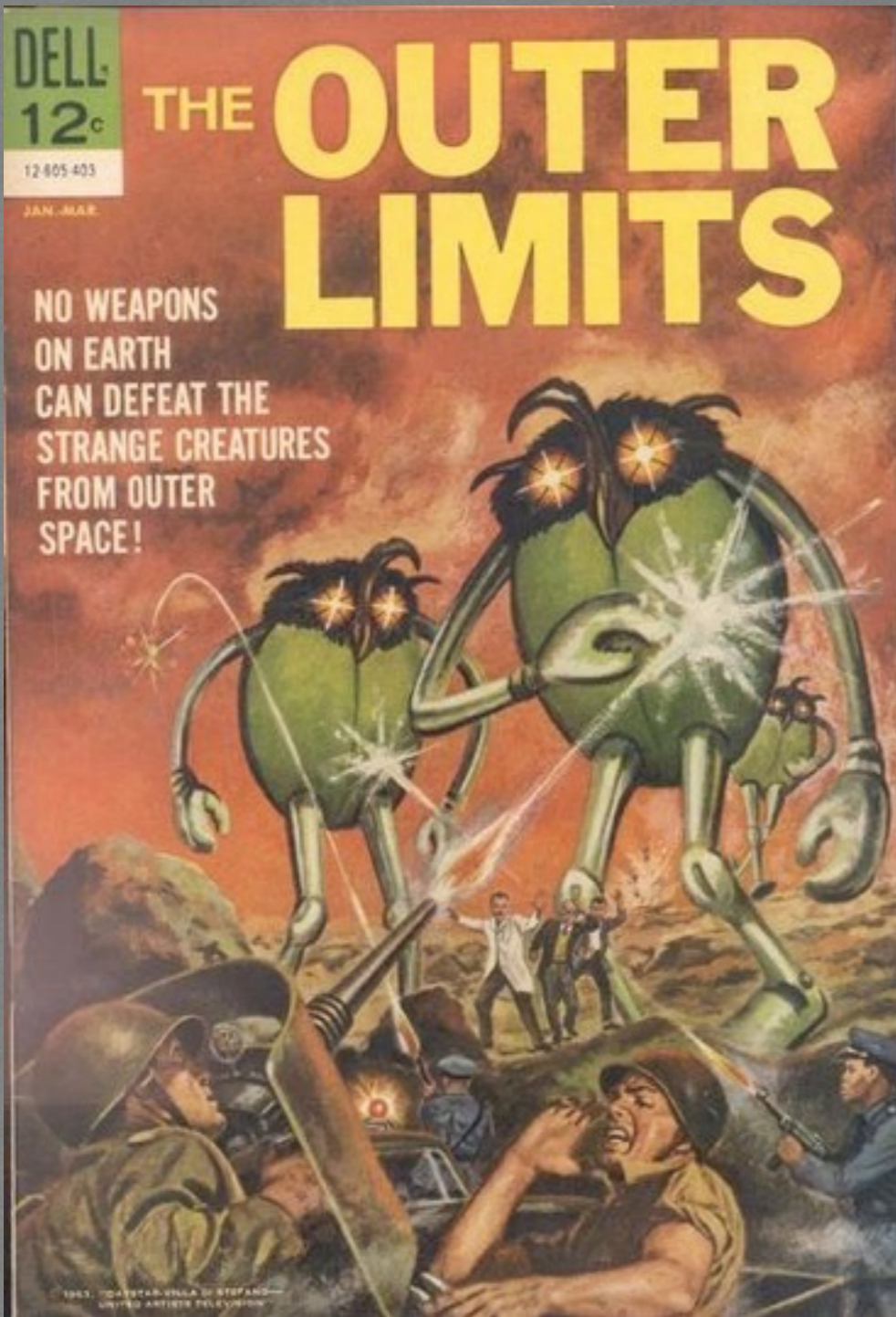
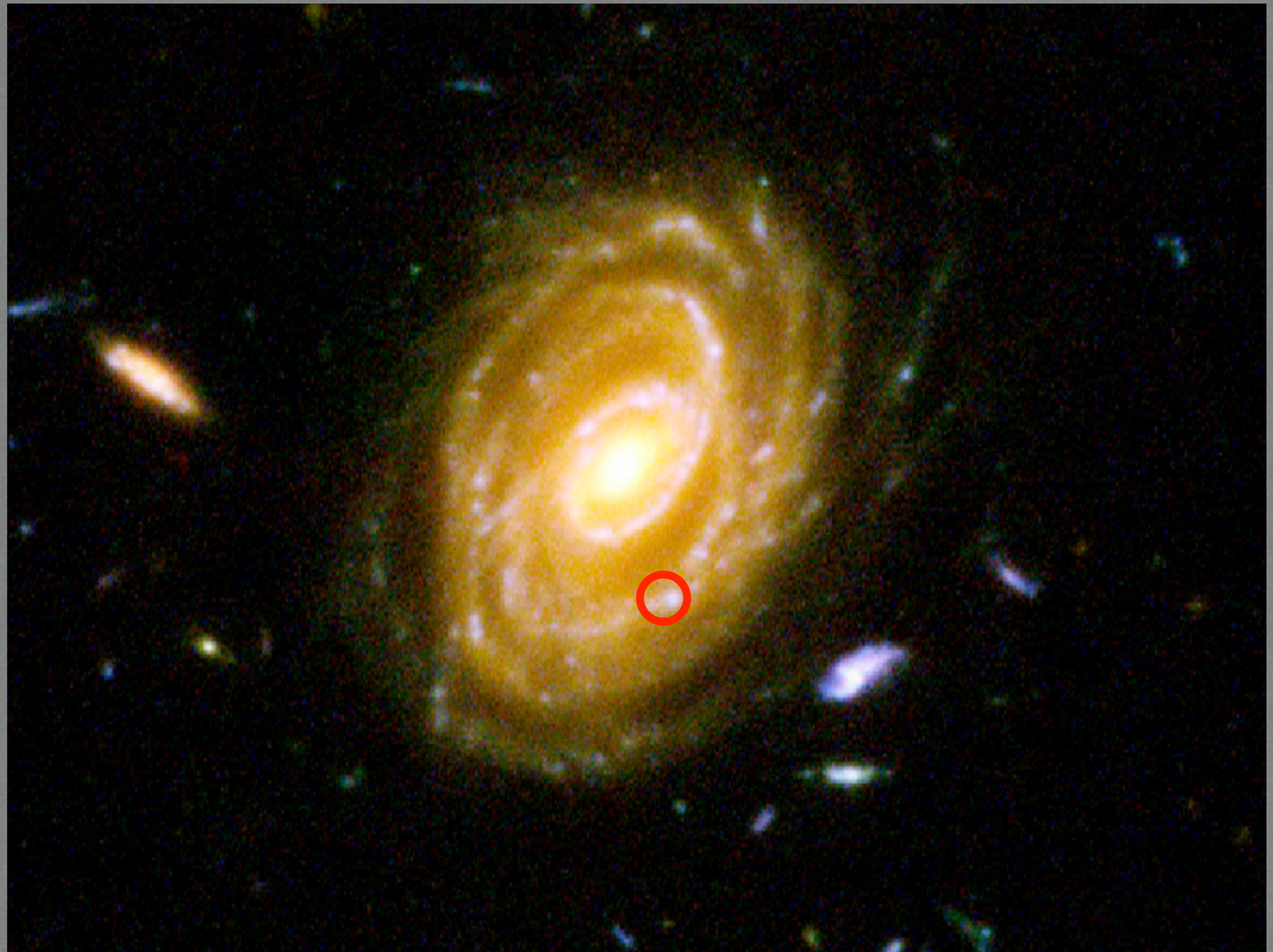
A black and white photograph showing a curved horizon of a planet, likely Earth, in the foreground. The sky above is dark, and a crescent moon is visible in the upper right portion of the frame. The planet's surface shows some texture and shadows.

