

# Radiation Map of Tsukuba University Campus

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**Introduction.** The purpose of this research is to compare radiation values measured in 2014, with the ones measured in 2012 at various locations across the campus of the University of Tsukuba.

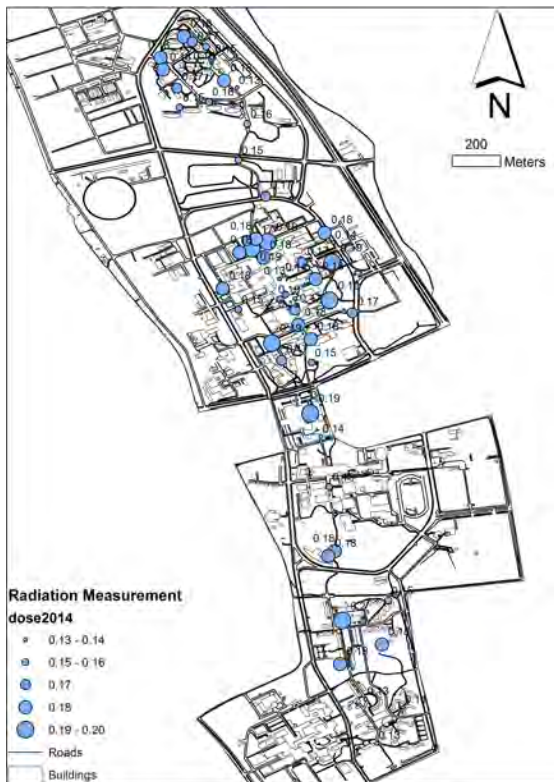
**Methodology.** For measuring the radiation around the campus, a handheld Geiger counter was used. The model is Radex RD1503+, and according to its specification it can detect radiation values from 0.05 to 9.99 $\mu$ sv/h. The measurements took place at the same points that radiation was measured in 2012. The points were found using GPS. Measurement time varied between 5-10 minutes.

**Results.** A total of 52 measures were taken starting from the Ichinoya Dormitory, moving south to the Central University area and finishing at the South Oikoshi Dormitory. Radiation levels ranged from 0.13 to 0.20 $\mu$ sv/h. The average radiation of all the measurements taken is 0.1659  $\mu$ sv/h. The results were input in ArcGIS in order to be visualized. It was also attempted to interpolate the data into a surface using the Inverse Distance Weighted method.

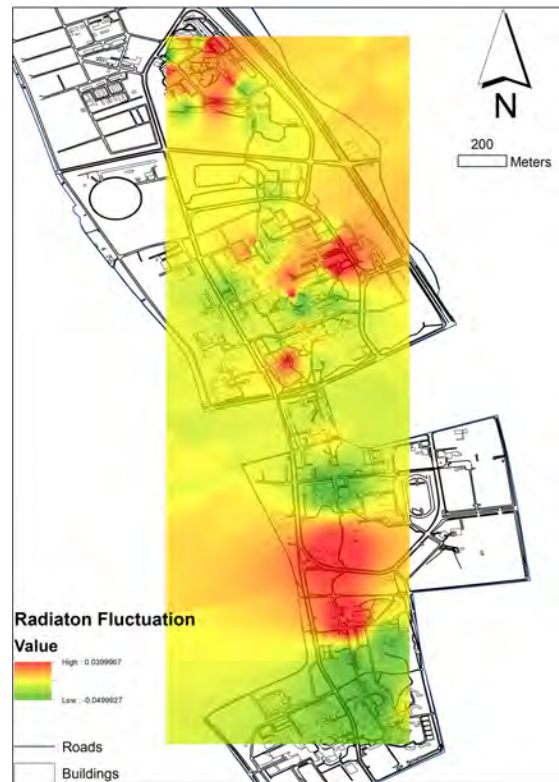
interpolated surface from 2012 was subtracted from the 2014 one using map algebra creating a final radiation fluctuation map.

**Comparison.** The new measurements were compared with the ones obtained in 2012. Out of the 52 points 33 had reduced radiation values, 7 had the same value, and 12 had an increased value. The average measurement value is lower than two years ago. The maximum measurement was lower than 0.02  $\mu$ sv/h. Spatially, at spots in the Ichinoya dormitory (north part of the campus), close to the Advanced research lab A (East Part) and the Advanced Research Lab C, measurements show slight a slight increase. The rest of the areas have either the same or decreased values.

**Conclusions.** Radiation levels seem to have slightly decreased in many locations but not everywhere. High values in 2012 are now lower, but a few low values of 2012 have increased. All measurements are well below safety limits but some high values are still around the dormitory areas.



2 - GPS captured radiation measurements



1 - Radiation fluctuation between 2012 and 2014