Solar wind observed by Parker Solar Probe and modelled by EUHFORIA

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Oral

Novel in situ observations, taken by Parker Solar Probe (PSP) at the close to the Sun distances, show large variability of the solar wind plasma parameters. We believe that this variability is one of the reasons which caused rather low accuracy of the modelled solar wind we obtained with EUHFORIA model (European heliospheric forecasting information asset, Pomoell & Poedts, 2018).

While inspecting the solar wind characteristics, for the first 10 PSP close encounters for which also solar wind modelling with EUHFORIA was done, we found number of intervals of the enhanced solar wind velocity appearing simultaneously with the decrease of the density. Such a behaviour usually indicates that the solar wind is originating from the coronal holes. Employing the magnetic connectivity tool (developed by ESA's MADAWG group) we confirmed that the sources of that enhanced solar wind were small coronal holes. We inspect the characteristics of the solar wind flows originating from such a small coronal holes, their contribution to the both fast and slow solar wind observed at 1 au, and discuss how our findings can help in improving the accuracy of the solar wind modelling with EUHFORIA.

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