All These Worlds Are Yours:
The Scientific Search for Alien Life

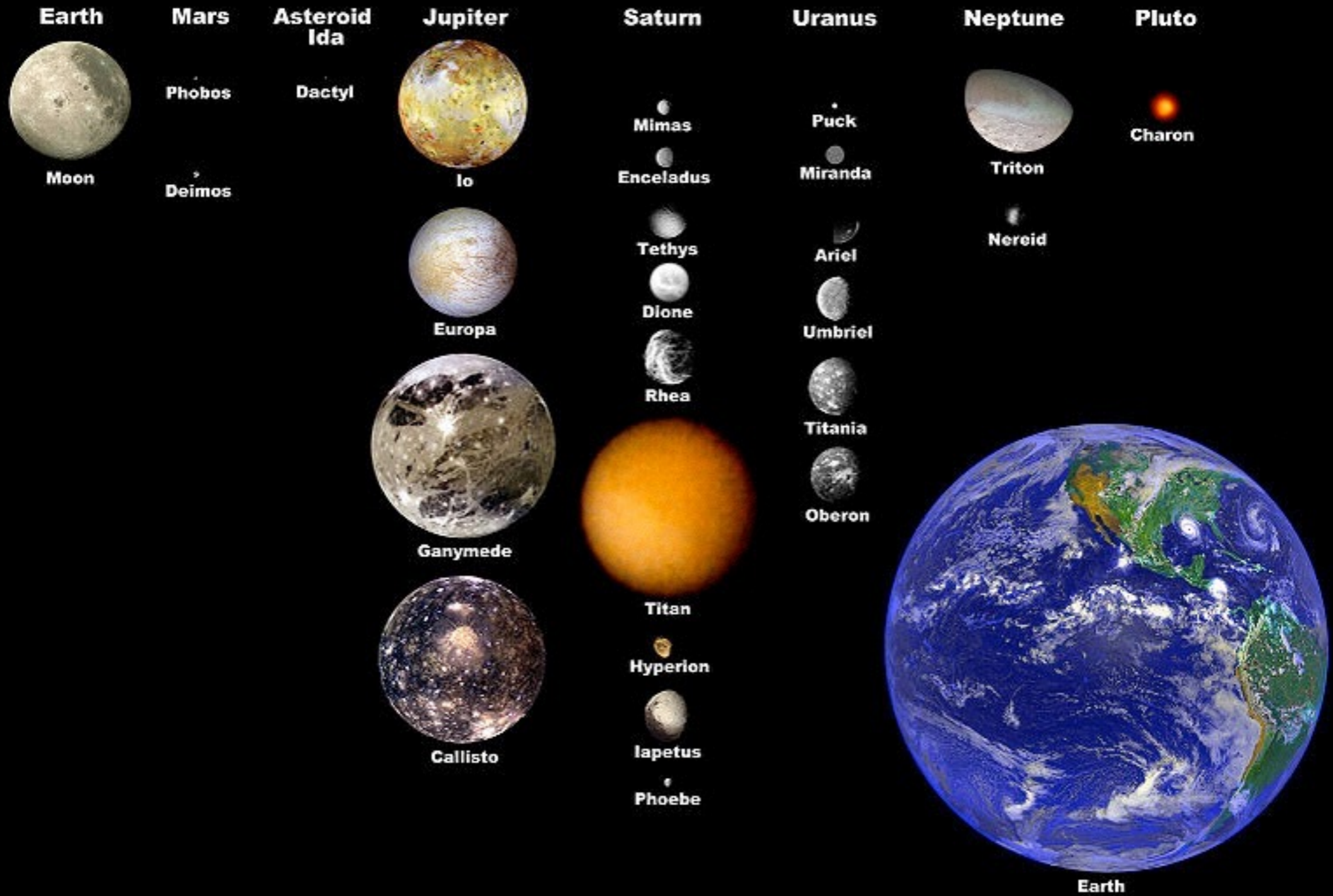
Jon Willis







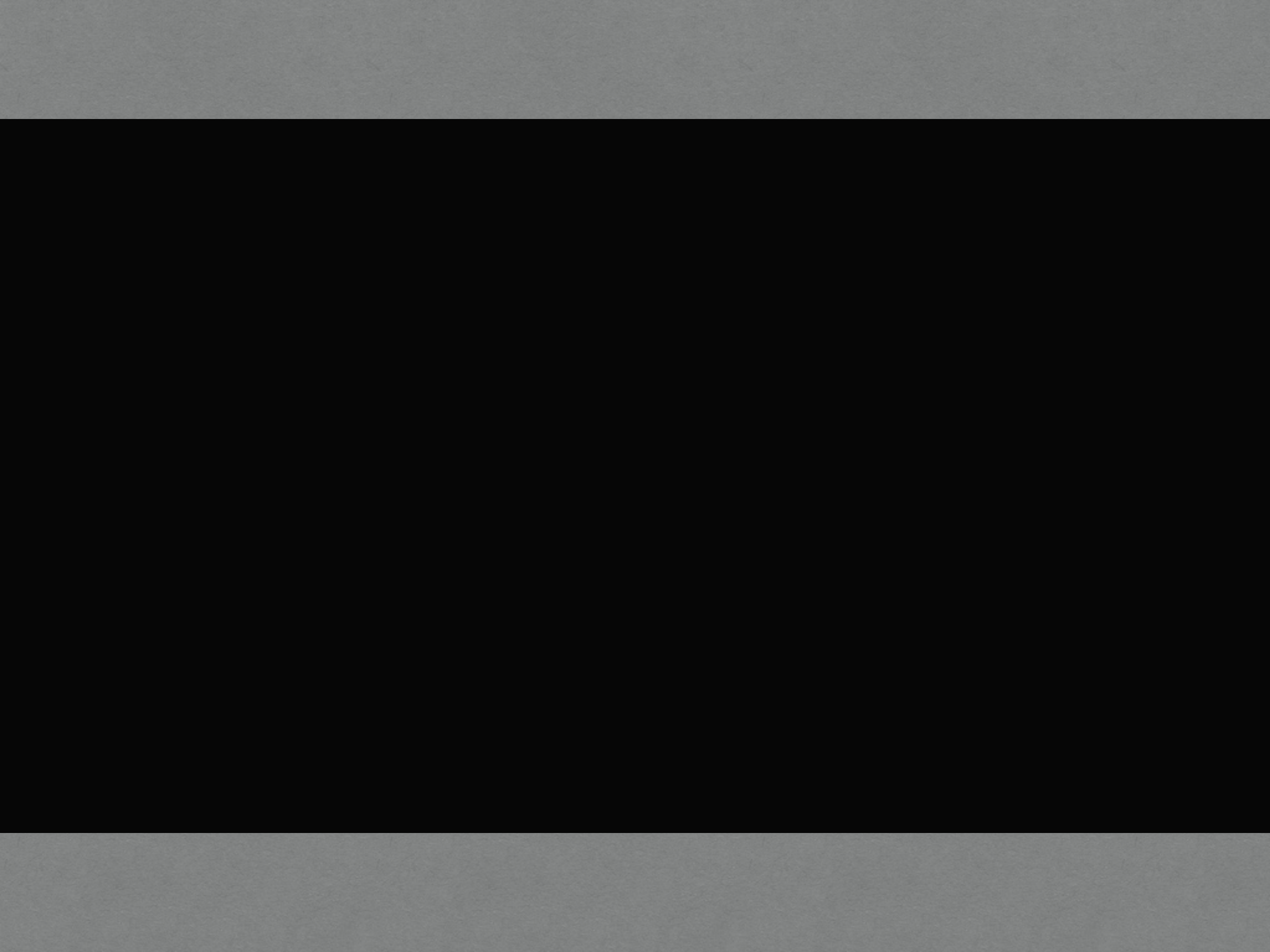
