

2021 PDC Exercise Fact Sheet: Final

Date: October 14, 2021 (6 days before impact)

Suggested Headline: ASTEROID 2021 PDC DETECTED BY RADAR AND IS SMALLER THAN PREVIOUSLY THOUGHT; BLAST DAMAGE ESTIMATE REVISED DOWNWARDS

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

Current Apparent Magnitude: 20.4

Distance at Discovery: 35 million miles (57 million km)

Current Distance: 3.9 million miles (6.3 million km); approaching Earth at 10.7 km/s

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 17:02:25 UTC +/- 1 s

Impact Velocity: 15.2 km/s (9.5 mi/s, 34,000 m/hr)

Impact Location: A region about 23 km across centered near the borders of three countries: Germany, Czech Republic and Austria. See image below.

Absolute Magnitude: 22.4 +/- 0.3

Object Size: 105 +/- 11 m, based on Goldstone radar images taken yesterday and today.

Size of Damage Area Around Impact Site: Still uncertain because asteroid physical properties such as size and bulk density are still uncertain. In the worst case, the serious damage region will be about 300 km across. See second image below.

Prospects for Future Observations: The asteroid is still tracked optically every night, and now by Goldstone radar every day.

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 by another factor of 2 over the next several days.

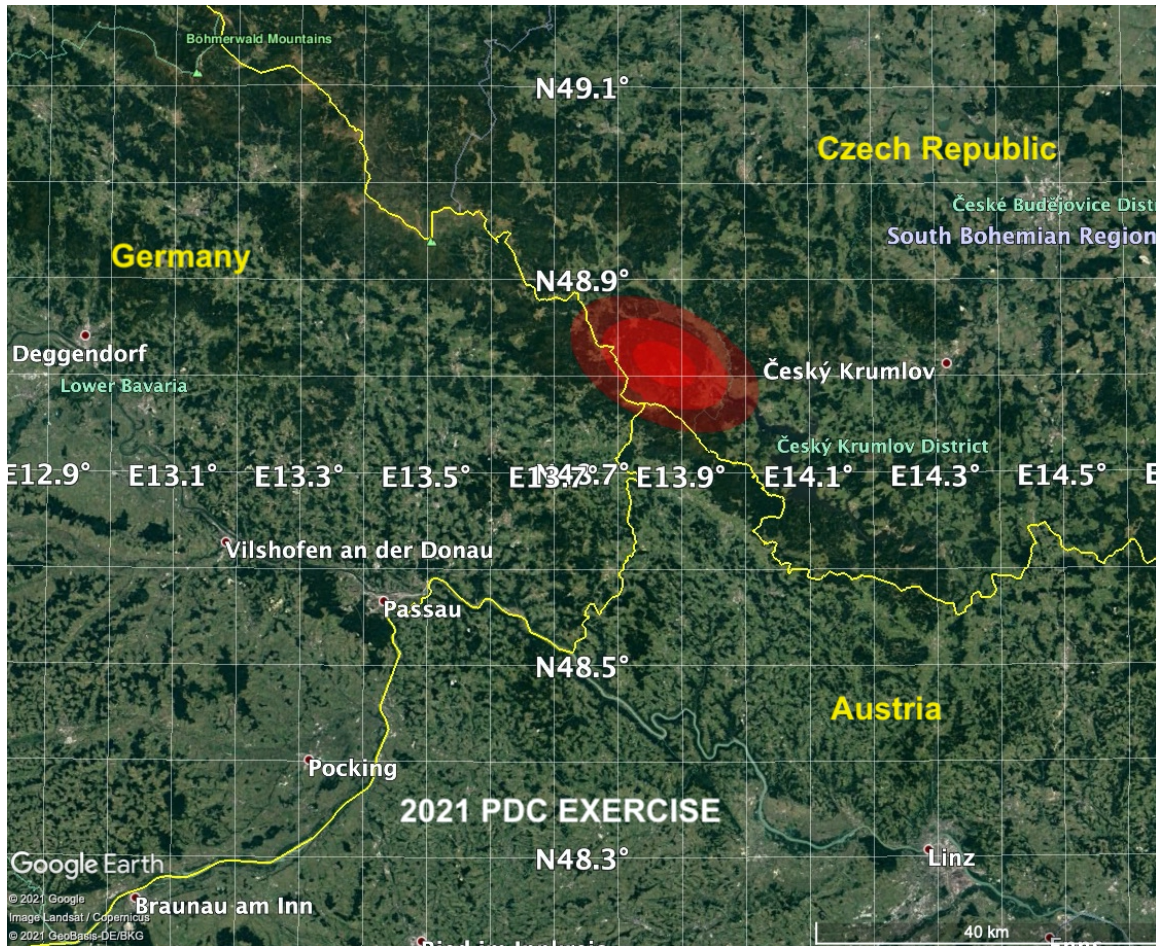
Expected Population Affected: Under evaluation – no results at this time.

