

→ NEWSLETTER JULY 2023

ESA's NEO Coordination Centre

Current NEO statistics

The number of NEO discoveries per month is starting to decrease, as is usual during the summer. So far the decline is likely due to the shorter Northern nights, but poor monsoon weather in the southwest of the US will soon further impact the statistics.

- Known NEOs: 32 267 asteroids and 121 comets
- NEOs in risk list*: 1493
- NEOs designated during last month: 168
- NEOs discovered since 1 January 2023: 1232

Focus on

This month marks the 100th issue of our Newsletter, one of the main outreach and communication products of our team. The first issue dates back to April 2015, and it was presented when ESA and our Centre hosted the 4th IAA Planetary Defense Conference in Frascati. The format of the Newsletter has remained fairly stable during the years: it always includes updates on our risk list and our close approaches, as well as announcements of upcoming events. It also always contains an interesting table, an image and a few paragraphs of text describing news, events or historical facts about the NEO world.

Upcoming interesting close approaches

Only one known object will have a significant close approach in July.

- 2023 HO6 is a moderately large asteroid, about 200 metres in diameter, which is passing by the Earth on 5 July at 5 lunar distances. It will get brighter than magnitude 14 at closest approach.

Recent interesting close approaches

June saw close approaches of both large and small objects, at various distances.

- (488453) 1994 XD and 2020 DB5 are half-kilometre objects that had a fly-by in June, reaching magnitude 14. Their fly-by distances were quite large, 8 and 11 lunar distances respectively.
- 2023 HO18 is a much smaller 30-metre object that reached the same brightness, having had a close approach at just 1.2 lunar distances. It also passed at just 0.38 lunar distances from the Moon itself during the fly-by.
- 2023 LS was the object with the closest known approach of the month, flying-by at only 0.23 lunar distances. It is a tiny object, just a few metres wide.

News from the risk list

The first object in our risk list will very likely disappear this month.

- 2001 VB, currently at the top of our risk list, has a possible impact solution this month. However, the probability of impact is incredibly low, less than 1 in 350 million. In fact, it is so low that it falls below the typical sensitivity of the algorithm used to compute the risk list. The high rating we see today is just the consequence of the short window of time between now and the possible impact date. This asteroid has not been observed since it was discovered in 2001, and it is likely currently located very far from Earth, possibly almost as far as Jupiter.

*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

- The Asteroids, Comets, Meteors Conference was held in Flagstaff, USA, in June, and saw a very significant participation of NEO researchers. As part of the event, over 300 scientists had the pleasure of receiving an asteroid named after them, in recognition of their contributions to the field of small body research.
- A wide range of initiatives related to Asteroid Day took place around the world on 30 June and 1 July, including a two-day public event in Luxembourg and many other presentations in various countries. A representative from the NEOCC was invited to participate in a panel and provide a talk at the main event in Luxembourg.

Upcoming events

- 42nd International Meteor Conference, 31 August-3 September 2023, Redu, Belgium
<https://imc2023.imo.net/>
- 55th Annual Meeting of the AAS Division for Planetary Sciences (joint meeting with the Europlanet Science Congress (EPSC) 2023), 1-6 October 2023, San Antonio, USA
<https://dps.aas.org/meetings/future>

Current completeness of NEA discoveries

This table shows the current status of the worldwide NEA discovery effort, for specific size ranges. The largest km-sized NEAs are mostly known, but the completeness figures for medium-sized ones are significantly poorer, demonstrating that a ramp-up of the discovery capabilities is still needed. Over the next few years, ground-based and space observatories designed to fill these gaps will become operational.

Size range	Expected number	Known number	Undiscovered fraction
10 – 30 m	40 – 50 million	8 792	99.8%
30 – 100 m	1 million	10 656	98.9%
100 – 300 m	30 000	6 987	76.7%
300 – 1 000 m	5 440	4 788	12.0%
> 1 000 m	930	886	4.7%



On 26 June 2023 at 20:45 UTC, a bright fireball appeared over southern Germany, crossing the sky above the city of Nuremberg (Nürnberg). The event was seen and recorded by numerous people.

This image was taken from the AllSky7 Fireball Network station AMS80 at Garching, a dedicated camera observing the sky for meteors and fireballs. ESA is also participating in the search for such events and is operating a number of fireball cameras in Spain.

[Credit: AllSky7.net AMS80 Garching (M. Frühauf)]

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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