

# **Asteroids**

Jim Paradise  
Lockheed Martin

## Asteroid Belt (gold colored specs)

- Distance From Sun:  
260 Million Miles to center
- over 166,000 asteroids
- Largest:  
Ceres 1/3 of all mass  
600 miles in diameter

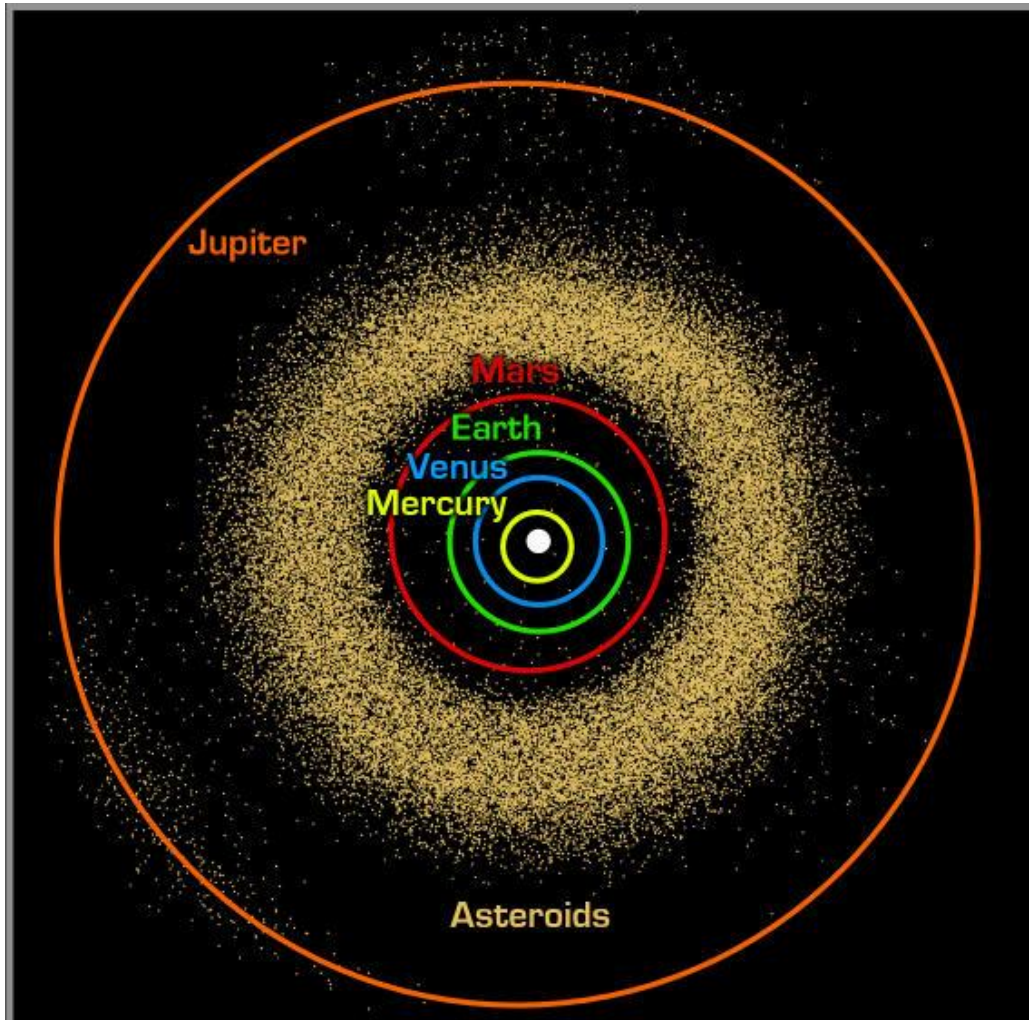


Image credit: NASA/JPL-Caltech

**Asteroid: Gaspra**

1<sup>st</sup> ever close-up  
photo of an asteroid



Image credit: NASA/JPL-Caltech

Ida

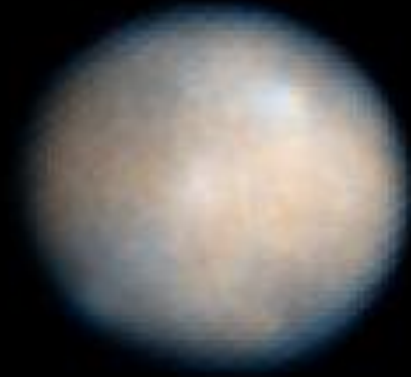
## Asteroid Photos

Ida (35 miles long) and Dactyl (1 mile diameter)



