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On the relationship between geomagnetic activity and climatic parameters for Romania in the last 150 years

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It is well known that the geomagnetic activity is influenced by the solar activity. Many recent studies revealed the correlation between solar parameters (sunspot number, solar irradiance), cosmic rays, and the climatic parameters, especially, temperature. We analyze the relationship between magnetic and solar activity, and the mean temperature and precipitation, as recorded at 14 meteorological stations in Romania in the last 150 years. Long-term changes in geomagnetic activity as given by the aa index are compared to the sunspot number and to the mean temperature and precipitation over Romania. The comparison of geomagnetic and solar parameters with the mean surface temperature shows positive correlation coefficients, while the comparison with the mean precipitation shows negative correlation coefficients. The correlation of climatic parameters with the geomagnetic and solar activity seems to be stronger in case of geomagnetic activity than in case of solar activity. The significance level of the calculated correlation coefficients would be discussed. The discussion is extended to the entire Northern Hemisphere, via the comparison of solar and geomagnetic activity with the hemispheric mean temperature and the North Atlantic Oscillation (NAO) index.