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Rosetta observations of the effects of solar flares on the cometary coma

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We investigate the effects that solar flares have on the coma of comet 67P as well as their influence on the photoelectron current from RPC/LAP instrument. During the ∼2 years Rosetta spent in the vicinity of comet 67P, a total of 4500 solar flares were observed to occur on the Sun. These solar flares were observed through X-ray flux measurements by the GOES satellite in orbit around Earth and were of all classes (A, B, C, M, X). 1600 of those occurred on regions on the Sun viewable from the vantage point of Rosetta. Despite the many events, we find very few that have any noticeable effects on the measured photoelectron current. Moreover, after a first glance, we find no events that have any effects on the cometary coma in terms of increased electron density. However, this is still under investigation. Only a few large solar flare events (X-class) were reported, which intensity might be needed to cause any significant effects. We will also investigate solar EUV flux measurements from the Maven spacecraft at Mars as well as include events from the Stereo spacecraft, which were better located to observe solar flares viewable by Rosetta during some intervals of the mission. We will also present data using high time-resolution SDO/EVE of the characteristics of some solar flares to see who well they correlate with the flares observed in the X-ray regime to understand why we do not see any clear effect on the coma.