Modeling of the plasmasphere using data assimilation of IMAGE/EUV data

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We are developing a data assimilation technique which incorporates the imaging data of extreme ultra-violet (EUV) from the IMAGE satellite into a two-dimensional fluid model of the plasmasphere. The structure of the plasmasphere is highly controlled by the electric field imposed on the inner magnetosphere. In order to obtain a comprehensive picture of the temporal and spatial variations of the plasmasphere, it is important to estimate the spatial distribution of the electric potential as well as that of the plasmaspheric plasma. We are trying to estimate both of them using the data assimilation approach. We will provide the overview of our data assimilation technique and demonstrate some examples of the results.