

2021 PDC Exercise Fact Sheet: Day 2

Date: May 2, 2021 (one week since last update)

Suggested Headline: NEW OBSERVATIONS CONFIRM ASTEROID WILL IMPACT IN SIX MONTHS; REGION AT RISK IS EUROPE AND NORTHERN AFRICA

Asteroid Designation: 2021 PDC

Discovery Date: April 19, 2021

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: 100%

Impact Date and Time: October 20, 2021 17:13 UTC +/- 82 s

Impact Region or Location: Somewhere within a large region covering much of Europe and extending into northern Africa. Countries most at risk include Denmark, Germany, Czech Republic, Austria, Slovakia, Hungary, Slovenia, Croatia, Serbia, Montenegro and Albania. The region extends on the north to Norway and Sweden, on the west, to England, France and Italy, on the east, to countries including Lithuania, Poland, Ukraine, Romania and Bulgaria, and on the south, to Greece and Egypt. See image 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 Around Impact Site: 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).

Prospects for Future Observations: The asteroid continues to be 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. Today's update was prompted by the discovery of new detections from archived sky images taken in 2014, when 2021 PDC made a distant passage by Earth.

Effect of Future Observations on Impact Probability: None. The impact probability is expected to remain 100%.

Effect of Future Observations on Predicted Impact Region: The region is expected to shrink significantly in size as observations are made over the next several months. Future predicted regions are expected to nest somewhere within the current region.

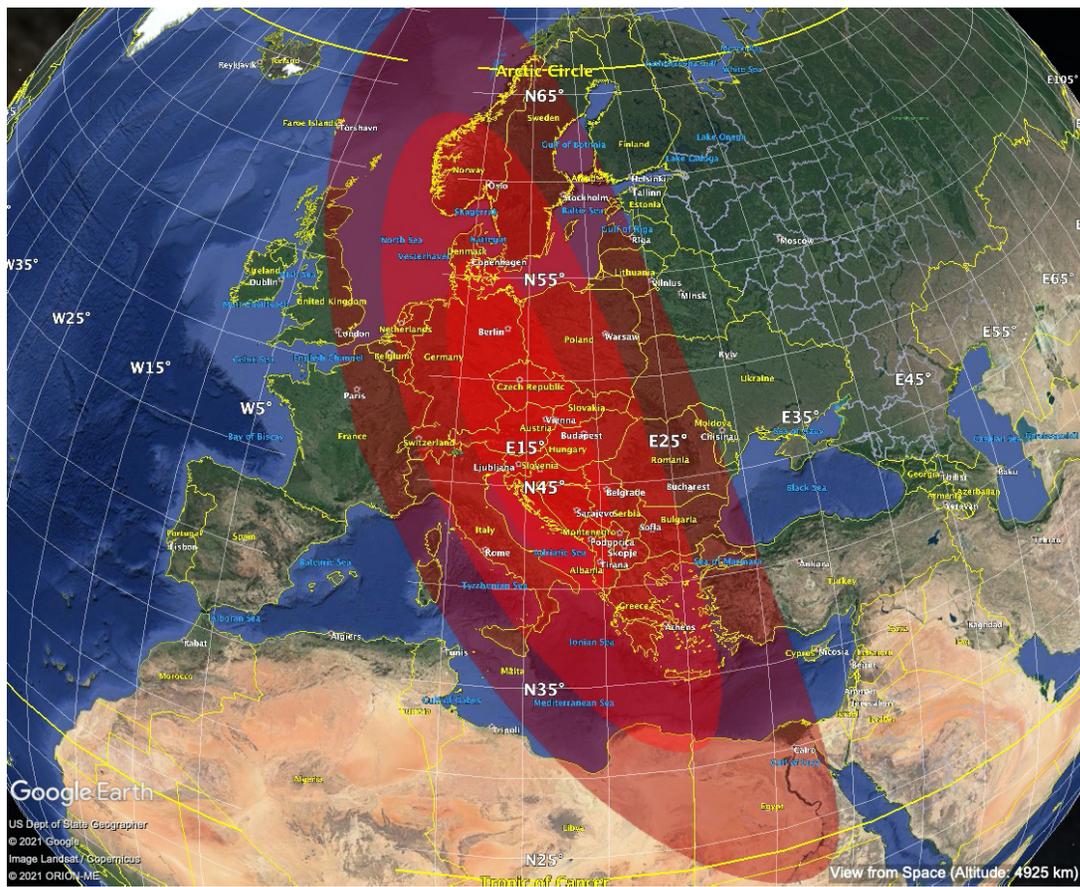
NOT A REAL-WORLD EVENT This is part of a hypothetical asteroid threat exercise conducted at the 2021 IAA Planetary Defense Conference

Expected Population Affected: Under evaluation – no results at this time.

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

Images:

Earth impact is now 100% certain, and the shaded regions in the following image show where the impact is most likely to happen. There is a 99% chance the impact will be located within the large shaded region; the boundaries of the two inner shaded regions indicate other probability levels: the chance of impact is 87% inside the middle contour, and 40% inside the central dark red region. As the asteroid is tracked and its future position becomes more certain, the future predicted impact regions will be smaller, and they will nest within the current large shaded region.



The International Asteroid Warning Network (IAWN) is disseminating 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 the predicted impact region as this asteroid is tracked throughout 2021.

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For more information: <https://cneos.jpl.nasa.gov/pd/cs/pdc21/day2.html> and <http://iawn.net>.

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