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Studying the climatological aspects of African storm centre activity using the Schumann resonance decomposition method.

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One of the methods dedicated to study thunderstorm global activity is the analysis of the Schumann resonances, which occur in the ELF range. In our team, we developed a unique decomposition method of the resonance spectrum [Dyrda et al. 2014, Kulak et al. 2006]. The method allows us to separate symmetrical spectrum from the rest of the it. The symmetrical part is used to designate distances to the source and parameters of the Schumann resonance. Furthermore decomposition method allows to localise storm centres and measure the dipole moments of discharges in a five minute time windows. Observations of the Schumann resonance are conducted in Poland since 1992, which allows the study of climatological changes throughout the years. Since 2005 our observations have been automated. To conduct our analysis, we have used data from the Hylaty ELF station, placed in Eastern Carpathians [Kulak et al. 2014]. The unit is equipped into two antennas and one of them is directly pointed at the African continent.
We are presenting preliminary results of our study, which can be analysed in climatological terms. To present distribution and the intensity of the African storm centre (ASC), we have used the data from January and July, due to Intertropical Convergence Zone (ITCZ) movement, which influences the source. These months are mostly representative for maximum deviation of the storm centre throughout the year. In winter it is noticeable, that the highest intensity of the African centre is moved northward from the equator, the opposite event happens in the summer. In conclusion position and intensity of the ASC is highly correlated with seasons in both hemispheres. Our studies show that its position might spread up to 20° in both directions. Over 25 years of data enable us to determine changes of this source.
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