Atlas of Japan (East) Sea hydrographic properties in summer, 1999: Supplementary material

Lynne D. Talley[a], Pavel Tishchenko[b], Vladimir Luchin[c], Alexander Nedashkovskiy[b], Sergey Sagalaev[b], Dong-Jin Kang[d], Mark Warner[e] and Dong-Ha Min[f]

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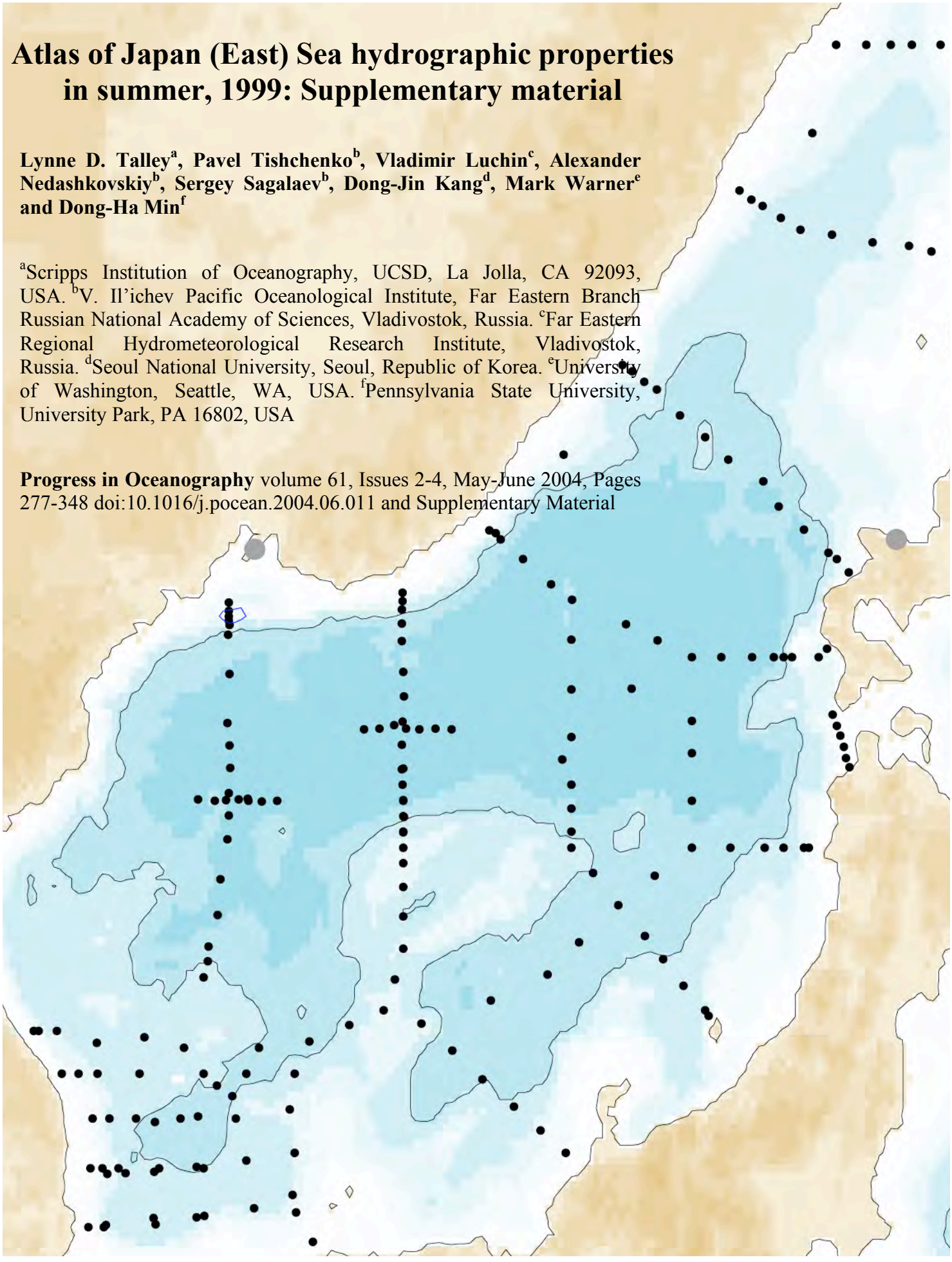
Progress in Oceanography volume 61, Issues 2-4, May-June 2004, Pages 277-348 doi:10.1016/j.pocean.2004.06.011 and Supplementary Material



Atlas of Japan (East) Sea hydrographic properties in summer, 1999

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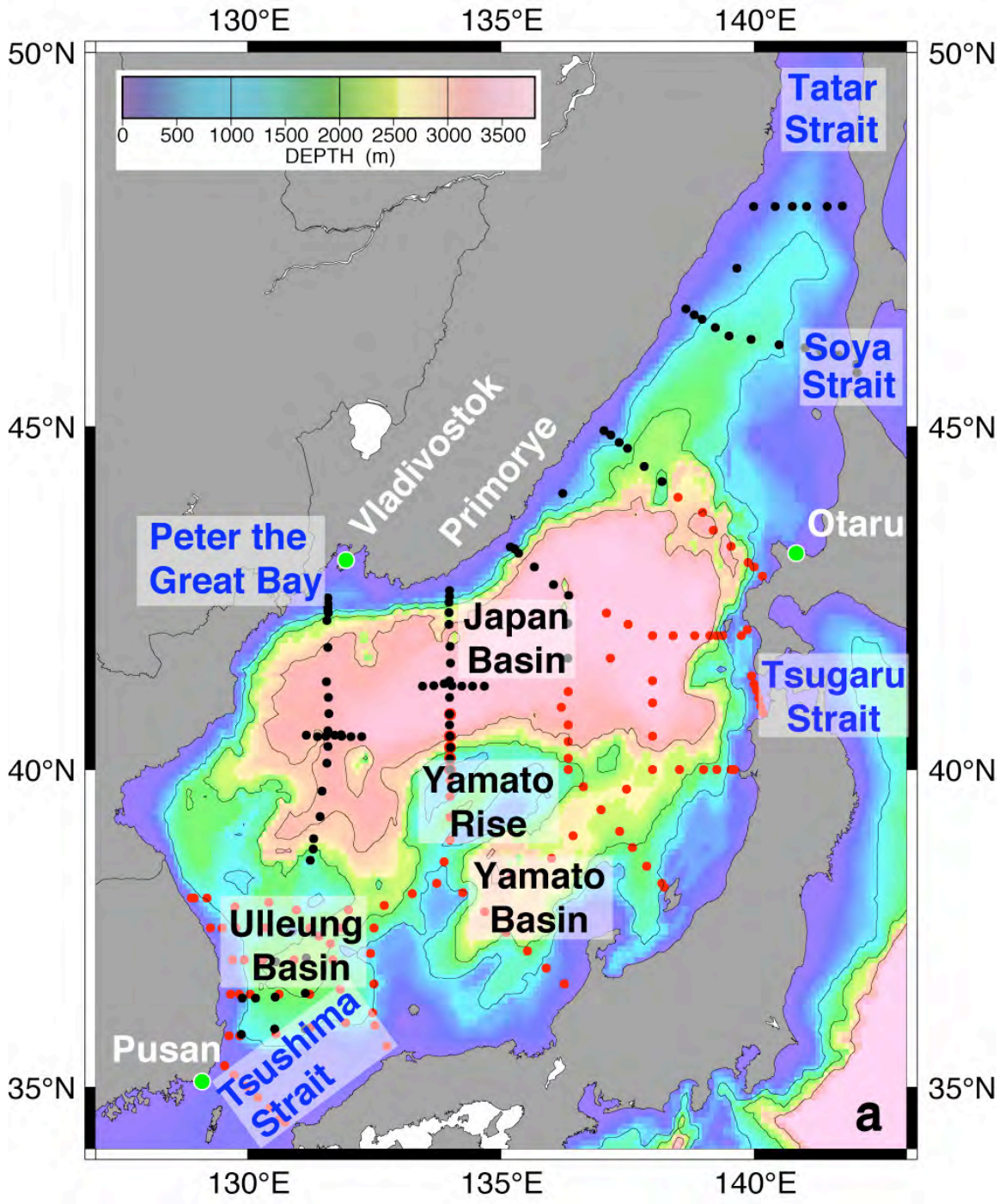
This is a pdf of all of the linked online material (all color material), formatted and including a table of contents, in order to facilitate perusal and printing. Some corrections have been made (see attached Errata). The original material is online at http://www.sciencedirect.com in Vol. 61 of Progress in Oceanography; click "Full Text + Links". A separate pdf contains the print version of the paper (primarily black and white images).

Table of contents for the Japan (East) Sea digital atlas

Errata for online figures and captions

Figure D1a. Figure conversion by Elsevier had errors. Corrected.
Figure D2a,b. Figure conversion created error in units "°C". Corrected
Figure D7. P1 Sigma 2 figure caption incorrect. Corrected.
Figure D9. P3 oxygen: original figure was unedited. Corrected.
Figure D10. P4 potential temperature: contour label error in figure. Corrected.
Figure D10. P4 all sections: section header in all figures corrected to "Ulleung Basin".
Figure D12. J1 caption: erroneously read "(black and white versions)". Corrected.
Figure D12. J1 all sections: include (2500:1) in captions. Deleted from all.
Figure D13. J2 all sections: section header in all figures corrected to "Japan Basin 134°E"
Figure D13. Y1J2 nitrate: drafting error in figure. Corrected.
Figure D16. J5 potential temperature: drafting error in figure. Corrected.
Figure D21. Y2J3 alkalinity: drafting errors in figure. Corrected.
Figure D41. Oxygen etc. maps, drafting error. Corrected.
Figure D62. Caption for potential density incorrect. Corrected.
Figure D105. Caption should include only (a) – (d).


130°E
135°E
140°E
50°N
45°N
40°N
35°N
0 500 1000 1500 2000 2500 3000 3500
DEPTH (m)
Tatar Strait
Soya Strait
Vladivostok
Primorye
Peter the Great Bay
Otaru
Japan Basin
Tsugaru Strait
Yamato Rise
Yamato Basin
Ulleung Basin
Tsushima Strait
Pusan
a

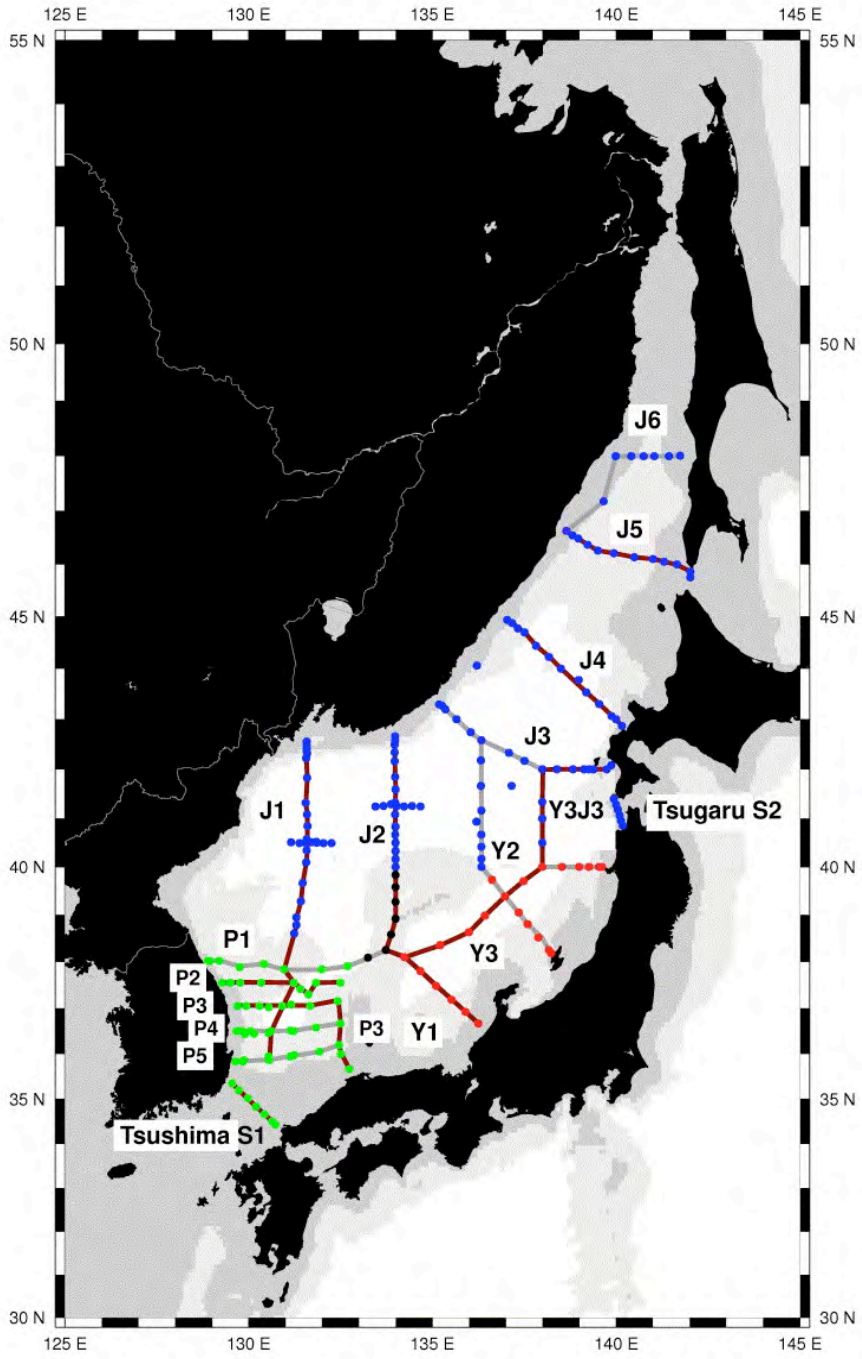


Figure D1. (a) Stations from the R/V Revelle (24 June - 17 July, 1999: red) and Professor Khromov (22 July - 11 August, 1999: blue), superimposed on etopo5 bathymetry. (b) Sections in this publication (brown) and sections in the online atlas (gray and brown). Station color indicates use in property-property distributions: Ulleung Basin (green), Yamato Basin (red), Japan Basin (blue), Yamato Rise (black).

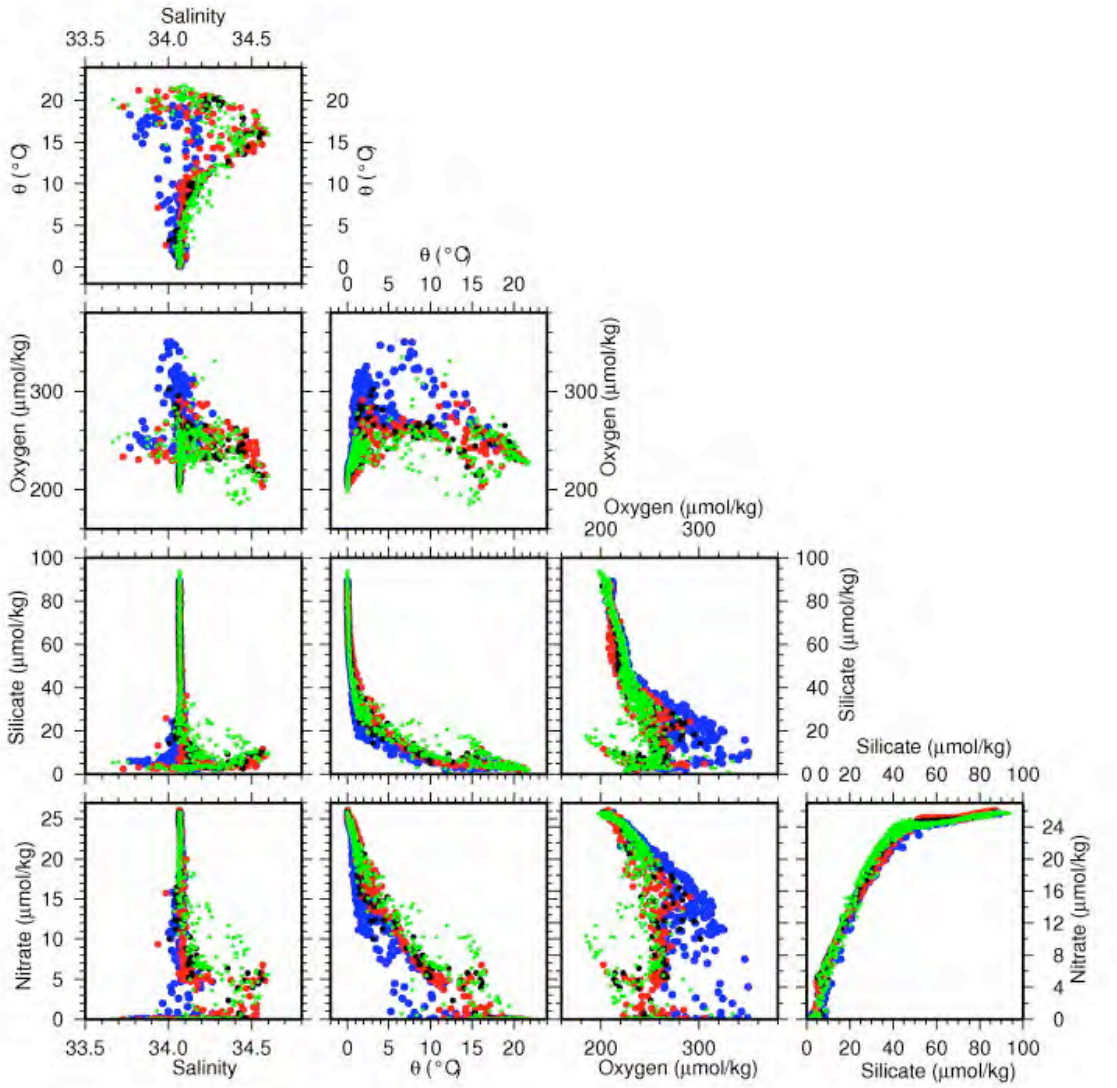


Figure D2a. For the stations shown in Fig. 1b (Ulleung Basin - green, Yamato Basin - red, Japan Basin - blue, Yamato Rise black): Salinity, potential temperature (°C), oxygen (μmol/kg), dissolved silicate (μmol/kg), nitrate (μmol/kg), phosphate (μmol/kg), pH, and alkalinity (mmol/kg). Property ranges were selected for full coverage, with the exception of a small number of very low salinity values.

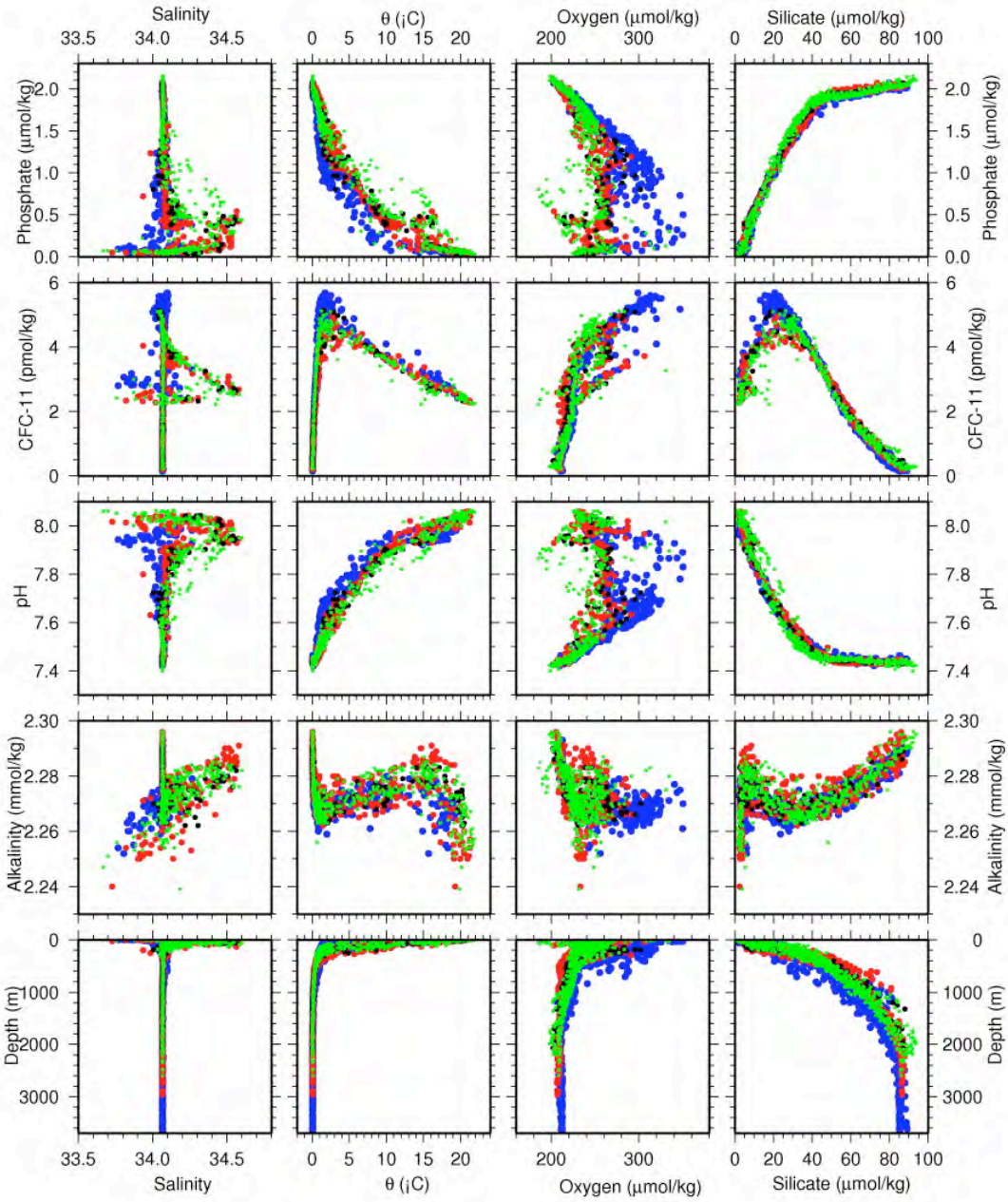


Figure D2b. For the stations shown in Fig. 1b (Ulleung Basin - green, Yamato Basin - red, Japan Basin - blue, Yamato Rise black): Salinity, potential temperature (°C), oxygen (μmol/kg), dissolved silicate (μmol/kg), phosphate (μmol/kg), CFC-11 (pmol/kg), pH, alkalinity (mmol/kg), and depth (m). Property ranges were selected for full coverage, with the exception of a small number of very low salinity and alkalinity values.

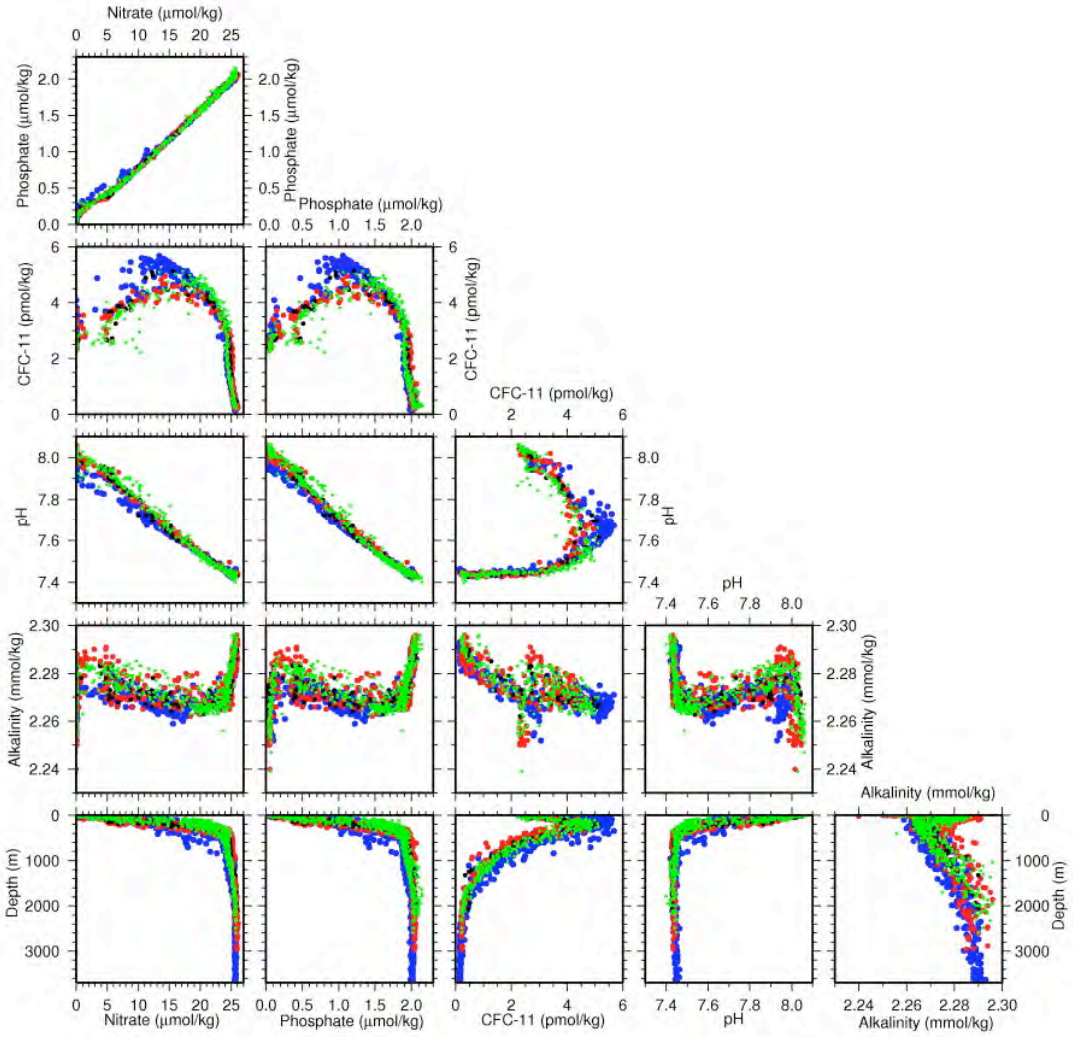


Figure D2c. For the stations shown in Fig. 1b (Ulleung Basin - green, Yamato Basin - red, Japan Basin - blue, Yamato Rise black): Nitrate (μmol/kg), phosphate (μmol/kg), CFC-11 (pmol/kg), pH, alkalinity (mmol/kg), and depth (m). Property ranges were selected for full coverage, with the exception of a small number of very low alkalinity values.

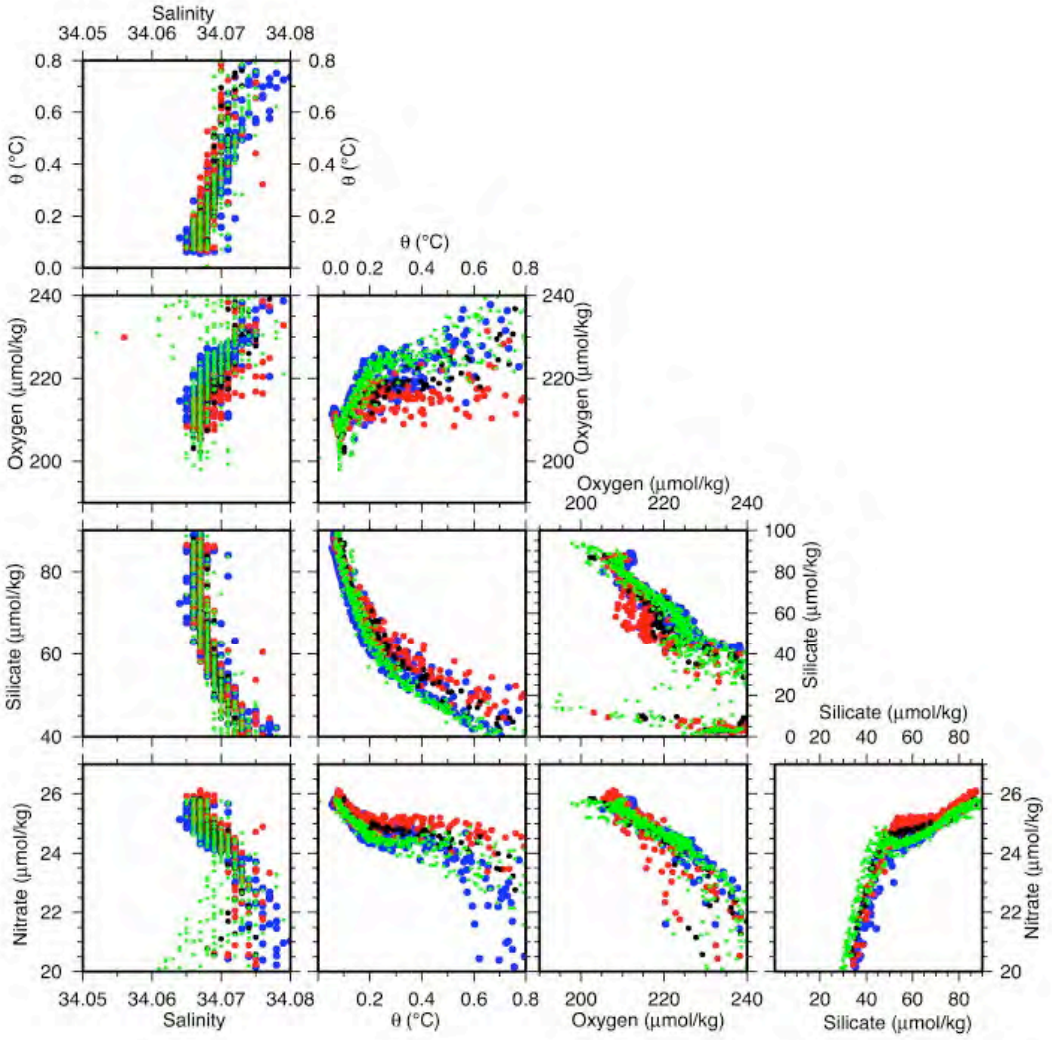


Figure D3a. Subthermocline and deep properties for the stations shown in Fig. 1b (Ulleung Basin - green, Yamato Basin - red, Japan Basin - blue, Yamato Rise black), as in Figure D2a.

