

Two Observatories (and a robot)

John Parejko
Drexel University

14 May 2008



The Sloan Digital Sky Survey (SDSS)

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What I should be working on right now.



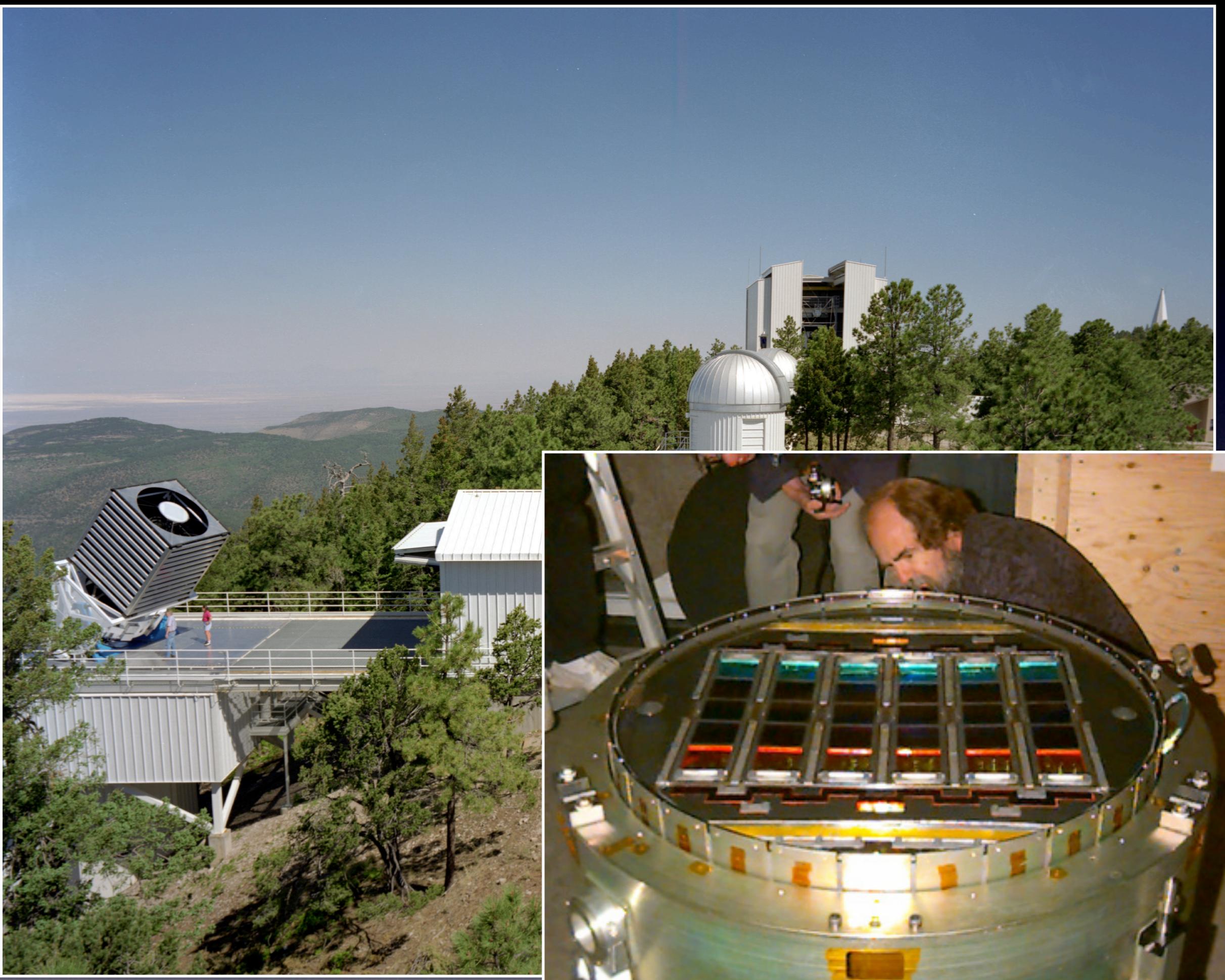
Apache Point observatory in Sunspot New Mexico.

The Camera: 30 2k x 2k CCDs cooled to -80C in 5 colors, 3° FOV

First Light image stripe with builders.

DR6 imaging coverage (~20% of the whole sky)

Fitting the plug plates (bottom end attaches to telescope)



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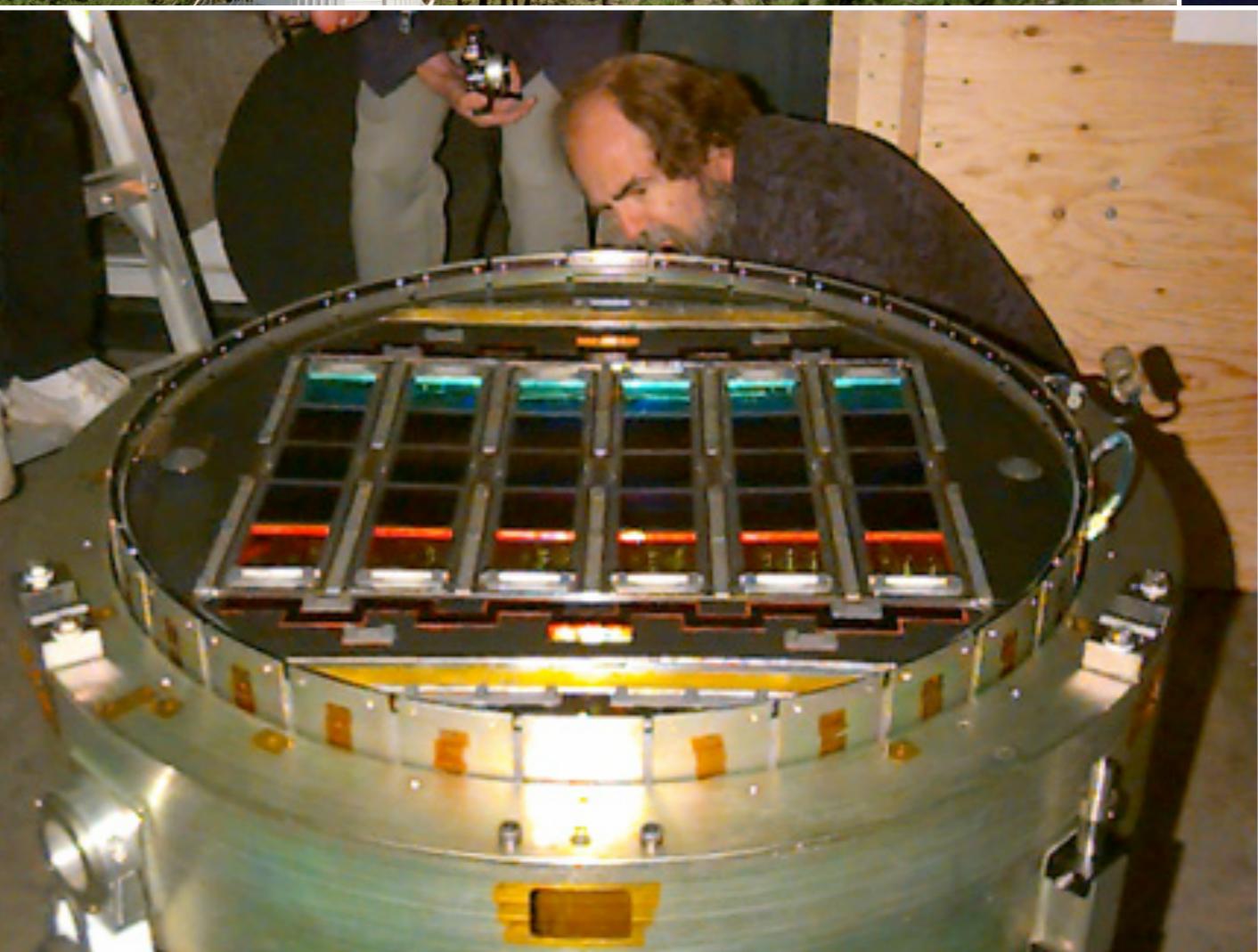
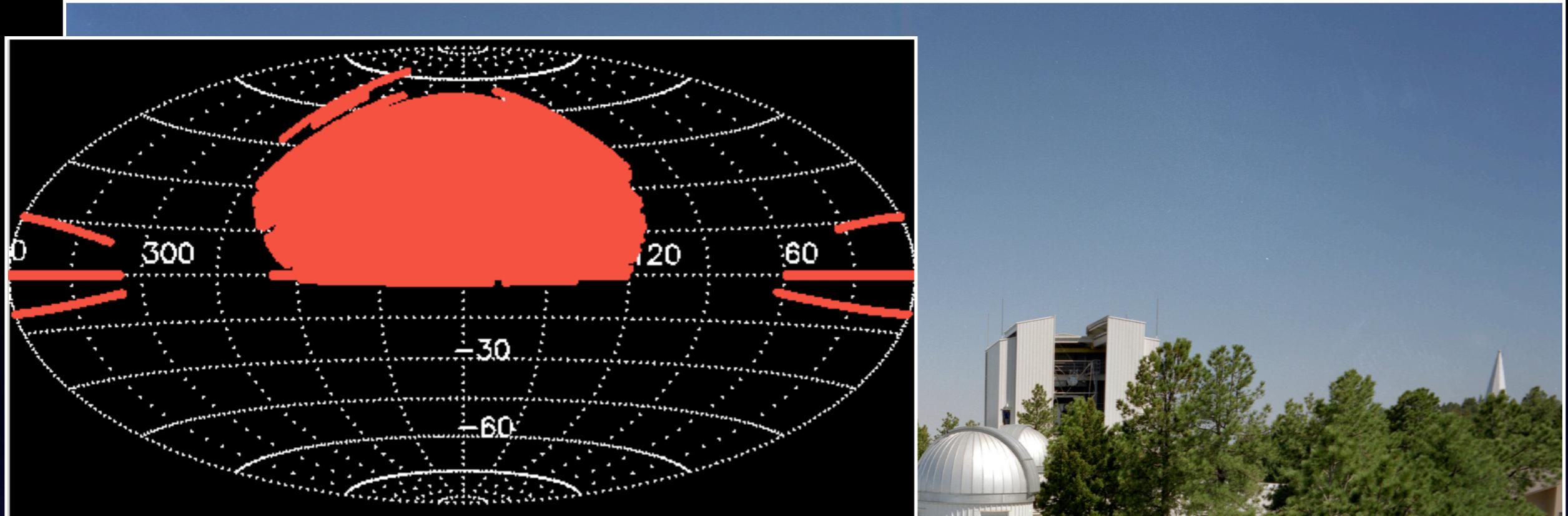
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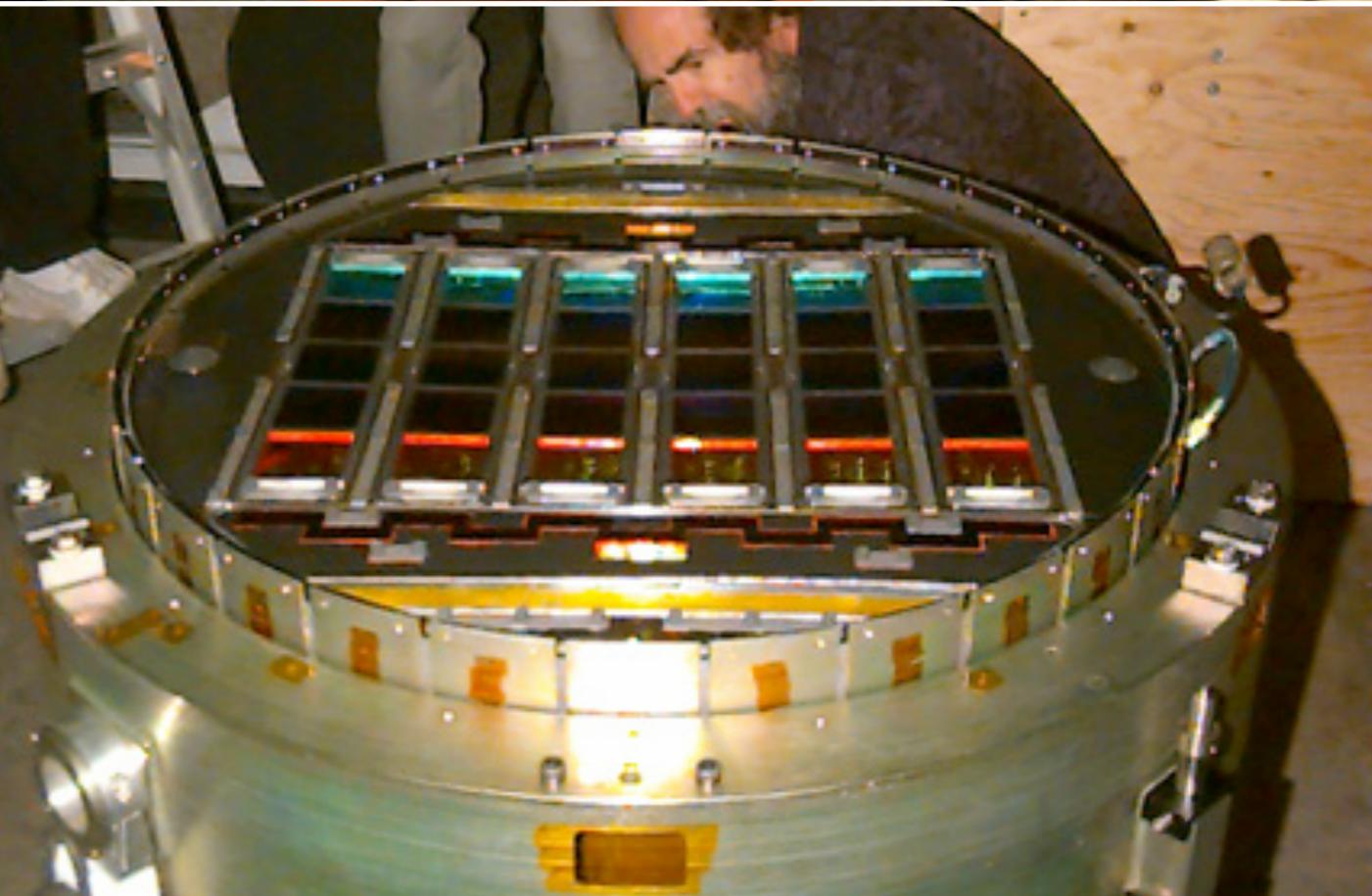
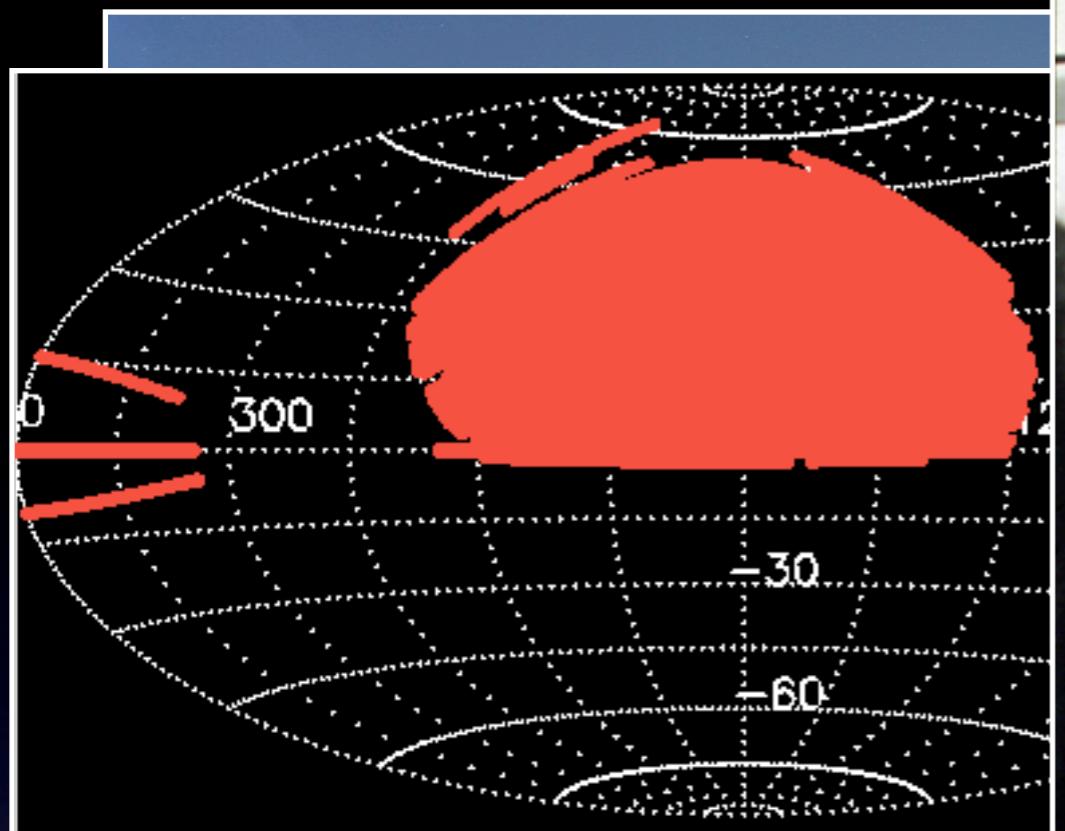
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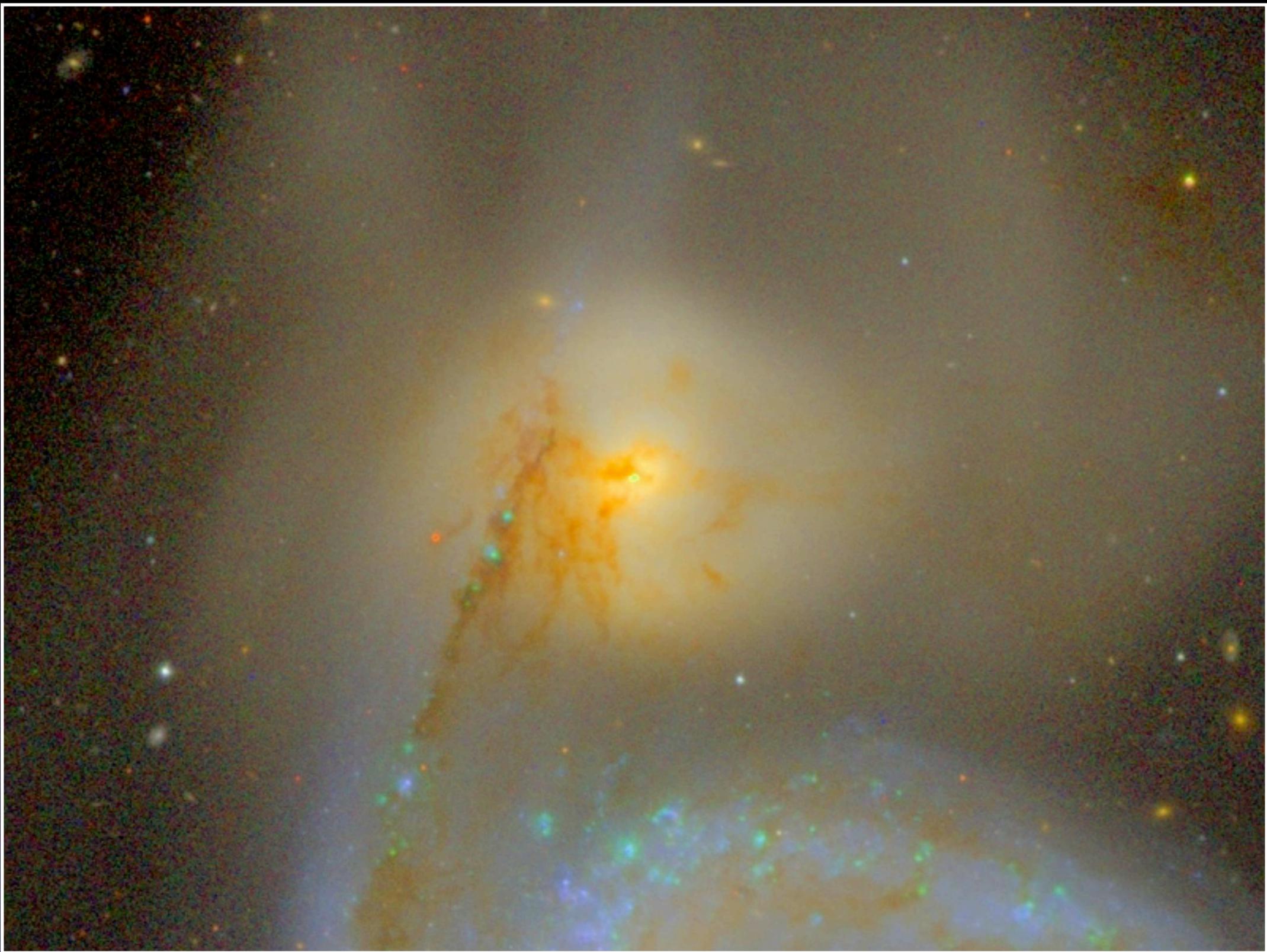
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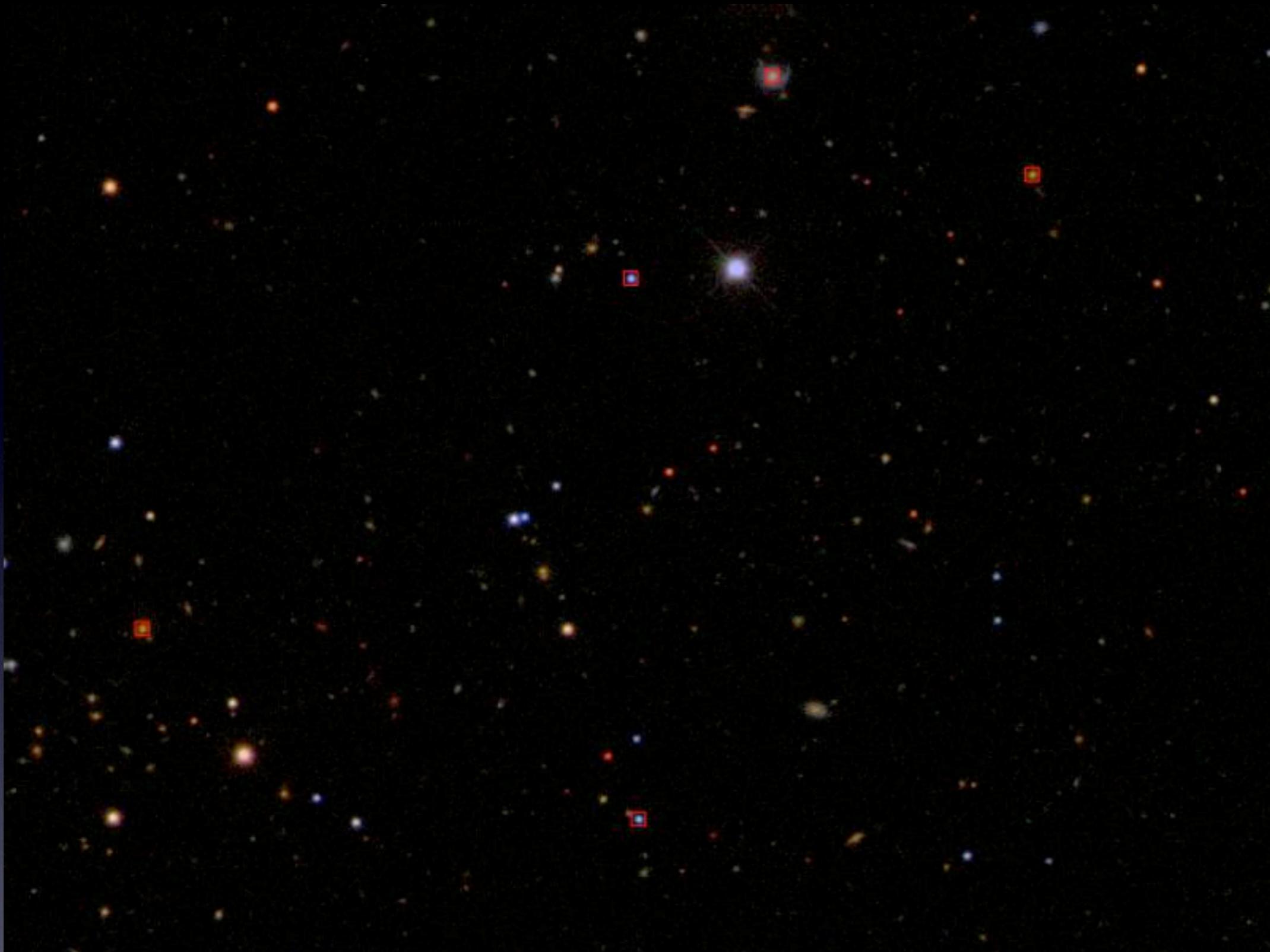
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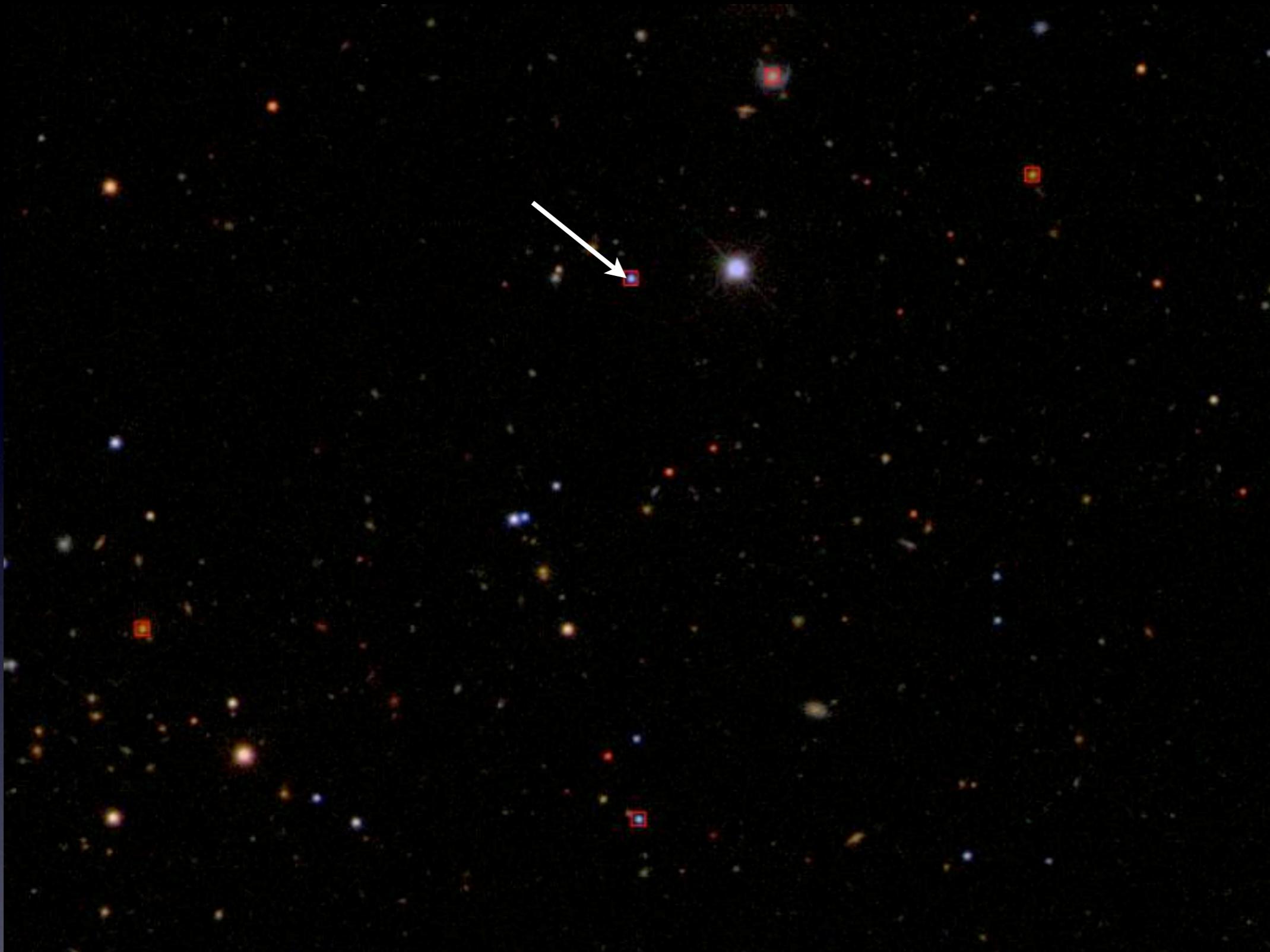
The scale of the SDSS

