

ポスター会場（1日目） | 一般セッション：S11. 地震に伴う諸現象

📅 2025年10月20日(月) 17:15 ~ 19:00 🏢 P11会場 (502+503)(502+503)

[P11] 地震に伴う諸現象**[P11-01] Incorporating Non-Seismicity Precursors into Earthquake Probabilistic Forecasting Model**

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To test whether geophysical anomalies contribute to earthquake forecasts beyond the inherent clustering effects in seismicity, we develop a self and external excitation point-process model by incorporating anomalies into the temporal Epidemic-Type Aftershock Sequence (ETAS) model. The model is applied to M_J 4.0+ earthquakes that occurred between 2001 and 2010 around the Kakioka (KAK) station in Japan, with two types of anomalies, ultra-low frequency (ULF) magnetic anomalies and carbon monoxide (CO) anomalies, as external excitations. Results indicate that 15.24% of the earthquakes can be interpreted by the external excitation of anomalies. Proposed ETAS+ULF+CO model improves the overall information gain by 17.53% compared to the purely temporal ETAS model. Statistical significance is assessed by fitting the same model to the same earthquake catalog but with randomized anomaly occurrence times, confirming that the performance improvement is not due to overfitting. These findings highlight the potential for enhancing short-term earthquake forecasts using non-seismic precursors, particularly when multiple precursors are combined.