

→ NEWSLETTER FEBRUARY 2024

ESA's NEO Coordination Centre

Current NEO statistics

The total number of known NEOs crossed 34 000 during the month of January.

- Known NEOs: 34 170 asteroids and 123 comets
- NEOs in risk list*: 1581
- NEOs designated during last month: 162
- NEOs discovered since 1 January 2024: 222

Focus on

After an imminent impactor over Europe in the third month of 2022, and one in the second of 2023, in 2024 one was already discovered in January. And again, as with the last two, the discoverer was Krisztián Sárneczky, the Hungarian astronomer who discovered 2022 EB5 and 2023 CX1. This new object, now designated 2024 BX1, was discovered just 3 hours before its impact, and quickly detected and reported by ESA's Meerkat alert system. The response from European observers was again excellent, and more than 200 observations were obtained in this short time window. An excellent trajectory could be determined, which led to an accurate prediction of the impact location, and to the recovery of meteorites on the ground. In light of the now more frequent occurrence of these predicted impacts (three in less than 12 months), our Centre has now developed a [webpage](#) dedicated to all imminent impactors discovered so far: information and plots about 2024 BX1 have already been added.

Upcoming interesting close approaches

A large asteroid is having a distant fly-by in February.

- 2008 OS7 is a large, with an estimated size of 200 m to 500 m, which is having a distant fly-by at more than 7 lunar distances in early February. A fly-by like this is a routine event that happens frequently, and causes no concern since the trajectory of the object is extremely well known.

Recent interesting close approaches

In addition to the impactor 2024 BX1, seven other small asteroids came closer than the Moon in January, all discovered during the month.

News from the risk list

No object discovered in 2024 is currently in the top positions of our risk list.

- 2024 AL3 is the highest rated discovery of 2024 so far. It has a diameter between 50 m and 100 m, and an impact probability of less than 1 in 20 000 in 2099. Observations are ongoing and may further reduce the threat assessment.

*The risk list of all known objects with a non-zero (although usually very low) impact probability can be found at <https://neo.ssa.esa.int/risk-list>

In other news

- Our NEO database has been recently updated with new physical properties entries.
- ESA is continuing with the preparations for the launch of the Hera mission this next October. Following the completion of the mechanical qualification, the spacecraft is being prepared for thermal-vacuum testing. In parallel, both the Milani and Juventus CubeSat integrations have been completed.
- A few months after the retrieval of the capsule, NASA has opened the OSIRIS-REx sample container.

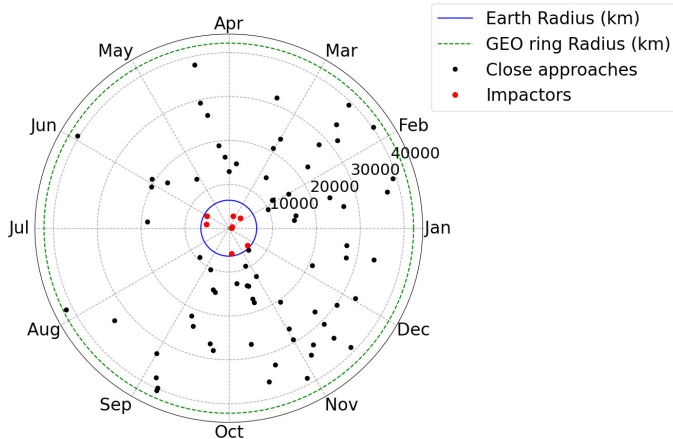
Upcoming events

- 55th Lunar and Planetary Science Conference (LPSC 2024), 11-15 March 2024, The Woodlands, USA
<https://www.hou.usra.edu/meetings/lpsc2024/>
- Apophis T-5 Years, 22-23 April 2024, ESTEC, Noordwijk, The Netherlands
<https://www.hou.usra.edu/meetings/apophis2024/>
- Follow-up Observations of Small Bodies in the Solar System in the Era of Large Discovery Surveys, 6 and 8 August 2024, Cape Town, South Africa
<https://sbss2024.sao.ac.za/>

List of past impactors

The table below contains the updated list of known asteroids detected in space before impact. It now includes 2024 BX1, the fourth one discovered in less than 2 years.

Object name	Impact time in UT	Time between discovery and impact in hours	Impact latitude in deg	Impact longitude in deg	Size range in m	H magnitude	Expected energy in kt of TNT equivalent	Discovery site
2024 BX1	2024-01-21 00:33	3	54 N	12 E	1–2	32.7	0.04	GINOP-KHK, Piszkesteto
2023 CX1	2023-02-13 02:59	7	50 N	1 E	1–2	32.8	0.04	GINOP-KHK, Piszkesteto
2022 WJ1	2022-11-19 08:27	4	43 N	79 W	0.5–1	33.6	0.009	Mt. Lemmon Survey
2022 EB5	2022-03-11 21:22	2	70 N	8 W	1–3	31.4	0.3	GINOP-KHK, Piszkesteto
2019 MO	~ 2019-06-22 21:30	~ 13	~ 15 N	~ 70 W	4–8	29.3	3.8	ATLAS-MLO, Mauna Loa
2018 LA	2018-06-02 16:44	8	21 S	24 E	2–5	30.5	0.9	Mt. Lemmon Survey
2014 AA	~ 2014-01-02 02:30	~ 22	~ 13 N	~ 30 W	2–4	30.9	0.2	Mt. Lemmon Survey
2008 TC3	2008-10-07 02:45	20	21 N	31 E	4	30.3	0.7	Mt. Lemmon Survey



Polar plot representing the geocentric distance of known close approaches versus the time of the year when the close approach happened, extending from the Earth to the Geostationary ring.

The 8 known impactors are plotted as red points near the centre. The recent 2024 BX1 is the closest to the centre, almost perfectly overlapping with the point corresponding to 2014 AA. Both objects entered the Earth atmosphere with nearly vertical trajectories.

The dichotomy between winter and summer discovery rates, often mentioned in this newsletter, is also evident in this plot.

[Credit: ESA / PDO]

Links for more information

Website: <https://neo.ssa.esa.int>

Close approaches page: <https://neo.ssa.esa.int/close-approaches>

Risk List: <https://neo.ssa.esa.int/risk-list>

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