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地上磁場からの磁気圏密度推定における地下電導度効果の適切な除去の重要性
Importance of correctly removing the underground-conductivity effect in the gradient methods

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There are methods called the hodograph method and the amplitude-phase gradient method (APGM below) that are used to obtain the latitude dependence of the field-line-resonance (FLR) frequency by using data from two ground magnetometers latitudinally separated by ˜100km. They both apply FFT to the two magnetometers' data, and calculate the amplitude ratio and the cross phase between the two stations' data as functions of the frequency. From there the two methods use different ways to estimate the latitude dependence of the FLR frequency; the hodograph method fits a circle to the obtained ratio (as a complex number including both the amplitude ratio and the cross phase) to separate out the non-FLR signal in the data, while APGM assume that the obtained amplitude ratio and phase difference include no non-FLR signal and obtains the FLR frequency (as a function of latitude) in an algebraic manner. In this paper we discuss the differences between the two methods by using example events, and show that the both methods need precise enough removal of the effects of the underground conductivity, superposed on the signal from space, in the magnetic field data before applying the method. More details will be presented at the meeting.