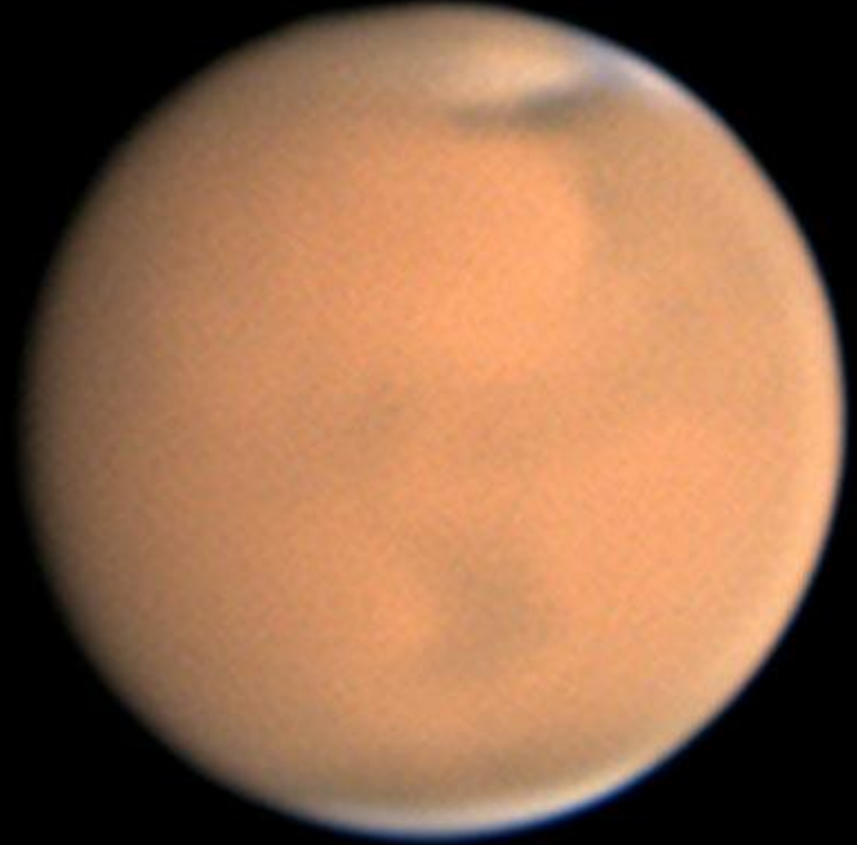
VENUS – Sept 30 – Last Days as Evening Star



