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On the crustal bias of repeat stations in Romania

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A magnetic induction model has been applied to recordings obtained in 2010 during the field campaigns for geomagnetic measurements at the 26 repeat stations of the Romanian secular variation network. The model is based on the observation that a variable external magnetic field induces a response of the Earth's interior not only by electromagnetic induction, but also by magnetic induction in the magnetic rocks above the Curie temperature. The model computes coefficients of a linear relationship between recorded values of a certain geomagnetic element (X, Y, Z, or F) at the repeat station and recorded X, Y, Z values at a reference station (in this case SUA observatory). Coefficients depend on magnetic permeabilities of rocks beneath the station and stand as a proxy for the anomaly bias characterizing the site. Maps of the lateral variation of this type of information were obtained and discussed.