Geophysical Research Abstracts, Vol. 8, 10048, 2006
SRef-ID: 1607-7962/gra/EGU06-A-10048

Multi-scale or multipolar tomography development of electrical or magnetic SP data: Applications on archeological prospecting.

Ginette Saracco (1), Frederique Moreau (2), Pierre-Etienne Mathe (1), Daniel Hermitte (1), Jean-Marie Michel (3)

(1) CNRS-CEREGE, Geophysics & Planetology, Europole de l'Arbois, BP 80, 13545 Aix en Provence, France, ginet@cerege.fr, (2) CNRS-Geosciences-Rennes, Campus de Beaulieu, bat 15, 35042 Rennes, France, (3) DRAC-PACA, 83000 Toulon, France

Recent tomography methods developped in potential field theory are based on monopolar or dipolar probability tomography methods (Patella 1997, Mauriello and Patella 1999. These kinds of algorithms needs to have a knowledge of the source, in particular its multipolar order (ie: dipole, monopole, quadripole,...etc). A new method based on the complex continuous wavelet transform (CCWT) allows to obtain a multipolar tomography of the subsurface at different spatial scales, without ''apriori" information of the source. This method used the potential theory combined to dilation, covariance and phase properties of the CCWT (Saracco et al 2004, Moreau et al 1997). This multi-scale or multipolar tomography has been used to characterize and localize with success in depth, degree and orientation, potential sources from surface measurements of anomalies SP data in different applications (e.g. subsurface hydrogeophysics; hydrodynamic flux circulations modelling hydrothermal system or to define electrical precursors in volcanic risk; or in magnetic survey).

The presentation of this method compared to other methods will be presented on noisy and synthetic magnetic and electrical data. Results on real SP data will be presented in archeological prospecting and volcano risk.