

space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

For the first time, there are more than 700 objects in the risk list.

- Known NEOs: 17 438 asteroids and 106 comets
- NEOs in risk list*: 704
- Number of NEOs designated during last month: 189
- NEOs discovered since 1 January 2017: 2033

Focus on

For the first time in the history of NEA observations more than 2 000 new NEAs have been discovered in one calendar year, resulting in a monthly average of nearly 170 new asteroids. In addition, 2017 was the fifth year in a row with NEA discoveries above a thousand. As a consequence, the NEA population during 2017 has increased by 13.2% which is clearly within the average of the last 10 years, with increases in the number of NEAs in a range between 11%-16%. Actually, the average in the mentioned 10 years is exactly 13.2%. With such a mean discovery rate, one can expect around 2 300 new NEAs by the end of 2018. This would result in a total number of just below 20 000 objects.

Upcoming interesting close approaches

Two NEOs about 200-metre in diameter will fly by in January.

- 2002 AS₄ is coming to about 15 lunar distances on the first day of the year.
- (306383) 1993 VD will fly-by on 22 January, at about 14 lunar distances.

Recent interesting close approaches

At the end of the year it was quite busy around the Earth.

- (418849) 2008 WM₆₄, a 300-metre asteroid, approached to about 15 lunar distances on 22 December, reaching magnitude 14.8.
- Six close approaches (less than 0.05 au) occurred within one single day in two different days, on the 18 and on 22 of December.
- 2017 YZ₄ and 2017 YE₇ came closer than the Moon at the end of the month.
- (3200) Phaethon, with an estimated diameter >5 km, reached magnitude 10 at close approach at ~27 lunar distances. Phaethon is believed to be the parent body of the annual Geminid meteor stream.

News from the risk list

A new object moved to the second position on the risk list on Christmas Eve.

- 2017 YZ₁, with its ~310 m in diameter, was designated on 24 December, jumping directly to position 2 of our risk list. At the time of publication of this newsletter it took over the first position, reaching 1 on the Torino Scale.
- A ~140 m object, 2017 XO₂, entered the risk list this month, reaching -4 on the Palermo Scale.

* 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/web/guest/risk-page>

In other news

- Radar images of asteroid Phaethon were obtained by the Arecibo radar when returning to service after several months of downtime.

Upcoming events

The next major international meeting on NEOs will be in the spring of 2018.

- Planetary Defense session at the 2018 IEEE Aerospace Conference, 3–10 March 2018, Big Sky, USA
<http://www.aeroconf.org>

Highest rated objects added to the risk list in 2017

The table shows the top 10 objects entering the risk list in 2017 and which are still present, ranked by current Palermo Scale.

Object name	Size in m	Date of possible impact	Impact probability	Palermo Scale	Torino Scale	Velocity in km/s
2017 YZ1	~ 300	2047-06-30 01:44	1/5 000	-1.27	1	17.85
2017 RH16	~ 30	2026-08-31 21:26	1/700	-2.36	0	16.98
2017 X02	~ 140	2057-04-28 16:45	1/250 000	-4.00	0	17.61
2017 YM1	~ 30	2091-12-16 12:48	1/6 000	-4.19	0	15.74
2017 RZ17	~ 400	2019-11-24 21:58	1/400 000 000	-4.52	0	23.16
2017 WT28	~ 10	2104-11-24 16:32	1/400	-4.53	0	12.04
2017 SF20	~ 9	2034-09-26 12:40	1/2 300	-4.55	0	15.30
2017 F063	~ 90	2097-11-13 18:33	1/400 000	-4.58	0	31.34
2017 LD	~ 10	2066-06-10 07:31	1/2 400	-4.80	0	12.05
2017 PY26	~ 140	2111-08-19 03:36	1/2 000 000	-5.09	0	22.94

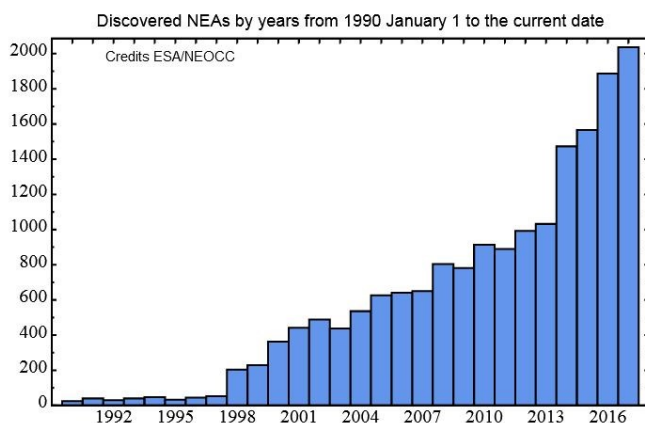
Links for more information

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

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

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

Annual plot



Annual NEA discoveries from 1990 to 2017.

Image Credit: ESA NEOCC

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