Image credit: NASA/JPL-Caltech

Ceres Vesta



**Ceres • January 24, 2004**  
*HST ACS/HRC*



**Vesta • May 14, 2007**  
*HST WFPC2*

# DAWN



Mars flyby



2011 Dawn  
orbits Vesta

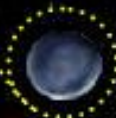


2007 Dawn  
mission launch



Journey to the beginning of the Solar System with the Dawn mission. Travel with the Dawn spacecraft as it explores Vesta and Ceres: ***Current Mission Status***

2015 Dawn  
orbits Ceres



## Asteroid: Vesta Close-up Images

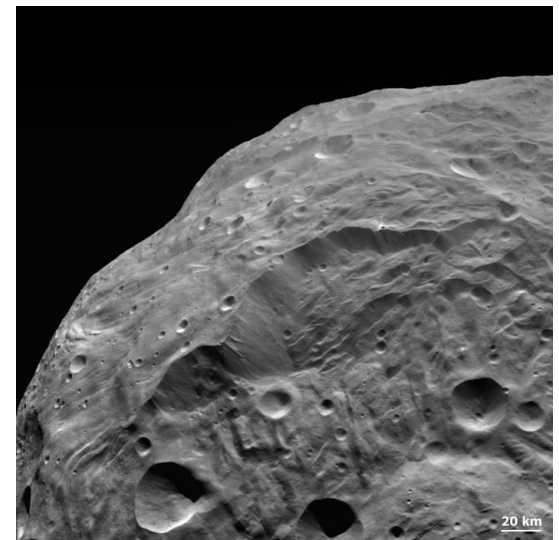
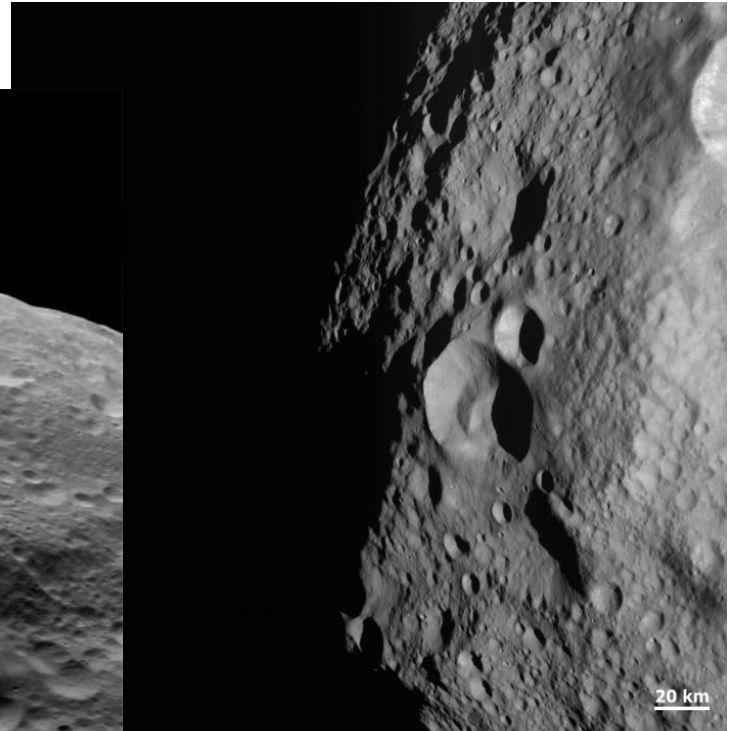
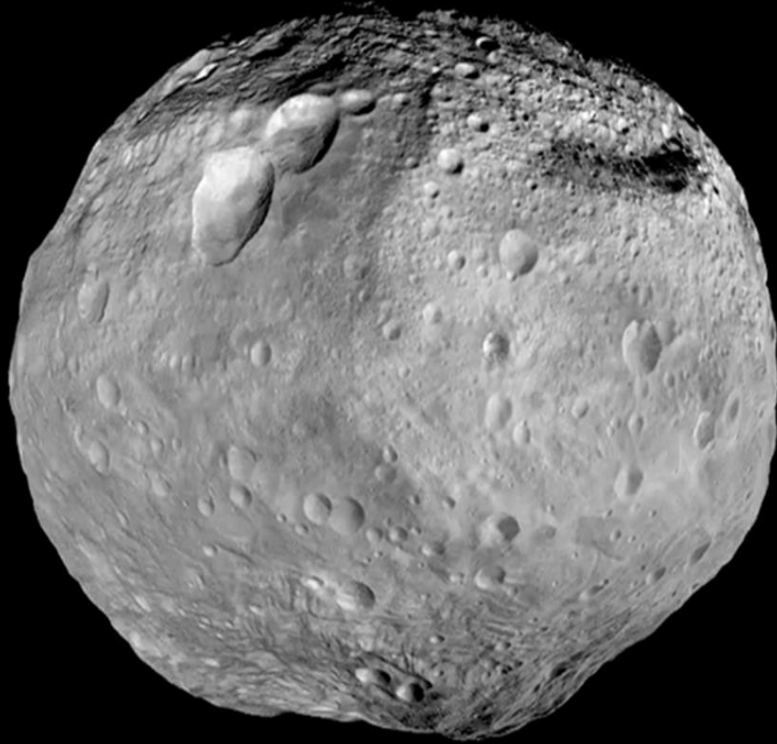