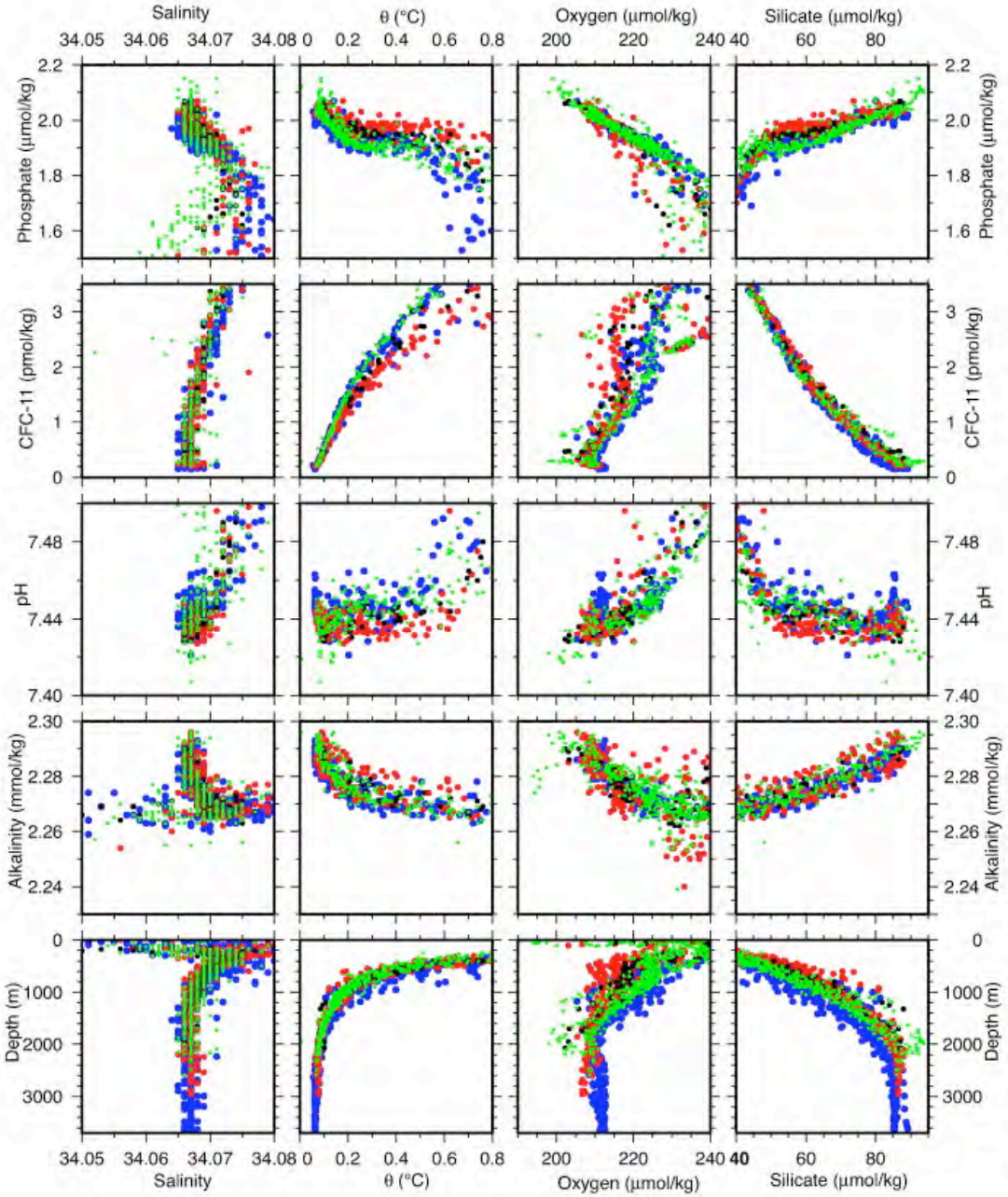


Figure D3b. Subthermocline and deep properties for the stations shown in Fig. 1b (Ulleung Basin - green, Yamato Basin - red, Japan Basin - blue, Yamato Rise black), as in Figure D2b.

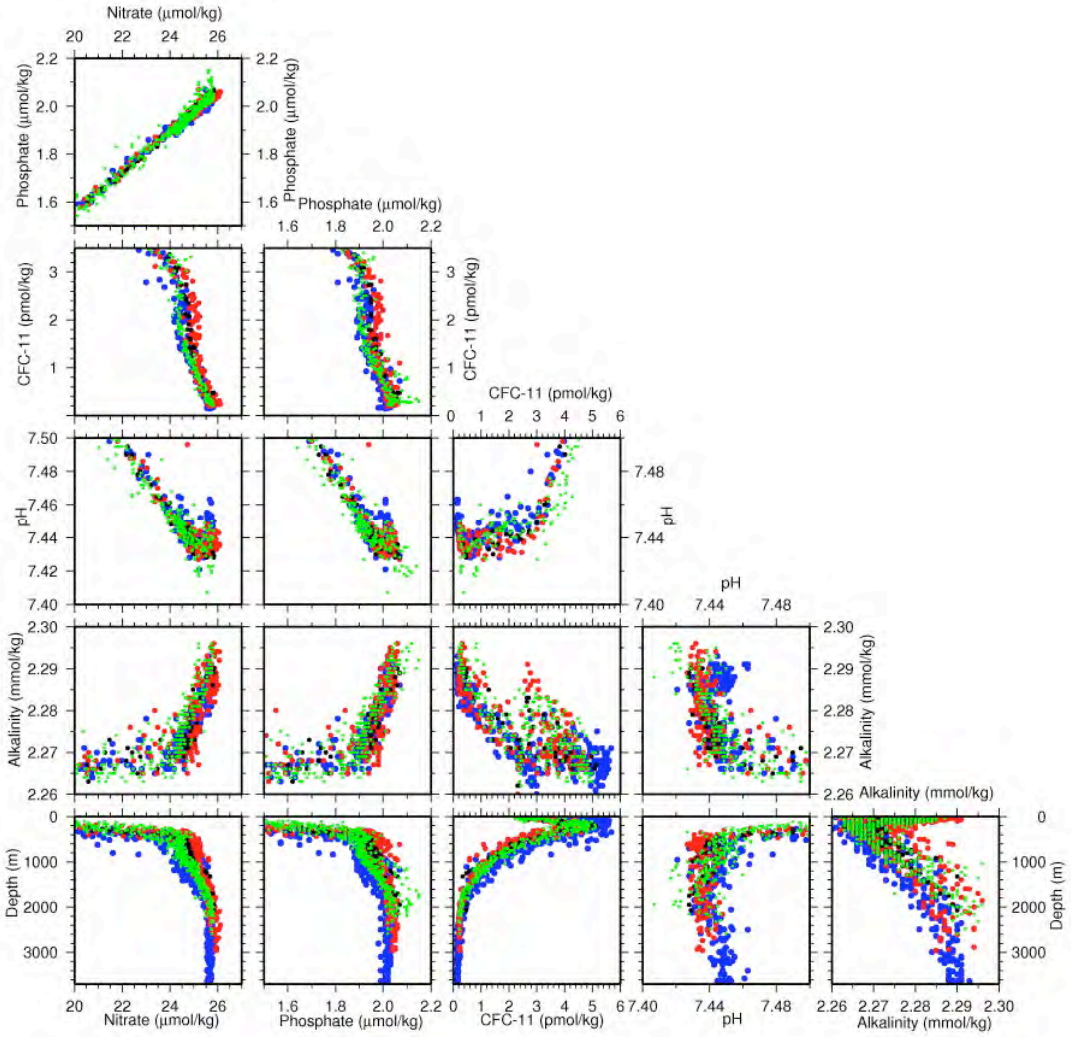


Figure D3c. Subthermocline and deep properties for the stations shown in Fig. 1b (Ulleung Basin - green, Yamato Basin - red, Japan Basin - blue, Yamato Rise black), as in Figure D2c.

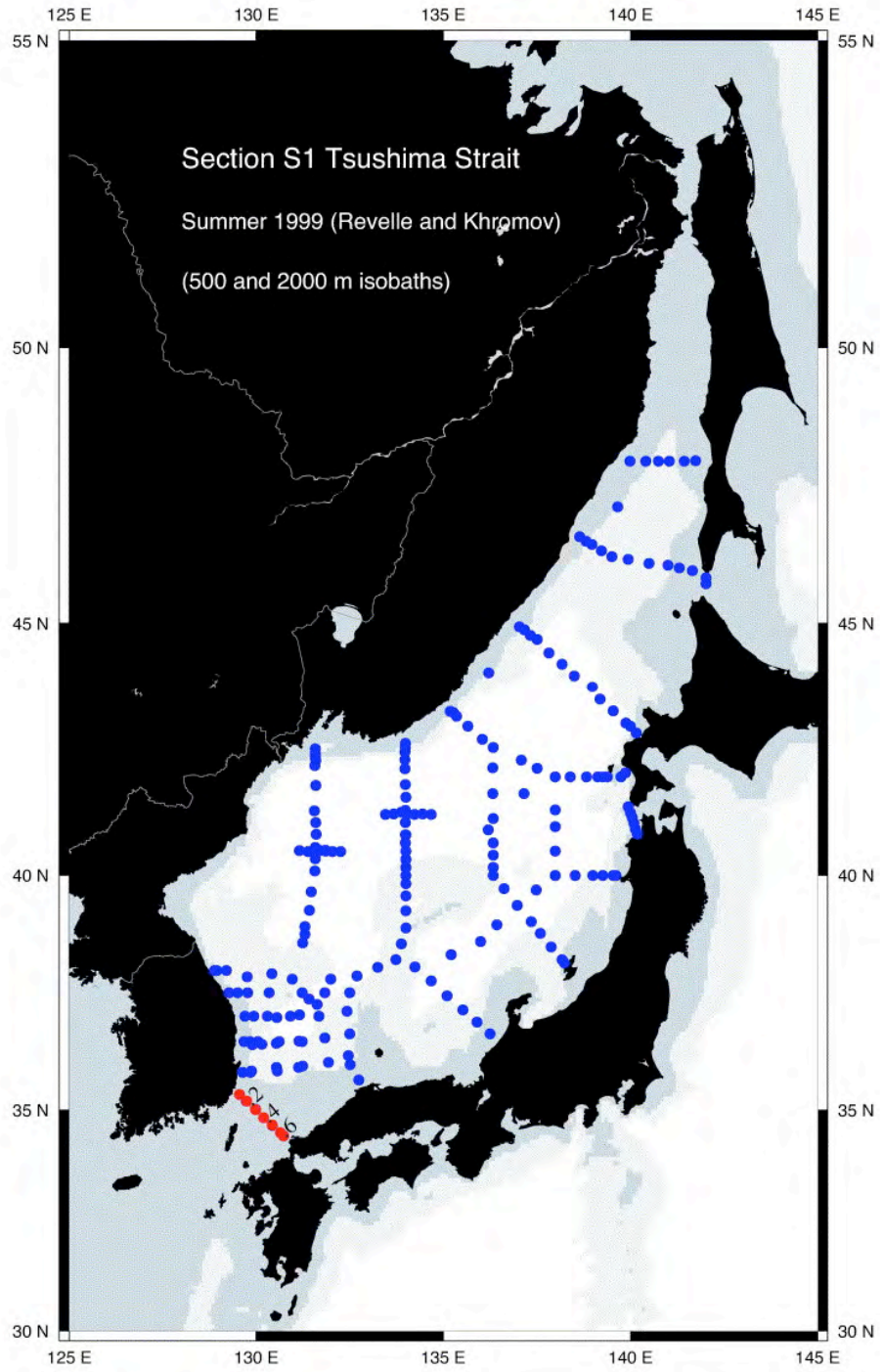
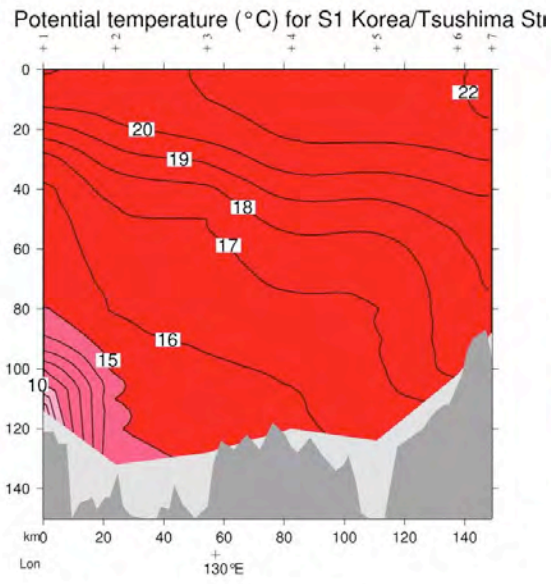
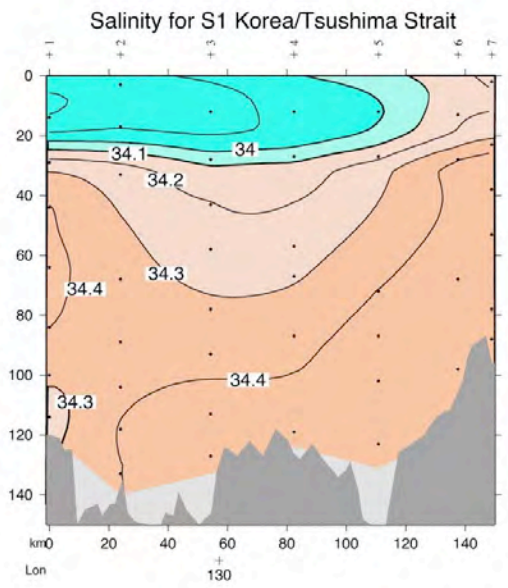
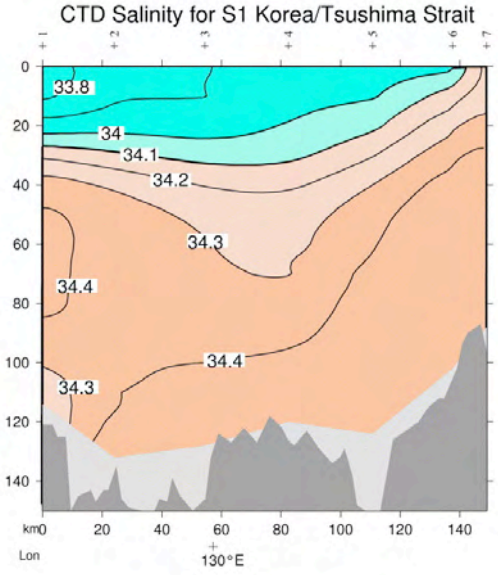
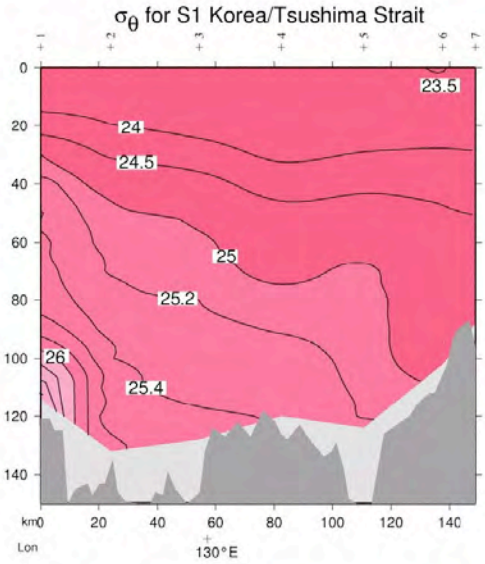


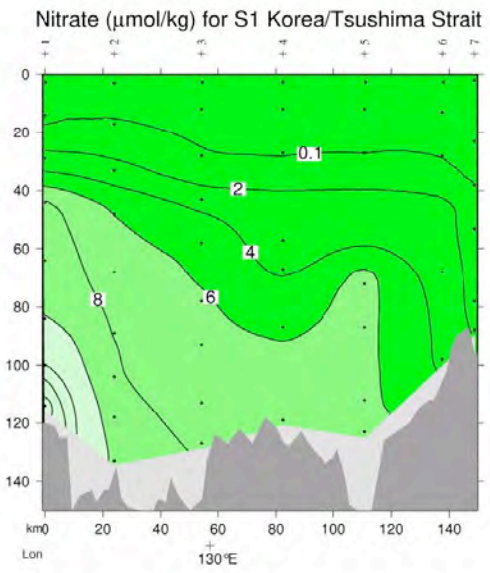
Figure D4. Vertical sections at Tsushima Strait (section S1): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) oxygen (μmol/kg), (g) nitrate (μmol/kg), (h) nitrite (μmol/kg), (i) phosphate (μmol/kg), (j) dissolved silica (μmol/kg), (k) CFC-11 (pmol/kg), (l) CFC-12 (pmol/kg), (m) pH, and (n) alkalinity (mmol/kg).

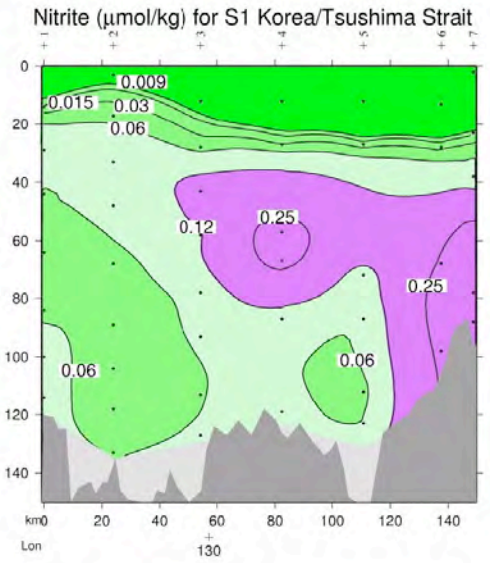

Potential temperature (°C) for S1 Korea/Tsushima Stı
22
20
19
18
17
16
15
10
km
Lon
130°E

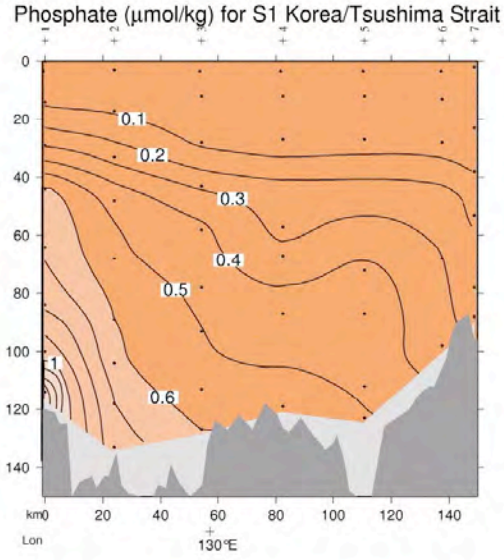

Salinity for S1 Korea/Tsushima Strait
34.1
34
34.2
34.3
34.4
34.4
34.3
km
Lon
130

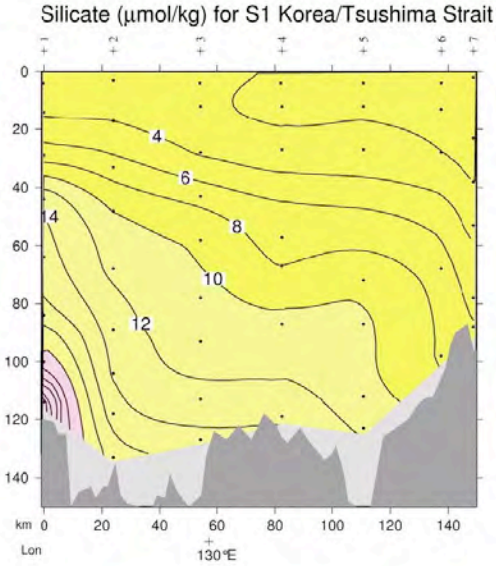

CTD Salinity for S1 Korea/Tsushima Strait
33.8
34
34.1
34.2
34.3
34.4
34.4
34.3
km
Lon
130°E

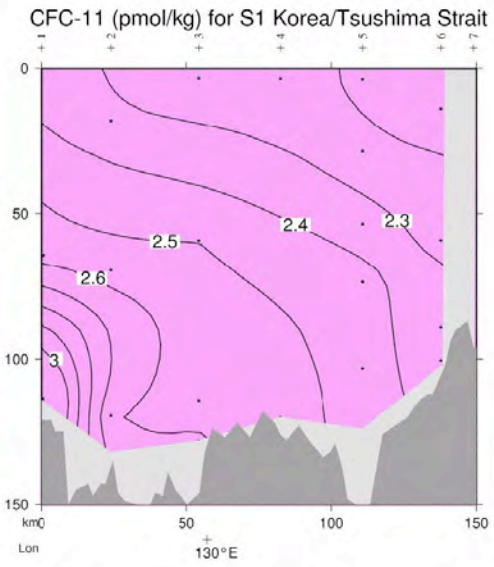

σθ for S1 Korea/Tsushima Strait
23.5
24
24.5
25
25.2
26
25.4
km
Lon
130°E

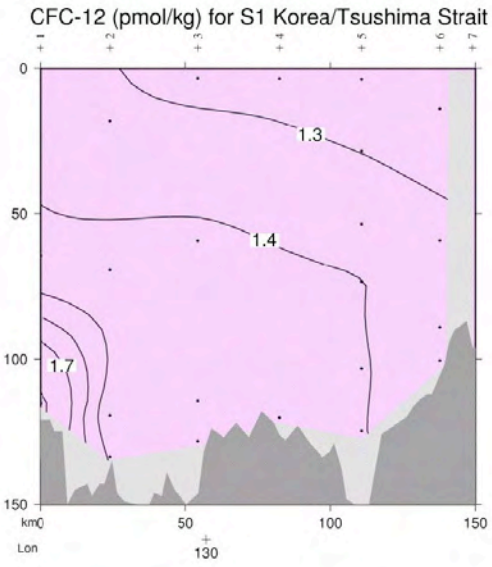

Nitrate (µmol/kg) for S1 Korea/Tsushima Strait
0.1
2
4
6
8
km
Lon
130°E

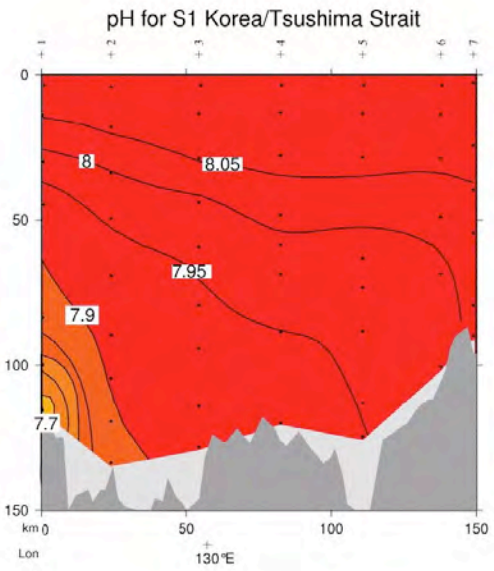

Nitrite (µmol/kg) for S1 Korea/Tsushima Strait
0.009
0.015
0.03
0.06
0.12
0.25
0.25
0.06
0.06
km
Lon
130

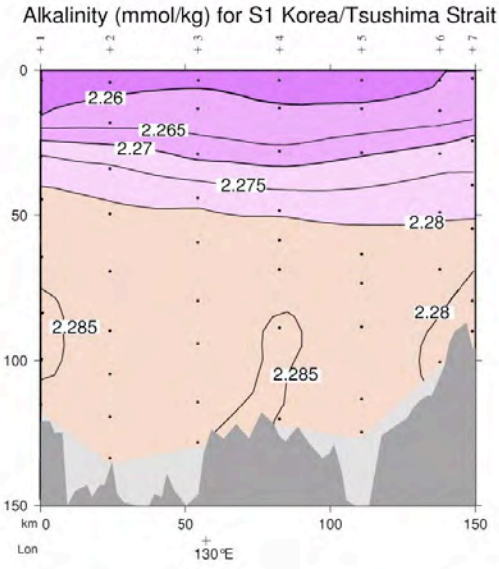

Phosphate (µmol/kg) for S1 Korea/Tsushima Strait
0.1
0.2
0.3
0.4
0.5
1
0.6
km
Lon
130°E


Silicate (µmol/kg) for S1 Korea/Tsushima Strait
4
6
14
8
10
12
km
Lon
130°E


CFC-11 (pmol/kg) for S1 Korea/Tsushima Strait
0
50
100
150
km
Lon
130°E
2.5
2.4
2.3
2.6
3


CFC-12 (pmol/kg) for S1 Korea/Tsushima Strait
0
50
100
150
km
Lon
130
1.3
1.4
1.7


pH for S1 Korea/Tsushima Strait
0
50
100
150
km
Lon
130°E
8
8.05
7.95
7.9
7.7


Alkalinity (mmol/kg) for S1 Korea/Tsushima Strait
0
50
100
150
km
Lon
130°E
2.26
2.265
2.27
2.275
2.28
2.285
2.285
2.28

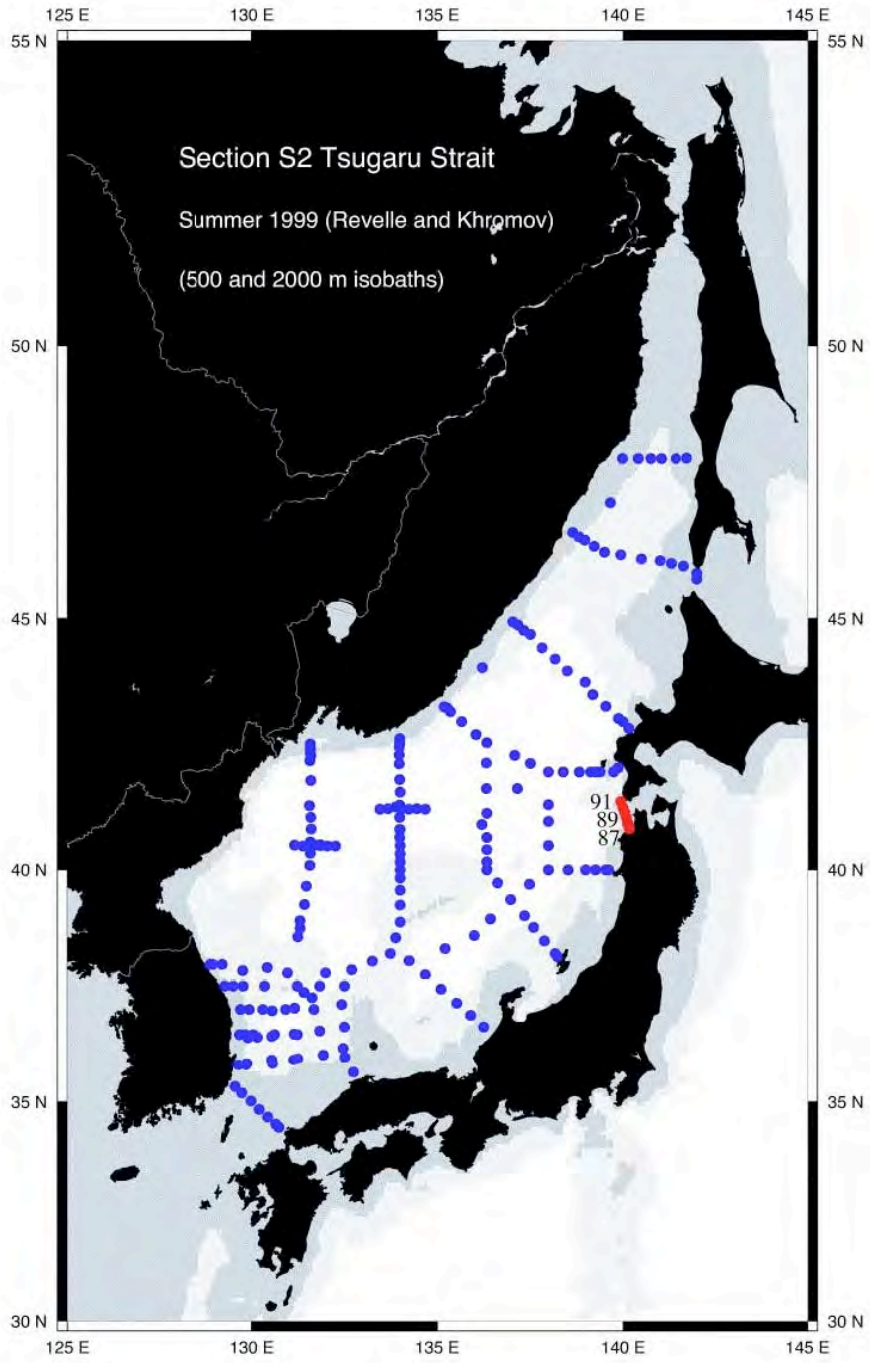
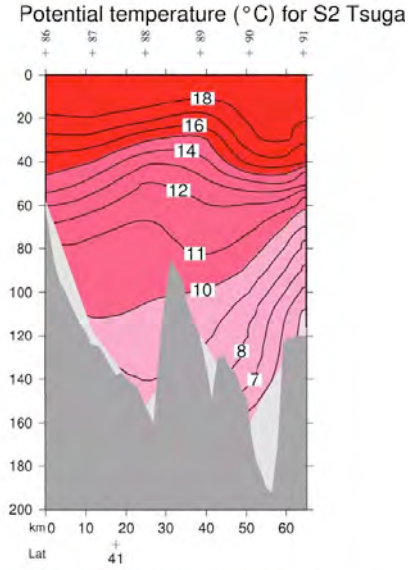
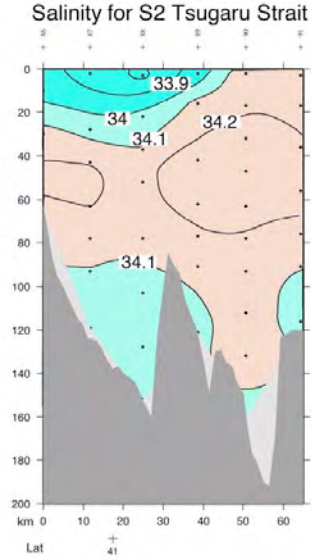


Figure D5. Vertical sections at Tsugaru Strait (section S2): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) oxygen (μmol/kg), (g) nitrate (μmol/kg), (h) nitrite (μmol/kg), (i) phosphate (μmol/kg), (j) dissolved silica (μmol/kg), (k) CFC-11 (pmol/kg), (l) CFC-12 (pmol/kg), (m) pH, and (n) alkalinity (mmol/kg).

