Advanced topics in the Solar System

B1

The Asteroid Belt & Ceres / *Pás asteroidů a Ceres*

The Asteroid Belt: A Space Frontier

The Asteroid Belt is a giant region between Mars and Jupiter filled with millions of rocky fragments. These "space rocks" are leftovers from the birth of our Solar System 4.5 billion years ago . The largest object in this belt is the dwarf planet Ceres, which is nearly 1,000 km wide. Scientists discovered that Ceres has bright salt spots and hidden water ice, making it one of the most interesting places to study in the inner Solar System.

Even though there are millions of asteroids, they are very far apart. If you stood on an asteroid, you couldn't see another one without a telescope!

Mining the Future: Asteroids as Gas Stations?

In the future, the Asteroid Belt could become very important for human exploration. Asteroids are not just dead rocks; they contain valuable metals like gold and platinum, and more importantly, water ice. This ice can be broken down into oxygen for breathing and hydrogen for rocket fuel. Instead of carrying everything from Earth, astronauts could stop at asteroids to "refuel" their ships.

Imagine a future where Ceres is a "cosmic gas station" or a mining base. Small robotic spacecraft could land on asteroids to extract resources and help us build giant structures in space. This would make long journeys to the outer planets much easier and cheaper. Exploring the Asteroid Belt is the first step toward becoming a truly space-faring civilization.

Write down into your notebook and discuss in class

In what timeframe do you think humans will expand past Mars and explore the outer Solar System?

Why should humanity pursue space exploration despite the very high initial investment?

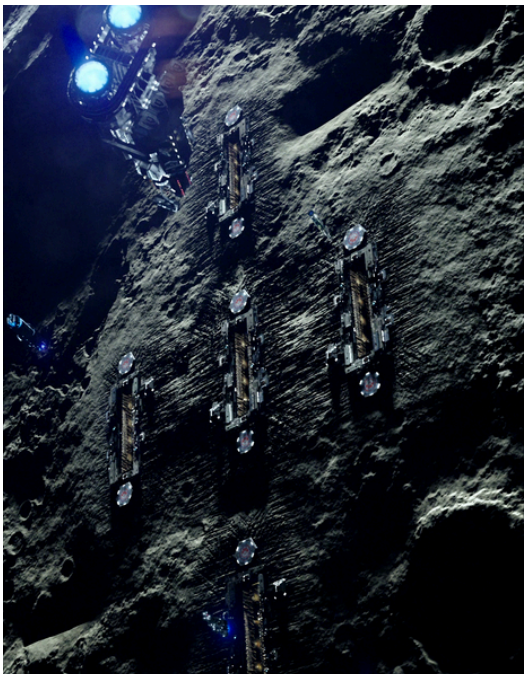


Source: NASA via phys.org

The Asteroid Belt (illustrative)

fragments [fræg.mənts] – úlomky, kusy

leftovers [leftˌəʊ.vərz] – pozůstatky



Source: The Expanse

In the sci-fi show The Expanse, Ceres is the capital of the Belt and is the industrial heart of the region.

exploration [ek.splәˈreɪ.ʃən] – průzkum

extract [ɪkˈstrækt] – těžit, extrahovat

toward [tәˈwɔːrd] – směrem k, vůči

space-faring [speɪsˌfeə.rɪŋ] – létající do vesmíru / schopný cestovat vesmírem