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Cooperative inversion of magnetotelluric and seismic data sets

M. Markovic and F. Santos
IDL,Universidade de Lisboa,LisbonPortugal (mpmarkovic@fc.ul.pt)

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Milenko Markovic,Fernando Monteiro Santos
IDL, Faculdade de Ciências da Universidade de Lisboa
1749-016 Lisboa
Inversion of single geophysical data has well-known limitations due to the non-linearity of the fields and non-uniqueness of the model. There is growing need, both in academy and industry to use two or more different data sets and thus obtain subsurface property distribution. In our case ,we are dealing with magnetotelluric and seismic data sets.
In our approach,we are developing algorithm based on fuzzy-c means clustering technique, for pattern recognition of geophysical data. Separate inversion is performed on every step, information exchanged for model integration. Interrelationships between parameters from different models is not required in analytical form. We are investigating how different number of clusters, affects zonation and spatial distribution of parameters. In our study optimization in fuzzy c-means clustering (for magnetotelluric and seismic data) is compared for two cases, firstly alternating optimization and then hybrid method (alternating optimization+ Quasi-Newton method).
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