Possibility of Space Missions for Reconnaissance or In-Space Mitigation: None contemplated.

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

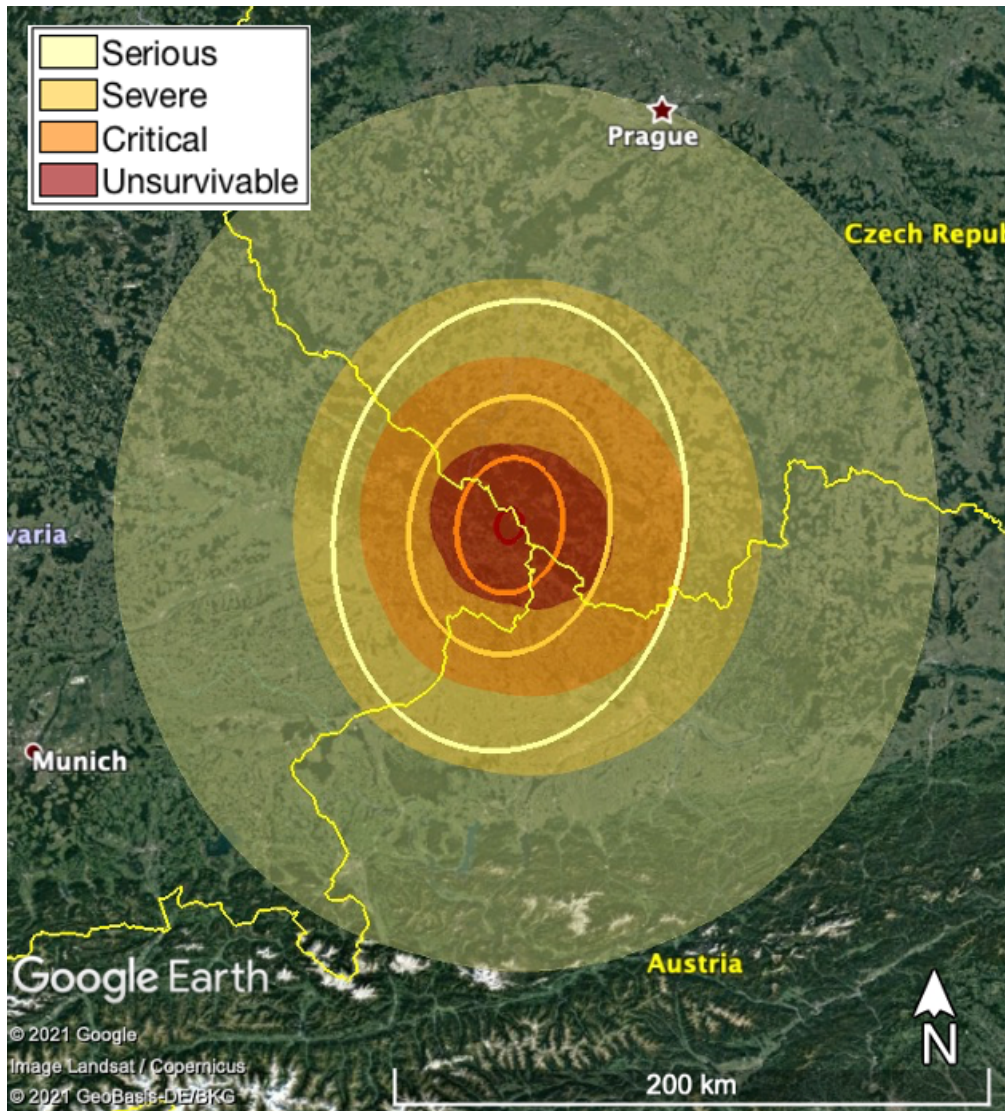
Images:

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.



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The following image shows the region of potential damage risk, which is much larger than the region in the previous image because serious damage could extend for up to a hundred kilometers or so from the impact point. In the highest impact-energy case, the region for serious potential damage risk is about 300 km across, as indicated by the shaded region; the extent of serious damage for the average case, indicated by the line contours, is about 150 km across.



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.

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