



R/V Aranda

CRUISE PLAN - VEDENVAIHTO2023 (WATER EXCHANGE 2023)

Description of the cruise:

Cruise Vedenvaihto2023 (Water exchange 2023) focuses in studying water exchange between the Baltic Proper and Bothnian Sea. Specific attention will be given to hydrographic conditions in the Åland Sea and Archipelago Sea areas. The measurements include temperature, salinity and oxygen profiles using shipborn CTD device. Water samples will be collected on certain stations for analysis of salinity, oxygen and nutrients.

Chief scientist: Laura Tuomi, Finnish Meteorological Institute, FMI

Departure: HELSINKI Monday 09.10.2023 at 10.00 EET

Arrival: HELSINKI Wednesday 18.10.2023 at 16.00 EET

Number of observation stations 128.

Table: List of stations

No.	Station	Latitude	Longitude	Depth	Time	Day	Date	Duration	Speed
		WGS-84	WGS-84	m	hh.mm		dd.mm.yyyy	hh min	knots
1	HELSINKI	60°09.55'	24°55.37'	0	10.00	Mo	09.10.2023	00	10
2	39 A	60°04.01'	24°58.81'	41	10.48	Mo	09.10.2023	10	10
3	UTO_SSE	59°36.06'	21°19.92'	-9	23.46	Mo	09.10.2023	20	10
4	KOKAR	59°54.00'	20°50.80'	-9	4.11	Tu	10.10.2023	030	10
5	SMVM2S	59°47.50'	20°55.56'	-9	5.23	Tu	10.10.2023	030	10
6	TEILI2	59°41.00'	21°06.80'	-9	6.46	Tu	10.10.2023	030	10
7	VV17_22	59°28.66'	20°36.65'	-9	9.14	Tu	10.10.2023	030	10
8	VV17_21	59°32.24'	20°37.74'	-9	10.05	Tu	10.10.2023	030	10
9	VV23_01	59°34.74'	20°36.58'	-9	10.51	Tu	10.10.2023	030	10
10	ROOPE2	59°36.64'	20°38.94'	143	11.34	Tu	10.10.2023	030	10
11	VV17_23	59°40.00'	20°40.45'	-9	12.25	Tu	10.10.2023	030	10
12	VV23_ADCP	59°40.25'	20°39.24'	-9	12.59	Tu	10.10.2023	20	10
13	VV17_24	59°40.55'	20°39.00'	-9	15.01	Tu	10.10.2023	030	10
14	ESM2	59°41.00'	20°35.79'	142	15.41	Tu	10.10.2023	030	10
15	VV17_20	59°43.53'	20°27.12'	-9	16.41	Tu	10.10.2023	030	10
16	F70B	59°45.00'	20°21.80'	229	17.30	Tu	10.10.2023	030	10
17	VV17_01	59°47.47'	20°20.23'	-9	18.15	Tu	10.10.2023	030	10
18	VV17_17	59°48.62'	20°16.00'	-9	19.00	Tu	10.10.2023	030	10
19	VV17_18	59°47.00'	20°15.99'	-9	19.39	Tu	10.10.2023	030	10
20	VV17_19	59°44.80'	20°15.71'	-9	20.23	Tu	10.10.2023	030	10
21	VV17_16	59°44.80'	20°09.00'	-9	21.13	Tu	10.10.2023	030	10
22	VV17_15	59°47.00'	20°09.00'	-9	21.56	Tu	10.10.2023	030	10
23	VV17_14	59°49.40'	20°09.00'	-9	22.41	Tu	10.10.2023	030	10
24	VV17_13	59°48.80'	20°03.50'	-9	23.28	Tu	10.10.2023	030	10

