Asteroid article

**Forget falling stars: NASA plans to catch an asteroid**

By **Dana Ford**, CNN

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Scientists at NASA would like to propel an asteroid into the orbit of the moon.

**STORY HIGHLIGHTS**

* NASA aims to tow the asteroid back toward Earth, says Florida Sen. Bill Nelson
* Astronauts would then travel there to study it
* President Barack Obama supports the plan, Nelson says

**(CNN)** -- NASA is planning to catch an asteroid and place it in orbit around the moon.

Seriously.

What sounds like something from science fiction is actually a part of President Barack Obama's proposed federal budget for the next fiscal year, according to a Florida senator.

The budget is expected to be unveiled this week.

"In a nutshell, the plan in NASA's hands calls for catching an asteroid with a robotic spacecraft and towing it back toward Earth, where it would then be placed in a stable orbit around the moon," read a statement from the office of Florida Sen. Bill Nelson.

Astronauts would then travel to the asteroid where "there could be mining activities, research into ways of deflecting an asteroid from striking Earth and testing to develop technology for a trip to deep space and Mars," it said.

NASA's plan is similar to one suggested last year by experts at the California Institute of Technology, said Nelson, who is chairman of the Senate Subcommittee on Science and Space. That plan proposed bringing a 500-ton asteroid closer to Earth.Obama supports NASA's plan and is including about $100 million in his proposed budget to kick it off, the senator said.

The president has previously said that he wants to send astronauts to an asteroid for the first time by 2025.

NASA's plan would bump that date up by four years to 2021, according to Nelson's office.

The proposal may have gotten an unexpected boost in February when an asteroid exploded over Russia, injuring more than 1,000 people, causing millions of dollars in damage and sparking fresh concerns about the severity of space threats.

# How did asteroids form and what is the difference between an asteroid and a comet?

Asteroids formed from small pieces of rock and metal just like the rest of the solar system. Small particles run into each other, and if they don't hit too hard, they'll stay together because their gravity pulls them together. The reason why the asteroids didn't continue to grow into a planet like all the rest of the planets is that they are too close to Jupiter. Jupiter's gravity "stirs them up" and makes them go so fast that when they run into each other, they usually bounce off or break apart instead of sticking together.

Comets formed farther away from the Sun. They're made of ice, which would melt if it was as close to the Sun as the asteroids. In fact, when comets leave the outer parts of the solar system to travel close to the Sun, they do melt, and the ice that was turned to water vapor forms the long tail that we see in the sky. After a few trips into the inner solar system, the comet will melt so much that it breaks into little pieces!

March 1999, [Dave Kornreich](http://curious.astro.cornell.edu/aboutus.php#1).

# [New Zealand Herald](http://www.nzherald.co.nz/)

Top of Form

Bottom of Form

# How often do meteorites hit Earth?

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Fragments of the meteor fell in a thinly populated area of the Chelyabinsk region, the Emergency Ministry said in a statement.

A meteor exploded in the sky above Russia's Ural Mountains on Friday, causing a shockwave that blew out countless windows and injured hundreds of people with flying glass.

**Q. What's the difference between a meteor and a meteorite?**

A. Meteors are pieces of space rock, usually from larger comets or asteroids, which enter the Earth's atmosphere. Many are burned up by friction and the heat of the atmosphere, but those that survive and strike the Earth are called meteorites. They often hit the ground at tremendous speed up to 30,000 kilometres an hour releasing a huge amount of energy, according to the European Space Agency.

**Q: How often do meteorites hit Earth?**

A: Experts say smaller strikes happen five to 10 times a year. Large meteors such as the one in Russia on Friday are rarer, but still occur about every five years, according to Addi Bischoff, a mineralogist at the University of Muenster in Germany. Most of them fall over uninhabited areas where they don't injure humans.

**Q: How big was Friday's meteor and why did it cause so many injuries?**

A: Before it entered the atmosphere, the meteor was about 15 metres in diameter and had a mass of about 7000 tons, Nasa says.

The space agency also says the fireball from it, which was brighter than the sun, is the biggest reported in more than a century, since a 1908 event in Siberia. The blast released the equivalent of hundreds of thousands of tons of TNT. The huge release of energy shattered windows and sent loose objects flying.

The US bomb dropped over Hiroshima during World War II had an explosive force of about 15,000 tons of TNT, but it detonated just 2,000 feet above a densely populated city. The Russian fireball exploded miles above a sparsely populated area, causing less damage.

**Q: Is there any link between this meteor and the larger asteroid that passed Earth later on Friday?**

A: No, it's just cosmic coincidence. According to Nasa, the trajectory of the Russian meteorite was significantly different than that of asteroid 2012 DA14. "In videos of the meteor, it is seen to pass from left to right in front of the rising sun, which means it was traveling from north to south. Asteroid DA14's trajectory is in the opposite direction, from south to north," the US space agency said.

**Q: When was the last event like this?**

A: In 2008, astronomers spotted a meteor similar to the one in Russia heading toward Earth about 20 hours before it entered the atmosphere. It exploded over the vast African nation of Sudan, causing no known injuries.

The largest known meteor in recent times caused the "Tunguska event" flattening thousands of square miles of forest in remote Siberia in 1908. Nobody was injured by the meteor blast, or by the Sikhote-Alin meteorite that fell in eastern Siberia in 1947.

Scientists believe that a far larger meteorite strike on what today is Mexico's Yucatan Peninsula may have been responsible for the extinction of the dinosaurs about 66 million years ago. According to that theory, the impact would have thrown up vast amounts of dust that blanketed the sky for decades and altered the climate on Earth.

**Q: What can scientists learn from Friday's strike?**

A: Bischoff says scientists and treasure hunters are probably already racing to find pieces of the space rock. Some meteorites can be very valuable, selling for up to $670 per gram, depending on their origin and composition. Because meteors have remained largely unchanged for billions of years unlike rocks on Earth affected by erosion and volcanic outbreaks scientists will study the fragments to learn more about the early universe.

Alan Harris, a senior scientist at the German Aerospace Center in Berlin, says some meteorites are also believed to carry organic material and may have influenced the development of life on Earth.

**Q: What would happen if a sizable meteorite hit a city?**

A: A blast at low altitude or on the surface would result in many casualties and cause serious damage to buildings. The exact extent would depend on many factors, including the mass of the meteorite, its speed and composition, said Harris.

Scientists have been discussing for several years how to prepare for such an event however remote. European Space Agency spokesman Bernhard von Weyhe says experts from Europe, the US and Russia are working on way to spot potential threats sooner and avert them. But don't expect a Hollywood-style mission to fly a nuclear bomb into space and blow up the asteroid, like the movie "Armageddon."

"It's a global challenge and we need to find a solution together," he said. "But one thing's for sure, the Bruce Willis 'Armageddon' method won't work."