

EXERCISE EXERCISE EXERCISE

This is a simulated event.

February 16, 2022

From: NASA Planetary Defense Coordination Office

Title: Notification of Potential Asteroid Impact

Impact Probability: 5%

Impact Date: 16 August 2022

Impact Risk Corridor: Covers 2/3 of Earth's surface, including CONUS

Approximate Size: 130-1440 ft (40-440 m)

Expected Level of Damage if Impact Occurs: Local to Regional

Impact Prevention Feasible: Unknown at this time

- There is a 5% probability that asteroid 2022 TTX will impact Earth on 16 August 2022. While there is uncertainty in whether the asteroid will impact Earth, if an impact occurs it will be on this date.
- The impact risk corridor, which is the region of Earth where it is possible that 2022 TTX could impact, covers approximately 2/3 of the Earth's surface, including North America, Europe, Asia, most of South American and most of Africa.
- The potential impact effects are highly dependent on the size of the asteroid. Based on current data, the asteroid is estimated to be between 130-1440 ft (40-440 m) in size. At the small end of this size range, an asteroid impact over land could result in minor local damage (e.g., air blasts resulting in broken windows and damage to low-integrity structures). At the large end, an asteroid impact could result in a significant surface crater and widespread injuries/casualties and structural damage over a region extending tens to 100+ km. An impact in coastal waters could result in a tsunami wave that would inundate coastline areas.
- The asteroid 2022 TTX has been tracked since initial discovery on 11 February 2022. Further observations will reduce the uncertainty in the asteroid's trajectory and impact probability. The asteroid will be continually observable by telescopes leading up to the potential impact date, except during the full moon.
- The asteroid size cannot be estimated with further precision without radar observations or imagery from a spacecraft that can closely approach the asteroid. Radar observations will be possible no sooner than 13 days prior to the potential impact date, if the asteroid is at the large end of the size range, and possibly not until 5 days prior to the potential impact if the asteroid is at the small end.
- The feasibility of space missions to prevent the impact is under study.

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This notification is issued by the Planetary Defense Coordination Office (PDCO) in accordance with NASA Policy Directive 8740.1. NASA established the PDCO to manage its ongoing mission of planetary defense. The PDCO is responsible for detection, tracking, and characterization of potentially hazardous objects (PHO's) and for issuing warnings of possible impact effects when the probability of impact is greater than 1%.

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Appendix: Illustrative graphics

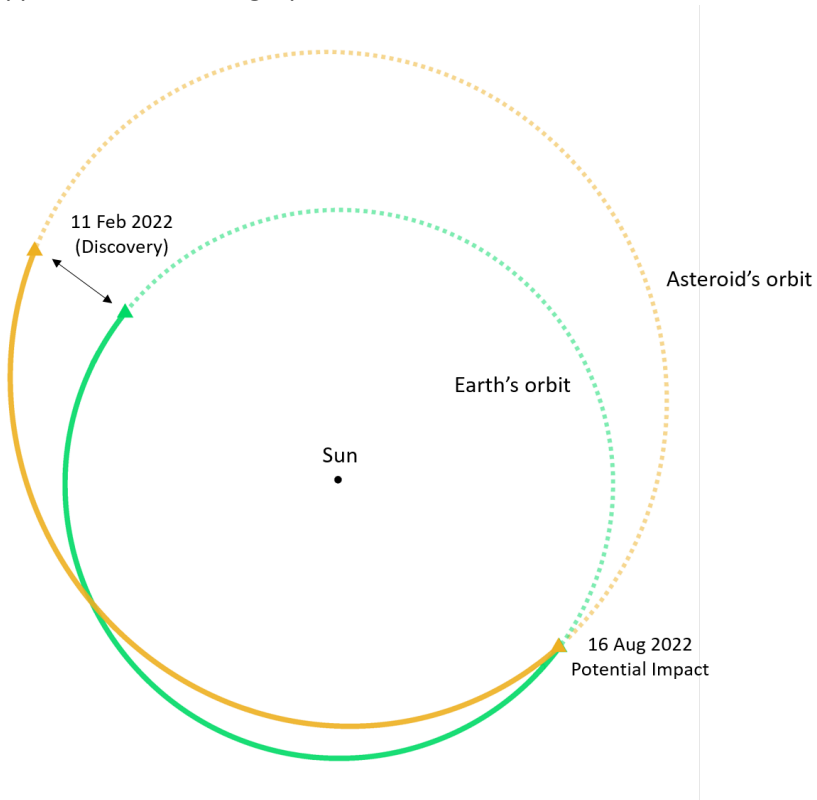


Figure 1. Heliocentric orbit diagram of asteroid TTX 2022 relative to Earth orbit

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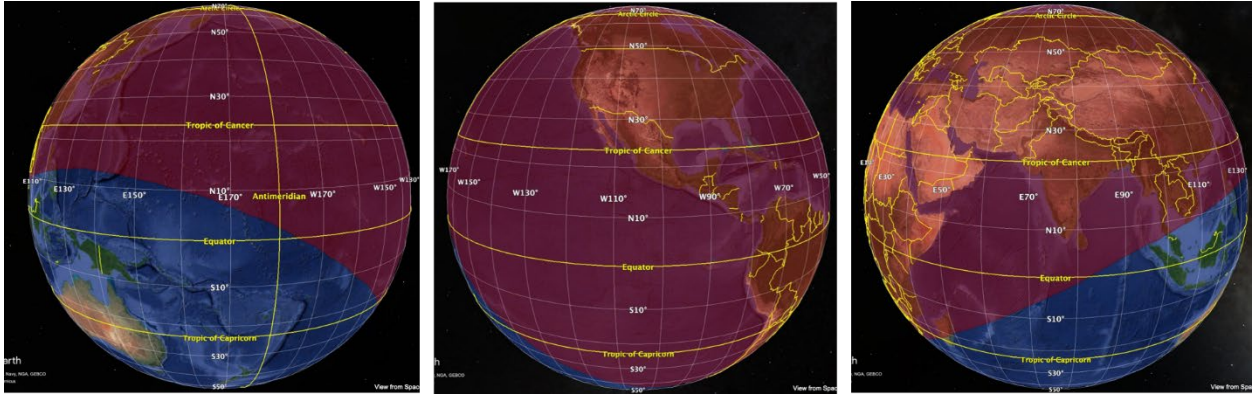


Figure 2. Impact risk corridor map

Diameter of Impacting Asteroid	Type of Event	Approximate Impact Energy (MT)	Average Time Between Impacts (Years)
5 m (16 ft)	Bolide	0.01	1
10 m (33 ft)	Superbolide	0.1	10
25 m (80 ft)	Major Airburst	1	100
50 m (160 ft)	Local Scale Devastation	10	1000
140 m (460 ft)	Regional Scale Devastation	300	20,000
300 m (1000 ft)	Continent Scale Devastation	2,000	70,000
600 m (2000 ft)	Below Global Catastrophe Threshold	20,000	200,000
1 km (3300 ft)	Possible Global Catastrophe	100,000	700,000
5 km (3 mi)	Above Global Catastrophe Threshold	10,000,000	30 million
10 km (6 mi)	Mass Extinction	100,000,000	100 million

Figure 3. Size/damage correlation

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