



Lessons Learned From Trying to Get *Juno* to Observe the Zodiacal Dust

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and great help from Eric De Jong
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for The View from 5 AU: Measuring the Diffuse Sky Brightness from the Outer
Solar System

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What is Juno?

- Juno will launch in 2011 and arrive in 2016 to study Jupiter.
- The Juno spacecraft will investigate Jupiter's origins, its interior structure, its deep atmosphere and its magnetosphere from an innovative, highly elliptical orbit with a suite of seven science instruments.

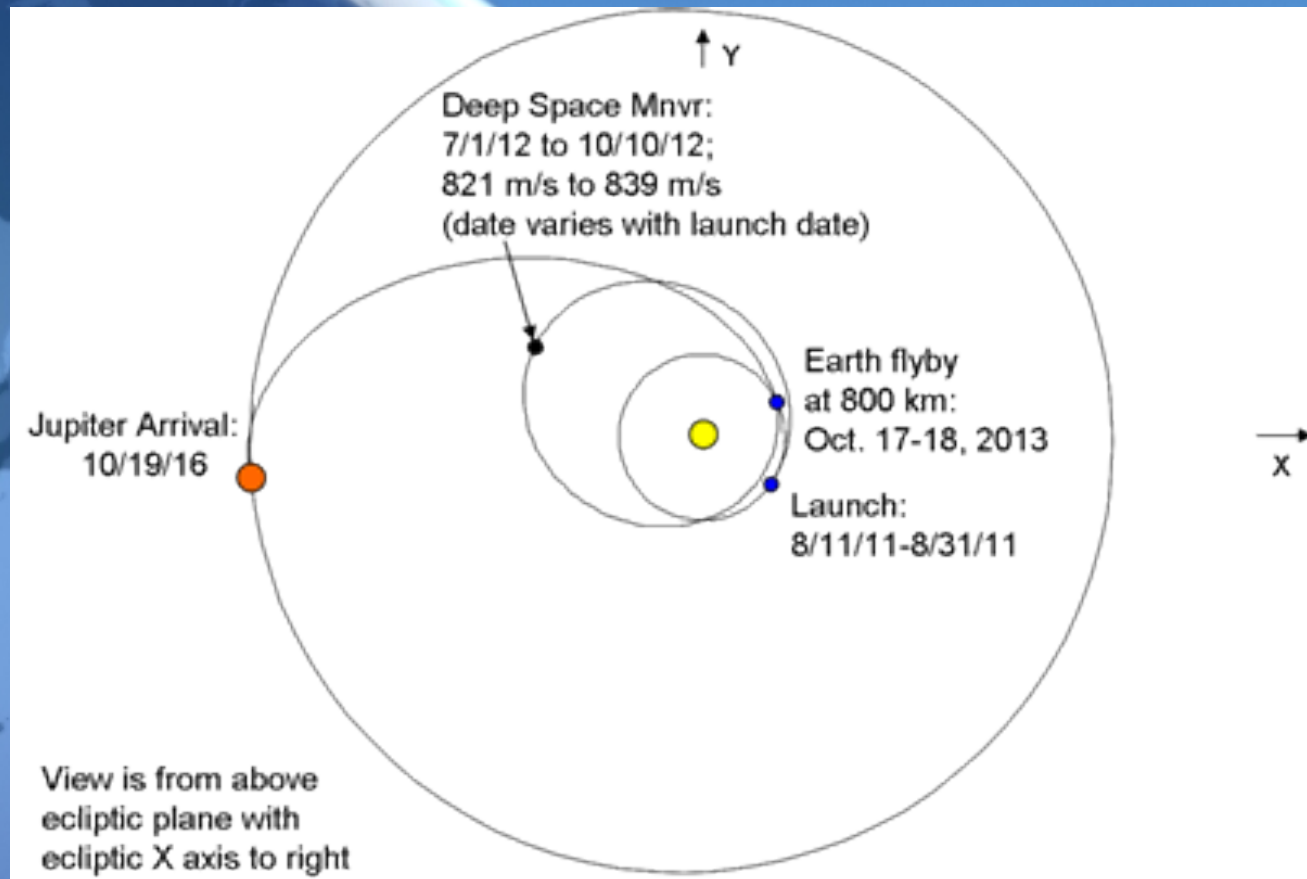
NASA's New Frontiers Mission to Jupiter

JUNO

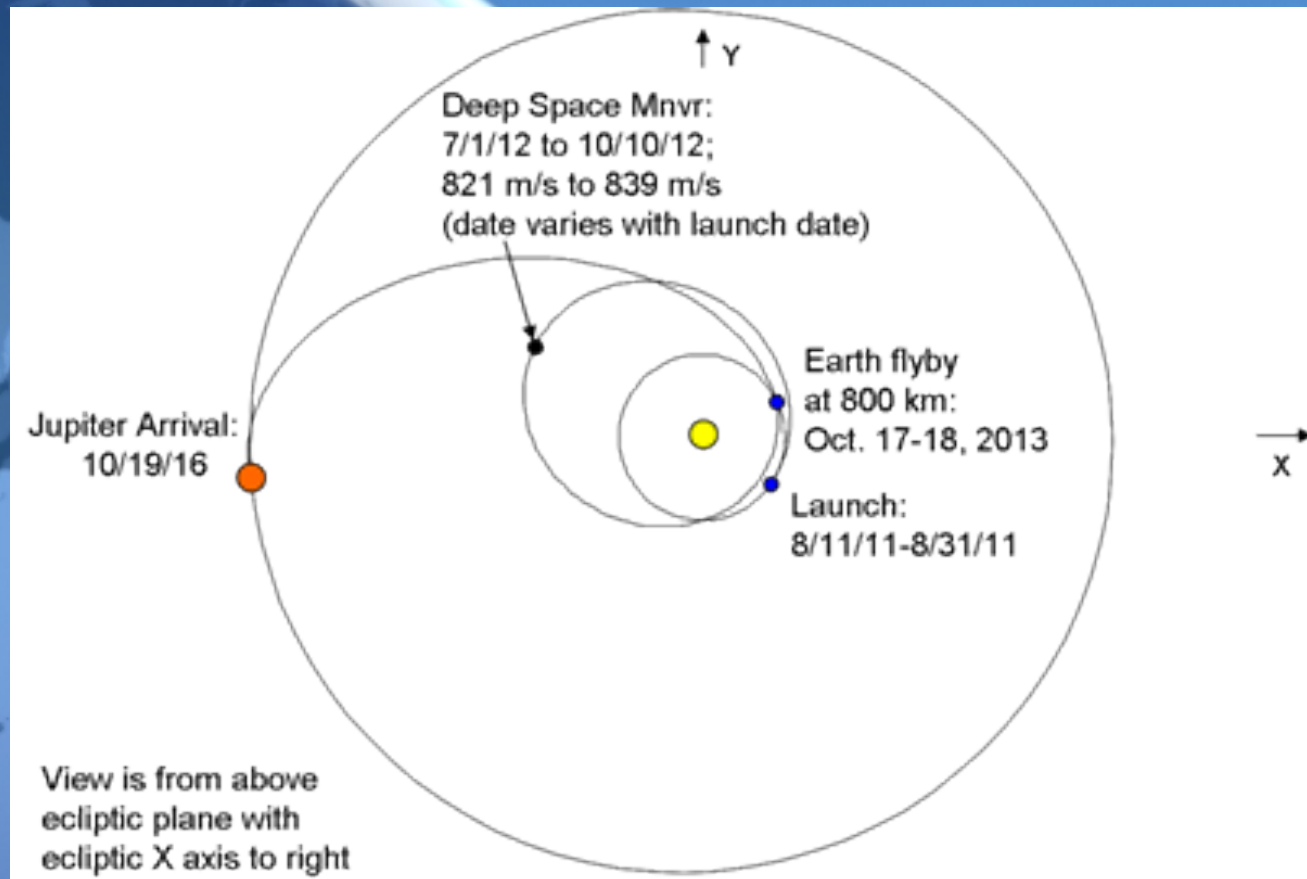
The history of
our solar system
is found in the
formation of the
planet Jupiter



The 5 Year Cruise Phase May Be Ideal for Zodi Imaging



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- But Juno was not approved with a camera

Lesson #1

- Just because a mission does not have a camera when it's approved, doesn't mean that it will never have a camera!

Jovian Infrared Auroral Mapper (JIRAM)

- After the mission was approved the Italian Space Agency offered to fund a camera for the mission.
- The primary goal of JIRAM is to probe the upper layers of Jupiter's atmosphere down to pressures of 5-7 bars at infrared wavelengths in the 2- 5 μm interval using an imager and a spectrometer.
- 2- 5 μm is a pretty good spectral region to map the Zodi

JunoCam

