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Simplified Ionospheric Regional Model updated by using a hybrid R12eff (hSIRMUP)

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Prediction of solar-induced effects for ionospheric physics and propagation is an important subject of the solar-terrestrial studies. The effective sunspot number R12eff is used as an efficient estimator of solar activity effects in the F region. Several studies have already shown that R12eff has significant forecasting potential to specify both quiet and disturbed ionospheric conditions. We examine the role of R12eff as a filter mechanism to correct the results given by Simplified Ionospheric Regional Model (SIRM) under the real-time conditions. Initially we compared the behaviour of the single station R12eff at different latitudes and longitude. It was demonstrated that there is a large variability in time and space even in the restricted European area. To overcome the consequences of such R12eff dispersion in regional mapping and modelling, a hybrid hR12eff has been introduced. It is used to improve the performance of SIRMUP and the preliminary results are presented in this paper.