25	VV17_12	59°47.00'	20°03.50'	-9	0.08	We	11.10.2023	030	10
26	VV17_11	59°44.80'	20°03.51'	-9	0.52	We	11.10.2023	030	10
27	VV17_10	59°43.00'	20°03.54'	-9	1.32	We	11.10.2023	030	10
28	VV17_03	59°42.83'	19°57.75'	-9	2.20	We	11.10.2023	030	10
29	VV17_09	59°45.20'	19°58.60'	-9	3.04	We	11.10.2023	030	10
30	VV17_02	59°49.20'	19°58.59'	-9	3.58	We	11.10.2023	030	10
31	F69	59°47.00'	19°55.80'	189	4.44	We	11.10.2023	030	10
32	VV17_08	59°48.60'	19°52.00'	-9	5.59	We	11.10.2023	030	10
33	VV17_07	59°47.00'	19°52.00'	-9	6.39	We	11.10.2023	030	10
34	VV17_06	59°44.80'	19°52.00'	-9	7.22	We	11.10.2023	030	10
35	VV17_05	59°42.68'	19°52.00'	-9	8.04	We	11.10.2023	030	10
36	VV17_04	59°44.80'	19°45.00'	-9	8.59	We	11.10.2023	030	10
37	FA3	59°48.00'	19°44.80'	87	9.48	We	11.10.2023	030	10
38	FA2	59°47.00'	19°38.80'	64	10.37	We	11.10.2023	030	10
39	VV23_02	59°45.88'	19°34.81'	-9	11.21	We	11.10.2023	030	10
40	FA1	59°45.00'	19°30.01'	82	12.07	We	11.10.2023	030	10
41	VV23_03	59°47.76'	19°29.03'	-9	12.54	We	11.10.2023	030	10
42	FA5	59°53.00'	19°24.80'	77	13.57	We	11.10.2023	030	10
43	FA4	59°51.00'	19°19.80'	101	14.47	We	11.10.2023	030	10
44	FA5_9	59°56.27'	19°12.90'	121	15.55	We	11.10.2023	030	10
45	FA3_13	59°58.84'	19°21.89'	99	16.56	We	11.10.2023	030	10
46	FA11	60°04.00'	19°14.81'	152	18.03	We	11.10.2023	030	10
47	VV23_04	60°03.37'	19°08.24'	-9	18.53	We	11.10.2023	030	10
48	VV23_05	60°02.67'	19°02.10'	-9	19.42	We	11.10.2023	030	10
49	VV23_09	60°05.34'	18°57.85'	-9	20.33	We	11.10.2023	030	10
50	VV23_08	60°05.70'	19°04.16'	-9	21.22	We	11.10.2023	030	10
51	VV23_07	60°06.12'	19°09.09'	-9	22.06	We	11.10.2023	030	10
52	VV23_10	60°10.68'	19°04.25'	-9	23.07	We	11.10.2023	030	10

53	VV23_11	60°09.99'	18°55.99'	-9	0.02	Th	12.10.2023	030	10
54	VV23_12	60°15.36'	18°57.90'	-9	1.05	Th	12.10.2023	030	10
55	VV23_13	60°17.84'	18°55.21'	-9	1.52	Th	12.10.2023	030	10
56	VV23_14	60°19.82'	19°01.70'	-9	2.45	Th	12.10.2023	030	10
57	VV23_15	60°21.41'	18°56.73'	-9	3.32	Th	12.10.2023	030	10
58	VV23_16	60°25.64'	18°57.12'	-9	4.28	Th	12.10.2023	030	10
59	MARKET_WH	60°30.09'	18°57.06'	129	5.24	Th	12.10.2023	030	10
60	F33	60°31.99'	18°56.26'	135	6.06	Th	12.10.2023	030	10
61	VV23_17	60°36.45'	18°55.35'	-9	7.03	Th	12.10.2023	030	10
62	VV23_18	60°36.40'	18°59.12'	-9	7.44	Th	12.10.2023	030	10
63	VV23_19	60°41.72'	18°59.37'	-9	8.46	Th	12.10.2023	030	10
64	SBSD1	60°45.88'	19°04.44'	101	9.45	Th	12.10.2023	030	10
65	SBSD2	60°50.50'	19°09.49'	99	10.46	Th	12.10.2023	030	10
66	SBS3	60°56.72'	19°11.23'	106	11.54	Th	12.10.2023	030	10
67	G4	60°33.00'	19°03.79'	64	14.48	Th	12.10.2023	030	10
68	ATVH	60°26.00'	19°07.89'	58	16.02	Th	12.10.2023	030	10
69	F64	60°11.34'	19°08.55'	285	18.00	Th	12.10.2023	20	10
70	FA16	60°12.00'	19°14.80'	135	20.19	Th	12.10.2023	030	10
71	F64C	60°09.50'	19°25.80'	265	21.25	Th	12.10.2023	030	10
72	VV23_06	60°07.31'	19°18.26'	-9	22.21	Th	12.10.2023	030	10
73	FA12	60°06.00'	19°23.80'	253	23.09	Th	12.10.2023	030	10
74	FA13	60°07.00'	19°30.81'	115	0.01	Fr	13.10.2023	030	10
75	F8_13	60°03.72'	19°40.90'	118	1.07	Fr	13.10.2023	030	10
76	ALAND_SEA	60°01.30'	19°32.80'	214	2.05	Fr	13.10.2023	030	10
77	FA6	59°56.00'	19°32.80'	71	3.07	Fr	13.10.2023	030	10
78	FA7	59°58.00'	19°40.81'	215	4.04	Fr	13.10.2023	030	10
79	FA8	60°00.00'	19°47.80'	186	4.58	Fr	13.10.2023	030	10
80	F67	59°56.00'	19°49.80'	205	5.53	Fr	13.10.2023	030	10

