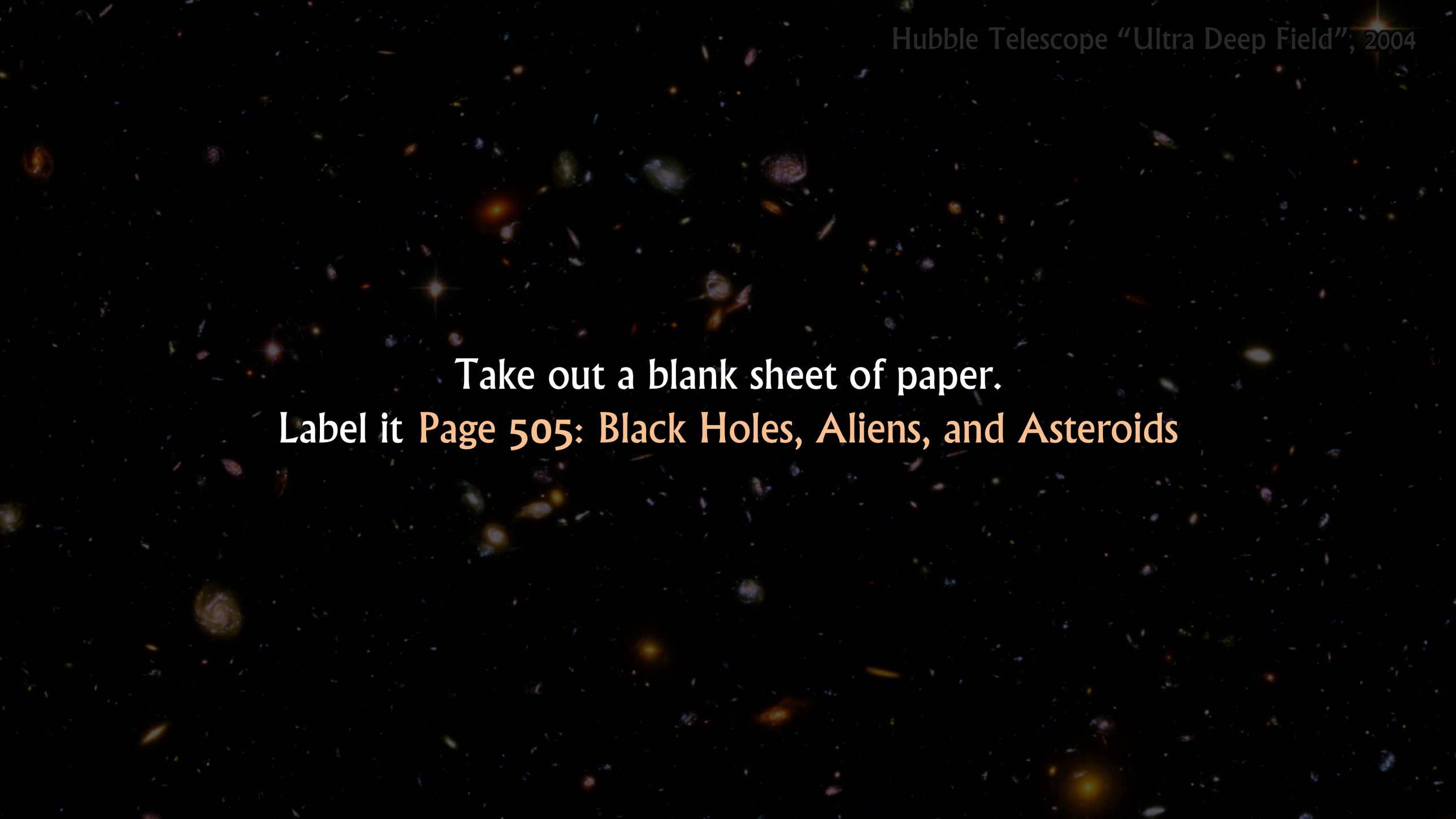


Take out a blank sheet of paper.

