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Validation of a 3D MHD coronal-wind global model using WL and UV data

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The 3D MHD modeling is a powerful tool to investigate the physical process responsible for the formation and evolution of the heliosphere and the solar wind. To fully understand the role of each physical ingredient making the model correct, we need a validation process where the output from the simulations are quantitatively compared to the observational data. In this work, we present the results from the validation process for the solar corona of the 3D MHD model WindPredict-AW. We analyze three simulations results, which differ for the initial conditions. We use the density and temperature 3D distributions, output from the simulations for the first Parker Solar Probe perihelion, to synthesize both UV and WL pB images. For these tests, we selected AIA 193 UV emission, MLSO K-Cor and LASCO C2 pB images during 6 and 7 November 2018. We then make quantitative comparisons of the disk and off limb corona. Our tests clearly identify the simulation that provides the best quantitative reproduction of the observed corona, and show that WindPredict-AW is a reliable model.

Student poster?

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