

space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

October is usually one of the richest months for asteroid discoveries in the year.

- Known NEOs: 13 176 asteroids and 104 comets
- NEOs in risk list*: 522
- New NEO discoveries since last month: 138
- NEOs discovered since 1 January 2015: 1220

Focus on

Over the past few days there has been a significant media interest in 2015 TB145, a large asteroid that flew past Earth on the night of Halloween. Apart for the popularity of the event generated by the date, the fly-by itself is interesting from a scientific perspective, because it was discovered only three weeks before its closest approach. This asteroid was spotted with short notice because of its peculiar high-eccentricity orbit, which brings it far from Earth for a significant fraction of its orbital period. This discovery highlights the importance of continuous monitoring of the sky, since even a large asteroid may be discovered only during its incoming approach to Earth, and not years in advance.

Upcoming interesting close approaches

Only one large object is known to have a close approach to Earth in November.

- (413577) 2005 UL5 is the only asteroid discovered so far that will come closer than 10 lunar distances in November.

Recent interesting close approaches

A large asteroid flew past the Earth on the night of Halloween.

- (410777) 2009 FD, the highest-rated object in our risk list, had a distant fly-by in October, offering a good opportunity for both optical and radar characterization.
- 2015 TB145, a 400-meter object discovered by the Pan-STARRS survey, flew past the Earth on October 31, reaching magnitude 10.
- 2015 UM52 and 2015 TC25, two tiny objects, both smaller than the Chelyabinsk impactor, came within 0.3 lunar distances of the Earth in October.
- 2015 FS332, a 800-meter asteroid, also flew past the Earth in early October, and reached magnitude 13.

News from the risk list

A new object now tops the list of possible impactors in the current century.

- 2015 RN35 recently rose through the ranks of our risk list for a possible impact in October 2038, currently with a probability of about 1 in 5000.
- The current observational opportunity for (410777) 2009 FD may soon provide a chance to change the impact assessment for this object, especially if radar data will become available.

* The risk list of all known objects with a non-zero (although usually very low) impact probability can be found at <http://bit.ly/neorisklist>

In other news

- WT1190F is a very small object (1–2 meters in diameter) that was discovered in early October by the Catalina Sky Survey. It is likely of artificial nature, and it will impact in the Indian Ocean on 13 November 2015. More information on the event and how it will be useful for NEO science can be found in a news article on our website.
- ESA organized two NEO Risk Communication Days in ESRIN, to discuss the best way to address the problem of transmitting information on the asteroidal risk with experts from various related fields and media professionals.

Upcoming events

The venue of the next Planetary Defense Conference in 2017 has been announced.

- AAS Division for Planetary Sciences Meeting, 8–13 November 2015, National Harbor, USA
<http://aas.org/meetings/dps47>
- Asteroids & Planetary Defense session at the AGU Fall Meeting, 14–18 December 2015, San Francisco, USA
<https://agu.confex.com/agu/fm15/preliminaryview.cgi/Session7518>
- Planetary Defense session at the 2016 IEEE Aerospace Conference, 5–12 March 2016, Big Sky, USA
<http://www.aeroconf.org/>
- IAA Planetary Defense Conference, 15–19 May 2017, Tokyo, Japan
<http://pdc.iaaweb.org/>

Current risk list

The list of top-10 most dangerous known asteroids, including the new entry 2015 RN35 in the third position.

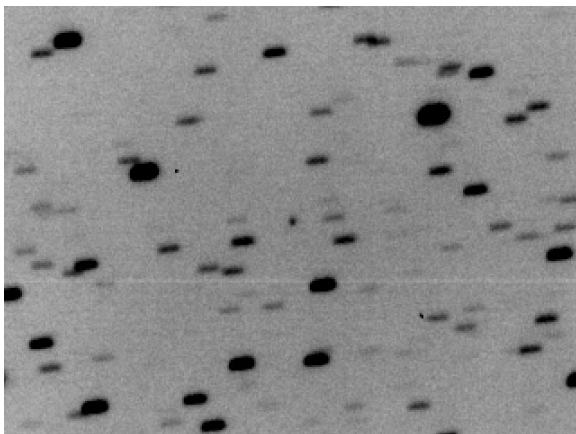
Object name	Size in m	Date/Time of possible impact (UTC)	Impact probability	Palermo Scale	Torino Scale	Velocity in km/s	In list since (days)
(410777) 2009 FD	472	2185-03-29 18:06	1/370	-0.43	n/a	19.41	1773
(101955) Bennu	484	2196-09-24 07:55	1/11000	-2.32	n/a	12.68	2378
2015 RN35	~ 110	2038-10-20 17:25	1/5000	-2.53	0	12.58	46
2010 RF12	~ 9	2095-09-05 23:50	1/11	-3.11	0	12.29	1791
1979 XB	~ 830	2056-12-12 21:39	1/3700000	-3.23	0	27.54	13009
2008 UB7	~ 71	2060-10-31 19:06	1/10000	-3.29	0	21.57	2497
2010 MZ112	808	2041-02-17 04:52	1/730000	-3.39	0	11.31	1878
2010 DG77	315	2047-01-12 04:39	1/97000	-3.44	0	11.49	1966
2009 JF1	~ 16	2022-05-06 08:12	1/2900	-3.57	0	26.41	2307
2000 SG344	~ 46	2071-09-16 00:55	1/2100	-3.62	0	11.27	5460

Links for more information

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

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

Risk List: <http://neo.ssa.esa.int/web/guest/risk-page> or <http://bit.ly/neorisklist>



WT1190F, a likely artificial object that will impact offshore the Southern coast of Sri Lanka in November, imaged by the Asiago Observatory in Italy on 22 October 2015. The object is the black dot in the centre of the frame.

Image credit: M. Lazzarin, P. Ochner, M. Micheli

neo.ssa.esa.int

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