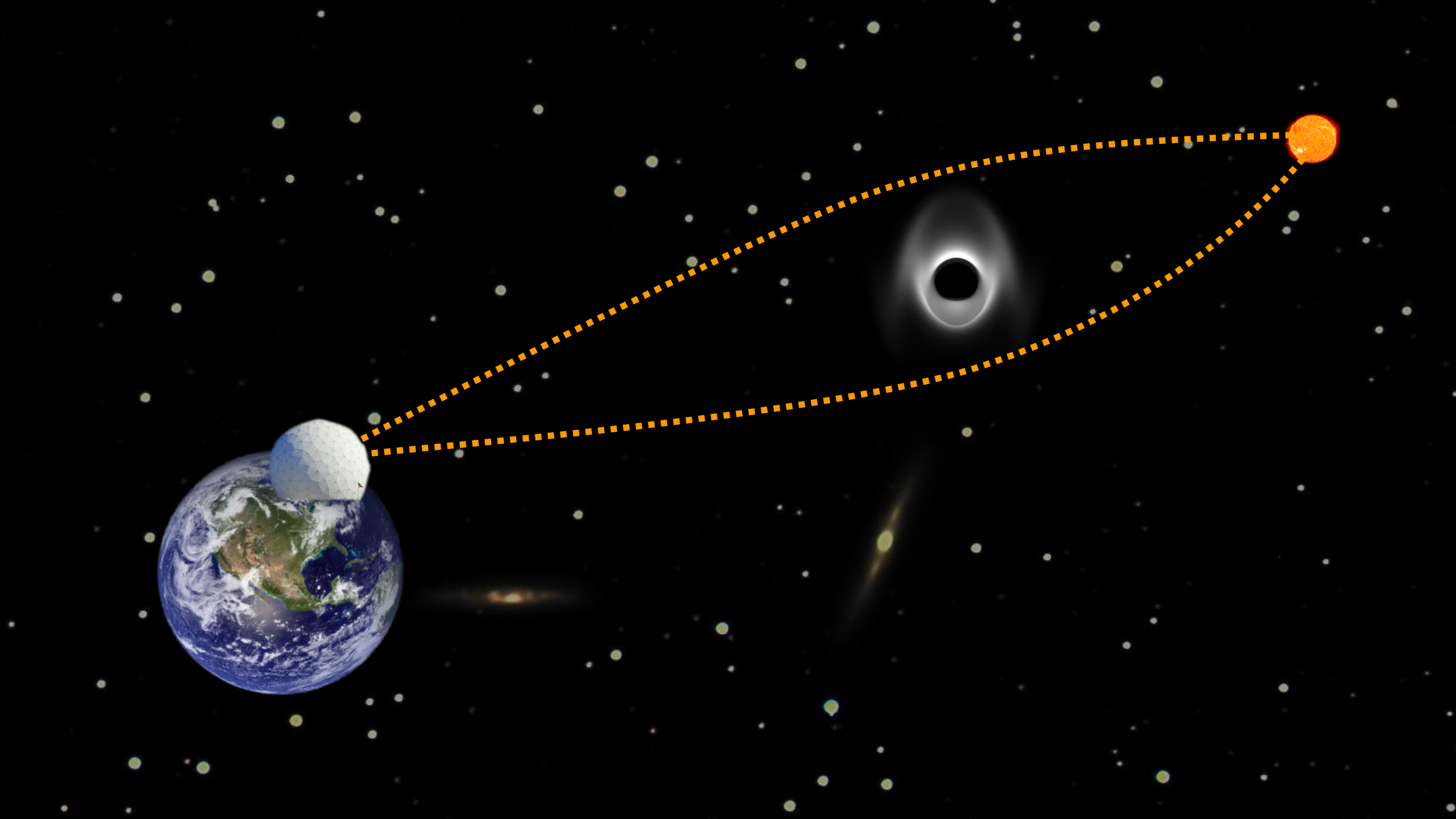
Label it Page 505: Black Holes, Aliens, and Asteroids