Zoom out from M51 to the whole SDSS sky.



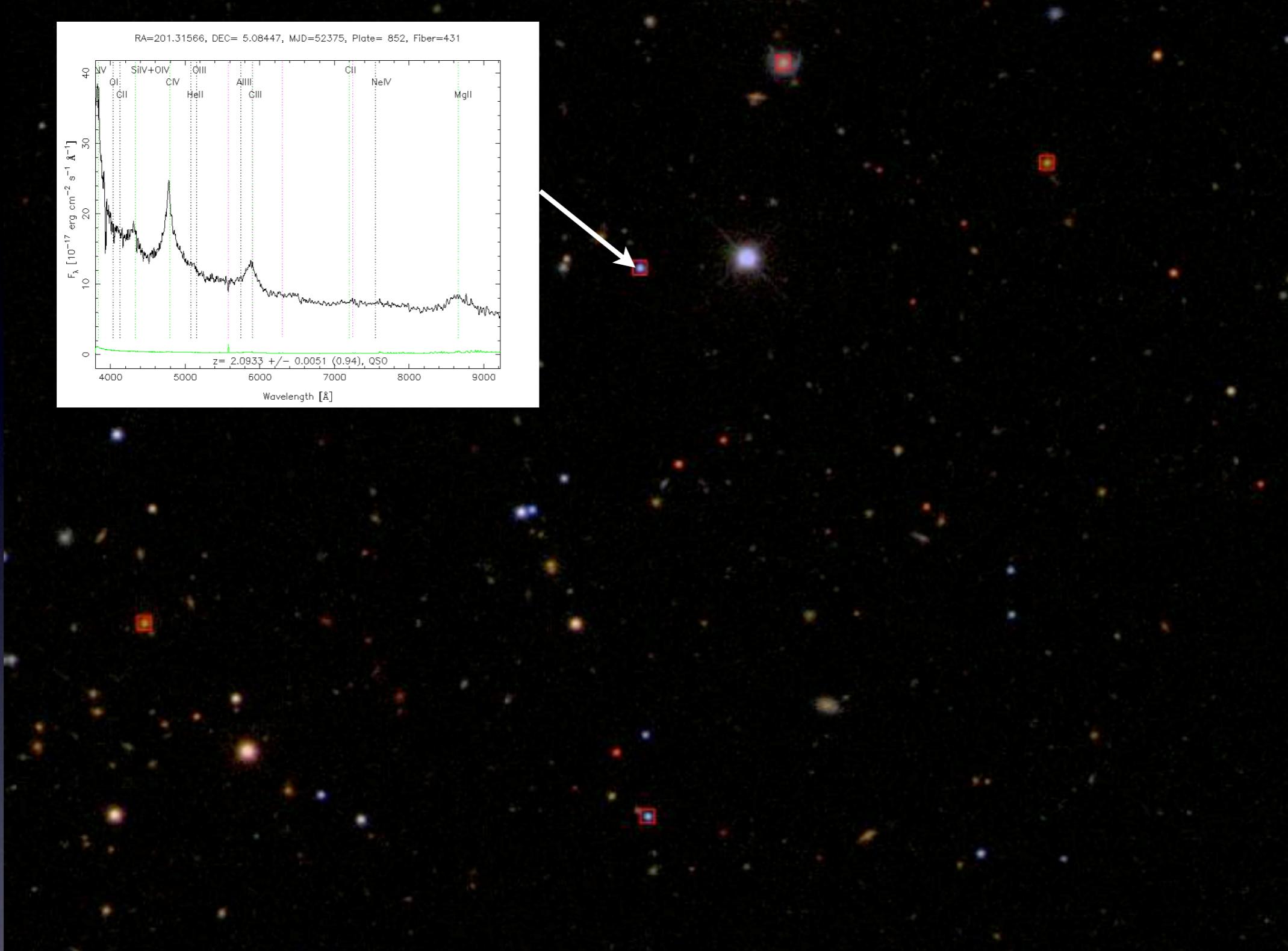
Identifying Active Galaxies

1. $z \sim 2.1$ quasar – ~10Gy ago
2. $z \sim 0.35$ quasar – ~3Gy ago
3. $z \sim 0.4$ passive galaxy (in a cluster?)
4. $z \sim 0.14$ star forming galaxy (spiral!)



