March 6, 2024

Results of ALPS Treated Water Marine Monitoring: Seawater Survey (tritium) (November, 2023)

1 Outline of survey

(1) Date of sampling

November 14-16, 2023

(2) Sampling points

27 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 were collected from surface and bottom layers at 23 sampling points within 30 km of ALPS treated water discharge outlet and from surface layer at 6 sampling points beyond 30 km .

(3) Detail of the survey

・The measurement of radioactive material concentrations in seawater. (tritium)

Analysis with target lower limit of detection of 0.1 Bq/L.

* 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 Outline of results

(1) Seawater survey (29 sampling points (52 samples))

Concentrations of tritium in seawater range from 0.057 Bq/L to 3.5 Bq/L.

(Detailed are attached)

(Maps attached)

Attachment

Sampling points within 3 km of ALPS treated water discharge outlet analysis result for tritium in seawater

Sampling point	Sampling date	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration[*1*2]			Unit
E-S1	2023/11/14	Surface layer	1.5	H-3	1.1	±	0.05	Bq/L
E-S1	2023/11/14	Bottom layer	4.9	H-3	0.74	±	0.033	Bq/L
E-S3	2023/11/14	Surface layer	1.5	H-3	3.5	±	0.15	Bq/L
E-S3	2023/11/14	Bottom layer	6.8	H-3	3.5	±	0.15	Bq/L
E-S4	2023/11/14	Surface layer	1.5	H-3	0.65	±	0.029	Bq/L
E-S4	2023/11/14	Bottom layer	6.4	H-3	0.52	±	0.024	Bq/L
E-S5	2023/11/14	Surface layer	1.5	H-3	0.24	±	0.022	Bq/L
E-S5	2023/11/14	Bottom layer	9.5	H-3	0.50	±	0.030	Bq/L
E-S10	2023/11/14	Surface layer	1.5	H-3	0.22	±	0.021	Bq/L
E-S10	2023/11/14	Bottom layer	13.2	H-3	0.23	±	0.021	Bq/L
E-S13	2023/11/14	Surface layer	1.5	H-3	0.23	±	0.022	Bq/L
E-S13	2023/11/14	Bottom layer	10.8	H-3	0.31	±	0.024	Bq/L
E-S14	2023/11/14	Surface layer	1.5	H-3	0.23	±	0.025	Bq/L
E-S14	2023/11/14	Bottom layer	7.1	H-3	0.29	±	0.027	Bq/L
E-S15	2023/11/15	Surface layer	1.5	H-3	0.38	±	0.019	Bq/L
E-S15	2023/11/15	Bottom layer	5.2	H-3	0.34	±	0.018	Bq/L
E-S16	2023/11/15	Surface layer	1.5	H-3	0.31	±	0.027	Bq/L
E-S16	2023/11/15	Bottom layer	4.9	H-3	0.37	±	0.029	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± 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).

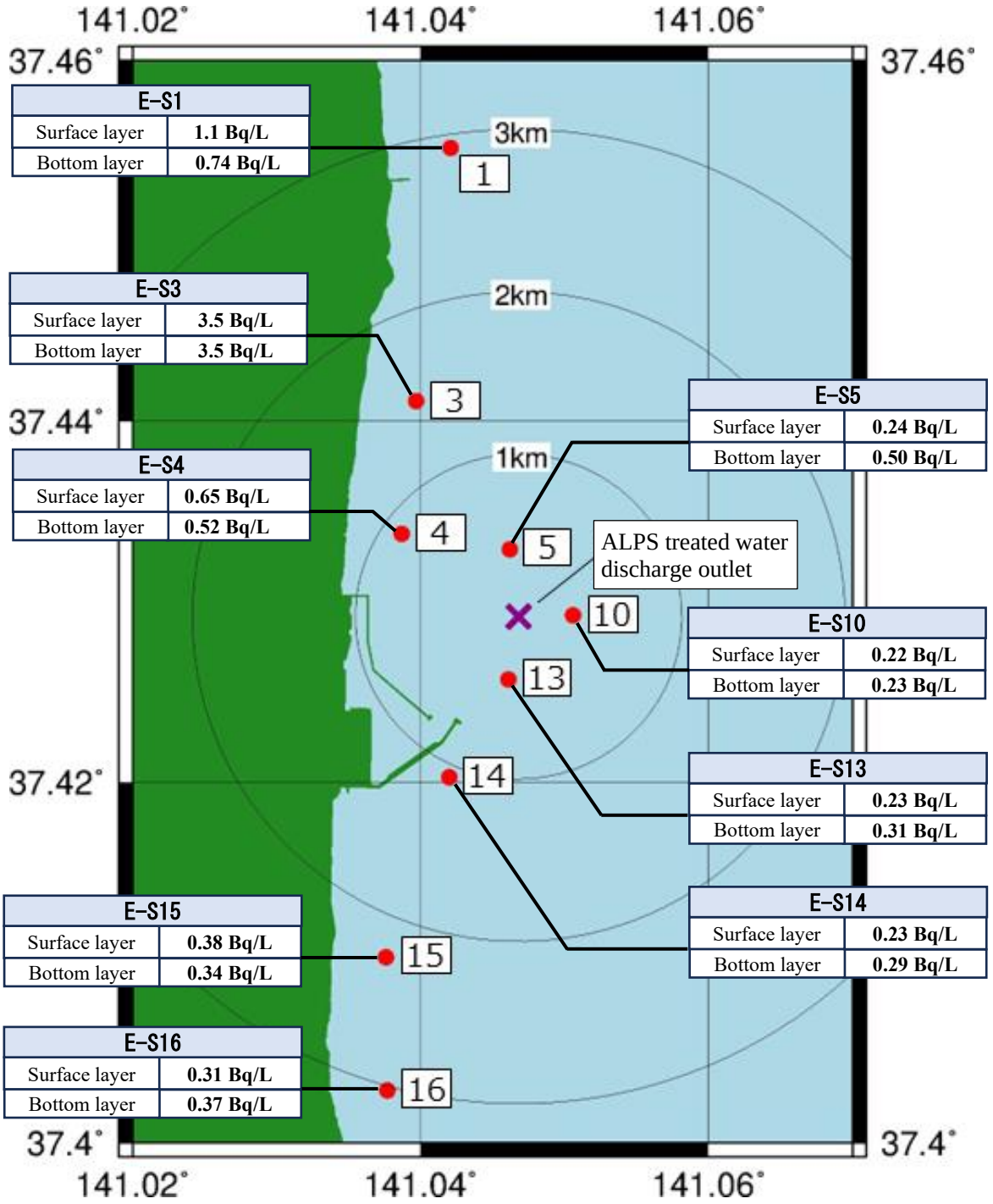
Sampling points beyond 3 km of ALPS treated water discharge outlet analysis result for tritium in seawater

