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Comparisons between EUV/IMAGE observations and numerical simulations of the plasmapause formation

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Simulations of plasmapause formation based on the mechanism of instability described in Pierrard and Lemaire [2004] predict the position of the plasmapause as a function of the geomagnetic activity index Kp and local time LT. The positions predicted by the model in the equatorial magnetic plane are compared with the observations of EUV/IMAGE during some storm and substorm events, and also during prolonged quiet periods when the plasmasphere is very extended. The formation of structures like plumes and shoulders, observed during periods of high geomagnetic activity, is well reproduced by the simulations. These structures are directly related to specific time sequences of Kp variations. The average radial distance of the plasmapause is also well reproduced by the model.