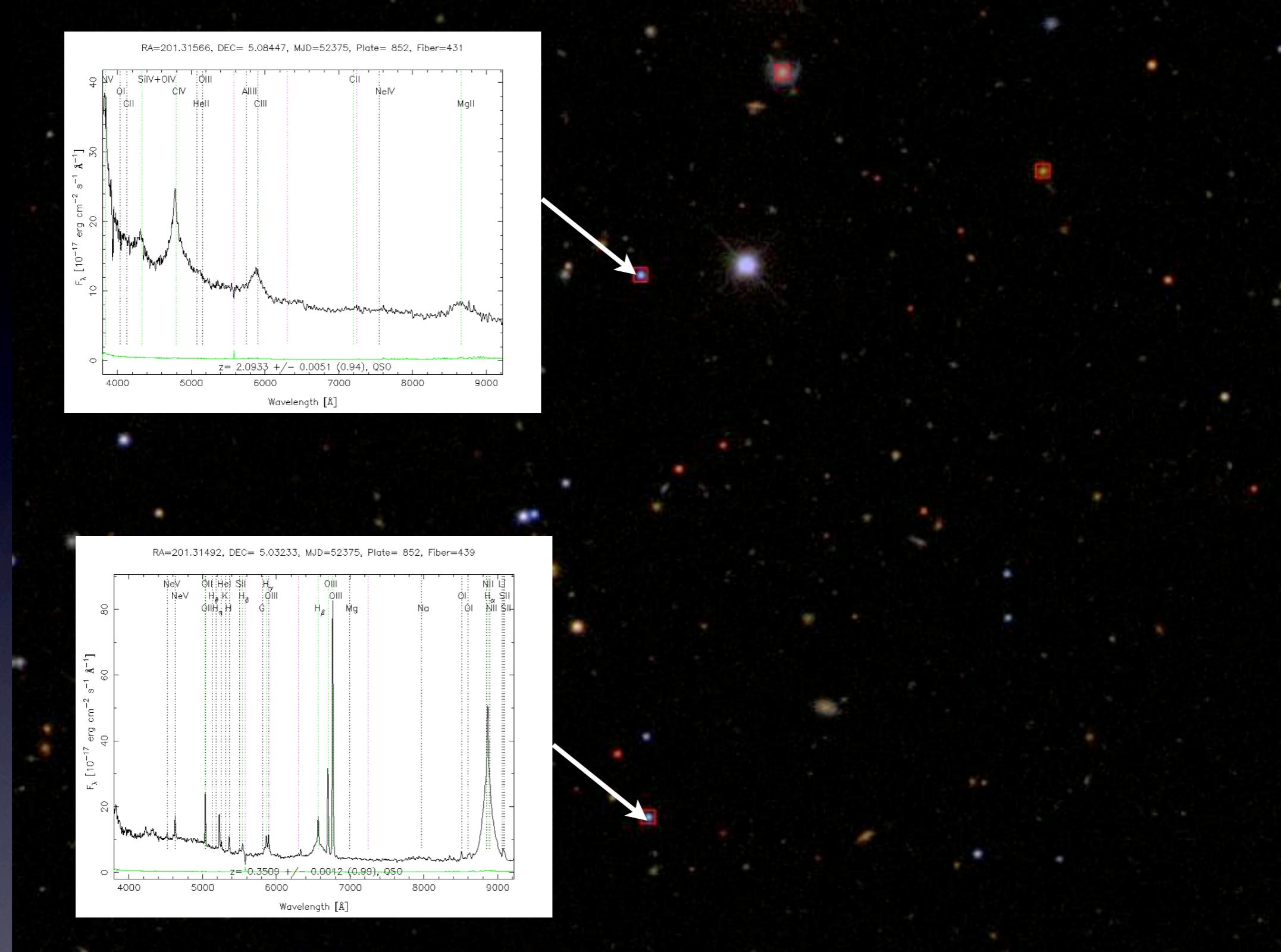
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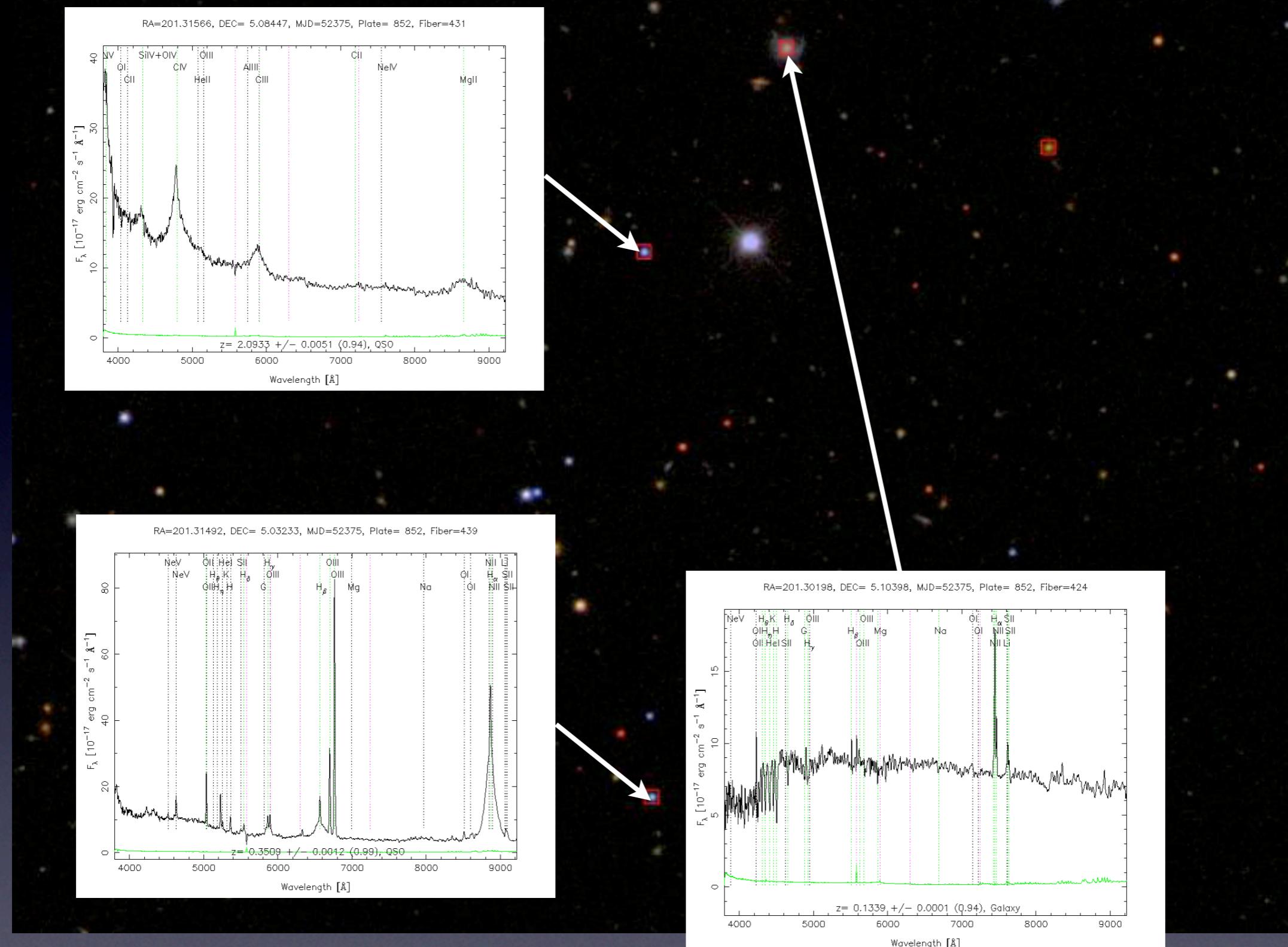
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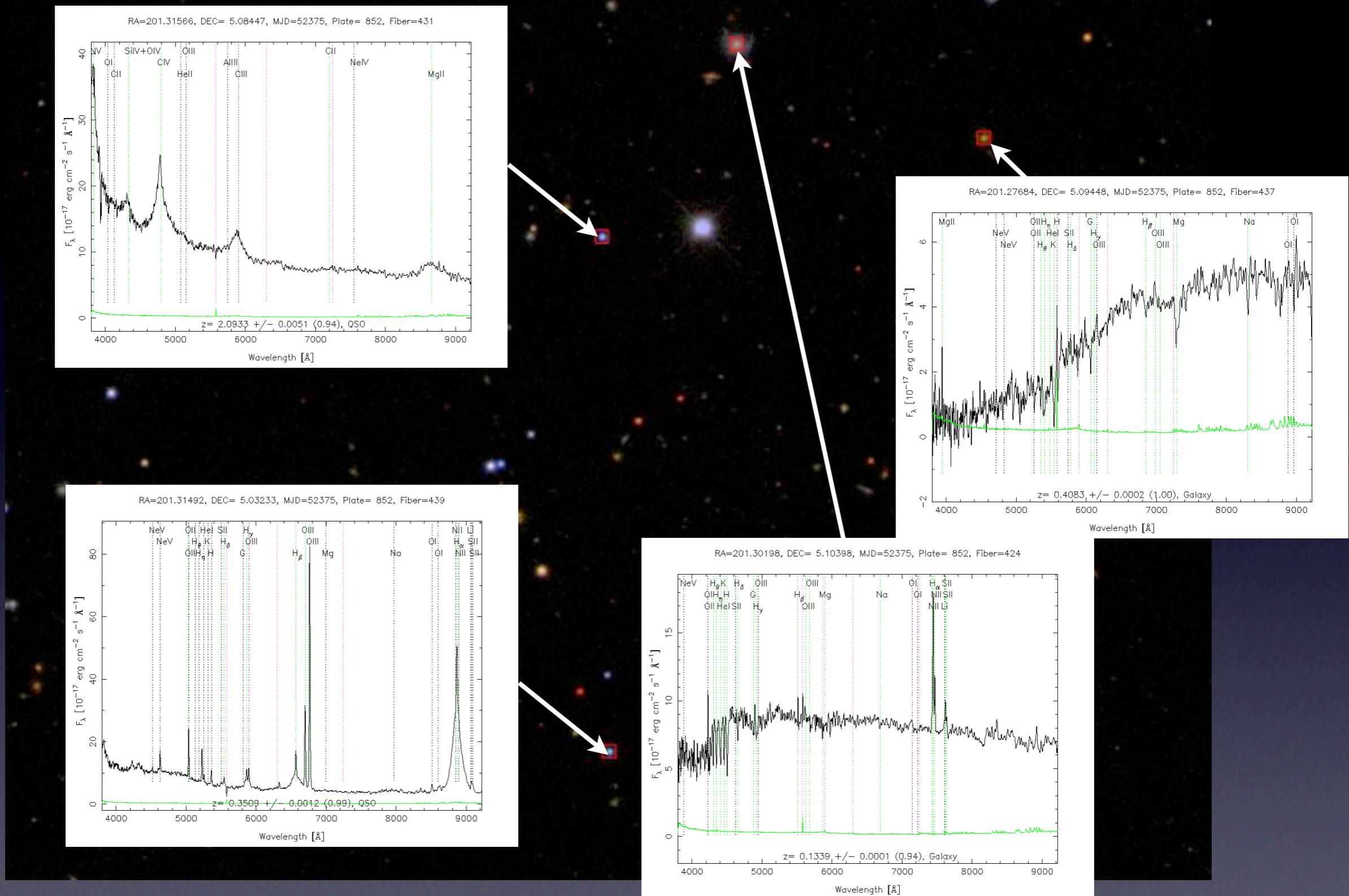
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For more information

The screenshot shows a web browser window for the Sloan Digital Sky Survey (SDSS) at <http://www.sdss.org/>. The browser is Camino, running on OS X, with a status bar showing the date as Wednesday, January 10, 2007. The SDSS logo is in the top left corner. The main content area features a banner for the "Sloan Digital Sky Survey" and "Mapping the Universe". A sidebar on the left contains links for "Explore SDSS", "Archive", "SDSS@Work", and "Contact Us". The central content area includes a news item about a symposium in Chicago, a section titled "What is the Sloan Digital Sky Survey?", and a large image of a spiral galaxy. The right sidebar has sections for "Image of the Week" (showing a nebula), "News" (with links to various articles), and "Events".

SDSS website: educational projects
Sky in Google Earth
Google Sky online
galaxyzoo.org: citizen science – need help with mergers!

- <http://www.sdss.org>

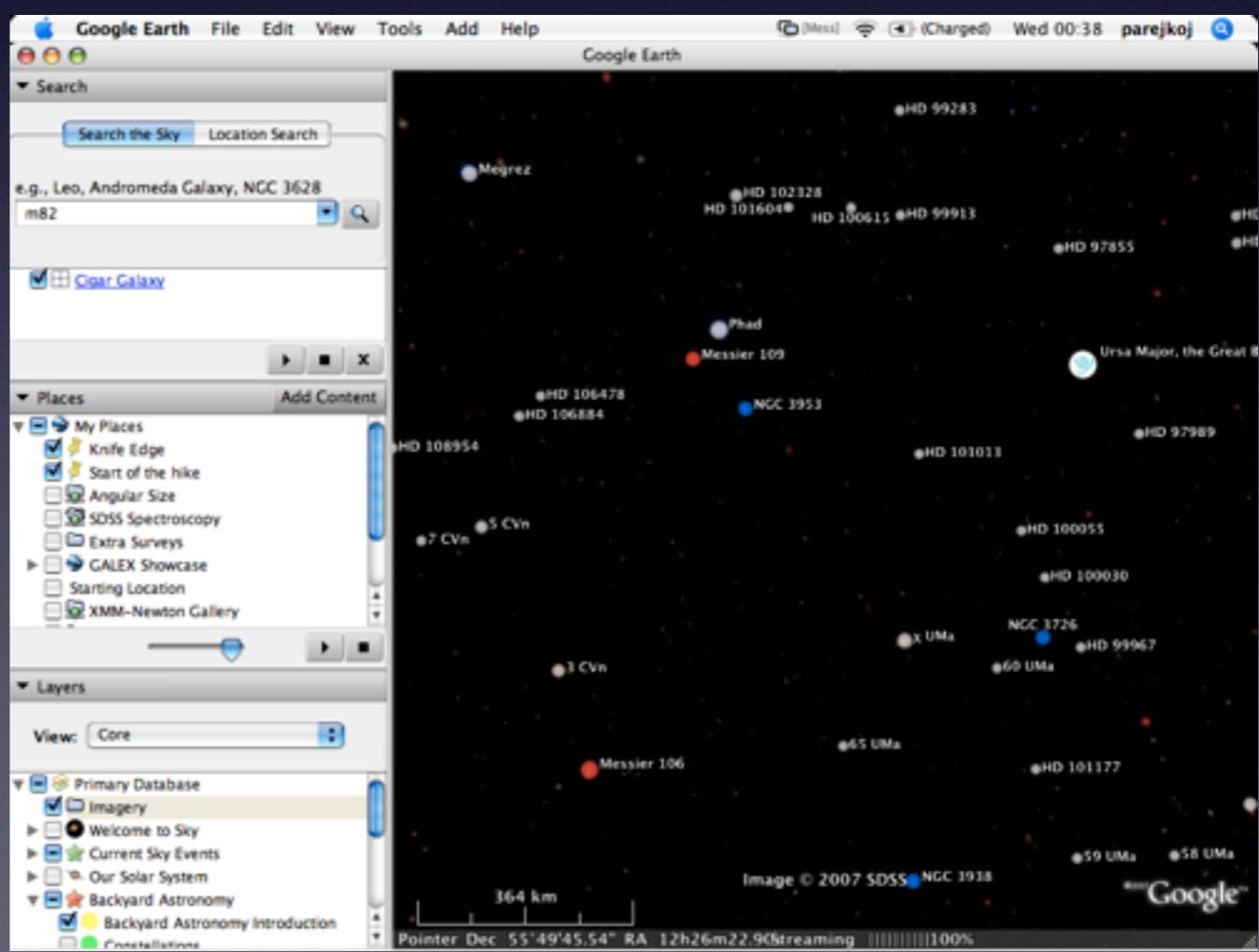
For more information

The screenshot shows a web browser window for the Sloan Digital Sky Survey (SDSS). The title bar reads "Camino File Edit View History Bookmarks Window Help Sloan Digital Sky Survey". The address bar shows the URL "http://www.sdss.org/". The main content area features the SDSS logo and the text "Sloan Digital Sky Survey" and "Mapping the Universe". A sidebar on the left lists links such as "Explore SDSS", "Archive", "SDSS@Work", and "Contact Us". A central column contains news items like "The Sloan Digital Sky Survey: Asteroids to Cosmology An International Symposium, August 15-18, Chicago" and "What is the Sloan Digital Sky Survey?". Below this is a paragraph about the survey's goals and a photograph of a spiral galaxy. To the right, there are sections for "Image of the Week" (with a thumbnail image) and "News" (listing recent articles), and "Events" (listing recent events).

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 Sky in Google Earth
 Google Sky online
 galaxyzoo.org: citizen science – need help with mergers!

For more information

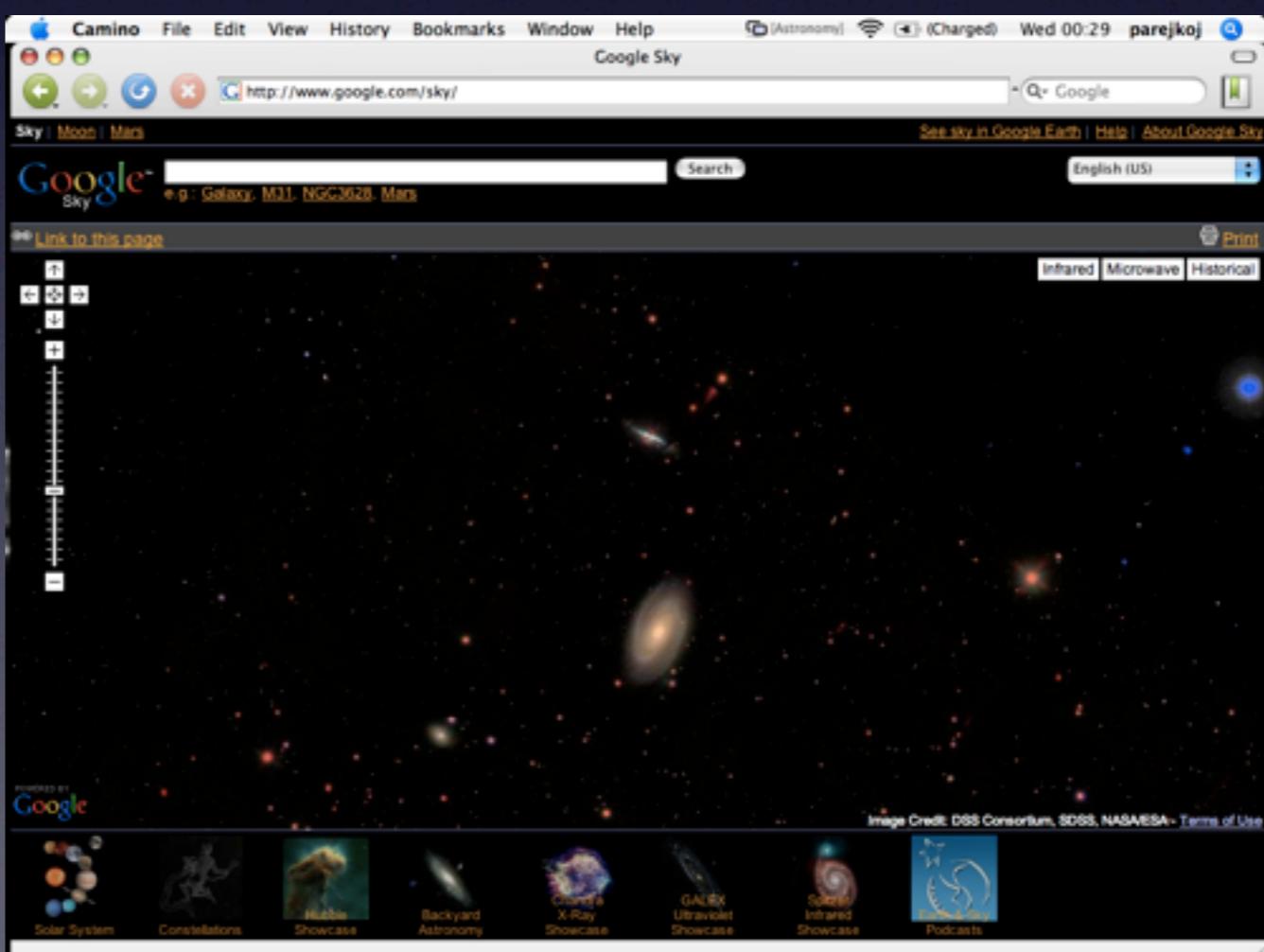
- <http://www.sdss.org>
- <http://earth.google.com/sky>



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The Joseph R. Lynch Observatory

The Joseph R. Lynch Observatory

Where I'd like to spend more time at night.

