

INTERNATIONAL ASTEROID WARNING NETWORK (IAWN)¹**PREDICTED ASTEROID IMPACT NOTIFICATION – HYPOTHETICAL SIMULATION**

Date: 24 July 2034

From: International Asteroid Warning Network (IAWN)

IAWN Coordinating Officer (NASA) for the IAWN Steering Committee

To: Chair (ESA), Space Mission Planning Advisory Group (SMPAG);

Planetary Defence Programme Officer, United Nations Office for Outer Space Affairs (UNOOSA)

Title: Update on Impact Prediction of Near-Earth Asteroid 2026 PDC27 on 10 July 2038

Impact Probability	100% based on the asteroid's current trajectory
Date of Predicted Impact	10 July 2038
Impact Location	The asteroid will impact the atmosphere somewhere along a 120 km (70 mile) long and 5 km (3 mile) wide corridor. The asteroid will airburst (disrupt in the atmosphere) somewhere along a corridor approximately 140 km (90 miles) long and 20 km (10 miles) wide that includes Montreal, Canada.
Expected Number of People Affected	Populated regions will be affected, with approximately 10,000 to 3 million people potentially affected in Canada and possibly the U.S., depending on the impact location, ground damage extent and severity, and other uncertainties.
Expected Damage Level	A destructive blast wave would cause severe, very likely critical, and potentially unsurvivable damage, with serious ground damage most likely extending 35–50 km but potentially up to 100 km.
Asteroid Size	Most likely in the range 82–84 meters (270–280 feet) in diameter, but potentially in the range 78–88 meters (260–290 feet).
When will new information be available from telescopic observations?	The asteroid is currently unobservable. Starting in January 2038—seven months before impact—the asteroid will become observable by optical telescopes on Earth. The asteroid will also be observable by the Hubble Space Telescope and the James Webb Space Telescope starting in January 2038 and March 2038, respectively. On 6 July 2038—four days before impact—the asteroid will be detectable by planetary radar. By 20 June 2038—twenty days before impact—the atmospheric impact location will be known to ± 10 km, and on 6 July it will be known to ± 3 km.

¹ IAWN is a worldwide collaboration of asteroid observers and modelers that was recommended by the United Nations. United Nations General Assembly resolution [70/82](#) of 9 December 2015 notes with satisfaction the establishment and the work of the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG) to implement recommendations for an international response to the near-Earth object impact that were endorsed by the Committee on the Peaceful Uses of Outer Space in 2013 ([A/68/20, para. 144](#)). The Committee in its annual reports ([A/79/20, para. 135](#)) notes that should a credible threat of impact be discovered by the IAWN, available information would be provided by IAWN and disseminated to all Member States through the Office for Outer Space Affairs. The threshold for issuing warnings of possible impact effects is a probability of impact greater than 1% and a rough size estimated to be greater than 10 meters/33 feet ([A/AC.105/C.1/2025/CRP.6, Annex II](#)). See <https://iawn.net>.

ADDITIONAL DETAILS:

