

# **MAGNETOVARIAITIONAL RESULTS AS A TOOL TO CHECK DISTORTION DIAGNOSTICS IN MAGNETOTELLURIC CURVES. A STUDY IN ARGENTINA**

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Ten MT soundings carried out along a WE 500 km long profile, in central region of Argentina, between 33° to 33°30' S, since the Andean zone in the West to cratonic region in the East, are being interpreted. This research is being accomplished in connection with magnetovariational (MV) information –in general, more reliable than MTS-. Previously to 1D modelling to search possible crust conductive layers, distortion diagnostics are made from MT curves and “normal” apparent resistivity curves estimated.

In order to check these diagnostics, the following procedure is proposed, with the condition that several MTS are available. Hodographs corresponding to horizontal geomagnetic variation field events are built for each MT site and their amplitudes in H and D components compared with the synchronous ones at the reference site: in the present case, the Pilar Geomagnetic Observatory (PGO), near to the study profile. Then, estimates of relative amplitudes to that at PGO are obtained for H and D and each event:  $A_r = A_{\text{field}}/A_{\text{pgo}}$ ; and also from the  $A_r$ s corresponding to all range of T in the MV study in a site, the average value is estimated:  $A_{\text{aver}} = (A_r(H) + A_r(D)) / 2$ , for all range of T, without considering in this estimate possible evidences of CAs, but only the suggested normal field. On the other hands, normal curves are compared at a given period, e.g. 1000 s with that estimated at PGO at 1000 s to see the difference in integrate conductivity S in both locations and obtain  $S_r = S_{\text{field}} / S_{\text{pgo}}$  in each site. Now if  $S_r$  values are plotted versus  $A_{\text{aver}}$  for all sites, a lineal law is clearly suggested in a bi-logarithmic sheet. Values out of the line are interpreted here as MT soundings with a mistake in the estimate of the normal curve and so they are corrected modifying S. It is assuming here that MV information is reliable enough.

This study let us to suggest two conductive deep faults (possibly belonging to regmatic network in South America, and a CA seated at about 15 km depth, with a possible graphitic nature, associated to a peri-cratonic deep fault.

magnetovariational, magnetotelluric, distortion

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