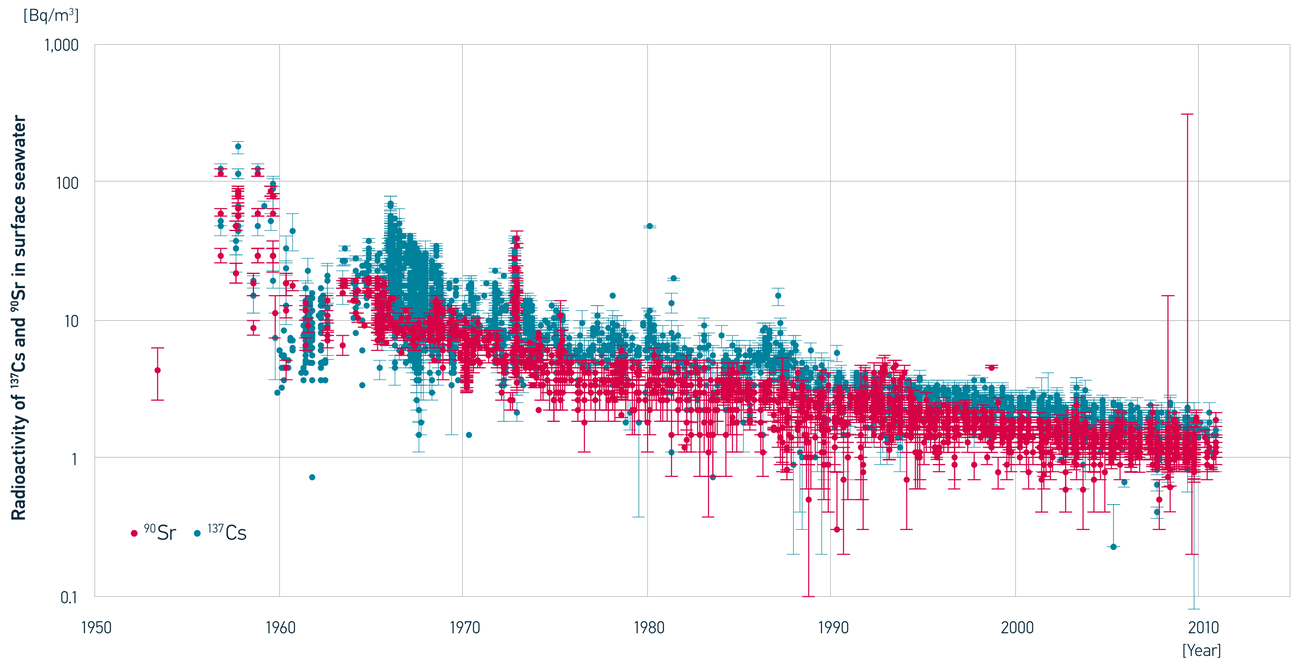
FACT

RADIOACTIVE CONTAMINATION TO THE OCEAN

Before radioactive materials were added by the Fukushima nuclear disaster, radioactive pollution due to nuclear tests in the atmosphere had already been spread to the oceans, in particular in the North Pacific. Those radioactive materials dissolved in seawater, deposited on the sea floor, or were taken into the bodies of marine organisms.
Look how the pollution situation of the ocean has changed over the six years since the accident occurred.



