

→ NEWSLETTER OCTOBER 2023

ESA's NEO Coordination Centre

Current NEO statistics

More than 400 new NEOs were discovered during the month of September, a large number but quite typical for this month of the year. During autumn, current surveys usually have good weather conditions and already moderately long nights, resulting in more discoveries.

- Known NEOs: 32 947 asteroids and 121 comets
- NEOs in risk list*: 1516
- NEOs designated during last month: 403
- NEOs discovered since 1 January 2023: 1912

Focus on

In this newsletter, we often report the removal of objects from our risk list thanks to new astrometric observations, either collected as follow-up or found in archives as precoveries. These new observations, when added to the existing ones, result in a better orbit for the object, sufficient to exclude future impact opportunities. There is however another way for an object to leave the risk list. In some cases, an object becomes lost and cannot be observed anymore; the time of its possible impact arrives without any new observations, and we are able to exclude the impact itself just because we realise it did not happen. This scenario is not uncommon for objects discovered decades ago, when the observational coverage was poorer, and many NEOs went lost. It happened just a few months ago when our then top-rated NEO, 2001 VB, suddenly dropped in our list because its most likely impact date, which was scheduled for the end of July 2023, passed without any actual impact.

Upcoming interesting close approaches

Among known asteroids, two 200-metre objects will approach during the second half of October.

- 1998 HH49, a moderately large asteroid with a diameter of about 200 metres, will fly-by the Earth on 17 October, at 3 lunar distances. It is expected to reach magnitude 13 near its closest approach.
- (525229) 2004 UU1, another asteroid of similar size, will have a close approach two weeks later. In this case the larger minimum distance, more than 3 times as far away, will result in a peak brightness around magnitude 14.

Recent interesting close approaches

A tiny asteroid was discovered just a few hours before its close approach.

- 2023 RS, an object with a size of about 1 metre, flew-by the Earth on 7 September, just 4000 km over the surface. It was the fifth-closest non-impacting approacher discovered so far.

News from the risk list

The top-ranked possible impactor of last month has now been excluded from our list.

- 2023 QF5, which reached the top of our risk list at the end of August, has now been completely removed from the list, thanks to follow-up observations during the month of September.

*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 OSIRIS-REx Sample Return Capsule, containing pristine samples of asteroid (101955) Bennu, safely landed in the Utah desert. The main spacecraft remains fully operational, has now been renamed OSIRIS-APEX, and will be redirected towards an encounter with asteroid (99942) Apophis in 2029.

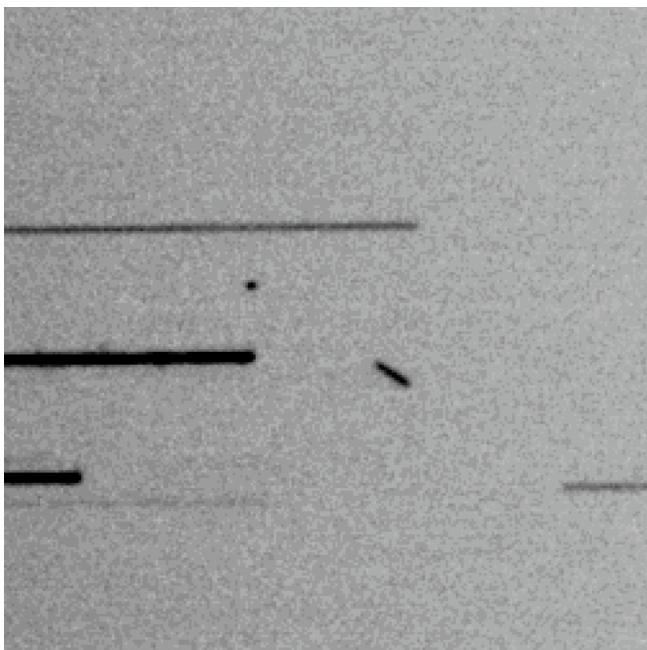
Upcoming events

- 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>
- Astronomical Data Analysis Software & Systems XXXIII (ADASS 2023), 5-9 November 2023, Tucson, USA
<https://adass2023.lpl.arizona.edu>

Past known closest approaches

The table shows the list of the past closest approaches of known NEAs. It contains only objects that approached within 1 Earth radius of the surface but did not impact.

Object name	Close approach date	Miss distance in Earth radii	Miss distance in km	Size range in m	H magnitude
2020 VT4	2020-11-13	0.06	400	5–11	28.7
2020 QG	2020-08-16	0.46	2 900	3–6	29.9
2021 UA1	2021-10-25	0.48	3 000	1–3	31.8
2023 BU	2023-01-27	0.56	3 600	3–7	29.5
2023 RS	2023-09-07	0.62	4 000	1–2	32.3
2011 CQ1	2011-02-04	0.86	5 500	1–2	32.0
2019 UN13	2019-10-31	0.98	6 200	1–2	32.2
2008 TS26	2008-10-09	1.00	6 400	1–1	33.2



This image shows a stack of 361 individual frames exposed just a few minutes after the separation of the OSIRIS-REx Sample Return Capsule from the main spacecraft.

The individual images have been aligned on the expected motion of the capsule, which is therefore visible as a dot in the frame. The capsule was moving away from the main spacecraft, and therefore the motion of the latter was a bit different. This can be inferred by the fact that the other object in the image, the spacecraft itself, appears as a short line, and not as a well-tracked dot.

[Credit: ESA / PDO / 6ROADS]

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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