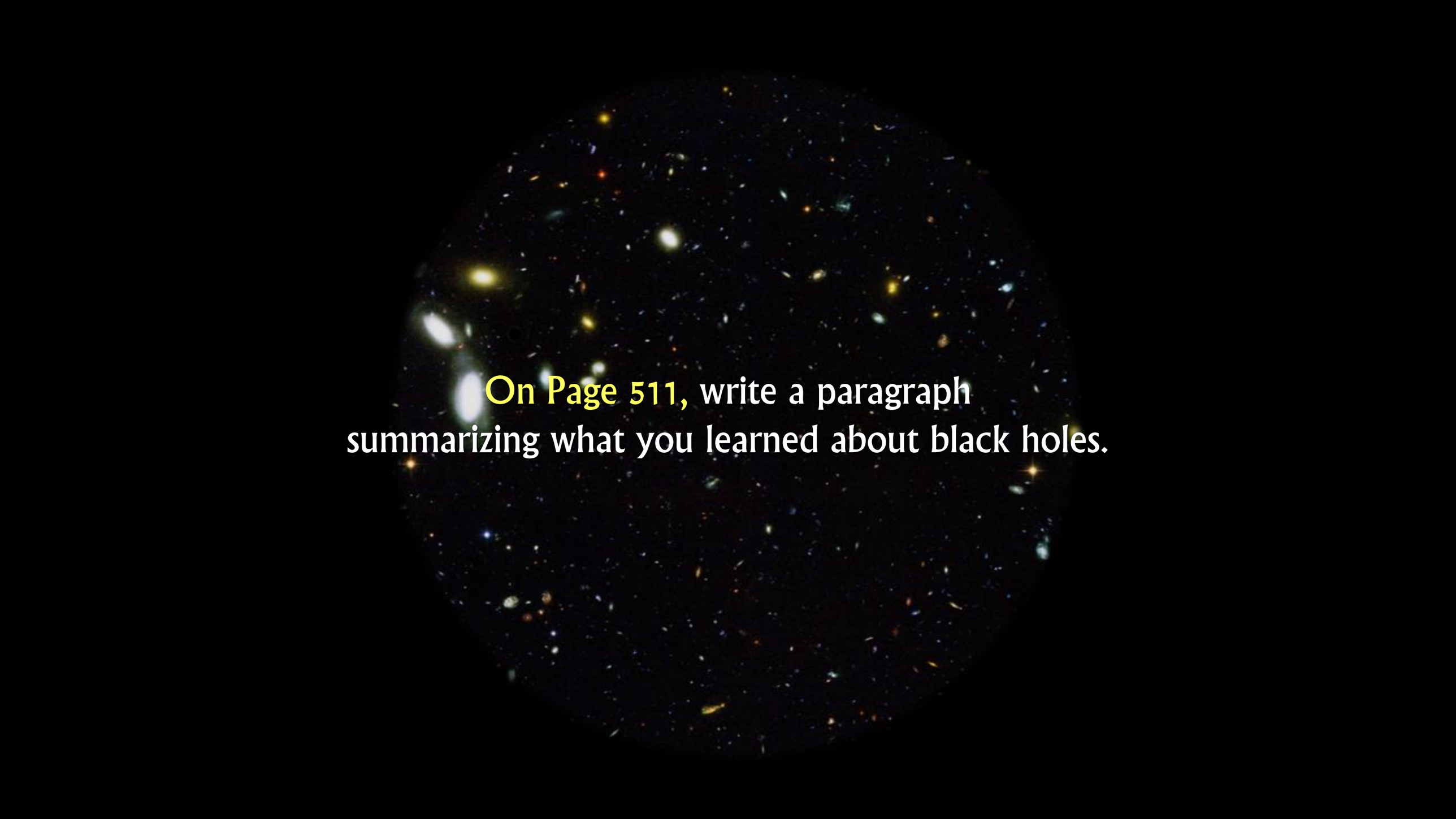
Black Holes

In 1905, Albert Einstein developed his theory of relativity, which among other things, said that gravity does influence light's motion.

$$v_e = \sqrt{\frac{2GM}{r}}$$

A project run by MIT's Haystack Observatory is attempting to observe a black hole directly. Initial results are encouraging.