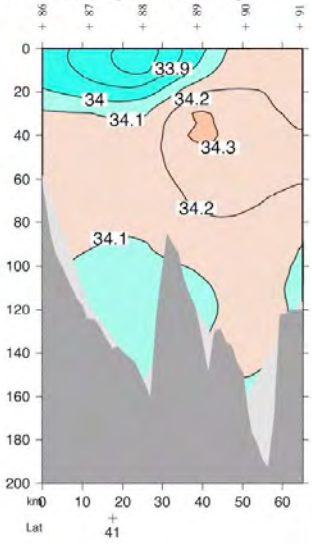
Potential temperature (°C) for S2 Tsuga



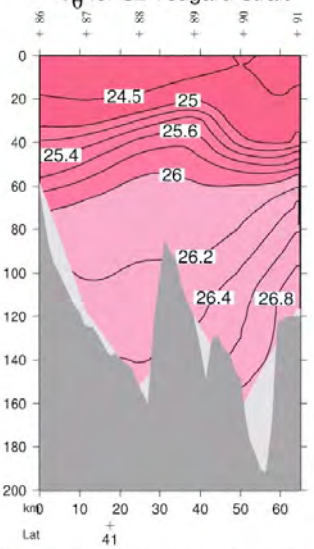
Salinity for S2 Tsugaru Strait



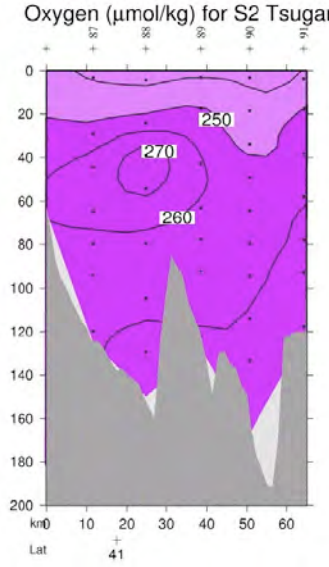
CTD salinity for S2 Tsugaru Strait



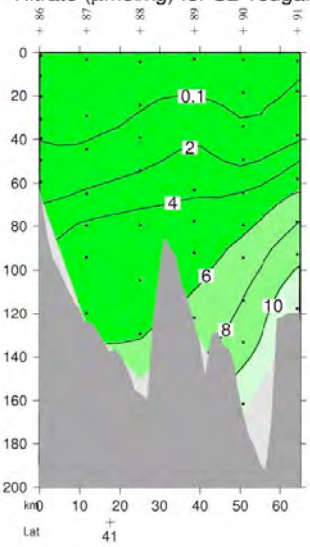
σ_θ for S2 Tsugaru Strait



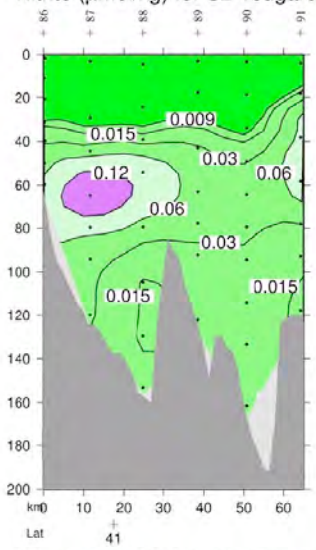
Oxygen (µmol/kg) for S2 Tsugaru Strait



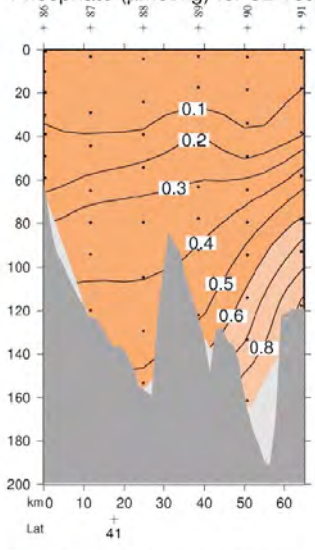
Nitrate (µmol/kg) for S2 Tsugaru Strait



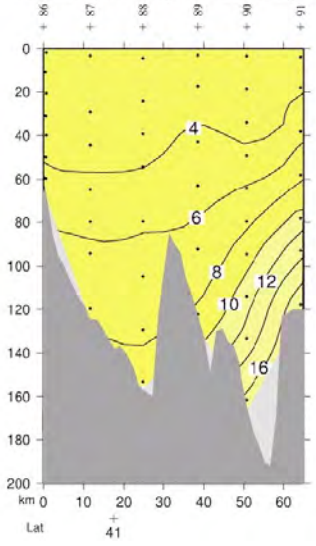
Nitrite (µmol/kg) for S2 Tsugaru Strait



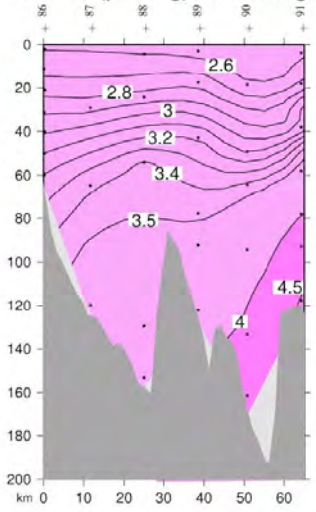
Phosphate (µmol/kg) for S2 Tsugaru Strait



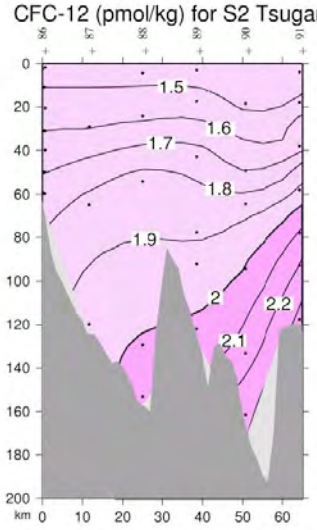
Silicate (µmol/kg) for S2 Tsugaru Strait



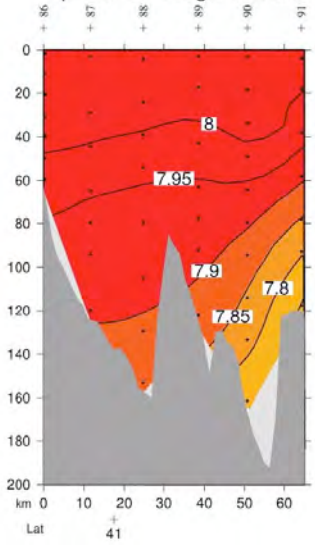
CFC-11 (pmol/kg) for S2 Tsugaru Strait



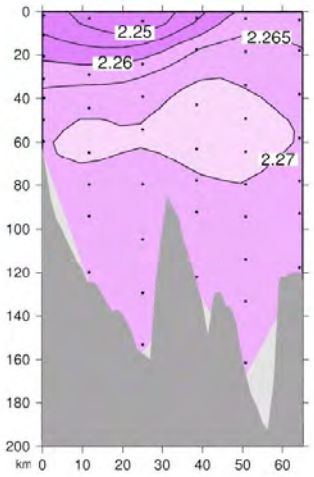
CFC-12 (pmol/kg) for S2 Tsugaru Strait



pH for S2 Tsugaru Strait



Alkalinity (mmol/kg) for S2 Tsugaru Strait



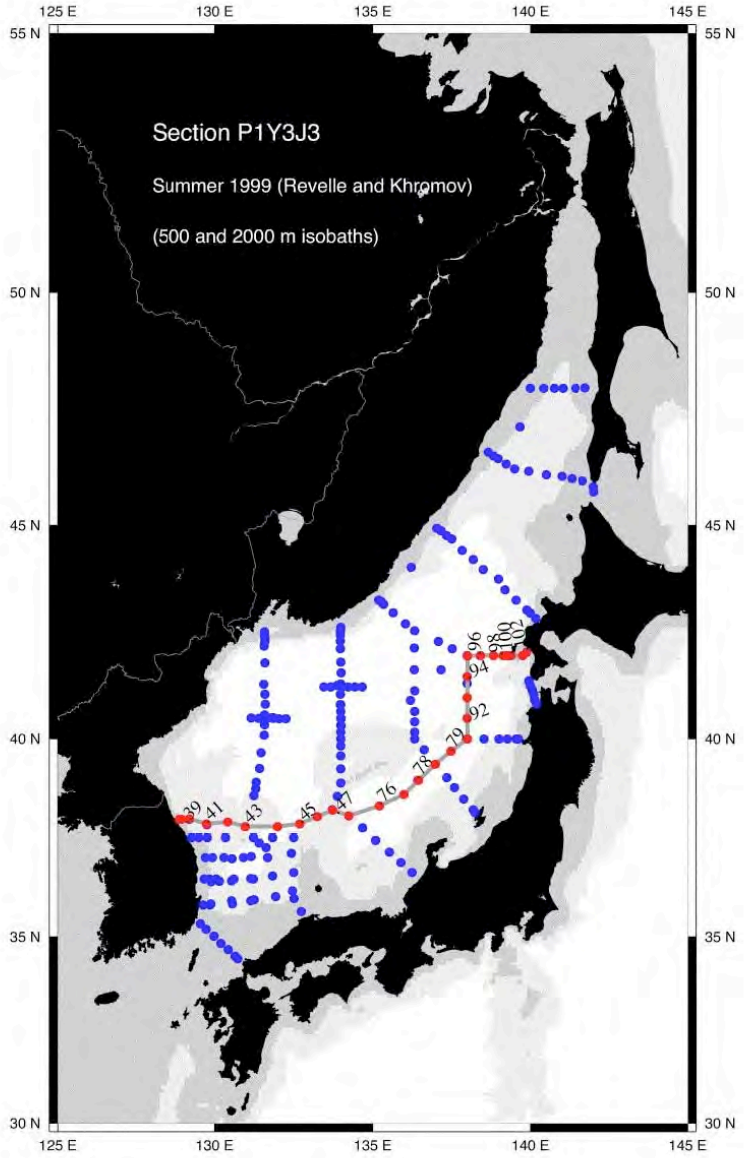
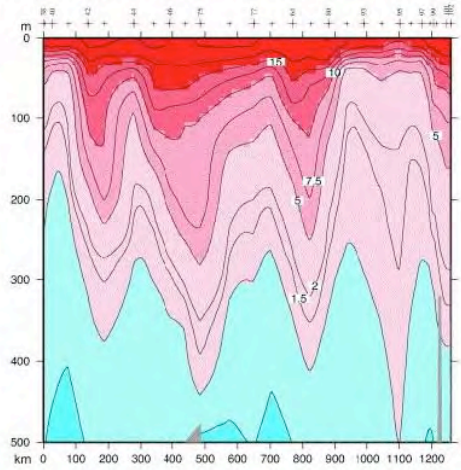
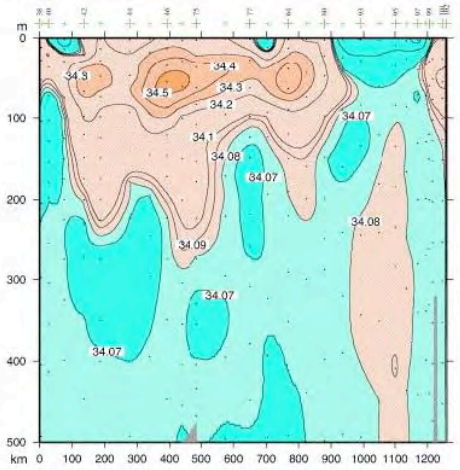


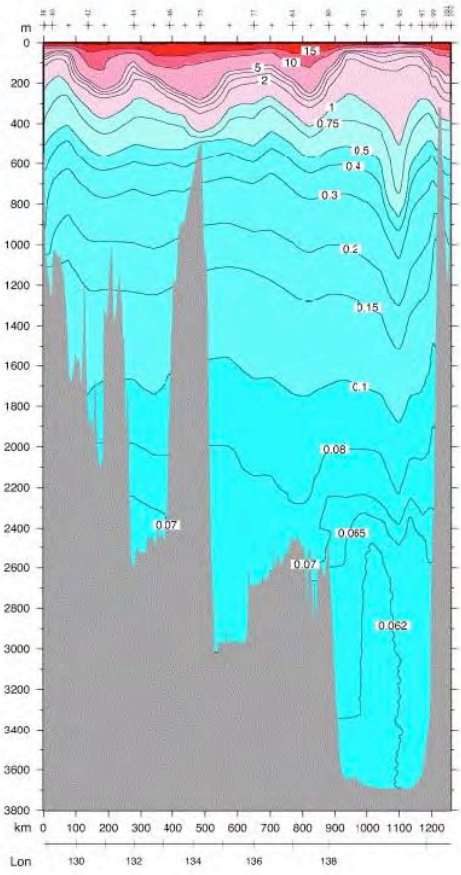
Figure D6. Vertical sections through the Ulleung, Yamato, and Japan Basins (combined sections P1, Y3J3 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

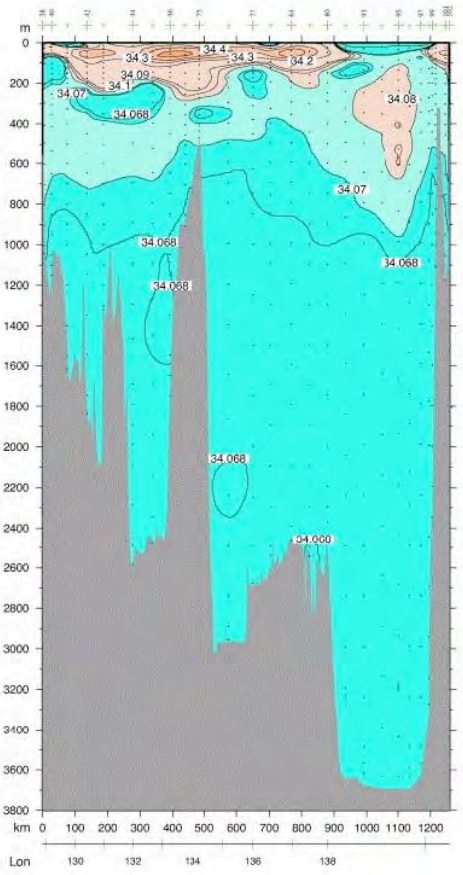
Potential Temperature (C) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N

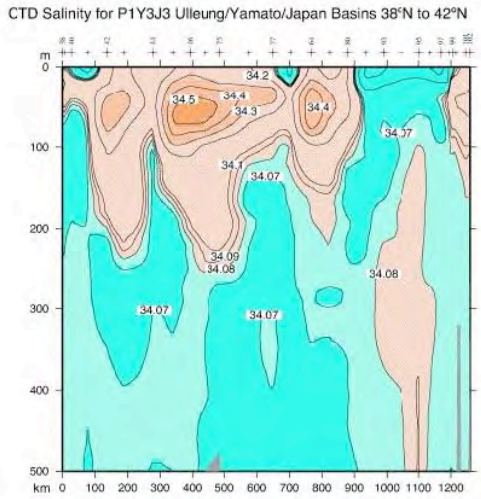


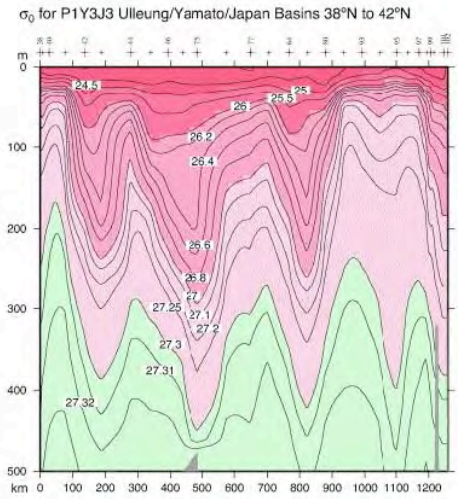
Salinity for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N

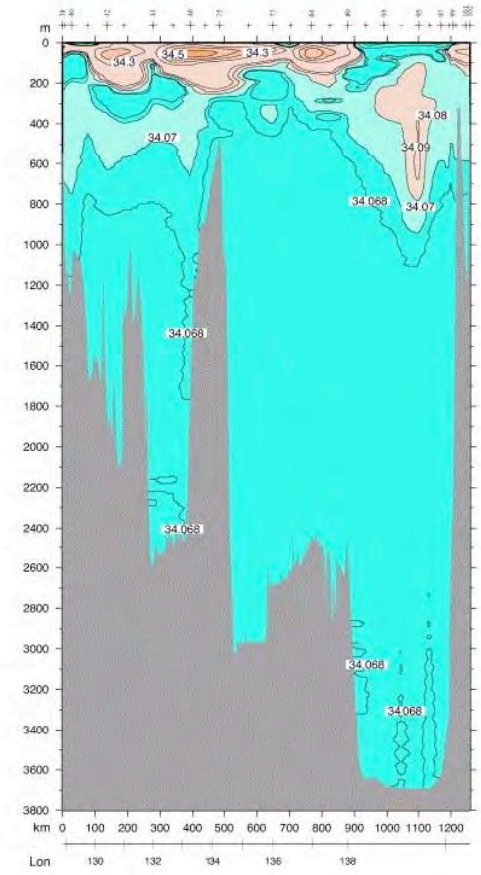


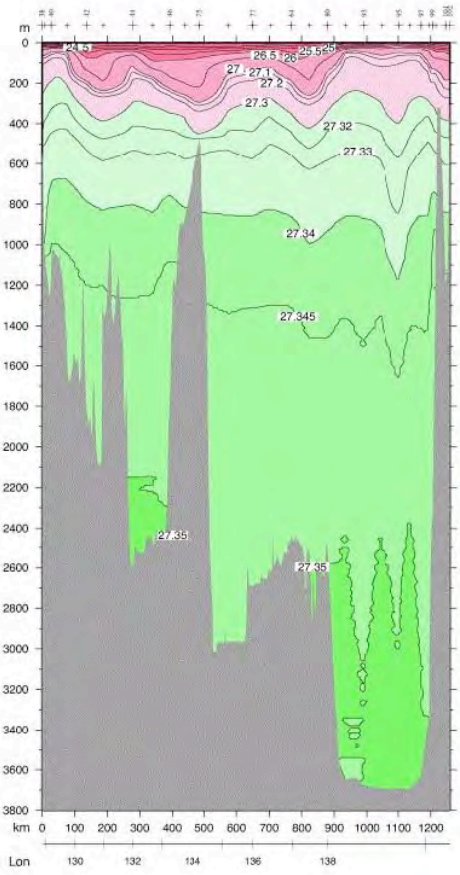


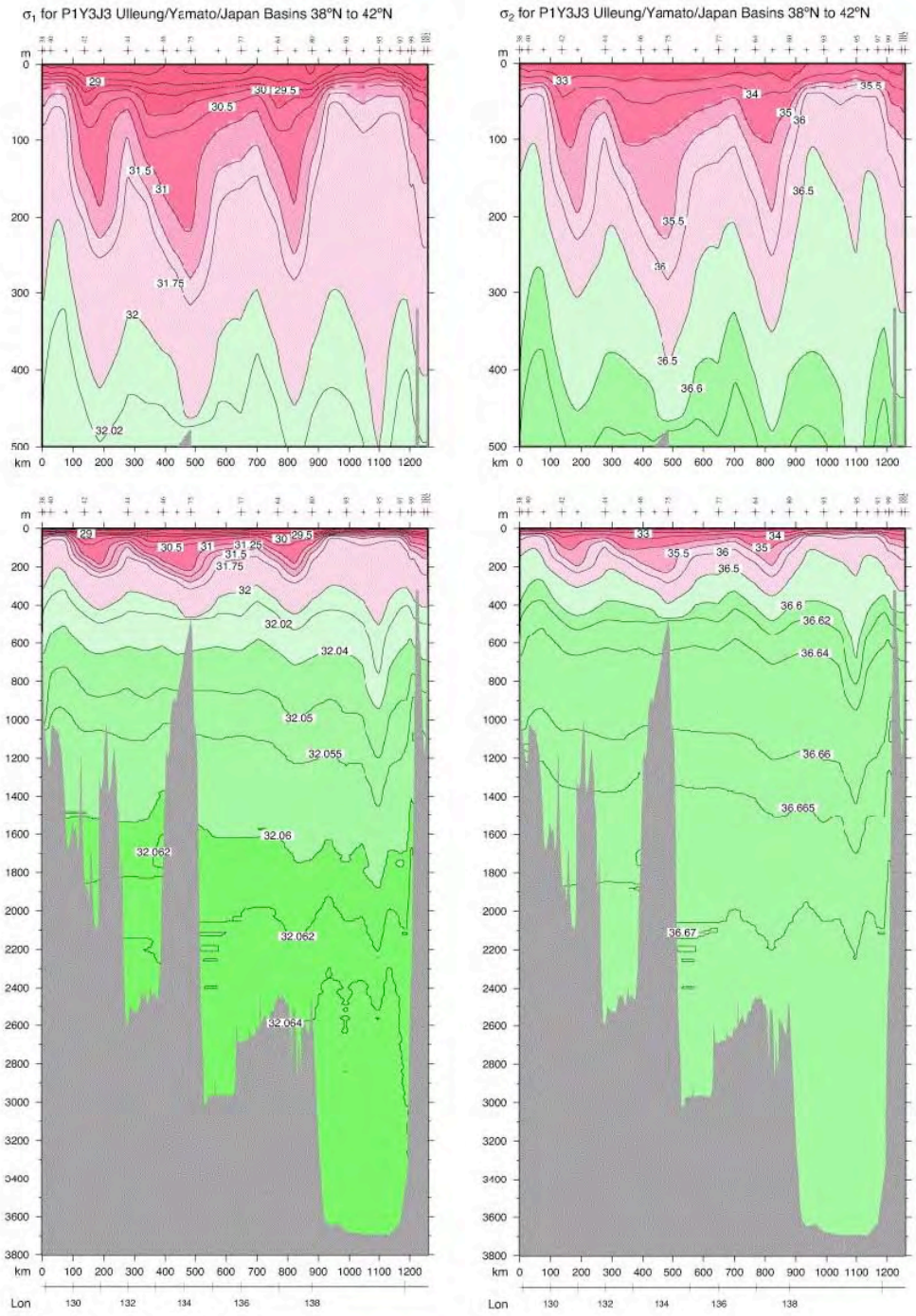


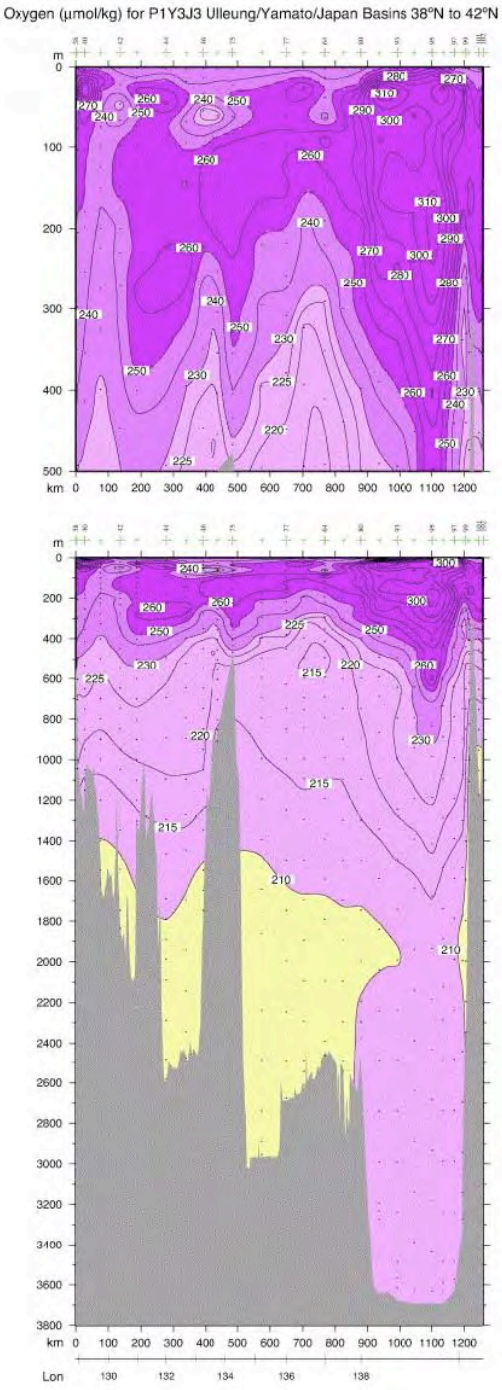

CTD Salinity for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
m
km
0 100 200 300 400 500 600 700 800 900 1000 1100 1200
34.2
34.5
34.4
34.3
34.4
34.07
34.1
34.07
34.09
34.08
34.08
34.07
34.07

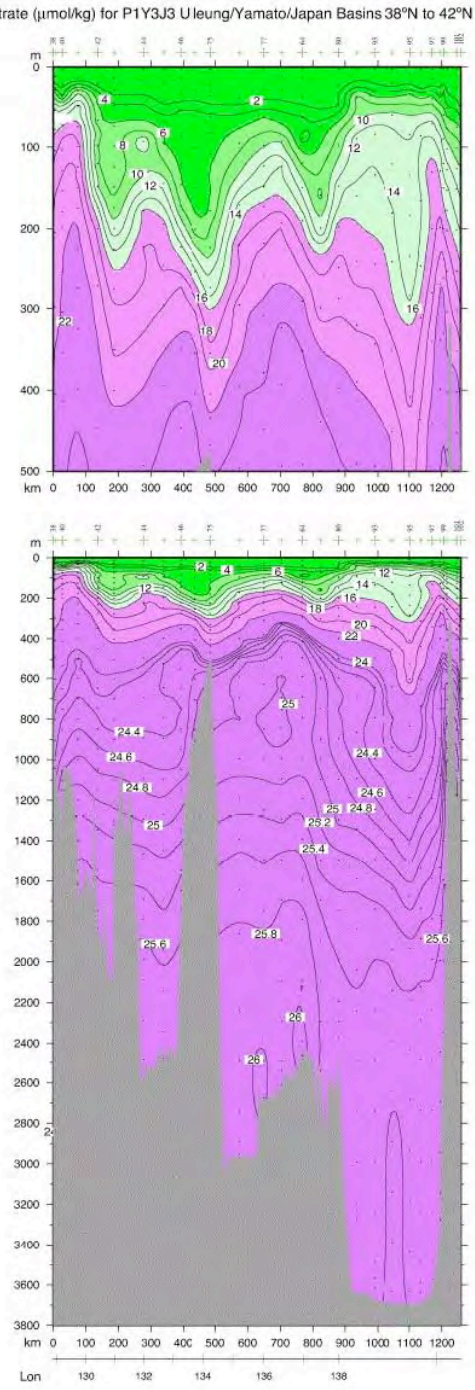

σ0 for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
m
km
0 100 200 300 400 500 600 700 800 900 1000 1100 1200
24.5
25
25.5
26
26.2
26.4
26.6
26.8
27
27.25
27.1
27.2
27.3
27.31
27.32

