# Data science approaches to geochemical data analysis

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"Data science approaches" such as machine learning, multivariate statistical analysis, and artificial intelligence, are rapidly developing in various fields based on the recent advances in measurement techniques, rapid enhancement of database and improvement in computing power. Such data science approaches are increasingly being used in the Earth sciences. Geochemical data is high-dimensional and complex data of multivariate and multiple samples. By using the data science method, we can extract the fundamental structure or pattern from the high-dimensional geochemical data, and can evaluate the geological processes to derive the geochemical variations. We will present our recent results of the geochemical studies based on data science approaches, such as machine-learning-based geochemical tectonic discrimination and feature selection of global volcanic rocks, and stochastic crustal compositional model of the Japanese crust. In addition, we will discuss the future possibility of data science approach in the geochemistry.

Keywords: Data science, Geochemical data