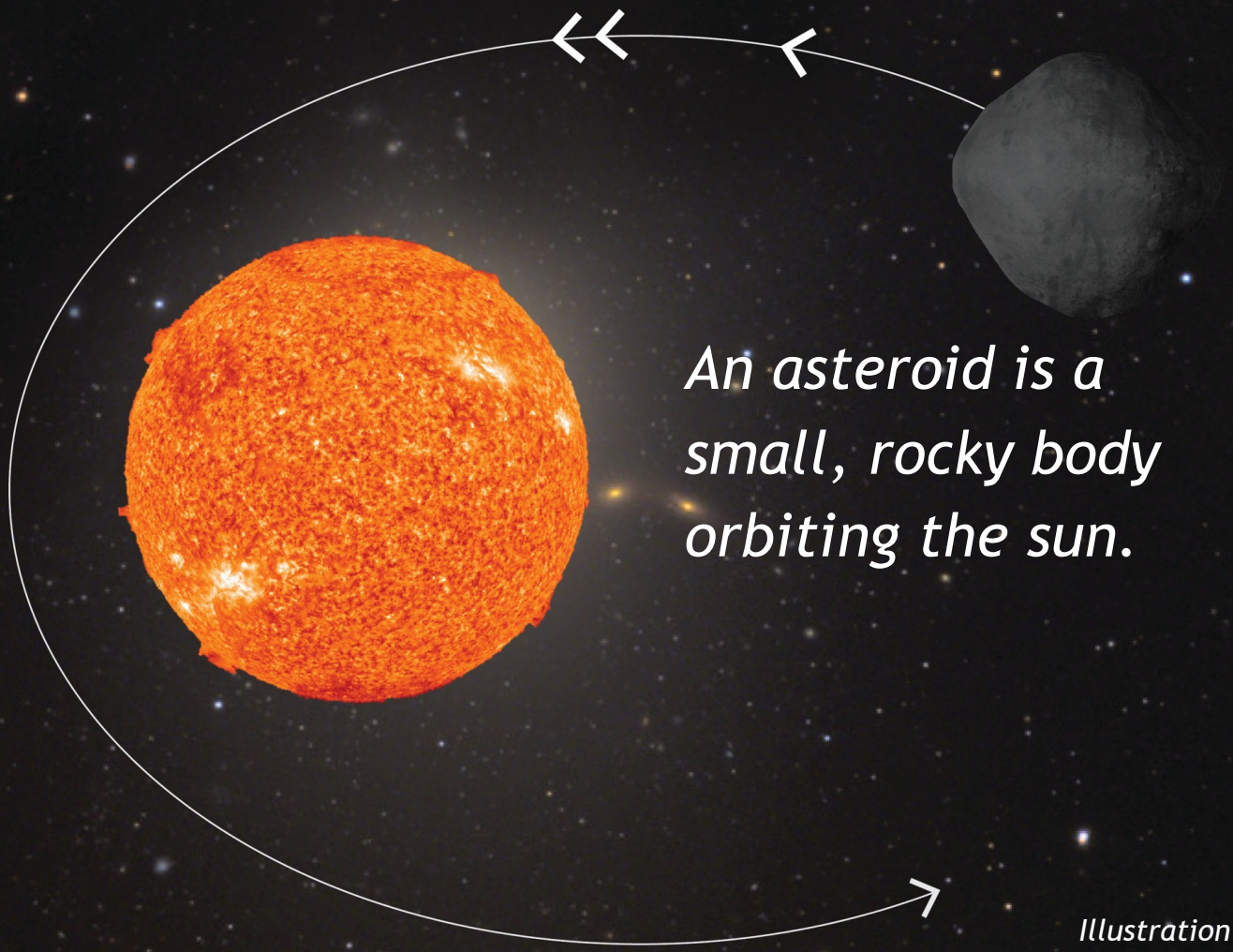
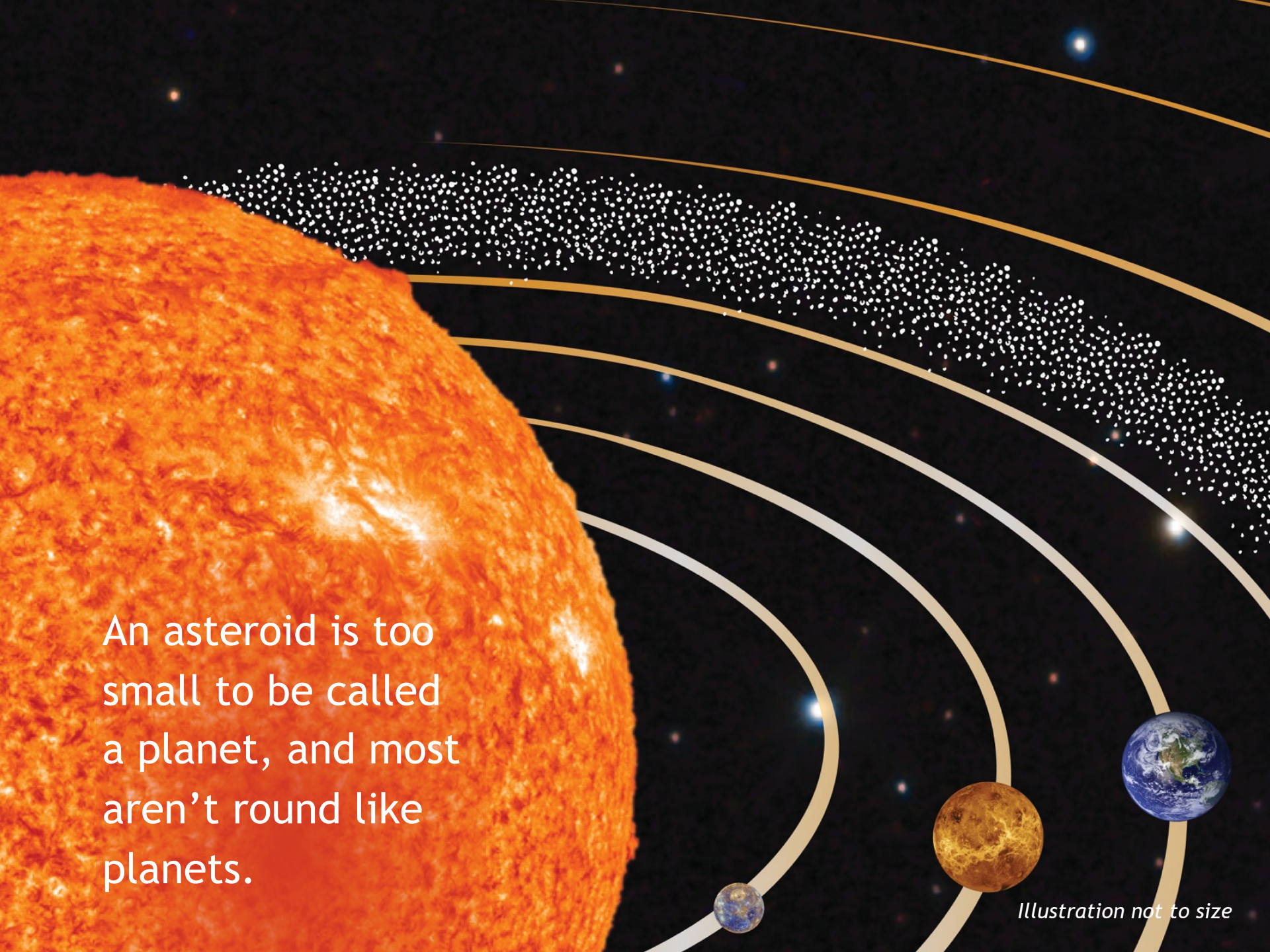
what's an asteroid?