Moons of the Solar System Scaled to Earth's Moon

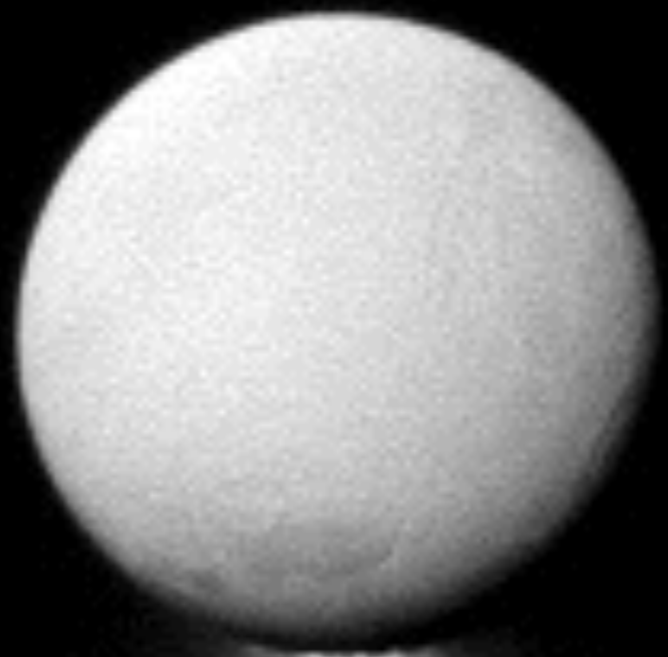


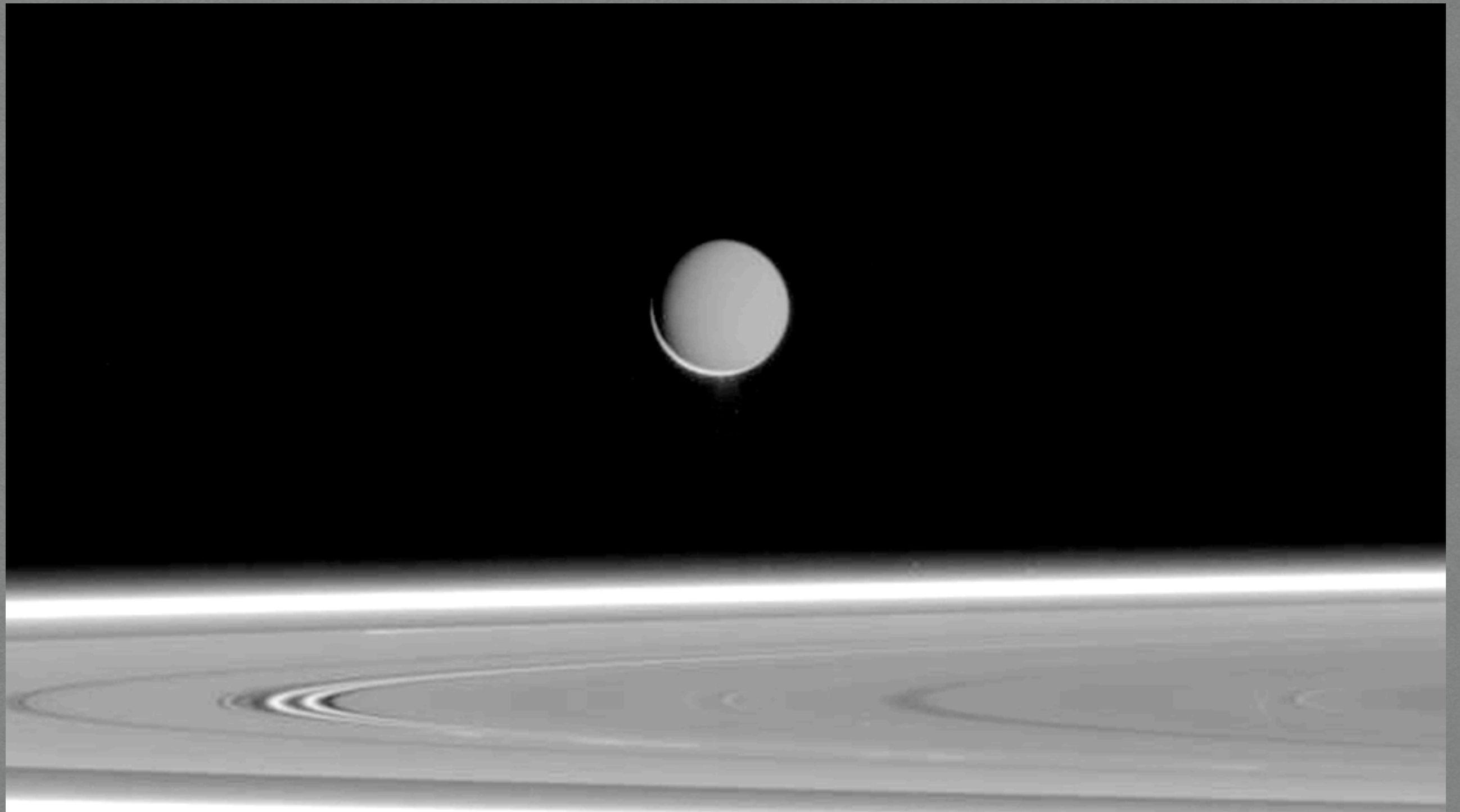
A question of priorities...