First Wednesday of each month



<http://www.physics.drexel.edu/observatory>

2 April 2008 open house
Roof of main building.

Drexel University Messier Project



The “Dumbbell” planetary nebula
M27 R band, 6x10seconds

Drexel University Messier Project



open cluster M67 - 5R, 7G, 12B (3s each)

Goal: submit data to the AAVSO for bright stars.

Our Equipment

- 16" Meade LX200GPS
- SBIG ST9 CCD w/ UBVRI filters
- Coronado Solar Max 60mm
- 10" Orion Dobsonian
- Edmund Scientific Astroscan
- 5" Celestron Nextstar SCT

Cassini/Huygens

Cassini/Huygens

Yes, there is life before grad school.



Look for the arrows!
1/3 mockup of Cassini/Huygens



Me!

Look for the arrows!
1/3 mockup of Cassini/Huygens

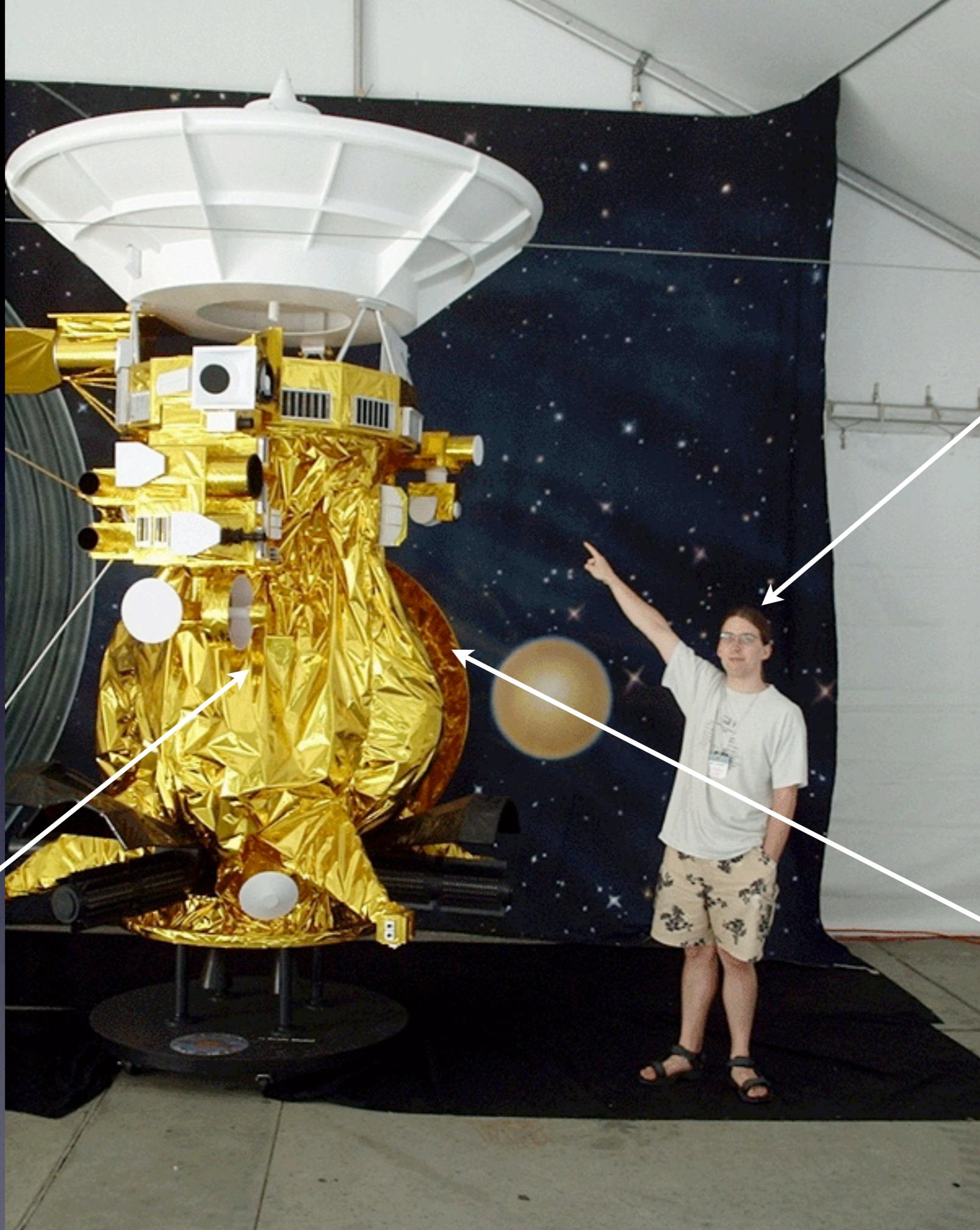
Cassini
It's just a
model!



Me!

Look for the arrows!
1/3 mockup of Cassini/Huygens

Cassini
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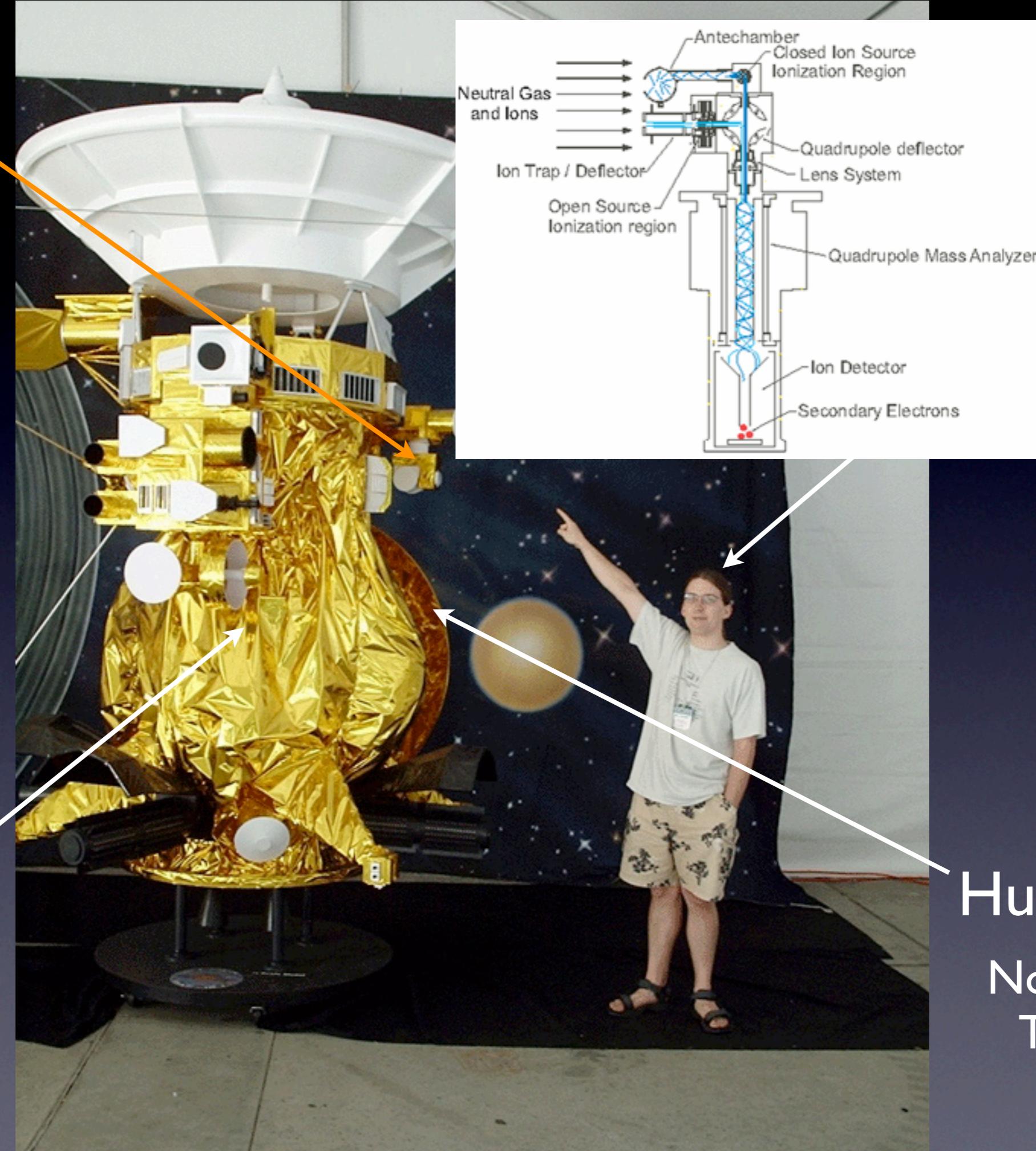


Me!

Huygens
Now on
Titan

Look for the arrows!
1/3 mockup of Cassini/Huygens

INMS
Cassini's
nose



e!

Cassini
It's just a
model!

Huygens
Now on
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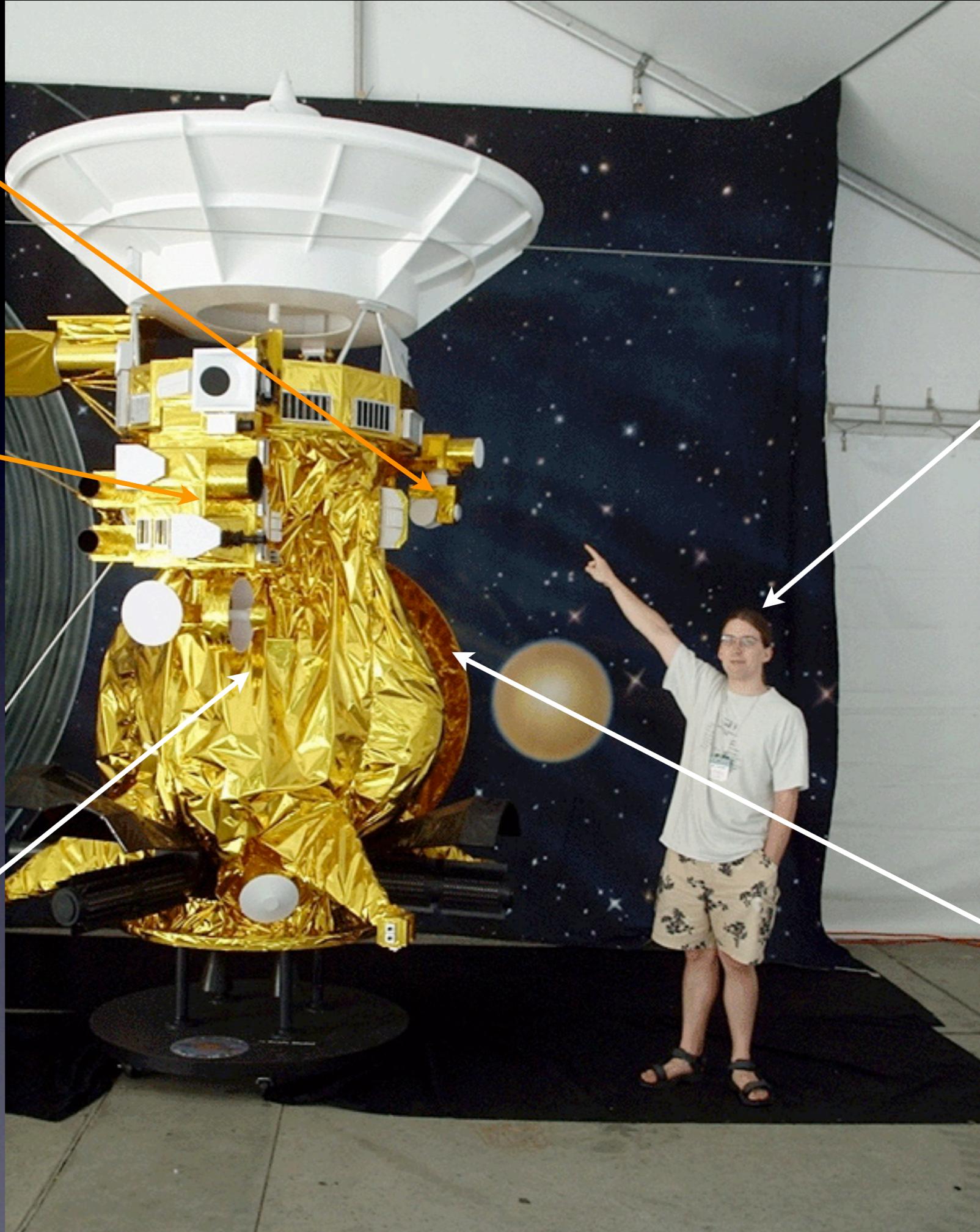
Look for the arrows!
1/3 mockup of Cassini/Huygens

Cassini
It's just a
model!

Who cares
about stupid
pictures
anyway?

INMS
Cassini's
nose

Imaging
Sub-
System



Me!