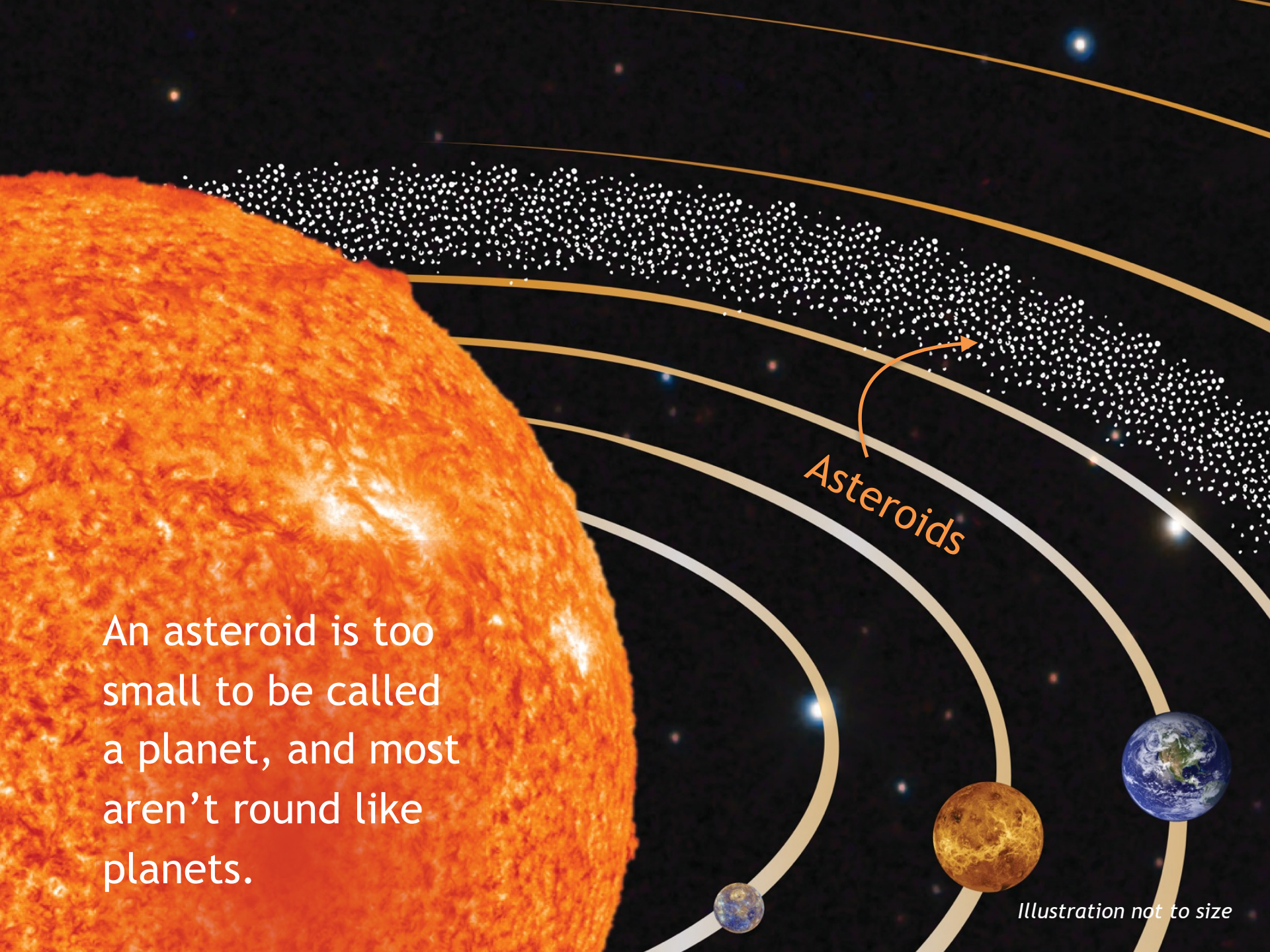
what's an asteroid?

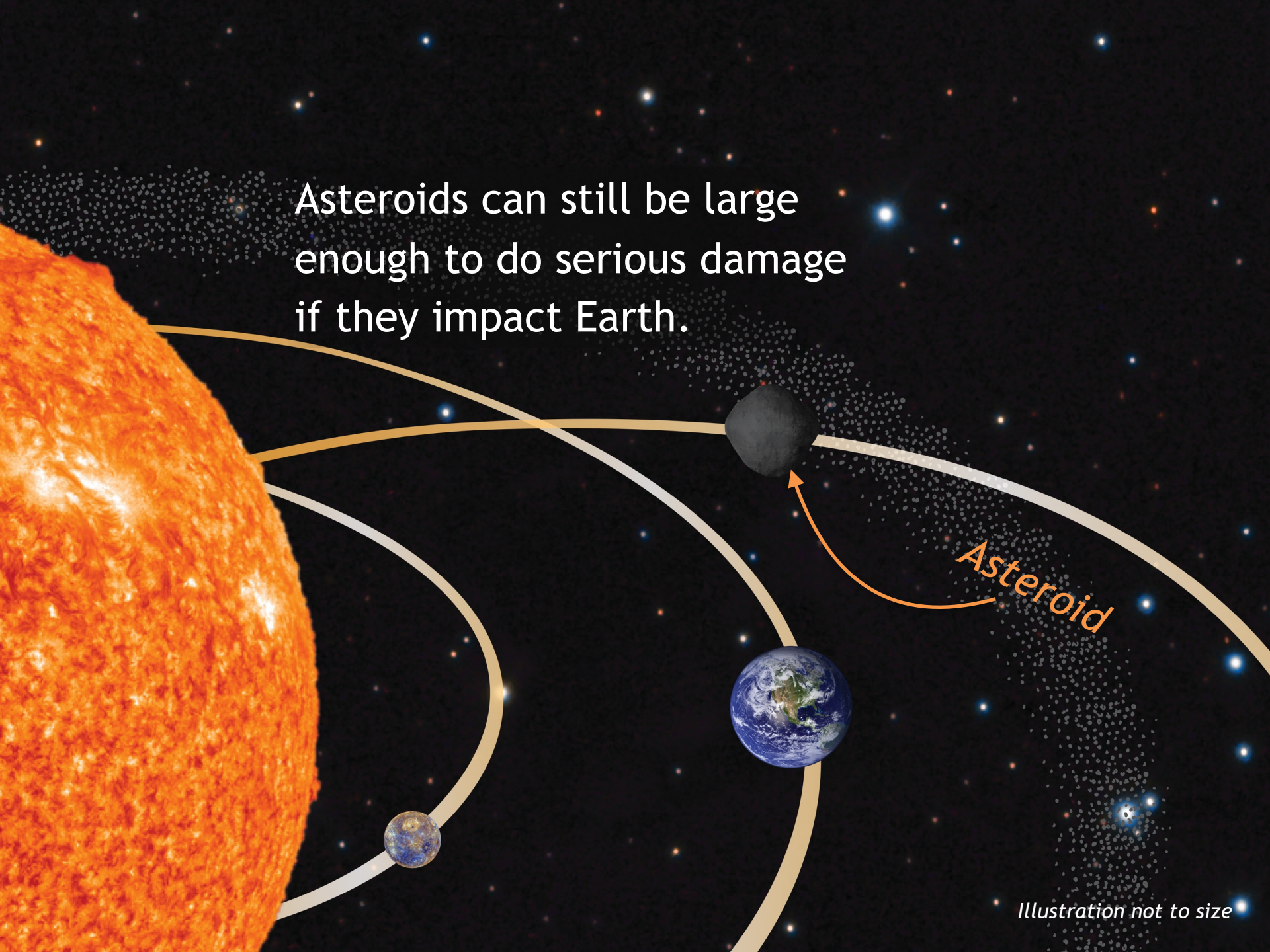


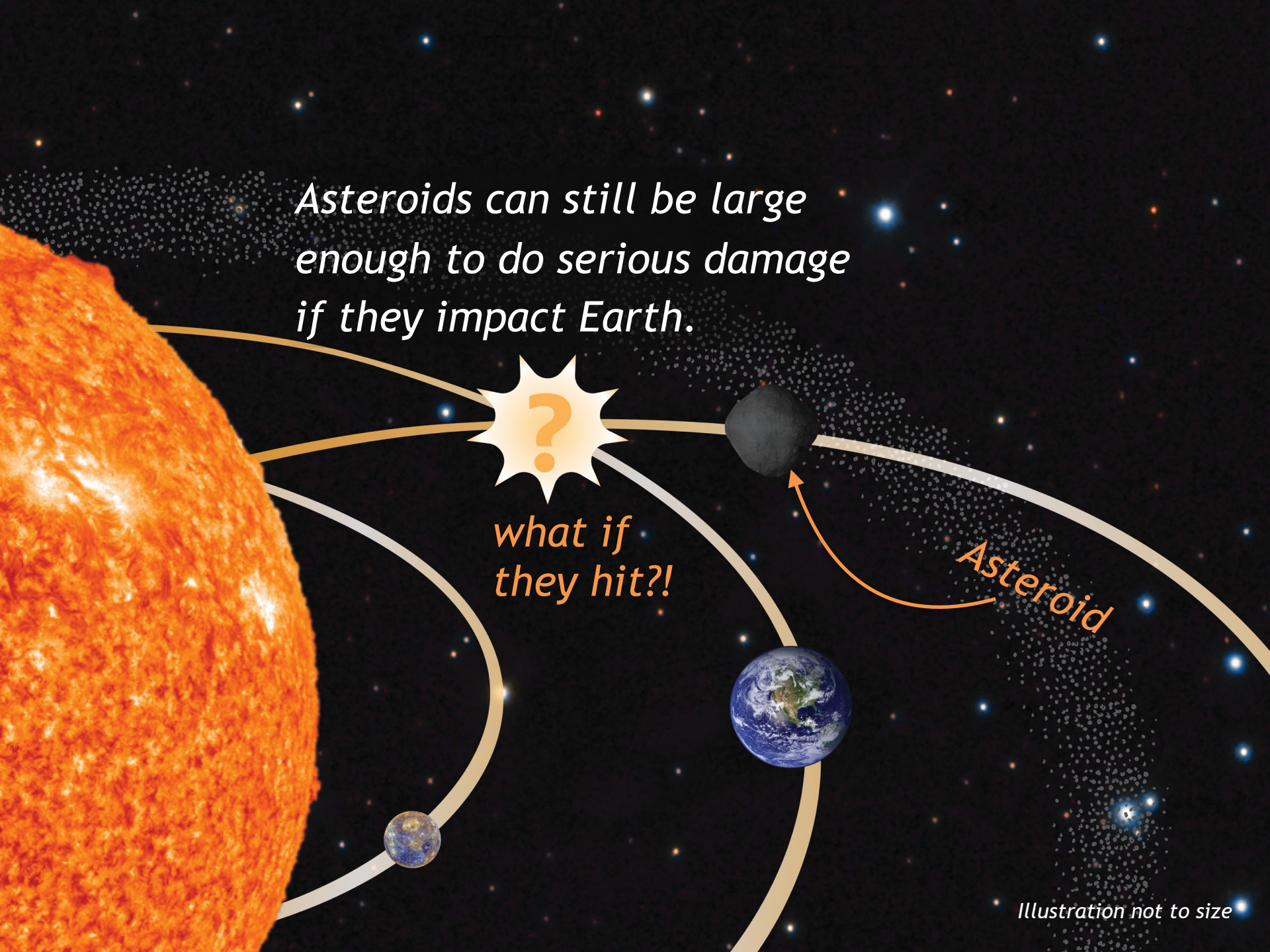
An asteroid is a small, rocky body orbiting the sun.

