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## Geostatistical Joint Interpretation of Gravity and Magnetotelluric Data of the US Cordillera

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Long-period magnetotelluric and gravity data were acquired to investigate the US cordillera's crustal structure. The magnetotelluric data are being acquired across the continental USA on a quasi-regular grid of 70 km spacing as an electromagnetic component of the National Science Foundation EarthScope/USArray Program. International Gravimetric Bureau compiled gravity Data at high spatial resolution. Due to the difference in data coverage density, the geostatistical joint integration was utilized to map the subsurface structures with adequate resolution. First, a three-dimensional inversion of each data set was applied separately.

The inversion results of both data sets show a similarity of structure for data structuralizing. The individual result of both data sets is resampled at the same locations using the kriging method by considering each inversion model to estimate the coefficient. Then, the Layer Density Correction (LDC) process's enhanced density distribution was applied to MT data's spatial expansion process. Simple Kriging with varying Local Means (SKLM) was applied to the residual analysis and integration. For this purpose, the varying local means of the resistivity were estimated using the corrected gravity data by the Non-Linear Indicator Transform (NLIT), taking into account the spatial correlation. After that, the spatial expansion analysis of MT data obtained sparsely was attempted using the estimated local mean values and SKLM method at the sections where the MT survey was carried out and for the entire area where density distributions exist. This research presents the integration results and the stand-alone inversion results of three-dimensional gravity and magnetotelluric data.