MARS



June 8, 2018



July 7, 2018

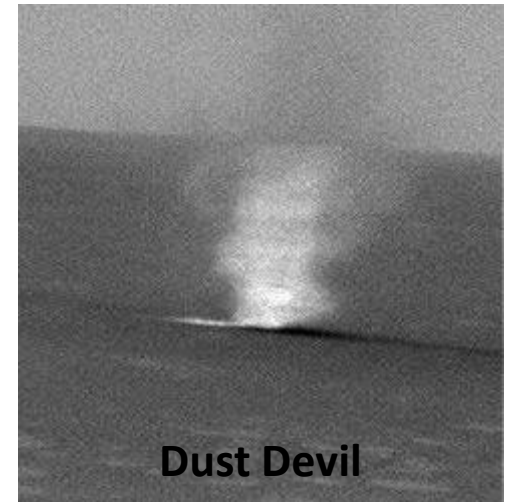
Impact of dust storms

MARS – Interesting Facts

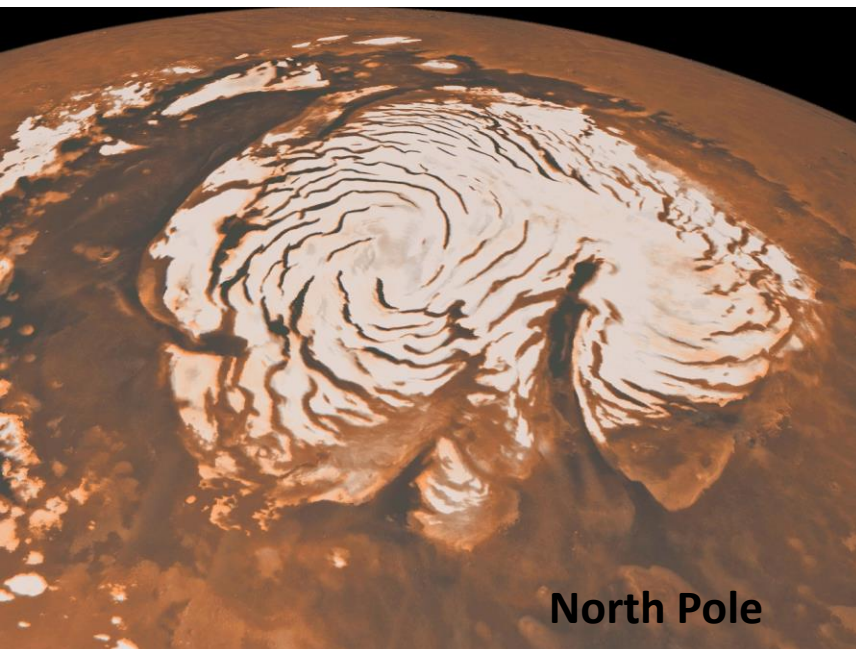
- Fourth planet from the sun – 50% farther than earth
 - Two tiny moons
- Half the amount of sunlight, sunsets are bluish (red dust)
- Year is 687 earth days, but day is 24 hours and 37 minutes
- Humans cannot breathe the air
 - 96% CO₂, 2% nitrogen, 2% argon, traces of oxygen, water
- Does not rain – low temperatures, very low air pressure
 - Equator: 70F day to 100F at night; Poles: -195F (dry ice)
 - Air pressure 0.6% of earth's. Like earth 50 miles up in space
 - There are twisters and dust storms, max wind speeds: 60 mph
- Gravity is 38% of earth's, jump 8 feet high on Mars
- Radiation – thin atmosphere, little magnetic field
 - Like getting 50 CAT scans a year, 30 times the annual radiation limit for a worker in a nuclear power plant
- Meteor/asteroid impact – 200 per year – thin atmosphere



