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Some new results from observations of the electromagnetic ELF range phenomena registered on sand dune

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It is well known that in dust storms and sandstorms prominent electric fields can develop eventually leading to micro- and macro scale electrical discharges. Large sandstorms and overall dust presence on Mars certainly support the existence of similar phenomena.

To develop technology of measurements and to understand electromagnetic phenomena in the Martian environment, we conducted series of observation of low frequency electromagnetic waves under corresponding conditions on sand dunes on Earth. Besides technological aspects, such observation can provide important addendum to theoretical modelling and to laboratory experiments related to sand- and dust electrification.

In the presentation, we briefly describe the observations we conducted on Czołpińska Dune at Słowiński National Park. We also compare selected features of the magnetic fluctuations in the ELF range registered on top of the dune to those registered in the nearby control localization, out of dune, and to meteorological parameters taken on top of the dune.

The work was carried out under the research project: NCN 2015/19/B/ST9/01710: „Tomography of the Martian ground using inverse solutions for ELF waves generated by dust storms in the ground-ionosphere waveguide”, implemented jointly at the Jagiellonian University and AGH Technical University in Kraków.



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