Sampling point	Sampling date	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration[*1*2]			Unit
E-S17	2023/11/14	Surface layer	1.5	H-3	0.074	±	0.0087	Bq/L
E-S18	2023/11/14	Surface layer	1.5	H-3	0.079	±	0.0087	Bq/L
E-S19	2023/11/15	Surface layer	1.5	H-3	0.076	±	0.0087	Bq/L
E-S19	2023/11/15	Bottom layer	10.1	H-3	0.069	±	0.0087	Bq/L
E-S20	2023/11/16	Surface layer	1.5	H-3	0.11	±	0.012	Bq/L
E-S20	2023/11/16	Bottom layer	7.4	H-3	0.16	±	0.014	Bq/L
E-S21	2023/11/16	Surface layer	1.5	H-3	0.084	±	0.012	Bq/L
E-S21	2023/11/16	Bottom layer	22.2	H-3	0.075	±	0.012	Bq/L
E-S22	2023/11/15	Surface layer	1.5	H-3	1.2	±	0.04	Bq/L
E-S22	2023/11/15	Bottom layer	7.9	H-3	1.6	±	0.05	Bq/L
E-S23	2023/11/16	Surface layer	1.5	H-3	0.18	±	0.015	Bq/L
E-S23	2023/11/16	Bottom layer	21.3	H-3	0.10	±	0.012	Bq/L
E-S24	2023/11/16	Surface layer	1.5	H-3	0.076	±	0.012	Bq/L
E-S24	2023/11/16	Bottom layer	24.0	H-3	0.072	±	0.012	Bq/L
E-S25	2023/11/16	Surface layer	1.5	H-3	0.086	±	0.011	Bq/L
E-S25	2023/11/16	Bottom layer	42.1	H-3	0.074	±	0.011	Bq/L
E-S26	2023/11/15	Surface layer	1.5	H-3	0.11	±	0.012	Bq/L
E-S26	2023/11/15	Bottom layer	23.1	H-3	0.10	±	0.012	Bq/L
E-S27	2023/11/15	Surface layer	1.5	H-3	0.43	±	0.020	Bq/L
E-S27	2023/11/15	Bottom layer	9.5	H-3	0.33	±	0.017	Bq/L
E-S28	2023/11/15	Surface layer	1.5	H-3	0.10	±	0.012	Bq/L
E-S28	2023/11/15	Bottom layer	32.0	H-3	0.079	±	0.012	Bq/L
E-S29	2023/11/15	Surface layer	1.5	H-3	0.26	±	0.015	Bq/L
E-S29	2023/11/15	Bottom layer	10.5	H-3	0.26	±	0.015	Bq/L
E-S30	2023/11/16	Surface layer	1.5	H-3	0.12	±	0.013	Bq/L
E-S30	2023/11/16	Bottom layer	12.5	H-3	0.11	±	0.013	Bq/L
E-S31	2023/11/16	Surface layer	1.5	H-3	0.057	±	0.013	Bq/L
E-S32	2023/11/16	Surface layer	1.5	H-3	0.093	±	0.012	Bq/L
E-S33	2023/11/14	Surface layer	1.5	H-3	0.072	±	0.022	Bq/L
E-S34	2023/11/15	Surface layer	1.5	H-3	0.086	±	0.0091	Bq/L
E-S34	2023/11/15	Bottom layer	11.3	H-3	0.085	±	0.0091	Bq/L
E-S35	2023/11/16	Surface layer	1.5	H-3	0.16	±	0.011	Bq/L
E-S35	2023/11/16	Bottom layer	12.9	H-3	0.14	±	0.010	Bq/L
E-S36	2023/11/16	Surface layer	1.5	H-3	0.072	±	0.022	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard uncertainty.

