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Modeling of Plasma Temperatures in the Topside Ionosphere and Plasmasphere - Quasiempirical Models

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For creating a quasiempirical model of plasma temperatures (especially the electron temperature) in the topside ionosphere and plasmasphere we used both a theoretical physical model and our extensive data base of satellite data. The model data are represented in equidistant time and space intervals, whereas time irregular data are taken from the data base. The Kalman Filtering was used for data assimilation. This assimilation metod allowed implementation of error terms into the deterministic model, its stochastic formulation and the use of statistical methods. So both, the uncertainties of the model, and of the experiment can be taken into account. The assimilation increases the stability of the physical model and makes possible generation of quasiempirical data and finally a model. First results of this approach are presented.