

Thaxted Astronomical Society

News

Features

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NASA Prepares For

Armageddon

<https://www.dailymail.co.uk/sciencetech/article-6962853/NASA-prepares-Armageddon-tabletop-planetary-defence-exercise.html>

## NASA prepares for 'Armageddon' with a five-day long role play that will act out what would happen if a giant asteroid was hurtling towards Earth at 31,000 mph

Daily Mail 26<sup>th</sup> March 2020 >

- NASA will present scenarios where an asteroid and comet may collide with Earth
- The fictional scenarios will be tackled by experts to discuss potential plans
- One station includes a comet which may hit Earth in 2021 and the other an asteroid which may collide with Earth in 2027

NASA is conducting planetary defence drills to see what would happen if an apocalyptic space rock was heading straight for Earth.

Participants will discuss potential preparations for studying an asteroid or comet, as well as how to deflect it and lessen the damage caused by any impact.

The space agency has been scanning the skies for more than 20 years, looking for what it calls Near-Earth Objects (NEOs).

NEOs are asteroids and comets that orbit the sun and come within 30 million miles (50m km) of Earth's orbit.

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The threat of asteroid impacts has gained increasing prominence over recent years, particularly since the Chelyabinsk fireball of 2013.

The meteor, which blazed across the southern Ural Mountain range in February 2013, was the largest recorded meteor strike in more than a century, after the Tunguska event of 1908.

More than 1,600 people were injured by the shock wave from the explosion, estimated to be as strong as 20 Hiroshima atomic bombs.

In preparation for a possible impact, NASA and other international science organisations will participate in the 2019 Planetary Defense Conference next week.

A 'tabletop exercise' will play out the realistic—but fictional—scenarios for an asteroid and a comet on an impact trajectory with Earth.

The NEO impact scenario have been developed by the NASA Jet Propulsion Laboratory's Center for NEO Studies (CNEOS).

The asteroid scenario begins with the premise that on March 26, astronomers 'discovered' an asteroid that they consider is potentially hazardous to Earth.

After a 'few months' of tracking, observers predict that this NEO – dubbed 2019 PDC – will pass within 0.05 astronomical units (AU) of Earth.

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One AU is the distance between the Earth and the sun and equates to 92,955,807 miles (149,597,871 km).

In the fictional simulation, NASA claims the asteroid poses a one in 100 chance of colliding with Earth and it may land on April 29, 2027.

It is first located 35 million miles (57 million kilometres) from Earth and approaching at 31,000 mph (14km per second) and getting progressively brighter.

Weeks of observation found it more and more likely it would impact Earth in 2027 but details of the asteroid's shape, size and composition remain scarce.

All that is known is the asteroid's average size could be anywhere from 330 feet to 1,000 feet (100 meters to 300 meters).

More than a month after first spotted it continues to fly towards Earth and passes Earth at a distance of 0.13 au on May 13 2019. it is next expected to return close to Earth in 2027.

The conference will pick up the event at this point and decide on the best course of action.

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Experts will discuss the dangers posed by NEOs and actions that might be taken to deflect a threatening object.

'These exercises have really helped us in the planetary defense community to understand what our colleagues on the disaster management side need to know,' Lindley Johnson, NASA's Planetary Defense Officer, said.

'This exercise will help us develop more effective communications with each other and with our governments.'

The conference will also discuss a hypothetical comet impact scenario.

This fictional event states a comet was spotted on April 4 2019 and could collide with Earth on February 28, 2021.

It has an orbital period believed to be several thousand years and astronomers speculate that its core is possibly only about 0.62 miles (1 kilometre) in size.

NASA has in recent weeks announced measures it hopes will help to combat the threat posed by by NEOs.

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On April 11, the space agency announced that its radical mission to fire a small spacecraft directly into an asteroid now has SpaceX on the roster, too.

It selected Elon Musk's aerospace company to launch its Double Asteroid Redirection Test (DART) mission, which is slated to lift off in June 2021.

The groundbreaking mission will be the first demonstrated attempt to deflect an asteroid by purposely crashing an object into it at high speed.

After launching from California's Vandenberg Air Force base atop a Falcon 9 rocket in 2021, the DART craft is expected to reach the object Didymos in October 2022, when it's 6.8 million miles (11m km) from Earth.

The DART mission relies on what's known as a 'kinetic impactor' – in this case an eight foot long (2.4m) craft with solar electric propulsion.

DART will be targeting the binary near-Earth asteroid Didymos, which measures roughly 2,600 feet (800m) across.

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## WHAT COULD WE DO TO STOP AN ASTEROID COLLIDING WITH EARTH?

Currently Nasa would not be able to deflect an asteroid if it were heading for Earth but it could mitigate the impact and take measures that would protect lives and property.

This would include evacuating the impact area and moving key infrastructure.

Finding out about the orbit trajectory, size, shape, mass, composition and rotational dynamics would help experts determine the severity of a potential impact.

However, the key to mitigating damage is to find any potential threat as early as possible.