81	FA3B	59°54.00'	19°52.79'	200	6.38	Fr	13.10.2023	030	10
82	AS_S_AD	59°49.28'	19°40.81'	-9	7.54	Fr	13.10.2023	40	10
83	AS_SE_AD	59°53.04'	20°00.32'	-9	12.57	Fr	13.10.2023	40	10
84	FA3	59°48.00'	19°44.80'	87	17.53	Fr	13.10.2023	030	10
85	SEME_A1	60°29.32'	19°12.39'	68	22.49	Fr	13.10.2023	030	10
86	SBS4	60°55.68'	19°27.55'	110	2.03	Sa	14.10.2023	030	10
87	SBS5	60°54.64'	19°43.87'	95	3.21	Sa	14.10.2023	030	10
88	SBS6	60°53.60'	20°00.18'	-9	4.39	Sa	14.10.2023	030	10
89	SBS7	60°52.56'	20°16.49'	-9	5.57	Sa	14.10.2023	030	10
90	SBS8	60°51.52'	20°32.78'	65	7.15	Sa	14.10.2023	030	10
91	VV23_20	60°51.93'	20°55.04'	-9	8.50	Sa	14.10.2023	030	10
92	VV23_21	60°57.38'	20°41.73'	-9	10.11	Sa	14.10.2023	030	10
93	VV23_22	60°59.43'	20°52.45'	-9	11.14	Sa	14.10.2023	030	10
94	VV23_23	61°02.94'	20°49.00'	-9	12.08	Sa	14.10.2023	030	10
95	SR9	61°10.01'	21°09.79'	42	13.51	Sa	14.10.2023	030	10
92	VV23_21	60°57.38'	20°41.73'	-9	10.11	Sa	14.10.2023	030	10
93	VV23_22	60°59.43'	20°52.45'	-9	11.14	Sa	14.10.2023	030	10
94	VV23_23	61°02.94'	20°49.00'	-9	12.08	Sa	14.10.2023	030	10
95	SR9	61°10.01'	21°09.79'	42	13.51	Sa	14.10.2023	030	10
96	SR8	61°07.59'	20°55.80'	46	15.04	Sa	14.10.2023	030	10
97	SR7	61°05.01'	20°35.79'	78	16.35	Sa	14.10.2023	030	10
98	SR6	61°03.01'	20°15.81'	102	18.04	Sa	14.10.2023	030	10
99	SR5B	61°04.00'	19°54.79'	111	19.35	Sa	14.10.2023	240	10
100	SR5	61°05.00'	19°34.78'	126	20.33	Su	15.10.2023	030	10
101	SEME_A5	60°57.30'	19°17.84'	-9	22.11	Su	15.10.2023	030	10
102	SEME_A4	60°49.71'	19°17.16'	-9	23.27	Su	15.10.2023	030	10
103	SEME_A3	60°41.47'	19°15.61'	-9	0.46	Mo	16.10.2023	030	10
104	SEME_A2	60°36.00'	19°14.70'	-9	1.49	Mo	16.10.2023	030	10