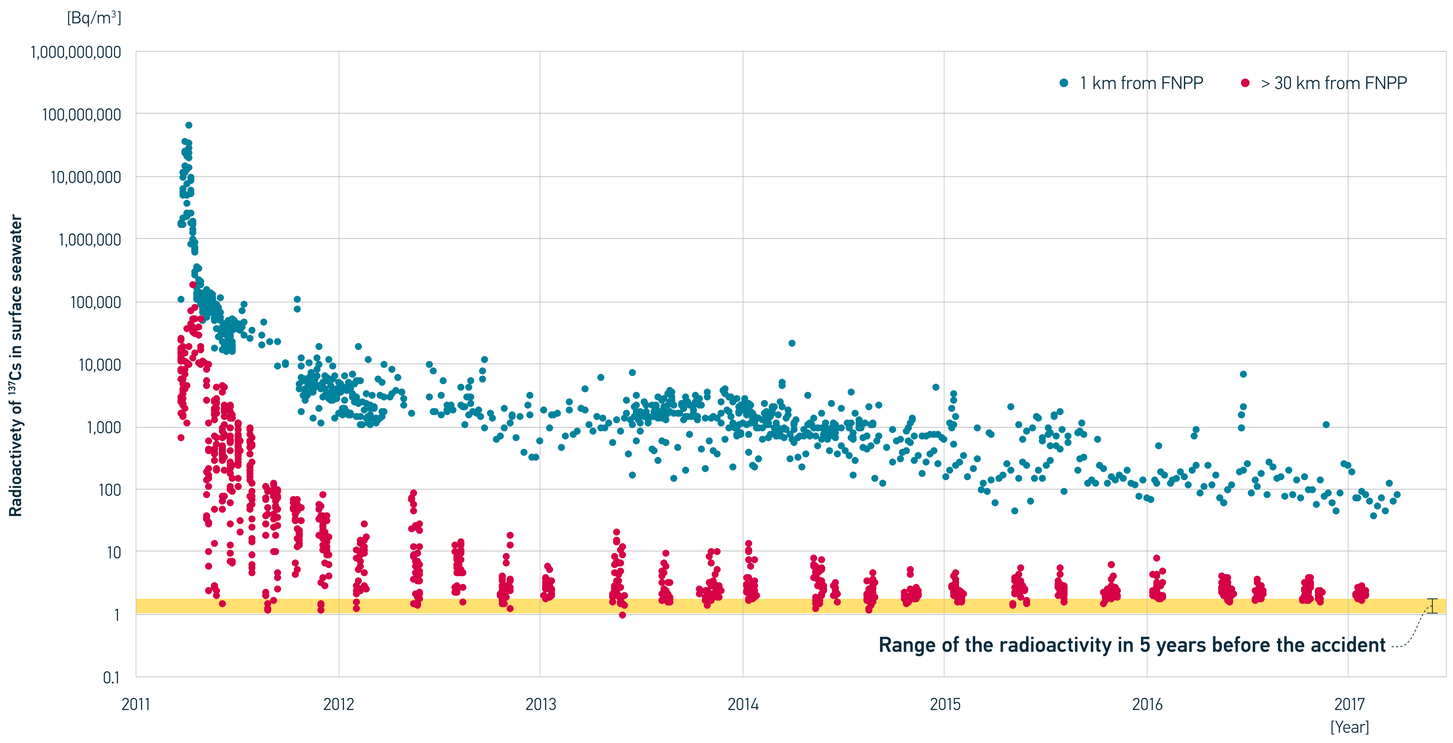
Trend of artificial radioactivity concentration in the North Pacific

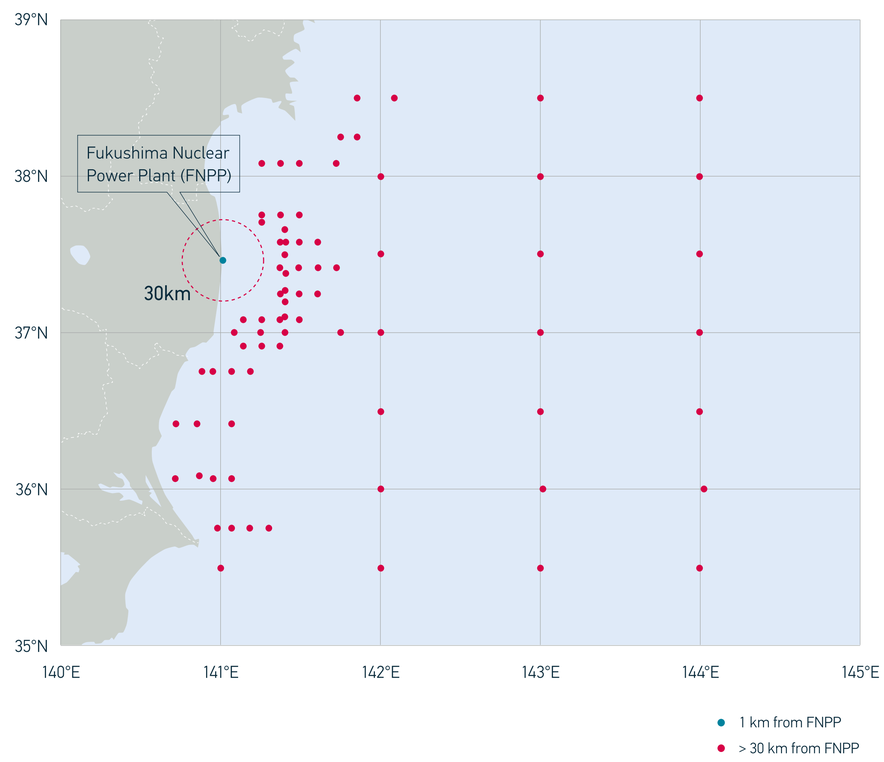
Changes in concentrations of cesium 137 and strontium 90 in surface seawater measured in various places in the North Pacific [*1]. The concentration of cesium 137 in surface water before the accident in 2011 was 1-2 Bq /m^3. The total amount of cesium 137 contained in the North Pacific was estimated at about 69 PBq [*2].