Illustration not to size


An asteroid is too small to be called a planet, and most aren’t round like planets.
Illustration not to size


Asteroids
An asteroid is too small to be called a planet, and most aren’t round like planets.
Illustration not to size


Asteroids can still be large enough to do serious damage if they impact Earth.
Asteroid
Illustration not to size


Asteroids can still be large enough to do serious damage if they impact Earth.
?
what if they hit?!
Asteroid
Illustration not to size

asteroid anatomy

Although varying in shape, size and material, nearly all asteroids are rough, lopsided, and covered in craters.

asteroid anatomy

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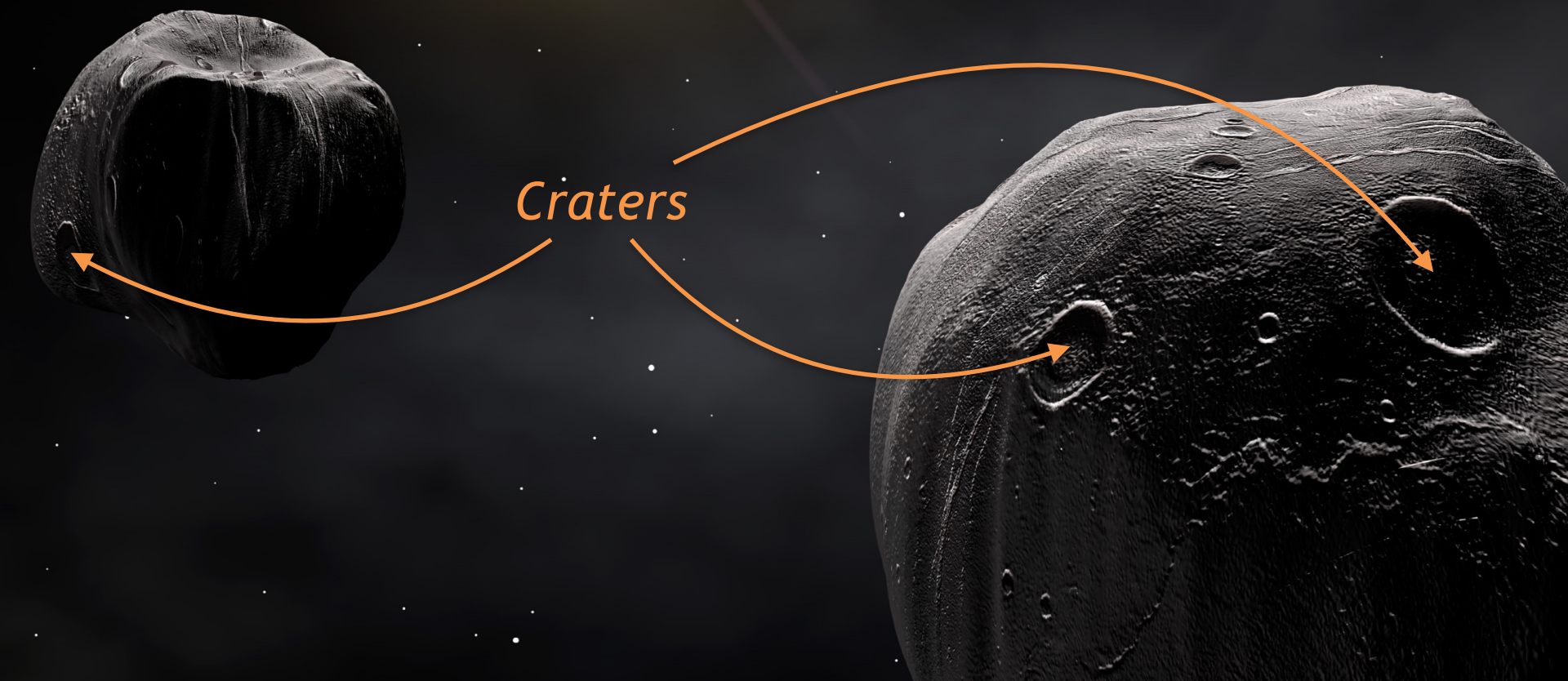
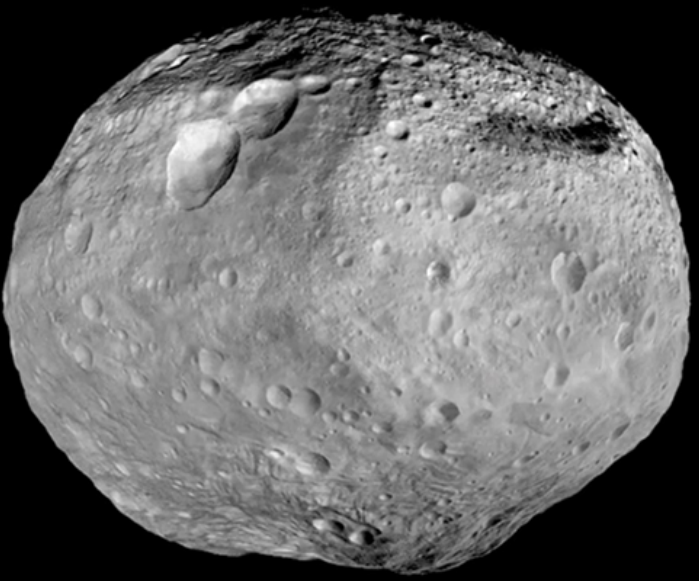
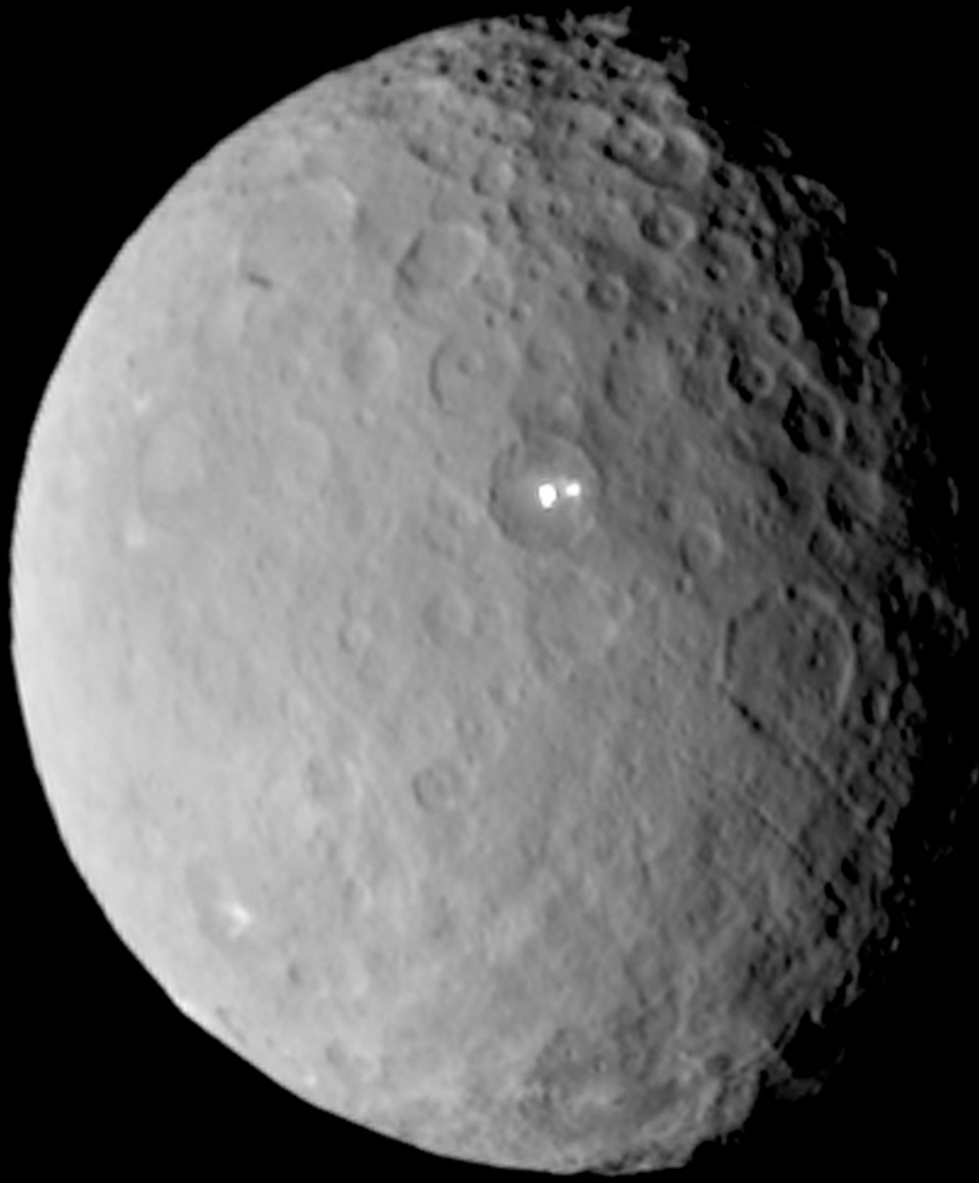


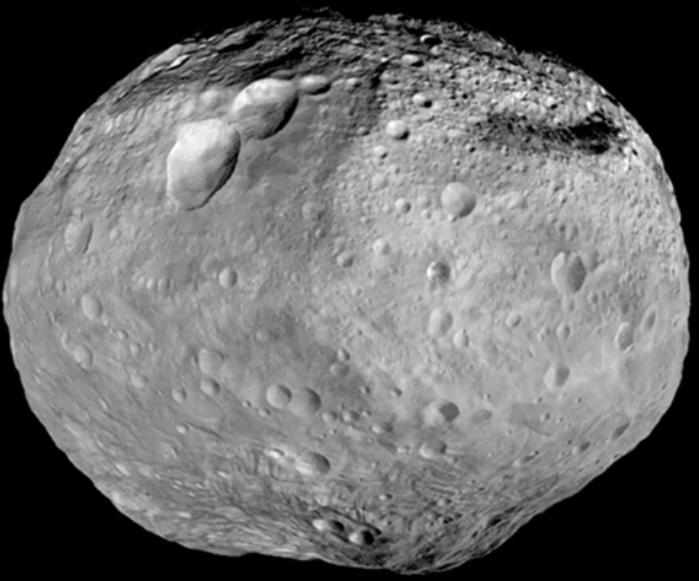


Vesta



Ceres

Only a few of the largest asteroids have enough gravity to pull them into spherical shapes.



