

# FLYING HIGH OVER FUKUSHIMA

Using the latest in Drone technology and Kromek's GR1, the team from Bristol University Took to the skies of Fukushima in Japan and the result was epic!

## Summary

Bristol University selected the GR1 with its lightweight and low power to map the levels of radiation contamination surrounding Fukushima from a drone. The radiation data collected was superimposed over a 3D terrain map produced by LiDAR, enabling the team to identify height-ened radiological contamination around the site within the drainage network.

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## Radiation mapping for assessing radioactive contamination distribution and mobility

In areas near Fukushima, Japan, [Bristol University](#) used a [Kromek GR1 CZT-based Gamma Spectrometer](#) to map the levels of radioactive contamination.

This was one of the first times the GR1 was used on a flying drone to provide a radiation map of the area that could then be superimposed over the 3D terrain map produced by the LiDAR system on the drone.

## What's the LiDAR system I hear you ask?

LiDAR is a remote sensing technology which uses the pulse from a laser to collect measurements which can then be used to create 3D models and maps of objects and environments. It works like radar but uses a laser beam which bounces off objects or the ground (rather than a radio wave used in radar). The system calculates how long it takes for the light to hit an object or surface and reflect back to the scanner. The 3D visualisation produced is called a point cloud.

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**Why use the GR1?**

The GR1 is one of the smallest sized detectors made by Kromek. Its lightweight and low power needs make it perfect for use on drones. Its radiation detecting properties make it perfect for investigating radiation levels and identifying the Gamma isotopes present. The GR1 is an uncollimated, small volume (1 cubic centimetre cadmium zinc telluride (CZT) crystal), co-planar grid spectrometer with an energy range of 30 keV to 3.0 MeV, with an energy resolution of <2.5% @ 662 keV. Electrical noise within the detector was <10 keV Full Width at Half Maximum (FWHM).

**The results obtained show that heightened radiological contamination exists around the site within the drainage network where the material is observed to have collected, having been transported by transient water runoff events.**



[Read the full study and results here](#)