Image credit: NASA/JPL-Caltech



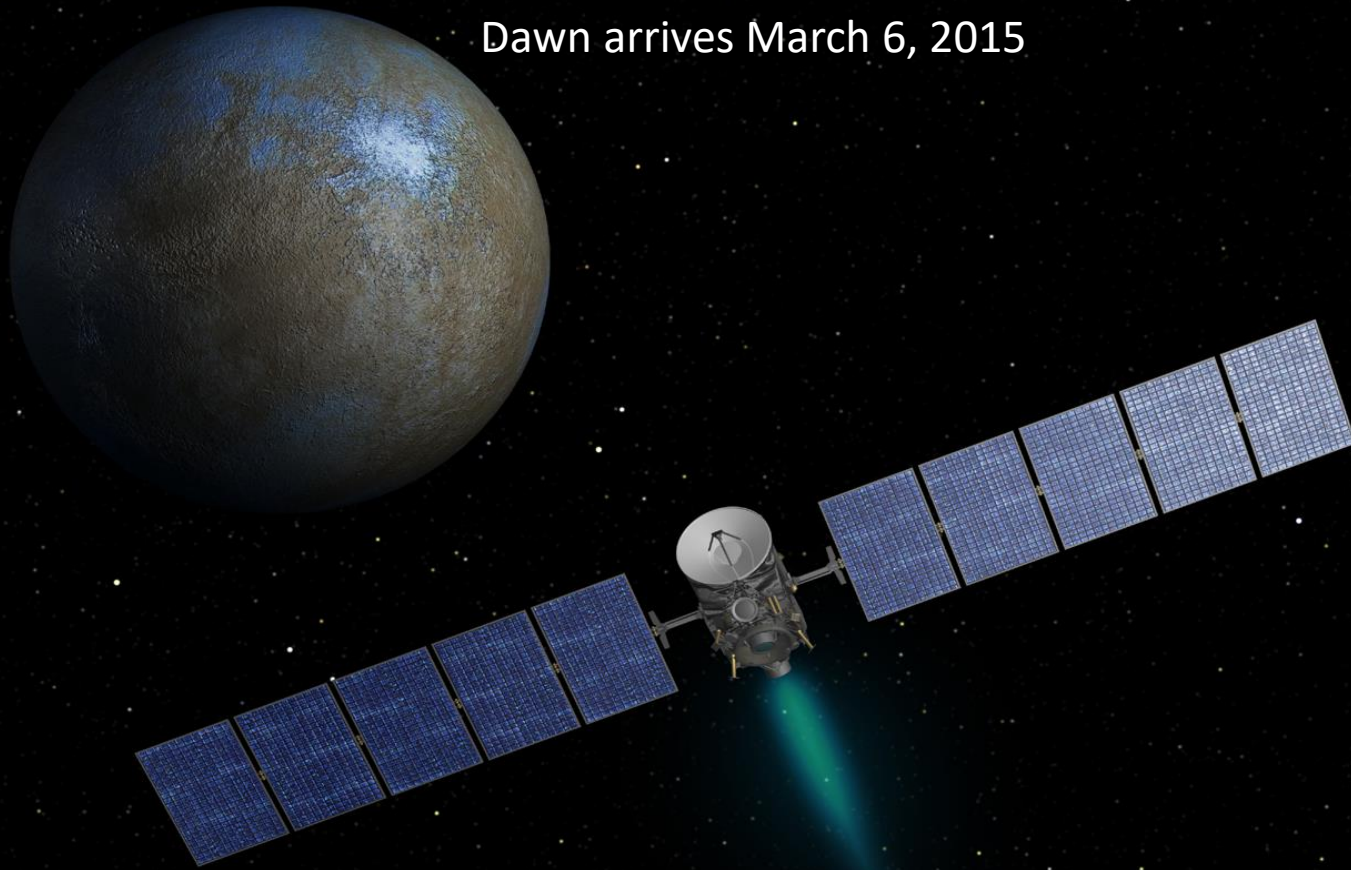
Looking Behind: Asteroid: Vesta – 326 miles in diameter  
This photo taken Sept 5, 2012 as Dawn left Vesta's orbit



