

space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

The number of NEOs discovered so far in 2016 represents more than 10% of all NEOs known today.

- Known NEOs: 15 092 asteroids and 106 comets
- NEOs in risk list*: 558
- New NEO discoveries since last month: 186
- NEOs discovered since 1 January 2016: 1561

Focus on

The number of known near-Earth asteroids has just surpassed the threshold of 15000. That is a 50% increase with respect to 2013, when the 10000th object was found, highlighting the ever increasing success of ground-based NEO detection surveys. This achievement can be fully appreciated by considering that at the turn of the millennium, a century after the discovery of Eros in 1898, only about 1000 NEAs were catalogued. As for the future, there is still room for significant improvement as new assets are likely to become available. In particular the Large Synoptic Survey Telescope (LSST) and ESA's fly-eye telescope, expected to enter operation within the next decade, will have complementary performances. The former is designed to detect smaller objects further away while the latter has a very large field of view allowing to cover the whole visible sky each night. A space-based survey capability would then represent the next step for the worldwide NEO detection networks.

Upcoming interesting close approaches

Two bright fly-bys on the same day.

- 2013 WM and (433953) 1997 XR2 will both be at their closest approach on 18 November, both reaching magnitude 16. However, the former is a small 70-metre object passing at about 3 lunar distances, the latter is a larger 300-metre one, but flying-by much farther away.

Recent interesting close approaches

A couple of bright close approaches happened in October, but one was only discovered after the brightness peak and was not seen at its best.

- (164121) 2003 YT1, the kilometre-sized asteroid already announced last month, safely passed by on 31 October, reaching magnitude 11.
- 2016 UD, a much smaller 20-metre object, should have reached magnitude 12 for a few hours on 18 October, but was found only a day later by the Catalina Sky Survey.

News from the risk list

One new object briefly appeared near the top of our list.

- 2016 TL57 entered the top-10 of our list for a day on 20 October, but was subsequently lowered significantly once new observations became 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

- The SSA-NEO team has contributed to the European Researchers' Night delivering presentations on the NEO hazard and mitigation at the ESA ESRIN establishment in Frascati (Italy).
- The US Dawn mission has completed its ascent spiral from Ceres low orbit and has resumed scientific observations of the dwarf planet.

Upcoming events

The Stardust Final Conference is ongoing during the first week of November.

- Stardust Final Conference, 31 October–4 November 2016, ESTEC, Noordwijk, The Netherlands
<http://www.stardust2013.eu/Training/Conferences/StardustFinalConference/tabid/5484/Default.aspx>
- Asteroids & Planetary Defense session at the AGU Fall Meeting, 12–16 December 2016, San Francisco, USA
<https://fallmeeting.agu.org/2016/>
- Asteroids, Comets and Meteors (ACM 2017) Conference, 10–14 April 2017, Montevideo, Uruguay
<http://acm2017.uy/>
- IAUS 330: Astrometry and Astrophysics in the Gaia sky, 24–28 April 2017, 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/>

Historical list of the first discovered NEAs

Near-Earth asteroids discovered before 1 January 1950: only 11 were known at the time, all bigger than 1 kilometre.

Object name	Size in km	H magnitude	Orbital class	Discovery date	Discoverer(s)	Notes
(433) Eros	23.3	11.2	Amor	1898-08-13	G. Witt, A. Charlois	First near-Earth asteroid
(719) Albert	2.4	15.5	Amor	1911-10-03	J. Palisa	Lost and rediscovered in 2000
(887) Alinda	4.8	13.4	Amor	1918-01-03	M. F. Wolf	In 3:1 resonant motion with Jupiter
(1036) Ganymed	36.5	9.5	Amor	1924-10-23	W. Baade	The largest known NEA
(1627) Ivar	8.5	13.2	Amor	1929-09-25	E. Hertzsprung	Mars crosser asteroid
(1221) Amor	1.1	17.7	Amor	1932-03-12	E. Delporte	Amor asteroids are named after it
(1862) Apollo	1.4	16.3	Apollo	1932-04-24	K. Reinmuth	First with perihelion less than the Earth
(69230) Hermes	~1.5	17.5	Apollo	1937-10-28	K. Reinmuth	Lost and rediscovered in 2003
(1863) Antinous	3.2	15.5	Apollo	1948-03-07	C. A. Wirtanen	Named after a character of the Odyssey
(1685) Toro	3.8	14.2	Apollo	1948-07-17	C. A. Wirtanen	Parent body of Sylacauga meteorite?
(1566) Icarus	1.3	16.9	Apollo	1949-06-27	W. Baade	Perihelion less than half of Mercury

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/neurisklist>



The “Charlois Dome” at the Observatory of Nice is named after the French Astronomer Auguste Charlois (1864-1910), one of the most prolific asteroid hunters of his time and co-discoverer of Eros, in the night of 13 August 1898.

Image credit: Mosaique HDR de la coupole Charlois à l'observatoire de Nice (Mont Gros); licence Wikimedia Commons.

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