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Identification of anisotropic geoelectric structures using dimensionality analysis of magnetotelluric data. Application to the Spanish Betic Chain

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In this work we investigate how to identify and characterise anisotropic structures in the Earth using the dimensionality analysis of the magnetotelluric (MT) responses, and apply it to the dataset from the Betics (SE Spain), which geoelectric lithospheric structure is well known from a 3D model. The methodology employed is based on a previous work (Martí et al., 2010), which extended the use of the rotational invariants of the MT tensor to define new criteria to identify anisotropic structures, based on 1D and 2D synthetic models. Now, we apply these criteria to a broad grid of MT sites which data are affected by 3D structures. In order to obtain as much information from the data as possible, we include the study of the induction arrows and compare the analysis with the phase tensor.