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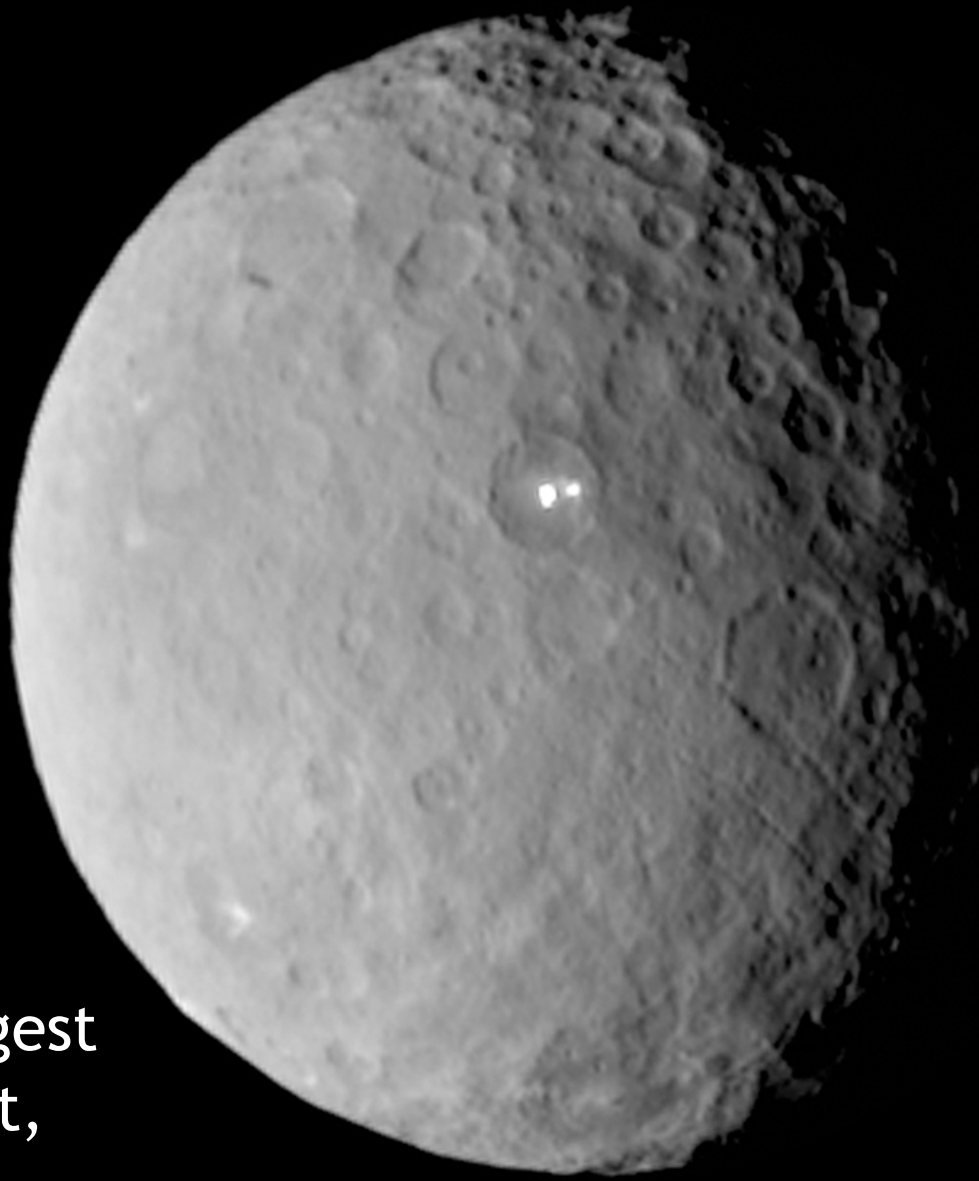


Ceres

Even Vesta, one of the largest objects in the asteroid belt, isn’t totally spherical.

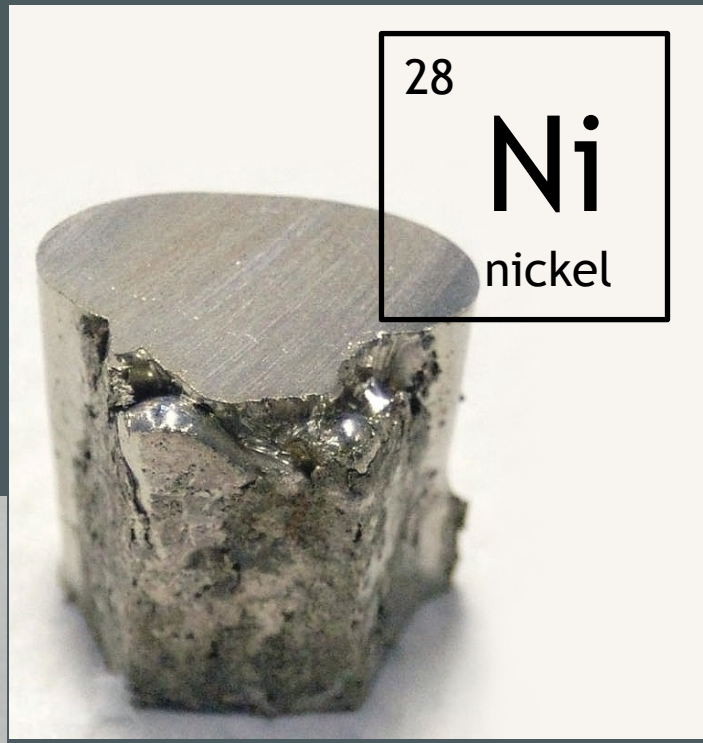
asteroid classification

Scientists use the amount of metal to classify an asteroid.

			5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
			13 Al Aluminium	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon
28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton
46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon
78 Pt Platinum	79 Au Gold	80 Hg Mercury	81 Tl Thallium	82 Pb Lead	83 Bi Bismuth	84 Po Polonium	85 At Astatine	86 Rn Radon
110 Ds Darmstadtium	111 Rg Roentgenium	112 Cn Copernicium	113 Uut Ununtrium	114 Fl Flerovium	115 Uup Ununpentium	116 Lv Livermorium	117 Uus Ununseptium	118 Uuo Ununoctium

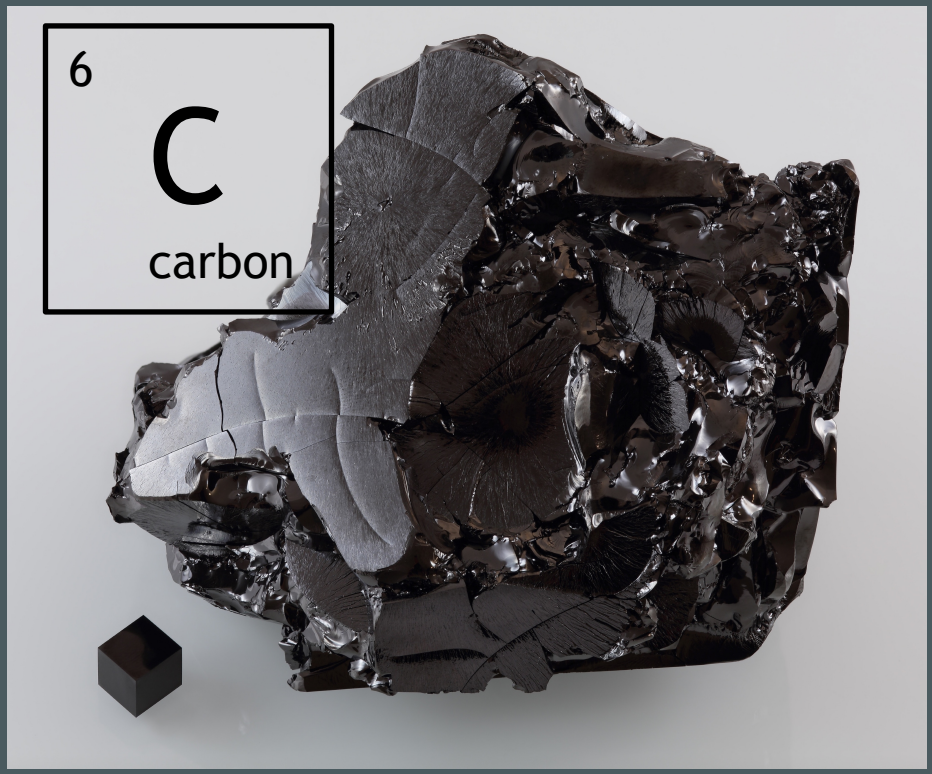
asteroid elements

An asteroid with greater mass and gravity has more iron and nickel in its makeup.



