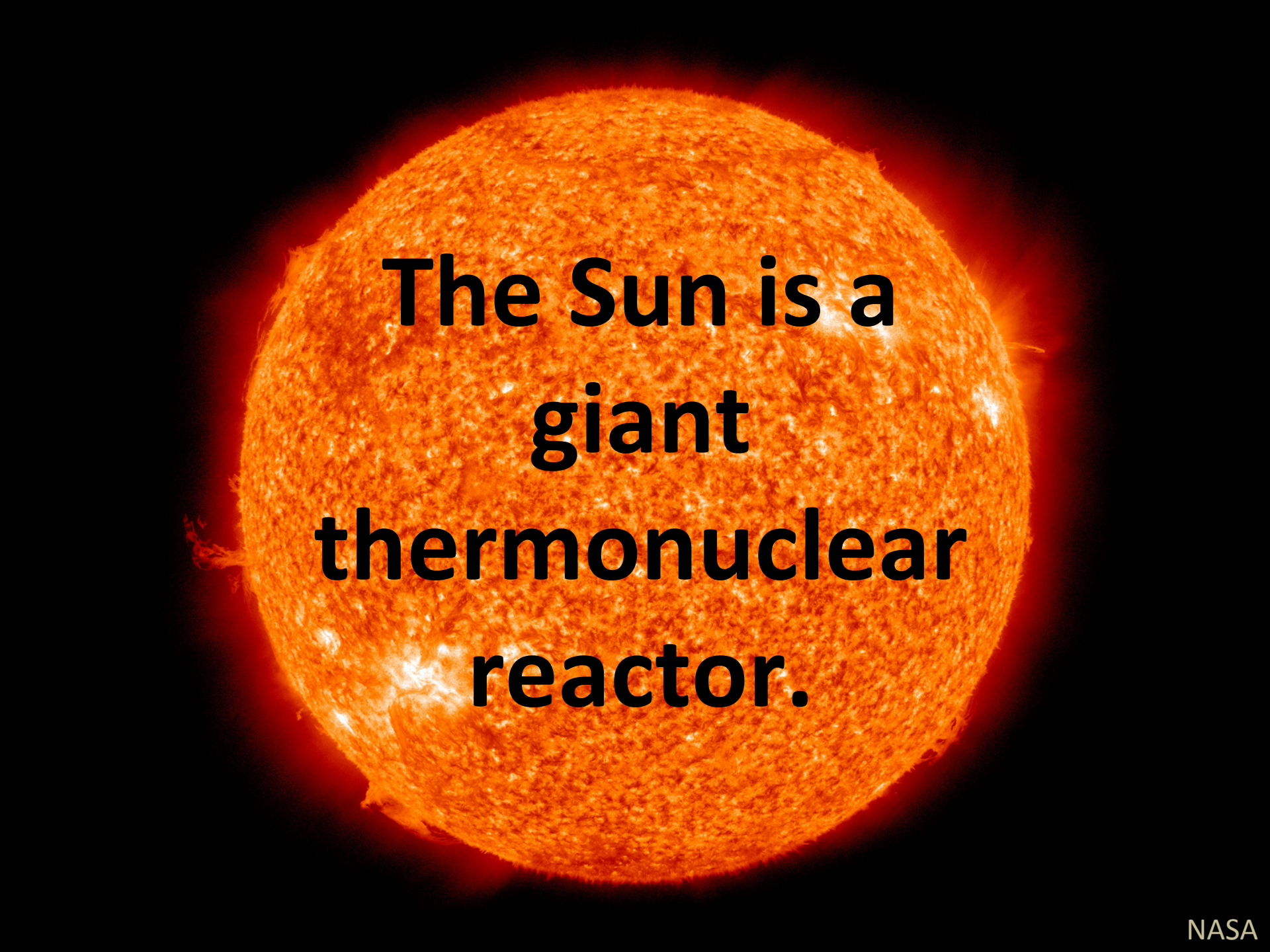
Carbon, Climate, & Energy Resources

Unit 2

