

Fukushima Dai-ichi and the Ocean: 10 years of study and insight Abstract Submission Form : Entry # 37

Name

Jakub Kaizer

Title

Dr.

Affiliation

Comenius University in Bratislava

Email

kaizer@fmph.uniba.sk

Country

Slovakia

Additional Authors (names only)

Yuichiro Kumamoto

Mihály Molnár

László Palcsu

Pavel P. Povinec

Session

Consequences for the ocean

Abstract Title (English, limited to 300 characters)

Post-Fukushima concentrations of tritium and radiocarbon in the western North Pacific Ocean

Abstract (English)

Tritium and concentrations in the surface waters and water column of the western North Pacific Ocean in winter 2012, impacted by the Fukushima Dai-ichi Nuclear Power Plant (FNPP1) accident, is compared with radiocesium data collected for the same region. Tritium levels in surface seawater, varying between 0.4 and 2.0 TU (47.2–236 Bq m⁻³), generally follow the Fukushima radiocesium trend, although some differences between the respective data in the vertical profiles (depths of 50–400 m) were determined. Surface radiocarbon concentrations (as $\Delta^{14}\text{C}$) raised from negative values (around –40‰) in the northern part of transect to positive values (about 68‰) near the equator, however, no correlation was apparent between the ^{14}C and radiocesium values. We observed homogeneously mixed radiocarbon levels in the subsurface layers at all investigated stations. In the case of tritium, sixteen surface (out of 30) and six water profile (out of 7) stations were apparently affected by the releases from the damaged FNPP1. The total amount of the FNPP1-derived tritium deposited to the western North Pacific Ocean was calculated to be 0.7 ± 0.3 PBq, which was indicated by the surface and vertical profile data together with the water column inventories. Regarding radiocarbon, a clear impact of the Fukushima accident on ^{14}C concentrations in the western North Pacific was not observed.