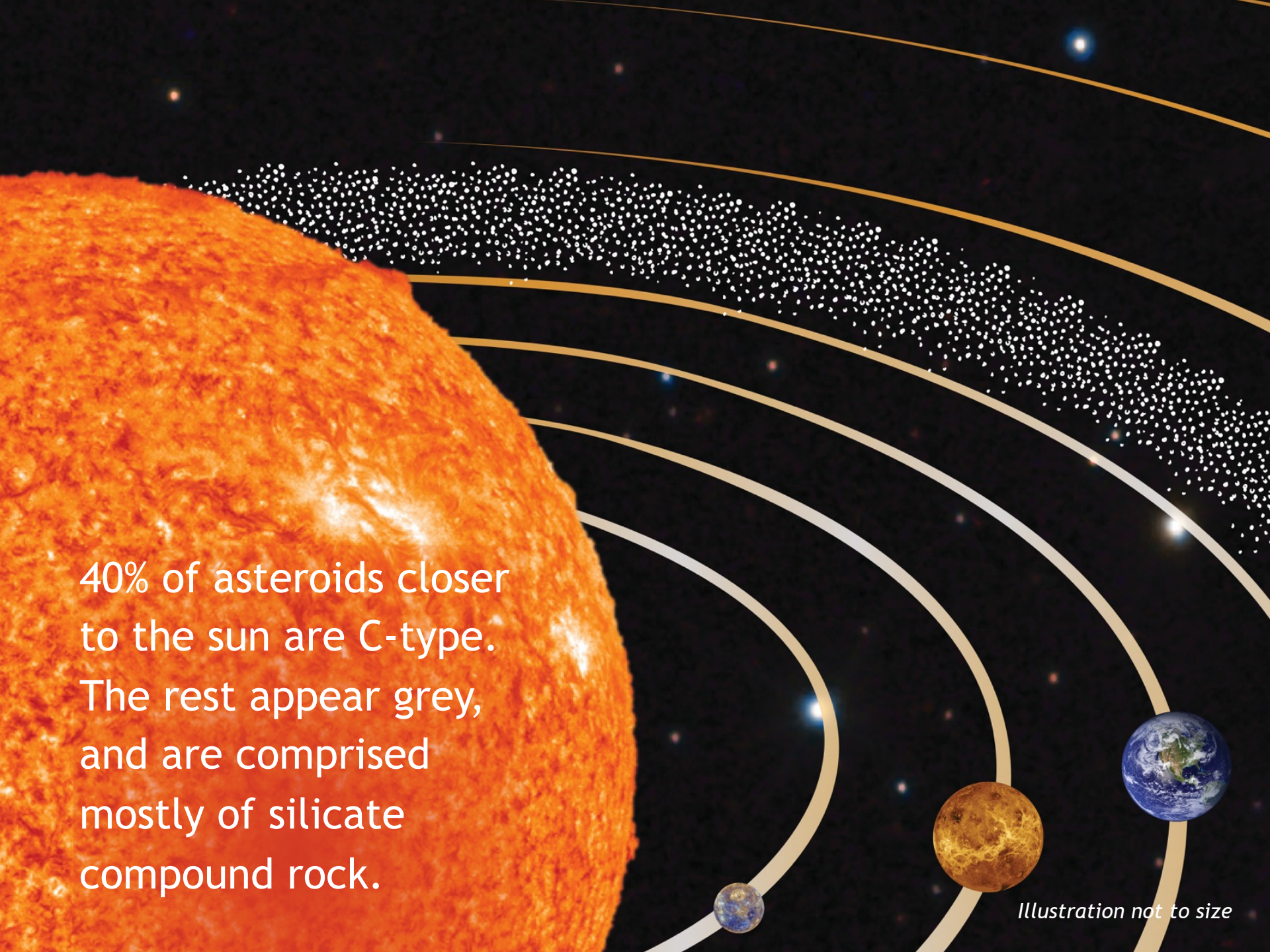
asteroid elements

Asteroids further away from the Sun more commonly contain large quantities of carbon.



asteroid elements

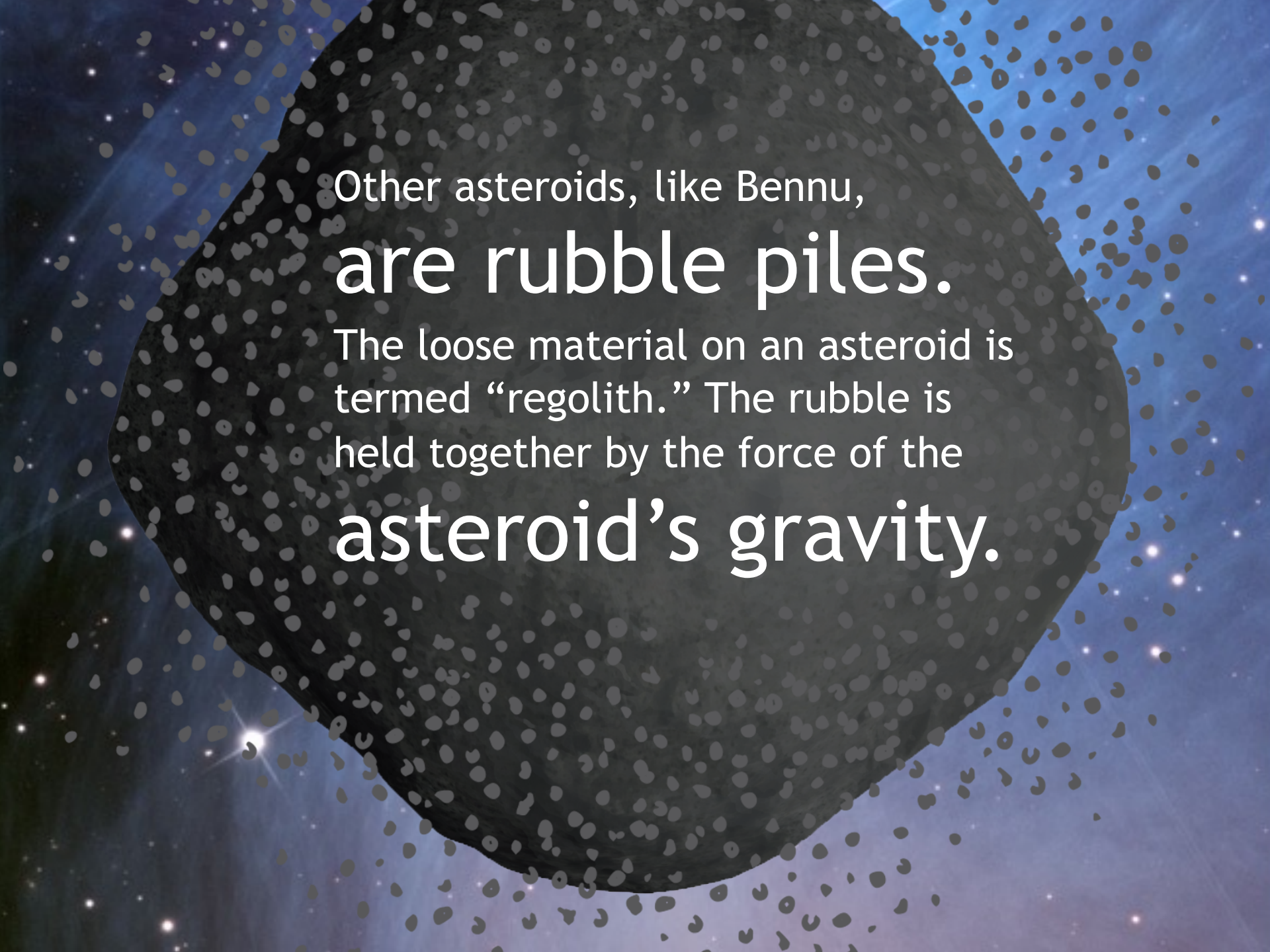
These are called “C-type asteroids,” and their surfaces appear black.


40% of asteroids closer to the sun are C-type. The rest appear grey, and are comprised mostly of silicate compound rock.
Illustration not to size

Bennu

the target asteroid for NASA's OSIRIS-REx mission, is one of the rare carbonaceous asteroids that orbits near the Sun.


Most asteroids are solid,
because they were molten
at some point in time.


Other asteroids, like Bennu,
are rubble piles.
The loose material on an asteroid is termed “regolith.” The rubble is held together by the force of the
asteroid’s gravity.

asteroids in orbit

Most asteroids are orbiting the Sun in the 19,400,000-mile wide asteroid belt between Jupiter and Mars.

