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D 会場 ：11/5　PM1 （13:45-15:30）
13:45〜14:00

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New remote reference method using multivariate regression S-estimator

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In magnetotelluric data processing, the remote reference method is commonly used. In the standard remote reference method, the auto- and cross-powers of the local electromagnetic field are replaced with the cross powers between the local and remote electromagnetic fields. It is sometimes difficult to apply a robust approach, which is used for reducing the influences of outliers and leverage points, to the standard remote reference method because it cannot be represented as a simple input/output model. Two generalized remote reference methods have been proposed to overcome the disadvantage. One generalized remote reference method, the two-stage bounded influence remote reference method, solves multiple-inputs-multiple-outputs systems in two stages. Although the other method solves a multiple-inputs-multiple-outputs system in one stage, in the second method, the dependent variables contain all channels of local stations, and a multivariate regression solves the system. However, those generalized remote reference methods have disadvantages: the first one can lead to bias when the weights of the first stage and the second stage are different; the second approach is not robust to the leverage points because M-estimator is used. Therefore, the author proposes a new remote reference method using the multivariate regression S-estimator. This estimator seeks the response functions which minimize the scale of the Mahalanobis' Distance of residuals. The newly developed method can avoid the disadvantages of the previous generalized remote reference method and is generally applicable to magnetotelluric data processing.