

## space situational awareness

### → NEAR-EARTH OBJECTS

#### Current NEO statistics

Almost 500 NEOs are currently in the risk list, about 4 % of the total known population.

- Known NEOs: 12512 asteroids and 101 comets
- NEOs in risk list\*: 498
- New NEO discoveries since last month: 114
- NEOs discovered since 1 January 2015: 564

#### Focus on

The month of April saw two very important international meetings on NEOs taking place at the ESA ESRIN establishment in Frascati. On 9–10 April the Space Mission Planning Advisory Group (SMPAG) met for two days for their third regular meeting. The following week, ESRIN hosted an extremely successful edition of the IAA Planetary Defense Conference (PDC); 234 experts in NEO science and technology participated in the events, together with 15 members of the press. The activities of the conference included a discussion of a simulated scenario of a future impact with a large asteroid, to gauge the reactions of the community and be ready in case a similar situation would become reality in the future.

#### Upcoming interesting close approaches

None of the currently known objects is expected to come within 10 lunar distances of Earth during the month of May. However, it is likely that many closer objects will be discovered in the upcoming weeks, just around the time of their fly-by with Earth.

#### Recent interesting close approaches

April registered a total of 35 close approaches of known NEOs to Earth; three of them came within 1 lunar distance.

- 2015 HD1, discovered on 18 April by the Catalina Sky Survey, came to within 60 000 km of the Earth on 21 April.
- 2015 HO116, also a Catalina Sky Survey discovery, flew past the Earth at about 1.7 lunar distances. The asteroid is a ~30 m object and the peak brightness during this close approach was about magnitude 14.

#### News from the risk list

Eight new objects announced in April are in the risk list. None of the new entries are particularly concerning.

- 2015 FL290, first observed by the Catalina Sky Survey in March, has a diameter of ~160 m and a probability of about 1 in 120 000 to hit the Earth in 2085.
- 2015 FY344, a supposedly large object observed by Pan-STARRS in March, was originally thought to be in an NEO orbit with some impact possibilities. However, it was recognized as a main belt asteroid and removed from the risk list once a linkage with the bodies 2010 UK7 and 2004 CH1 were identified.

\* The risk list of all known objects with a non-zero (although usually very low) impact probability can be found at <http://neo.ssa.esa.int/web/guest/risk-page>

## In other news

- ESA initiated a new project with the National Observatory of Athens to count and characterise the number and distribution of NEOs by monitoring lunar impacts. The full story is available on our website.
- A dedicated webpage for ESA's Asteroid Impact Mission study is online at <http://www.esa.int/aim>.
- Several NEO experts participated in the PDC public event organised by the Planetary Society: Planetary Radio Live. Details at <http://wp.me/p2RwcN-xy>.

## Upcoming events

The next major international conference on NEOs will be the IAU Symposium 318 held during the IAU General Assembly in August, and titled "Asteroids: New Observations, New Models"

- IAU General Assembly 3–17 August 2015, Honolulu, USA  
<http://astronomy2015.org>
- 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>

## Closest approaches of the past month

- Three small objects came closer than the Moon during April 2015.

| Object name | Close approach date | Miss distance in au | Miss distance in lunar distances | Size in m | H magnitude | Peak magnitude | Velocity in km/s |
|-------------|---------------------|---------------------|----------------------------------|-----------|-------------|----------------|------------------|
| 2015 FW117  | 2015-04-01          | 0.0092              | 3.6                              | ~ 120     | 22.7        | 14.0           | 18.7             |
| 2015 GU     | 2015-04-12          | 0.0007              | 0.3                              | ~ 9       | 28.5        | 14.3           | 11.7             |
| 2015 GK     | 2015-04-13          | 0.0072              | 2.8                              | ~ 29      | 25.8        | 18.0           | 11.9             |
| 2015 GE1    | 2015-04-13          | 0.0087              | 3.4                              | ~ 30      | 25.8        | 17.0           | 10.3             |
| 2015 GL13   | 2015-04-16          | 0.0012              | 0.5                              | ~ 7       | 28.9        | 16.1           | 14.0             |
| 2015 GA1    | 2015-04-16          | 0.0064              | 2.5                              | ~ 20      | 26.6        | 17.7           | 16.1             |
| 2015 HD1    | 2015-04-21          | 0.0004              | 0.2                              | ~ 14      | 27.4        | 13.1           | 16.0             |
| 2015 HE1    | 2015-04-21          | 0.0085              | 3.3                              | ~ 16      | 27.1        | 19.3           | 14.4             |
| 2015 HQ11   | 2015-04-25          | 0.0033              | 1.3                              | ~ 16      | 27.1        | 18.3           | 10.2             |
| 2015 H0116  | 2015-04-27          | 0.0044              | 1.7                              | ~ 31      | 25.7        | 14.3           | 18.2             |
| 2015 HD10   | 2015-04-29          | 0.0042              | 1.6                              | ~ 17      | 27.0        | 17.8           | 13.0             |

## 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>



Participants in the 2015 Planetary Defense Conference, ESA/ESRIN, 13–17 April 2015. Image credit: ESA CC BY-SA IGO 3.0

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