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The Meteoritical Bulletin, no. 112

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Abstract—Meteoritical Bulletin 112 contains the 2487 meteorites approved by the Nomenclature Committee of the Meteoritical Society in 2023. It includes 14 falls, 1926 ordinary chondrites, 141 HED, 127 carbonaceous chondrites (including 6 ungrouped), 71 lunar meteorites, 37 ureilites, 36 mesosiderites, 27 Martian meteorites, 23 iron meteorites (6 ungrouped), 20 Rumuruti chondrites, 19 ungrouped achondrites, 19 enstatite chondrites, 18 primitive achondrites (2 ungrouped), 12 pallasites, 6 angrites, 4 enstatite achondrites, and 1 ungrouped chondrite. Of the meteorites approved in 2023, 968 were from Africa, 836 from South America, 572 from Antarctica, 66 from Asia, 35 from North America, 9 from Europe, and 1 from Oceania.

TRENDS AND SPECIFICITIES

Meteoritical Bulletin 112 (MB112) contains the 2487 meteorites submitted to and accepted by the Nomenclature Committee of the Meteoritical Society in 2023. These meteorites are listed in the Meteoritical Bulletin Database available online at <https://www.lpi.usra.edu/meteor/>. This database is widely and increasingly used by meteorite scientists and meteorite collectors (Figure 1). In 2023, it has totaled 1.8 million views of individual meteorite pages.

These meteorites listed in MB112 total 3604 kg of material. Twelve meteorites are over 50 kg, and eight of those are ordinary chondrites (OCs). The non-OC

meteorites with masses greater than 50 kg include NWA 15774 (CK3) with 174 kg, NWA 15923 (eucrite-melt breccia) with 105 kg, NWA 15878 (OC4-melt breccia) with 70 kg, and Xizang with 68.7 kg (IAB Iron).

In detail, 968 meteorites were from Africa, 836 from South America, 572 from Antarctica, 66 from Asia, 35 from North America, 9 from Europe, and 1 from Oceania (Figure 2). The total number of meteorites in MB112 is in line with the average number of 2570 meteorites per year since the Meteoritical Bulletin has been phased with calendar years starting with Bulletin 105 in 2016. A relatively low number of Antarctic meteorites (due to COVID-19 field season delays) has been compensated by