- Another camera was added with the primary goal of providing the first 3-color images of Jupiter as the Juno spacecraft approaches the poles for context, public engagement and E/PO.

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- A blue-tinted image of Earth from space, showing the Americas. The image has a gradient background transitioning from dark blue at the top to a lighter blue at the bottom. Overlaid on the right side of the image is a list of names in a serif font with a drop shadow.
- Juno Zodiacal dust animation by Mike Stetson, Jason Craig, Varoujan Gorjian, and Eric De Jong

Lesson #2

- The Science Team may think your idea for cruise phase science is great, but liking an idea is very different from seeing it implemented. You need to be on the science team or have someone on the science team be the champion for your cause.

Lesson #3

- The Cruise Phase of a science mission is not when you do science!

Lesson #4

- The Science Team does not dictate what the mission will do! Mission Management decides and the magic word there is “Requirements.”

Lesson #5

- The Deep Space Network is a very precious and oversubscribed resource. Be very careful how many bits you want to send back.

How this Conference Can Help

- JIRAM is not an ideal camera for Zodiacal Light or CIRB work. But it can serve as a test-bed for what may come next.
- If its use is approved to image the Zodi, then it will provide the very first images of the main body of the Zodiacal Dust from the outside. This can set the stage for the requirements of the next camera to fly on an outer planets mission.