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D 会場 ：9/25　PM1 （13:45-15:30）
14:45〜15:00

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Integrated interpretation of structure around the Atotsugawa Fault by MT, Magnetic, and Gravity inversion with seismic constraint

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Different geophysical methods provide information about various physical properties of underground structures and rock formations. In many situations, this information is mutually complementary. One can reduce the inherent uncertainty and ambiguity of single geophysical inversion and interpretation by utilizing this complementary information. The key productive approaches to achieving this target are joint multi-geophysics inversion and constrained inversion steered (or guided) by highly reliable geophysical structural models of other kinds. In this research, we apply the joint and constrained ideas together to study the structure around the Atotsugawa Fault in central Japan, especially for the origin of the aqueous fluid in the lower crust, as well as the association of the deep fluid with the Philippine Sea slab and the Pacific slab beneath the Atotsugawa Fault. Previously, a resistivity structure was obtained from an EM (MT and NMT) only inversion (Usui et al., 2021). Here, our inversion uses the same MT and NMT datasets but jointly with satellite Magnetic (Maus et al., 2009) and Gravity data (Sandwell et al., 2014) and is steered by pre-existing seismic velocity structure (Matsubara et al., 2022). The coupling method we use to connect different physical models is cross-gradient coupling (e.g., Gallardo and Meju, 2003), which enforces the structural similarity between different physical models. The technical framework that joint inverts MT, Gravity, and Magnetic data with seismic constraints will be discussed in this presentation, as well as corresponding electrical, magnetization, and density resulting models and their geological meanings.