On Page 511, write a paragraph
summarizing what you learned about black holes.

Alien Life?

What conditions are needed for alien life?

The Basic Answer:

- A terrestrial planet
- Medium temperatures (5°F to 250°F)
- Liquid water or other solvent
- Oxygen gas

The Complicated Answer:

- We have no #*@!$ idea

Kepler 22b

(closest Earth-like planet)

- Similar star to the sun
- Year lasts 290 days
- 2.4 times bigger than Earth
- Temperature could be around 72°F
- Could be an ocean world

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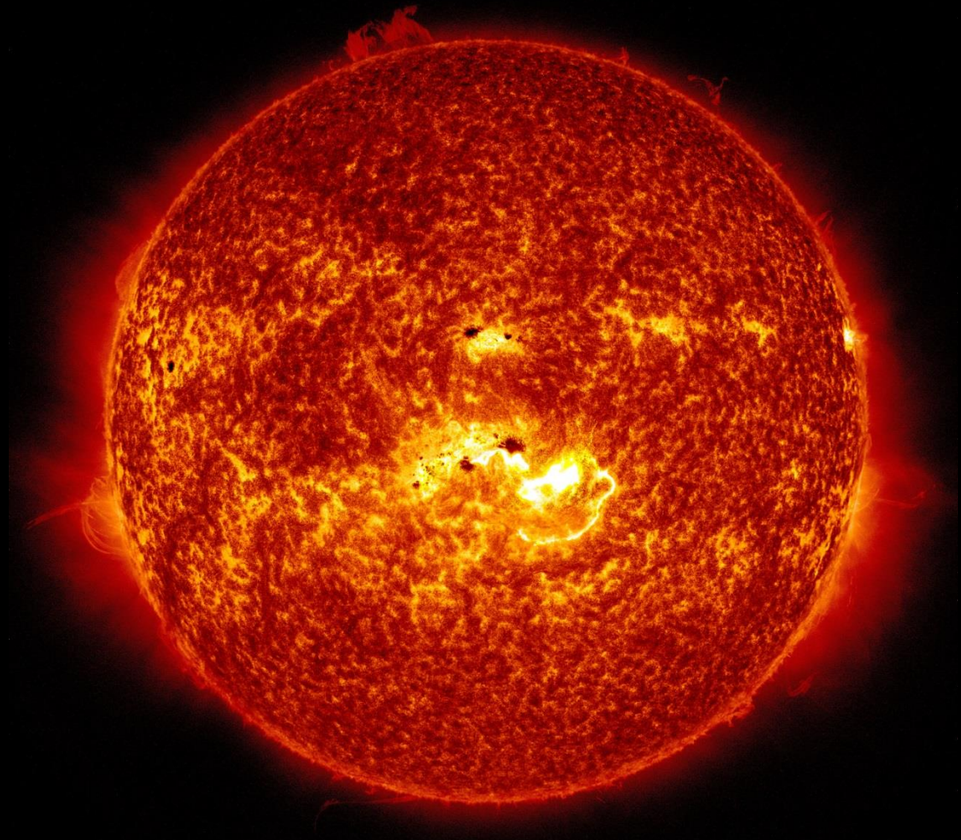
Summarize what you learned about the potential for Alien Life on Page 511.