105	SEME_A1	60°29.32'	19°12.39'	-9	3.00	Mo	16.10.2023	030	10
106	SEME_B1	60°36.43'	19°35.55'	-9	4.50	Mo	16.10.2023	030	10
107	SEME_B2	60°40.40'	19°29.29'	-9	5.50	Mo	16.10.2023	030	10
108	SEME_B3	60°44.11'	19°28.80'	-9	6.43	Mo	16.10.2023	030	10
109	SEME_B4	60°51.76'	19°27.25'	-9	7.59	Mo	16.10.2023	030	10
110	SEME_B5	60°58.09'	19°25.77'	-9	9.07	Mo	16.10.2023	030	10
111	SEME_C4	60°53.77'	19°40.25'	-9	10.27	Mo	16.10.2023	030	10
112	SEME_C3	60°48.73'	19°43.88'	-9	11.29	Mo	16.10.2023	030	10
113	SEME_C2	60°46.00'	19°47.38'	-9	12.18	Mo	16.10.2023	030	10
114	SEME_C1	60°40.50'	19°53.61'	-9	13.26	Mo	16.10.2023	030	10
115	SEME_D0	60°39.31'	20°16.96'	-9	15.05	Mo	16.10.2023	030	10
116	SEME_D1	60°46.35'	20°11.07'	-9	16.20	Mo	16.10.2023	030	10
117	SEME_D2	60°51.51'	20°02.49'	-9	17.30	Mo	16.10.2023	030	10
118	SEME_D3	60°55.15'	19°55.52'	-9	18.30	Mo	16.10.2023	030	10
119	SEME_E1	60°53.04'	20°20.15'	-9	20.13	Mo	16.10.2023	030	10
101	SEME_A5	60°57.30'	19°17.84'	-9	22.11	Su	15.10.2023	030	10
102	SEME_A4	60°49.71'	19°17.16'	-9	23.27	Su	15.10.2023	030	10
103	SEME_A3	60°41.47'	19°15.61'	-9	0.46	Mo	16.10.2023	030	10
104	SEME_A2	60°36.00'	19°14.70'	-9	1.49	Mo	16.10.2023	030	10
105	SEME_A1	60°29.32'	19°12.39'	-9	3.00	Mo	16.10.2023	030	10
106	SEME_B1	60°36.43'	19°35.55'	-9	4.50	Mo	16.10.2023	030	10
107	SEME_B2	60°40.40'	19°29.29'	-9	5.50	Mo	16.10.2023	030	10
108	SEME_B3	60°44.11'	19°28.80'	-9	6.43	Mo	16.10.2023	030	10
109	SEME_B4	60°51.76'	19°27.25'	-9	7.59	Mo	16.10.2023	030	10
110	SEME_B5	60°58.09'	19°25.77'	-9	9.07	Mo	16.10.2023	030	10
111	SEME_C4	60°53.77'	19°40.25'	-9	10.27	Mo	16.10.2023	030	10
112	SEME_C3	60°48.73'	19°43.88'	-9	11.29	Mo	16.10.2023	030	10
113	SEME_C2	60°46.00'	19°47.38'	-9	12.18	Mo	16.10.2023	030	10

114	SEME_C1	60°40.50'	19°53.61'	-9	13.26	Mo	16.10.2023	030	10
115	SEME_D0	60°39.31'	20°16.96'	-9	15.05	Mo	16.10.2023	030	10
116	SEME_D1	60°46.35'	20°11.07'	-9	16.20	Mo	16.10.2023	030	10
117	SEME_D2	60°51.51'	20°02.49'	-9	17.30	Mo	16.10.2023	030	10
118	SEME_D3	60°55.15'	19°55.52'	-9	18.30	Mo	16.10.2023	030	10
119	SEME_E1	60°53.04'	20°20.15'	-9	20.13	Mo	16.10.2023	030	10
120	SEME_E0	60°45.02'	20°36.58'	-9	21.51	Mo	16.10.2023	030	10
121	VV23_20	60°51.93'	20°55.04'	-9	23.29	Mo	16.10.2023	030	10
122	IU1	60°46.01'	20°50.80'	33	0.37	Tu	17.10.2023	20	10
123	IU2	60°35.01'	21°07.80'	54	3.02	Tu	17.10.2023	20	10
124	IU3	60°20.00'	21°06.80'	48	5.33	Tu	17.10.2023	20	10
125	IU4	60°14.00'	21°08.80'	51	7.16	Tu	17.10.2023	20	10
126	IU5	60°03.49'	21°11.90'	89	9.43	Tu	17.10.2023	20	10
127	IU6	59°56.21'	21°13.26'	120	12.03	Tu	17.10.2023	20	10
128	IU7	59°48.91'	21°20.20'	92	14.07	Tu	17.10.2023	20	10
129	UTO_SSE	59°36.06'	21°19.92'	-10	16.24	Tu	17.10.2023	20	10
130	HELSINKI	60°09.63'	24°54.02'	-10	15.00	We	18.10.2023	00	10

