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[EJ] Evening Poster | S (Solid Earth Sciences) | S-TT Technology & Techniques

## [S-TT49] Airborne surveys and monitoring of the Earth

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Airborne surveys are useful to better understand the whole and/or the detailed structures of the Earth and their variations. They can be implemented from a traditional manned and newly-developed unmanned aircraft to efficiently map very large or remote areas with difficult access. We invite studies on theory, instrumentation, processing, modeling or inversion and applications of airborne surveys.

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## [STT49-P02] Implementation of airborne geophysics using unmanned aerial vehicles (drone)

### ★ Invited Papers

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These days various kinds of unmanned aerial vehicles (UAV) such as helicopter, airplane, kite, balloon etc. are available. In Japan, UAV has been used for aerial photography, agricultural activities and various observation works. Regarding geophysical survey, we have developed and operated ground-based source airborne electromagnetic survey, using industrial unmanned helicopter. But service was terminated now due to discontinuation of the production and operation of industrial unmanned helicopter.

In drone operation, planes and industrial unmanned helicopters, those capable of conducting programmed flight, have been used for a long time. An autonomous navigation type unmanned industrial helicopter has been used for monitoring and evaluation of the effect of radiation caused by the accident at Fukushima Daiichi Nuclear Power Plant after the Great East Japan Earthquake. This monitoring is being continued until now. The unmanned industrial helicopter (hereinafter referred to as "unmanned helicopter") can perform survey with a maximum payload of 10 kg, a flight time of 90 minutes, a flight speed of up to 72 km per hour, and a maximum flying distance of 3 to 5 km. At present, operation is limited to the visible extent; however, operation beyond the visual range is also possible. In addition to radiation monitoring, this unmanned helicopter can be used to perform geophysical exploration such as airborne magnetic survey and aerial thermal infrared photography.

Recently, high performance and compact multicopter has become available at low price. Performance improvement and low price of multicopter have boosted its use significantly in activities such as photography, aerial surveying, laser surveying, and so on. However, use of multicopter has been started even in the field of geophysical exploration.

In this presentation, we report airborne electromagnetic and radiation monitoring technology using multicopter along with geophysical survey technology using unmanned helicopter.