

Presentation for the  
Columbia Elementary School  
March 5, 2018



Mitzi Adams, Heliophysicist  
NASA/MSFC



# Who Am I ?

## Mitzi Lynn Adams

- From Atlanta, Georgia
- In high school, was an observatory/planetarium assistant at Fernbank Science Center
- Bachelor of Science in physics with a mathematics minor from Georgia State University  
Master of Science in physics from University of Alabama in Huntsville, in co-op program with NASA/MSFC
- Have been a NASA Solar Scientist since 1988
- Was planetarium director of the Von Braun Astronomical Society's planetarium from 1988-2006
- Have completed five marathons and observed five total solar eclipses
- Like to visit Peru
- Like languages, Spanish, Latin, and German



**What Objects are in the Sky?**

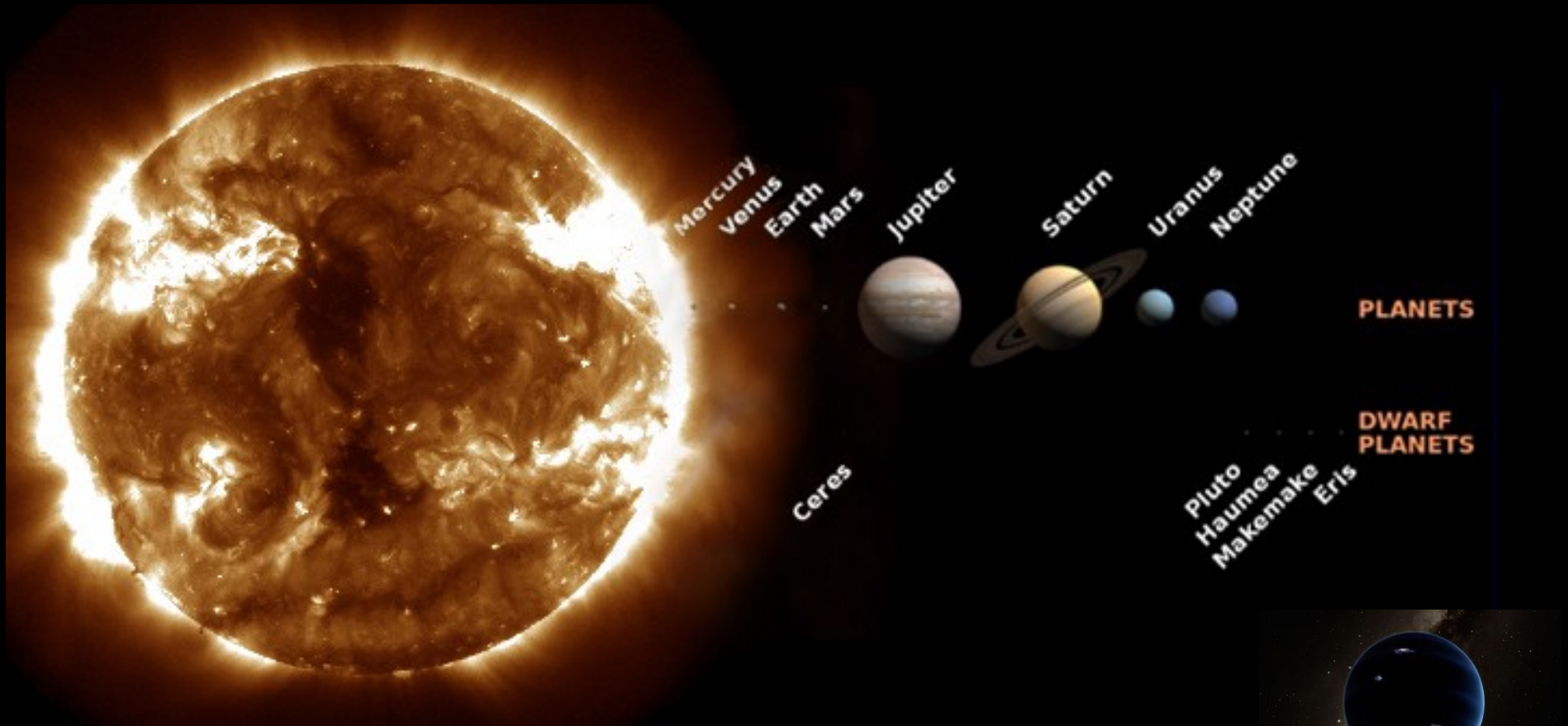
# There are Stars in the Sky!!



