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Daily variation of radiation dose rate after the Fukushima Nuclear Accident

Masatoshi Yamauchi
Swedish Institude of Space Physics (IRF), Kiruna, Sweden (m.yamauchi@irf.se)

After the radioactive contamination of the lands from the Fukushima Nuclear Power Plant accident, the radiation dose rates observed by the dosimeters often shows daily variations, at different local times at different places or time. These variations are caused by different reasons: the temperature-dependent characteristics of the dosimeter (instrumental effect), the daily convective wind that lifts up the radioactive small particle on the ground (local effect), and the daily sea-land wind that transports the radioactive small particle from highly contaminated area (regional effect). The last type is most important in understanding the internal dose by air taking. However, while very regular patterns can easily be judged as instrumental effect, variations that strongly depend on the weather conditions are not easily judged. Combining the atmospheric electric field measurement near the ground (potential gradient, PG) with the wind and weather data, some of these unclear cases can be classified into above three reasoning, which will be shown in the presentation. Thus, the PG measurement is important right after any nuclear accidents in the future.