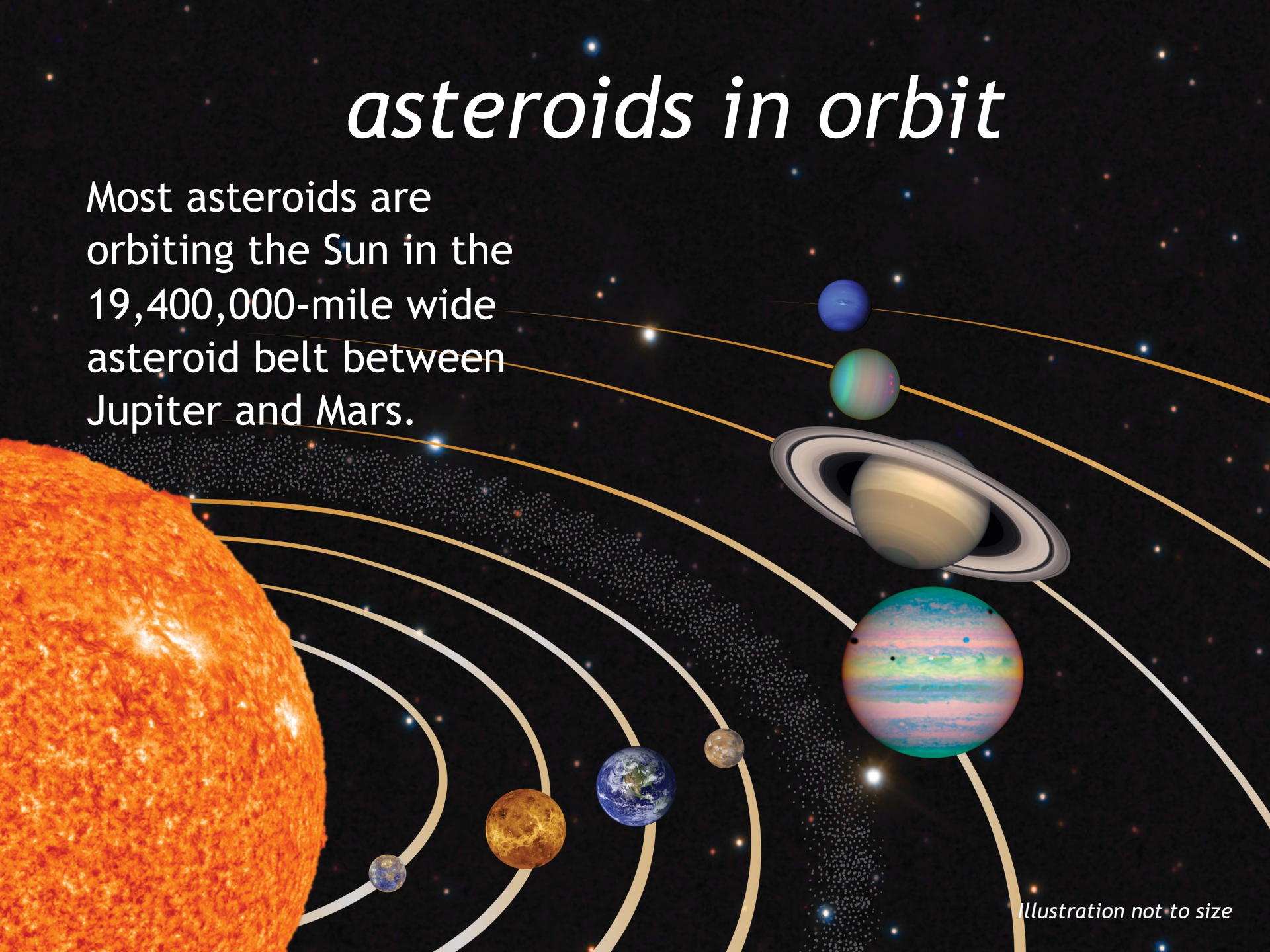


Illustration not to size

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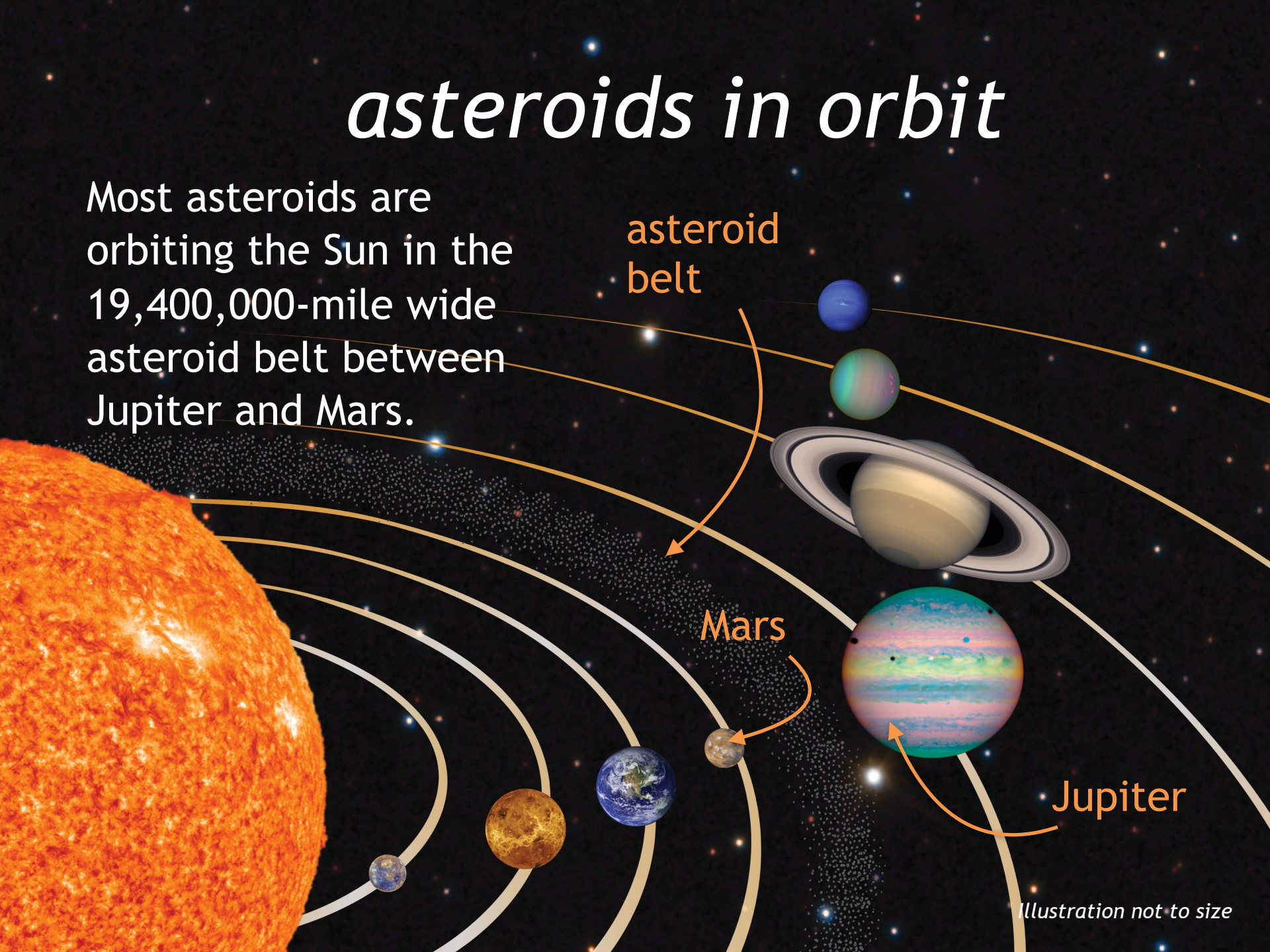


how do asteroids get near Earth?

