

ESA'S NEO Coordination Centre

Current NEO statistics

After a good start in January, the discovery rate slowed down in February, mostly due to bad weather at several survey sites.

- Known NEOs: 19 692 asteroids and 107 comets
- NEOs in risk list*: 824
- Number of NEOs designated during last month: 128
- NEOs discovered since 1 January 2019: 385

Focus on

On 1 February 2019 a bright daytime fireball was seen by multiple eyewitnesses around the area of Gulf of Mexico. It exploded over the western tip of Cuba, producing a significant shockwave felt by local residents, and the fall of a large number of stony meteorites, mostly near the village of Viñales. The explosion released an energy equivalent to more than 1 kilotonne of TNT, making it the most energetic impact event of 2019 so far. The impacting asteroid, which was probably a few metres in diameter, could not be detected in advance because it came from the approximate direction of the Sun, where ground-based telescopes cannot observe.

Upcoming interesting close approaches

A known asteroid will have a close approach this month.

- 2015 EG will be the brightest close approach of the month among the currently known asteroids, reaching magnitude 15. It is a 30-metre asteroid which will pass by the Earth on 4 March, just a bit farther than the Moon.

Recent interesting close approaches

Only one known asteroid came closer than the Moon in February.

- 2019 CN5 is a newly discovered 10-metre object that flew by the Earth at 0.3 lunar distances on 11 February, reaching magnitude 14.

News from the risk list

Two objects entered our risk list in high-level positions last month.

- 2019 CE4, a new kilometre-sized NEO discovered last month, reached the first position of our risk list for a possible impact in 2025. The high ranking was mostly due to its large size, because the impact probability always remained less than one in 2 millions. Subsequent observations, including some obtained by our team with the 80 cm Telescopi Joan Oró in Spain, led to the removal of all impact chances for the year 2025. As of today, a small chance of impact for 2065 remains, but with a probability of less than 1 in a million.
- 2019 CM4 also reached a significant ranking in our list, but it is a smaller object of roughly 100 meters. Subsequent observations allowed the exclusion of all possible impact solutions up to the year 2108, with the remaining ones corresponding to a total impact probability of less than one in a million.

* 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

- On 21 February JAXA's Hayabusa2 spacecraft collected its first sample from the surface of (162173) Ryugu.
- Our group started a collaboration to use the 60 cm telescope at the Observatoire des Makes on La Réunion, France, to observe targets that can be favourably seen from the Indian Ocean and the Southern Hemisphere.
- We are now also collaborating with the 80 cm Telescopi Joan Oró (TJO) in Spain, to use their new wide-field imager to observe high-priority asteroids.

Upcoming events

Relevant international meetings over the next months.

- EGU General Assembly 2019: "Near Earth Objects and Planetary Defence", 7–12 April 2019, Vienna, Austria
<https://meetingorganizer.copernicus.org/EGU2019/session/31957>
- IAA Planetary Defense Conference, 29 April–3 May 2019, College Park, USA
<http://pdc.iaaweb.org/>
- Meteoroids 2019, 17–21 June 2019, Bratislava, Slovakia
<https://fmph.uniba.sk/en/microsites/daa/division-of-astronomy-and-astrophysics/meteoroids-2019/>

Top-10 positions of our risk list for the next century

Updated table with the first 10 positions of our risk list for impacts in the next 100 years. The new entry 2019 CE4 is present as the first entry. The risk is ranked according to the Palermo Scale value.

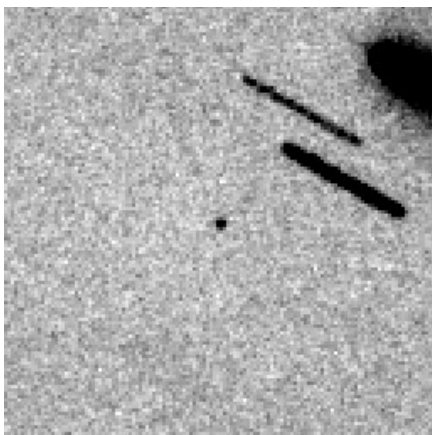
Object name	Size in m	Date of possible impact	Impact probability	Palermo Scale	Torino Scale	Velocity in km/s
2019 CE4	~ 1100	2065-11-01 02:53	1/1200000	-2.58	0	19.16
2010 RF12	~ 9	2095-09-05 23:50	1/16	-3.26	0	12.29
1979 XB	~ 900	2113-12-14 18:07	1/1800000	-3.28	0	26.04
2000 SG344	~ 50	2071-09-16 00:26	1/2100	-3.63	0	11.26
(99942) Apophis	375	2068-04-12 15:13	1/500000	-3.67	0	12.62
2018 XB4	~ 70	2092-06-22 22:49	1/7000	-3.69	0	13.36
2009 JF1	~ 16	2022-05-06 08:12	1/4000	-3.75	0	26.41
2006 QV89	~ 40	2019-09-09 07:03	1/11000	-3.79	0	12.32
2008 UB7	~ 70	2060-10-31 18:26	1/40000	-3.83	0	21.57
2006 JY26	~ 9	2074-05-03 01:00	1/90	-3.91	0	11.57

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>



Asteroid 2019 CE4 as seen by the Telescopi Joan Oró on 17 February 2019, when it still had a Palermo Scale value of almost -2 on our risk list.

The object is the bright point-like source at the centre of the figure. At the time of this observation, it had a magnitude of approximately 20.5.

The image has been generated by combining 18 separate but consecutive frames, aligned on the motion of the object: therefore, stars in the image appear as a long trails, while the asteroid remains stationary.

[Credit: Joan Oró Telescope / Institute for Space Studies of Catalonia (IEEC) / ESA NEOCC]

neo.ssa.esa.int

To subscribe to this newsletter fill the form at <http://neo.ssa.esa.int/subscribe-to-services>

To unsubscribe or for any further information please send an email to neocc@ssa.esa.int