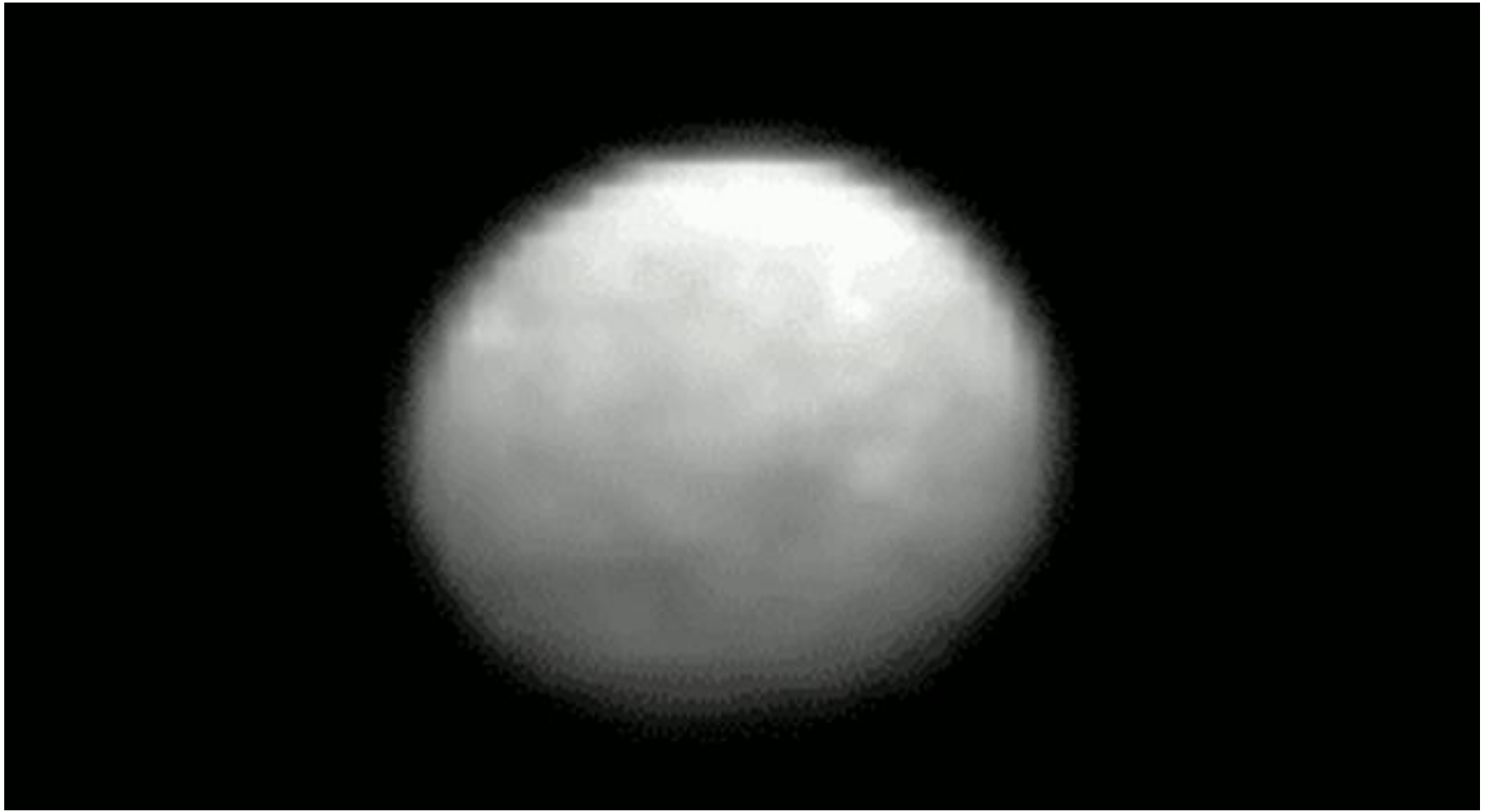


Asteroid: Ceres – 590 miles in diameter

Dawn arrives March 6, 2015



Ceres as of last week



# **OSIRIS-Rex ( mission to asteroid 101955 Bennu )**

**Origins Spectral Interpretation Resource Identification Security