R package wfIMA: Wavelet-Functional Indexes of Magnetic Activity

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An R package for space physics applications, **wfIMA** is developed. It consists of several major functions that compute indices of the magnetic storm activity and estimate the Solar quiet daily variation. Both indexes are widely used in geophysical community. A novel approach based on wavelet and functional principal component analysis is used in order to develop an applied statistical software. This package implements the ideas introduced in [1] and [2]. It utilizes the functions of **fda** and **waveslim** packages. Magnetic storm activity indices and quiet daily Solar variations are computed automatically without any subjective human intervention using the most recent magnetometer data available. This allows to produce indexes in near-real time, which would be an attractive alternative to the current index. This package will be publicly available at Comprehensive R Archive Network (CRAN). It would be a very important tool for the geophysical community and would address the need of software that balances the parameter flexibility with reliable results.

References

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