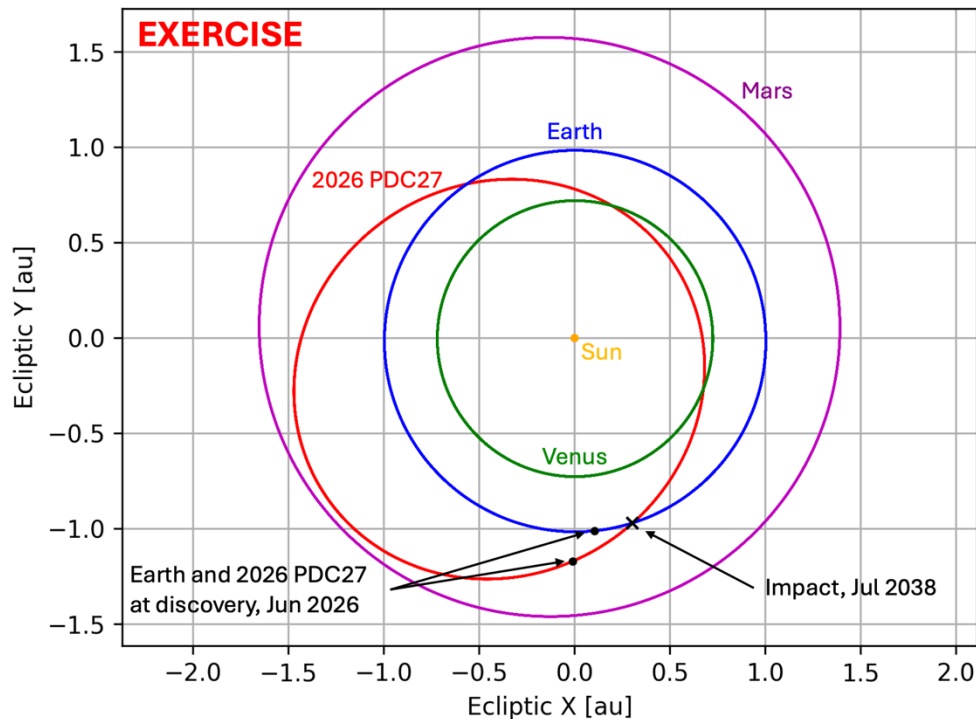
- **Impact Probability:** On its current trajectory, near-Earth asteroid 2026 PDC27 will impact Earth on 10 July 2038.
- **Impact Location:** The asteroid will impact Earth's atmosphere somewhere along a 120-km (70-mile) long, 5-km (3-mile) wide corridor. The asteroid will airburst (disrupt in the atmosphere) somewhere along a corridor approximately 140 km (90 miles) long and 20 km (10 miles) wide around Montreal, Canada, including Baie-d'Urfé, Kirkland, Pointe-Claire, Dorval, Montreal West, Brossard, Carignan, Chambly, Richelieu, Marieville, and Valcourt. Blast effects will extend outward from the airburst location.
- **Expected Number of People Affected:** Populated regions will experience ground damage, potentially affecting around 10,000 to 3 million people depending on the impact location, damage extent and severity, and other uncertainties.
- **Expected Damage:** The primary hazard will be a high-energy airburst (disruption in the atmosphere) causing a destructive blast wave. The blast damage will likely extend approximately 35–50 kilometers (20–30 miles) from the airburst location, and possibly as far as 100 kilometers (60 miles). The blast could flatten structures near the damage center, with structure damage and broken windows extending over larger areas. The energy delivered by the asteroid will most likely be in the 20–32 megaton range but potentially in the 13–46 megaton range. Heat from the airburst fireball could also cause thermal damage or burns over smaller areas within the blast region. Damage estimates will be updated once new data on the asteroid's orbital trajectory or physical properties become available.
- **Asteroid Properties:** Asteroid 2026 PDC27 is most likely 82–84 meters (270–280 feet) in diameter, but potentially in the range 78–88 meters (260–290 feet) based on all available information. The available information continues to indicate that the asteroid is made of rocky material, rather than metallic or carbonaceous material.
- **Current Sources of Information:** Data from the information-gathering spacecraft that flew by the asteroid, along with prior ground- and space-based telescopic observations.
- **Expectations for New Telescopic Information:** No new telescopic information about the asteroid is expected until January 2038 (seven months before impact), when the asteroid will become observable first in the twilight sky and then in the nighttime sky by optical ground-based telescopes. The asteroid will also be observable by the Hubble Space Telescope and the James Webb Space Telescope starting in January 2038 and March 2038, respectively. Ground-based telescopes will be able to observe the asteroid from January 2038 until the predicted impact. These observations will progressively improve the prediction of where the asteroid airburst will occur. By 20 June—twenty days before impact—the atmospheric entry location will be known to ± 10 km. On 6 July—four days before impact—the asteroid will be detectable by high-power deep space planetary radar. Radar data would improve the prediction of the atmospheric impact location and further refine the asteroid's estimated size. At that point, based on all available data, the atmospheric impact location uncertainty would be ± 3 km.
- **Discovery:** 2026 PDC27 was first reported on 28 June 2026 by the University of Hawai'i's Panoramic Survey Telescope and Rapid Response System 1 (Pan-STARRS1), located at Haleakalā,

