

ABSTRACT ONLY**WHAT IS THE FREQUENCY OF METEORITE FALLS? IS THERE A PREFERRED DAY?**Acosta, I.¹ and Tancredi, G.¹

Meteoroids are solid natural objects of a size roughly between 30 μm and 1 m moving in interplanetary space, that can reach the Earth upper atmosphere producing a noticeable phenomenon: a meteor. They might survive the meteor phase when passing through the atmosphere, and eventually reach the surface as meteorites. If recovered after observations of their passage they are called falls, whereas, if found by chance they are called finds. As of 20/11/2023 there are 1,218 recorded falls worldwide, with official names in the Meteoritical Bulletin Database. A subgroup among the falls are those that directly affect humans or their belongings (damaging falls). A meteoroid stream is a group of meteoroids with common orbits and origins (e.g., from the fragmentation of an asteroid), and is of great relevance because it might indicate the presence of a larger body, yet to be discovered. The aim of this work is to analyze the temporal distribution of meteorites, calculate how many meteorite falls per year, and how many of them are damaging. We determined if there is any preferred moment of the year with more meteorite falls. The frequency of falls per day over the entire Earth was calculated as a function of the day of the year and solar longitude; and compared with a Poisson process in order to look for dates with higher frequency than expected. From our analysis, an average rate of ~ 7.82 falls and ~ 1.72 damaging falls on urban Earth per year was calculated. Subsequently, $\sim 6,014$ falls per year over the entire Earth's surface, and $\sim 1,777$ falls per year over Earth's landmass were estimated from satellite data. No peaks in the distribution tail were observed, therefore, the presence of a meteoroid stream cannot be asserted. There is no particular day of the year with a higher fall rate, hence, it is likely that there are no highly populated meteoroid streams.

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