Globular Cluster NGC 1846, Nov. 22, 2011  
From: <http://heritage.stsci.edu/gallery/galindex.html>

Hubble  
Heritage

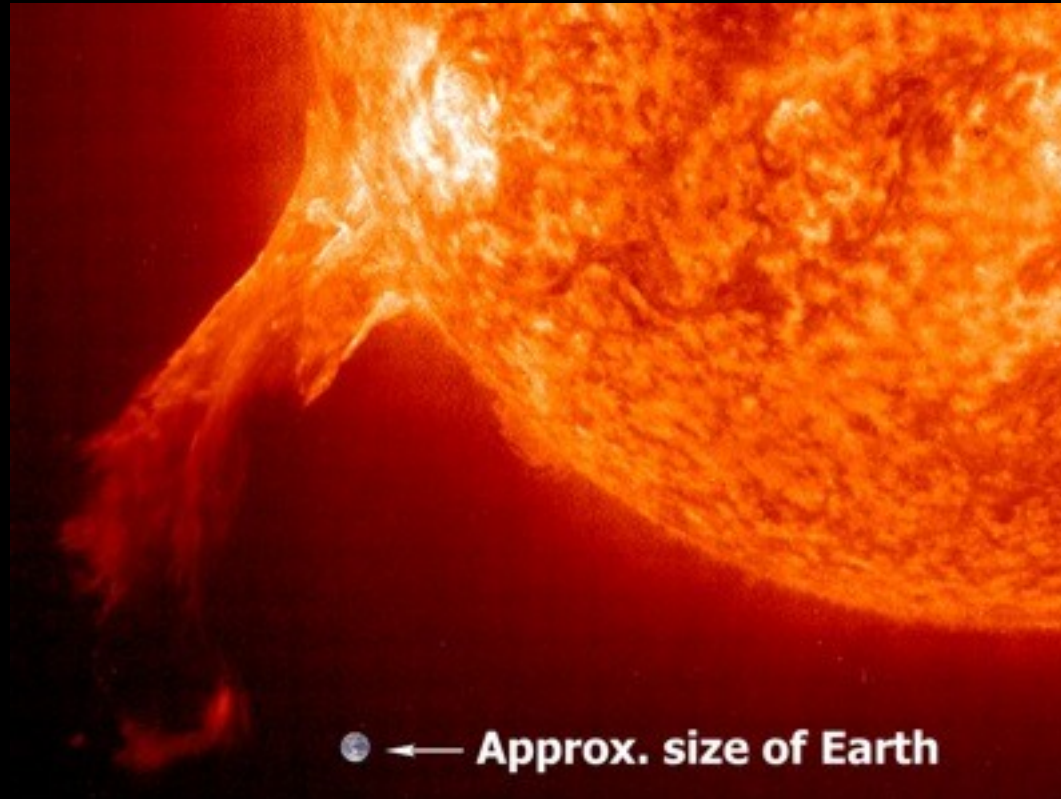
# Our Dynamic Sun: A Star at the Center of the Solar System with a System of Planets



Planet  
Nine?

Images From: <https://sdo.gsfc.nasa.gov/data/> and  
<https://solarsystem.nasa.gov/planets/hypothetical-planet-x/in-depth/>  
and Credit: Caltech/R. Hurt (IPAC)

There is a star at the center of our solar system!



But what is a star?

# What is a Star?

A Star is an object in space that *produces* its light.

Planets and Moons *reflect* light



10 mas

Betelgeuse: A red giant star, about 600 ly away, 3500 K, 1,180  $R_{\odot}$ , 7.7  $M_{\odot}$ .



Rigel: A blue-white star, about 770 ly away, 11,000 K, 80  $R_{\odot}$ , 20  $M_{\odot}$ .