Regolith Explorer**

## **First US Asteroid Sample and Return Mission**

**Launch: 2016**

**Asteroid Orbit/Sample: 2019**

**Earth Return: 2023**

**101955 Bennu diameter: 1,900 ft**

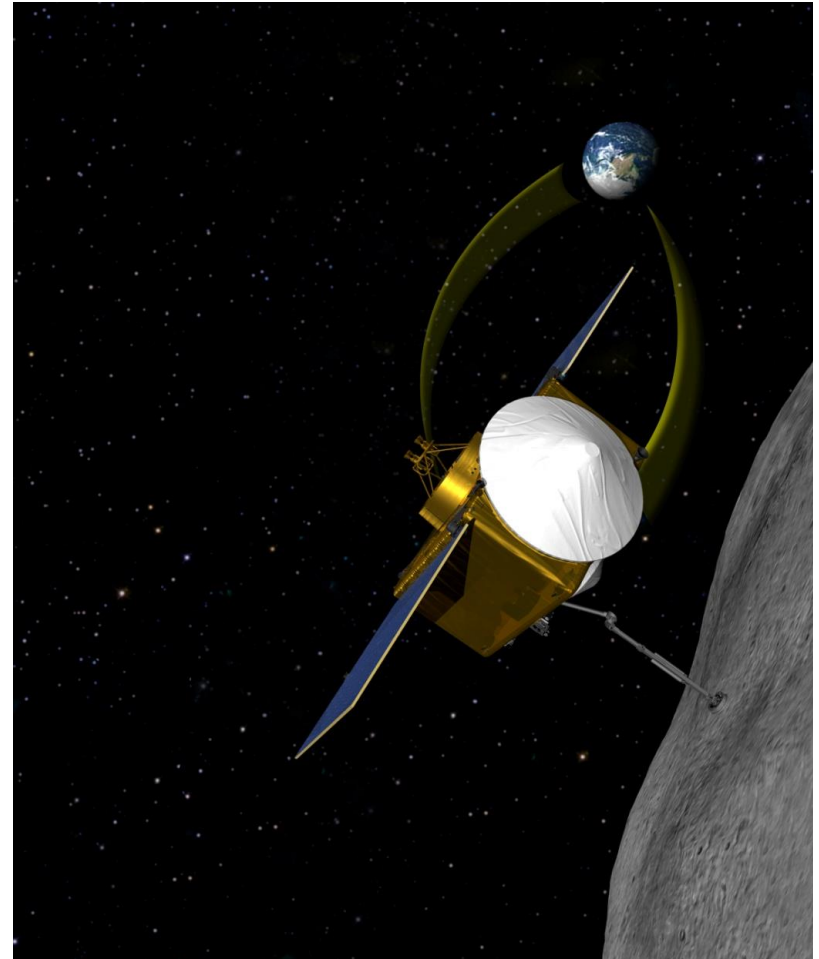


Image credit: NASA/JPL-Caltech

Jupiter