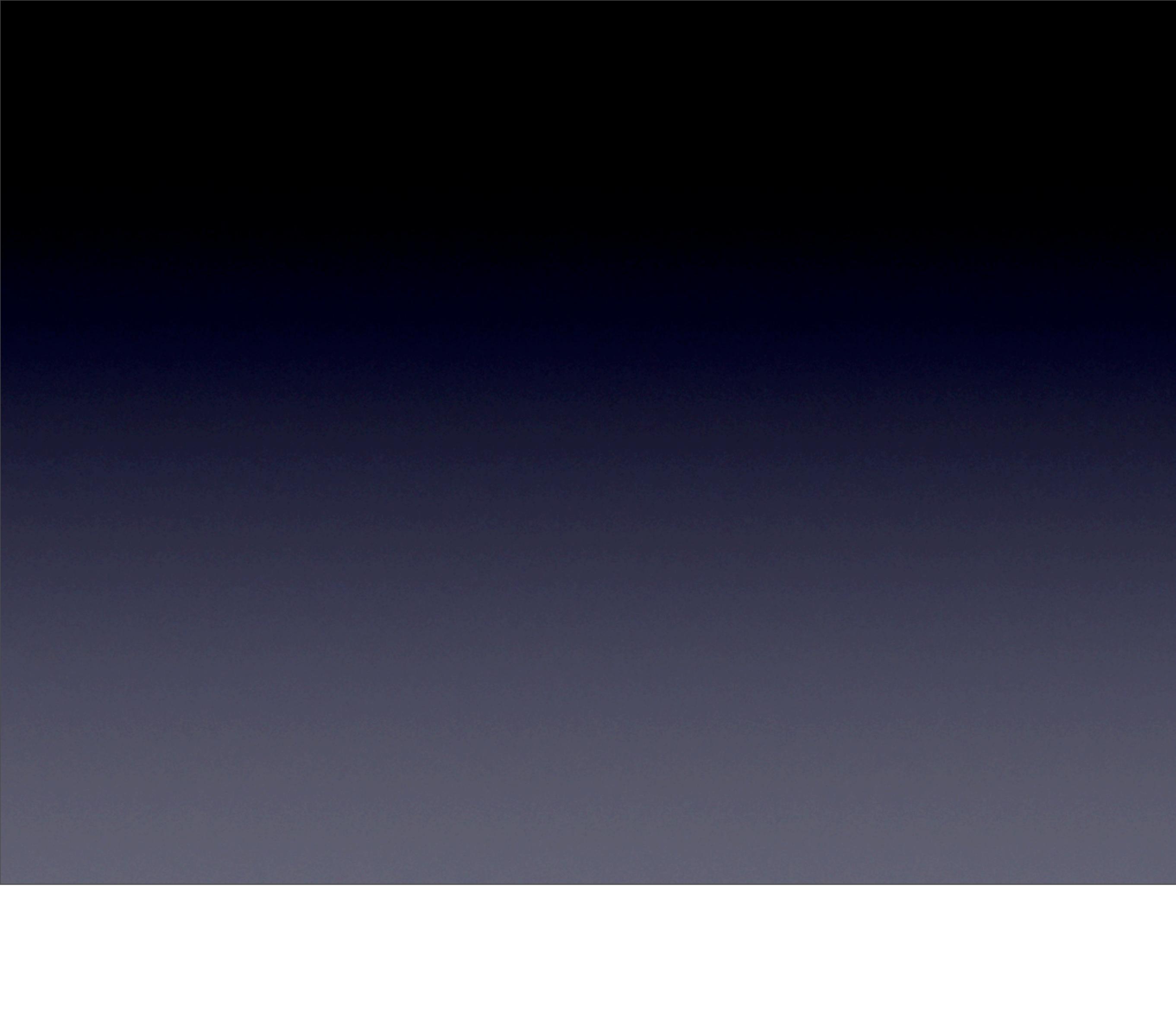
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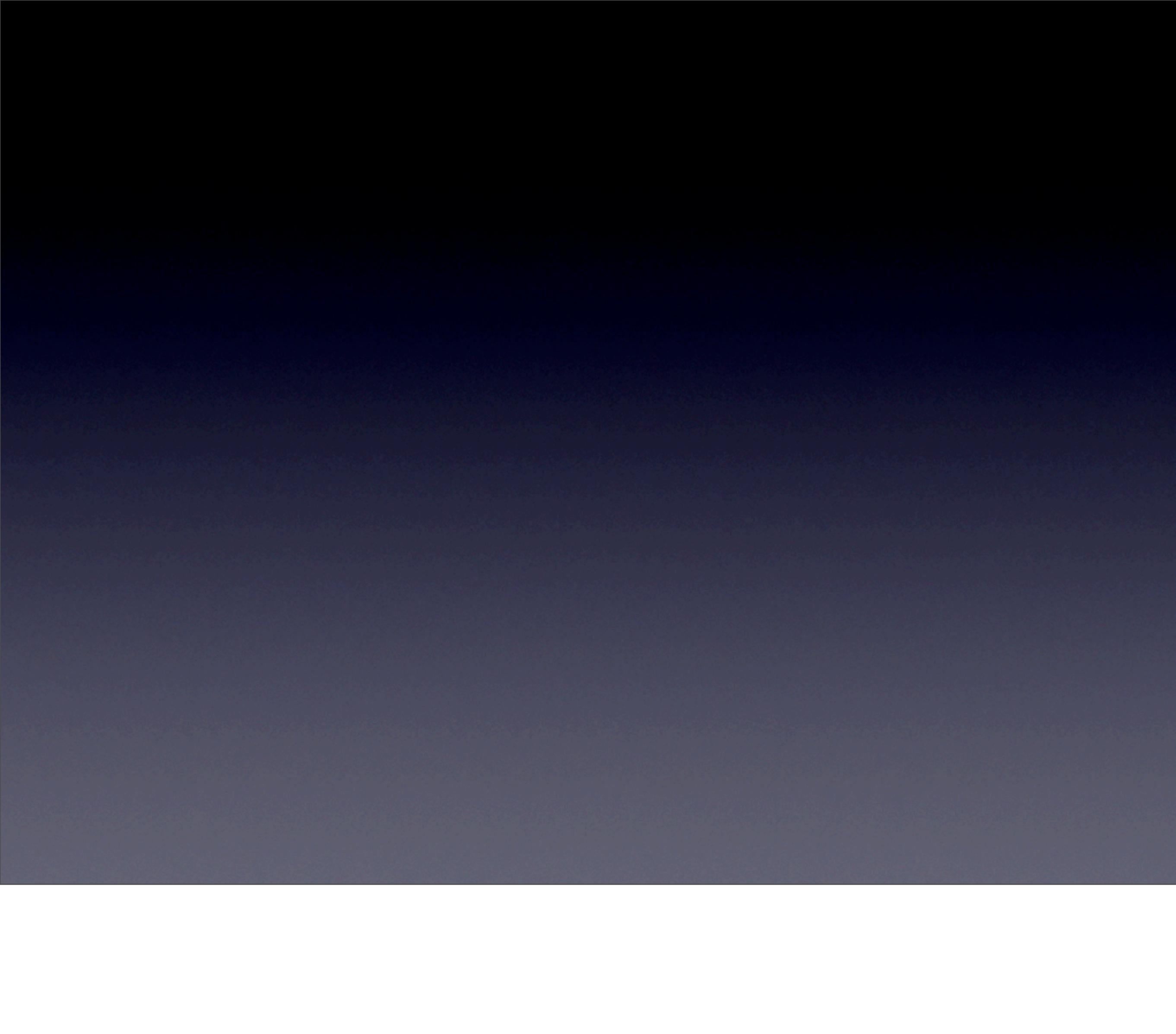
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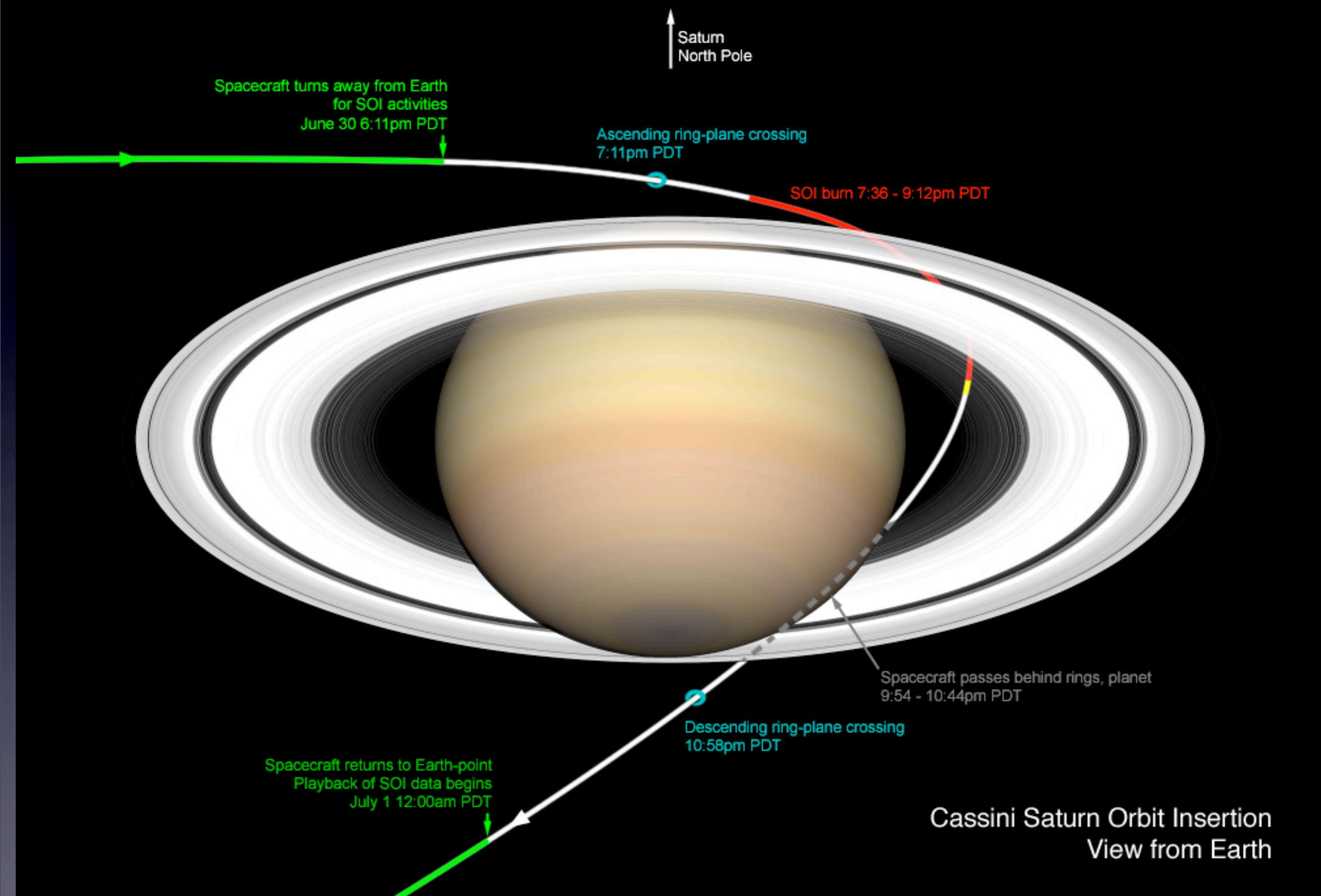


Supersize
it!

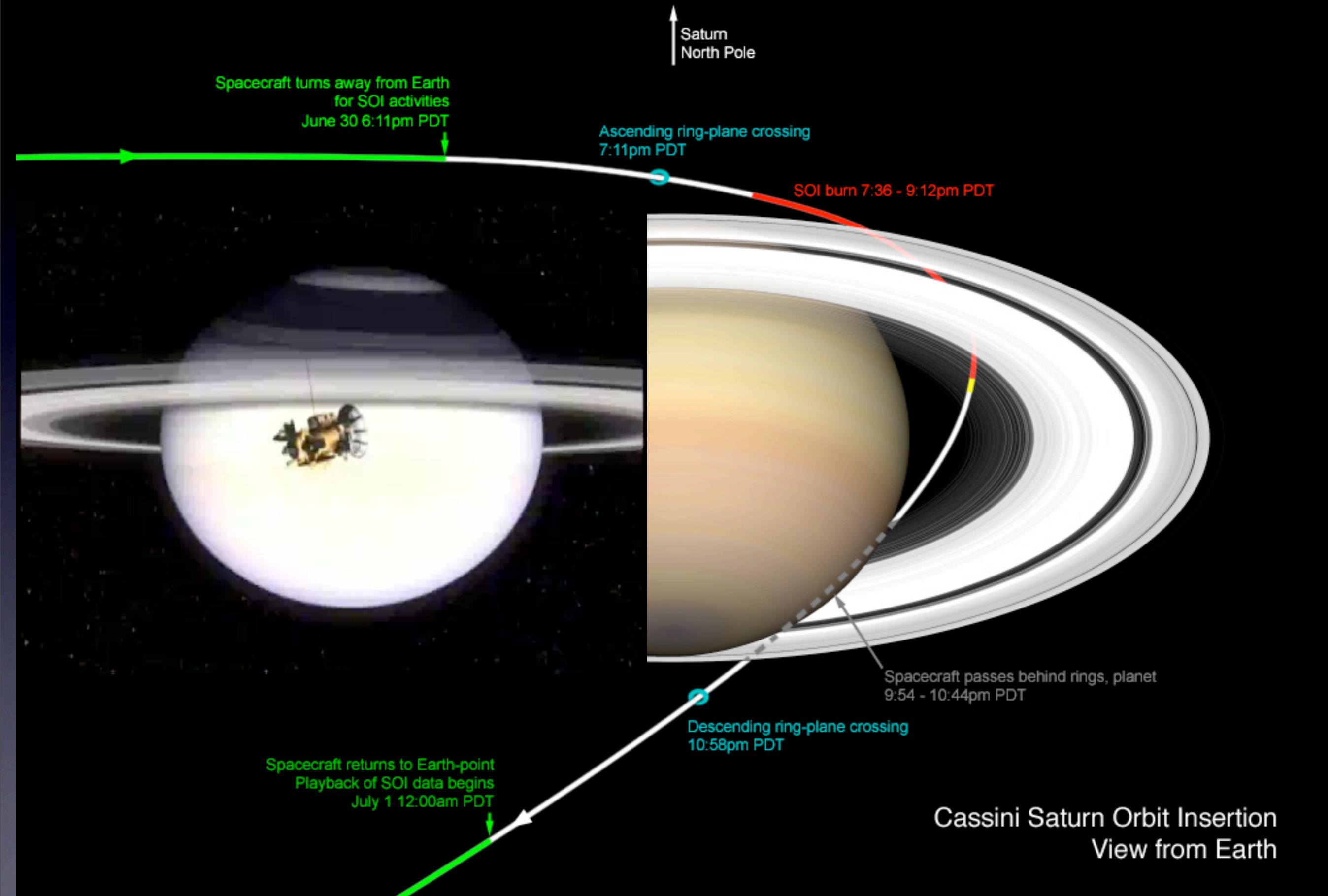
Schoolbus sized.
In the clean room, prepping for launch.
Launched on 15 October 1997.



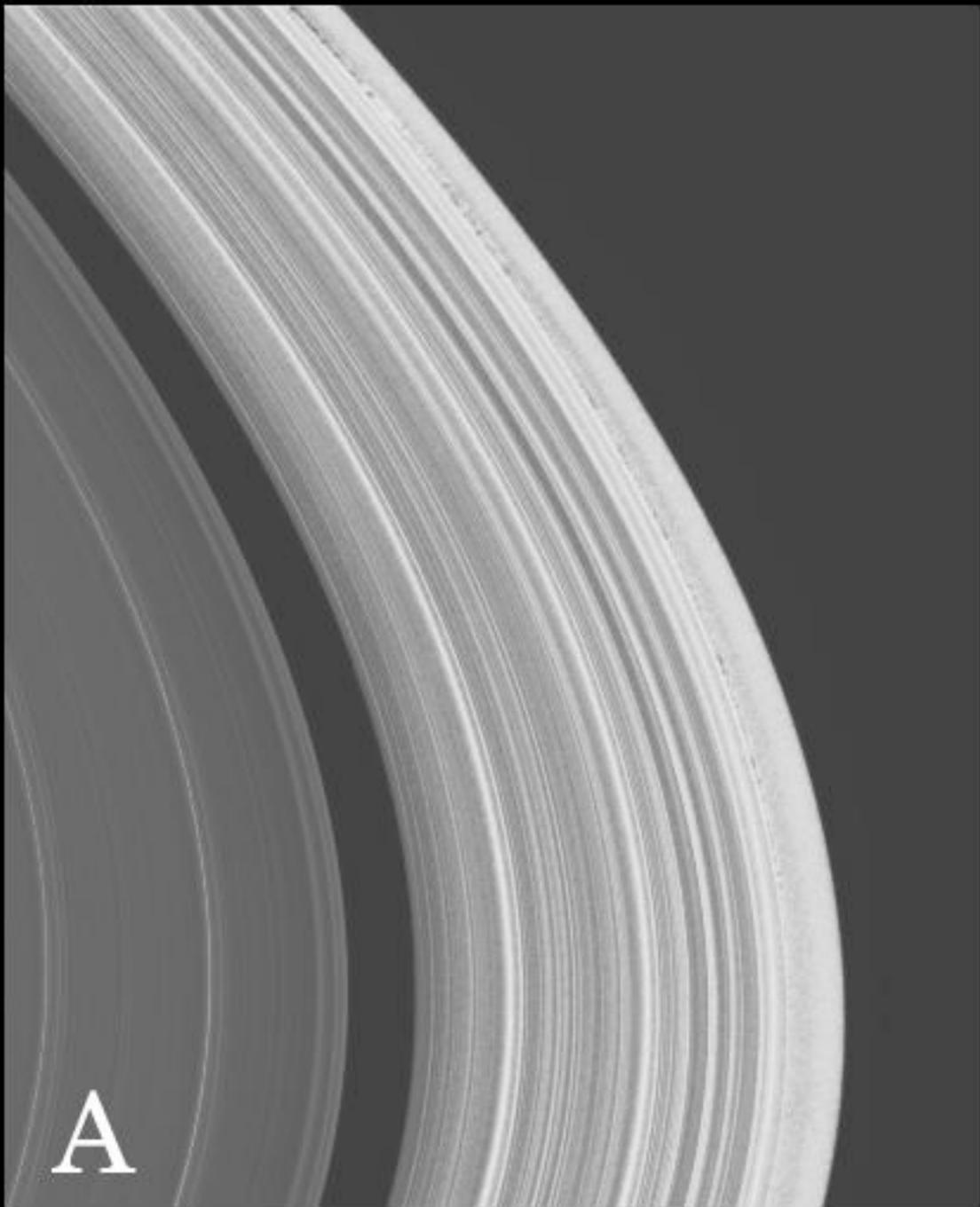




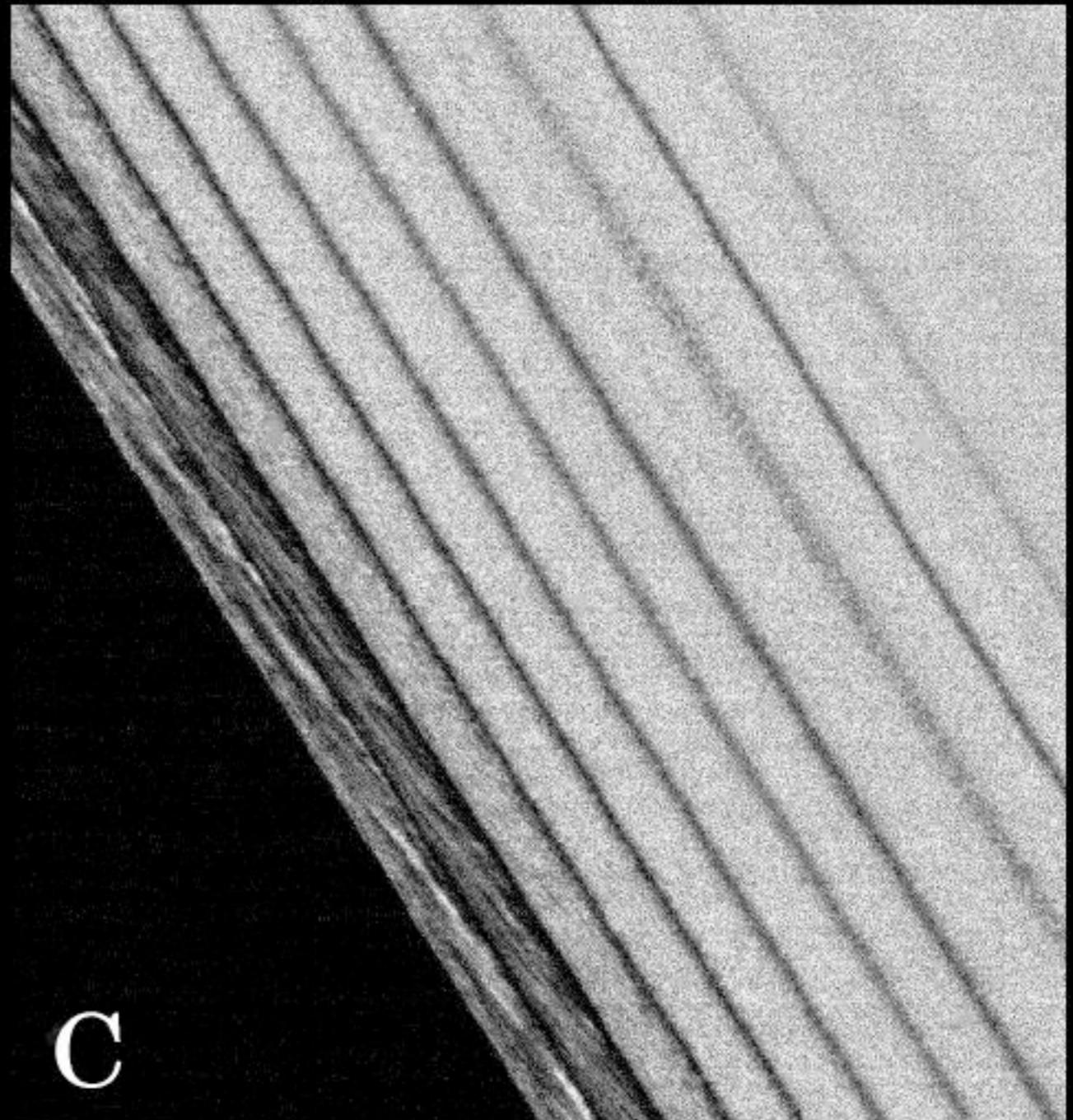
SOI burn: 90 minutes



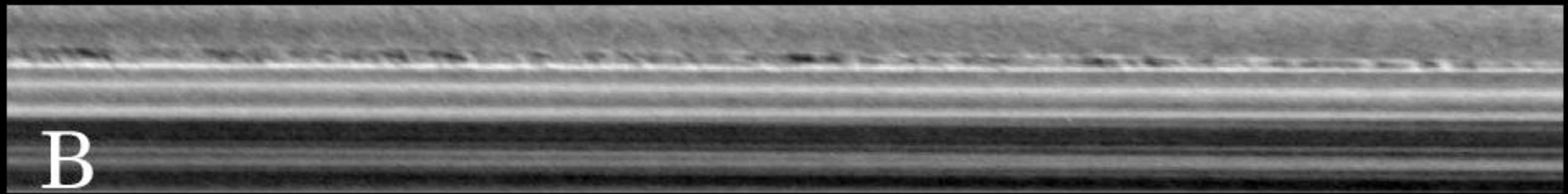
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A

