

## Estimation of the density structure beneath the Kanto District, Japan, by 3-D gravity inversion

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We applied an improved gravity inversion technique by Bear et al. (1995) to rapidly invert Bouguer gravity data in Kanto District, Japan, for a 3-D density distribution as a source of the observed field. The technique estimates the density distribution within the source volume using a least-squares inverse solution that is obtained iteratively by singular value decomposition using orthogonal decomposition of matrices with sequential Householder transformations. The source volume is subdivided into a series of right rectangular prisms of specified size but of unknown density. This discretization allows the construction of a system of linear equations relating the observed gravity field to the unknown density distribution. Convergence of the solution to the system is tightly controlled by a damping parameter which may be varied at each iteration. Application to a gravity data set from Kanto District, Japan, has yielded a geologically reasonable result that agrees with published models derived from interpretation of gravity, magnetic, seismic, and drilling data.