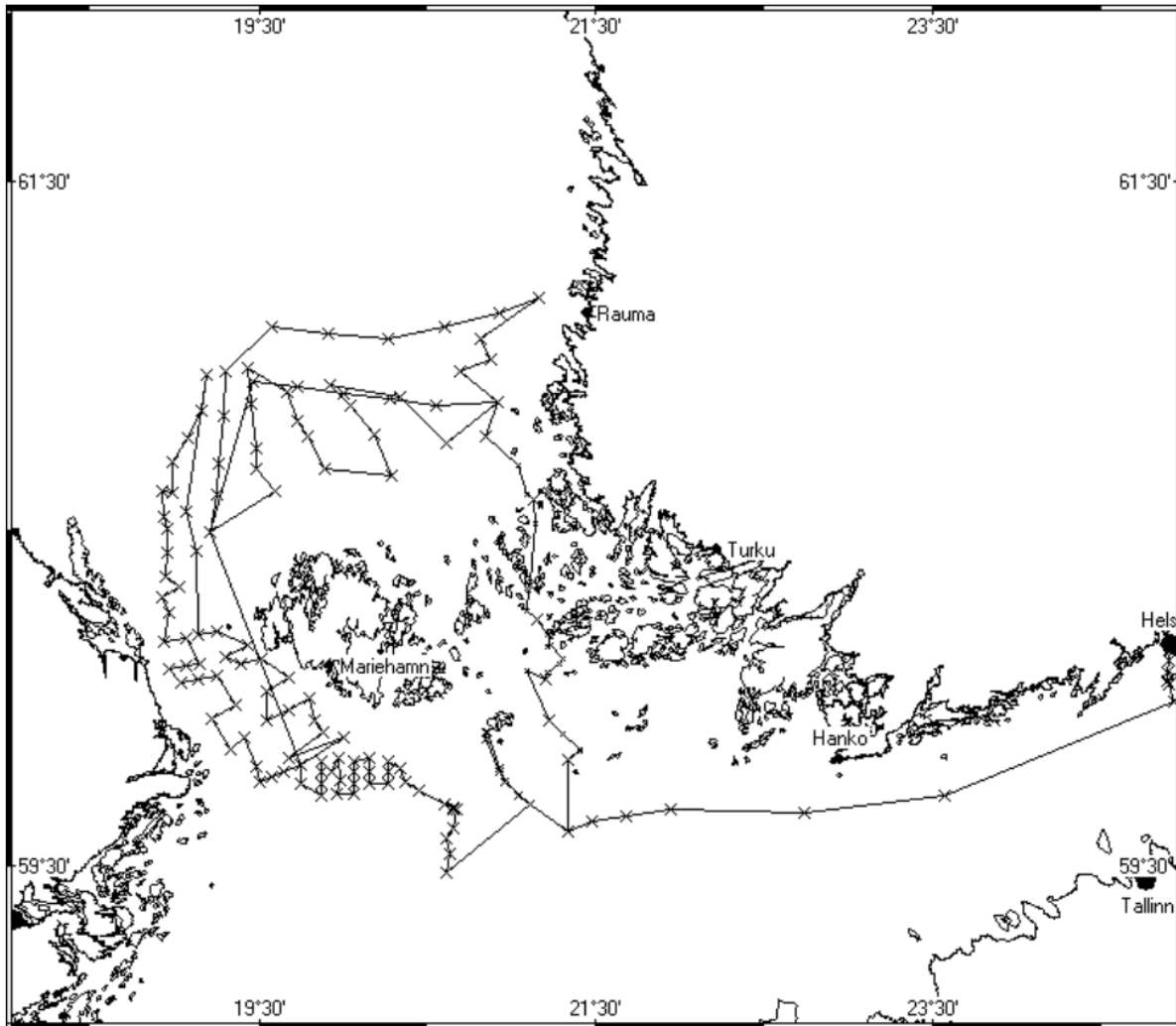


Figure 1. Planned route of the Aranda cruise.