Panorama



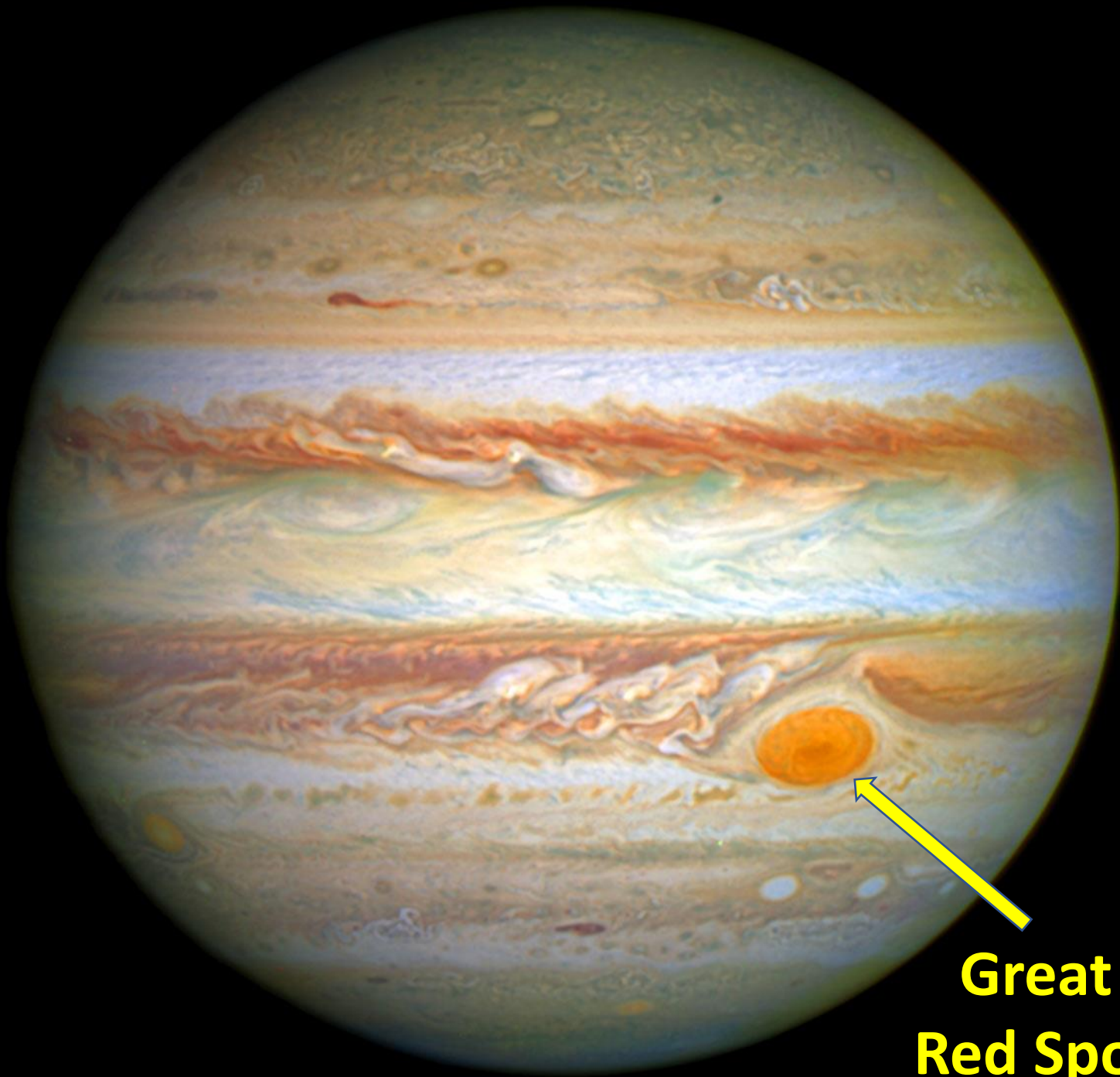
Dust Devil



North Pole



Sunset



J
U
P
I
T
E
R

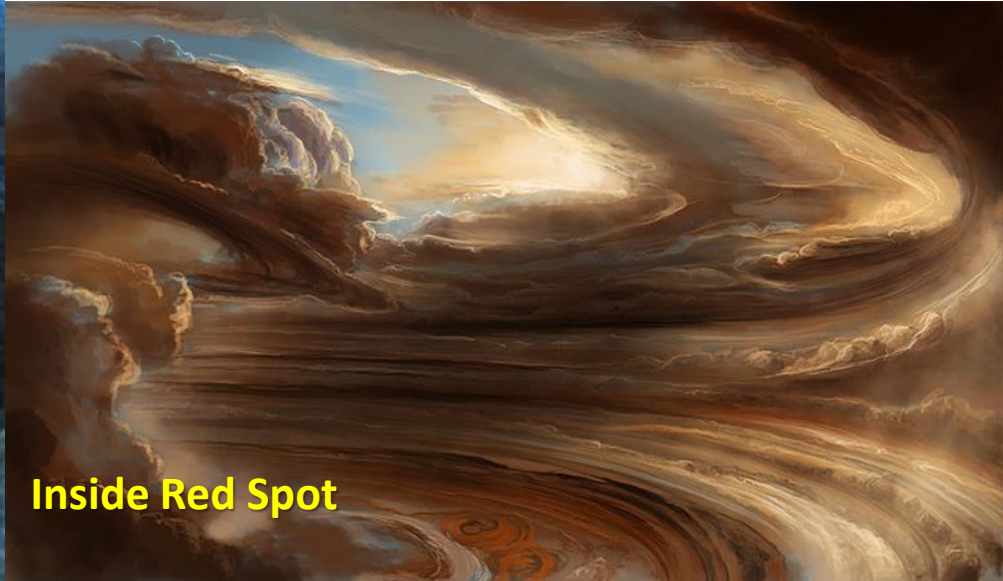
**Great
Red Spot**

Jupiter – Interesting Facts

- Fifth planet from the sun – 5.2 times farther than earth
 - 79 known moons – Ganymede bigger than Mercury, 4 faint rings
 - Diameter is 11 times larger than earth
- Year is 11.9 earth years, but day is 9 hours and 55 minutes
- Gas giant – you cannot stand on a surface, sink to the core
 - Great Red Spot storm, fits 3 earths, raging for at least 350 years
 - Gravity is 240% of earth's, 200 lb person would feel like 480 lb
- Sunlight less than 4% as strong as on earth
 - Temperatures range from -150F to -260F
- Humans cannot breathe the air – stinky like Clorox
 - Mostly hydrogen and helium with some ammonia and methane
- Magnetic field and radiation is 20,000 more powerful than earth's
 - Electromagnetic storms heard by amateur radio operators
 - Powerful northern/southern lights



