

## Atmospheric Radio-Sr and -Cs Depositions at Mt. Haruna

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The authors have collected atmospheric deposition samples at an isolated mountain located at the northwestern corner of the Kanto plain and measured <sup>90</sup>Sr and the radio-Cs. This observation was started as a comparison with the similar deposition observation in Tsukuba situated on the ground surface. The chosen site is therefore located as high altitude as in the free troposphere, in which the aeolian dust is transported and it would be one of the main constituents of the deposition sample. Nevertheless, the data obtained there could be served unintentionally for the investigation of the pollution of the atmospheric environment by the Fukushima Daiichi Nuclear Power Plant (FDNPP) accident.

At Mt. Haruna (Takasaki, Gunma, 36°28'N, 138°52'E, 1,370m above sea level), monthly <sup>90</sup>Sr and <sup>137</sup>Cs deposition observations have been performed. The observation started at the end of 2006. Precipitation samples were filtered by a sieve of 2 mm mesh and 100 μm mesh to remove fallen leaves, wooden piece, large particles in size, etc. and processed to concentrate the whole sample. The desiccated sample was subjected to γ-spectrometry with a Ge detector to measure radio-Cs. Sr-90 was then measured by 2 π gas-flow β-counter after that strontium carbonate was radiochemically separated and radio-equilibrium was attained. Each analytical process was quality-controlled by using the reference fallout sample that was prepared by the Meteorological Research Institute.

Monthly <sup>137</sup>Cs deposition in March, 2011 was 14±0.5 kBq/m<sup>2</sup> which is 5 to 6 orders of magnitude higher than the level before the FDNPP disaster. However, this amount was approximately 60% of that observed at the MRI, Tsukuba. The cumulative <sup>137</sup>Cs deposition at Mt. Haruna was 18.8 kBq/m<sup>2</sup> for the year 2011, which was also approximately 70% of that in Tsukuba. Almost the same amount of <sup>134</sup>Cs was simultaneously deposited with <sup>137</sup>Cs. Thus, the total cesium deposition at Mt. Haruna reached about 40 kBq/m<sup>2</sup>. It was revealed that the current observation site had a relatively lighter pollution than those found in Tsukuba. Although Mt. Haruna was found within the so-called hotspot region distributed over northern Gunma, and heavier radio-Cs pollution (60-100 kBq/m<sup>2</sup>-level) was observed around Lake Haruna by the airborne observation mapping conducted by the MEXT. The current observation site might avoid pollution of wet deposition because of higher altitude than cloud layer height. On the other hand, monthly <sup>90</sup>Sr deposition in March, 2011 was as small as 3.11±0.03 Bq/m<sup>2</sup>, which was about 1/4500 of the deposited <sup>137</sup>Cs amount. This <sup>90</sup>Sr deposition was also approximately 60% of the value in Tsukuba. Deposition observations at Mt. Haruna confirmed that the pollution impacts of <sup>90</sup>Sr are relatively minor compared with radio-Cs over the Kanto district.

Keywords: the Fukushima Daiichi Nuclear Power Plant accident, Radioactive deposition, Strontium, Cesium, Resuspension