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An example of combined inversion: muon tomography

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Muon imaging has recently emerged as a powerful method to complement standard geophysical tools in the understanding of the Earth's subsurface. Muon measurements yield a "radiography"of the average density along the muon path, allowing to image large volumes of a geological body from a single observation point. More traditional gravity field measurements are also sensitive to the near-surface density distribution and thus both methods care complementary. We will explore the joint inversion of muon data together with gravity data to estimate the three-dimensional density structure of the La Soufrière de Guadeloupe volcano. We discuss the advantages and challenges of such exercise and the resolution and potential improvements of the methods proposed.

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