# Closest Star System Alpha Centauri -- Three Stars!

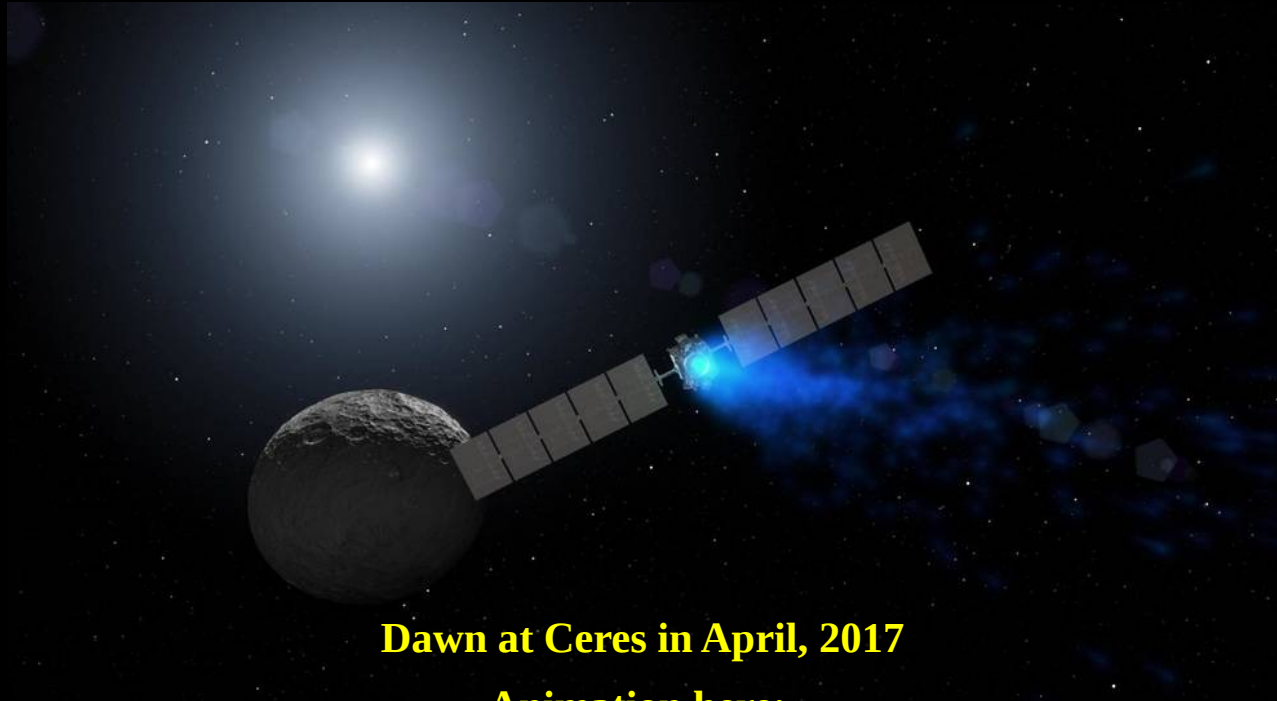


$\alpha$ -Cen-A and  $\alpha$ -Cen-B are about 4.4 light years away

$\alpha$ -Cen-C or Proxima-Centauri is 4.2 light years away

If Sun were grapefruit sized, Alpha Centauri system  
would be 4,000 kilometers or 2,500 miles away