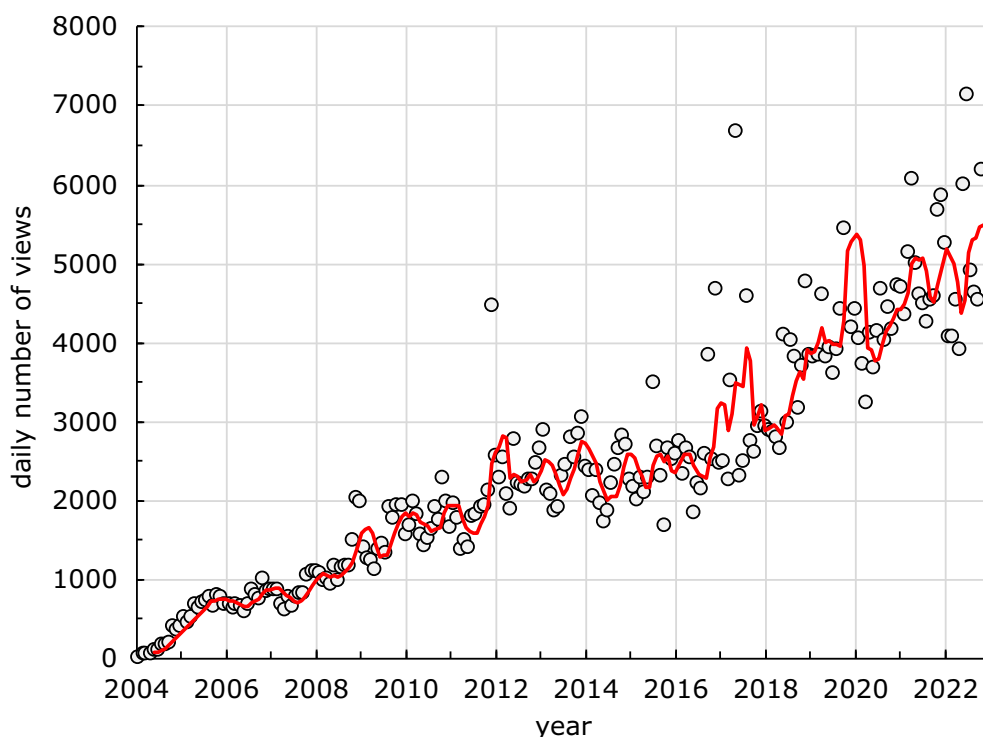


FIGURE 1. Daily number of views of individual meteorite pages in the Meteoritical Bulletin Database, grouped by month. The red line is a 5-month running average. (Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/maps.14181))

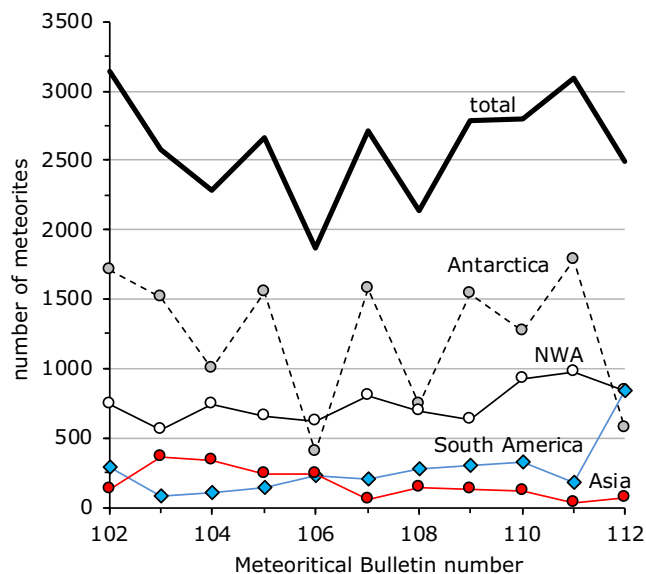


FIGURE 2. Number of meteorites from Antarctica, Northwest Africa, South America, and Asia reported in the last 11 Meteoritical Bulletins. These Meteoritical Bulletins are phased with civil years, with MB102 reporting meteorites approved by the Nomenclature Committee in 2013 and so on. (Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/maps.14181))

a record high number of meteorites from Chile (835) and a steady flow of meteorites from northwest Africa (NWA). It is noteworthy that 12% of North African

meteorites are now declared with their coordinates, and hence get a dense collection area name distinct from the typical NWA name.

The meteorites listed in MB112 include 14 falls (13 OCs and 1 aubrite) that occurred in 2023 (7 falls), 2022 (4 falls), 2021 (1 fall), 2019 (1 fall), and the Koshigaya fall that occurred in 1906. Out of these 14 falls, 4 were recovered with the assistance of camera networks, such as the Desert Fireball Network in Australia (Bland et al., 2012), or international networks such as FRIPON (Colas et al., 2020), and/or radar reflectivity data (Fries & Fries, 2010).

The meteorites listed in MB112 comprise 1926 OCs, 141 HED, 127 carbonaceous chondrites (including 6 ungrouped), 71 lunar meteorites, 37 ureilites, 36 mesosiderites, 27 Martian meteorites, 23 iron meteorites (6 ungrouped), 20 Rumuruti chondrites, 19 ungrouped achondrites, 19 enstatite chondrites, 18 primitive achondrites (2 ungrouped), 12 pallasites, 6 angrites, 4 enstatite achondrites, and 1 ungrouped chondrite.

The number of lunar and Martian meteorites remain high, representing 174 kg and 52.5 kg of material, respectively. Over the last 5 years, 260 lunar meteorites have been accepted by the Nomenclature Committee, representing 790 kg of material. Over 1000 kg of lunar meteorites and 337 kg of Martian meteorites are now listed in the Meteoritical Bulletin Database.

