HOW SOLAR NOISE STORMS CAN CONTRIBUTE TO FORECASTING GEOEFFECTIVE EVENTS WITH DEEP LEARNING

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Abstract:

The importance of solar radio bursts has been discussed for over two decades in the context of space weather (e.g. 1). However, some data related to geoeffective events from complex solar active regions (eruptive phenomena with CMEs) bring the Solar Noise Storm as markers of the beginning of geoeffectiveness related to SEP and also to SYM-H. In this work we discuss how to apply a deep learning approach (RNN-LSTM and CNN) [2] to predict SYM-H recovery from SNS types I and III tagging after a flare and/or CME.

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References:

[1] Gopalswamy, N. , *Low-frequency radio bursts and space weather,* APRSC, 2016.

[2] Siciliano, F. et al., *Forecasting SYM-H Index: A Comparison Between Long Short-Term Memory and Convolutional Neural Networks*, Space Weather, 19(2), 2020.

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