



Correlation-study about the ambient dose rate and the weather conditions

Masato Furuya (1), Yuko Hatano (1), Tomoo Aoyama (2), Yasuhito Igarashi (3), Kazuyuki Kita (4), and Masahide Ishizuka (5)

(1) University of Tsukuba, Graduate School of Systems and Information Engineering, Risk Engineering, Tsukuba city, Japan (s1520590@u.tsukuba.ac.jp), (2) University of Tsukuba, Center for Research in Isotopes and Environmental Dynamics, Japan (s1520590@u.tsukuba.ac.jp), (3) Meteorological Research Institute, Japan (yigarash@mri-jma.go.jp), (4) Ibaraki University, College of Science, Japan (kita@mx.ibaraki.ac.jp), (5) Kagawa University, Faculty of Engineering, (ishizuka@eng.kagawa-u.ac.jp)

The long-term radiation risks are believed to be heavily affected by the resuspension process. We therefore focus on the surface-atmosphere exchange process of released radioactive materials in this study. Radioactive materials were deposited on the soil and float in the air, and such complicated process are influenced by the weather conditions deeply. We need to reveal the correlation between the weather conditions and the ambient dose rate.

In this study, we study the correlation between the weather conditions and the ambient dose rate with the correction of the decrease due to the radioactive decay. We found that there is a negative correlation between the ambient dose rate and the soil water content by the correlation coefficient. Using this result, we reconstruct the ambient dose rate from the weather conditions by the multiple regression analysis and found that the reconstructed data agree with the observation very well. Using Kalman filter, which can be sequentially updates the state estimate, we obtained such a good agreement.