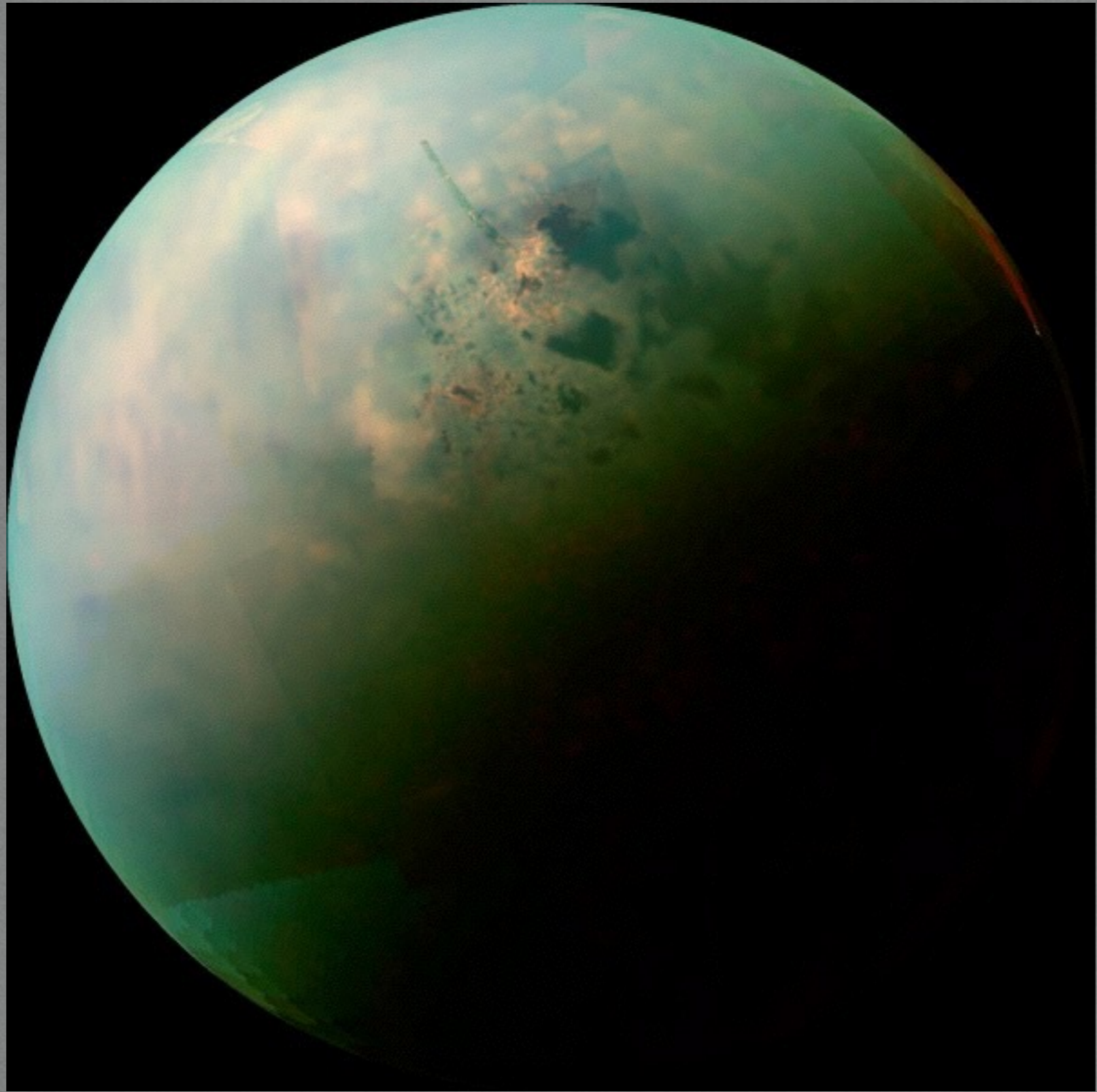
- All science projects are limited by funding.
- What would you do if I gave you \$4 billion?
- The NASA planetary science budget is just over \$1 billion per year.
- \$4 billion is also 1 day's worth of annual defence spending.