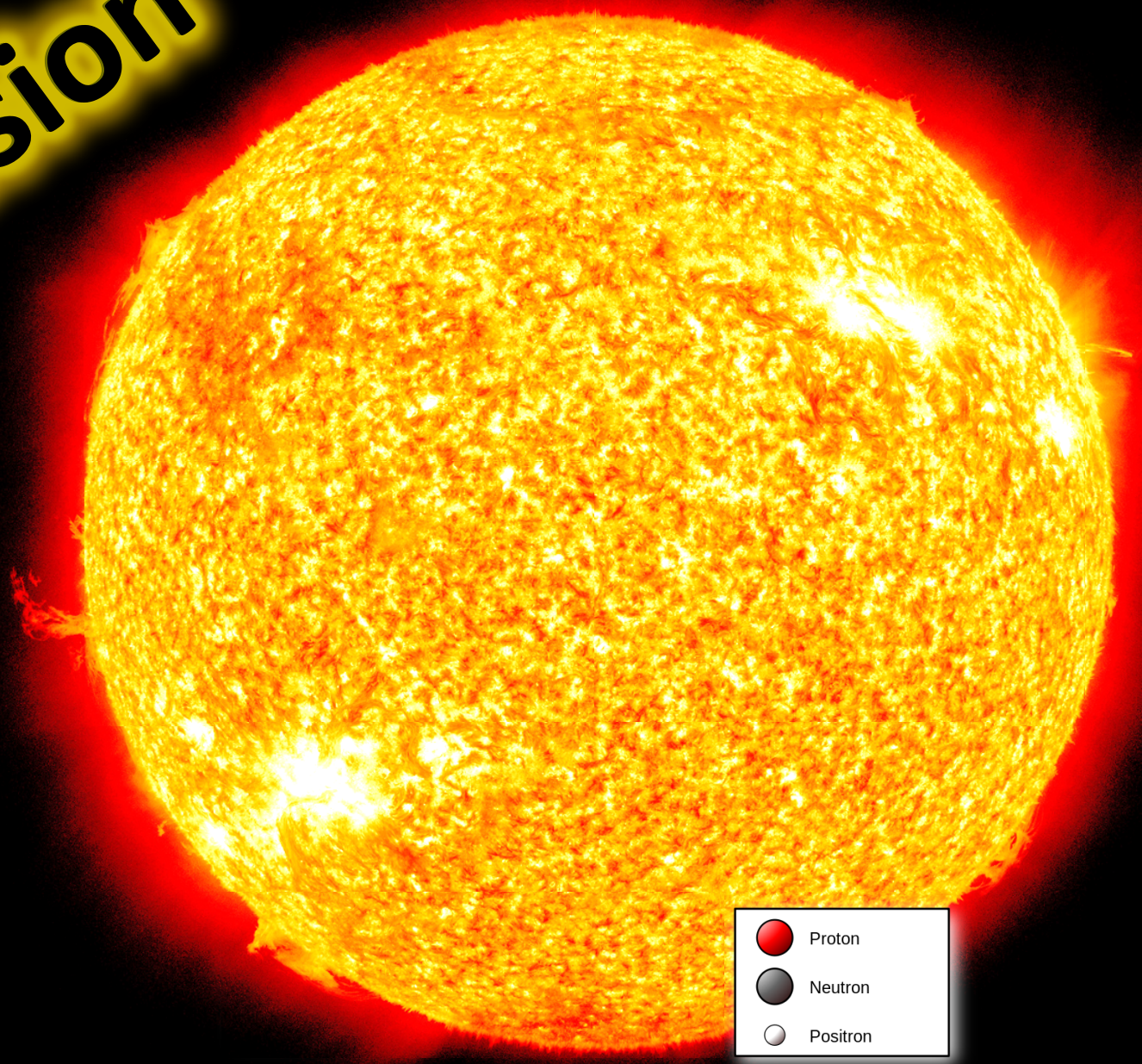
Carbon cycle:

The origin of carbon atoms

Where does carbon come from?


