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Statistical study of ELF/VLF emissions based on data from DEMETER spacecraft

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Our paper is devoted to the statistical study of man-made wave effects in the ionosphere as well as to the general behaviour of electromagnetic waves in this region. The data come from a newly launched Demeter spacecraft (summer 2004, altitude of orbit 710 km). We present maps of ELF/VLF emissions as a function of frequency, Kp index and magnetic local time, which can be used in advance to represent what is expected at a given place under given conditions. Such studies are very important when looking for some exceptional, generally weak, phenomena, such as man-made effects and effects connected with seismic activity. Moreover, we study how the intensity of emissions above industrialized regions depend on the day of week, which enables to clearly distinguish artificial emissions from the natural ones. Concerning the power-line harmonic radiation, it is possible to develop an automatic procedure to identify it and to study the positively identified cases more in detail. Finally, we can globally look for possible correlation between seismic activity and the intensity of electromagnetic emissions above active regions.