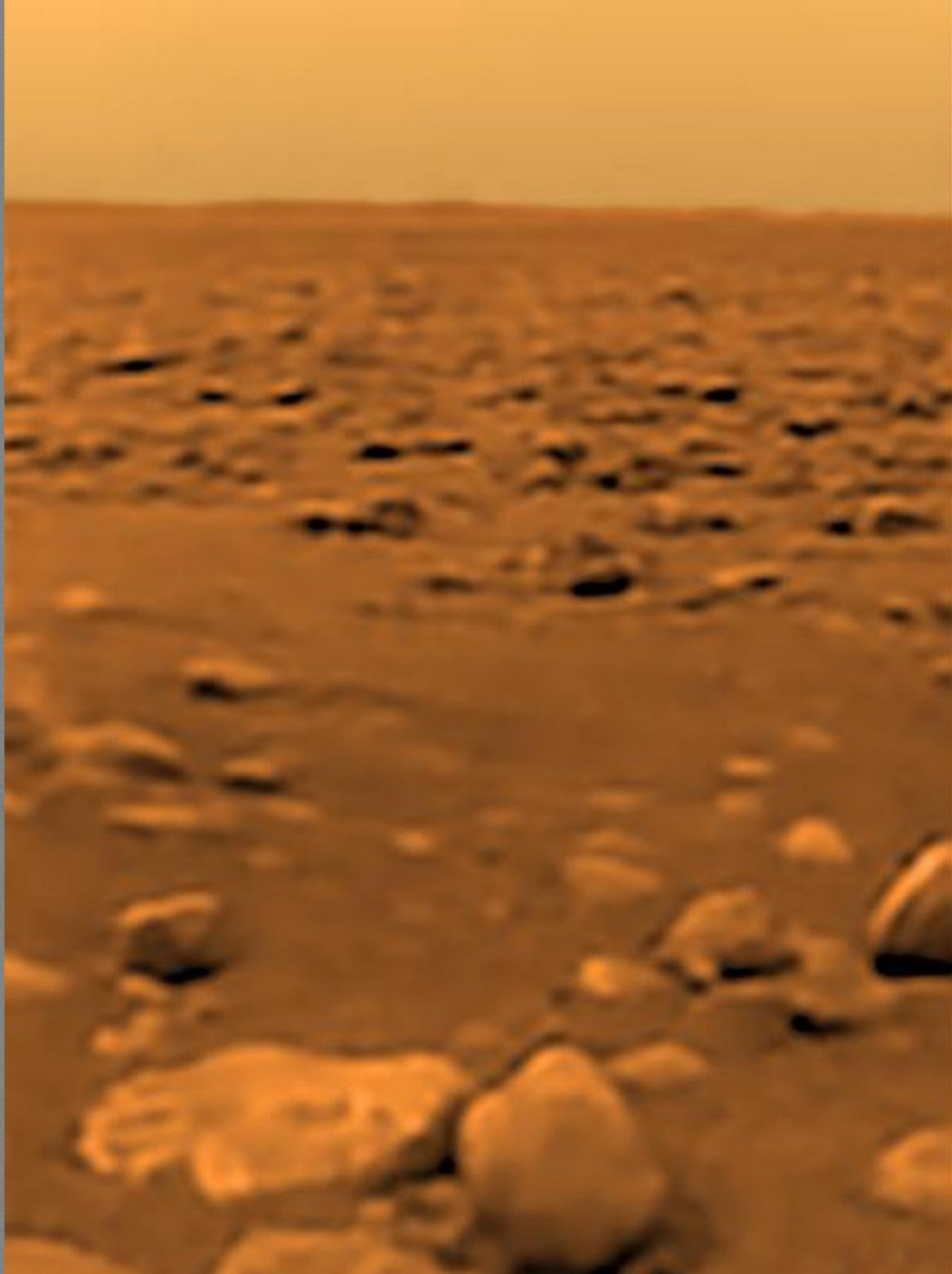
Approaching Titan a Billion Times Closer

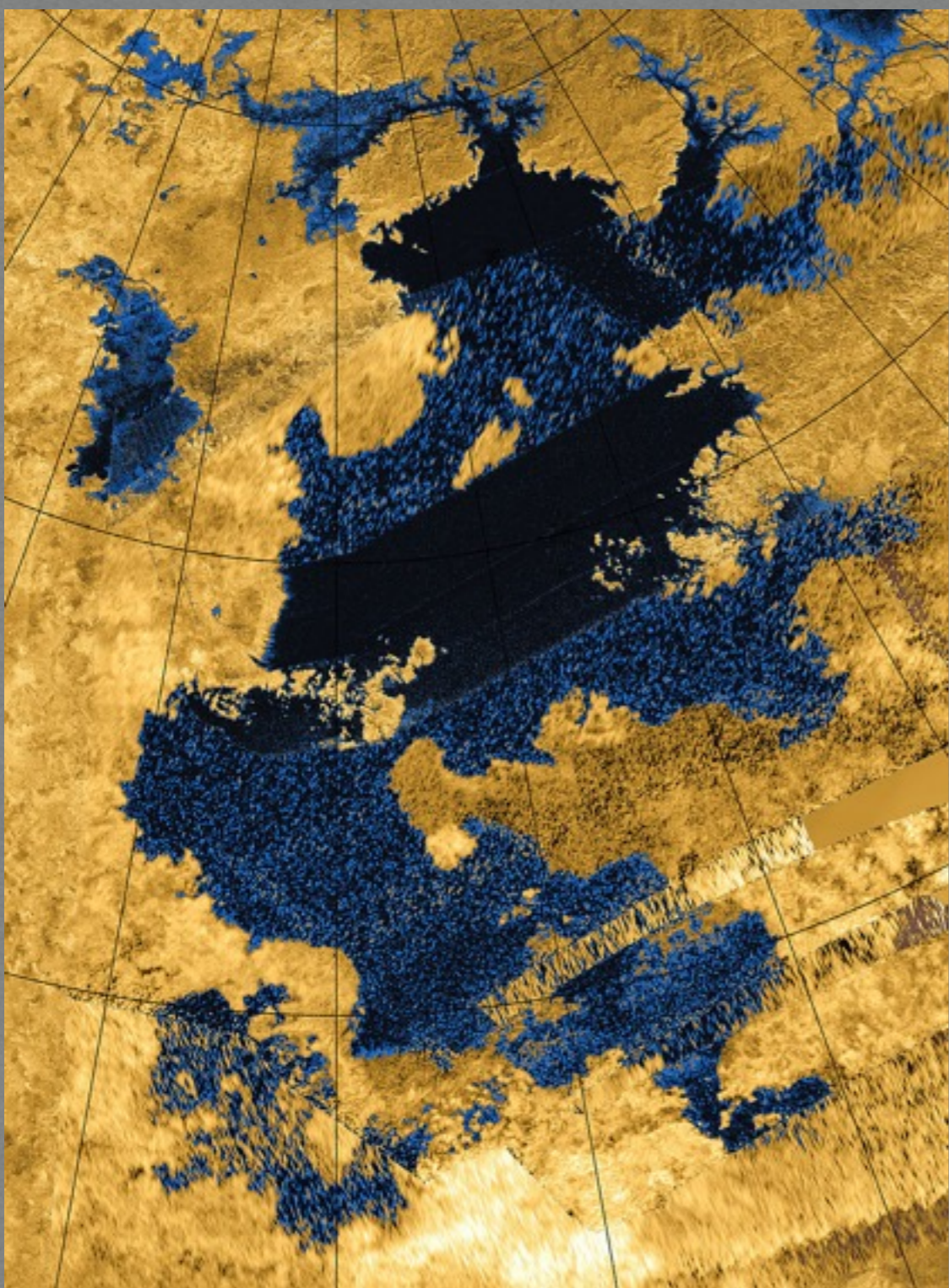
Based on data from Huygens' Descent Imager/Spectral Radiometer
and Cassini's Imaging Science Subsystem (images PIA14922, 14908)