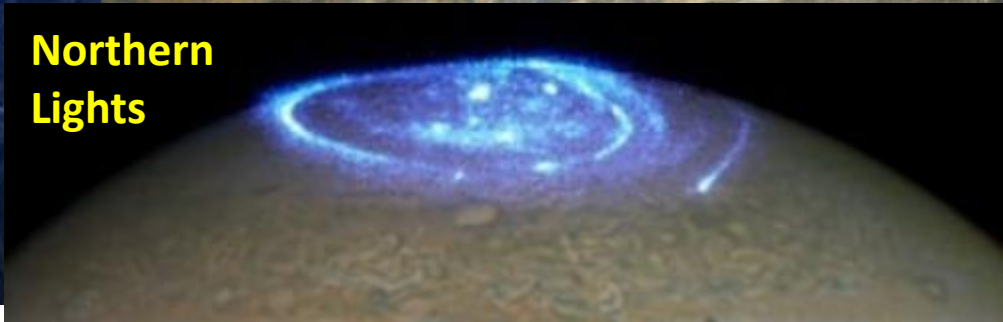
Red Spot



Inside Red Spot



Storms



**Northern
Lights**

SATURN



Taken by Hubble telescope

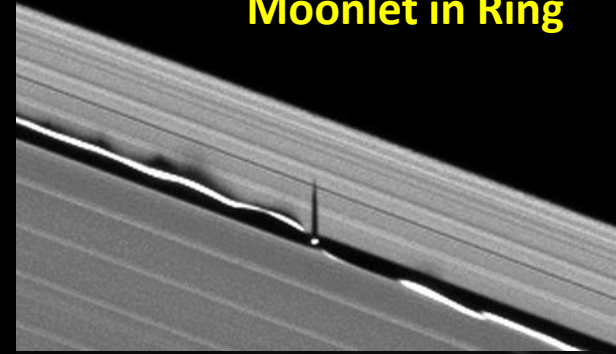
Saturn – Interesting Facts

- Sixth planet from the sun – 9.5 times farther than earth
 - Diameter is 9.5 times larger than earth
 - Rings!!! – over 30 rings in 7 groups
 - 150 known moons plus smaller moonlets.
 - Enceladus is all solid ice with water geysers
 - Titan has thick atmosphere, rains methane, has several methane lakes
- Year is 29.4 earth years, but day is 10 hours and 34 minutes
- Gas giant – you cannot stand on a surface, sink to the core
 - Gravity is only 7% more than earth's despite its size
 - Has huge storms like Jupiter, winds speeds to 1100 mph!
 - Huge hexagonal storm at north pole
- Sunlight only 1% as strong as on earth
 - Temperatures average -285F at top of clouds
- Humans cannot breathe the air – stinky like Jupiter
 - Hydrogen (96%), helium (3%) with some ammonia and methane
- Magnetic field and radiation is half that of Jupiter
 - Powerful northern/southern lights