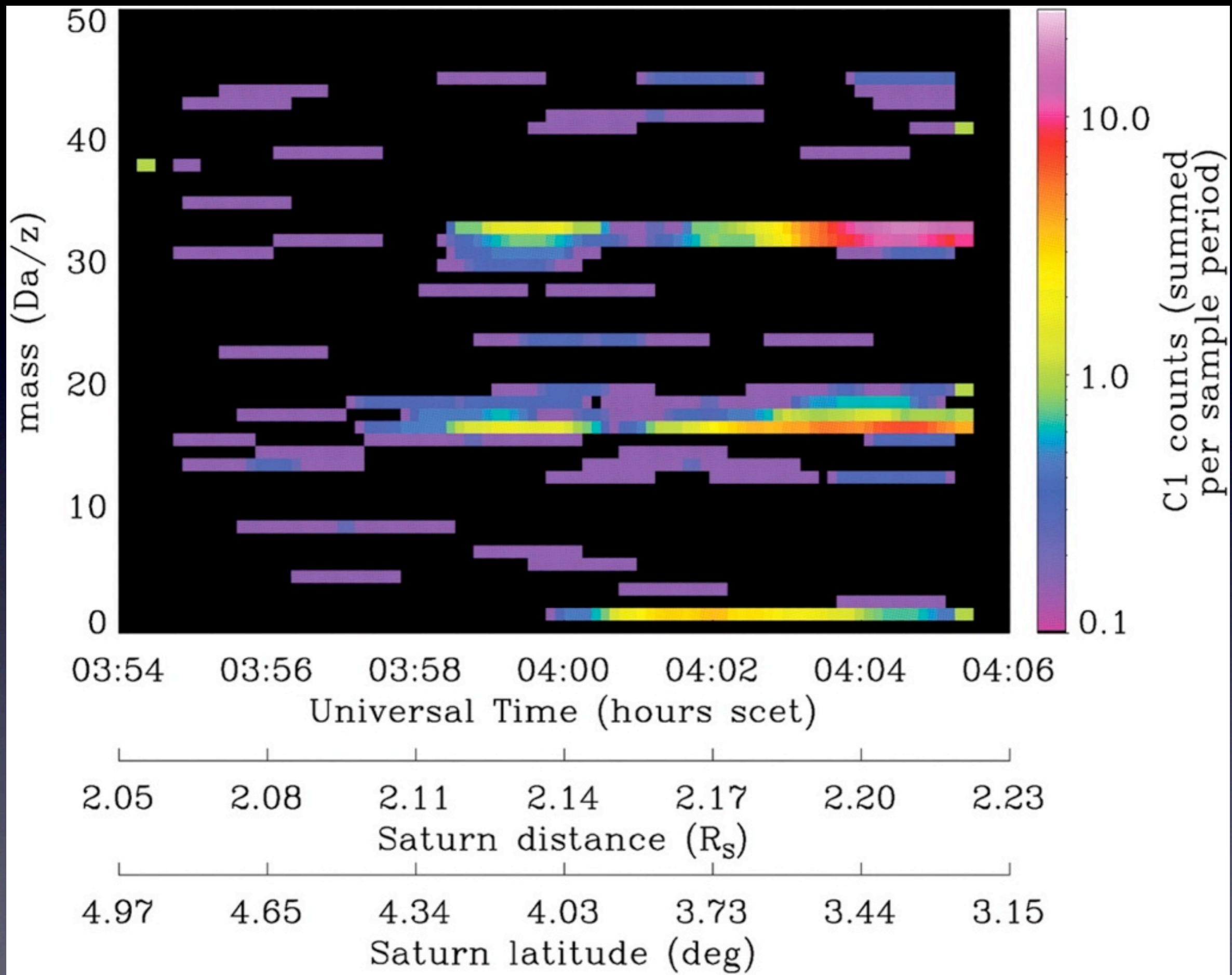


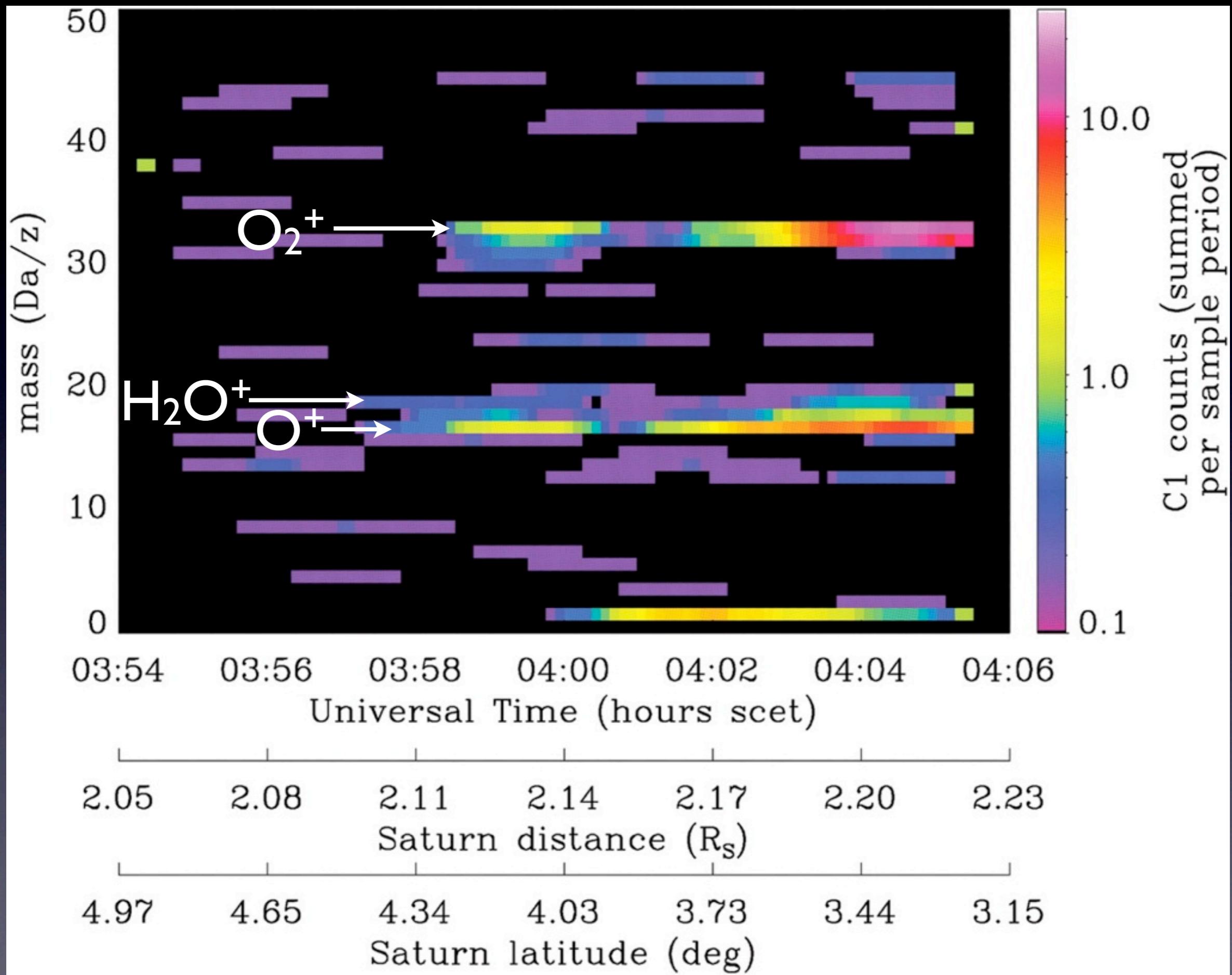
C

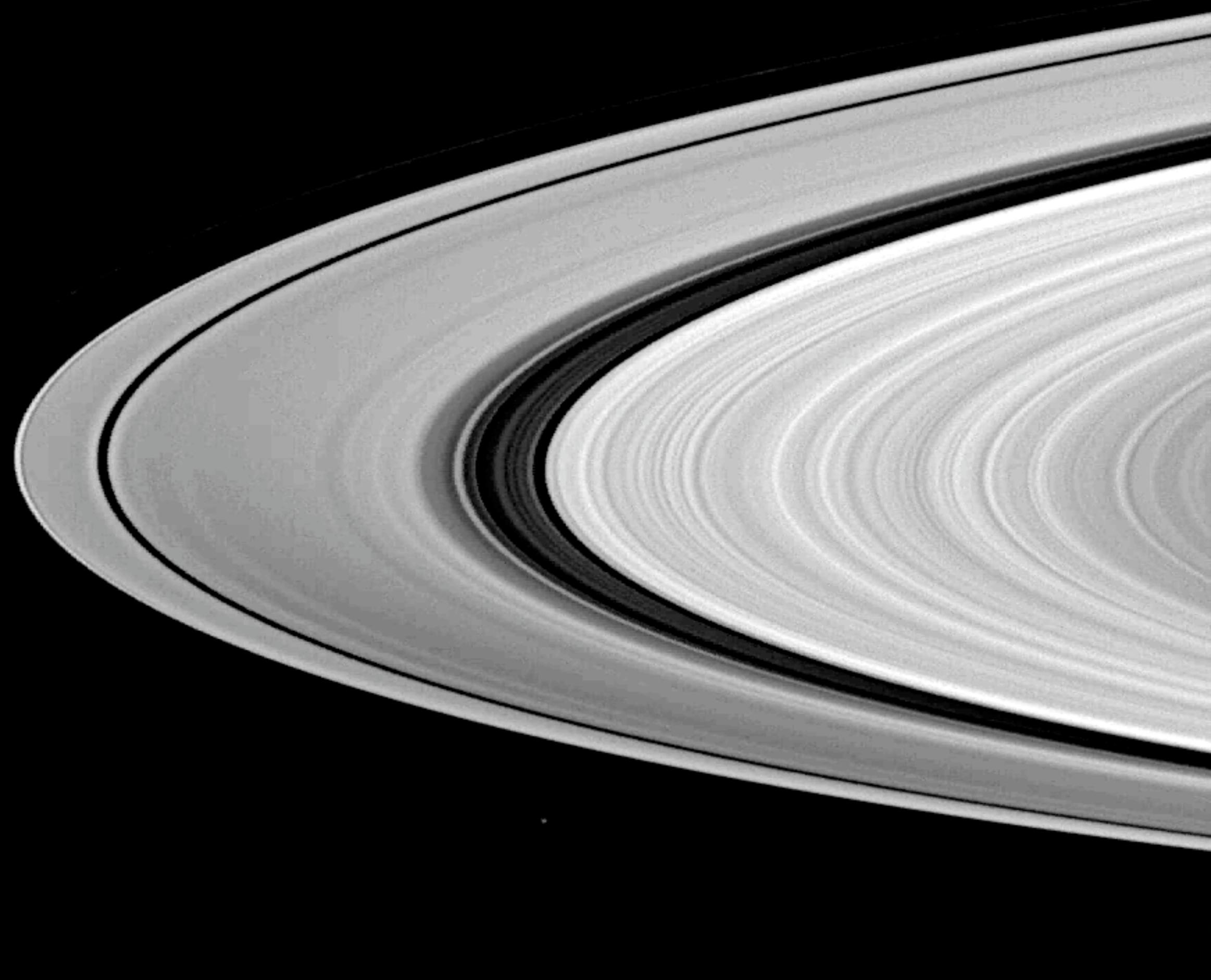


B

- A: fine structure (much finer than Voyager had seen).
B: braids.
C: braids and density waves.

