

space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

One new near-Earth comet has been included in the count: it is P/2016 BA14, an object that appeared asteroidal at the time of discovery, but was later recognized as active.

- Known NEOs: 13 851 asteroids and 106 comets
- NEOs in risk list*: 521
- New NEO discoveries since last month: 158
- NEOs discovered since 1 January 2016: 331

Focus on

This month, while reading this newsletter, you will find an object designated with a “non-standard” name: XD92F93. Labels like this, not following the standard form of year + letters + numbers, are called “temporary designations”. They are created by observers that discover a possible new object, and want to report it to the Minor Planet Center. If the object turns out to be real, and gets confirmed by other observers, it then gets a proper designation of the usual form. However, this process may take a few days, and in the meantime the candidate is identified among the community of observers with this temporary label.

Upcoming interesting close approaches

A new object will have a close approach in early March.

- 2016 DV1, a very recent discovery by the Catalina Sky Survey, will come to about a lunar distance on 3 March, reaching magnitude 14.
- 2016 BC14 and (455148) 1994 UG are both objects of about 250 meters that will come within 20 lunar distances in March. The first is a recent discovery, the second has been known for more than two decades.

Recent interesting close approaches

Four known objects came within half lunar distance in February.

- XD92F93 is the temporary designation of an object discovered on 26 February by the Catalina Sky Survey. It had flown past the Earth just a few hours before discovery, at about 7900 km from the Earth’s surface. This is the closest approach of a known NEO since the impact of 2014 AA more than 2 years ago. The object was between 2 and 5 meters in size.
- 2016 CM194, 2016 DB and 2016 CG18 came within half lunar distance in February. They were all 10-meter-class objects, discovered just around their close approaches.

News from the risk list

A top-10 objects of the list becomes a challenging target for observations this month.

- 1994 WR12, currently ranked ninth in our risk list, may be recoverable this month by a few of the best telescopes in the world. At magnitude 24, and with a peculiarly shaped uncertainty of a few degrees, it would require a telescope aperture of more than 2 meters, and a large field of view.

* 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

- A few interesting events happened in February. A moderately large object fell unnoticed in the Atlantic Ocean on 6 February, while two smaller meteoroids generated bright fireballs around France on 17 and 25 February.
- One year ago the NEOCC began monitoring the daily visits to our web portal. Over one year, we collected about 30 000 unique visitors, from 136 countries.

Upcoming events

The 2016 IEEE Aerospace Conference, which includes a session on Planetary Defense, will be held this month in Montana, USA.

- Planetary Defense session at the 2016 IEEE Aerospace Conference, 5–12 March 2016, Big Sky, USA
<http://www.aeroconf.org/>
- International Meteor Conference (IMC 2016), 2–5 June 2016, Egmond aan Zee, The Netherlands, followed by the Meteoroids 2016 conference, 6–10 June 2016, Noordwijk, The Netherlands.
<http://imc2016.imo.net>, <http://www.cosmos.esa.int/web/meteoroids2016>
- AAS Division for Planetary Sciences Meeting (joint with EPSC), 16–21 October 2016, Pasadena, USA
<http://dps.aas.org/meetings/current>
- IAUS 330: Astrometry and Astrophysics in the Gaia sky, 5–9 December 2016, Nice, France
<http://www.iau.org/science/meetings/future/symposia/1163/>
- IAA Planetary Defense Conference, 15–19 May 2017, Tokyo, Japan
<http://pdc.iaaweb.org/>

List of closest approaches of known asteroids

Since the advent of NEO surveys, only 8 objects have been discovered that came closer than two Earth radii from the surface of our planet. Two of them, 2008 TC₃ and 2014 AA, actually collided with our planet, while the others just flew by. The following table lists the specifics of each encounter, with all the distances referred to the Earth's surface.

Object name	Close approach date	Miss distance in lunar distances	Miss distance in Earth radii	Miss distance in km	Size in m	H magnitude
2014 AA	2014-01-02	0	0	0	~ 3	30.9
2008 TC ₃	2008-10-07	0	0	0	4	30.3
2011 CQ ₁	2011-02-05	0.014	0.9	5 500	~ 2	32.1
2008 TS ₂₆	2008-10-09	0.016	1.0	6 300	~ 1	33.2
"XD92F93"	2016-02-26	0.020	1.2	7 900	~ 4	30.6
2004 FU ₁₆₂	2004-04-01	~ 0.03	~ 1.5	~ 10 000	~ 8	28.7
2014 LY ₂₁	2014-06-04	~ 0.03	~ 1.5	~ 10 000	~ 6	29.1
2011 MD	2011-06-28	0.032	1.9	12 300	~ 10	28.0

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>



The fireball event of 17 February 2016 on Southern France and Northern Italy, as seen in a still frame captured from Collecchio, Italy.

The full video can be watched at <https://www.youtube.com/watch?v=kaCTiezHAW4>

Image credit: Andrea Franchi

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