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Modelling plasma transport and dynamics in the inner magnetosphere: a parametric study

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The purpose of this study is to model the plasma transport and energisation, from the near-tail plasma sheet to the ring current region, and to assess the errors made at each step in this modelling of the inner magnetosphere. This parametric study lies on three main lines: plasma sources, transport and losses. Work is done in four dimensions. For the spatial dimension, the study is restricted to the equatorial plane. Time variation and particle energy constitute the two other dimensions. We will also take into account the Kp index, which allows us to consider magnetic activity as an additional dimension of the study. Comparisons between magnetic field models on one hand, and electric field models on the other hand, and their impact on plasma dynamics, are being particularly developed for this purpose. Finally, we will focus on the exosphere modelling, which is a necessary step for particle loss assessment.