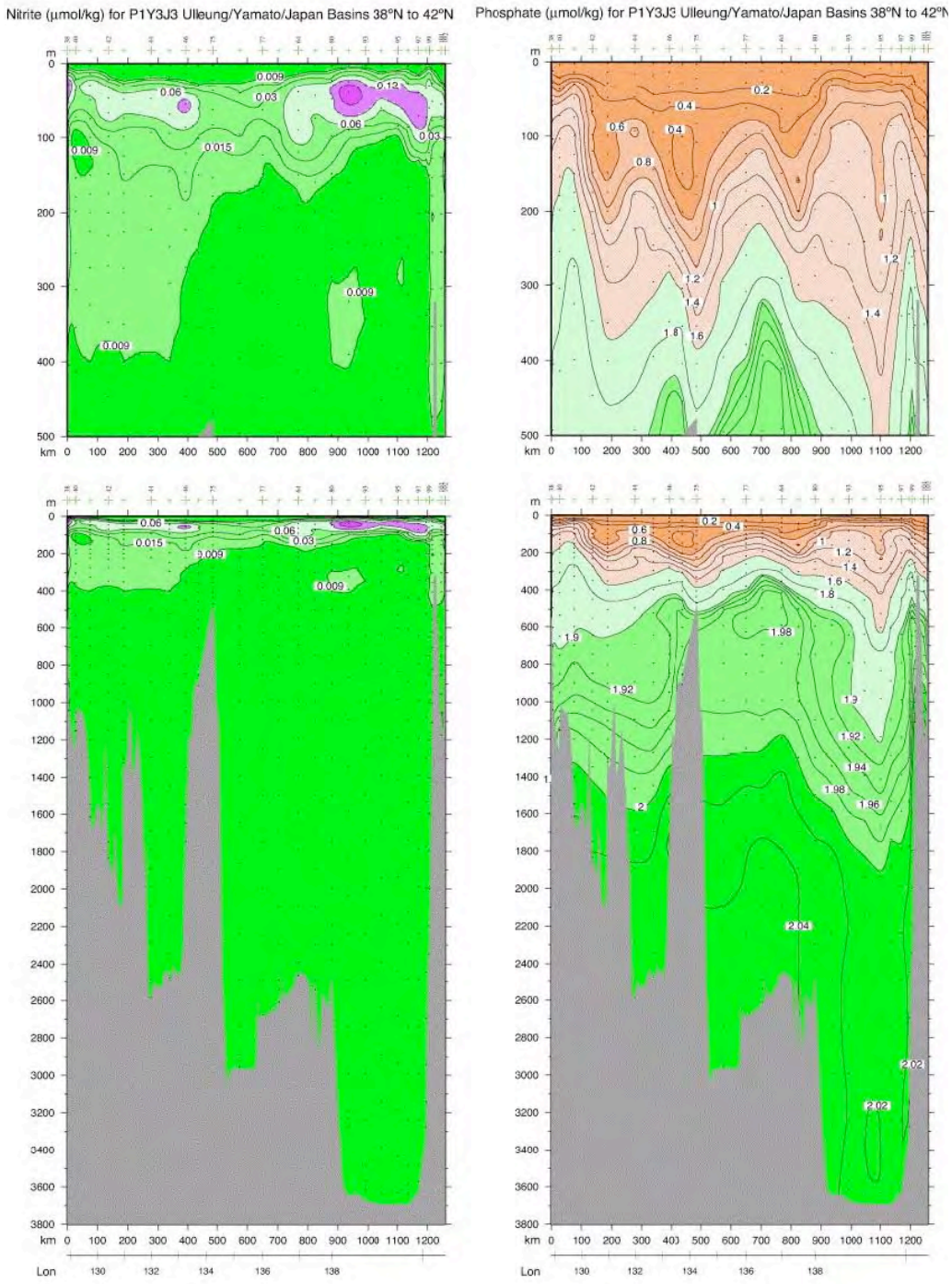

m
km
Lon
0 100 200 300 400 500 600 700 800 900 1000 1100 1200
130 132 134 136 138
34.3
34.5
34.3
34.08
34.07
34.09
34.068
34.07
34.068
34.068
34.068
34.068


m
km
Lon
0 100 200 300 400 500 600 700 800 900 1000 1100 1200
130 132 134 136 138
24.5
26.5
26
25.5
27
27.1
27.2
27.3
27.32
27.33
27.34
27.345
27.35
27.35

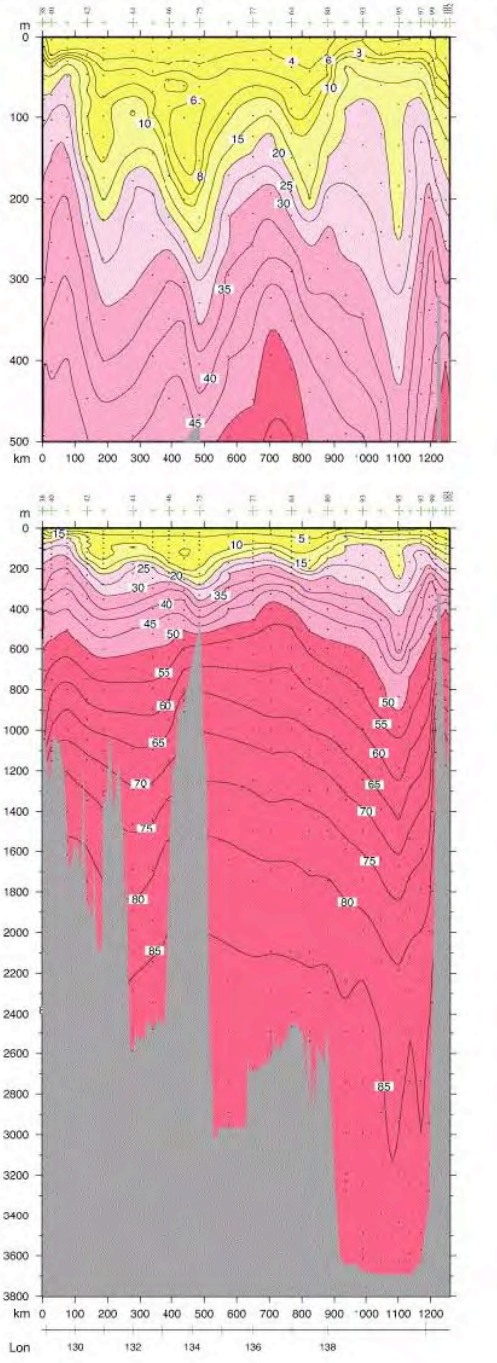

σ1 for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
σ2 for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
m
km
Lon
29
30.5
30
29.5
31.5
31
31.75
32
32.02
33
34
35.5
35
36
36.5
36.6
31.25
32.04
32.05
32.055
32.06
32.062
32.064
36.62
36.64
36.66
36.665
36.67


Oxygen (µmol/kg) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
m
km
Lon

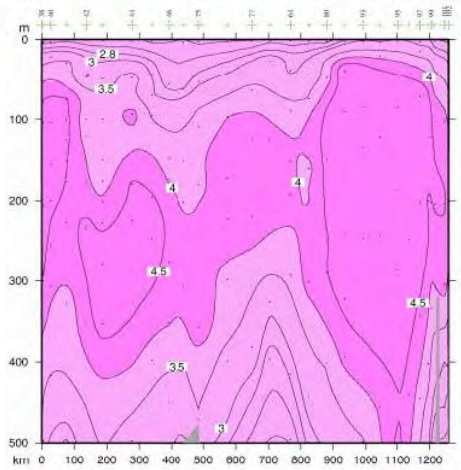

Nitrate (µmol/kg) for P1Y3J3 Uleung/Yamato/Japan Basins 38°N to 42°N
m
km
Lon

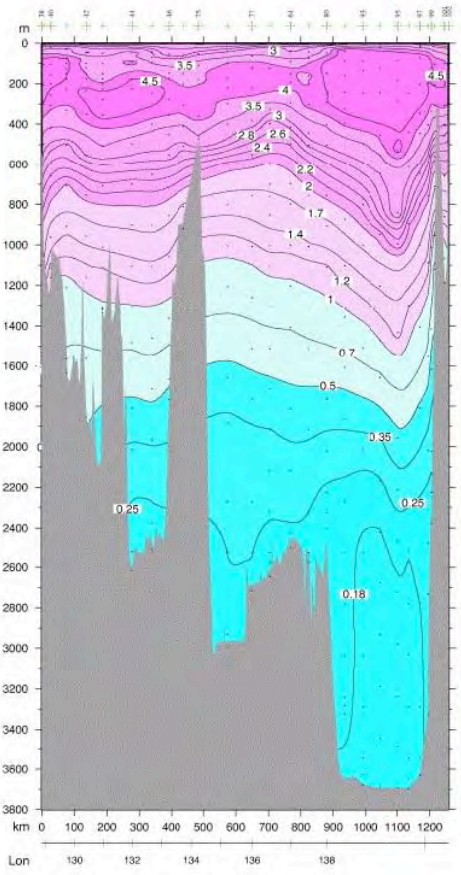

Nitrite (µmol/kg) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
Phosphate (µmol/kg) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
m
km
Lon

Dissolved Silica (µmol/kg) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N

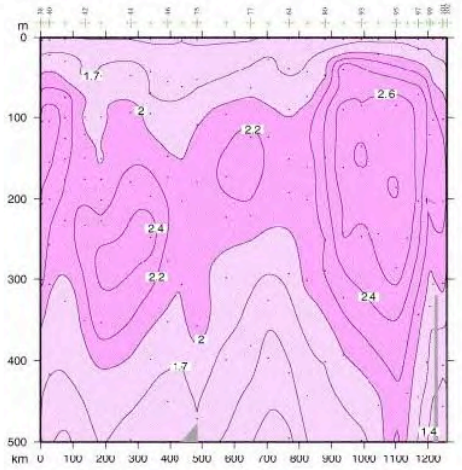


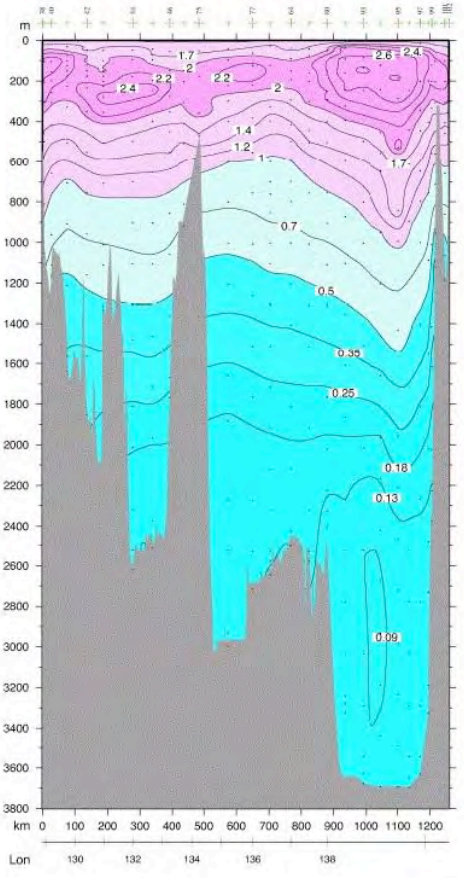
CFC-11 (pmol/kg) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N

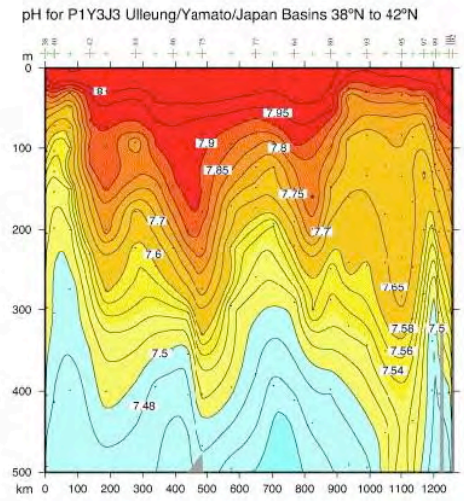


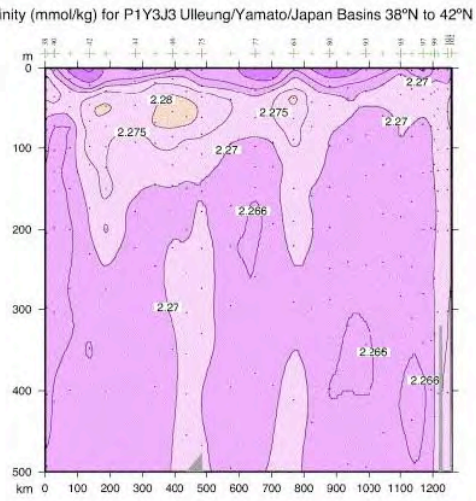


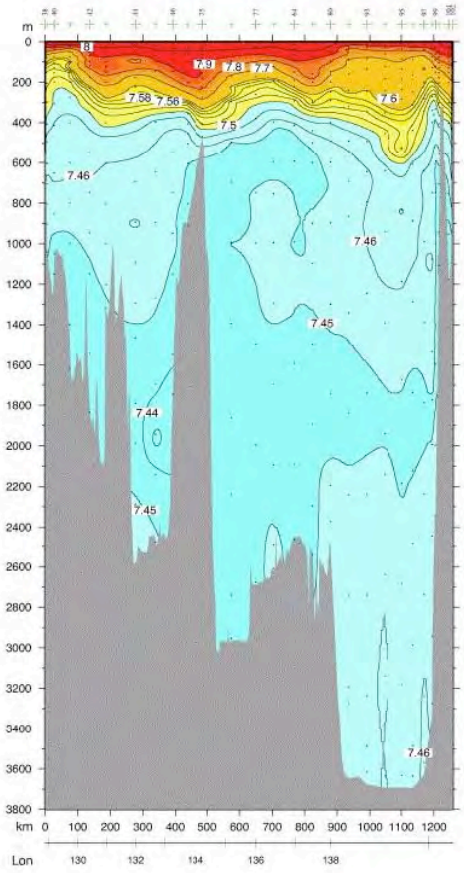
CFC-12 (pmol/kg) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N

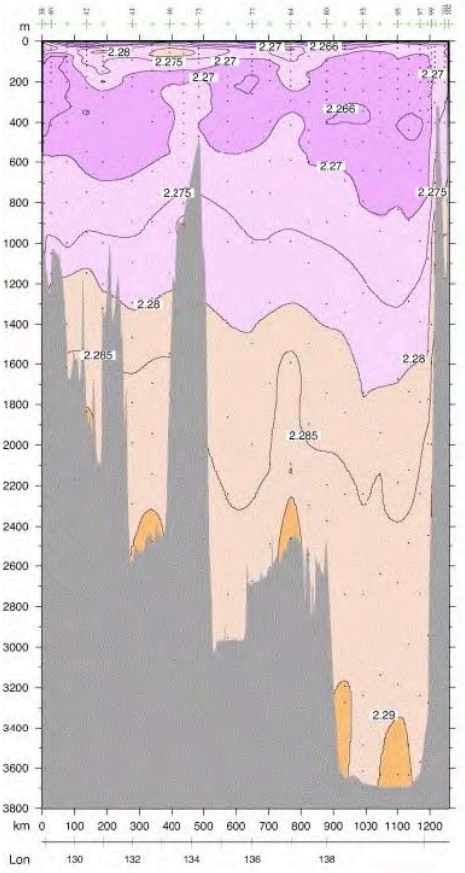





pH for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
m
km
8
7.95
7.9
7.8
7.85
7.75
7.7
7.6
7.65
7.58
7.5
7.56
7.54
7.48


Alkalinity (mmol/kg) for P1Y3J3 Ulleung/Yamato/Japan Basins 38°N to 42°N
m
km
2.28
2.275
2.27
2.266


m
km
Lon
8
7.9
7.8
7.7
7.58
7.56
7.6
7.5
7.46
7.45
7.44


m
km
Lon
2.28
2.275
2.27
2.266
2.285
2.29

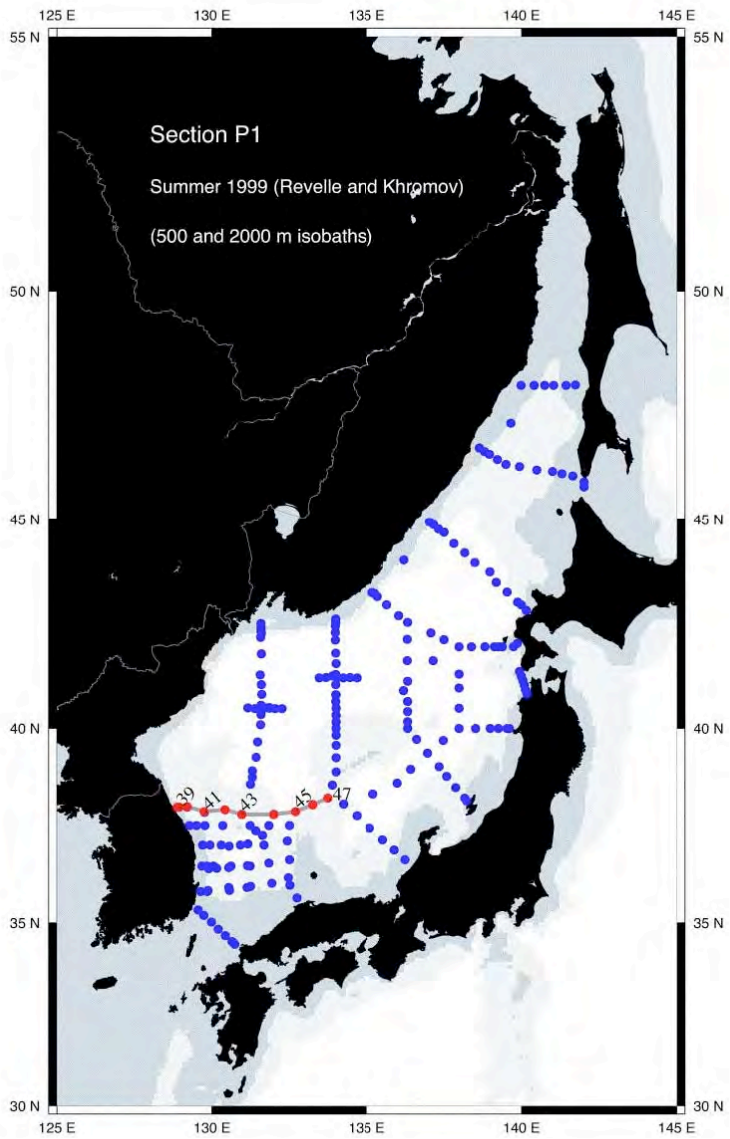
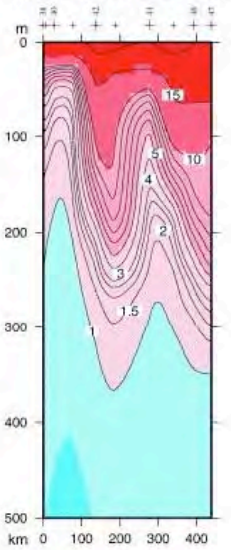
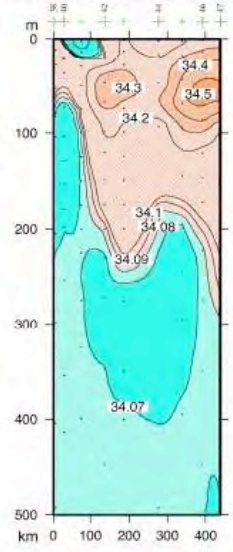


Figure D7. Vertical sections through approximately 38°N (Ulleung Basin) (P1 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1. The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

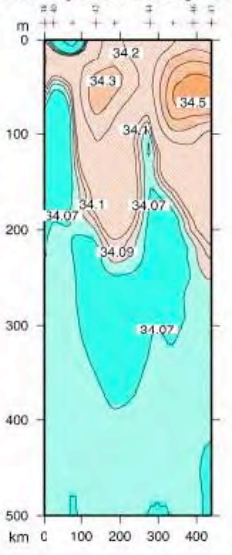
Potential Temperature (°C) for P1 Ulleung Basin 38°N