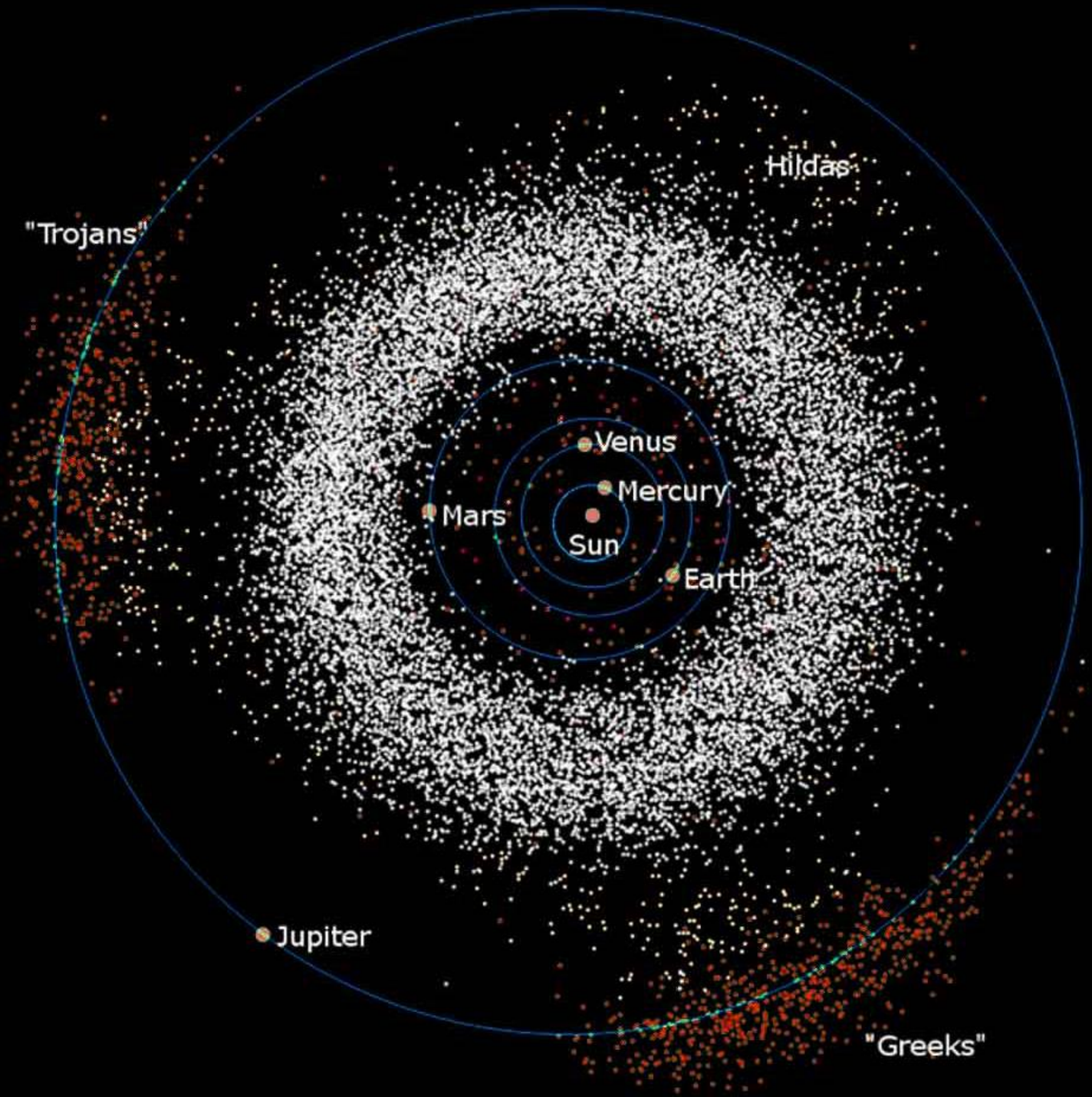
Asteroids

