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Jupiter impacts monitoring till 2026 apparition

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After 1994 Shoemaker/Levy 9 comet fragmentation and impacts on Jupiter was predicted and observed by professional astronomers, it was estimated that impacts on Jupiter should be very rarely observed events, maybe once per century. But an Australian amateur observed dark traces of an impact on Jupiter with his backyard telescope in 2009 and observed a flash provoked by another smaller impactor on Jupiter atmosphere in 2010 [1]. This started a series of 13 observations of such events [2],[3], and a long monitoring program supported by software (DeTeCt) aiming at estimating such impacts frequency, through both semi-automatic detection of flashes on amateur videos of Jupiter and logging of all observations period without any events. Despite record participation in the project in 2024 and very good in 2025, no impact was discovered during this period.

Over the years, we could collect a year worth of videos analysis with our software, from 303 different observers (491 000 videos). To refine the rate of Jupiter impacts' frequency estimation, we analyzed the data per Jupiter apparition, and considering for each apparition the number of impacts discovered, the total duration and period of all negative observations collected through DeTeCt. Focusing on most relevant apparitions with around or more than a month worth of data collected, we find an impact frequency varying from none per year (no impacts detected in 2018, 2022, 2024 and 2025), to ~80/year (4 observed in 2023). Averaging the result for these apparitions (between 2018 and 2026), we estimate now the impact frequency to ~22/y, lowering the precedent (2024) estimation using this methodology of 32~/y [4]

References:

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