Preface

Radionuclides in coastal sediments after the accident of Fukushima Daiichi Nuclear Power Plant: distribution, dynamics and fate

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Geochemical behavior of radionuclides, especially radiocesium (^{134}Cs : half-life of 2.06 years and ^{137}Cs : half-life of 30.1 years) have been investigated in terrestrial and marine environments because of better understanding of the radiological impact on ecosystems after the Fukushima Dai-ichi Nuclear Power Plant (FDNPP) accident on 11 March 2011. The coastal environment is also an important area from the viewpoint of human activities and fisheries production. In the first year after the accident, ^{134}Cs and ^{137}Cs radioactivity in coastal seawater showed a temporary increase, which rapidly decreased with time. Although the proportion was small, a significant amount of radionuclides also accumulated in coastal sediments. A major part of the radiocesium was distributed in marine sediments at less than 100 m water depth of the coastal area from the Miyagi Prefecture to the Chiba Prefecture. The sedimentary radiocesium concentration tended to decrease gradually with increasing time. The variation is important in assessing the ecological impact at different times after the accident. However, we do not understand the factors controlling the spatial distribution and temporal variation of the radiocesium concentration in surface sediments of the coastal marine environment. Therefore, we need to resolve this problem in order to predict the fate of the radiocesium in the coastal area.

We, the guest-editors, took part in a special session entitled “Radionuclides in coastal sediments after the accident of Fukushima Daiichi Nuclear Power Plant: distribution, dynamics and fate” at the Spring Meeting of the Oceanographic Society of Japan in 2016. The session presented the latest situation with regard to the radiocesium in the marine sediment and discussed information disclosure. This special section of the *Journal of Oceanography* mainly consists of selected original papers from the Spring Meeting. Dr. Kusakabe and collaborators have shown that the reduction of radiocesium concentration in surface sediments is estimated as 70% of initial values during 2012–2015. Dr. Tsuruta and collaborators report the distribution of radiocesium in seabed sediments around the Ukedo River estuary close to FDNPP, in addition to the detailed results of the submarine survey. Dr. Otsuka reports the importance of the transport of radiocesium-bound sediment to the deeper layers of the coastal sediments. Dr. Inoue and collaborators assess the fate of radiocesium-bound fluvial particles in a less-contaminated coastal system in the Japan Sea. With these latest findings, we expect to be able to deepen our understanding of the transport of radiocesium from river systems to coastal sediments. Additionally, many data reported in the special section will provide fundamental information for further understanding of the deposition and transport of various materials in the coastal environment.

We thank the Oceanographic Society of Japan for giving this opportunity to publish papers concerning coastal marine sedimentary radiocesium. We also thank Professor Joji Ishizaka of Nagoya University, an editor-in-chief of the *Journal of Oceanography* and numerous reviewers for their support of this special section. We guest editors believe that these research results are useful for the recovery of the coastal marine environment and coastal fisheries after the FDNPP accident.

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