Two meteorites were reclassified in MB112: NWA 12474 from CR3 to CVred3.1 and NWA 13498 from L3 to LL3.

The following references were used to support the classification of meteorites in MB112: Barrat et al. (1999), Boesenberg et al. (2012), Gattacceca et al. (2014), Gattacceca et al. (2020), Grossman and Brearley (2005), Haack and Scott (1993), Harlow and Klimentidis (1980), Huss et al. (2006), Kovach and Jones (2010), Krämer et al. (2022), Kuehner et al. (2006), McKibbin et al. (2019), Metzler et al. (2021), Mittlefehldt et al. (1998), Nehru et al. (1980), Powe (1971), Rochette et al. (2003), Rubin (1990), Rubin (2003), Rubin (2016), Sharp and Wostbrock (2021), Stoeffler et al. (1980), Tait et al. (2014), Tomeoka and Itoh (2005), Warren (1993), Wasson and Huber (2006), Wasson and Richardson (2001), Wasson et al. (2007), Weyrauch et al. (2017).

NOTABLE METEORITES

The Saint-Pierre-le-Viger fall (L5-6) was first observed as asteroid 2003 CX₁ on February 12, 2023 on a collision course with Earth, before exploding over Normandy, France, hours later in the early morning of February 13, 2023. The Rantila (200 g aubrite) fall from August 17, 2022, in Gujarat, India, is the 11th aubrite fall, and remarkably the second recovered aubrite fall in 2 years (Tigit in 2021, Rantila in 2022). Other notable falls are the large El Menia fall on March 11, 2023, in Algeria (L5, 75 kg), and the 121 year old but recently classified Koshigaya fall from April 25, 1902, in Saitama prefecture, Japan (L4, 4.05 kg). Meteorite finds that are notable for their mass, rarity, and/or scientific interest include the Amgala 001 shergottite (34.7 kg), which is the most massive shergottite ever reported in the Meteoritical Bulletin. In addition, a highly vesiculated shergottite, NWA 16272, was also reported in 2023. The most massive meteorite reported in this issue is Kapustin Yar L/LL6 (276.5 kg). Other notable meteorite finds include NWA 15468 OC4-melt breccia (30 kg), the Mount Tourniat 001 ungrouped pallasite (17.7 kg), and the NWA 16111 ungrouped achondrite.

ALPHABETICAL TEXT ENTRIES FOR NON-ANTARCTIC METEORITES

See online version of this article.

NEW DENSE COLLECTION AREAS

In 2022, 29 new dense collection areas (DCA) were created: five in Algeria, three in China, three in Iran, three in Mauritania, three in Western Sahara, two in

Chile, two in Egypt, two in Libya, one in Chad, one in Mali, one in Namibia, one in Niger, one in Peru, one in the United States. A full list of all approved DCAs, with maps, can be found at <https://www.lpi.usra.edu/meteor/DenseAreas.php>.

LISTING OF INSTITUTES AND COLLECTIONS

An up-to-date index of collections and approved repositories (next to a green check mark) cited in the Meteorite Bulletin can be found here: <https://www.lpi.usra.edu/meteor/MetBullAddresses.php?grp=country>.

Supporting Information—Supplementary information can be found in the online version of this article: Table S1 of data including Antarctic meteorites, Table S2 listing the corrections to the Meteoritical Bulletin Database, and a complete copy of the text entries for non-Antarctic meteorites. Information about the approved meteorites can be obtained from the Meteoritical Bulletin Database available online at <https://www.lpi.usra.edu/meteor/>.

Editorial Handling—Dr. A. J. Timothy Jull

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article.

Data S1. Complete copy of the text entries of MB112 for non-Antarctic meteorites.

Table S1. Data of MB112 including Antarctic meteorites.

Table S2. List of corrections to the Meteoritical Bulletin Database.