Erich Karkoschka
University of Arizona
and the DISR team
NASA, ESA, JPL, CICLOPS
Narrator Dan Kruse

Scale on Titan 20000 km








ALL 786 KNOWN PLANETS

(AS OF JUNE 2012)

TO SCALE

(SOME PLANET SIZES ESTIMATED BASED ON MASS)

THIS IS OUR SOLAR SYSTEM.

THE REST OF THESE ORBIT OTHER STARS
AND WERE ONLY DISCOVERED RECENTLY.

MOST OF THEM ARE HUGE BECAUSE
THOSE ARE THE KIND WE LEARNED TO
DETECT FIRST, BUT NOW WE'RE FINDING THAT
SMALL ONES ARE ACTUALLY MORE COMMON.

WE KNOW NOTHING ABOUT WHAT'S ON ANY OF THEM.
WITH BETTER TELESCOPES, THAT WOULD CHANGE.

• THIS IS AN EXCITING TIME.

TRAPPIST-1 System



Inner Solar System



Enlarged 25x

Illustration

PALE RED DOT

ALPHA CENTAURI A

PROXIMA CENTAURI

ALPHA CENTAURI B

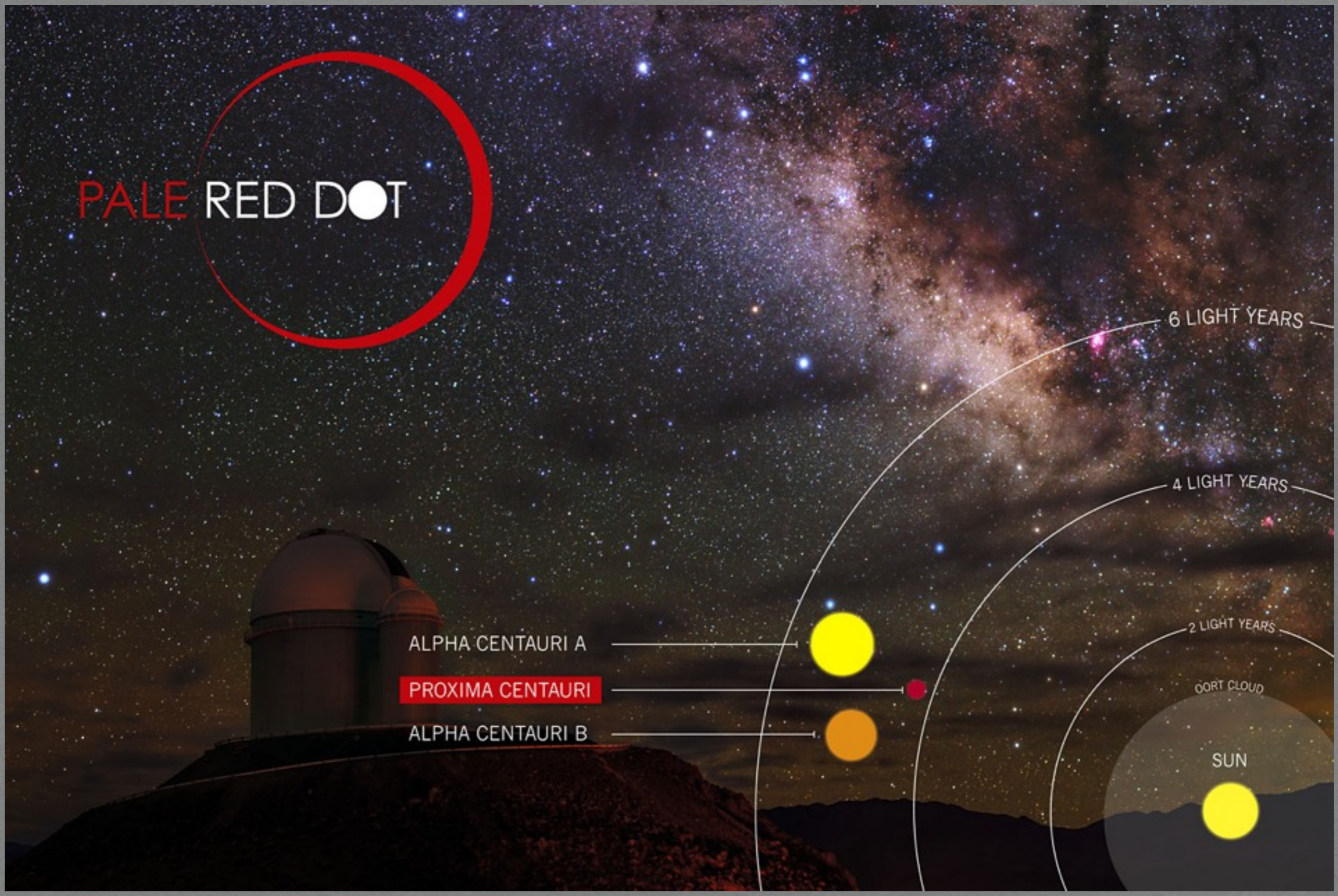
6 LIGHT YEARS

4 LIGHT YEARS

2 LIGHT YEARS

OORT CLOUD

SUN

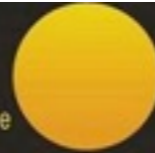




BREAKTHROUGH STARSHOT



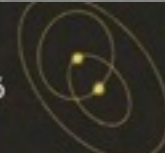
Moon
230,100 miles
Times round world 9.2
Starchip journey time - 1 minute