# Comets and Asteroids

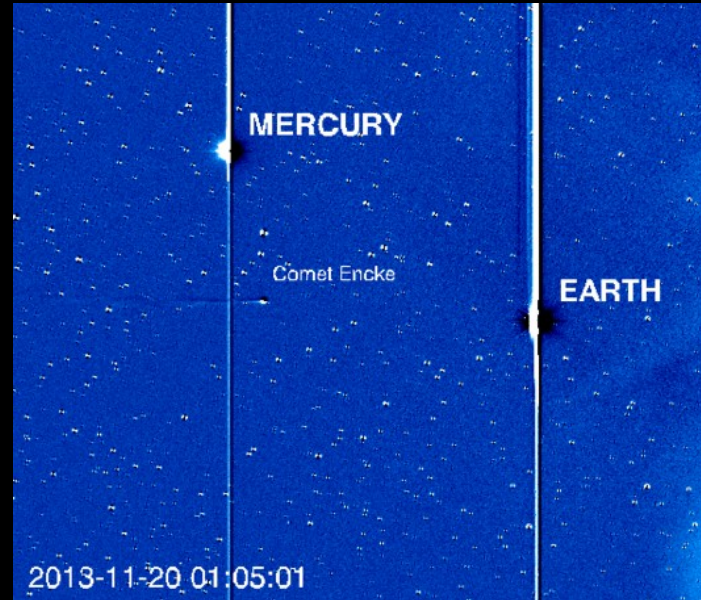


**Dawn at Ceres in April, 2017**

**Animation here:**

**<https://www.nasa.gov/feature/jpl/movie-shows-ceres-at-opposition-from-sun>**

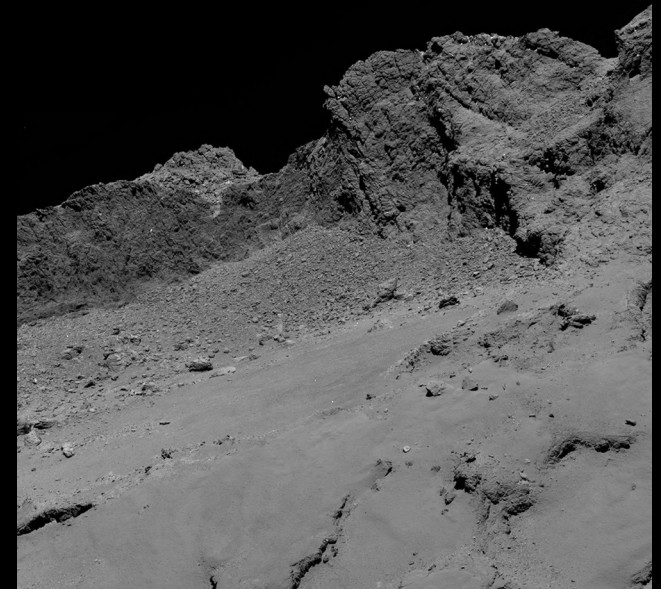
# Comets



Images from STEREO-A,  
November 22, 2013



Source: NASA/MSFC/Aaron Kingery  
Published: November 19, 2013



Source: ESA/Rosetta/MPS for OSIRIS Team  
MPS/UPD/LAM/IAA/SSO/INTA/UPM/DASP/IDA  
Published: September 30, 2016

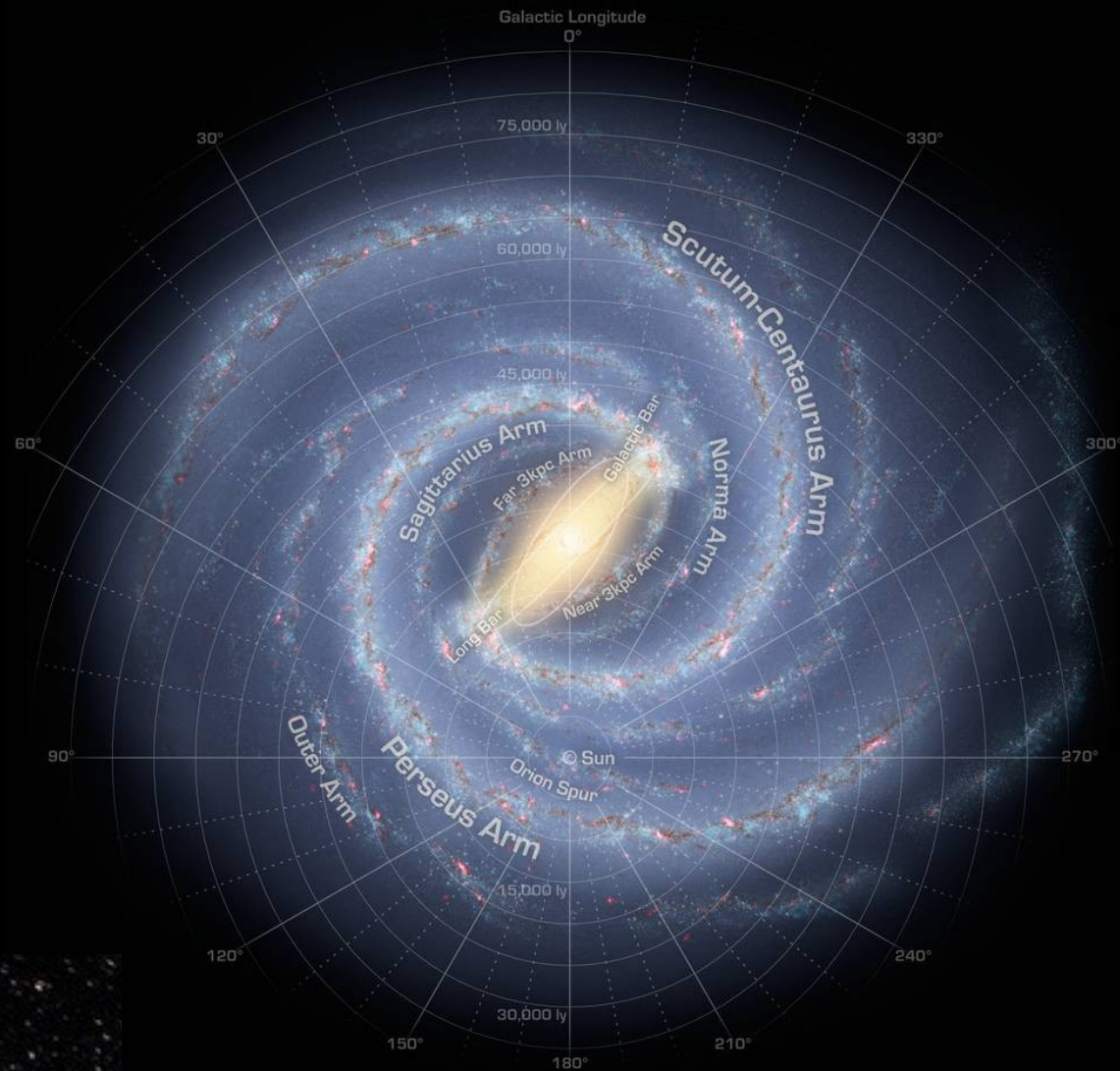
# Galaxies

100 billion stars in the Milky Way galaxy

More than 30 galaxies in the local group (d= ~10 million light years)

The Sun is 25,000 light years from the middle of the galaxy

The Sun goes around the center (a galactic “year”) in about 250 million years.