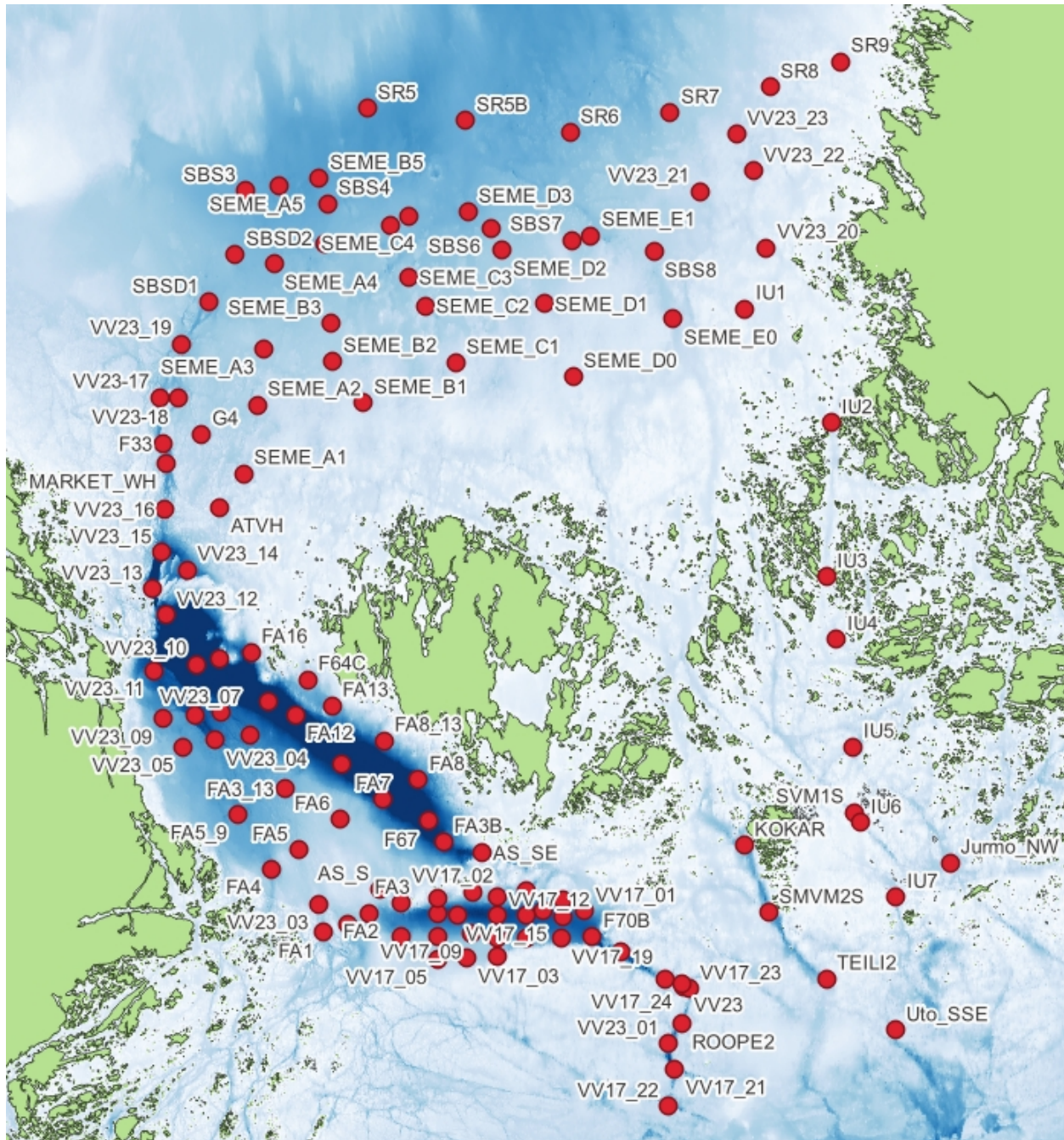


Figure 2. Map of planned stations of the Vedenvaihto2023 cruise. Bathymetry source: EMODnet.