Sun
92.95million miles
Times round world 3,732
Starchip journey time - 41 mins

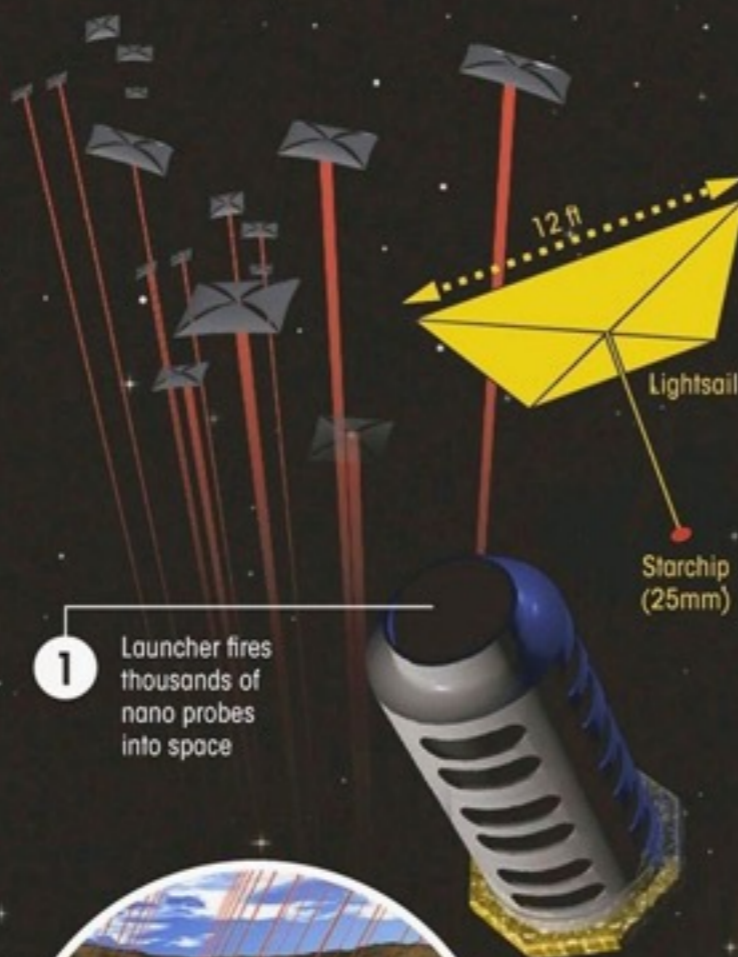


Edge of solar system
4.6 trillion miles
Times round world 184,731,536
Starchip journey time - 4 years



Alpha Centauri
25 trillion miles
Times round world 1,003,975,743
Starchip journey time - 20 years

