

space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

During the past month there were a few high-rated additions to the risk list.

- Known NEOs: 12 917 asteroids and 104 comets
- NEOs in risk list*: 520
- New NEO discoveries since last month: 79
- NEOs discovered since 1 January 2015: 960

Focus on

During the month of August two NEOs rose through the ranks of the risk list of the most dangerous known NEOs, reaching level 1 in the so called Torino Scale. The Torino Scale has been established to provide a simple level-based assessment of how dangerous a particular asteroid is, and distribute it in a way that is easy to interpret for the general public. It is based on 10 levels, labelled 1 to 10 and assigned to colour classes, with 10 being the highest. Level 1 is green, and is defined as “A routine discovery in which a pass near the Earth is predicted that poses no unusual level of danger”. The two new objects of this summer are therefore not unusual, but they still merit a directed effort from astronomers to better clarify the threat they may pose.

Upcoming interesting close approaches

A moderately large object will have a moderately close approach in early September.

- (281375) 2008 JV19, a 300 m object discovered by the Catalina Sky Survey in May 2008, will have a close approach on 1 September, at 17 lunar distances. Around those dates it will reach magnitude 15.

Recent interesting close approaches

A very small object came very close to us on August 6.

- 2015 PK, discovered by the Pan-STARRS survey, is a 10 m object that came to less than 80 000 km from the Earth’s surface on August 6. It is the third closest approach of a known object in 2015.

News from the risk list

Two objects reached the level of Torino Scale 1 in August.

- 2015 PU228 is the most recent important addition to the risk list, still rated as Torino Scale 1. Currently ranked first among the most dangerous NEOs for the current century, at the time of this writing it has an impact probability of about 1/12000 for 15 January 2081, quite significant for a 400 m object. It is the most significant discovery so far from the new 3.5 m Space Surveillance Telescope, currently located in New Mexico, USA, but soon to be relocated to Australia.
- 2015 NK13 has already been mentioned last month in this newsletter. Observations collected until mid-August resulted in an increase of its impact probability for a close approach in 2096, which was also rated at Torino Scale 1. Subsequent observations have now significantly reduced the probability, and the object now ranks low on the risk list.

* 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 NEOCC website has been visited more than 10 000 times from users located in at least 100 different countries during the past six months. Most visits originate from the United States, followed by Italy and other European countries.
- The IAU General Assembly held in Hawaii last month saw a large number of presentations related to NEOs, and asteroids in general.
- The 34th International Meteor Conference took place from 27-30 August in Mistelbach, Austria.

Upcoming events

A few planetary science meetings will happen in the fall, and most of them have sessions dedicated to NEOs.

- European Planetary Science Congress, 17 September – 2 October 2015, Nantes, France
<http://www.epsc2015.eu>
- 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/>

Current risk list

The list of top-10 most dangerous known asteroids, including 2015 PU228 in the second-highest position.

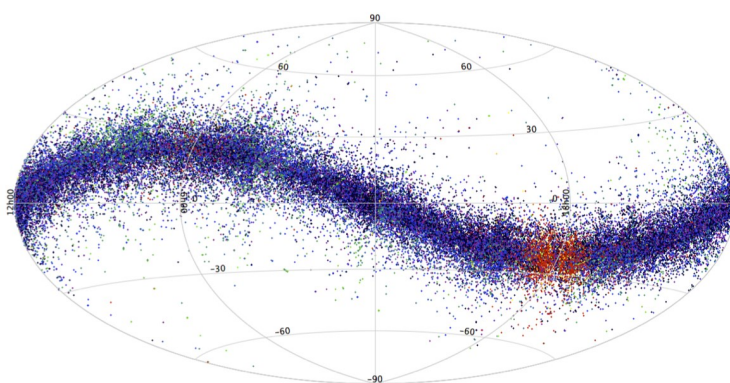
Object name	Size in m	Date/Time of possible impact (UTC)	Impact probability	Palermo Scale	Torino Scale	Velocity in km/s	In list since (days)
(410777) 2009 FD	472	2185-03-29 18:06	1/370	-0.43	n/a	19.41	1726
2015 PU228	~ 400	2081-01-15 09:39	1/12000	-1.49	1	27.93	14
(101955) Benu	484	2196-09-24 07:55	1/11000	-2.32	n/a	12.68	2331
2010 RF12	~ 9	2095-09-05 23:50	1/11	-3.11	0	12.29	1744
1979 XB	~ 830	2056-12-12 21:39	1/3700000	-3.23	0	27.54	12962
2008 UB7	~ 71	2060-10-31 19:06	1/10000	-3.29	0	21.57	2450
2010 MZ112	808	2041-02-17 04:52	1/730000	-3.39	0	11.31	1831
2010 DG77	315	2047-01-12 04:39	1/97000	-3.44	0	11.49	1919
2009 JF1	~ 16	2022-05-06 08:12	1/2900	-3.57	0	26.41	2260
2000 SG344	~ 46	2071-09-16 00:55	1/2100	-3.62	0	11.27	5413

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/neaorklist>



First asteroid results from ESA's Gaia mission. This image shows Gaia's detections of asteroids in eight months' worth of data, compared with the positions on the sky of a sample of 50 000 known asteroids. Each point in the figure represents a known asteroid detected by Gaia, and the colour of the data points is an indication of the accuracy of the detections.

Image credit: ESA/Gaia/DPAC/CU4, L. Galluccio, F. Mignard, P. Tanga (Observatoire de la Côte d'Azur).

neo.ssa.esa.int

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