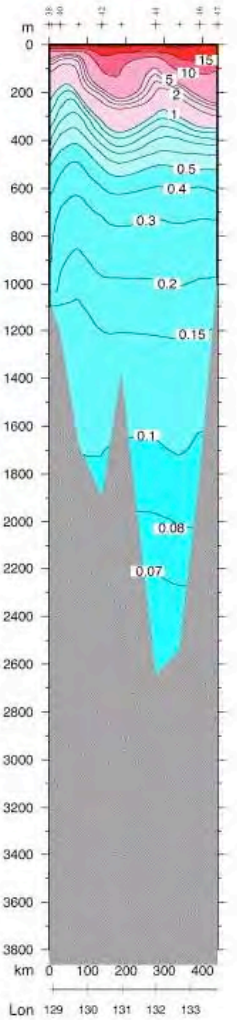


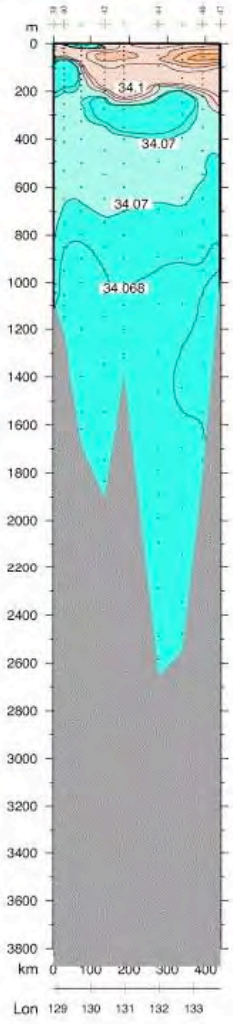
Salinity for P1 Ulleung Basin 38°N

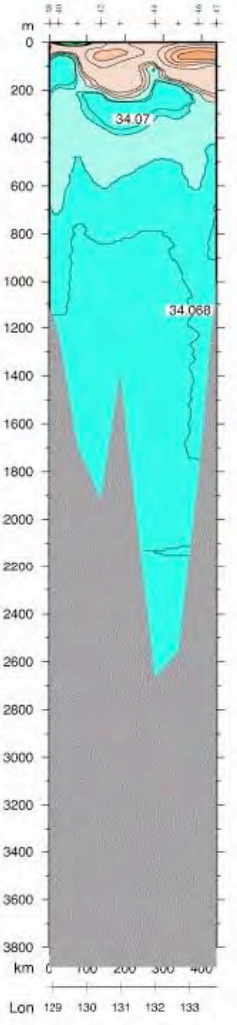


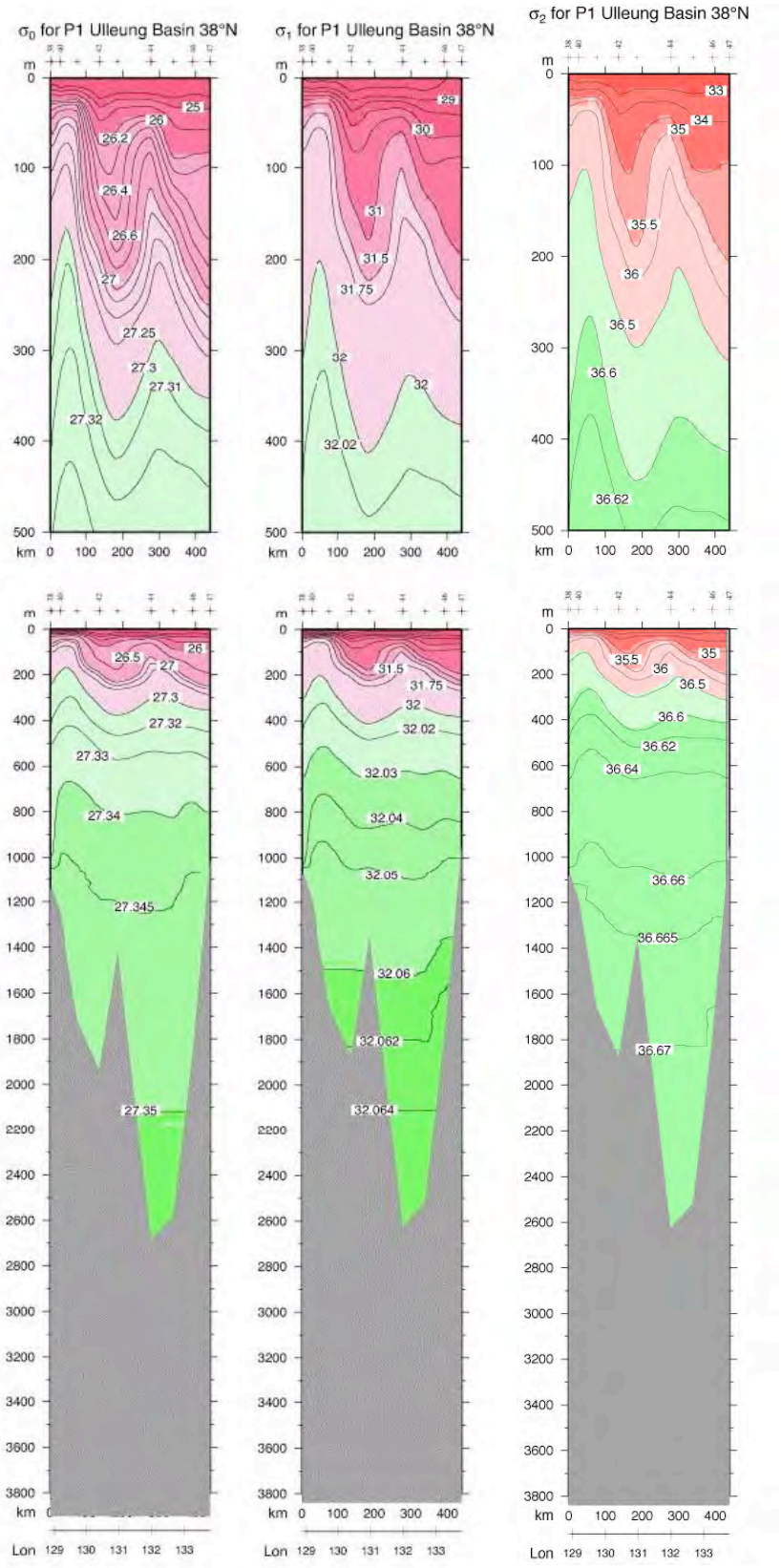
CTD Salinity for P1 Ulleung Basin 38°N

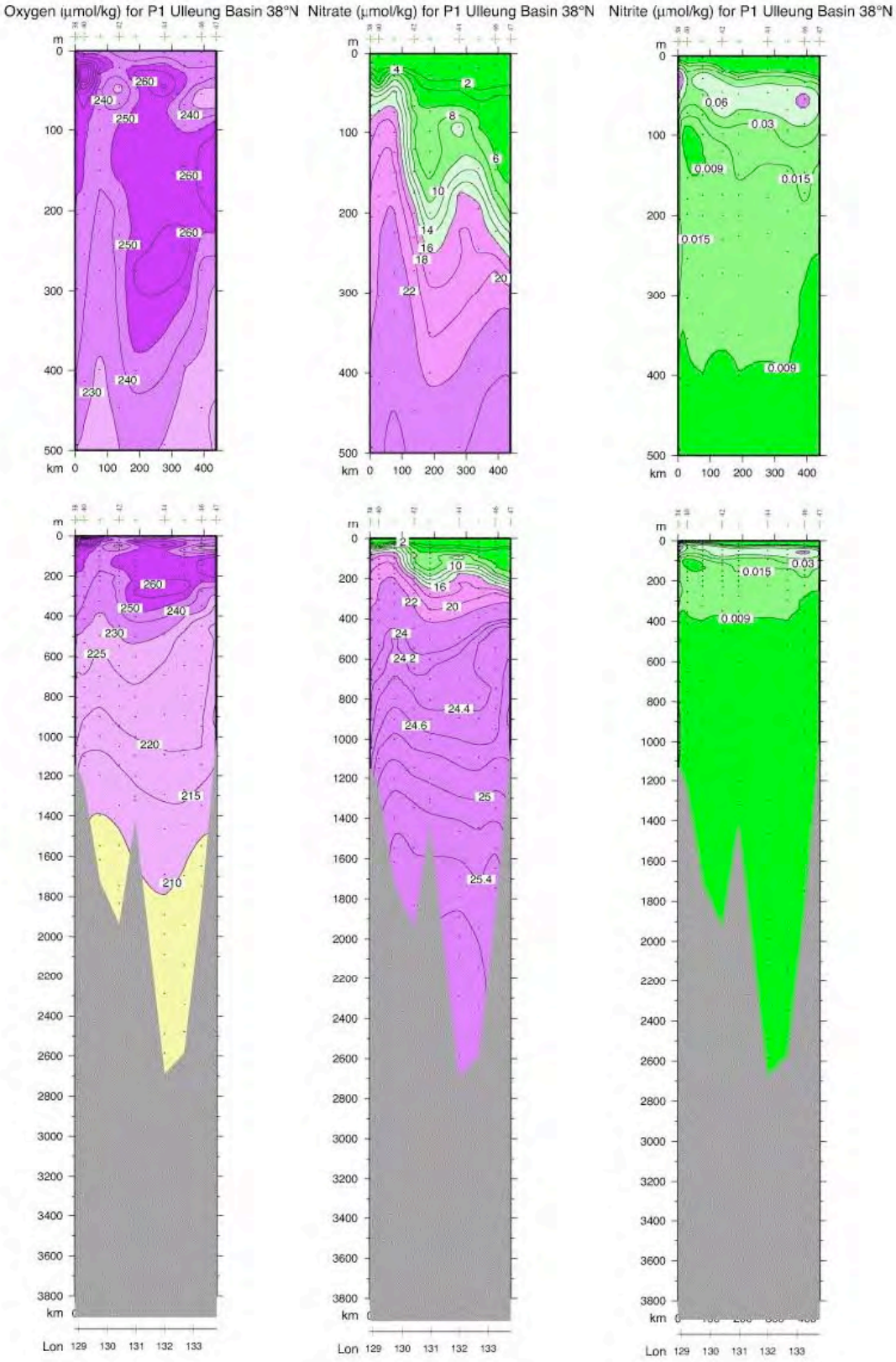


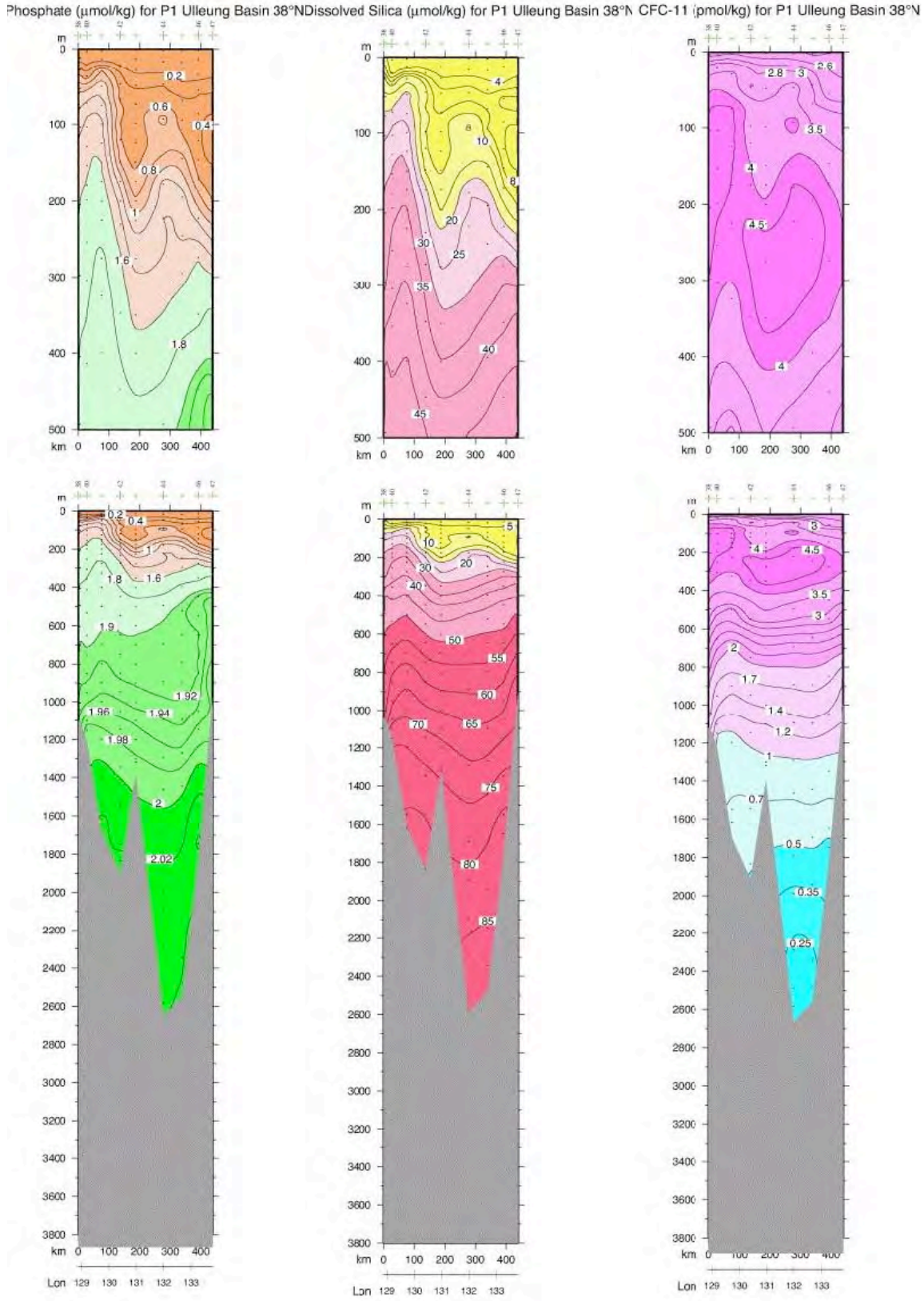


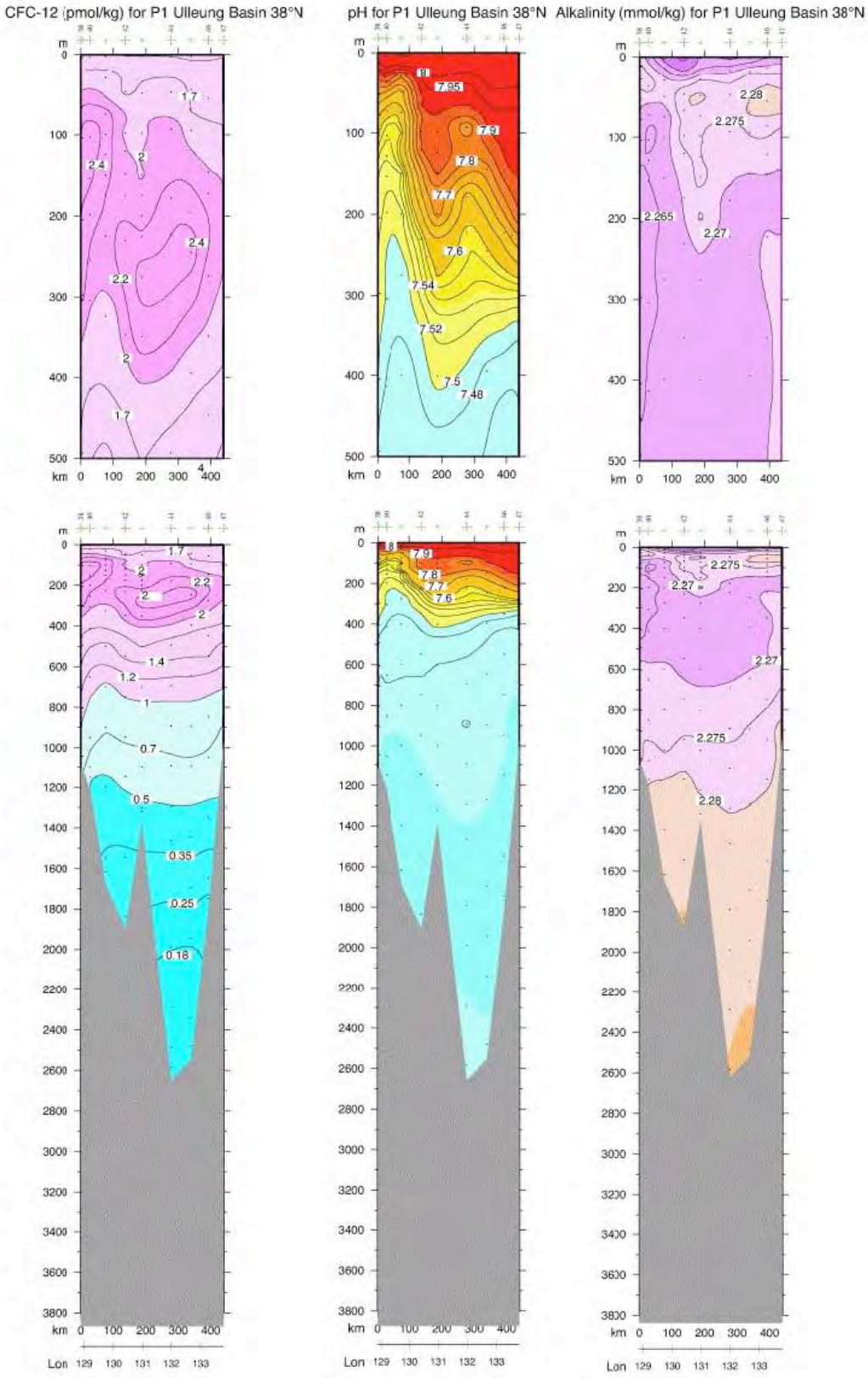





σ0 for P1 Ulleung Basin 38°N
σ1 for P1 Ulleung Basin 38°N
σ2 for P1 Ulleung Basin 38°N
m
km
Lon
25
26
26.2
26.4
26.6
27
27.25
27.3
27.31
27.32
29
30
31
31.5
31.75
32
32.02
33
34
35
35.5
36
36.5
36.6
36.62
26
26.5
27
27.3
27.32
27.33
27.34
27.345
27.35
31.5
31.75
32
32.02
32.03
32.04
32.05
32.06
32.062
32.064
35
35.5
36
36.5
36.6
36.62
36.64
36.66
36.665
36.67
0 100 200 300 400
129 130 131 132 133


Oxygen (µmol/kg) for P1 Ulleung Basin 38°N
Nitrate (µmol/kg) for P1 Ulleung Basin 38°N
Nitrite (µmol/kg) for P1 Ulleung Basin 38°N
m
km
Lon
129
130
131
132
133


Phosphate (µmol/kg) for P1 Ulleung Basin 38°N
Dissolved Silica (µmol/kg) for P1 Ulleung Basin 38°N
CFC-11 (pmol/kg) for P1 Ulleung Basin 38°N
m
km
Lon
129 130 131 132 133


CFC-12 (pmol/kg) for P1 Ulleung Basin 38°N
pH for P1 Ulleung Basin 38°N
Alkalinity (mmol/kg) for P1 Ulleung Basin 38°N
m
km
Lon
0
100
200
300
400
500
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
129
130
131
132
133
1.7
2
2.4
2.2
1.4
1.2
1
0.7
0.5
0.35
0.25
0.18
8
7.95
7.9
7.8
7.7
7.6
7.54
7.52
7.5
7.48
2.28
2.275
2.265
2.27

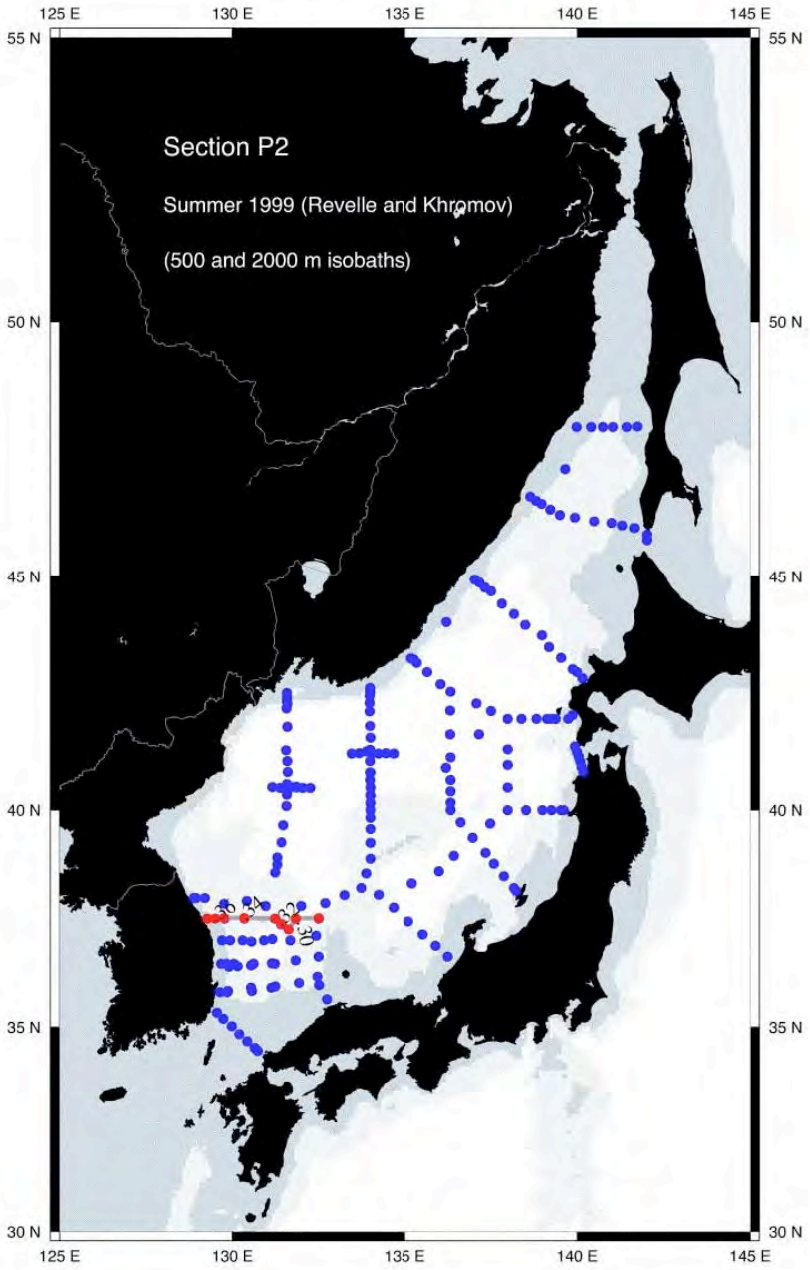
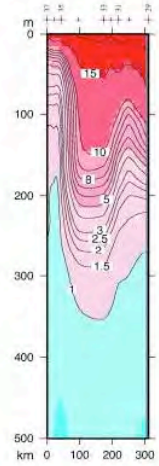
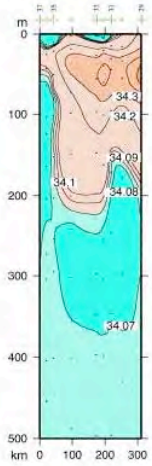


Figure D8. Vertical sections at approximately 37°30'N (Ulleung Basin) (P2 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg).The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1. The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

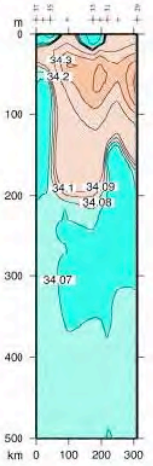
Potential Temperature (°C) for P2 Ulleung Basin 37°30'N

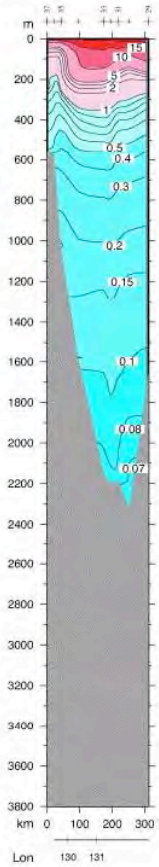


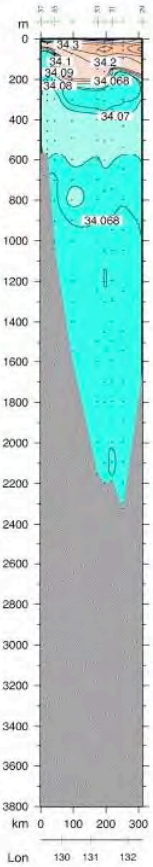
Salinity for P2 Ulleung Basin 37°30'N

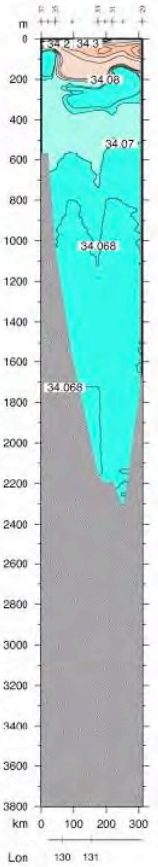


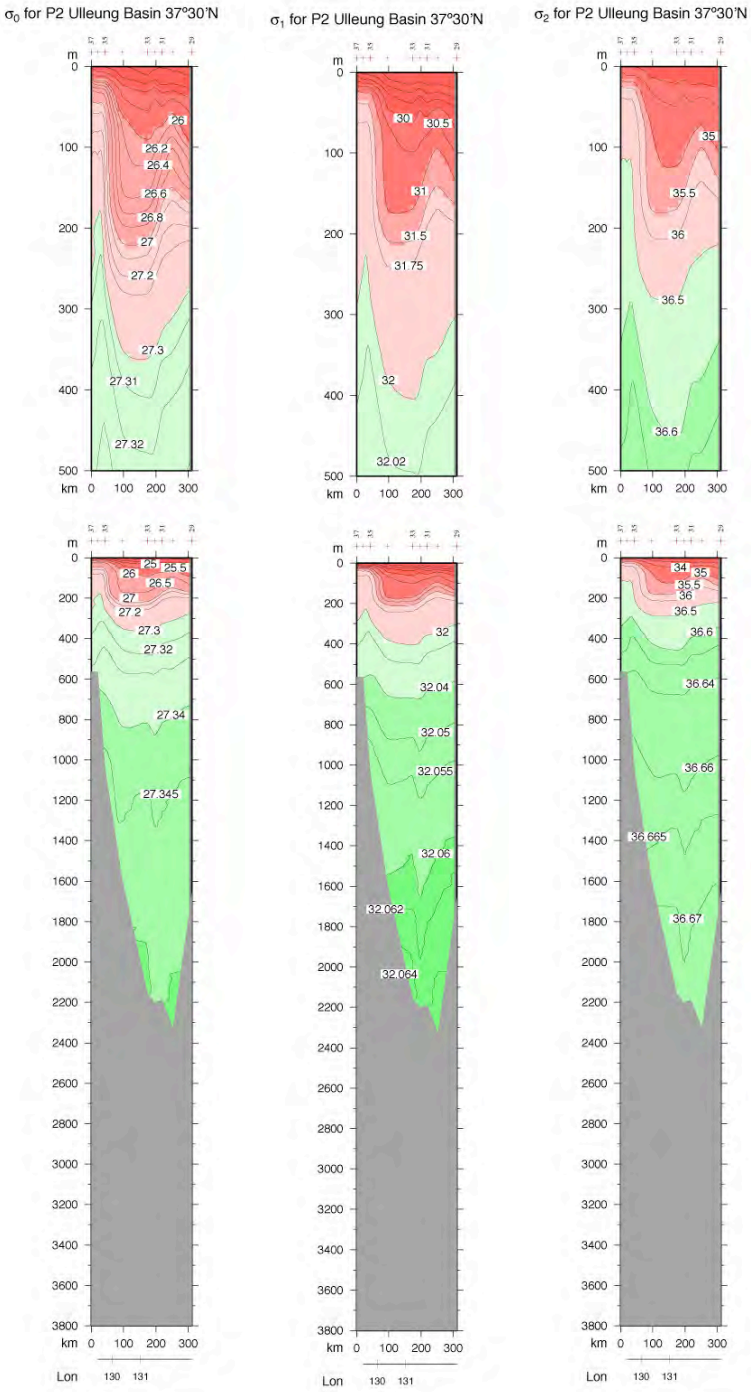
CTD Salinity for P2 Ulleung Basin 37°30'N

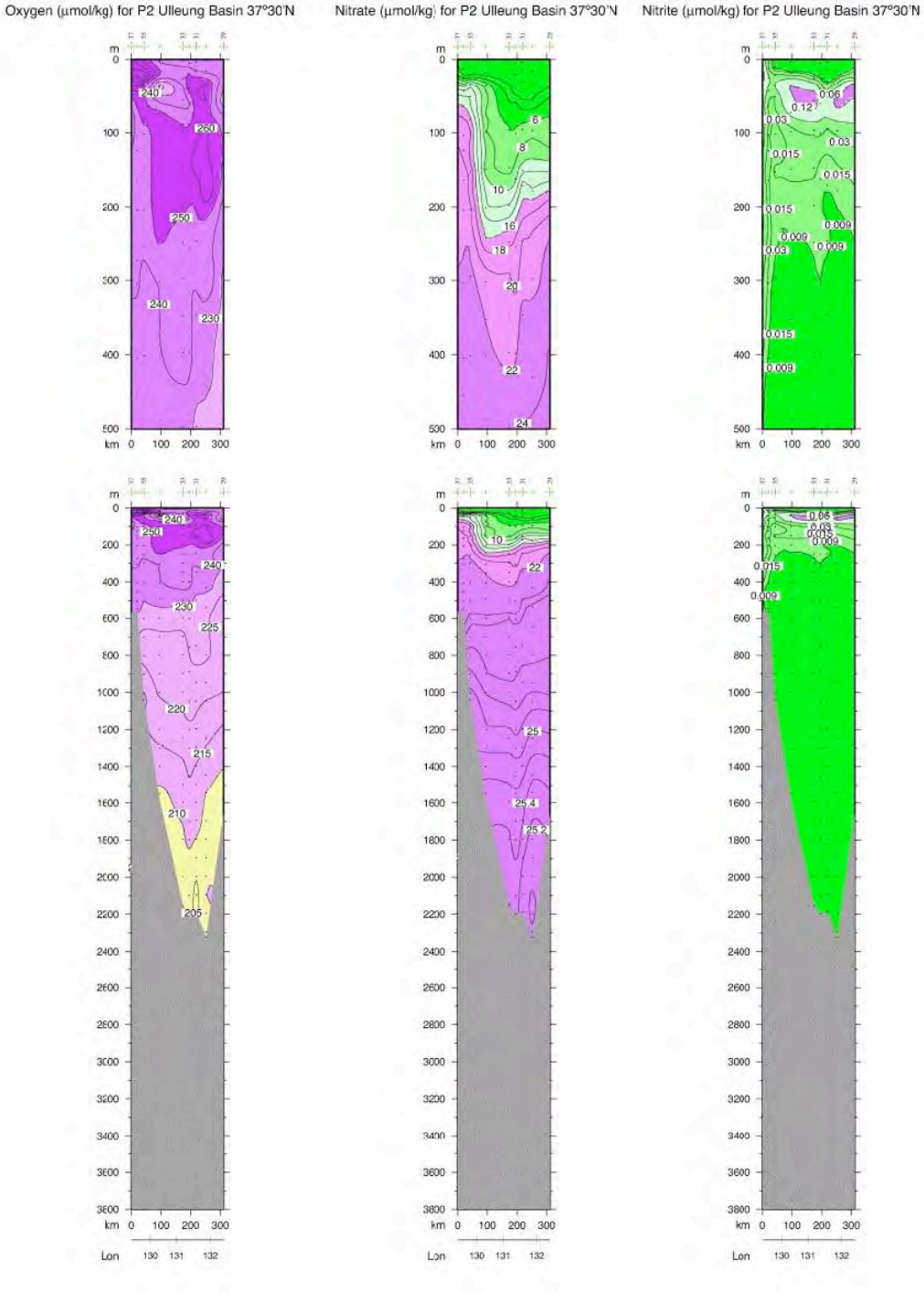




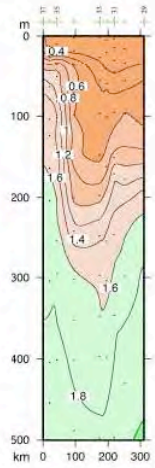




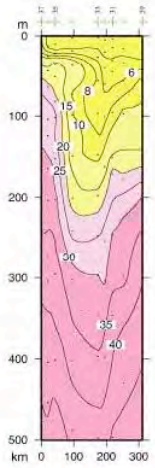

σ0 for P2 Ulleung Basin 37°30'N
σ1 for P2 Ulleung Basin 37°30'N
σ2 for P2 Ulleung Basin 37°30'N
m
km
Lon
26
26.2
26.4
26.6
26.8
27
27.2
27.3
27.31
27.32
30
30.5
31
31.5
31.75
32
32.02
35
35.5
36
36.5
36.6
25
25.5
26.5
27.34
27.345
32.04
32.05
32.055
32.06
32.062
32.064
34
35.5
36.64
36.66
36.665
36.67


Oxygen (µmol/kg) for P2 Ulleung Basin 37°30'N
Nitrate (µmol/kg) for P2 Ulleung Basin 37°30'N
Nitrite (µmol/kg) for P2 Ulleung Basin 37°30'N
m
km
Lon
130 131 132

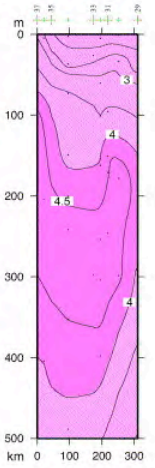
Phosphate (µmol/kg) for P2 Ulleung Basin 37°30'N

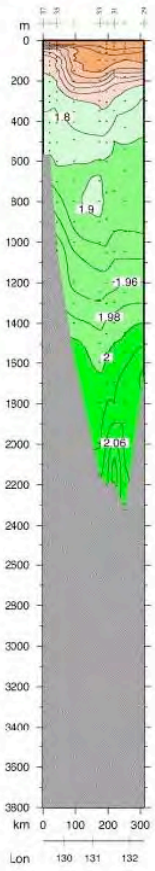


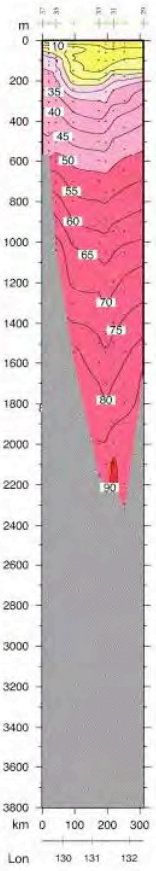
Dissolved Silica (µmol/kg) for P2 Ulleung Basin 37°30'N