The Sun is a giant thermonuclear reactor.
NASA

fusion



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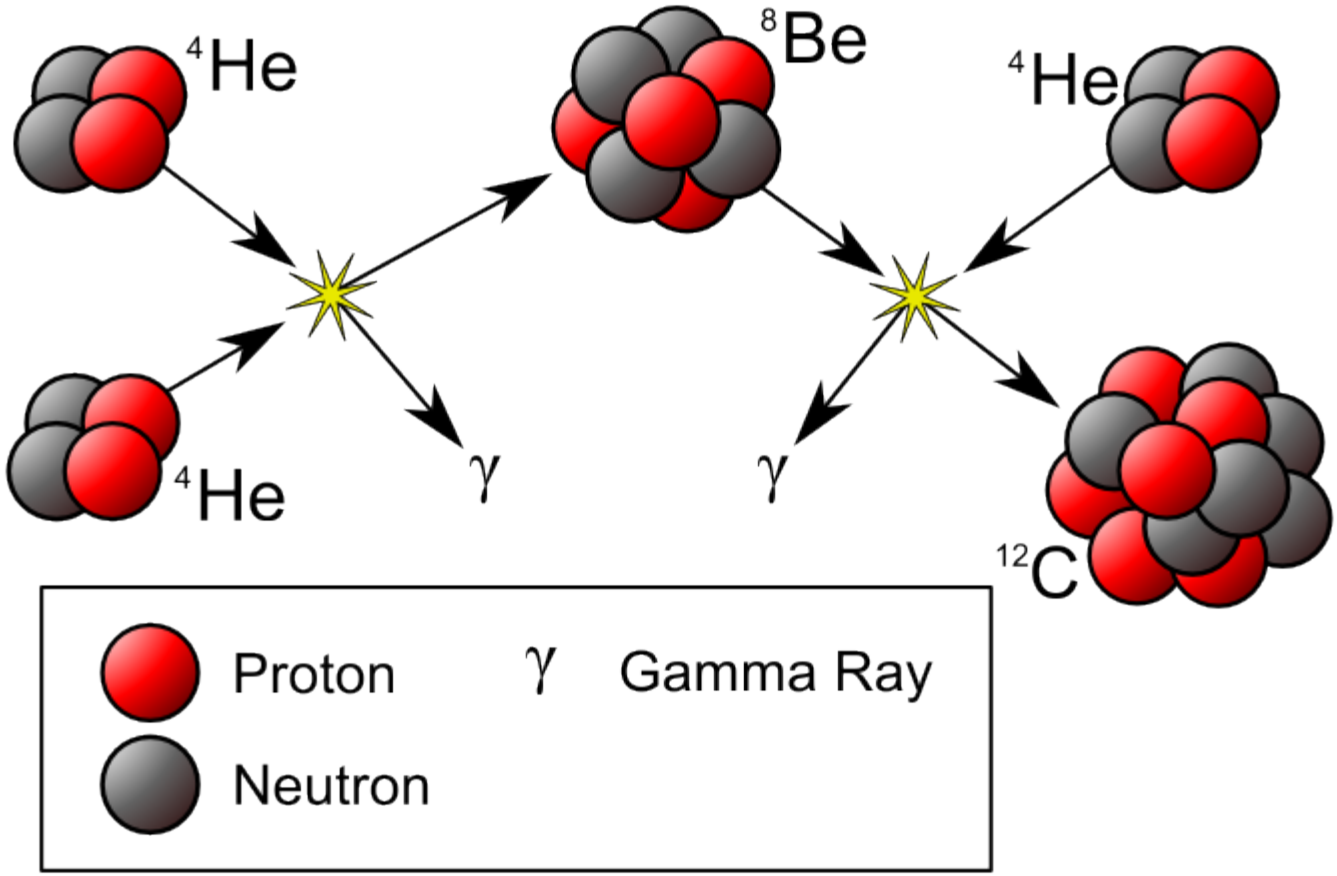

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4H → 1He

3He → 1C

12H → 1C

$$^{1}H + {}^{1}H + {}^{1}H + {}^{1}H \rightarrow {}^{4}He$$

$$^{4}He + {}^{4}He \rightarrow {}^{8}Be$$

$$^{8}Be + {}^{4}He \rightarrow {}^{12}C$$

How did carbon get to Earth?

