

## From MHD simulations to coronal observations :

### How to build a standard flare model in 3D

Solar eruptive flares lead to the ejection of coronal mass ejections (CMEs) that are amongst the main drivers for space weather. 2D models have been developed so as to understand the formation of flare loops and the flux rope (i.e. the CME) during an eruptive flare. However, the intrinsic 3D nature of both structures implies a need to extend those 2D models in a more complete 3D version.

In this work, I will present the main observational characteristics of eruptive flares, and how we can use a 3D magnetohydrodynamic simulation to understand their underlying mechanisms. I will compare observational data from STEREO and SDO with the results from the numerical model, and how fulfilled predictions ensure the validity of our simulations. I will also focus on the reconnection mechanism leading to the further development of the flux rope, the flare loops, and the flare ribbons. Finally, I will describe these extensions in a newer, 3D version of the standard flare model.