

ESA's NEO Coordination Centre

Current NEO statistics

Rate of NEA discoveries is back to the expected average for this time of the year.

- Known NEOs: 22 893 asteroids and 110 comets
- NEOs in risk list*: 1059
- Number of NEOs designated during last month: 231
- NEOs discovered since 1 January 2020: 1219

Focus on

On 4 May 2020 a tiny asteroid now designated 2020 JJ flew by the Earth at just 13 400 km from the Earth's centre. How exceptional is such an event? Distant fly-bys are very common, but it is much harder to observe something coming so close. This is due to a combination of two factors: very close fly-bys are of course less frequent than distant ones, but NEAs in those trajectories are also harder to discover, because they tend to move really fast in the sky. As of today, only 16 asteroids have been seen coming closer than 3 Earth radii from the Earth centre. Four of them were actually found to be in a collision course with our planet, while the remaining twelve missed us. The recent approach of 2020 JJ ranks ninth in this list. It is also interesting to note that 10 out of these 16 events happened in the last five years: this is a testament to the recent significant improvements of NEO surveys, but also to the alert systems that now immediately notify observers when a particularly close approacher is discovered. All these objects were extremely small, most being less than 10 metres in diameter. None of them would have caused any significant damage on ground. Nevertheless, discovering, observing and characterising them, during their short observability windows, provides an excellent training for our systems, to make sure they are ready to quickly react in case a larger object is found in an incoming impact trajectory.

Upcoming interesting close approaches

Two moderately bright objects will fly by the Earth in June.

- Among known objects, 2020 KB₃ and (163348) 2002 NN₄ will both reach magnitude 15 in June. The former thanks to its close approach at just 3 lunar distances, the latter thanks to its moderate size of 400 metres.

Recent interesting close approaches

A few fly-bys happened in May.

- In addition to 2020 JJ mentioned above, five other objects came closer than the Moon in May. They were all smaller than 15 m in diameter, and therefore remained fainter than magnitude 15 for the entire apparition.
- Two larger objects, (388945) 2008 TZ₃ and (438908) 2009 XO, flew by at about 8 lunar distances, reaching magnitude 14 thanks to their size of about 300 metres.

News from the risk list

No relevant news from the risk list in May.

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

In other news

- As done since 2015, Asteroid Day will be celebrated again worldwide next 30 June. Check activities in the following link: <https://asteroidday.org/>
- ESA's Planetary Defence Office is initiating this month the publication of riddles with the purpose of involving interested readers in solving some NEO problems. We are releasing the first riddle with this newsletter and with a deadline to submit answers on 25 June. Find the release information here: <http://neo.ssa.esa.int/neocc-riddles>

Upcoming events

Relevant international meetings over the next months.

- Apophis T-9 Years, 9–10 November 2020, Nice, France
<https://www.hou.usra.edu/meetings/apophis2020/>
- Hera Community Workshop, 11–13 November 2020, Nice, France
<https://www.cosmos.esa.int/web/hera-community-workshop/>

List of closest approaches of known asteroids

Since the advent of NEO surveys and not counting the four known Earth impactors, 12 objects have been discovered that came closer than two Earth radii from the Earth surface.

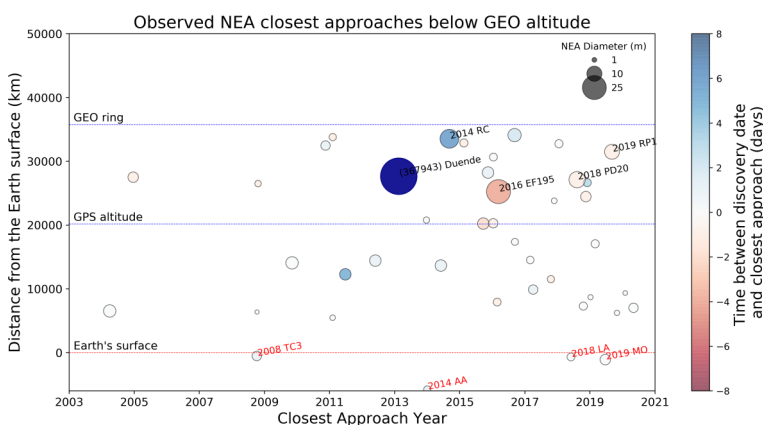
Object name	Close approach date	Miss distance in lunar distances	Miss distance in Earth radii	Miss distance in km	Size range in m	H magnitude
2011 CQ1	2011-02-04	0.014	0.9	5 500	1–2	32.0
2019 UN13	2019-10-31	~ 0.016	~ 1.0	~ 6 200	1–2	32.2
2008 TS26	2008-10-09	~ 0.017	~ 1.0	~ 6 400	~ 1	33.2
2004 FU162	2004-03-31	~ 0.017	~ 1.0	~ 6 500	5–11	28.7
2020 JJ	2020-05-04	0.018	1.1	7 000	3–6	30.0
2018 UA	2018-10-19	0.019	1.1	7 300	3–6	30.1
2016 DY30	2016-02-25	0.021	1.2	7 900	2–5	30.5
2019 AS5	2019-01-08	0.023	1.4	8 700	1–2	32.4
2020 CW	2020-02-01	0.024	1.5	9 300	1–2	32.6
2017 GM	2017-04-04	0.026	1.5	9 900	3–6	29.9
2017 UJ2	2017-10-20	0.030	1.8	11 500	2–4	30.9
2011 MD	2011-06-27	0.032	1.9	12 300	6	28.0

Links for more information

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

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

Risk List: <http://neo.ssa.esa.int/risk-page>



This plot provides the closest approaches of NEAs (below the GEO altitude) in the last years. The four Earth impacting objects are also included.

Object size is represented by the dot size and a colour code is added to indicate the time between the discovery date and the closest approach time. As a special case, Duende was discovered one year before the close approach.

[Credit: ESA/NEOCC]

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