

Fukushima Dai-ichi and the Ocean: 10 years of study and insight Abstract Submission Form : Entry # 39

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Session

What happened

Abstract Title (English, limited to 300 characters)

Quantification and Evaluation of the Strontium-90 Concentrations in soil of Fukushima Prefecture before and after the Fukushima Daiichi Nuclear Accident

Abstract (English)

To precisely understand the status of scattered strontium-90 after the 2011 accident at the Fukushima Daiichi Nuclear Power Plant (NPP), the measurement of the soil samples collected both before and after the day of the accident from the same sampling locations is necessary. However, very few reports have investigated the background contaminant data before the accident even though several studies have been conducted to investigate the effects of the F1-NPP accident. To address the lack of the passed Sr-90 information and reestablished baseline, this study focuses on the stored topsoil samples that are collected from the same sampling locations from the Fukushima Prefecture before and after the F1-NPP accident, which are analyzed for obtaining the 90Sr concentrations. The results of our investigation exhibited that the 90Sr concentrations in the Fukushima Prefecture soils ranged from 0.2 to 20.4 Bq/kg in the samples that were collected before the accident and from 1.37 to 80.8 Bq/kg in the samples that were collected after the accident from identical sampling locations. Further, the soil samples that were collected from 30 out of 56 locations displayed significant differences in terms of concentrations before and after the accident. In addition, the relations between the 90Sr concentrations and the soil properties of the samples (organic content, pH, water content, and composition) were investigated, and it was found that the organic content and water content had a positive correlation with Sr-90 concentrations and, in contrast, the sandiness was shown to have a negative correlation with Sr-90 concentrations. The depth characteristics were also investigated. The aforementioned results indicate that this tendency would be observed even in the future.