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Poster
A reliable long term space weather forecast of geomagnetic storms (? 3 days) is critical for safe operation of national and commercial assets in space. Dst and Kp are the two of the most used indices for storm monitoring and serve as inputs of many space weather models. However, the current state of the art Dst or Kp forecast models (mostly machine learning algorithms) can only provide good storm-time prediction for a few hours. Here we report a physics-based pattern recognition algorithm to predict storm-time Dst evolution from 1 hour to ~4.5 days ahead of the time of the latest observed Dst. The algorithm just needs a few observed Dst data. It has been tested for a few isolated storms and shows a good agreement between predicted and observed Dst with correlation coefficients up to ~0.9 and errors as low as ~5-10 nT. This indicates that the algorithm is feasible and reliable. We also identified some caveats and improvements for our future work, such as predicting storm-time storms and determining the conditions for storm watch, alert and warning.
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