Maui, during near-Earth asteroid search operations for NASA. IAWN's worldwide network of observatories continued to perform follow-up observations until the asteroid became unobservable on 31 July 2026. Detections were also found in archival images taken by the Vera C. Rubin Observatory's Legacy Survey of Space and Time (LSST) on 11, 17, and 23 May 2026 and 4, 10, and 16 June 2026.

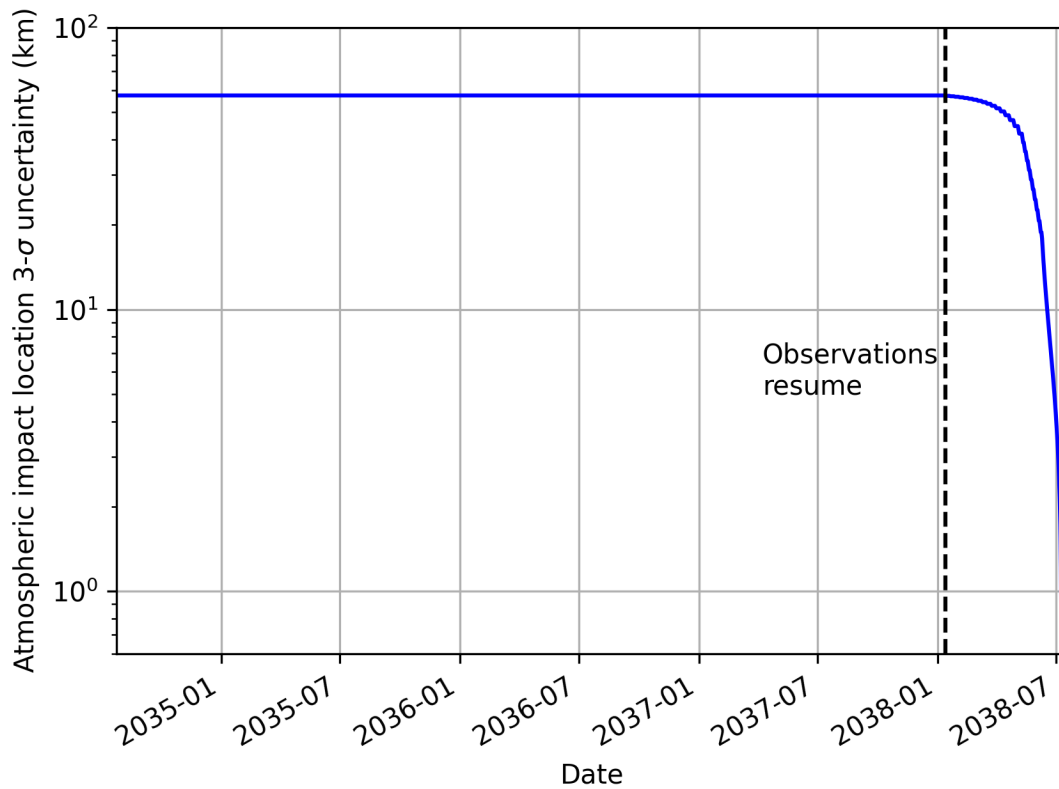
Graphics

1. Heliocentric orbit diagram of 2026 PDC27
2. Uncertainty in knowledge, as a function of time, about where the asteroid will impact Earth's atmosphere
3. Ground damage risk region map – regions potentially at risk of ground damage
4. Damage probability map – likelihood of damage occurring in each region

