



HAL
open science

The effect of solar flares on comet 67P and RPC/LAP

Niklas Edberg, Fredrik Johansson, Anders Eriksson, Cyril Simon Wedlund,
Markku Alho, David Andrews, Elias Odelstad, Pierre Henri

► **To cite this version:**

Niklas Edberg, Fredrik Johansson, Anders Eriksson, Cyril Simon Wedlund, Markku Alho, et al.. The effect of solar flares on comet 67P and RPC/LAP. European Planetary Science Congress 2018, Sep 2018, Berlin, Germany. 18 pp. insu-03565620

HAL Id: insu-03565620

<https://insu.hal.science/insu-03565620>

Submitted on 11 Feb 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

The effect of solar flares on comet 67P and RPC/LAP

Niklas J.T. Edberg (1), Fredrik L. Johansson (1), Anders. I. Eriksson (1), Cyril Simon Wedlund (2), Markku Alho (3), David J. Andrews (1), Elias Odelstad (1), Erik Vigren (1) and Pierre Henri (4)
(1) Swedish Institute of Space Physics, Uppsala, Sweden (ne@irfu.se), (2) Department of Physics, University of Oslo, Norway, (3) Department of Radio Science and Engineering, School of Electrical Engineering, Aalto University, Aalto, Finland, (4) Laboratoire de Physique et Chimie de l'Environnement et de l'Espace (LPC2E), CNRS, Orleans, France

Abstract

We investigate the effects of solar flares on the coma of comet 67P as well as their influence on the photoelectron current from the RPC/LAP instrument. During the ~2 years Rosetta spent in the vicinity of comet 67P, ~4500 solar flares were observed to occur on the Sun, through X-ray flux measurements by the GOES satellite in orbit around Earth. 1600 of those occurred on regions on the Sun viewable from the vantage point of Rosetta, of all classes (A, B, C, M, X). We find that only a minority of the events have any noticeable effects on the measured photoelectron current by the Langmuir probe (LAP). We find little evidence of the flares having any effect on the cometary coma in terms of increased electron density. However, observing this is complicated due to the otherwise dynamic plasma environment in combination with measurement uncertainties. The effect on the plasma density is still under investigation. Only a few large solar flare events (X-class) were reported, whose intensity might be needed to cause any significant effects.