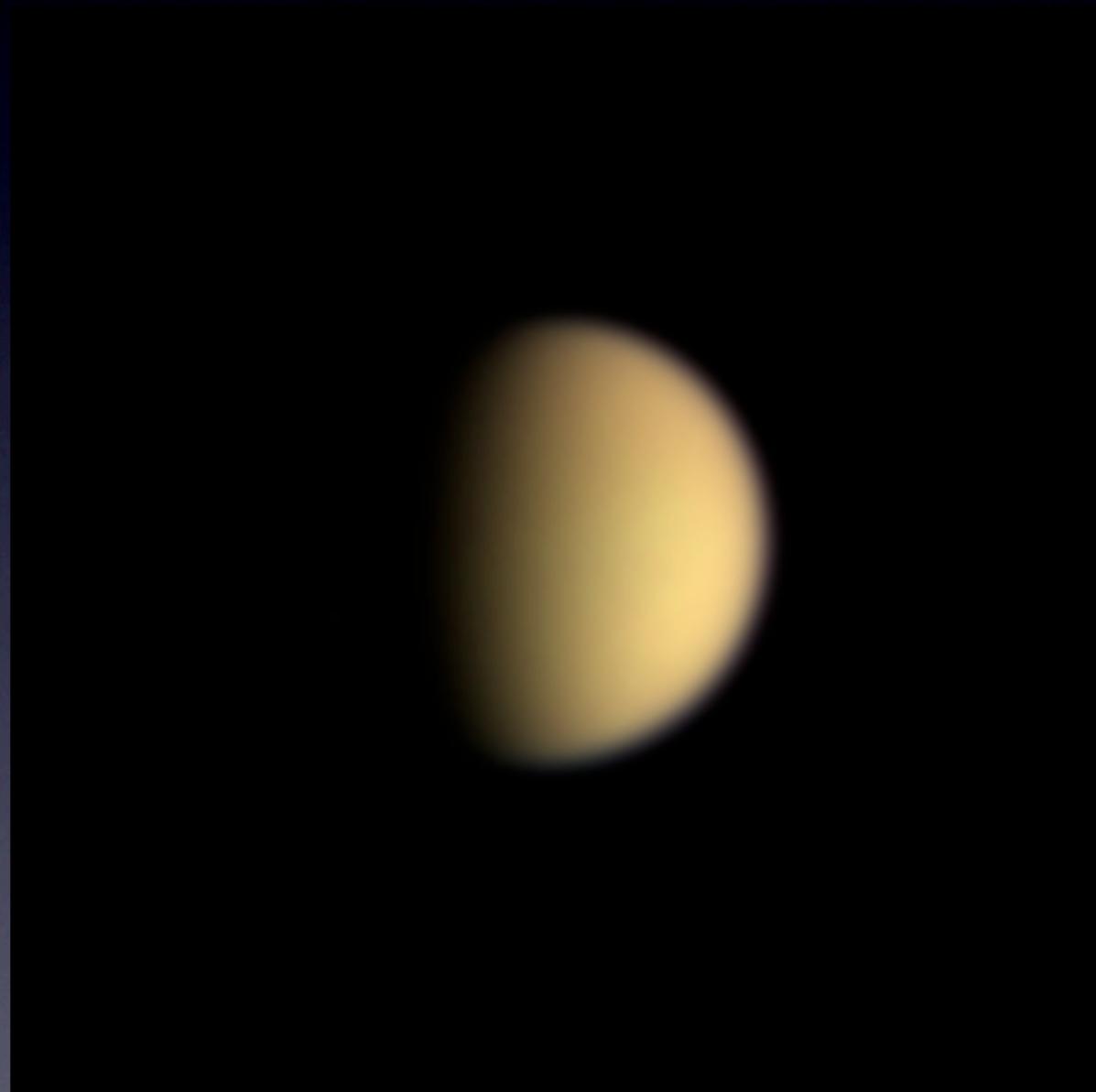




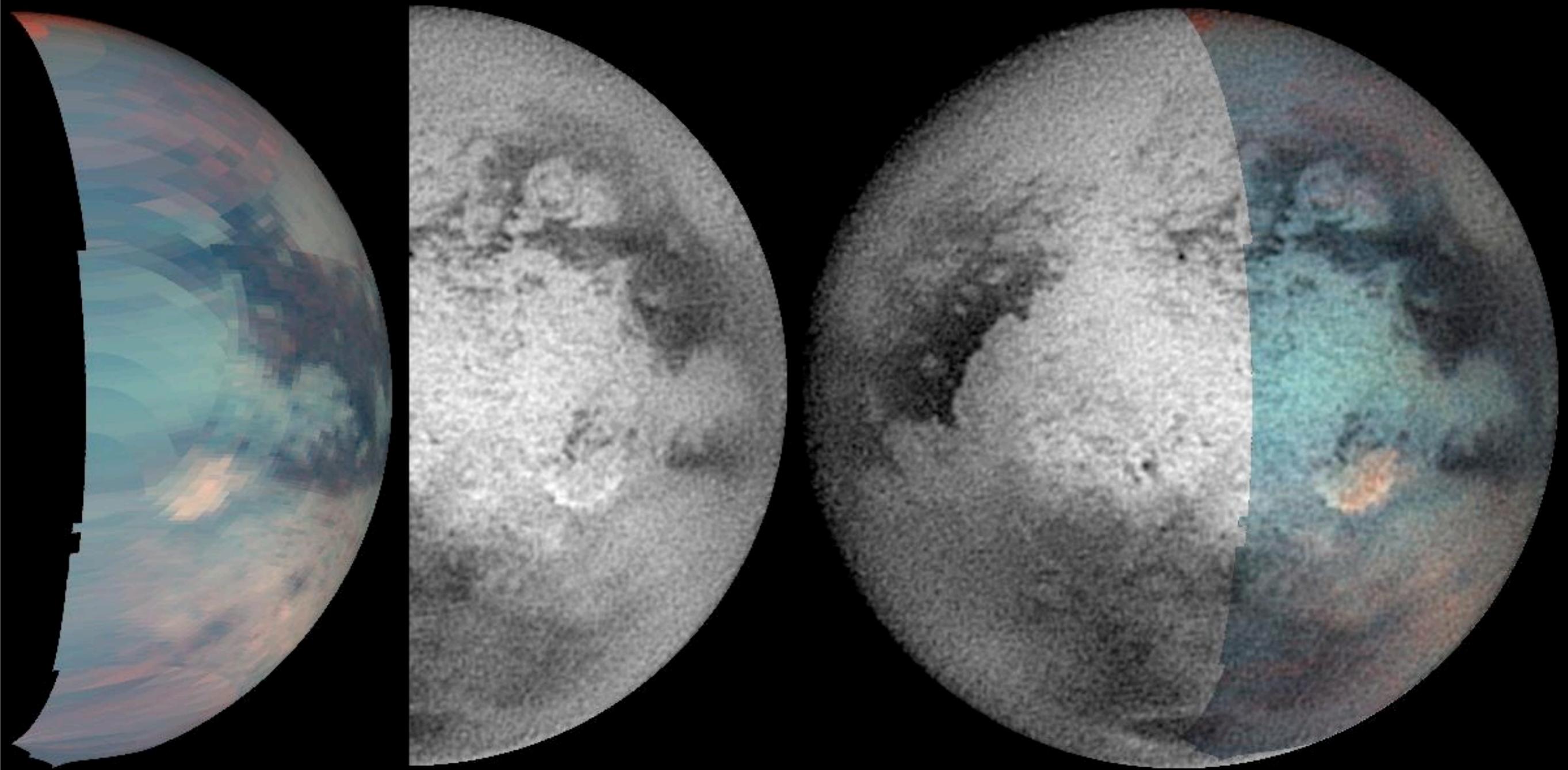


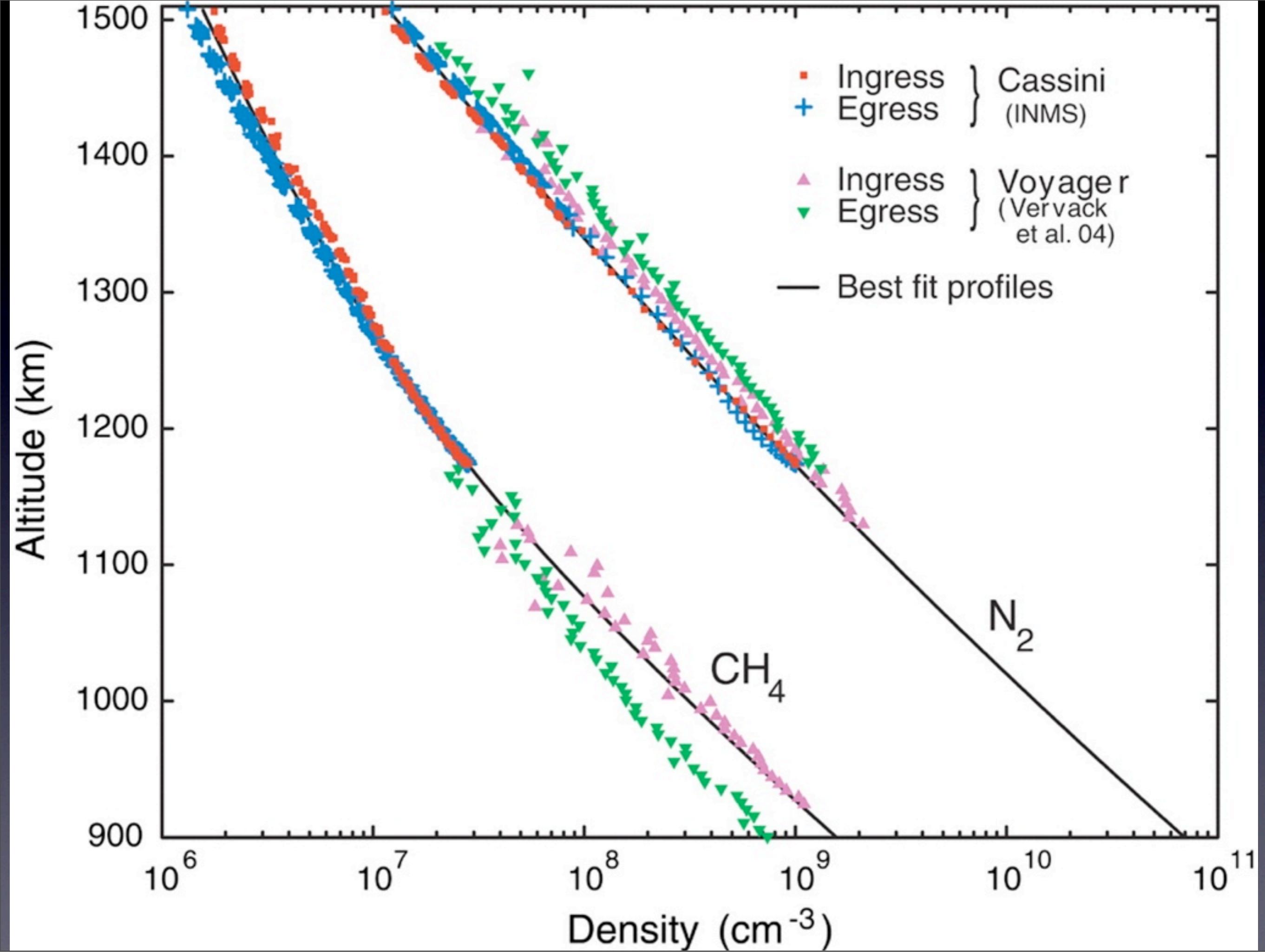


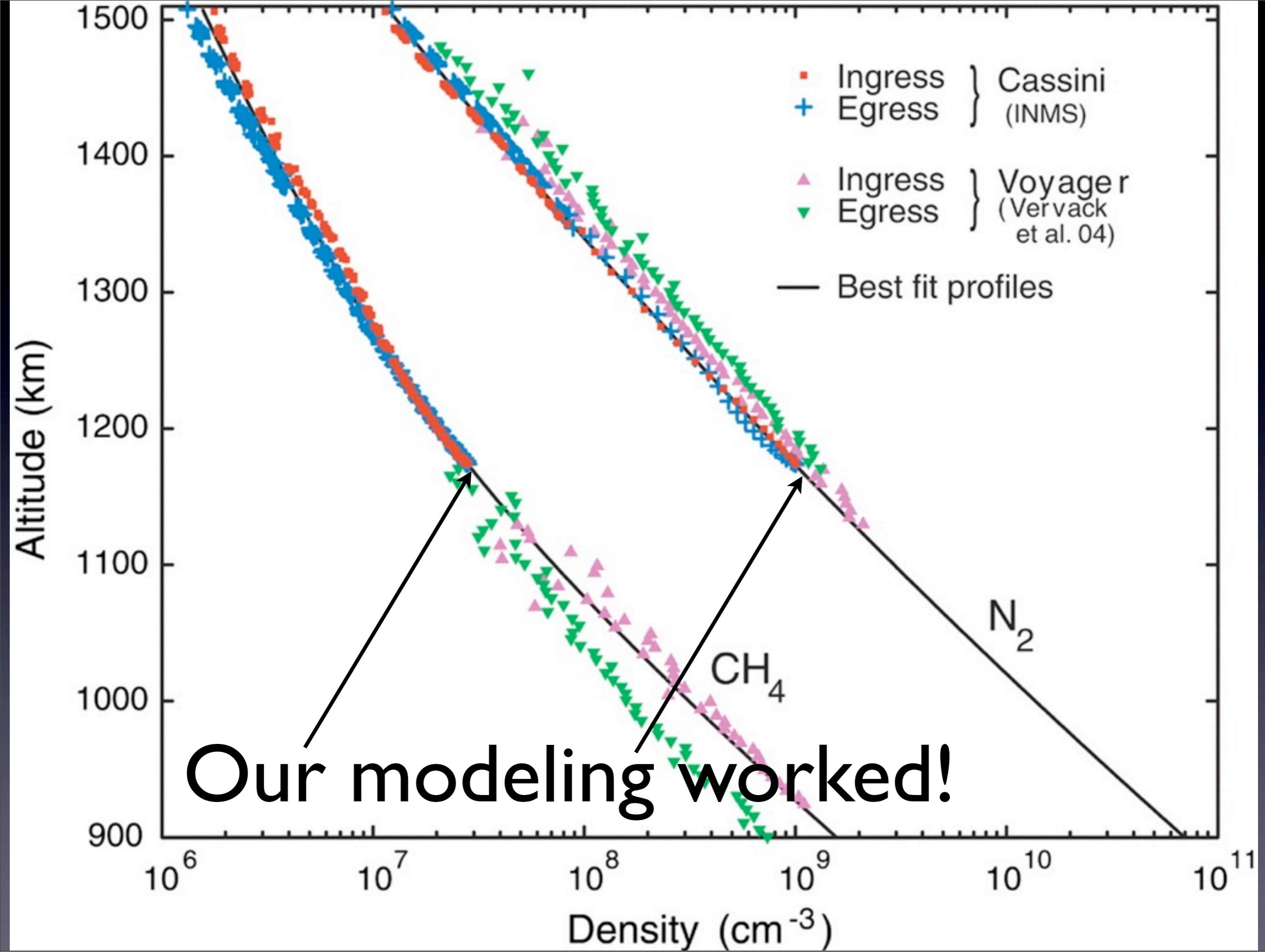
The Mystery Moon

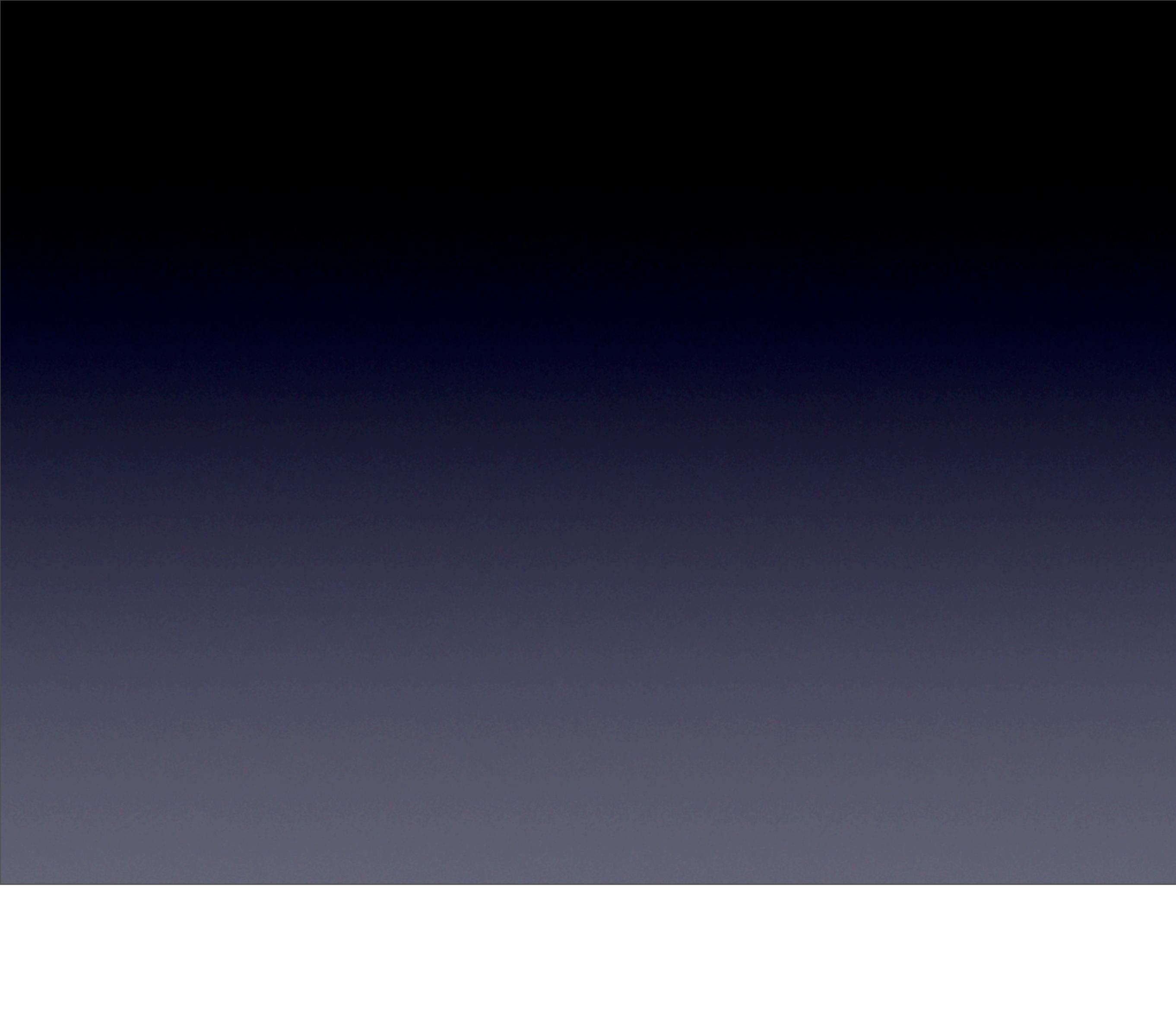


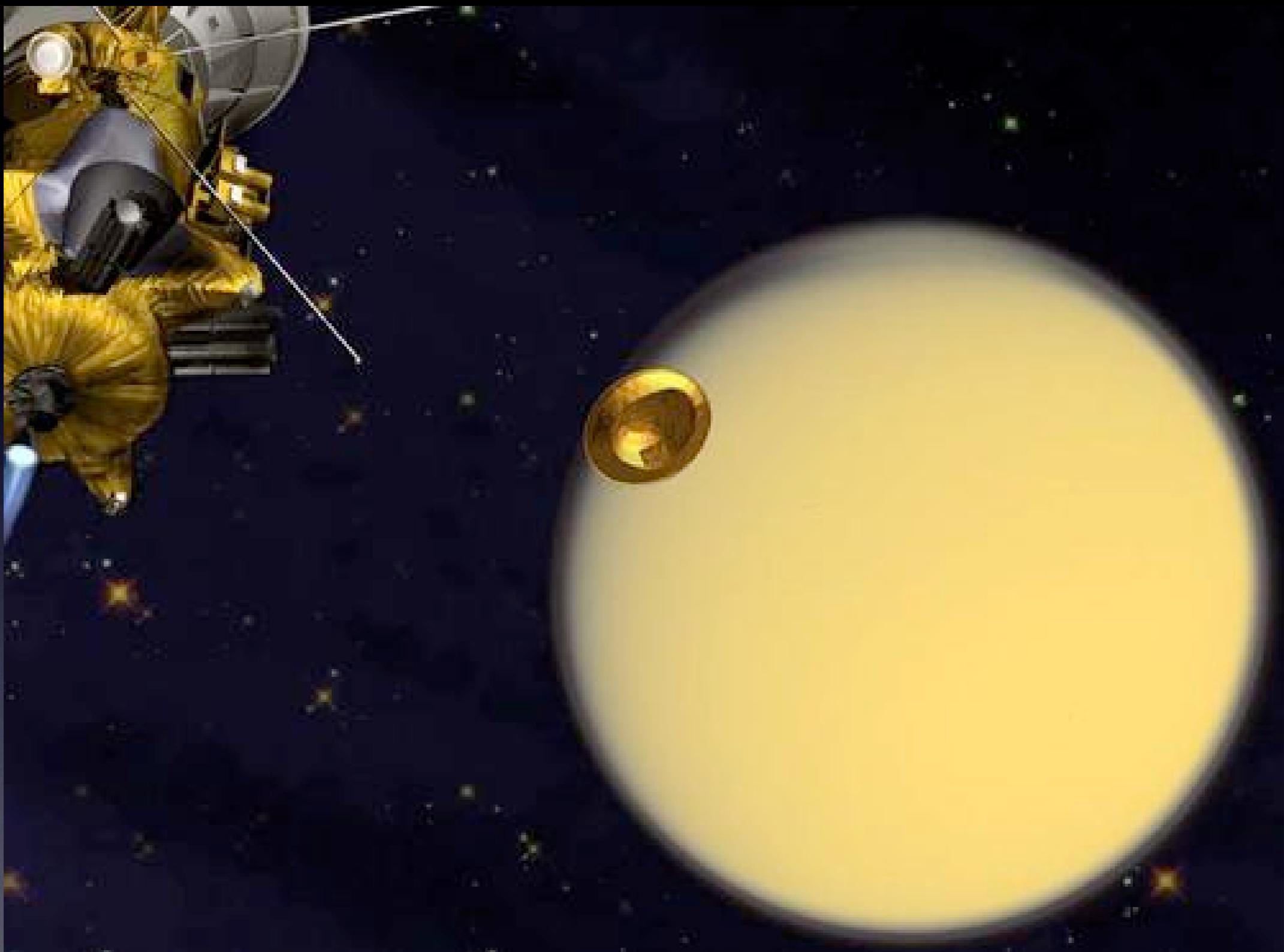
Never seen the surface.