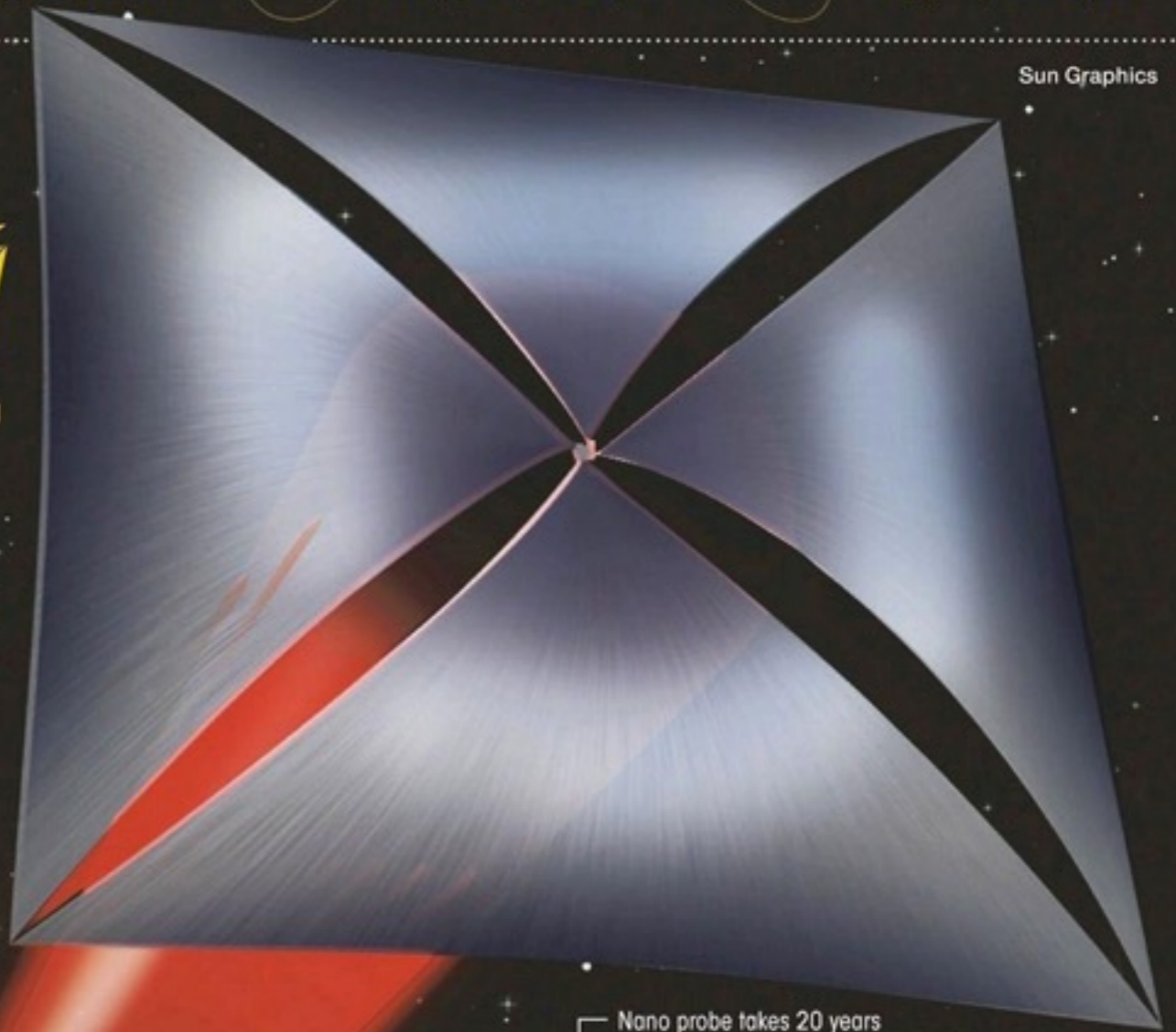
Sun Graphics



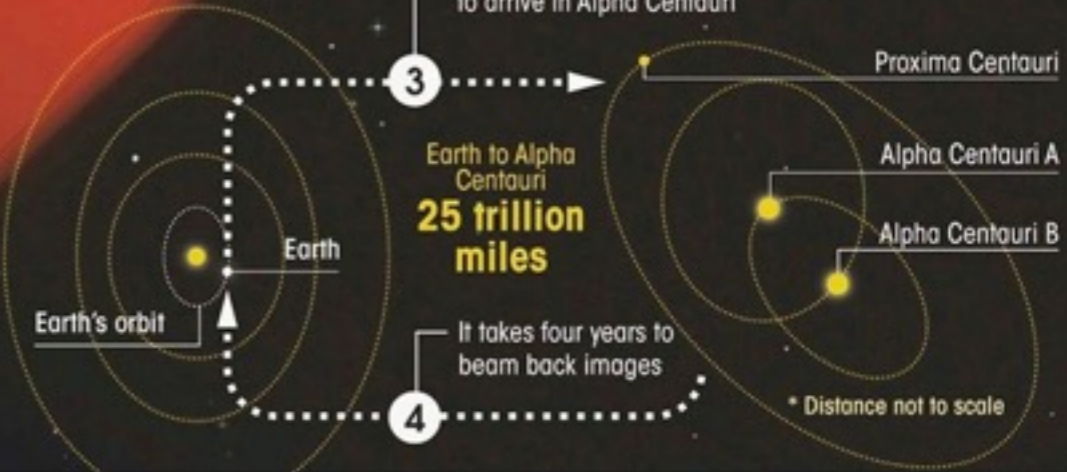
1 Launcher fires thousands of nano probes into space



2 Lasers power nano chip to 1/5th the speed of light using photon technology



3 Nano probe takes 20 years to arrive in Alpha Centauri



4 It takes four years to beam back images

Coming soon: An Astrobiological Grand Tour

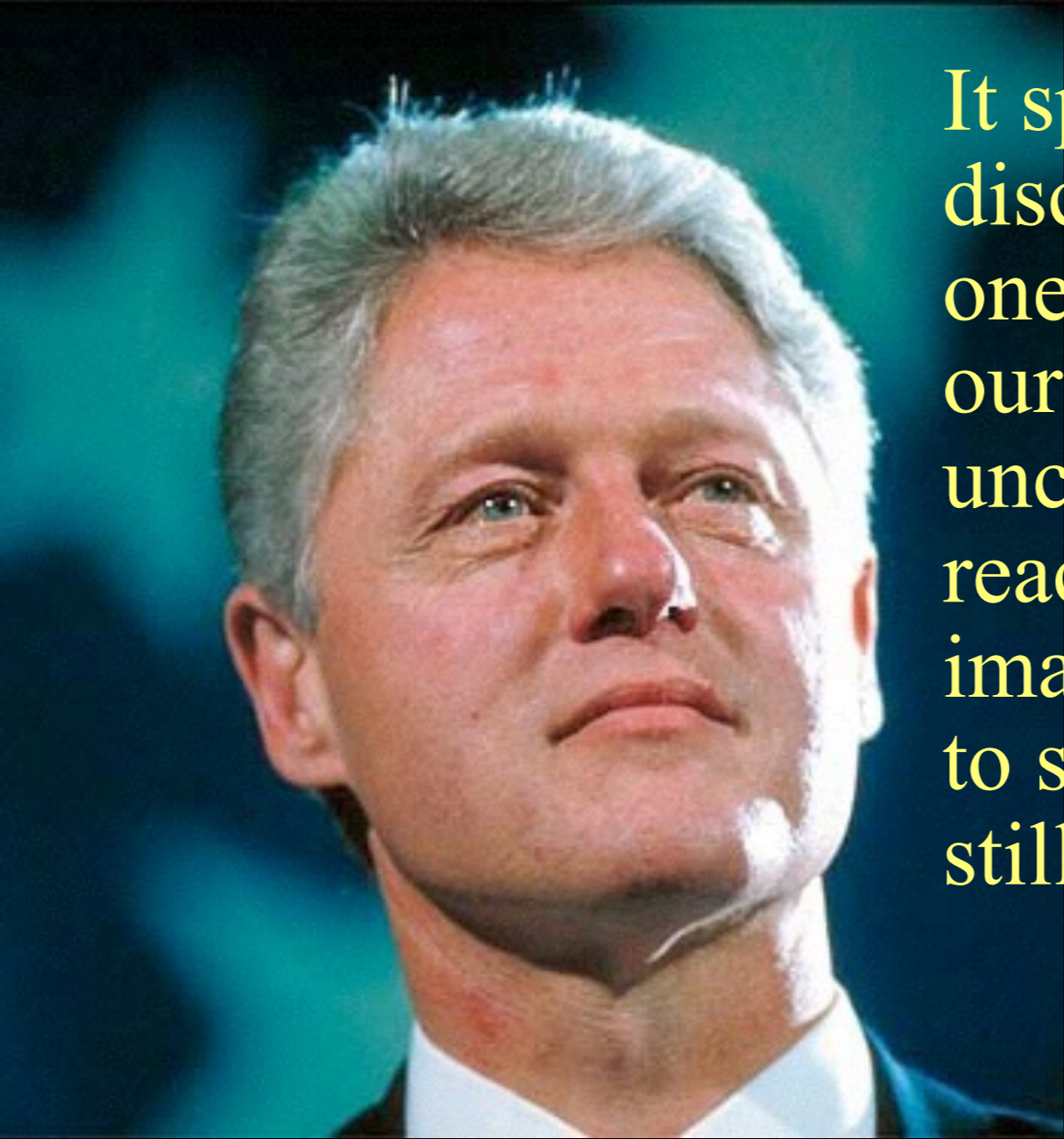




Wiring the Abyss 2013

Highlights From Past Expeditions

www.oceannetworks.ca/cruise13



It speaks of the possibility of life. If this discovery is confirmed, it will surely be one of the most stunning insights into our universe that science has ever uncovered. Its implications are as far-reaching and awe-inspiring as can be imagined. Even as it promises answers to some of our oldest questions, it poses still others even more fundamental.