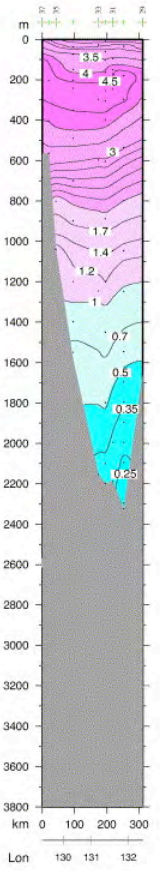


CFC-11 (pmol/kg) for P2 Ulleung Basin 37°30'N

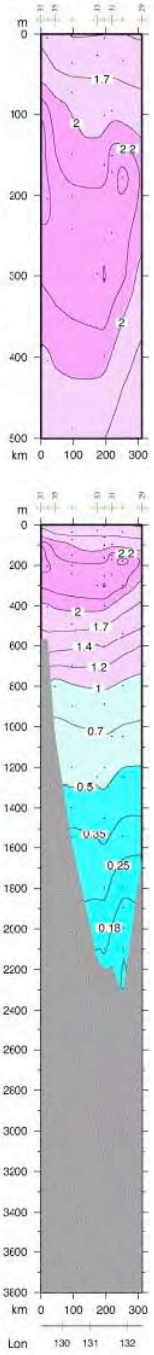




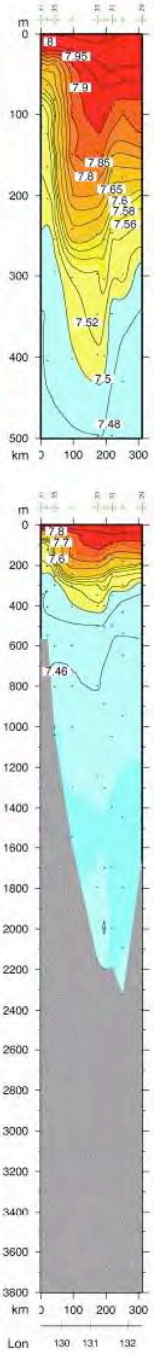




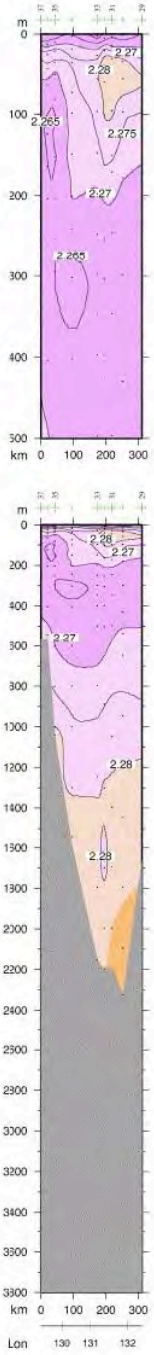
CFC-12 (pmol/kg) for P2 Ulleung Basin 37°30'N



pH for P2 Ulleung Basin 37°30'N



Alkalinity (mmol/kg) for P2 Ulleung Basin 37°30'N



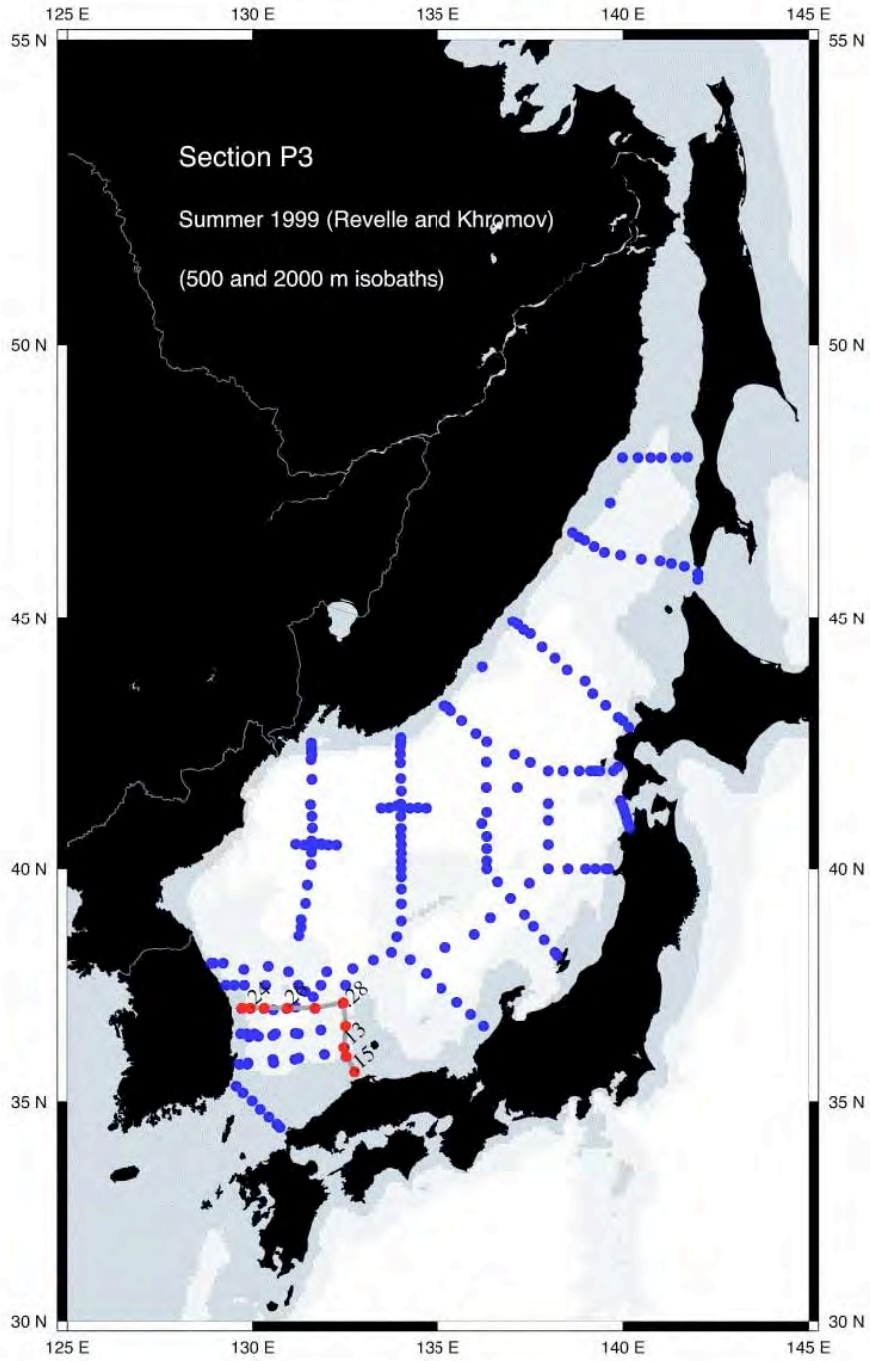
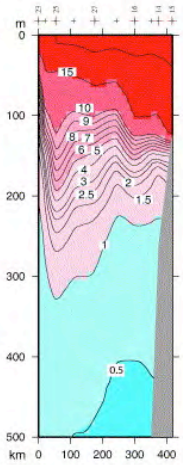
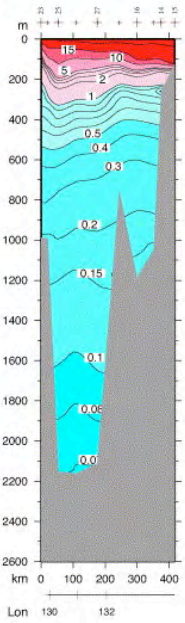


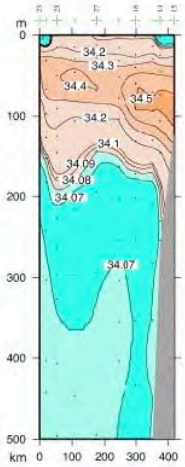
Figure D9. Vertical sections at approximately 37°N (Ulleung Basin) (P3 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

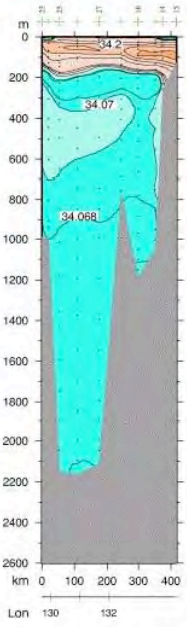
Potential Temperature (°C) for P3 Ulleung Basin 37°N



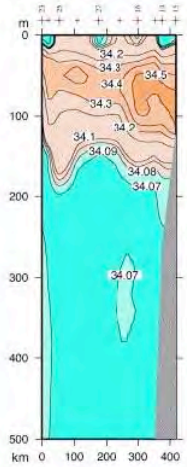


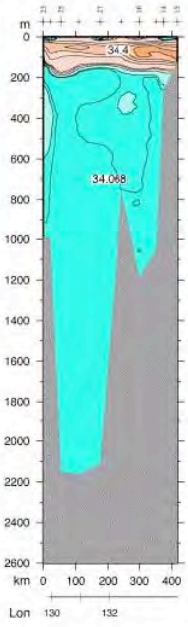
Salinity for P3 Ulleung Basin 37°N

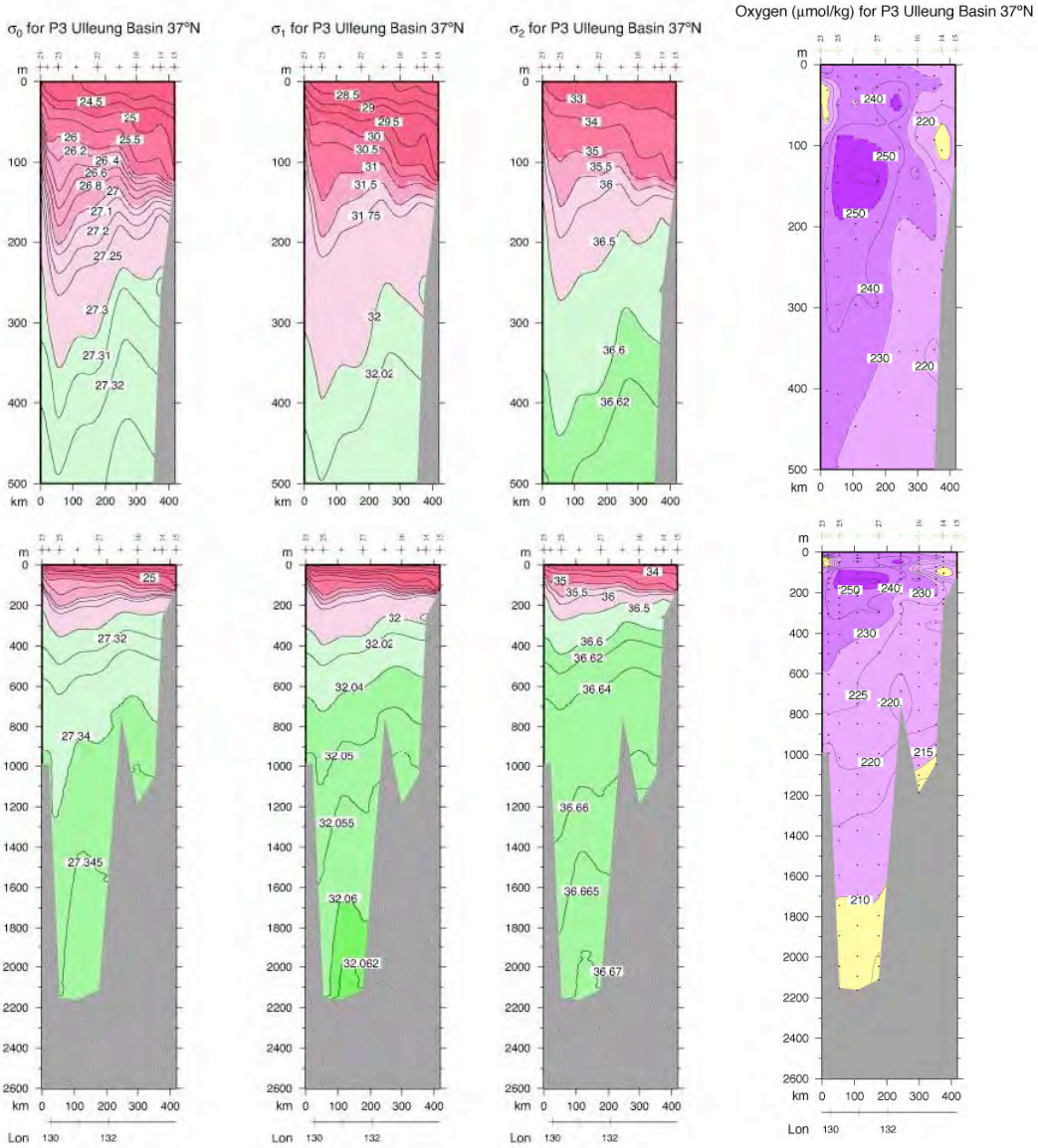


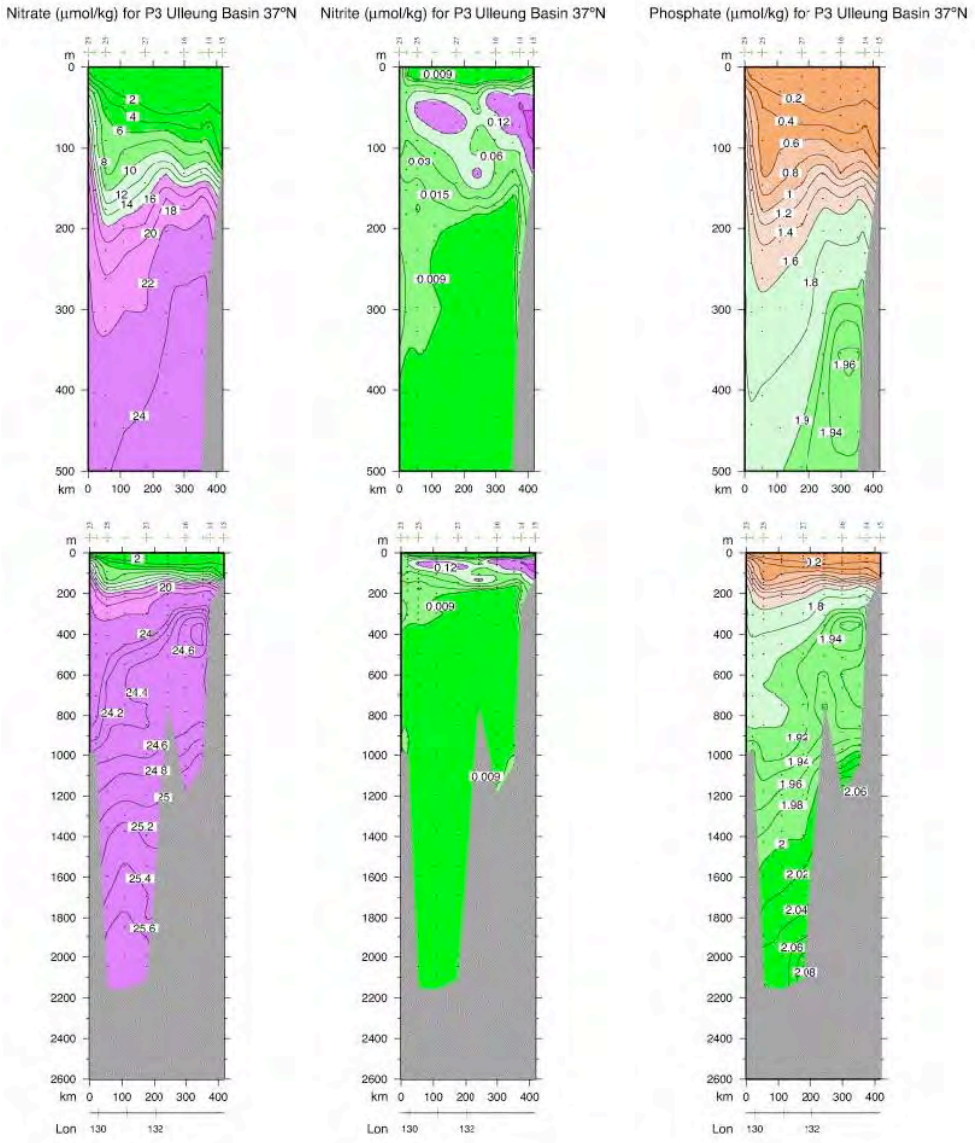


CTD Salinity for P3 Ulleung Basin 37°N

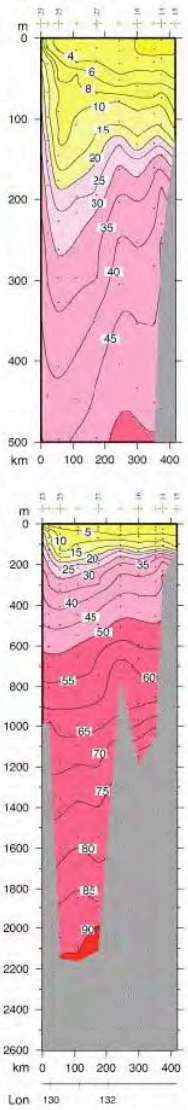




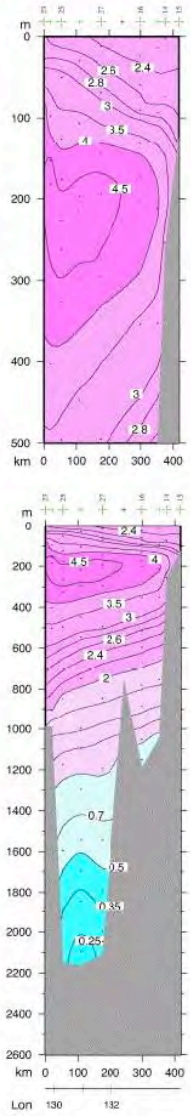

σ_0 for P3 Ulleung Basin 37°N
σ_1 for P3 Ulleung Basin 37°N
σ_2 for P3 Ulleung Basin 37°N
Oxygen (µmol/kg) for P3 Ulleung Basin 37°N
m
km
Lon
130
132


Nitrate (µmol/kg) for P3 Ulleung Basin 37°N
Nitrite (µmol/kg) for P3 Ulleung Basin 37°N
Phosphate (µmol/kg) for P3 Ulleung Basin 37°N
m
km
Lon

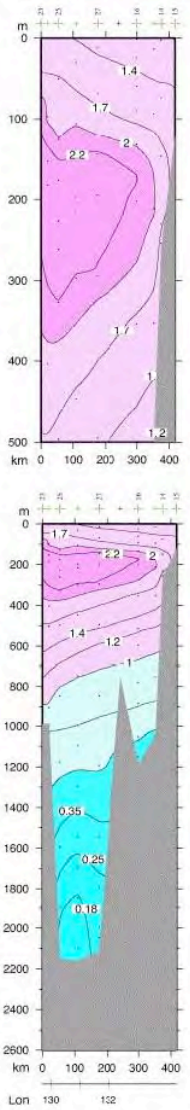
Dissolved Silica (μmol/kg) for P3 Ulleung Basin 37°N



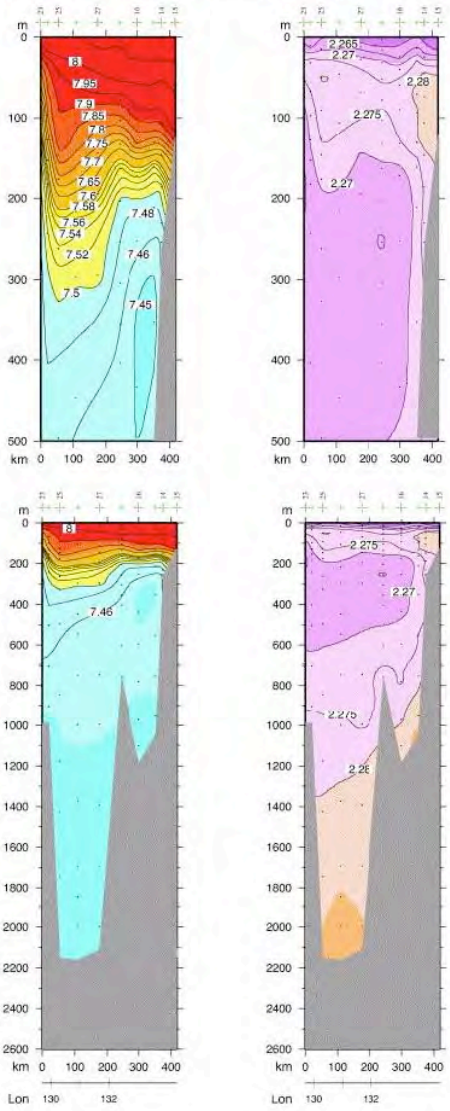
CFC-11 (pmol/kg) for P3 Ulleung Basin 37°N



CFC-12 (pmol/kg) for P3 Ulleung Basin 37°N



pH for P3 Ulleung Basin 37°N Alkalinity (mmol/kg) for P3 Ulleung Basin 37°N



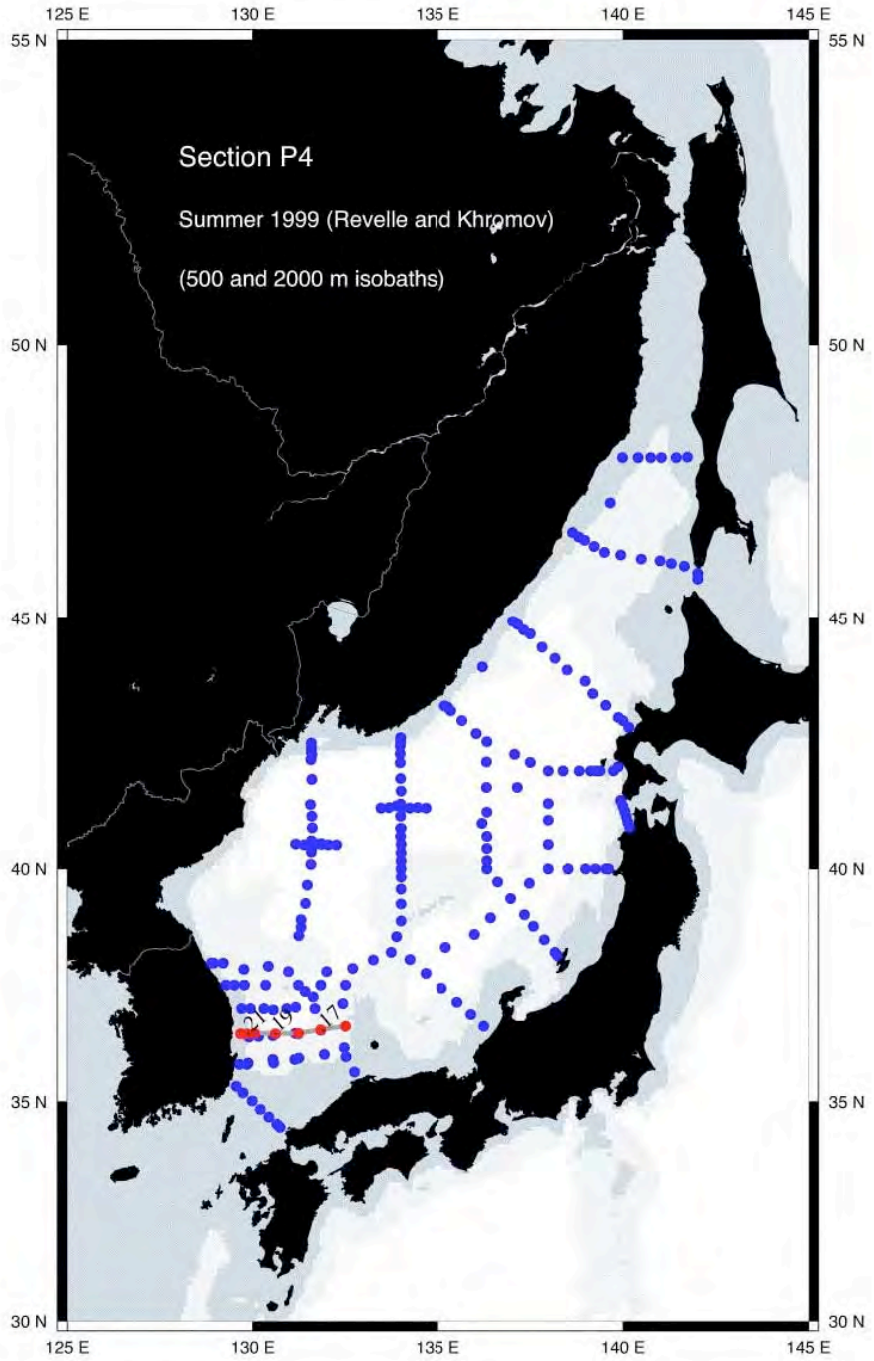
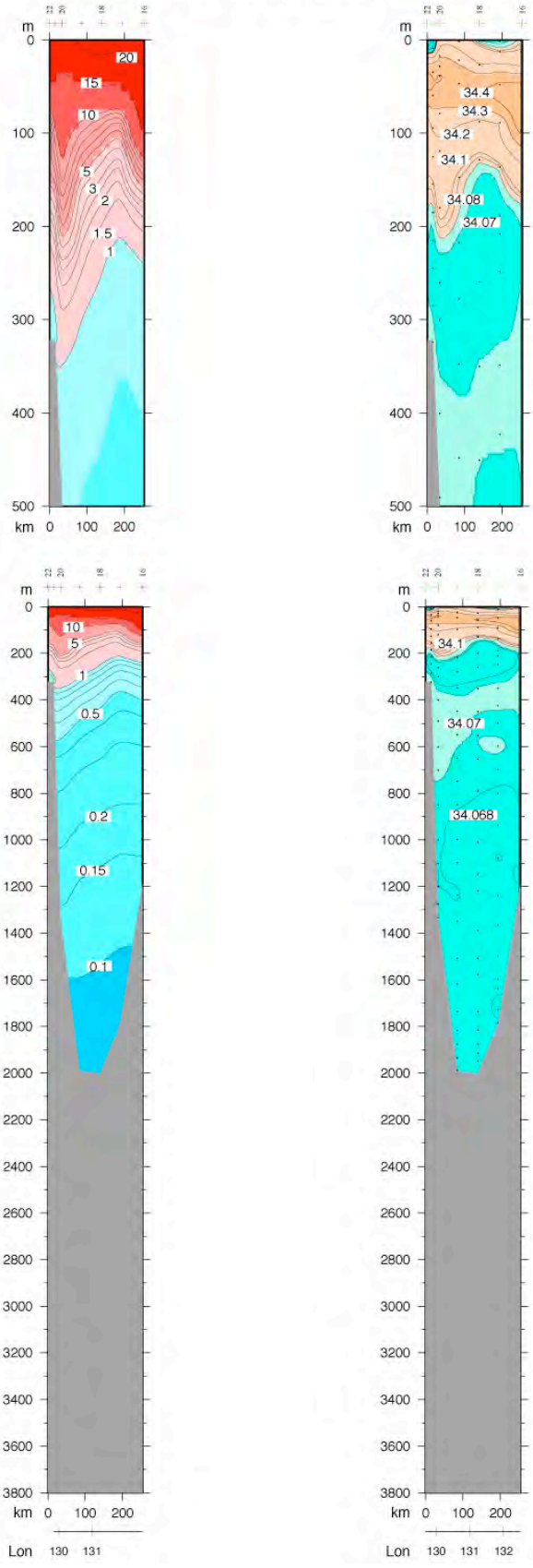
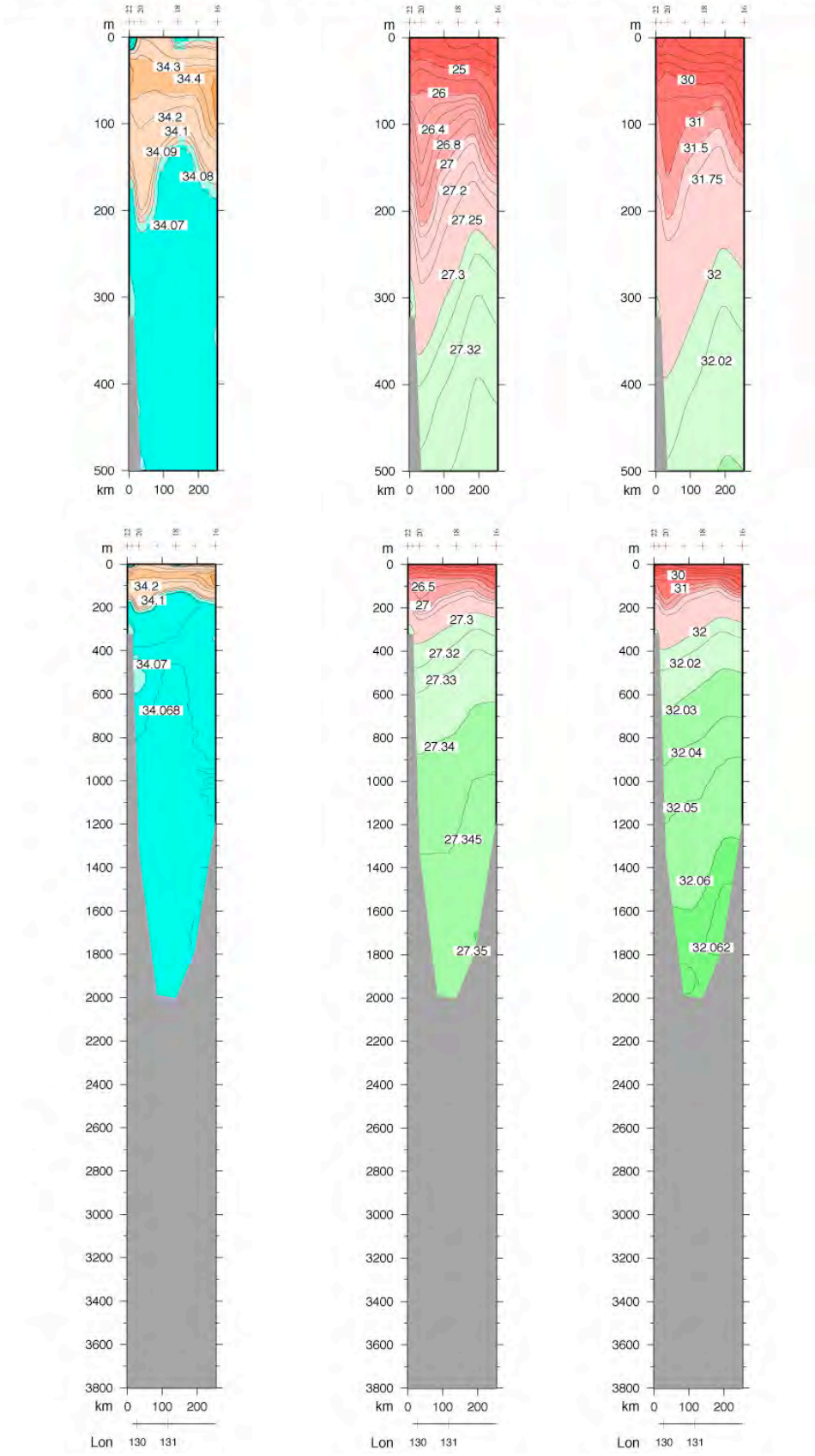