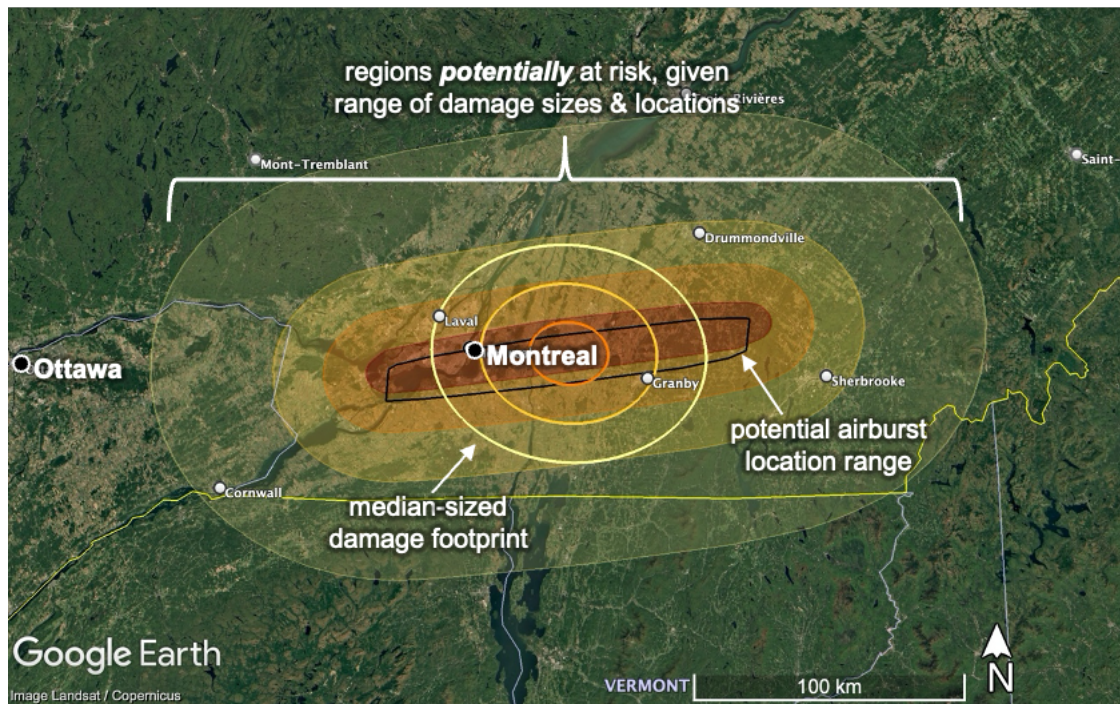
1. **Heliocentric orbit diagram of 2026 PDC27.** The plot shows the asteroid's position relative to Earth's orbit at discovery in June 2026 and around the time of impact on 10 July 2038.



2. **Uncertainty in knowledge, as a function of time, about where the asteroid will impact Earth's atmosphere.** The 3-sigma uncertainty is currently ± 60 km and will remain constant until telescopic observations resume in January 2038. As telescopes measure the asteroid's position in space, the uncertainty in the predicted atmospheric impact location will decrease to ± 10 km by 20 June and ± 3 km by 6 July.



3. **Ground damage risk region map.** This damage risk region map shows the extent of regions potentially at risk to local ground damage, which takes into account the uncertainty in the potential airburst location (black border) and potential extent of damage. The shaded colors show the highest potential damage severity that may reach each region (out to the 95th percentile of estimated damage extent). The colored rings show a likely median-size damage footprint at an example location. Damage would only occur around the actual airburst location, not across the entire risk region.



Damage Level Description

Serious	Windows shatter, some structure damage
Severe	Widespread structure damage or third-degree burns
Critical	Residential structures collapse or clothing ignites
Unsurvivable	Devastation, structures flattened or burned

4. **Damage probability map.** This damage probability map shows how likely damage is to occur at different locations within the risk region. The shaded colors show the total probability of *at least* serious damage (shattered windows or minor structure damage) at a given location. These total probabilities include the uncertainty in the asteroid's predicted airburst location and the corresponding potential ground damage. The probability of ground damage occurring in different regions ranges from 97–50% near the most likely damage regions, and drops to fractions of a percent toward the edges of the risk region.