NASA

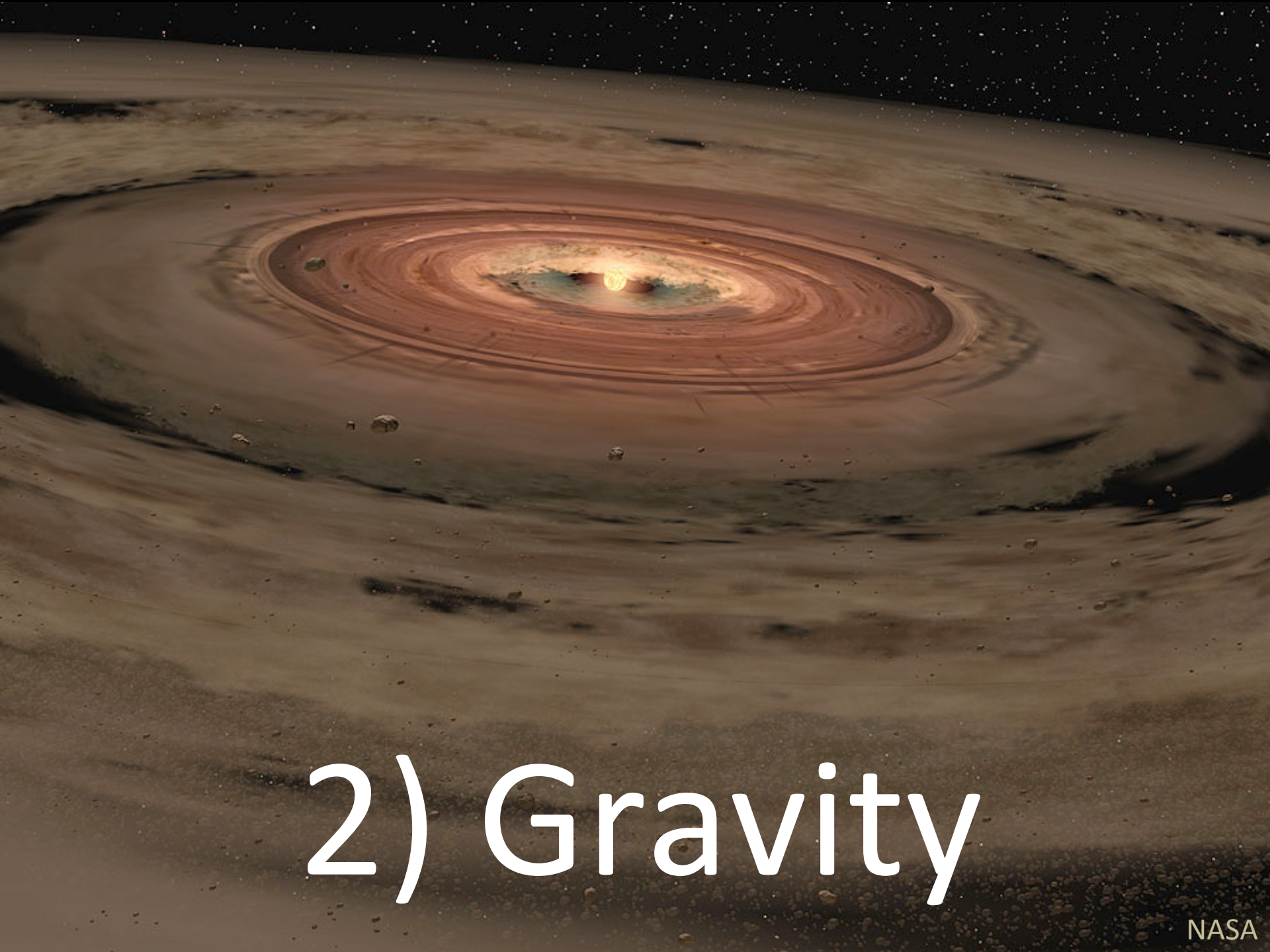
Where did the nebula come from?

supernova
NASA

How did the nebula contract to make the solar system?