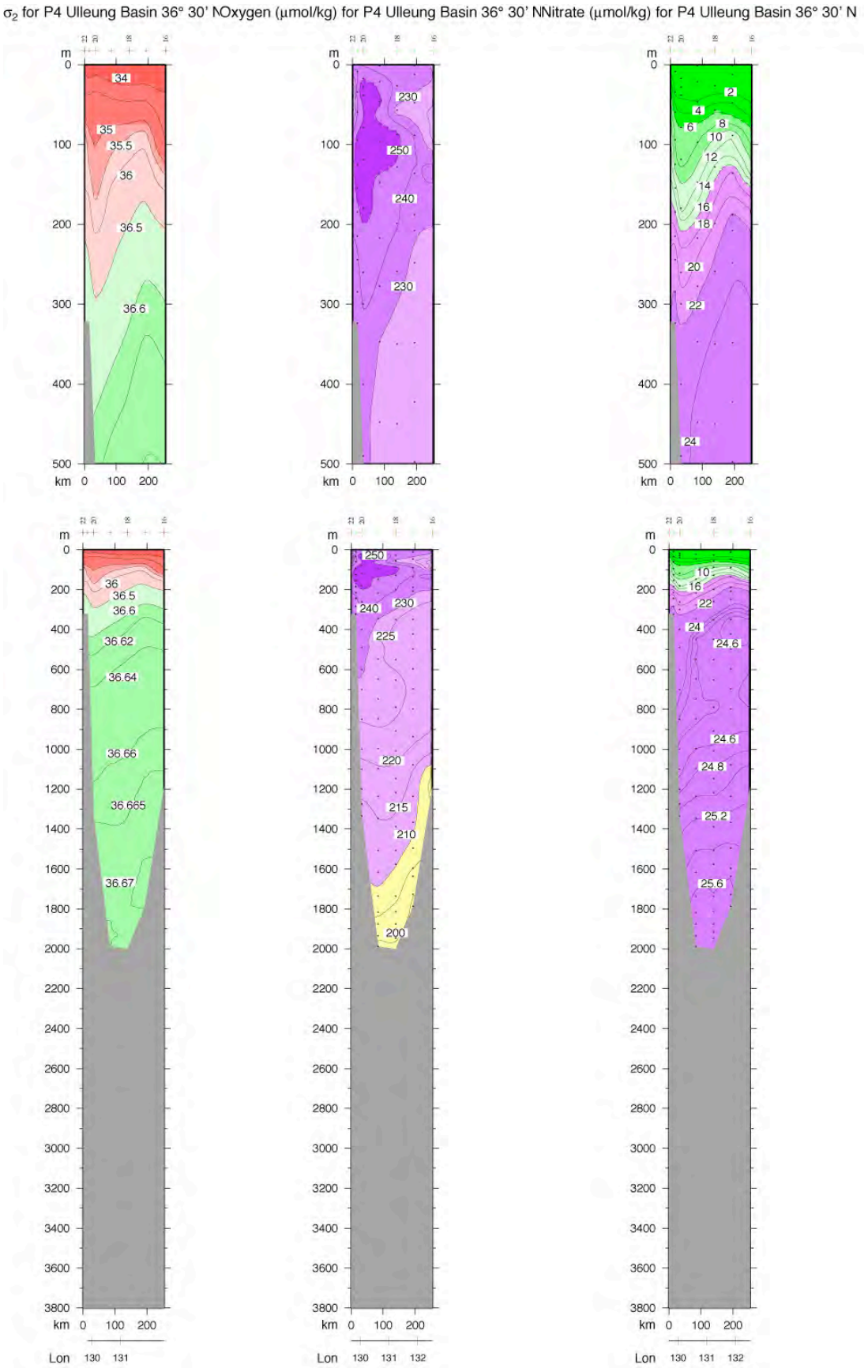
Figure D10. Vertical sections at approximately 36°30'N (Ulleung Basin) (P4 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

Potential Temperature (°C) for P4 Ulleung Basin 36° 30' N Salinity for P4 Ulleung Basin 36° 30' N

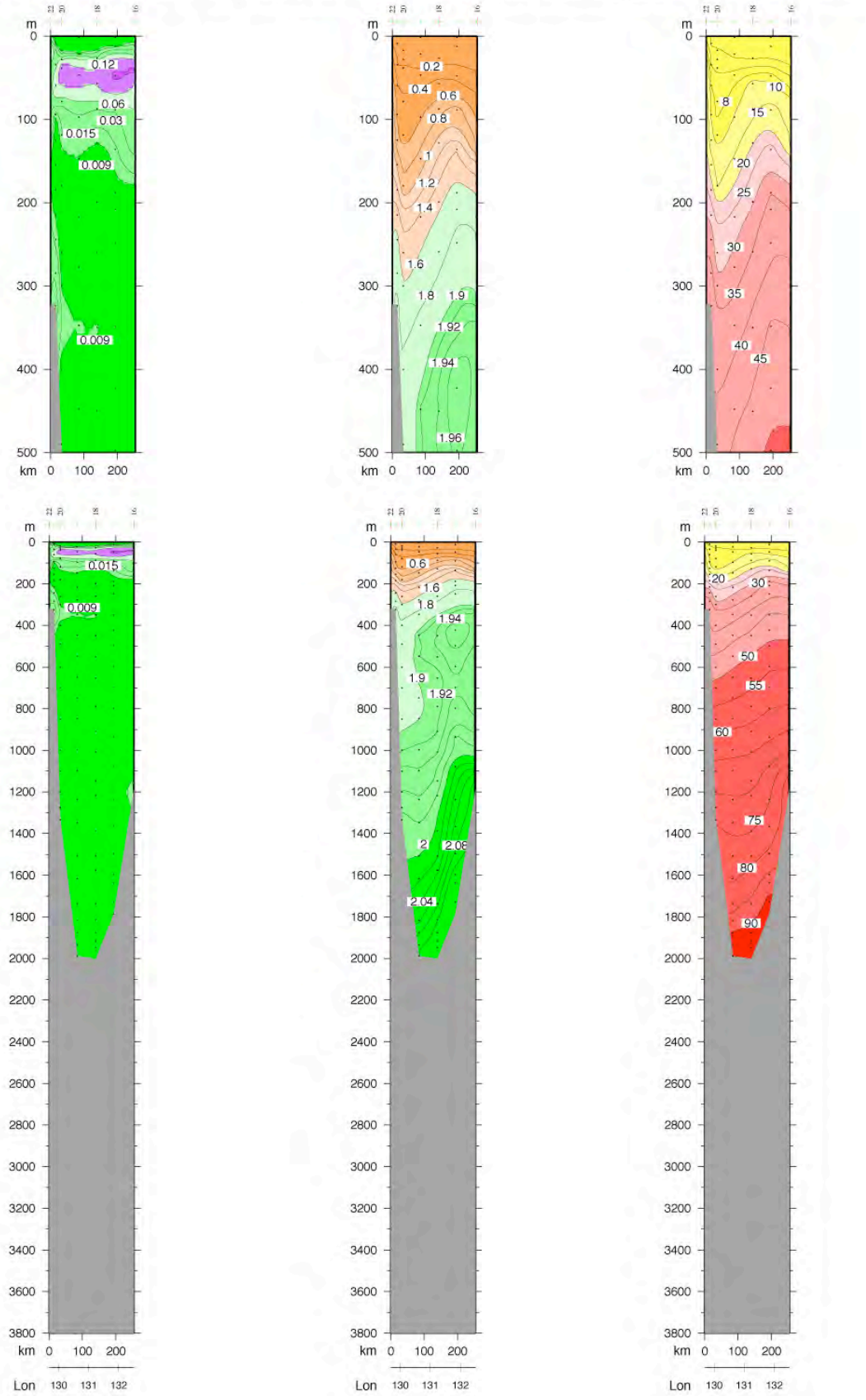


CTD Salinity for P4 Ulleung Basin 36° 30' N σ_0 for P4 Ulleung Basin 36° 30' N σ_1 for P4 Ulleung Basin 36° 30' N

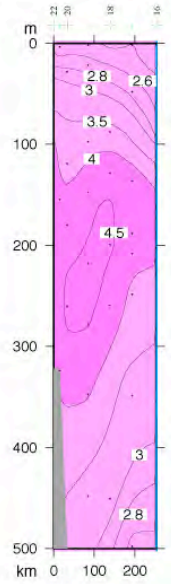



σ2 for P4 Ulleung Basin 36° 30' NOxygen (µmol/kg) for P4 Ulleung Basin 36° 30' NNitrate (µmol/kg) for P4 Ulleung Basin 36° 30' N
m
km
Lon
34
35
35.5
36
36.5
36.6
230
250
240
230
2
4
6
8
10
12
14
16
18
20
22
24
36
36.5
36.6
36.62
36.64
36.66
36.665
36.67
250
240
230
225
220
215
210
200
10
16
22
24
24.6
24.6
24.8
25.2
25.6

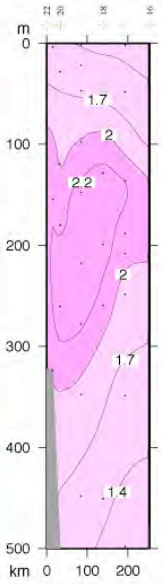
Nitrite (µmol/kg) for P4 Ulleung Basin 36° 30' NPhosphate (µmol/kg) for P4 Ulleung Basin Dissolved Silica (µmol/kg) for P4 Ulleung Basin

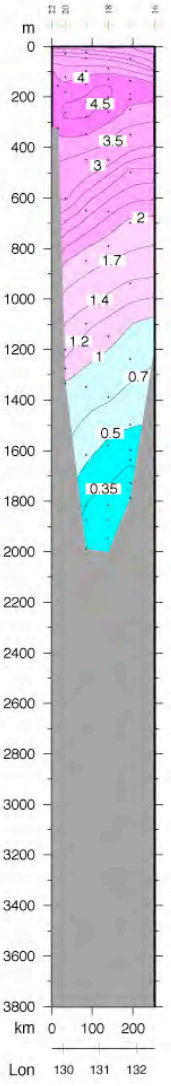


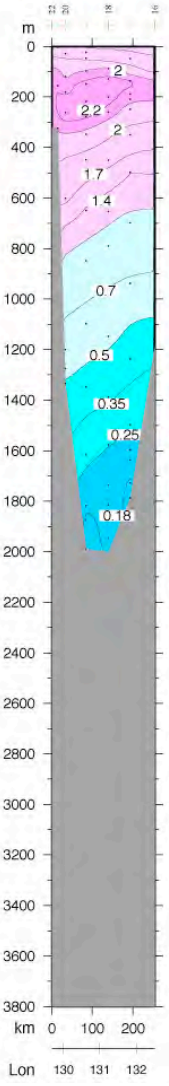
CFC-11 (pmol/kg) for P4 Ulleung Basin 36° 30' N



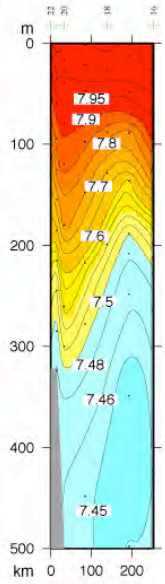
CFC-12 (pmol/kg) for P4 Ulleung Basin 36° 30' N

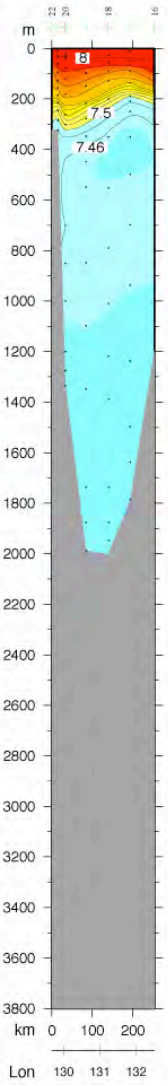




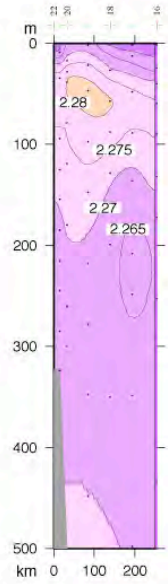


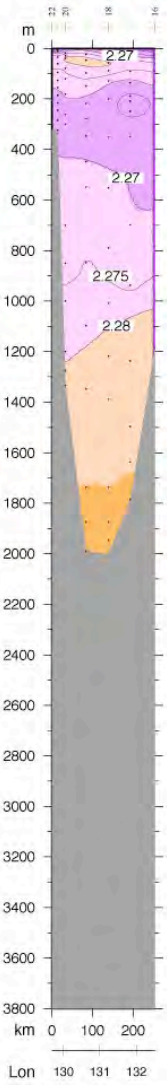
pH for P4 Ulleung Basin 36° 30' N





Alkalinity (mmol/kg) for P4 Ulleung Basin 36° 30' N





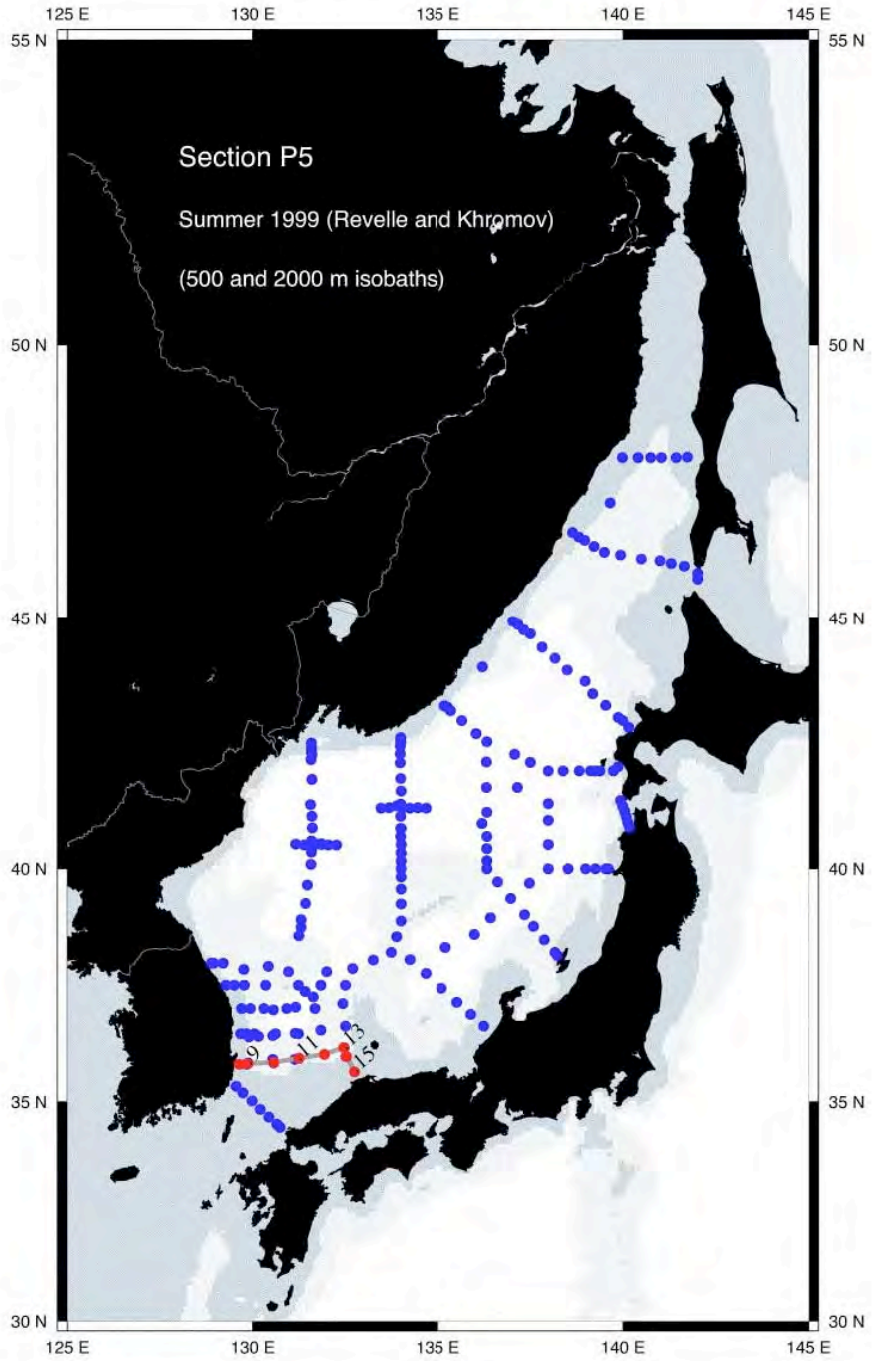
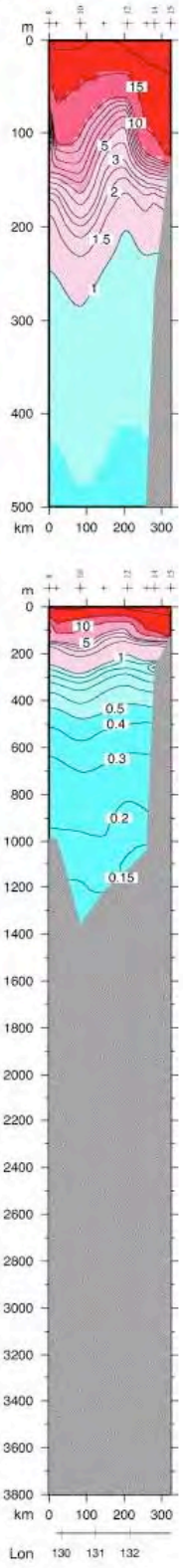
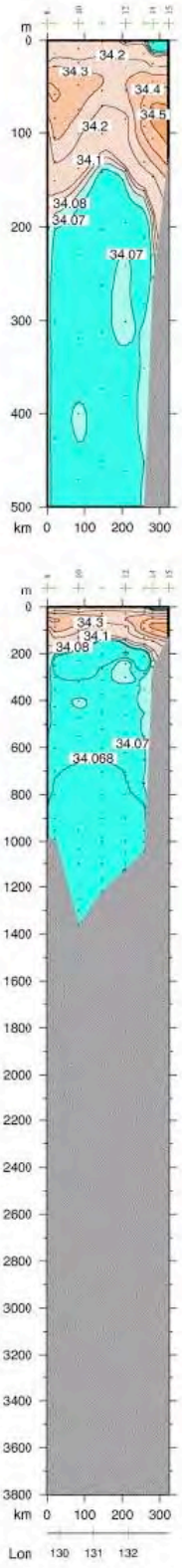


Figure D11. Vertical sections at approximately 36°N (Ulleung Basin) (P5 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

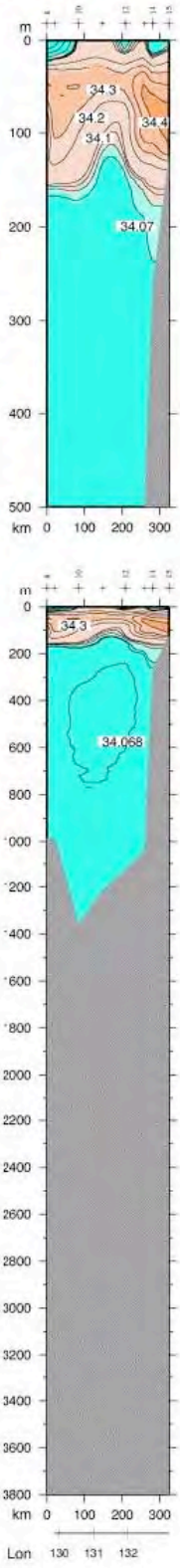
Potential Temperature (°C) for P5 Ulleung Basin 36° N

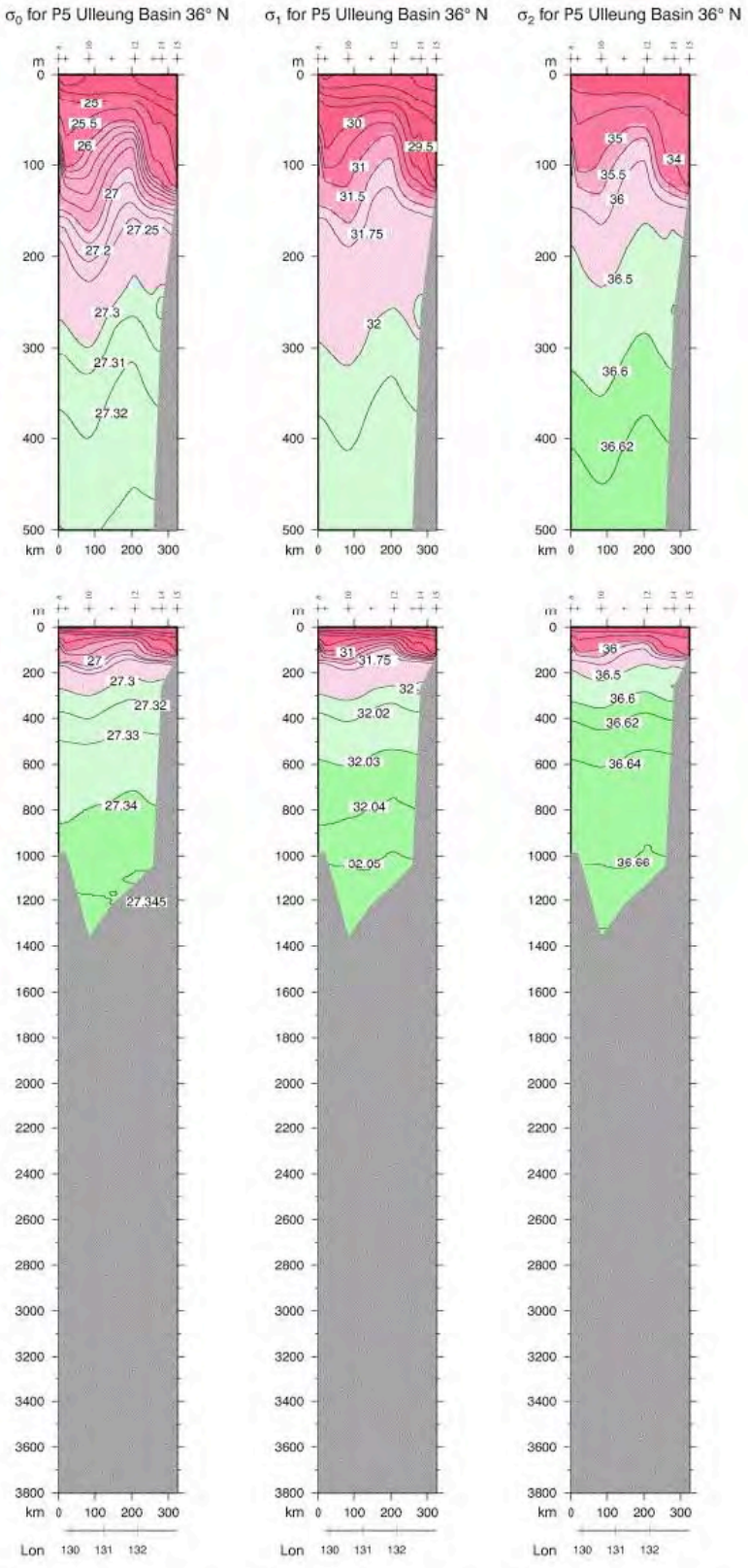


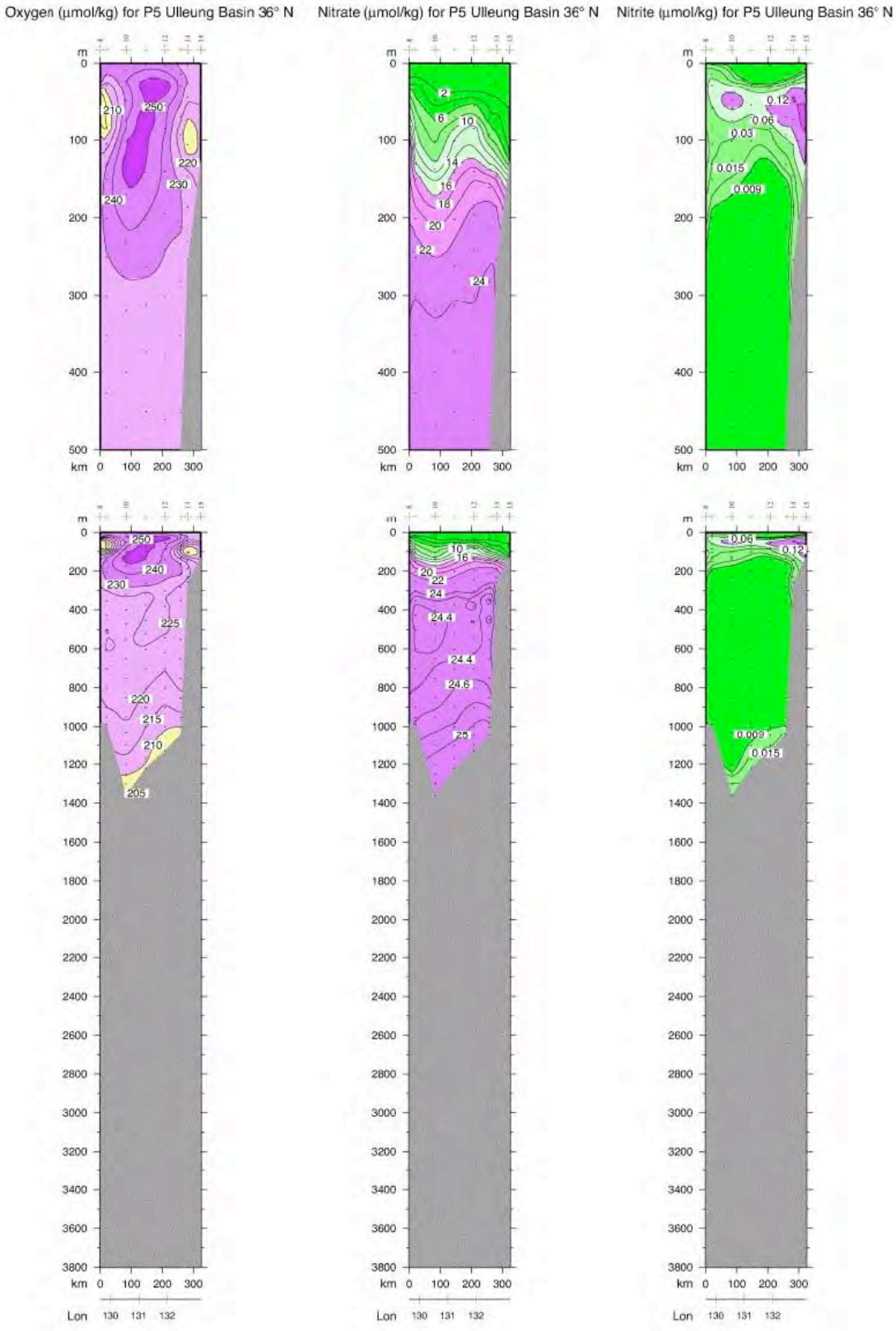
Salinity for P5 Ulleung Basin 36° N



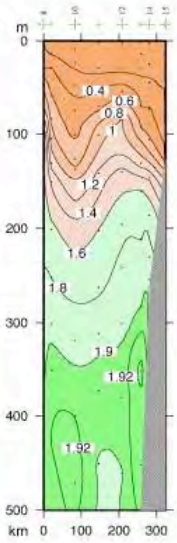
CTD Salinity for P5 Ulleung Basin 36° N



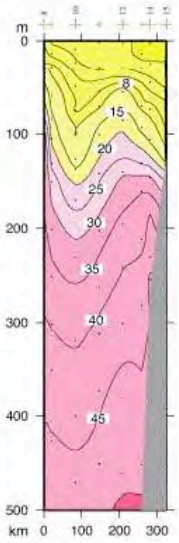

σ0 for P5 Ulleung Basin 36° N
σ1 for P5 Ulleung Basin 36° N
σ2 for P5 Ulleung Basin 36° N
m
km
Lon
25
25.5
26
27
27.25
27.2
27.3
27.31
27.32
30
29.5
31
31.5
31.75
32
35
34
35.5
36
36.5
36.6
36.62
27
27.3
27.32
27.33
27.34
27.345
31
31.75
32.02
32.03
32.04
32.05
36
36.5
36.6
36.62
36.64
36.66


Oxygen (µmol/kg) for P5 Ulleung Basin 36° N
Nitrate (µmol/kg) for P5 Ulleung Basin 36° N
Nitrite (µmol/kg) for P5 Ulleung Basin 36° N
m
km
Lon
130
131
132

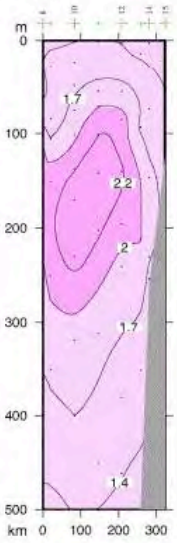
Phosphate (µmol/kg) for P5 Ulleung Basin 36° N

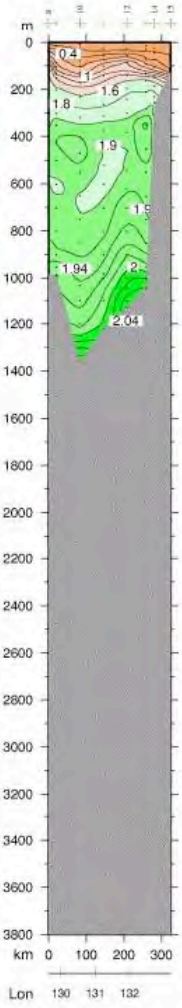


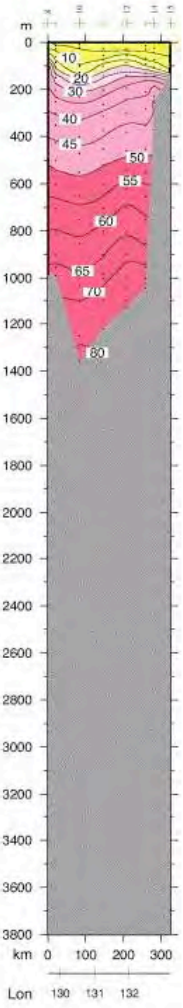
Dissolved Silica (µmol/kg) for P5 Ulleung Basin 3