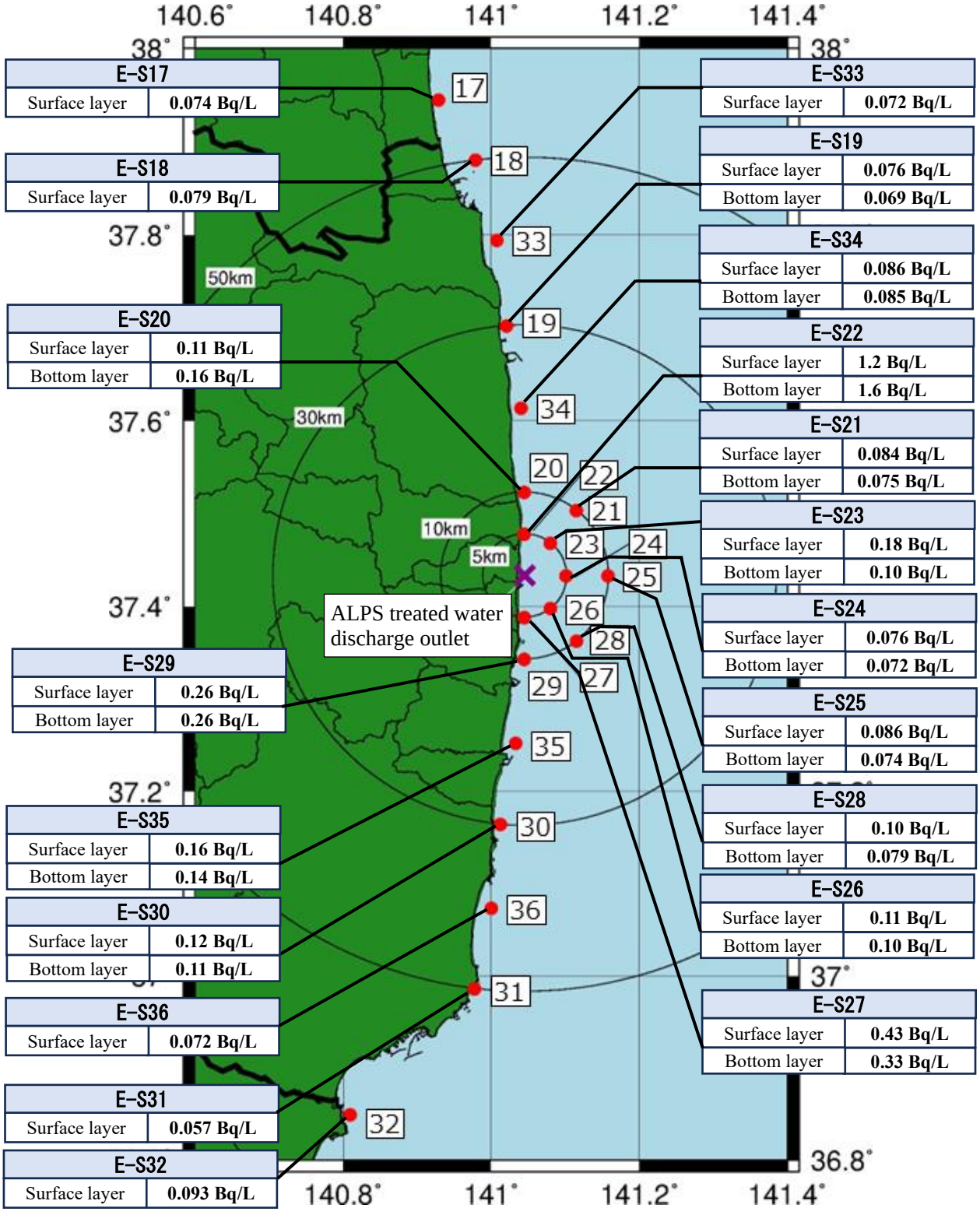
*2 Values below detection limit are shown by lower limit of detection (e.g.,“<10 Bq/L” indicates a value below 10 Bq/L).

Attachment



* Numbers in the map are shown with “E-S” omitted from labels in the map (e.g., E-S1 is marked as 1).

Fig, 1 Sampling points within 3 km of ALPS treated water discharge outlet



* Numbers in the map are shown with "E-S" omitted from labels in the map (e.g., E-S20 is marked as 20).

Fig. 2 Sampling points beyond 3 km of ALPS treated water discharge outlet