Asteroids experience heat radiated from the Sun,

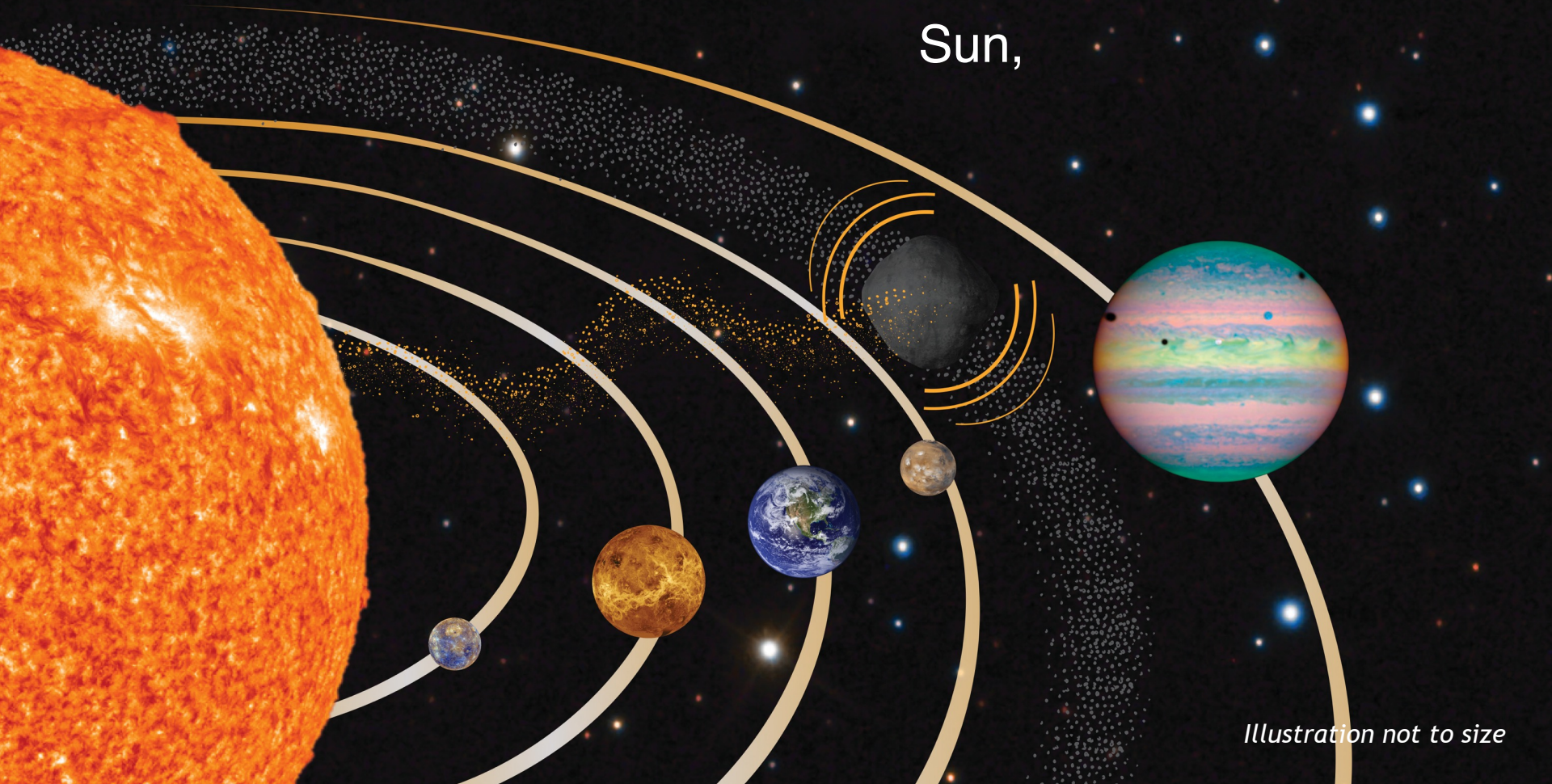


Illustration not to size

how do asteroids get near Earth?

which can push an asteroid closer to planets like Jupiter and Saturn. This pulls the asteroids out of the asteroid belt entirely.

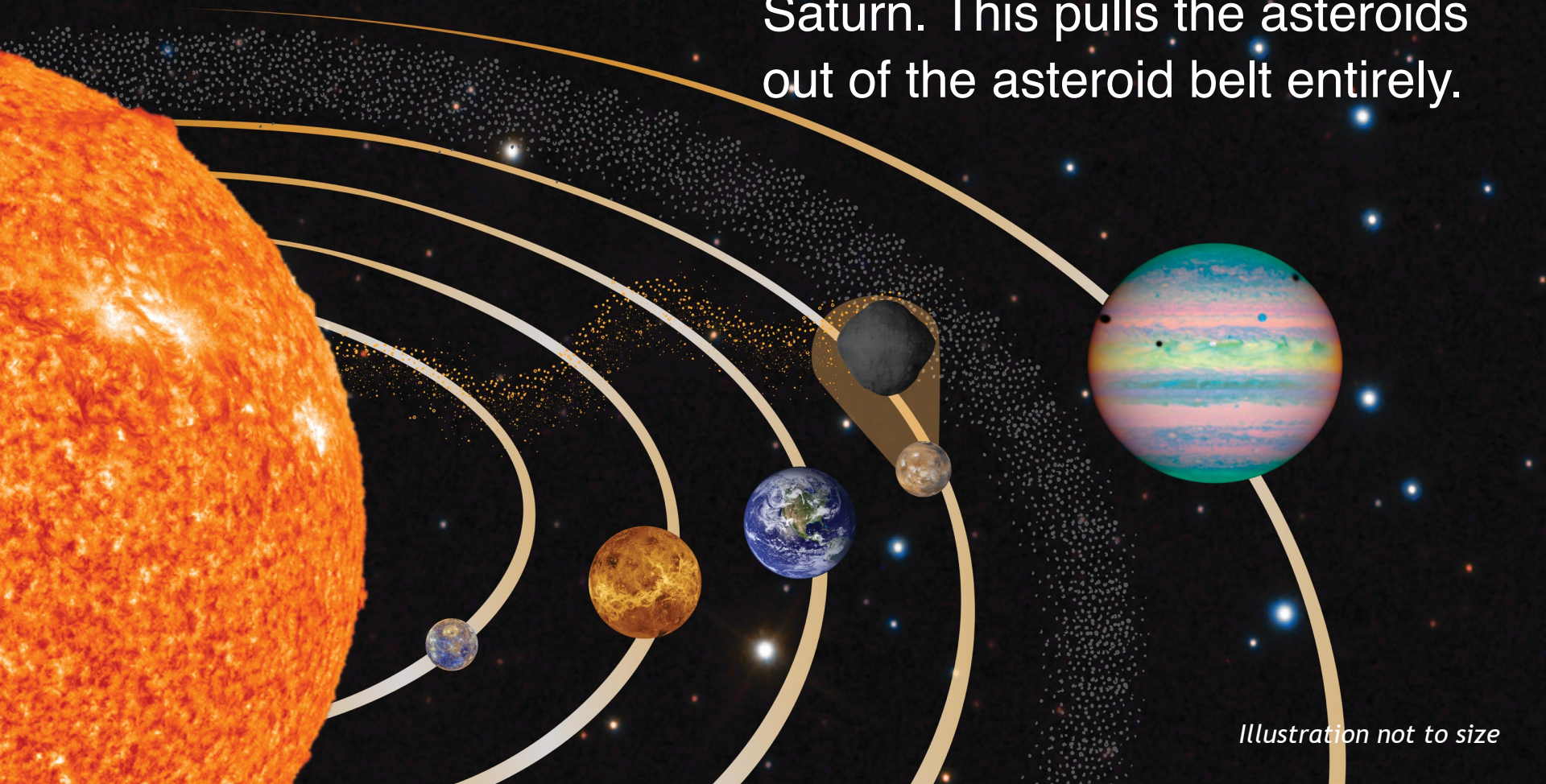


Illustration not to size

how do asteroids get near Earth?

Essentially, the asteroid gets thrown out of the asteroid belt and enters the inner solar system, orbiting near Earth.

Illustration not to size

from asteroid to near-Earth object

These asteroids are aptly named near-Earth objects, or NEOs.

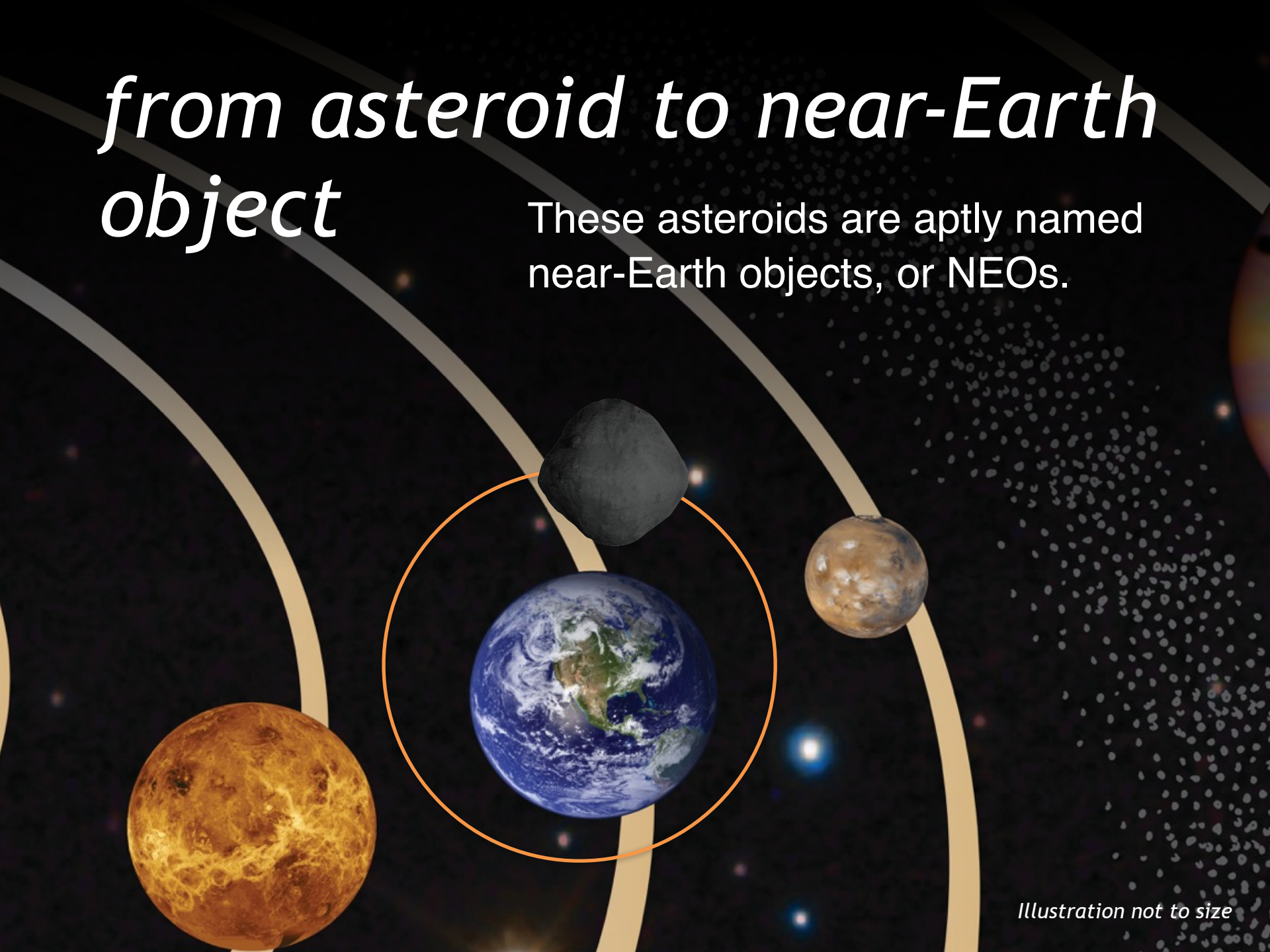


Illustration not to size

from asteroid to near-Earth object

NEOs usually don't last too long in the inner solar system. They impact the Sun, a planet, or get thrown out of the solar system completely.

