

Results of ALPS Treated Water Marine Monitoring:  
Seawater Survey (tritium and gamma ray nuclides (rapid analysis)) (April 23,24,26, 2024)

1 Outline of survey

(1) Date of sampling

April 23,24,26, 2024

(2) Sampling points

Tritium: 21 sampling points on coastal waters in the Fukushima Prefecture, 1 sampling point on coastal waters in the Miyagi Prefecture, and 1 sampling point on coastal waters in the Ibaraki Prefecture

\*Water samples are collected from surface layer at all sampling points. At the sampling point E-S10, closest to discharge outlet, water samples are collected from bottom layer as well.

Gamma ray nuclides: 3 sampling points on coastal waters in the Fukushima Prefecture

(3) Details of the survey

The measurement of radioactive material concentrations in seawater (tritium and gamma ray nuclides (rapid analysis))

Tritium: Analysis with target lower limit of detection of 10 Bq/L.

Gamma ray nuclides: Analysis of broad range of gamma ray nuclides in a condition of target lower limit of detection to be 1 Bq/L for cesium 137

\*1 A target lower limit of detection means a value that is set for quality control to assure at least the detection up to the value when analysis is conducted. Each actual lower limit of detection differs according to samples, and is equal to or lower than a target lower limit of detection.

\*2 "Gamma ray nuclides" refers to radioactive isotopes that emit gamma rays, such as cesium-137, cesium-134, cobalt-60, ruthenium-106, and antimony-125. Gamma ray is a type of electromagnetic waves, thus the analysis of gamma ray that we adopt can detect broad range of nuclides with measuring the sequential spectrum from one sample.

2 Outline of results

(1) Seawater survey (tritium: 23 sampling points (24 samples))

Concentrations of tritium in seawater correspond to below the lower limit of detection in all samples.

(2) Seawater survey (gamma ray nuclides: 3 sampling points (3 samples))

Concentrations of gamma ray nuclides in seawater correspond to below the lower limit of detection in all samples.

(Detailed are attached)

(Maps attached)

## Analysis result for tritium in seawater

Sampling point	Sampling date	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration <sup>*1*2</sup>	Unit
E-S1	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S3	2024/04/23	Surface layer	1.5	H-3	< 8	Bq/L
E-S4	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S5	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S10	2024/04/23	Surface layer	1.5	H-3	< 8	Bq/L
E-S10	2024/04/23	Bottom layer	11.3	H-3	< 8	Bq/L
E-S13	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S14	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S15	2024/04/23	Surface layer	1.5	H-3	< 8	Bq/L
E-S16	2024/04/23	Surface layer	1.5	H-3	< 8	Bq/L
E-S17	2024/04/23	Surface layer	1.5	H-3	< 7	Bq/L
E-S18	2024/04/23	Surface layer	1.5	H-3	< 7	Bq/L
E-S19	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S20	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S22	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S27	2024/04/23	Surface layer	1.5	H-3	< 7	Bq/L
E-S29	2024/04/23	Surface layer	1.5	H-3	< 7	Bq/L
E-S30	2024/04/26	Surface layer	1.5	H-3	< 8	Bq/L
E-S31	2024/04/26	Surface layer	1.5	H-3	< 8	Bq/L
E-S32	2024/04/23	Surface layer	1.5	H-3	< 7	Bq/L
E-S33	2024/04/23	Surface layer	1.5	H-3	< 7	Bq/L
E-S34	2024/04/24	Surface layer	1.5	H-3	< 8	Bq/L
E-S35	2024/04/26	Surface layer	1.5	H-3	< 8	Bq/L
E-S36	2024/04/26	Surface layer	1.5	H-3	< 8	Bq/L