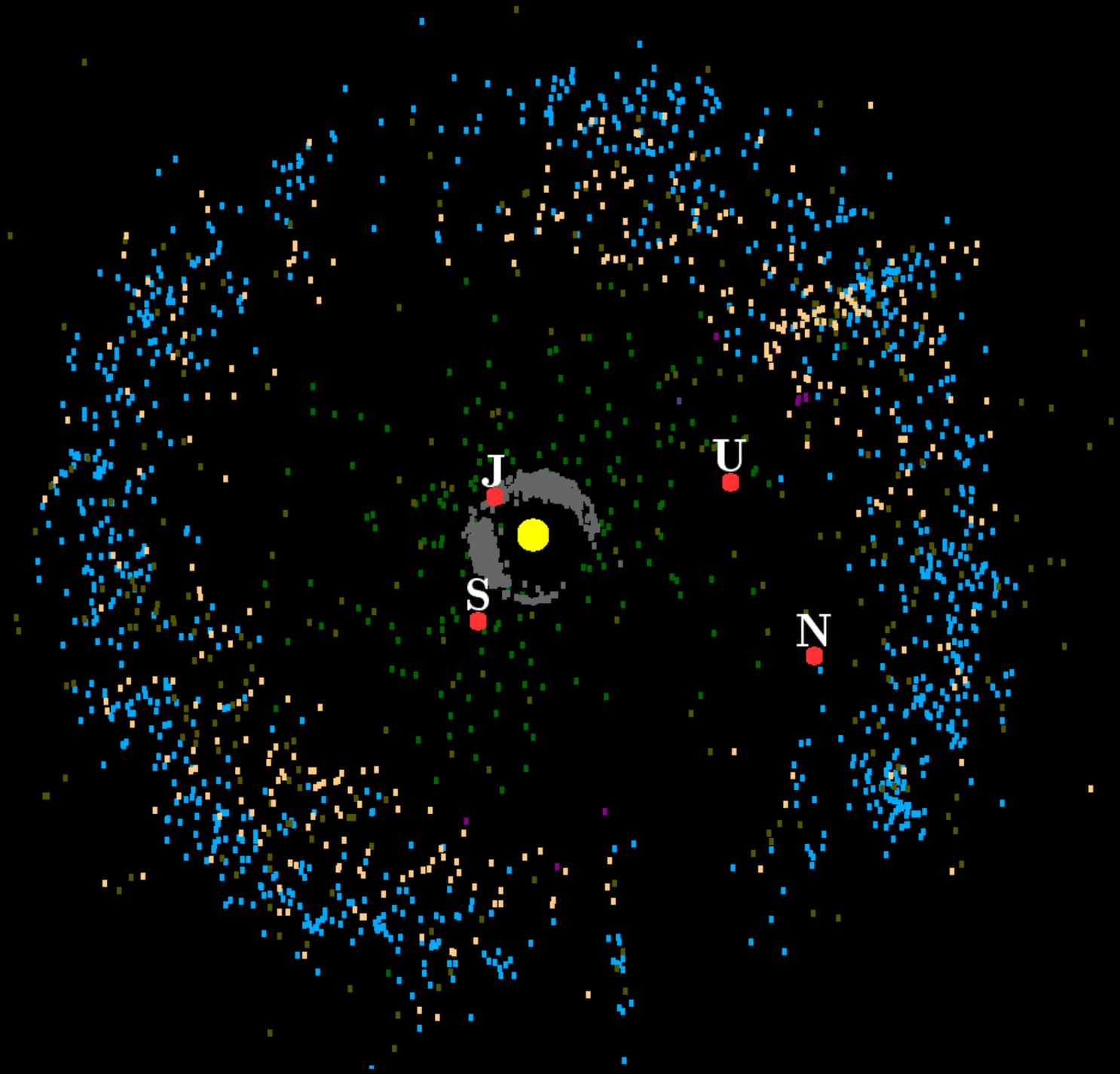
Asteroids, Meteors, Comets
“space rocks”

