

## Impacts of the Fukushima Dai-ichi Nuclear Power Plants on the Ocean

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The triple disaster of the March 11, 2011, earthquake, tsunami and subsequent radioactivity releases from the Fukushima Dai-ichi nuclear power plants are unprecedented events for the oceans. In response, we organized a research cruise in June, 2011 off Japan to study Fukushima derived radionuclides in the waters and biota off Japan. This presentation will provide an overview of these successful sampling activities and our plans for analyses of a wide range of radionuclides. We focus on the cesium-137 and cesium-134 surface distributions and vertical profiles obtained during this cruise. The highest cesium concentrations at that time were not necessarily at the closest sampling point 30 km from the Fukushima NPPs, but 70-100 km off shore. Furthermore, as part of this effort, 24 surface drifters were deployed and subsequently tracked. The trajectories of these drifters indicate that much of the contaminated water was being pulled away from the coast on the northern side of Kuroshio Extension. However, some of the drifters stayed in the coastal region suggesting that some contaminated water may recirculate in this area before being washed off-shore. The absence of drifter crossings across the Kuroshio Extension core suggests that it inhibits the southward spreading of contaminated water, at least over the western Pacific ocean. Measurements of different radioactive contaminants seem to agree with our interpretation based on drifters. These results are discussed in context of prior cesium levels in the waters off Japan and in comparison to radionuclide results from other studies in 2011 off Japan.

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