1) Static charges

Wikimedia Commons



2) Gravity

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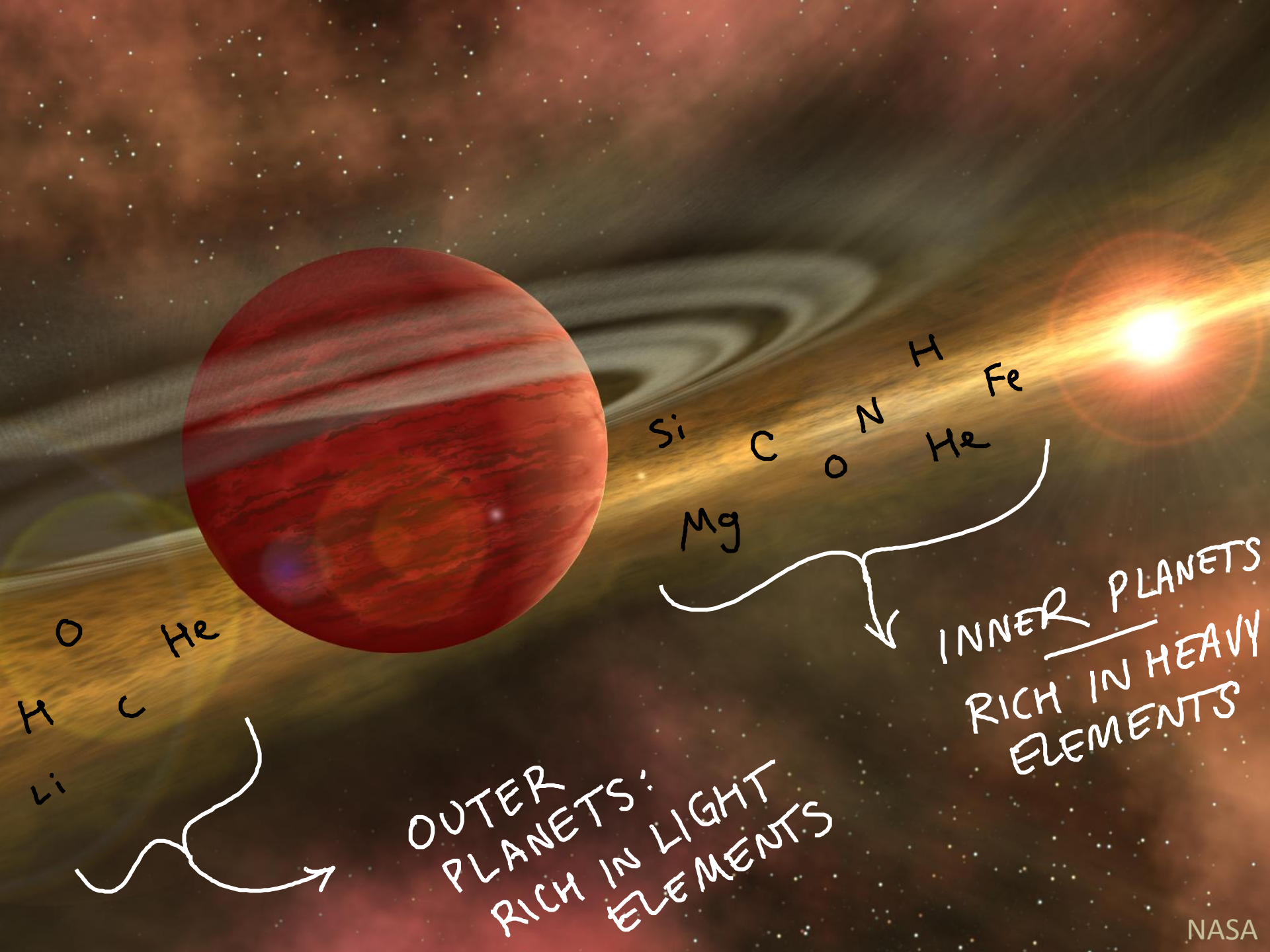
H
Fe
Si
C
N
He
O
Mg
INNER PLANETS
RICH IN HEAVY ELEMENTS
O
He
H
C
Li
OUTER PLANETS:
RICH IN LIGHT ELEMENTS

NASA

Example A: Itokawa 25143

JAXA

Example B: Earth

NASA