

## ESA's NEO Coordination Centre

### Current NEO statistics

The number of known NEOs crossed the threshold of 25 000 in February.

- Known NEOs: 25 195 asteroids and 113 comets
- NEOs in risk list\*: 1120
- Number of NEOs designated during last month: 305
- NEOs discovered since 1 January 2021: 510

### Focus on

On 6 March 2021 the well-known NEO (99942) Apophis will have its closest approach to Earth until the extremely close pass of 2029. This time Apophis will only reach a minimum distance of almost 17 million kilometres, still close enough to allow astronomers to perform a large variety of precise measurements that will help characterise the object to our best ability.

In order to facilitate this data collection, and to study Apophis as a test case for planetary defence, the International Asteroid Warning Network (IAWN) is dedicating an observing campaign to it. The goal is that of simulating the amount of information that the overall astronomical community could collect on a bright object during one single apparition. The campaign is working under the “ad hoc assumption” that Apophis has just been discovered, trying to purposefully ignore what we already know about it, and reconstruct its characterisation on the basis of data collected over a limited timespan. At the same time, the observational resources applied to Apophis during this apparition will allow us to get as much data as possible in anticipation of the 2029 fly-by, forming the base on which that historical event will be studied in exceptional detail.

### Upcoming interesting close approaches

A large asteroid will pass moderately close this month, and become very bright.

- (231937) 2001 FO32 is a kilometre-sized object that will fly-by at about 2 million kilometres from the Earth on 21 March, the closest approach of an object of this size expected for 2021. It is expected to reach magnitude 11 at its peak, making it observable with good amateur level instrumentation.

### Recent interesting close approaches

Two very close approaches of metre-sized asteroids were spotted in February.

- 2021 CZ3 and 2021 CW7 both came closer than the geostationary ring during the first half of the month. They were both tiny, just a couple of metres in diameter.

### News from the risk list

A new large object entered the top-10 of our list.

- 2021 DG1 is a new entry in the fourth position of our risk list. It only has an impact probability of 0.001% in the year 2084, but being larger than 100 metres pushes its importance up in the list.

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\* 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 19 February, the object 2020 SO was deleted by the Minor Planet Center (MPC) from its database since its origin was determined to be artificial. P. Chodas (JPL) suggested that 2020 SO could be the Centaur upper stage for the Surveyor 2 mission.
- On 22 February, the MPC announced the publication of observational data in the Astrometric Data Exchange Standard (ADES) format for all observations published in Minor Planet Electronic Circulars (MPECs).

## Upcoming events

Relevant international meetings over the next months.

- 7th IAA Planetary Defense Conference, 26–30 April 2021, virtual  
<https://iaaspace.org/event/7th-iaa-planetary-defense-conference-2021/>

## Closest approaches in the next 10 years

The table shows the list of the closest approaches of known NEAs in the next 10 years. It only contains objects with nominal approaches at less than 1 lunar distance, and only if the distance is known with an accuracy better than half a lunar distance.

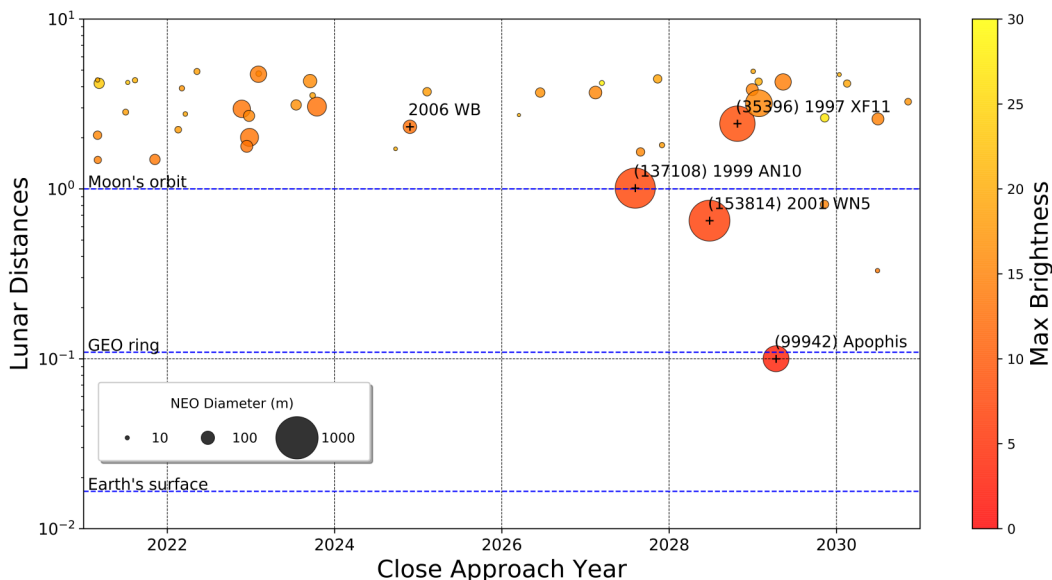
Object name	Close approach date	Miss distance in lunar distances	Miss distance in Earth radii	Miss distance in km	Size range in m	H magnitude
(99942) Apophis	2029-04-13	0.08	5	30 000	375	18.9
2016 NL39	~ 2030-06-30	0.31	19	120 000	8–18	27.6
(153814) 2001 WN5	2028-06-26	0.63	38	240 000	932	18.3
2001 AV43	2029-11-11	0.80	48	300 000	28–60	24.9

## 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 known NEAs below 10 lunar distances in the next 10 years. Only objects where the distance is known with an accuracy better than half a lunar distance are represented.

The object size is represented by the dot size and a colour code is added to indicate the maximum brightness during the close approach. The five brightest objects are indicated with their designation.

[Credit: ESA/NEOCC]

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