RADIOACTIVE CONTAMINATION OF SEAWATER

Radioactive contamination to the ocean occurred due to deposition on the water surface via atmosphere and direct draining of contaminated water. A sharp rise in radioactivity in the water was observed. As the release amount began to be suppressed, the concentration in the waters near Fukushima also declined, but small-scale radiation leakage continues even now.

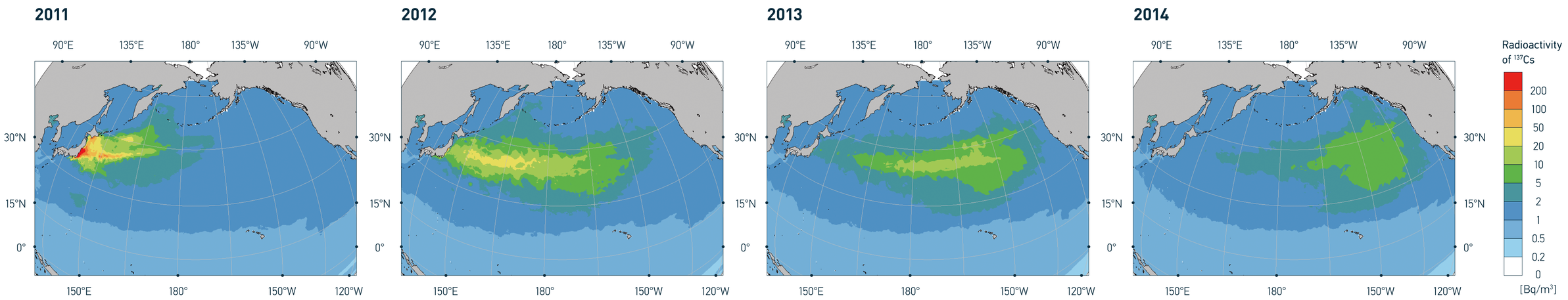
Among the released radioactive materials, those dissolved in seawater were transported to the east of the North Pacific Ocean with ocean currents, moved downward with the seawater subduction, and diffused extensively. The total amount of radioactive cesium present throughout the North Pacific was estimated to increase by 22-27% after the accident [*2].





Temporal changes in concentration of cesium 137 in surface seawater

(Left) Concentration change of cesium 137 per 1 m^3 of surface seawater. The blue points indicate a value at a location of 1 km from the nuclear power plant [*3]. The red points indicate values at various places of 30-350 km from the plant (Right) [*4].



Changes in radioactivity distribution in the North Pacific after the accident

Transportation and diffusion of cesium 137 in the ocean after absorption into seawater was resolved with numerical simulation [*5]. The four figures show the monthly average distribution of the cesium concentration of the surface seawater in March from 2011 to 2014.

Reference ***1** Aoyama and Hirose, 2004, HAM database and update ***2** Aoyama *et al.*, 2016, *J. Oceanogr.*, **72**, 67-76. ***3** Tokyo Electric Power Company Holdings, Inc. ***4** Marine Ecology Research Institute ***5** Central Research Institute of Electric Power Industry