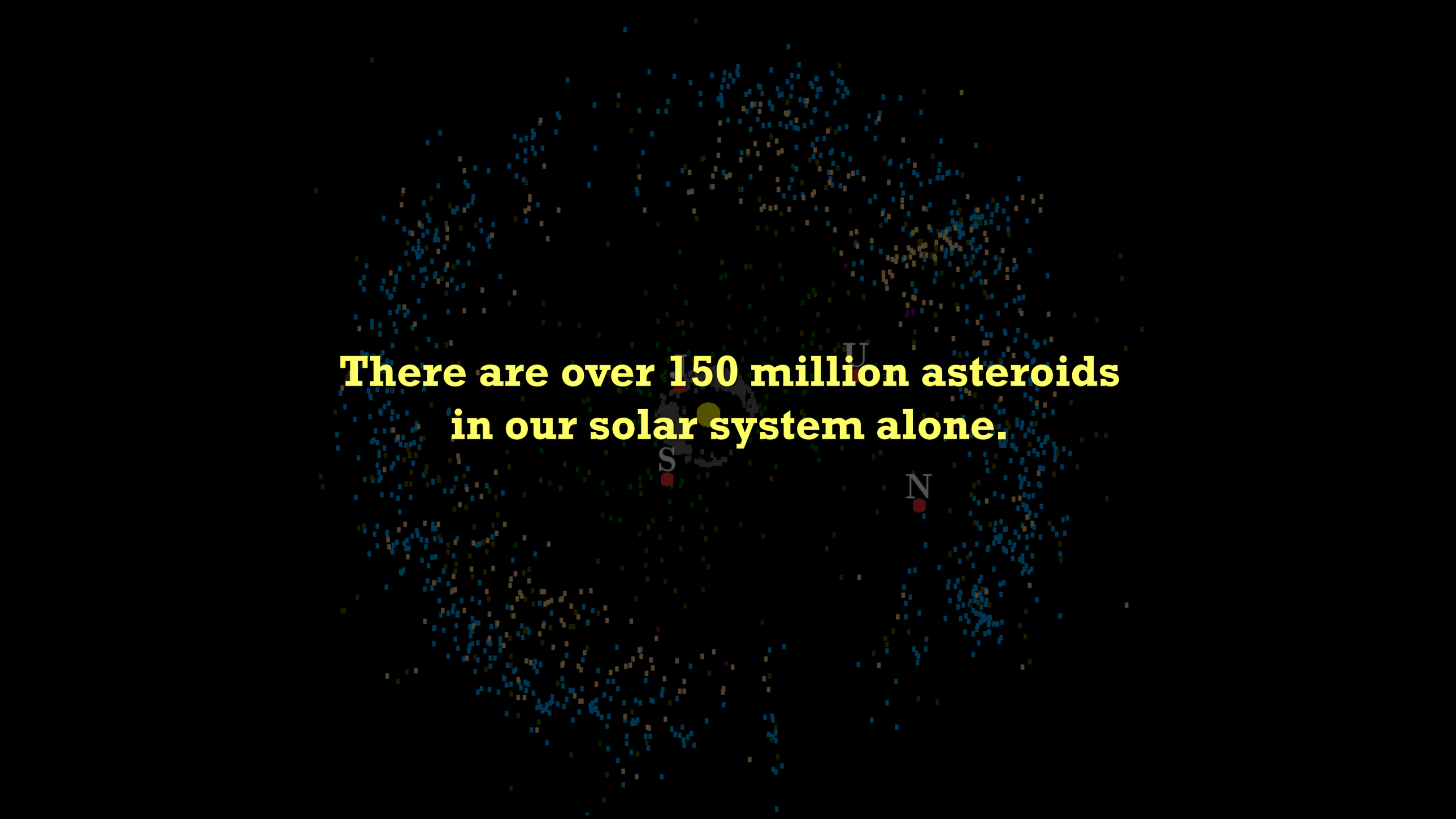
Stars
“so much pressure from gravity, that they get super duper hot”



Planets and Moons
“enough gravity to be round”


Hildas
"Trojans"
Venus
Mercury
Mars
Sun
Earth
Jupiter
"Greeks"


J
U
S
N


There are over 150 million asteroids
in our solar system alone.
J
U
S
N

The Asteroid Apophis:

$$\frac{x^2}{112^2} + \frac{y^2}{164^2} = 1$$

Diameter = 325 m

Mass = 4.0×10^{10} kg

Planet Earth:

$$\frac{x^2}{149^2} + \frac{y^2}{152^2} = 1$$

Diameter = 6,371 km

Mass = 6.97×10^{24} kg

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Summarize what you learned about asteroids on Page 511.