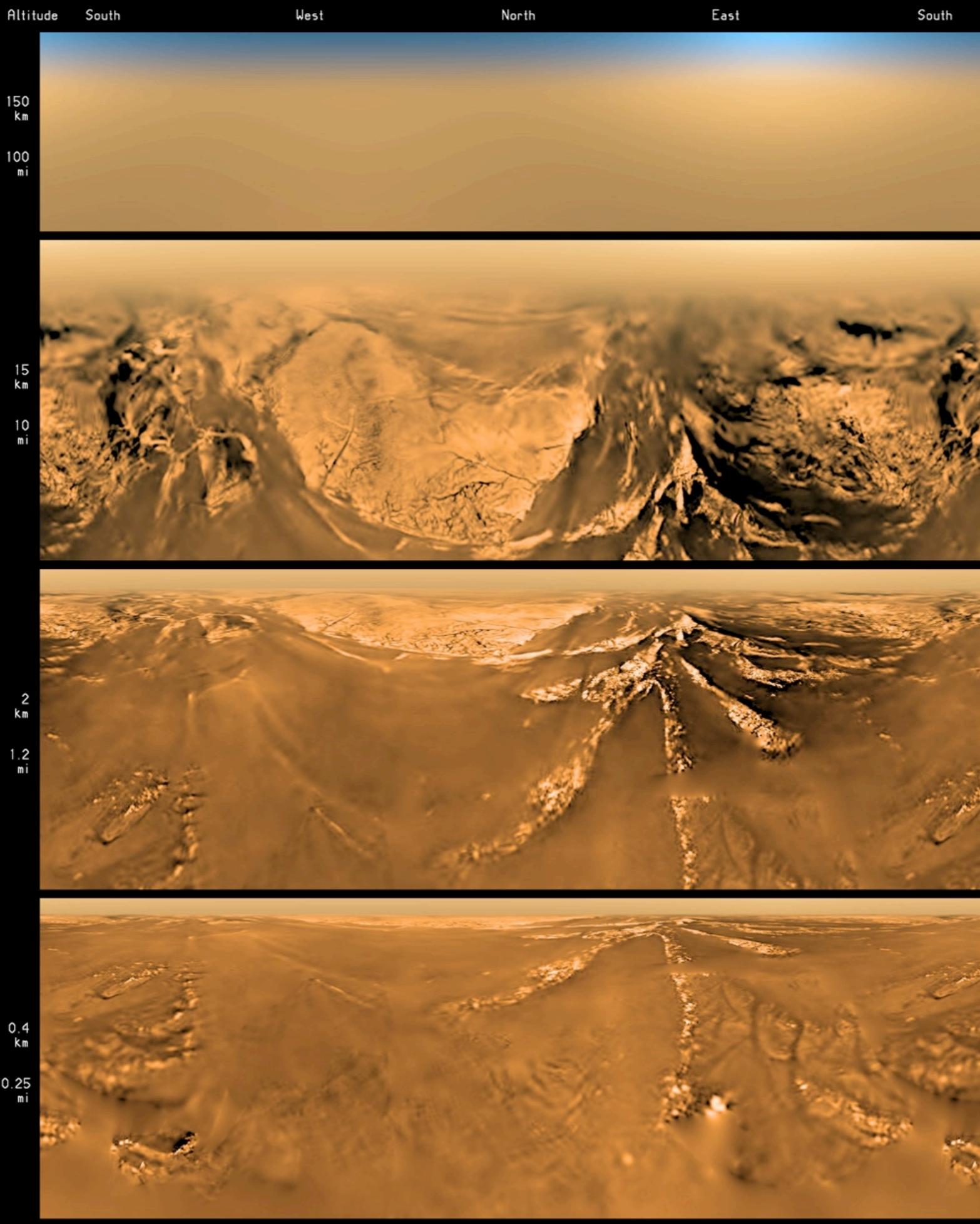


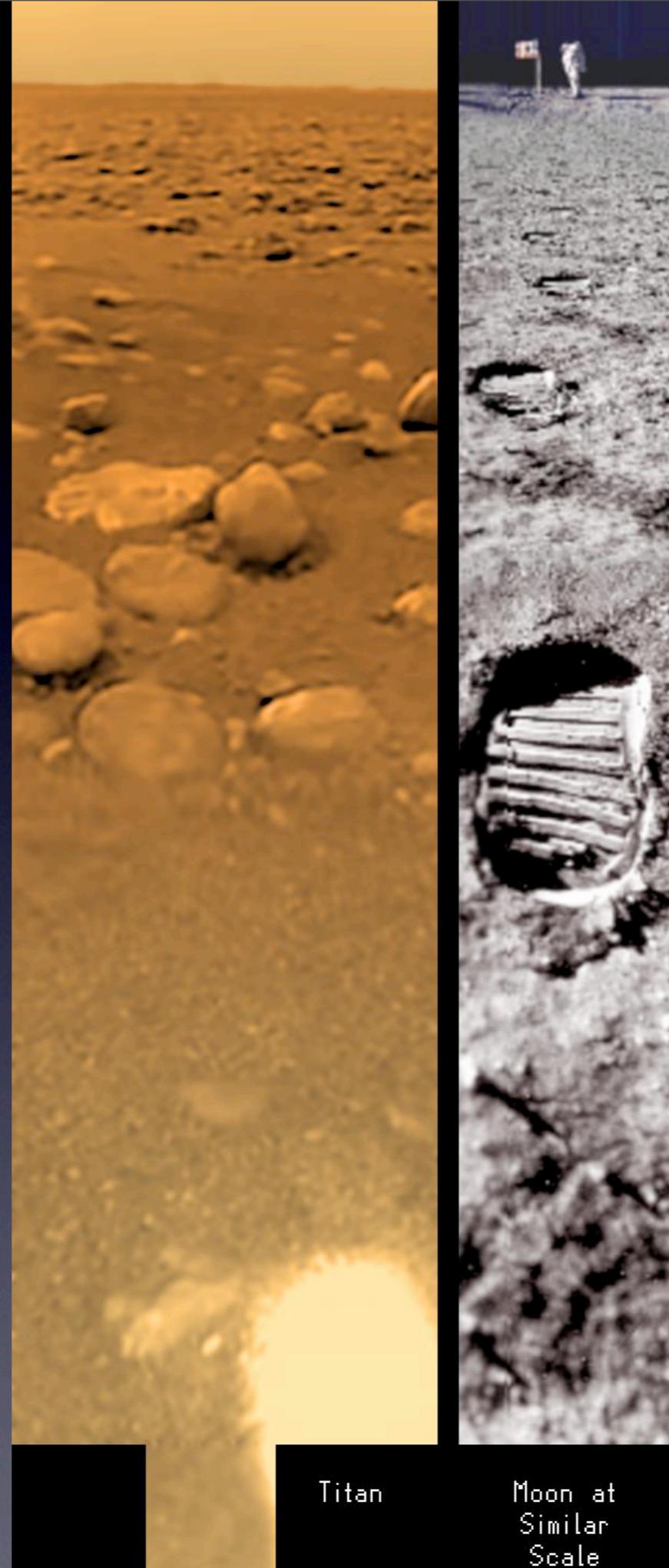






Aerial Views of Titan Around the Huygens Landing Site





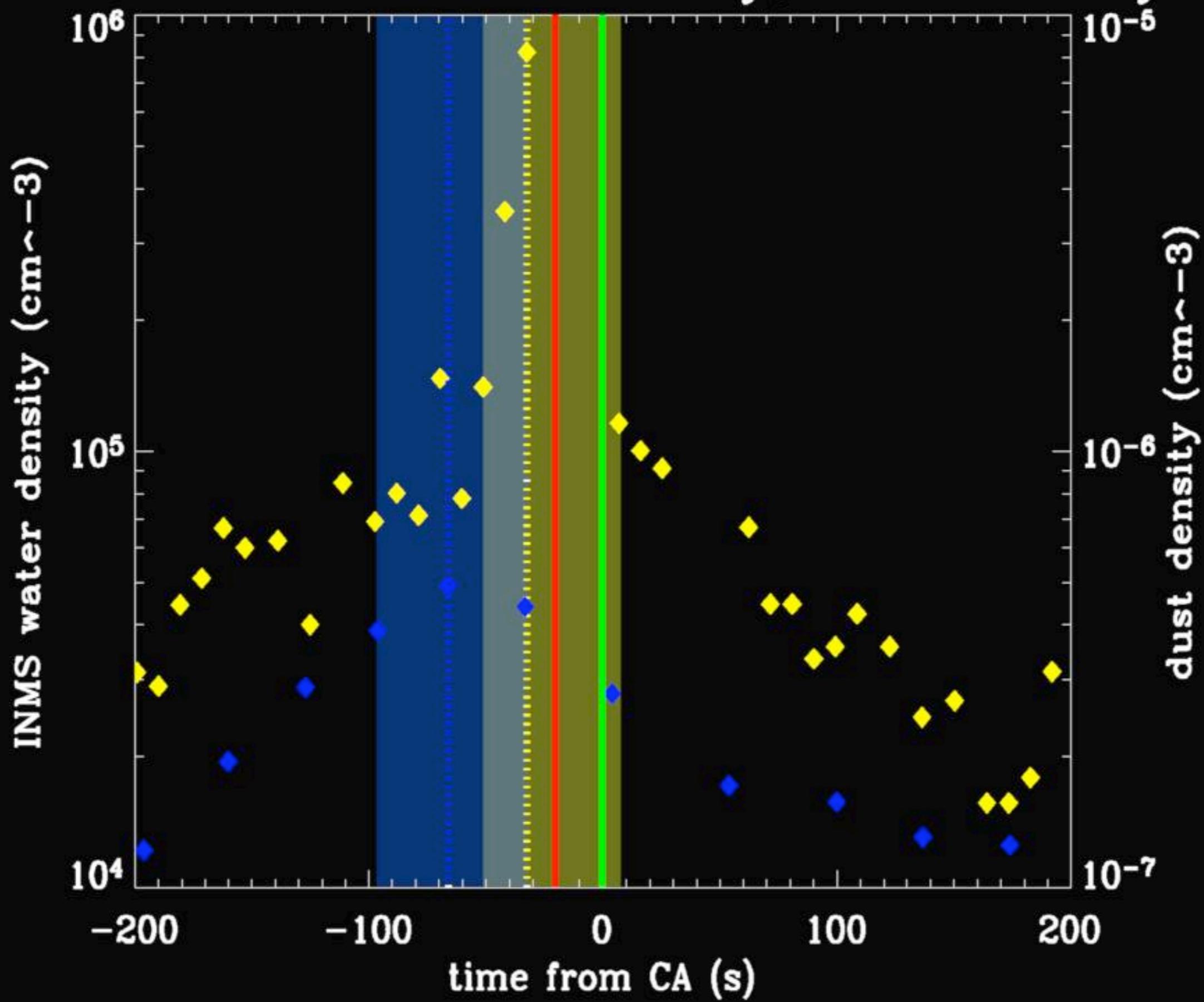
Titan

Moon at
Similar
Scale

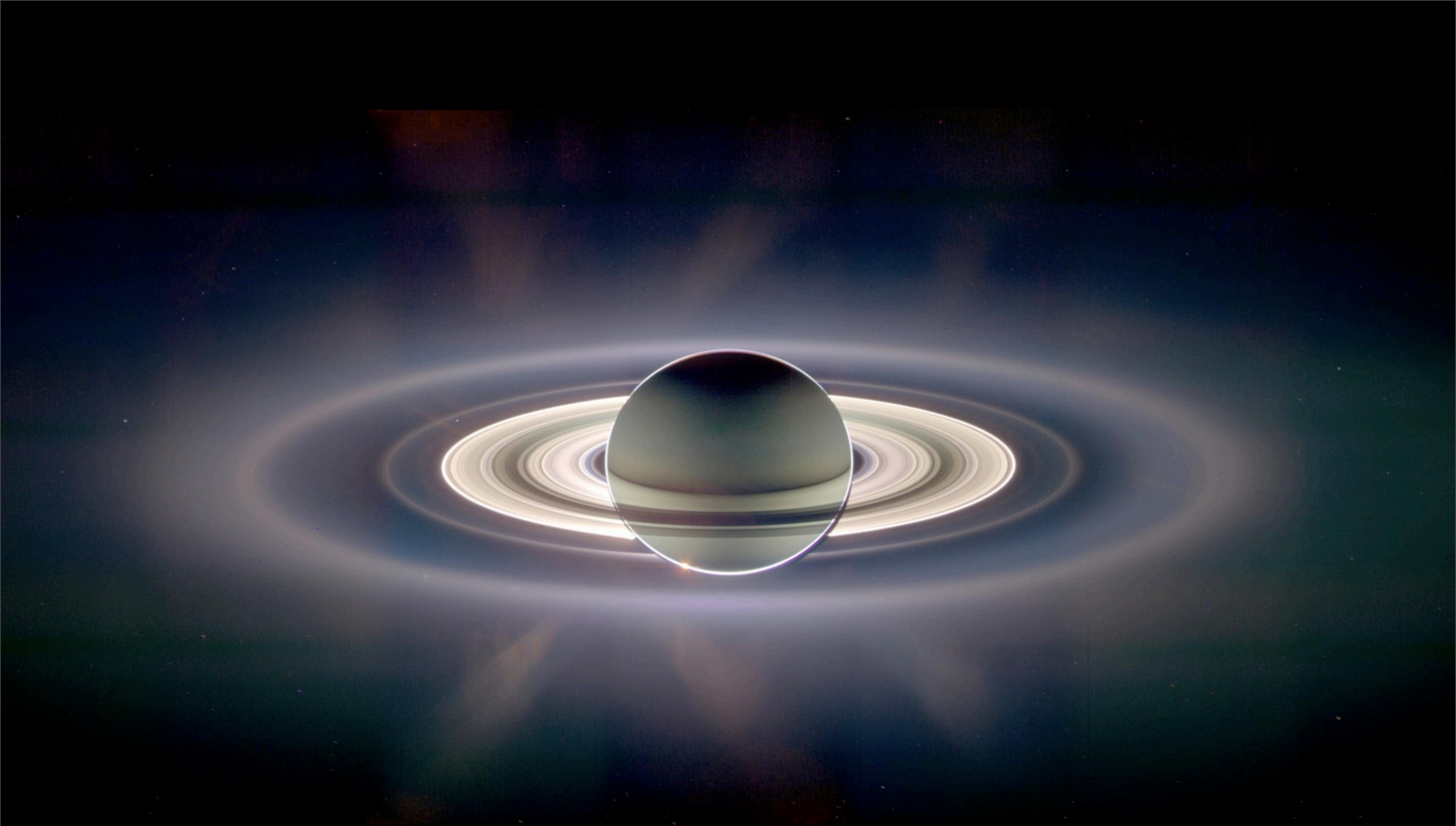


Enceladus plume

Enceladus- Water Density, Dust density

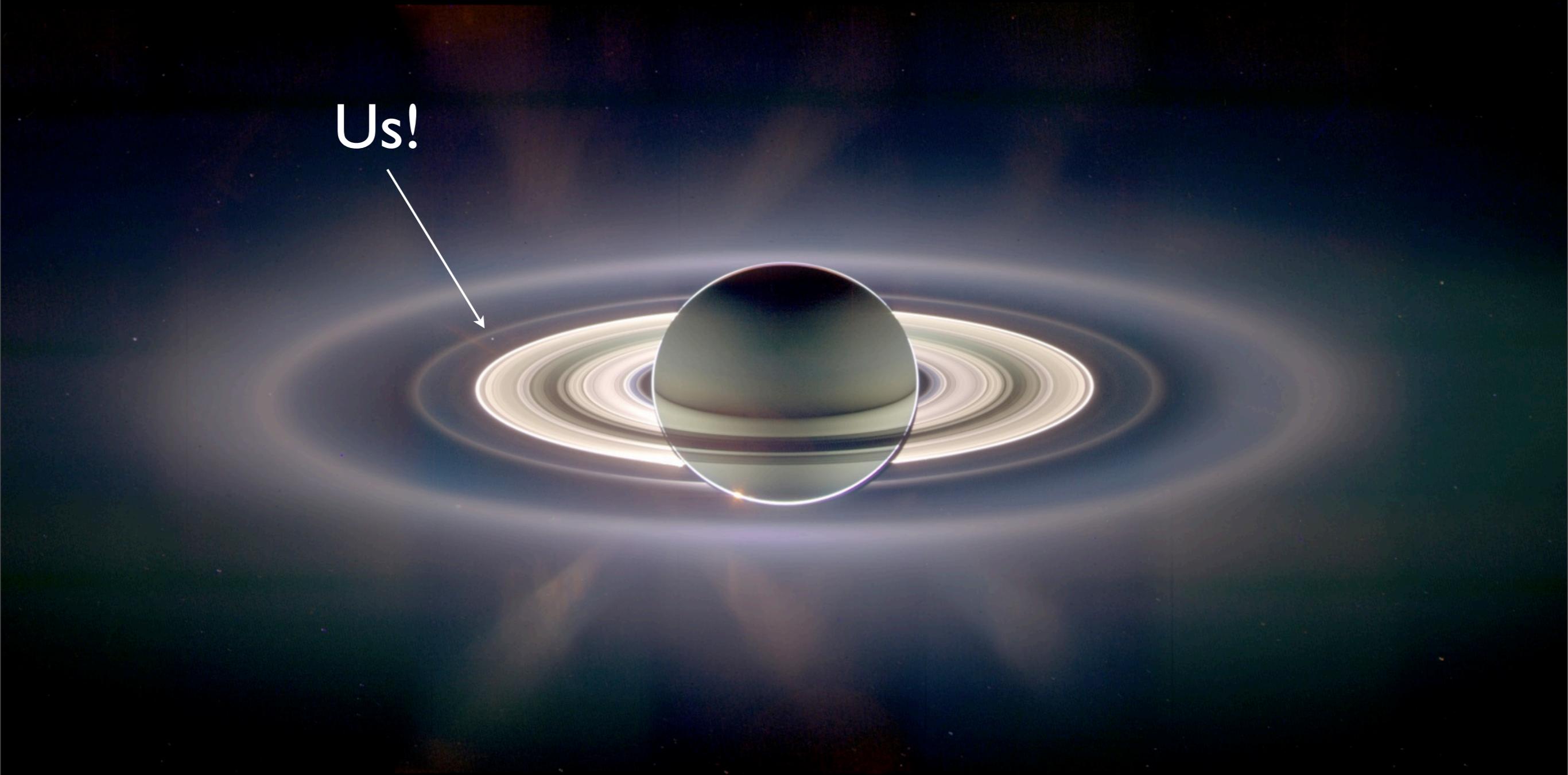


Passing through the plume.



<http://saturn.jpl.nasa.gov>

<http://ciclops.org>



<http://saturn.jpl.nasa.gov>

Don't forget [galaxyzoo.org!](http://galaxyzoo.org)

<http://ciclops.org>