Illustration not to size

from asteroid to near-Earth object

Some NEOs, including Bennu, have a chance of impacting Earth within centuries.

why study asteroids?

Due to their

size, composition, and speed,

asteroids do pose a threat to Earth upon impact.

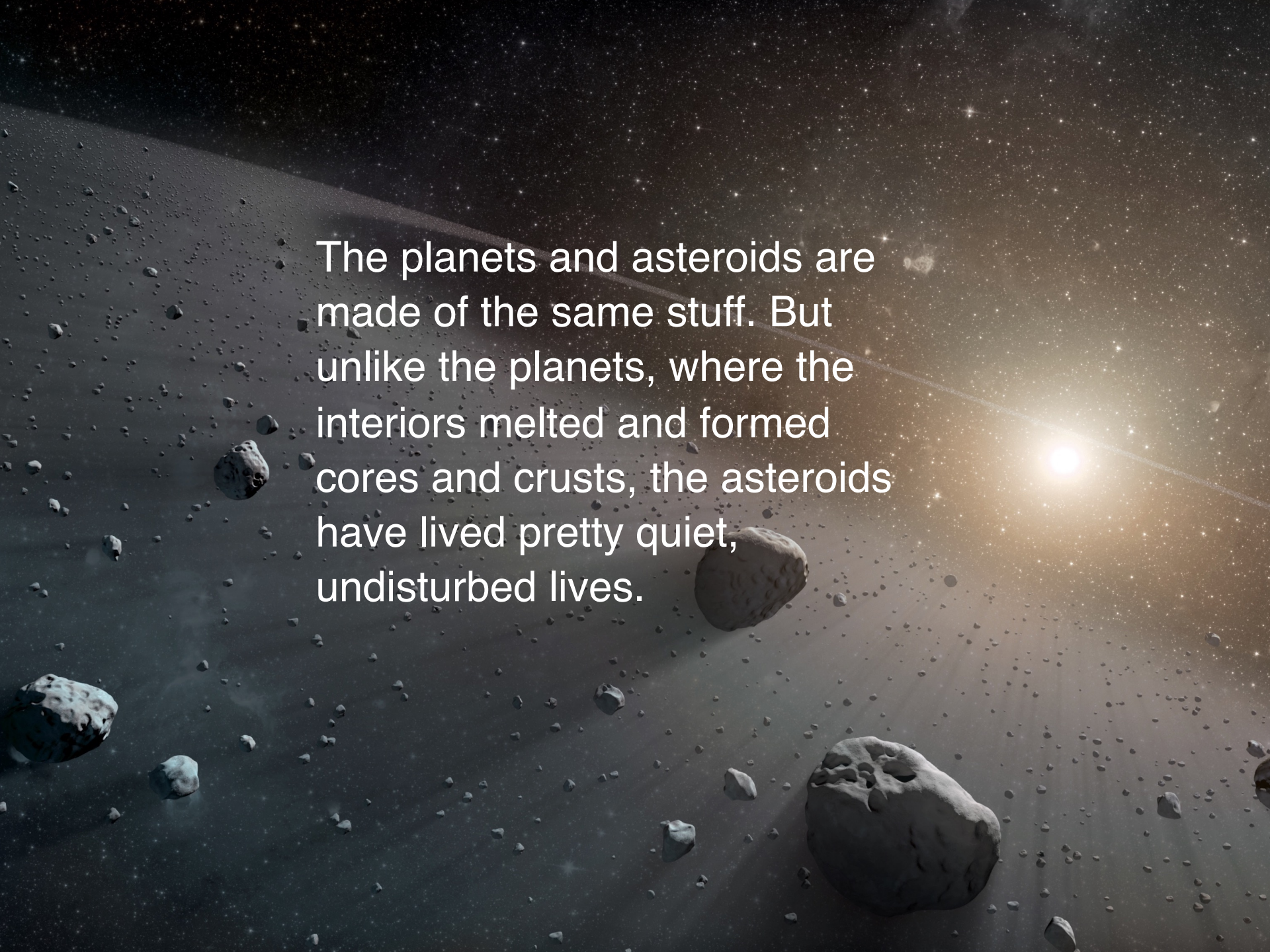

While most of
asteroids in space
are not on a
trajectory to crash
into Earth,

some have a small chance of hitting Earth within just a couple of centuries.

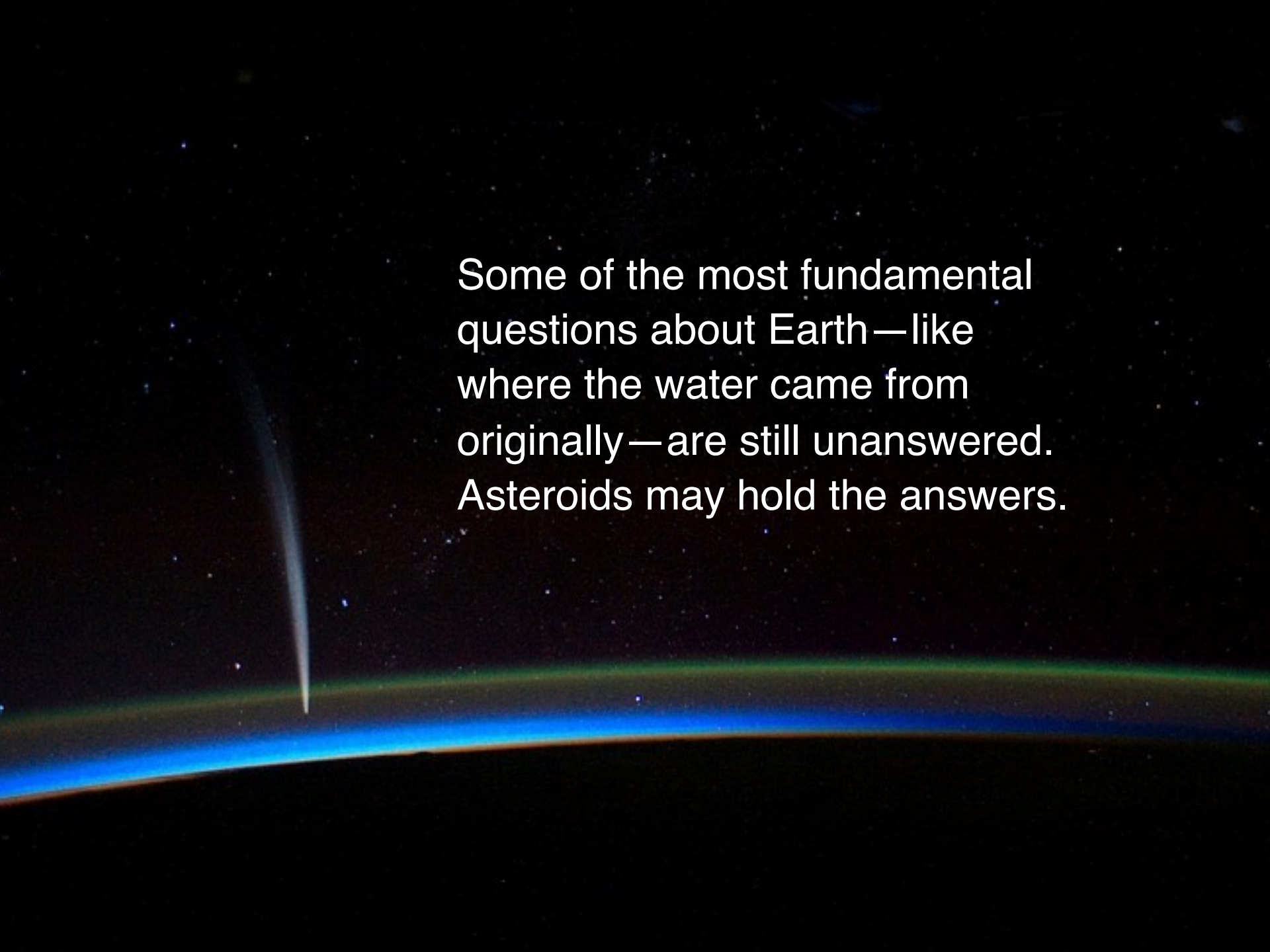
more reasons to study asteroids

In order to come up with a way to redirect asteroids away from Earth, scientists need to learn more about them.


Additionally,
asteroids are leftovers from the creation of the planets.


The planets and asteroids are made of the same stuff. But unlike the planets, where the interiors melted and formed cores and crusts, the asteroids have lived pretty quiet, undisturbed lives.


That means we can find samples of the things that went into the planets, before they got mixed, melted and stirred past recognition on Earth.


Some of the most fundamental questions about Earth—like where the water came from originally—are still unanswered. Asteroids may hold the answers.

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The University of Arizona

where more than 52%
of all near-Earth objects,
including asteroids,
were discovered

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