

OpenSpace: An Open-Source Framework for Data Visualization and Contextualization

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We present an open-source software development effort called OpenSpace that is tailored for the dissemination of space-related data visualization. In the current stages of the project, we have focussed on the public dissemination of space missions (Rosetta and New Horizons) as well as the support of space weather forecasting. The presented work will focus on the latter of these foci and elaborate on the efforts that have gone into developing a system that allows the user to assess the accuracy and validity of ENLIL ensemble simulations. It becomes possible to compare the results of ENLIL CME simulations with STEREO and SOHO images using an optical flow algorithm. This allows the user to compare velocities in the volumetric rendering of ENLIL data with the movement of CMEs through the field-of-views of various instruments onboard the space craft. By allowing the user access to these comparisons, new information about the time evolution of CMEs through the interplanetary medium is possible. Additionally, contextualizing this information in three-dimensional rendering scene, allows the analyst and the public to disseminate this data. This dissemination is further improved by the ability to connect multiple instances of the software and, thus, reach a broader audience. In a second step, we plan to combine the two foci of the project to enable the visualization of the SWAP instrument onboard New Horizons in context with a far-reaching ENLIL simulation, thus providing additional information about the solar wind dynamics of the outer solar system. The initial work regarding this plan will be presented.