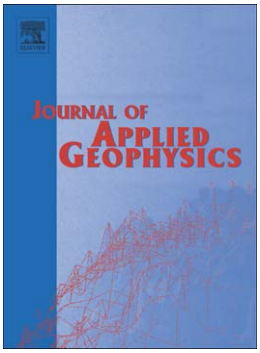

Translation algorithm of the apparent conductivity using the frequency-domain electromagnetic method of a magnetic dipole

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Translation algorithm of the apparent conductivity using the frequency-domain electromagnetic method of a magnetic dipole

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Abstract

In this paper, based on the expression of the relative magnetic anomaly for a frequency-domain magnetic dipole in homogeneous half-space under quasi-static conditions, we derive higher-order approximate formulas of the apparent conductivity. At the same time, it is found that there is a translational and expansionary characteristic between the response curve of the relative magnetic anomaly for the frequency-domain magnetic dipole and underground conductivity and observation frequency. Accordingly, we propose a translation algorithm that can directly calculate the apparent conductivity. By processing the data of the theoretical models and the GEM-2 electromagnetic measurement data from the detection of the thickness of Arctic sea ice, we validate the effectiveness of this method. In comparison with the conventional and the higher-order approximate calculation