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New clues for explanation of lunar variation of precipitation

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The effect of the moon's influence on weather had been demonstrated in the last century by many authors, in some cases by careful statistical analysis of large datasets. It was often found that there was a cycle of one-half of the lunar synodic month in daily precipitation data series with the maxima some 3-5 days after syzygies. In our previous papers we tried to analyse such issues as spatial distribution of the phenomenon, its persistence and long-term behaviour. The aim was to explain obvious disappearance of the variation during some extensive time periods what probably caused the disregard of the effect by scientific community. Daily precipitation records at Prague-Klementinum in 1804-2004 were analysed by moving superpositin of epochs. The zero day was new moon, the epoch matched synodic month of 29 days and the window centred at specific year comprised five years (ca 62 lunations). The expression of semilunar effect was measured by correlation coefficient between annual signal and cosinus-like curve, shifted by 4 days. This parameter was drawn against time axis and then smoothed by 11-year moving average. The resulting diagram has time span of nearly two centuries and demonstrates quasiperiodical characteristics. The turning points occur in most cases two years before solar minima and tendency of the turn is modulated in the same way as Hale cycle of solar magnetic field reversals. This may implicate following chain of physical explanation: orientation of solar magnetic field - different types of interaction with Earth's magnetosphere during even or odd solar cycles - modulation of the magnetosphere by the Moon - semilunar variation of cosmic rays - changes in cloud formation - lunar variation of precipitation.