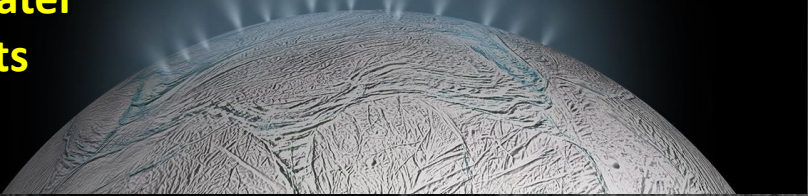
**Northern
Lights**



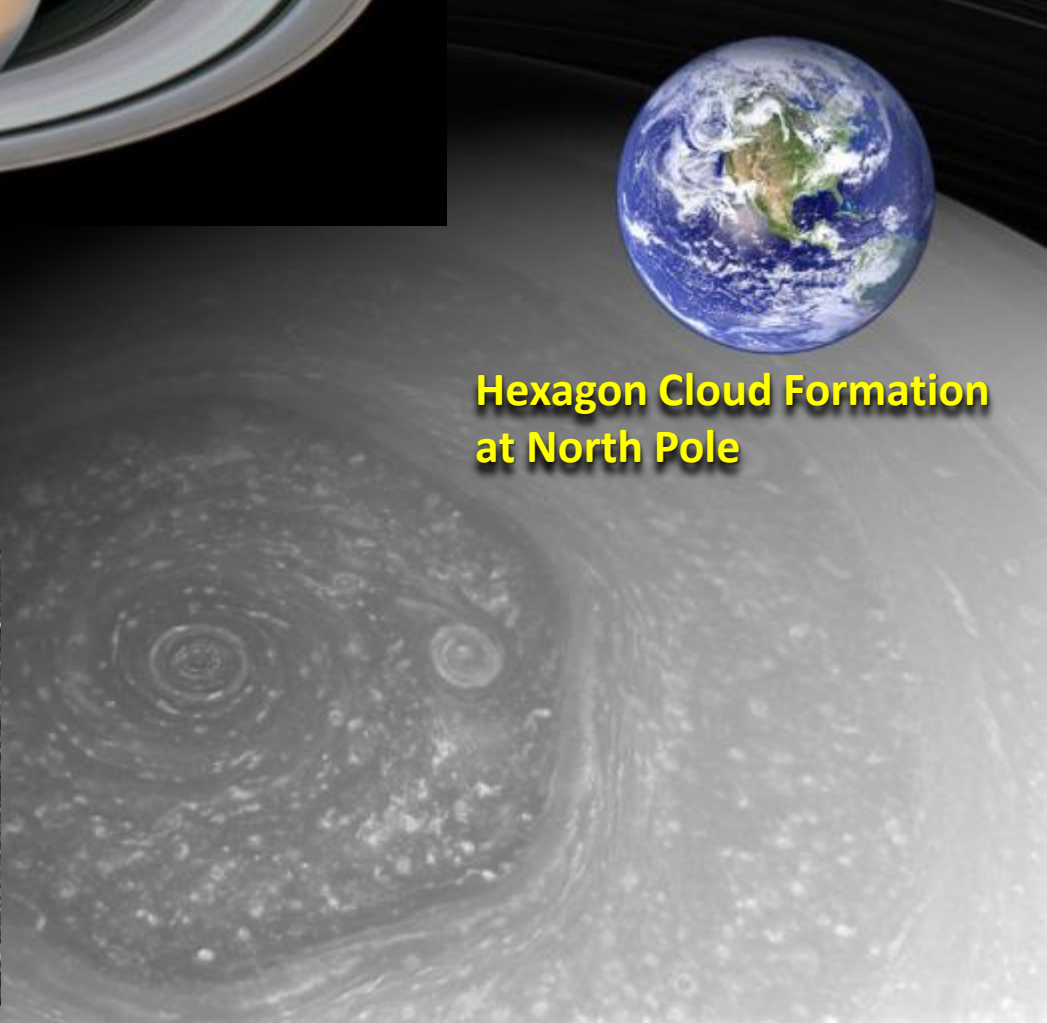
Moonlet in Ring



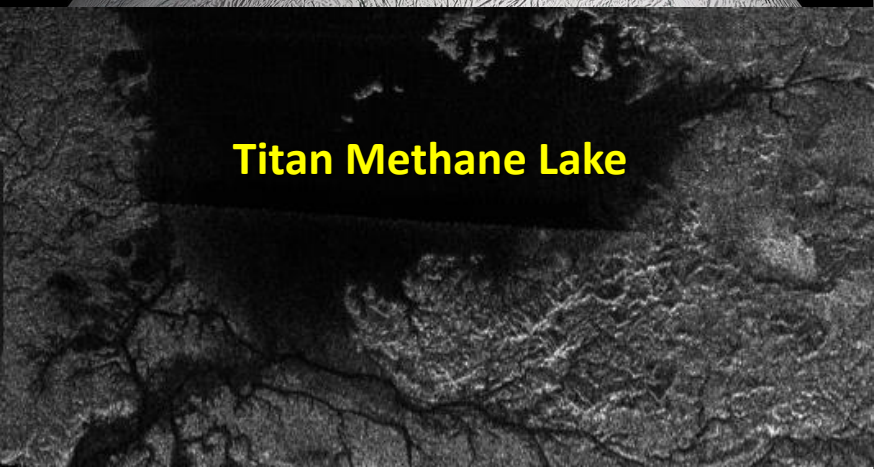
**Enceladus
Water
Jets**



**Hexagon Cloud Formation
at North Pole**

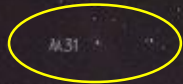


Titan Methane Lake



Stars – Interesting Facts

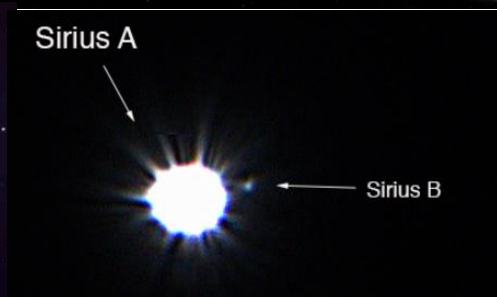
- You can see about 5000 stars with the naked eye
 - All of them are in the Milky Way
 - Half of these can be seen from where you stand
- Milky Way Galaxy has 100 to 400 BILLION stars
- Stars are singular, binary, tertiary or multiple
 - Majority of bright stars are binary or more
 - Mizar is really four stars, and Alcor is really two stars
 - Sirius is a double; Polaris (North Star) is a triple
- Only other galaxy visible here is Andromeda (M31)
 - Located 2,538,000 light years away



Andromeda Galaxy



MIRACH



Cassiopeia



Triple Star Simulation (North Star)
By Space and Intelligence



Triple-Star System HD 131399.mp4