

**EXERCISE**

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**NOT A REAL-WORLD EVENT** This is part of a hypothetical asteroid threat exercise conducted at the 2021 IAA Planetary Defense Conference

## 2021 PDC Exercise Fact Sheet: Day 1

**Date:** April 26, 2021

**Suggested Headline:** NEWLY DISCOVERED ASTEROID POSES RISK OF EARTH IMPACT IN SIX MONTHS

**Asteroid Designation:** 2021 PDC

**Discovery Date:** April 19, 2021 (one week ago)

**Discovered By:** Pan-STARRS near-Earth object survey project, operated by University of Hawaii for the NASA Planetary Defense Program

**Apparent Magnitude at Discovery:** 21.5

**Distance at Discovery:** 35 million miles (57 million kilometers)

**Object Orbit:** Perihelion: 0.92 au, Aphelion: 1.60 au, Period: 516 d, Inclination: 16 deg

**Currently Observable?**: Yes

**Impact Probability:** 5% (1 chance in 20)

**Potential Impact Date and Time:** October 20, 2021 17:12 UTC +/- 24 min

**Potential Impact Region or Location:** Anywhere within a large region covering about 2/3 of the surface of the Earth. See images below.

**Absolute Magnitude:** 22.4 +/- 0.3

**Object Size:** Highly uncertain. Accounting for uncertainties in absolute magnitude and albedo, the asteroid could be as large as 700 m (2000 ft) or as small as 35 m (100 ft).

**Size of Damage Area If Impact Occurs:** Highly uncertain. Depending on the object size, severe damage from the airblast could extend anywhere from Minimal (a few kilometers) to Local (tens of kilometers) to Regional (hundreds of kilometers).

**Expected Population Affected:**

Chance of no people affected: 97%

Chance of more than 1,000 people affected: 2%

Chance of more than 10,000 people affected: 1.3%

Chance of more than 100,000 people affected: 0.7%

Chance of more than 1 million people affected: 0.14%

Average number of people affected: 6,000

**Prospects for Future Observations:** The asteroid is being tracked almost every night and will remain observable from now until the potential impact. Large telescopes will be required for these observations, since the asteroid will remain very faint.

**Effect of Future Observations on Impact Probability:** If the asteroid is headed for impact, observations over the next week could push the impact probability as high as 30%. If the asteroid is not headed for impact, the probability may still rise for a time but will eventually drop to zero.

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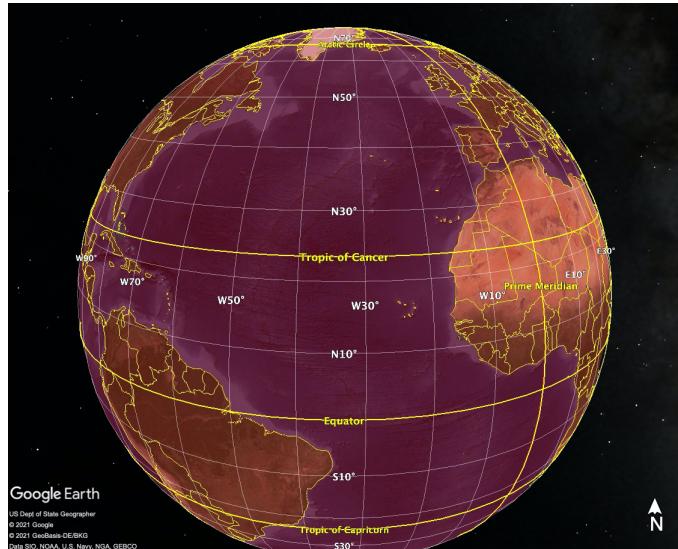
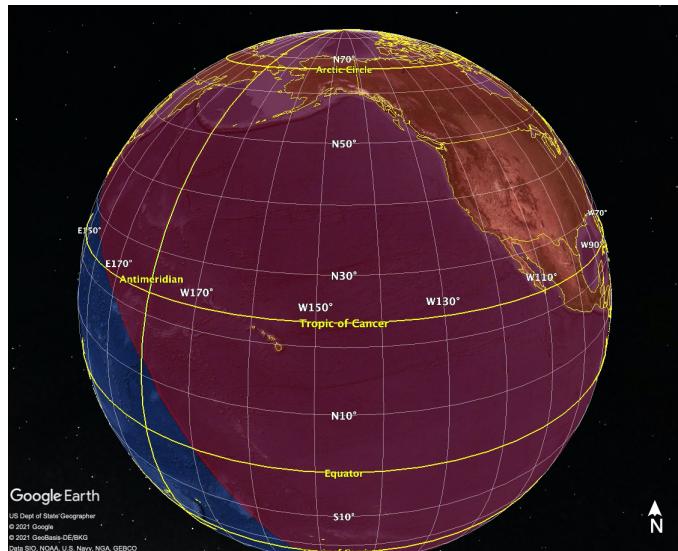
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**Possibility of Space Missions for Reconnaissance or In-Space Mitigation:** SMPAG (the Space Missions Planning and Advisory Group), an international forum for space agencies, will meet shortly to consider the feasibility of space missions as a coordinated international response to 2021 PDC.

**Images:**

The following 3 images show the very large region, here shaded in red/purple, where 2021 PDC could potentially impact on October 20, 2021. The region covers roughly 2/3 of Earth's surface. As the asteroid is tracked and its predicted future position becomes more certain, those later predicted impact regions should be smaller and should embed within the region indicated here.

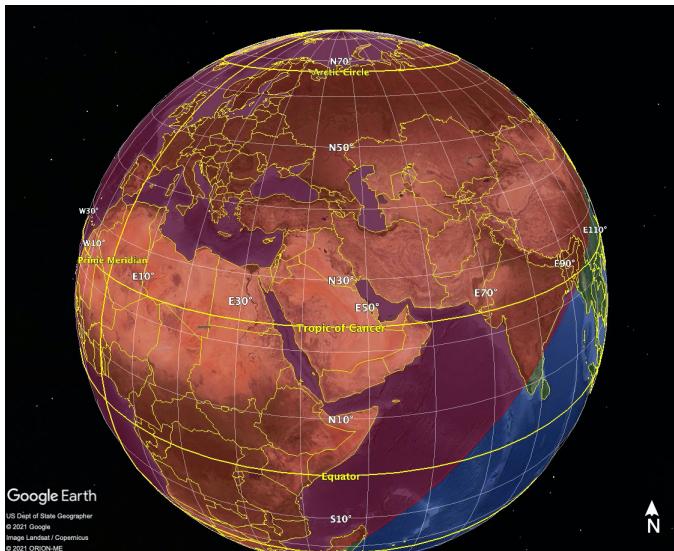
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The International Asteroid Warning Network (IAWN) disseminates this information pursuant to United Nations General Assembly resolution 71/90, paragraph 9. IAWN is an international network of organizations that detect, track and characterize potentially hazardous asteroids. IAWN will publish weekly updates of impact probability as this asteroid is tracked throughout 2021.

**For more information:** <https://cneos.jpl.nasa.gov/pd/cs/pdc21/day1.html> and <https://iawn.net>.

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