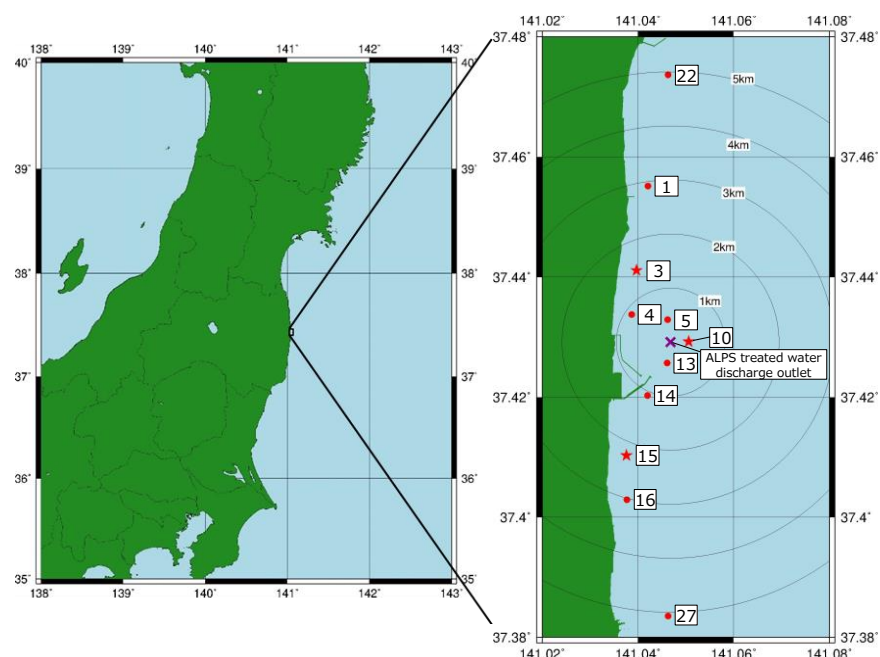
\*1 Radioactivity concentrations are presented as radioactivity concentration  $\pm$  combined standard uncertainty.

\*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value below 10 Bq/L).

Analysis result for gamma ray nuclides in seawater

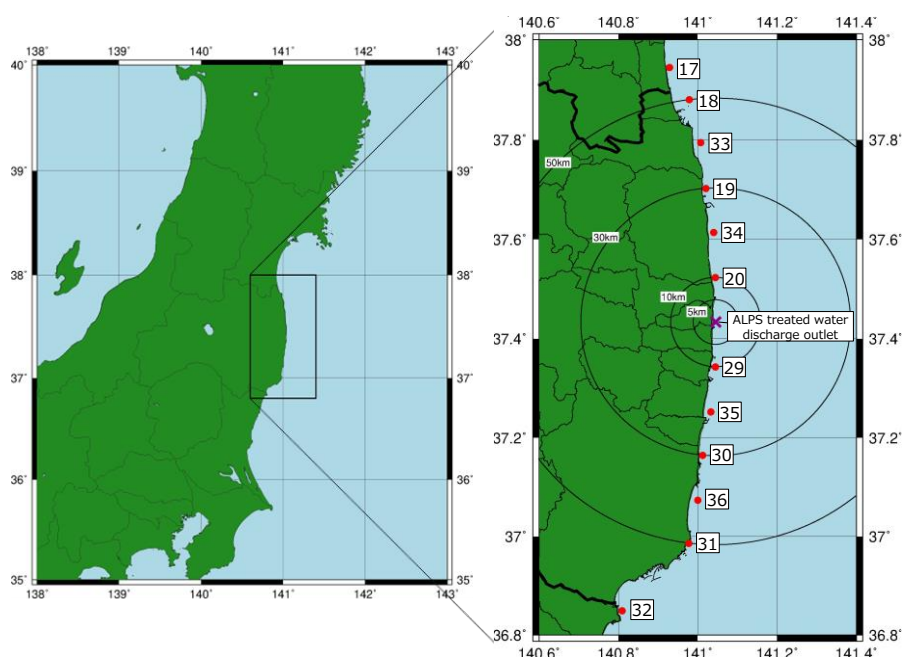
Sampling point	Sampling date	Sampling layer	Sampling depth (m)	Nuclide	Result
E-S3	2024/04/23	Surface layer	1.5	Gamma ray nuclides	Below lower limit of detection in all gamma ray nuclides
E-S10	2024/04/23	Surface layer	1.5	Gamma ray nuclides	Below lower limit of detection in all gamma ray nuclides
E-S15	2024/04/23	Surface layer	1.5	Gamma ray nuclides	Below lower limit of detection in all gamma ray nuclides

\*Lower limit of detection is set in a condition of target lower limit of detection to be 1 Bq/L for cesium 137.



\*Numbers in the map show sampling points this time, and “E-S” is omitted from labels in the map (e.g., E-S3 is marked as 3)

Fig. 1: Sampling points within 5 km of ALPS treated water discharge outlet



\*Numbers in the map show sampling points this time, and “E-S” is omitted from labels in the map (e.g., E-S1 is marked as 1)

Fig. 2: Sampling points beyond 5 km of ALPS treated water discharge outlet