Solar flares are the most dynamics and energetic phenomena in the Sun’s atmosphere, often related to coronal mass ejections (CMEs). Solar flares and CMEs have a dominant influence on the space-weather and huge impact on technology (e.g. electric grid, radio communication, satellite, and radar navigation). On the other hand, the evolution and forecasting of the solar flare are still an open issue. The magnetic field and electric currents play a critical role in the initiation and determine the evolution of the solar flares. In our project, we analyze the evolution of the electric current, especially focus on the area surrounded by the hooks of the flare ribbons -the places where flare rope is rooted. The goals of this study are (i) to test whether the surface electric current has a subsurface fixed source as claimed by proponents of the circuit approach, or if it is a response of the surface magnetic field to the evolution of the coronal magnetic field as claimed by proponents of the MHD approach; (ii) to test whether the observed electric current decrease can help identifying the twist and the altitude (hence the acceleration) of erupting structures in their early eruptive phase; (iii) bring a new stone to the standard flare model in 3D. To this aim, we study 19 X-class flares (high energetic) observed by the satellite Solar Dynamics Observatory (SDO) from 2011 to 2016. SDO provides high-resolution, multi-temperature (5kK to 20MK) observations of the solar plasma and vector magnetograms. SDO data allows us to identify the hooks of the flare ribbon and investigate the magnetic field and electric current in their surroundings. If a topology of the active region is relatively simple and identification of the hooks ribbon is possible, then our preliminary analysis shows a decrease of the electric current in the area surrounded by the ribbon hooks during and after the eruption. This result is fully consistent with our 3D MHD simulation of the eruptive flare. Based on our 3D model we suggest that the decrease of the electric current in the area surrounded by the ribbon hooks due to the flux rope expansion.