Artist's Concept from best data (2015)

(<https://www.nasa.gov/jpl/charting-the-milky-way-from-the-inside-out>)

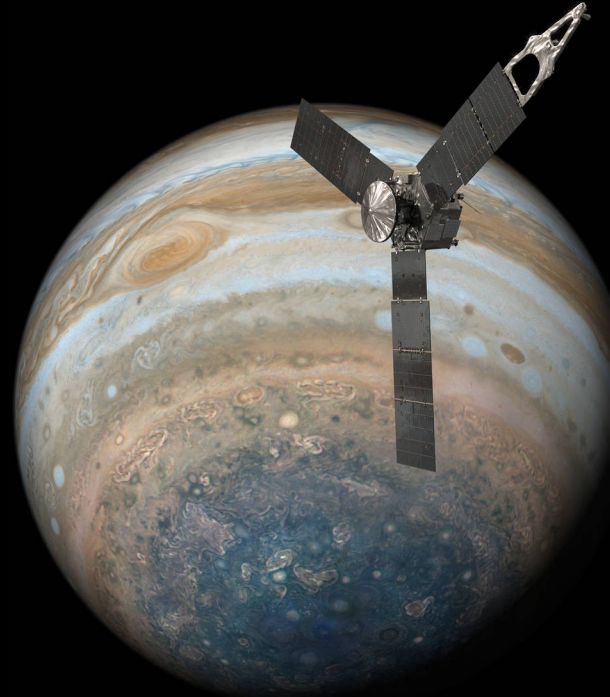


Image above looks into the center of Milky Way from the COBE Project, see: <https://imagine.gsfc.nasa.gov/science/objects/milkyway1.html>

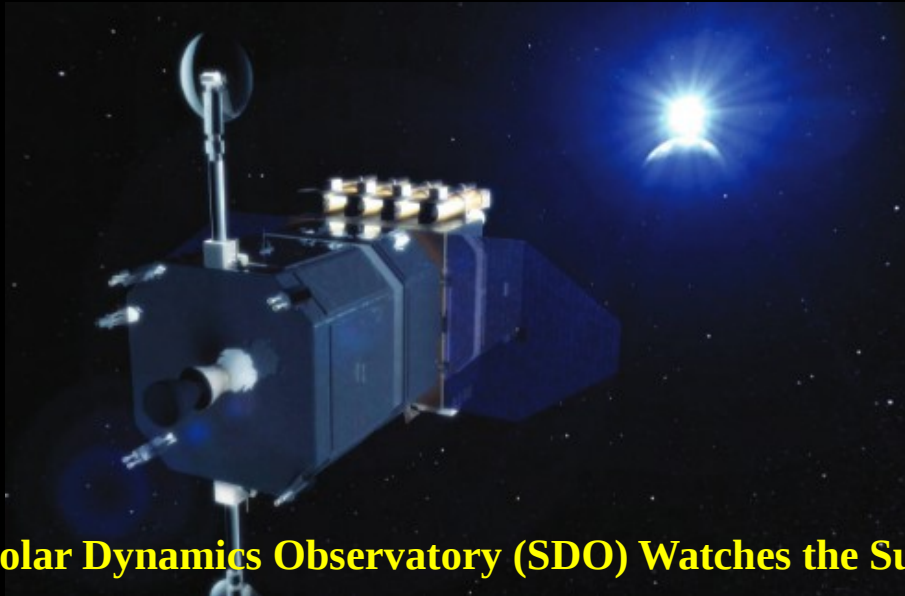
# NASA has Satellites in Space



**Mars Global Surveyor**



**Juno, at Jupiter**



**Solar Dynamics Observatory (SDO) Watches the Sun**



**Lunar Reconnaissance Orbiter**

All images from NASA's Mission Pages:  
<https://www.nasa.gov/missions>

# **What is in Space?**

**Stars**

**Planets**

**Comets**

**Asteroids**

**Galaxies**

**Satellites Made by Humans**