

## ESA's NEO Coordination Centre

### Current NEO statistics

Number of designated NEOs in February was a bit higher than the monthly average.

- Known NEOs: 22 209 asteroids and 109 comets
- NEOs in risk list\*: 1022
- Number of NEOs designated during last month: 202
- NEOs discovered since 1 January 2020: 529

### Focus on

Our planet is hit by small asteroids every day, and less often by larger ones that are capable of producing a crater on the surface. Looking at the Moon, which moves within the same population of possible impacting asteroids, gives us direct evidence of how many craters could exist on our planet, if they were not constantly eroded by atmospheric and geological phenomena. Nevertheless, even this constant erosion is not sufficient to completely erase all signs of craters from our surface: some still exist, and their true nature can be proven by locating features that can only be originating by the physics at play during an asteroidal impact, such as some shocked minerals. As of today, the catalogue of confirmed craters on Earth only contains about 200 entries. But new discoveries continue to be made, sometimes showing that very old craters are still around. Just a few weeks ago, evidence has been published that the Yarrabubba crater, discovered in 2003 in Australia, may be the oldest confirmed on Earth, dating back to more than 2 billion years ago. This shows that, when geological conditions are right, craters can survive on Earth for very long periods of time.

### Upcoming interesting close approaches

A large object will have a distant fly-by this month.

- 2012 XA133, a 200-metre object, will have a fly-by at 17 lunar distances on 27 March.

### Recent interesting close approaches

Six known asteroids came closer than half the distance to the Moon in February.

- 2020 BT14, 2020 CQ1, 2020 CQ2, 2020 CW and 2020 DR4 are five small objects that flew by the Earth at less than 0.5 lunar distances during the past month. 2020 CQ1 reached a maximum brightness of about magnitude 14.
- 2020 CD3, a temporary captured object, also had a close approach at 0.1 lunar distances during its last perigee.

### News from the risk list

Two objects entered the top position in our risk list in February and one is still there.

- 2020 DR2, a 600-metre asteroid discovered on 20 February, has now an impact probability of 1 in 80 000 and a Palermo Scale of  $-1.8$  for an impact in 2081. It has a Torino Scale value of 1 for that possible impactor and for another one in 2074.
- 2020 BW14, a 800-metre asteroid, reached on 7 February a Palermo Scale of  $-1.1$  and a Torino Scale 1 for an impact in 2046. Further object observations allowed a better knowledge of its orbit, excluding it from the risk list on 10 February.

\* 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/risk-page>

## In other news

- The recently discovered object 2020 CD<sub>3</sub> has been in a temporarily Earth-capture trajectory for about two years and it is currently departing the Earth-Moon system.

## Upcoming events

Relevant international meetings over the next months.

- Hera Community Workshop, 20–22 April 2020, Nice, France  
<https://www.cosmos.esa.int/web/hera-community-workshop/>
- Apophis T–9 Years: Knowledge Opportunities for the Science of Planetary Defense, 23–24 April 2020, Nice, France  
<https://www.hou.usra.edu/meetings/apophis2020/>
- Asteroids, Comets, Meteors Conference, 14–19 June 2020, Flagstaff, USA  
<https://www.hou.usra.edu/meetings/acm2020/>

## Largest known craters in the world

List of the ten known craters on Earth with the largest diameter as extracted from the [Earth Impact Database](#).

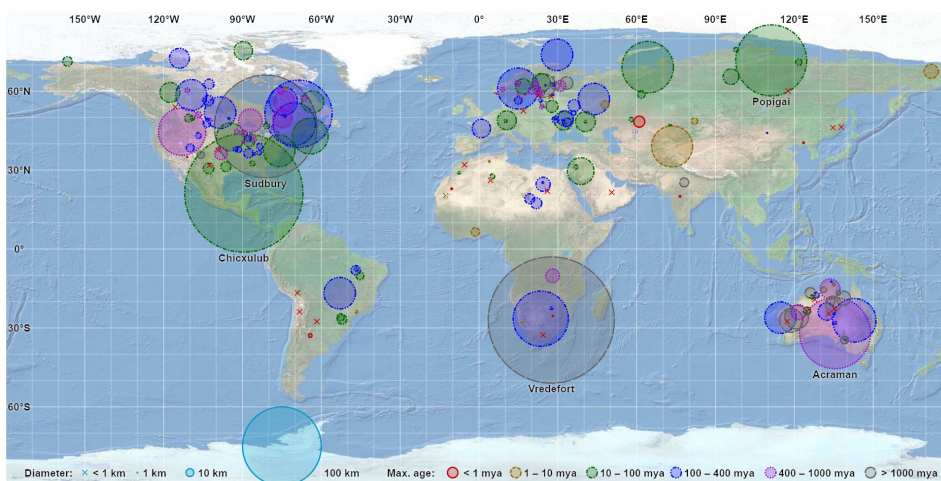
Crater name	Location	Latitude	Longitude	Diameter in km	Age in Ma
Vredefort	South Africa	27°00'S	27°30'E	160	2023 ± 4
Chicxulub	Mexico	21°20'N	89°30'W	150	64.98 ± 0.05
Sudbury	Canada	46°36'N	81°11'W	130	1850 ± 3
Popigai	Russia	71°39'N	111°11'E	90	35.7 ± 0.2
Acraman	Australia	32°01'S	135°27'E	90	~ 590
Manicouagan	Canada	51°23'N	68°42'W	85	214 ± 1
Morokweng	South Africa	26°28'S	23°32'E	70	145.0 ± 0.8
Kara	Russia	69°06'N	64°09'E	65	70.3 ± 2.2
Beaverhead	U.S.A.	44°36'N	113°00'W	60	~ 600
Tookoonooka	Australia	27°07'S	142°50'E	55	128 ± 5

## Links for more information

Website: <http://neo.ssa.esa.int>

Close approaches: <http://neo.ssa.esa.int/close-approaches>

Risk List: <http://neo.ssa.esa.int/risk-page>



Location, size (circle size) and age (circle colour) of the confirmed craters on Earth.

[Credits: Wikipedia, licensed under the Creative Commons Attribution-Share Alike 4.0 International, no changes introduced]

[neo.ssa.esa.int](http://neo.ssa.esa.int)

To subscribe to this newsletter fill the form at <http://neo.ssa.esa.int/subscribe-to-services>  
To unsubscribe or for any further information please send an email to [neocc@ssa.esa.int](mailto:neocc@ssa.esa.int)

