

space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

Despite the lower discovery rate during the Northern hemisphere summer months, the total number of discovered NEOs has almost reached 1000 in 2018.

- Known NEOs: 18 425 asteroids and 107 comets
- NEOs in risk list*: 754
- Number of NEOs designated during last month: 87
- NEOs discovered since 1 January 2018: 972

Focus on

On 27 June 2018, after a cruise phase of 3.5 years, the Japanese Hayabusa2 spacecraft rendezvoused with its target, near-Earth asteroid (162173) Ryugu. The first images sent back by the mission's cameras show a nearly spherical object, much more symmetric than (25143) Itokawa, target of the previous Hayabusa mission.

Over the next year, the spacecraft will perform a variety of complex operations, starting with a phase of low-altitude orbits in August, followed by the release of sets of small rovers, and culminating with multiple sample collection attempts. The mission also plans to artificially generate a crater with a small impactor, before leaving the asteroid in late 2019 to bring the samples back to Earth one year later.

Upcoming interesting close approaches

A fly-by of an asteroid discovered long ago is expected in August.

- 1998 SD₉ is an object discovered two decades ago by the then-dominant LINEAR survey. It will have a fly-by at 4.2 lunar distances at the end of the month.

Recent interesting close approaches

Three newly discovered objects became moderately bright during their fly-bys in July.

- Two new objects, 2018 NW and 2018 NX, both came to about 0.3 lunar distances in early July. They were both about 10 metres in diameter and reached magnitude 15 during the fly-by. Despite the similarity of the close approach circumstances, the orbits of the two objects are very different and the two objects are likely unrelated.
- 2018 NH, a larger object passing at ~ 1 lunar distance, also reached magnitude 15.

News from the risk list

A few new objects entered our risk list in prominent positions in July.

- 2018 NL is currently ranked fourth in our list (according to the Palermo Scale value), for a possible impact in year 2060, with a probability of about 1/2000. It's an object of about 40 metres in diameter, close to the size of the Tunguska impactor.
- 2018 NJ has a lower ranking because of its smaller size, only about 10 metres, but its impact probability in year 2083 is even higher, about 1/400. This probability is the third-highest in our risk list.
- 2018 MC7 also has a close approach in year 2060, but the probability is about 1/8000, making it less important in our rankings.

* 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

- At least one fragment of asteroid 2018 LA, which impacted Earth in early June, has been recovered in Botswana.
- Radar images obtained by the Goldstone, Arecibo and Green Bank radio telescopes show that asteroid 2017 YE5 is a binary object, with two km-sized spheroidal components of similar mass orbiting each other in about a day.

Upcoming events

Relevant international meetings over the next months.

- IAU Focus Meeting: A Century of Asteroid Families, 28–29 August 2018, Vienna, Austria
<https://www.iau.org/science/meetings/future/1329/>
- Asteroids and comets—inside out workshop, 4–6 September 2018, Tampere, Finland
<http://www.tut.fi/en/asteroids-and-comets-inside-out-workshop/>
- European Planetary Science Congress, 16–21 September 2018, Berlin, Germany
<http://www.epsc2018.eu/>
- AAS Division for Planetary Sciences Meeting, 21–26 October 2018, Knoxville, USA
<https://aas.org/meetings/dps50>

List of past closest approaches with Mercury

List of the ten closest approaches of known NEAs to the planet Mercury since 1950. It is interesting to note that one object, designated 2015 FV118, had at least three close approaches during that period. The list is limited to objects with good orbits for which the close approach is certain.

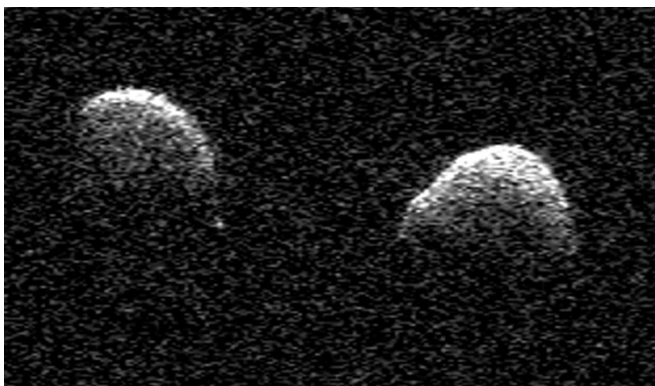
Object name	Close approach date	Miss distance in au	Miss distance in km	Size range in m	H magnitude
2004 TD10	1954-03-19	0.00184	276 000	110 – 240	22.0
(359242) 2009 FT	1954-04-13	0.00211	316 000	400 – 1000	18.9
(252399) 2001 TX44	1953-01-10	0.00301	451 000	260	19.0
(163243) 2002 FB3	1971-06-11	0.00379	567 000	1300 – 3000	16.5
2001 WN15	2001-09-04	0.00380	568 000	400 – 900	19.1
2015 FV118	1996-06-21	0.00382	572 000	130 – 300	21.5
2015 FV118	1988-07-09	0.00408	610 000	130 – 300	21.5
2007 VB138	1973-06-26	0.00420	628 000	16 – 40	26.1
2015 FV118	1972-08-17	0.00424	634 000	130 – 300	21.5
2001 CP36	1988-09-20	0.00435	651 000	60	23.7

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 2017 YE5 observed by radar in bi-static mode (with the Arecibo Observatory emitting and the Green Bank Observatory receiving) on 25 June 2018.

The two separate components of the binary asteroid are clearly visible, and their comparable size is evident.

[Credit: Arecibo / GBO / NSF / NASA / JPL-Caltech]

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