

Radiation Surface Map of Tsukuba University Dormitory Areas

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Introduction.

When a person exposure to a certain amount of radiation long term, it will affect the health very badly. In here assume that the students living in their dormitory more time than in the university. So, Tsukuba university dormitory areas are selected for this field survey.

Objective.

The purpose of this survey is to measure the radiation level of the Tsukuba University dormitory areas using Geiger counter, and locations points using GPS device. Then identify the high-level radiation zones and compare the result with previous years.

Methodology.

Hand held Giger Counter (Radex RD1503+) and a hand-held GPS device used in this filed survey to measure the radiation level and get the location points. 55 readings collected in the field survey. About 5 to 7 minutes took to complete the radiation readings by the device in each place.

After the field survey, collected points converted into shape files and used to prepare the radiation map. Radiation surface map created using the interpolation method (Inverse Distance Weighted) in ArcGIS.

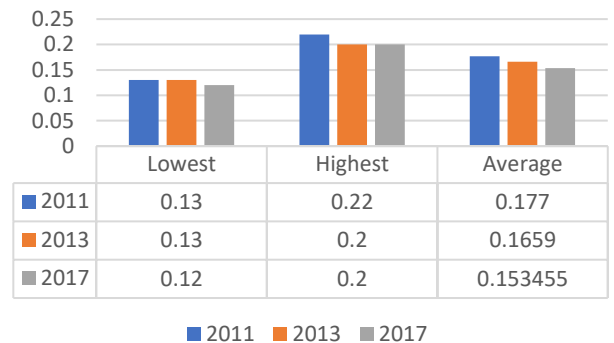
Results.

Total of 55 readings were taken, from the Ichinoya (26 readings) & Hirasuna/Oikoshi (29 readings). Radiation levels ranged from 0.12 $\mu\text{Sv/h}$ to 0.20 $\mu\text{Sv/h}$. The average of all the readings is 0.153455 $\mu\text{Sv/h}$.

Conclusions.

Comparing to the previous years (2011,2013), lowest and average values are lowered while the maximum value is same with previous year. Following table shows that overall radiation is little bit lowered.

Radiation Comparison



Generally, the radiation level of those areas is very low and all the reading are well below the safety limits.

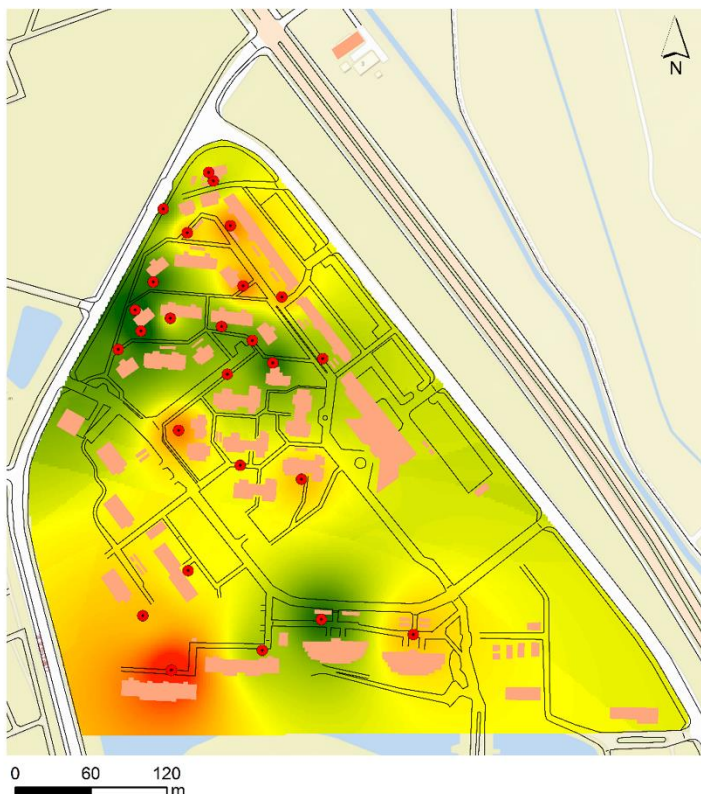


Figure 1: Interpolated(IDW) surface of radiation map (Ichinoya)

- Sample points
- Roads
- Building

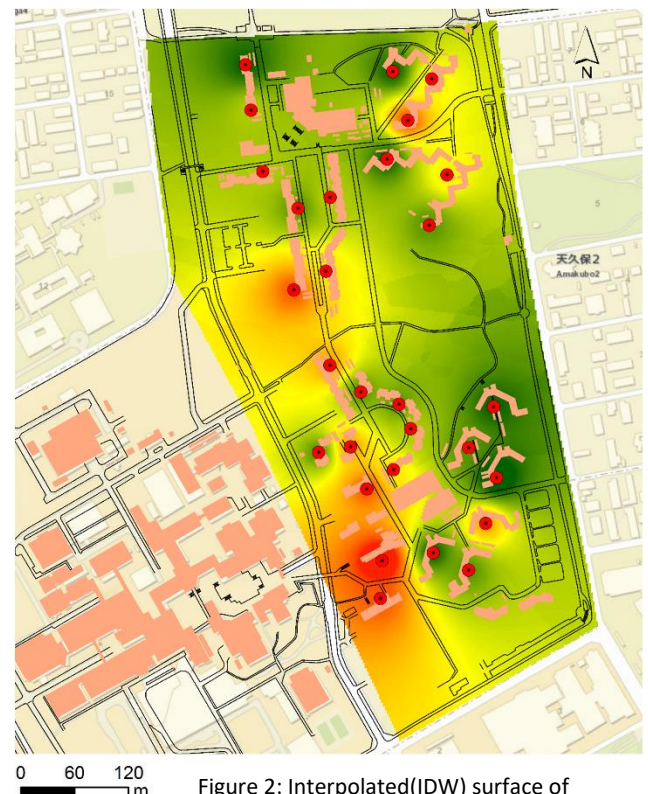


Figure 2: Interpolated(IDW) surface of radiation map (Hirasuna/Oikoshi)

- Radiation ($\mu\text{Sv/h}$)
- High : 0.20
- Low : 0.12