Effect of meteoritic dust on the variation of global rainfall

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The tendency for the recurrence of rainfall singularities, on or near the same calendar date has been the subject of controversy for many years. Some researchers propounded the phenomenon that dust from meteors acting as rain forming condensation nuclei is the cause. This concept is well known as meteor-rain hypothesis.

Most of the investigations on meteor-rain hypothesis had been carried out by scientists in 1950's and 1960's. All those investigations have been dealt with limited available local precipitation data from different parts of the world and meteor shower information. This research is an attempt made to understand the level of influence caused by meteoritic dust on the variability of global rainfall. To the best of our knowledge this is the first time that such an attempt has been made in the global context using northern and southern hemispheric precipitation data covering the entire world.

Data files of global precipitation for 30 year period 1981-2010, obtained from NOAA database, were used as precipitation data. Data obtained from Visual Meteor Database **(**VMDB) of International Meteor Organization-IMO, on meteor rate data and meteor magnitude data for 30 year period 1982-2011 were used as meteor data for the analysis. By shifting one series relative to the other, the relationship between the meteor series and the rainfall series was studied for the greatest positive correlation, using a variety of statistical analysis methods.

Results of a few significant singularity days were found to tally with those of previous researchers obtained from various parts of the world, and that pattern is found to be continued year by year. When searching the time lag 28-30 days of previous researchers obtained for local precipitation using a few meteor showers, a poor correlation ($r = -0.08$) was found in the global context. The best correlation ($r = 0.97$) was found with a lag of 6 to 7 months after a meteoritic activity.