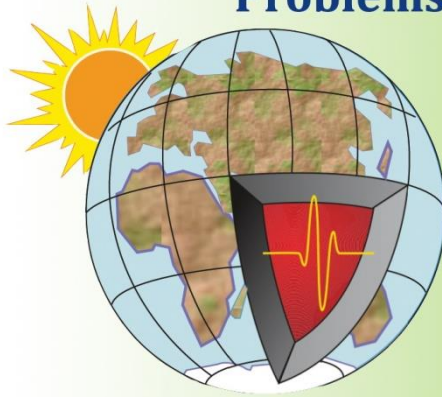


St. Petersburg State University

## **12th International Conference and School Problems of Geocosmos**



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## ABOUT MEASUREMENT OF VERTICAL COMPONENT OF ELECTRIC FIELD AT MAGNETOTELLURIC SOUNDING

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At magnetotelluric sounding (MTS) variations of five components of the electromagnetic field are usually registered. At standard approach transfer functions are defined in an experiment namely ratios between horizontal components of electric and magnetic fields. Deviations from the Tikhonov–Cagniard basic model are defined by fifth registered component namely by vertical component of magnetic field. Because of the complex geoelectric structure of the medium and in the presence of the MTS curve distortions, there are difficulties at interpretation of data in practice. For increase in reliability of the received results by the inversion and for bigger informational content of MTS, it is offer to carry out the additional registration of vertical component of electric field in the medium. Comparison of calculated values with experimental data on this component at the solution of the inversion task is very desirable. To register variations of the vertical electric component, now the method of measurement of potential difference arising on the vertical line shipped in the sea is applied. On the land for this purpose it is necessary to drill new wells or use available ones, that is difficult. It is offered to apply the circular electric dipole (CED) for registration of the vertical electric component. Now CED is successfully apply as the emitter in methods of electromagnetic soundings. Its feature is use to excite only one TM-mode in

which electric field has vertical component in the layered medium. In practice, CED usually is implemented by eight long radial lines. Considering the specified feature, CED can be used and as the MTS receiver for registration of variations of the field of TM-mode. Possibilities of its use at MTS are analyzed in this work.

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