space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

The year started well for NEO discoveries, more than 150 new objects were found.

- Known NEOs: 13 675 asteroids and 105 comets
- NEOs in risk list*: 515
- New NEO discoveries since last month: 155
- NEOs discovered since 1 January 2016: 155

Focus on

A new release of our NEO Web Portal is on-line at http://neo.ssa.esa.int/. It represents a major update of the SSA-NEO system since it includes a number of new functionalities and an improved graphics. The possibility of visualizing the actual trajectory of an NEO including gravitational perturbations and an enlarged plot at close encounter has been implemented. Discovery statistics are improved by showing plots and diagrams dynamically updated every day. A "Maximum Brightness at Close Approach" column has been added to the close encounters table in order to give a first estimate of the visibility conditions. Comets are now also included in our database and their orbital characteristics can be queried and displayed. Finally, an NEO Chronology and an archive of the technical news appeared on the portal and the newsletter distributed so far can be found. These improvements mark the beginning of the SSA-NEO System evolution: stay tuned!

Upcoming interesting close approaches

Four known 100-meter sized objects will fly-by closer than 20 lunar distances from the Earth in February.

- 2016 BE is a newly discovered 100-meter object that will fly-by at about 6 lunar distances on 1 February.
- Among the returning objects, 2008 DL5, 2013 VA10 and 2014 EK24 are also comparable or slightly larger in size, and will come closer than 20 lunar distances over the month of February.

Recent interesting close approaches

Four tiny objects came closer than the Moon over five days in January.

- 2016 AQ164, 2016 AH164, 2016 AN165 and 2016 AN164, four objects smaller than 10 meters, all came closer than the Moon between 10 and 14 January.

News from the risk list

There was a swap in the first two positions of the list.

- (410777) 2009 FD is now in the second spot of our risk list. This is the result of a complex reassessment of its risk potential after revision of its diameter, which thanks to radar observations is now known to be smaller than previously thought.
- 2016 BE is a new object that reached Torino Scale 1 on 25 January, before being lowered back to level 0 the following day, thanks to new observations.

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* 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

European Space Agency

In other news

- On 1 February the NEOCC will host a meeting of European observers, to discuss the coordination of observational priorities and optimize the use of all the available resources.
- The following day, 2 February, four recently completed NEO-related contracts will have their final presentations, again hosted by the NEOCC at ESRIN.

Upcoming events

A few interesting conferences will take place in 2016.

- Planetary Defense session at the 2016 IEEE Aerospace Conference, 5–12 March 2016, Big Sky, USA
  http://www.aeroconf.org/
- Meteoroids 2016 conference, 6–10 June 2016, Noordwijk, The Netherlands
  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/

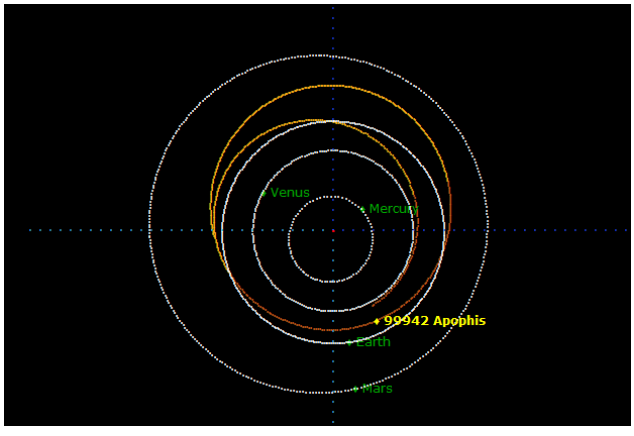
Top-10 table of risky objects

The new risk list with (410777) 2009 FD now in the second 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)
(29075) 1950 DA	1300	2880-03-16 23:48	1/7000	-1.36	n/a	17.99	48
(410777) 2009 FD	90	2185-03-29 18:06	1/700	-1.83	n/a	19.41	1851
(101955) Bennu	484	2196-09-24 07:55	1/10600	-2.32	n/a	12.68	2456
2010 RF12	~ 9	2095-09-05 23:50	1/16	-3.26	0	12.45	1970
1979 XB	~ 860	2113-12-14 18:01	1/2000000	-3.31	0	26.04	13193
2000 SG344	~ 50	2072-09-13 16:41	1/1900	-3.61	0	11.26	5595
(99942) Apophis	375	2068-04-12 15:13	1/532000	-3.67	0	12.62	3947
2009 JF1	~ 15	2022-05-06 08:12	1/4500	-3.75	0	26.41	2456
1994 WR12	~ 140	2072-11-24 02:59	1/65000	-3.78	0	14.91	7696
2006 QV89	~ 40	2019-09-09 07:03	1/12000	-3.81	0	12.32	3434

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 April 2029 close approach of (99942) Apophis will lead to a major change of its orbit: from an Aten to an Apollo type . This can be clearly seen by using our upgraded Orbit Visualization Tool, as shown on the left.

When a close encounter occurs it is possible to display a magnified geocentric view of the trajectory, while when the uncertainty on the object position grows beyond a certain threshold a warning message appears.

Image credit: ESA NEOCC