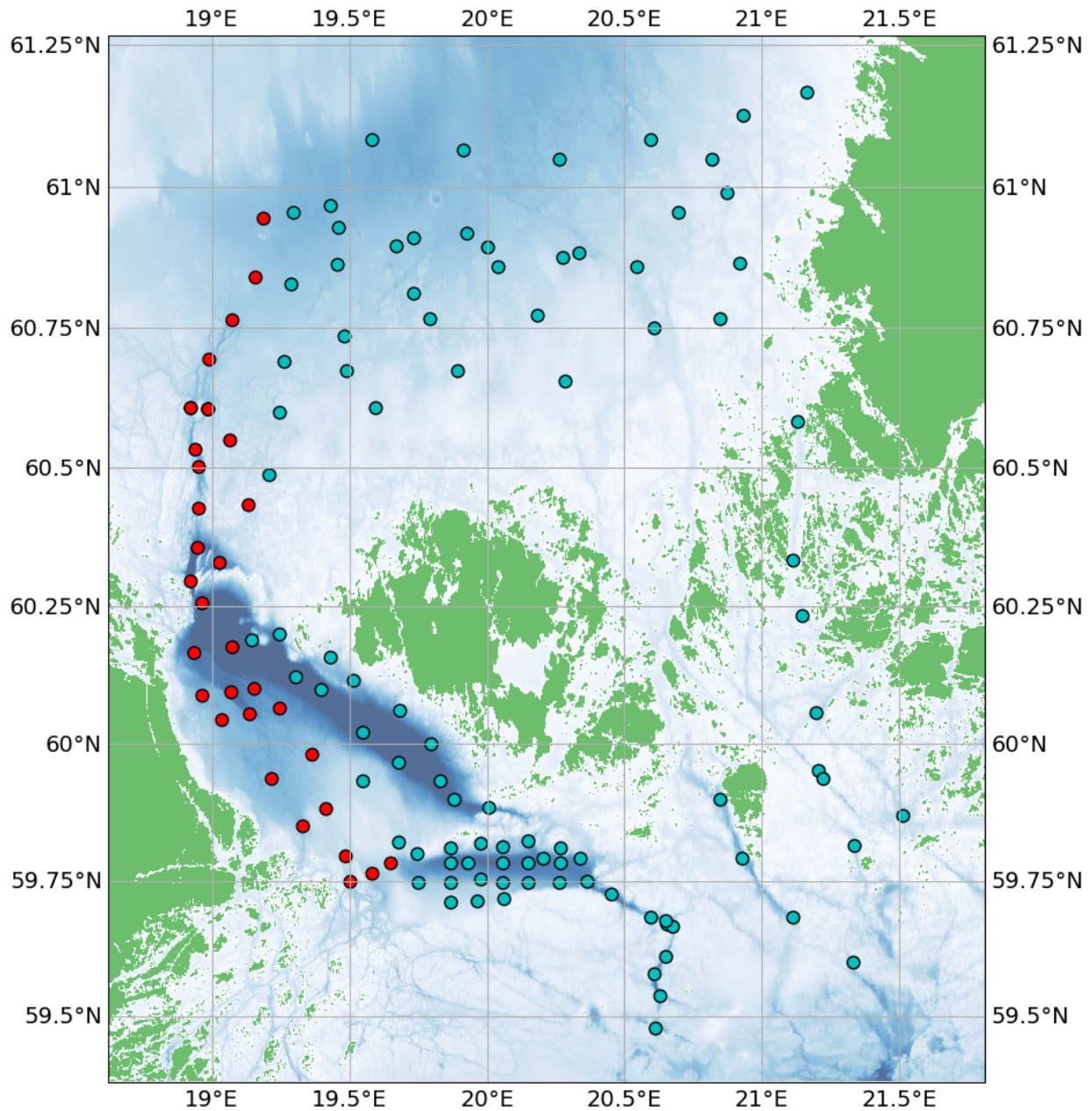


Figure 3. Map of planned stations showing the stations in Swedish territorial waters with red colour. Bathymetry source: EMODnet