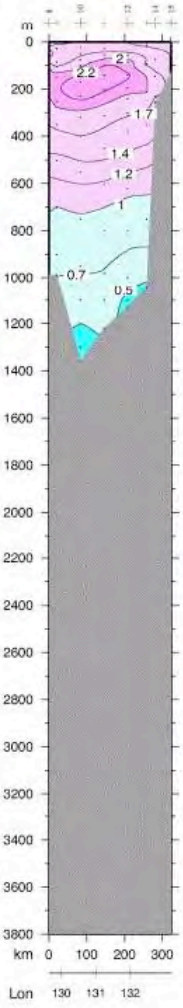


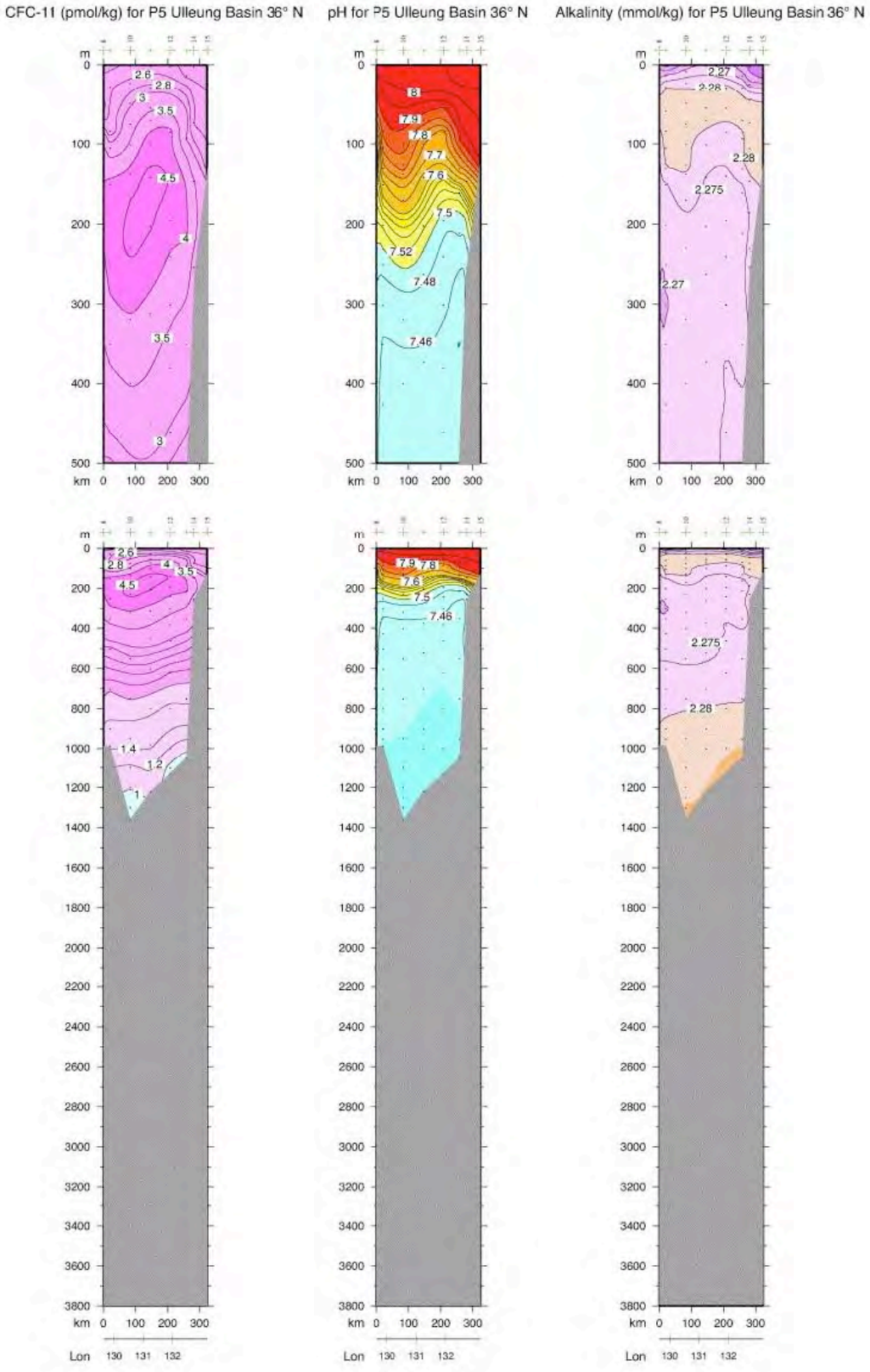
CFC-12 (pmol/kg) for P5 Ulleung Basin 36° N










CFC-11 (pmol/kg) for P5 Ulleung Basin 36° N
pH for P5 Ulleung Basin 36° N
Alkalinity (mmol/kg) for P5 Ulleung Basin 36° N
m
km
Lon
130
131
132

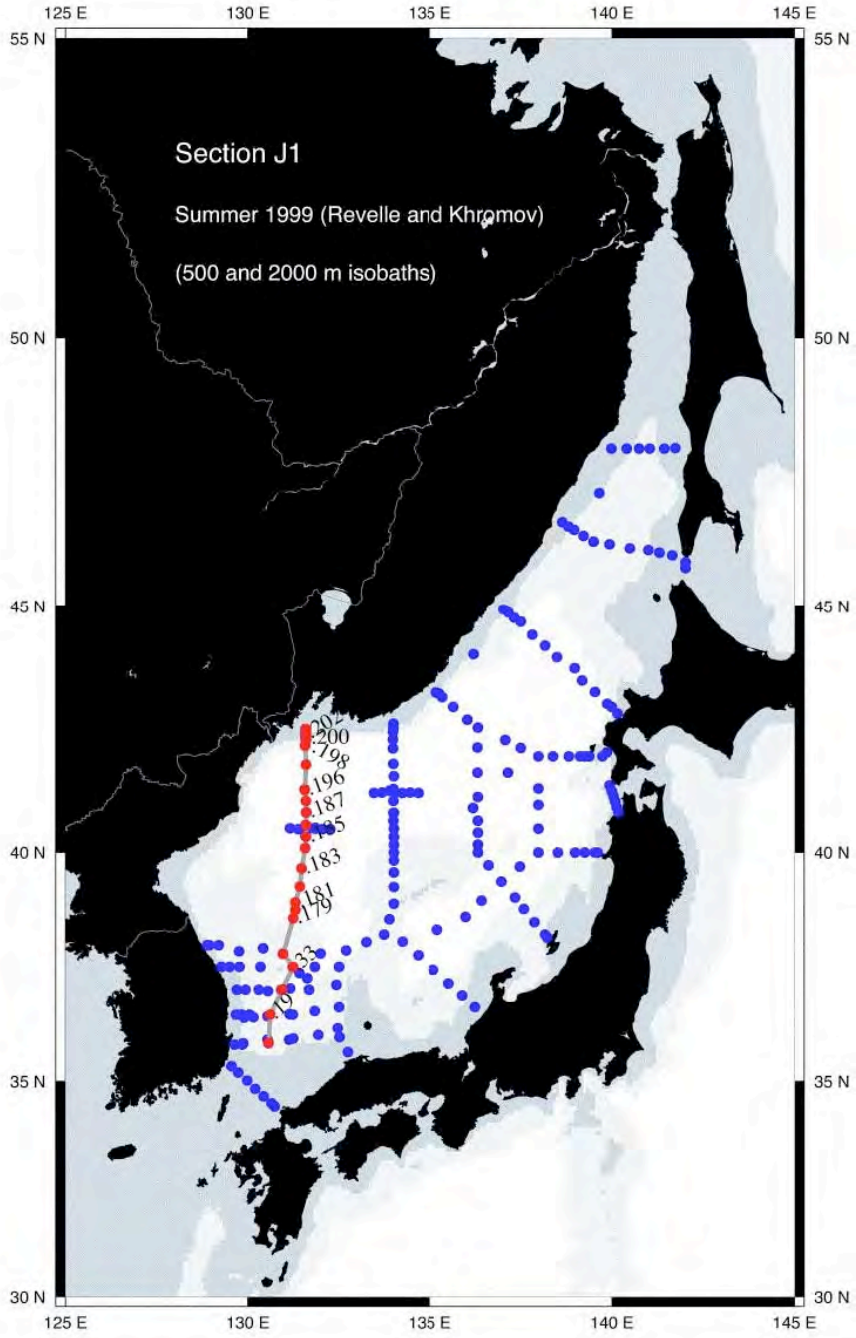
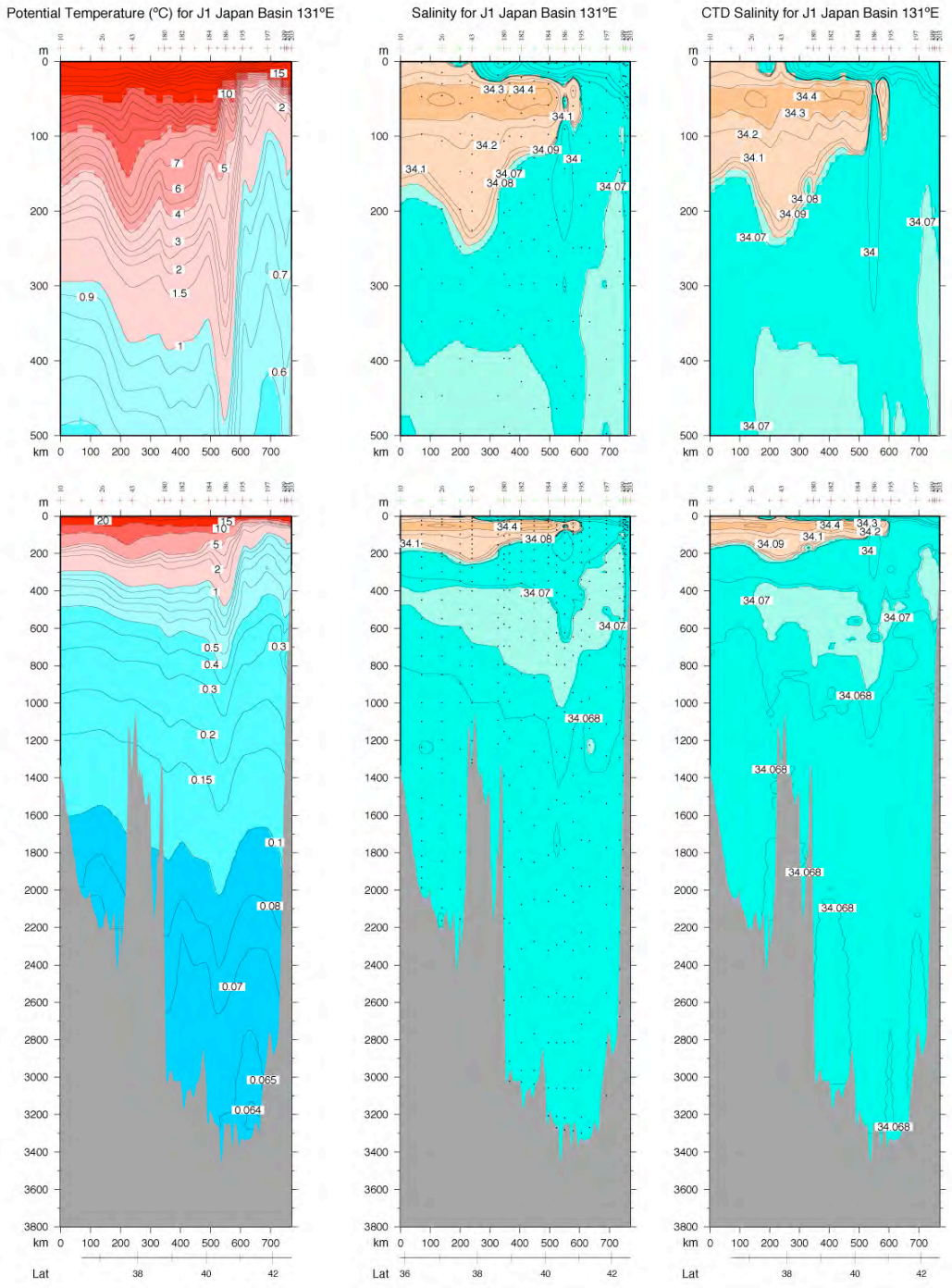
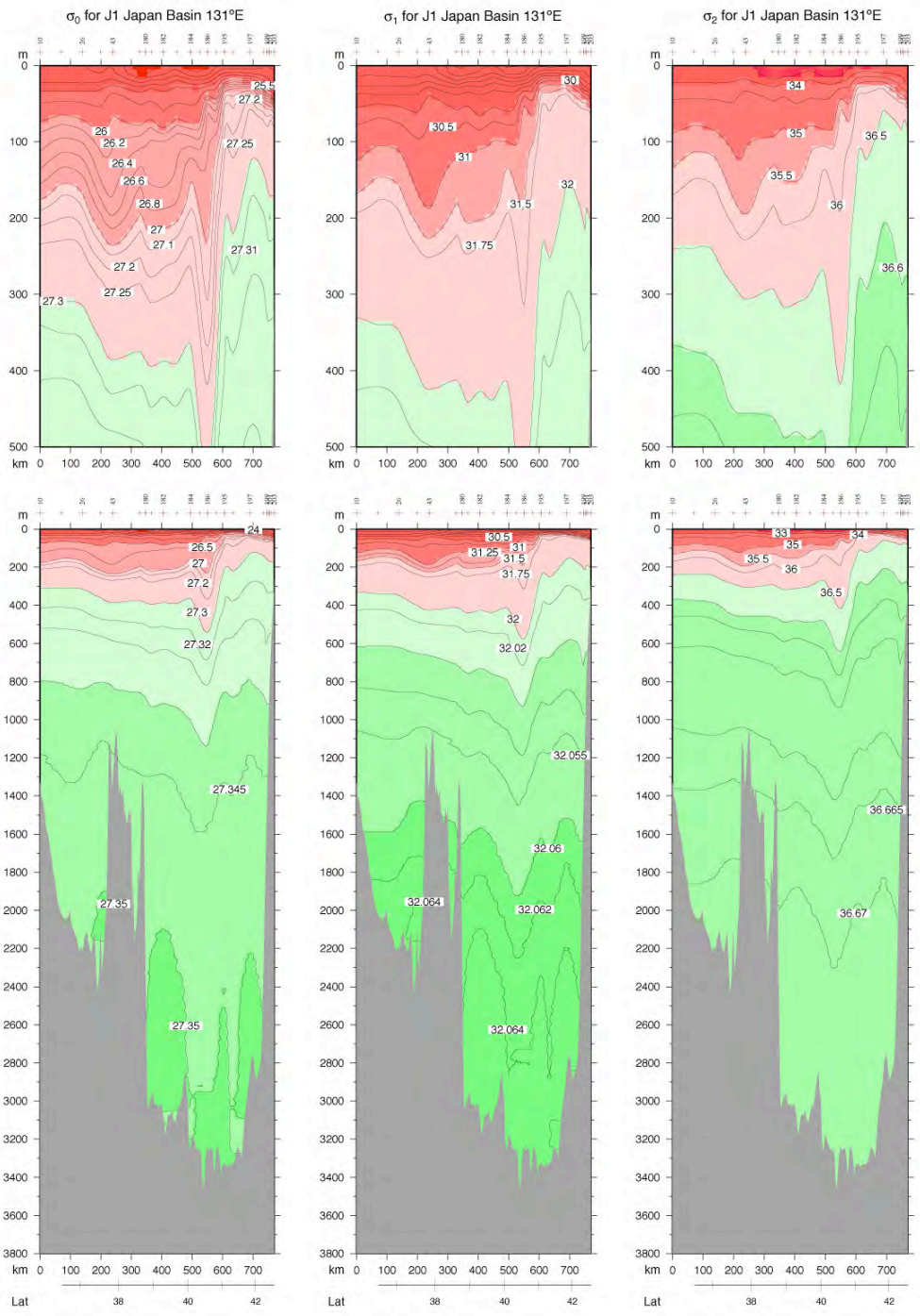
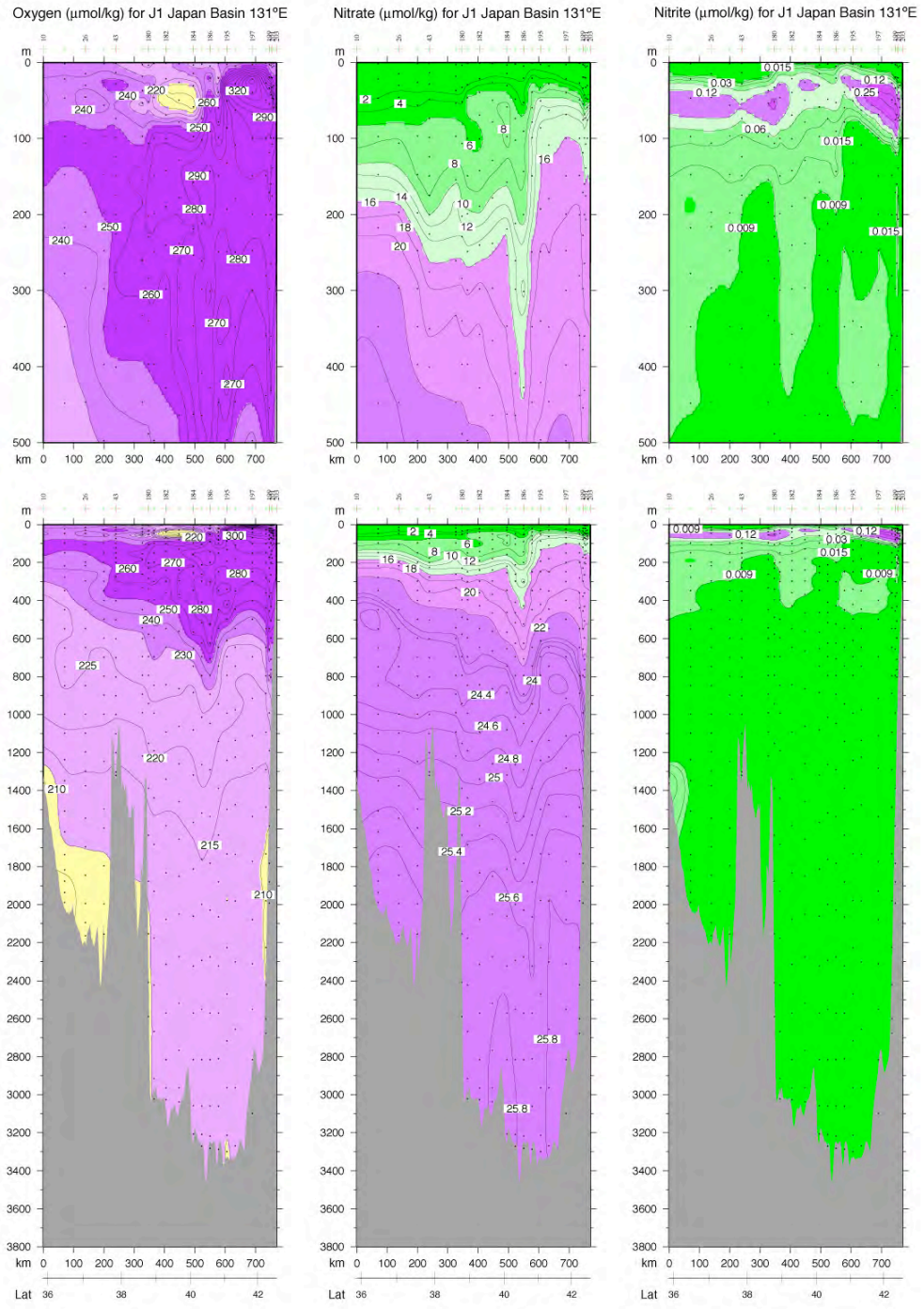
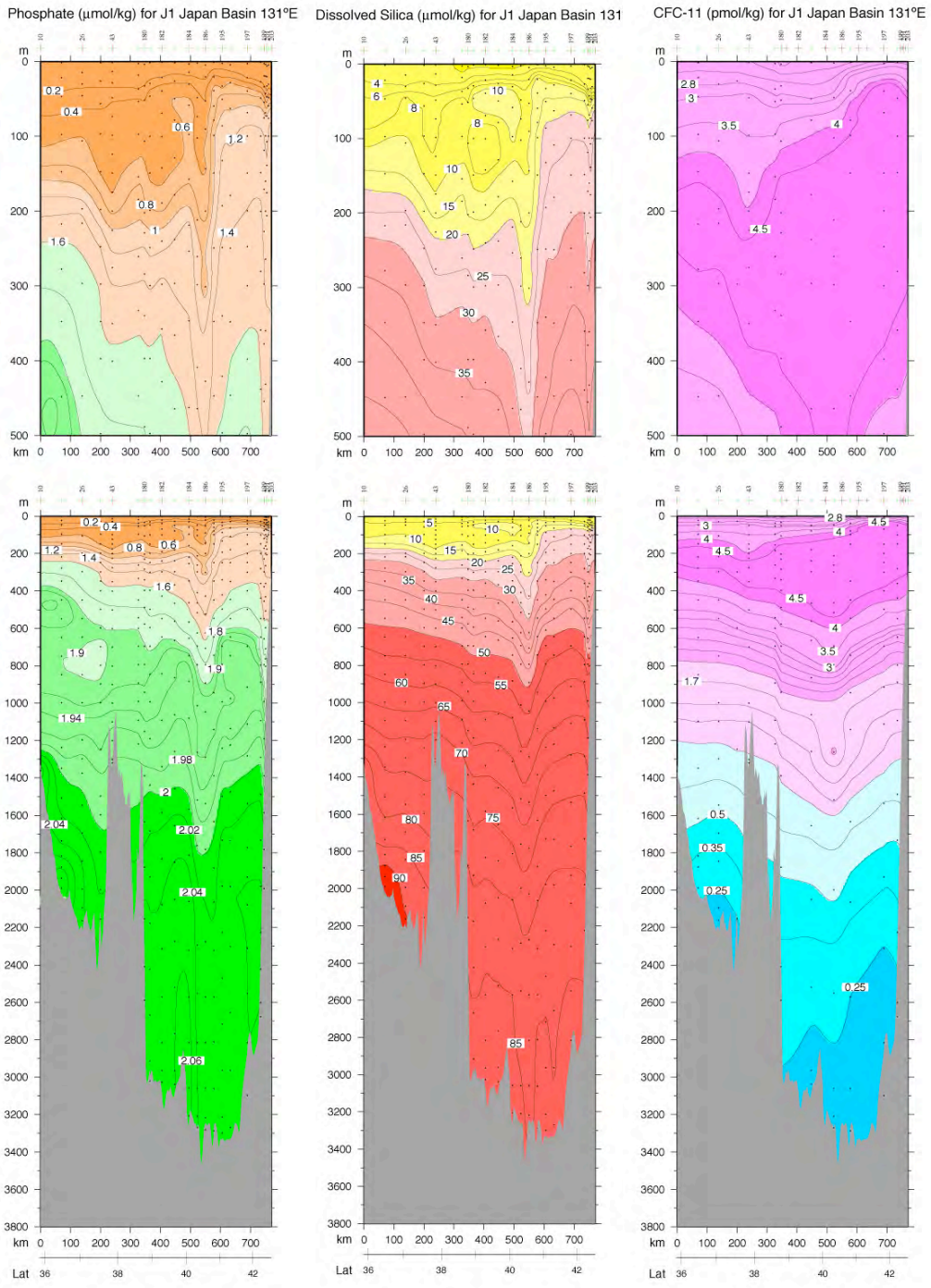


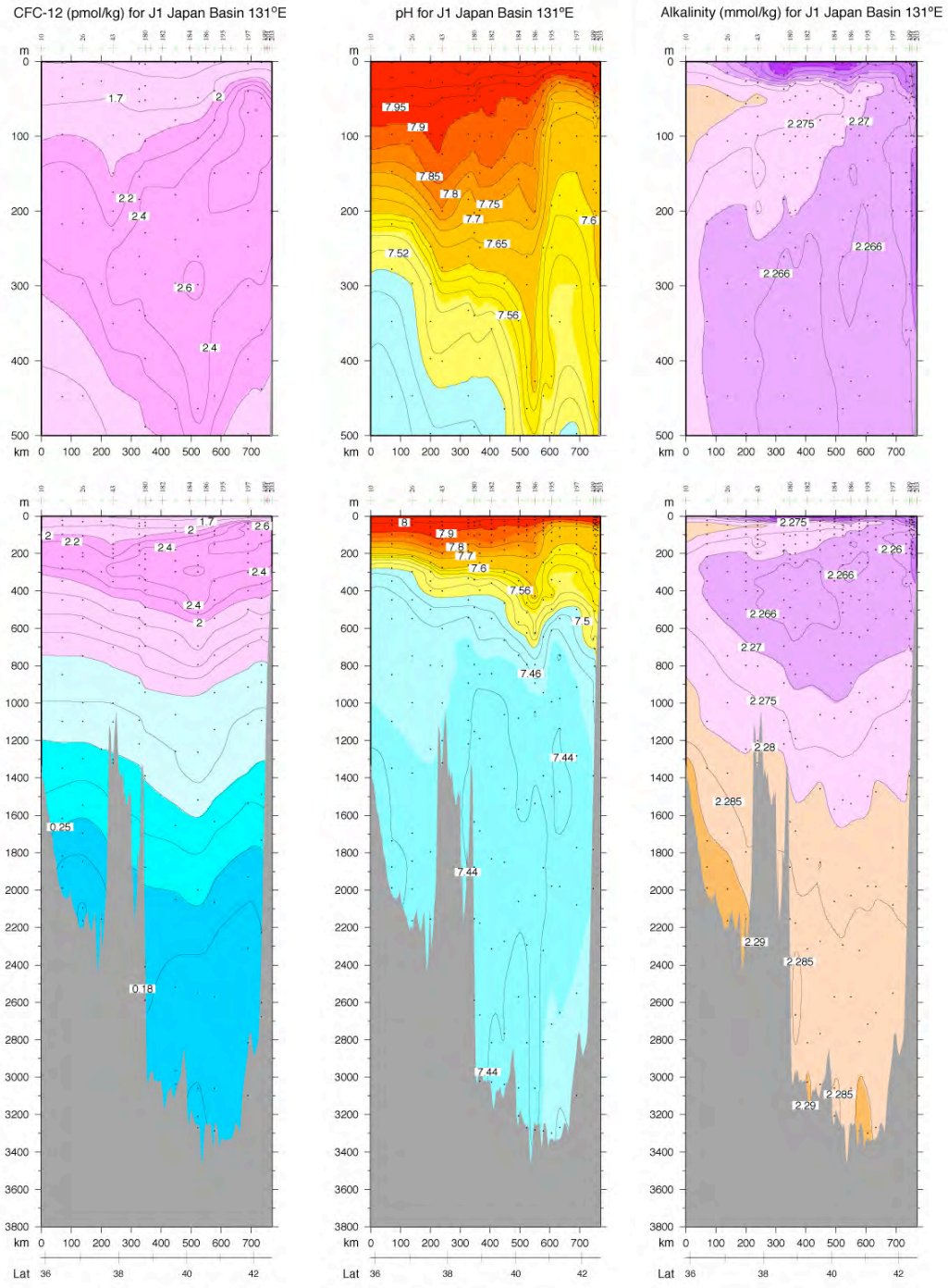
Figure D12. Vertical sections at approximately 131°E (Ulleung and Japan Basins) (J1 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panelvertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.


Potential Temperature (°C) for J1 Japan Basin 131°E
Salinity for J1 Japan Basin 131°E
CTD Salinity for J1 Japan Basin 131°E
m
km
Lat


σ0 for J1 Japan Basin 131°E
σ1 for J1 Japan Basin 131°E
σ2 for J1 Japan Basin 131°E
m
km
Lat
25.5
27.2
26
26.2
26.4
26.6
26.8
27
27.1
27.2
27.25
27.3
27.31
30
30.5
31
31.5
31.75
32
34
35
35.5
36
36.5
36.6
24
26.5
27
27.2
27.3
27.32
27.345
27.35
27.35
30.5
31.25
31.5
31
31.75
32
32.02
32.055
32.06
32.064
32.062
32.064
33
34
35
35.5
36
36.5
36.665
36.67


Oxygen (µmol/kg) for J1 Japan Basin 131ºE
Nitrate (µmol/kg) for J1 Japan Basin 131ºE
Nitrite (µmol/kg) for J1 Japan Basin 131ºE
m
km
Lat


Phosphate (µmol/kg) for J1 Japan Basin 131ºE
Dissolved Silica (µmol/kg) for J1 Japan Basin 131
CFC-11 (pmol/kg) for J1 Japan Basin 131ºE
m
km
Lat


CFC-12 (pmol/kg) for J1 Japan Basin 131°E
pH for J1 Japan Basin 131°E
Alkalinity (mmol/kg) for J1 Japan Basin 131°E
m
km
Lat
1.7
2
2.2
2.4
2.6
7.95
7.9
7.85
7.8
7.75
7.7
7.6
7.65
7.52
7.56
2.275
2.27
2.266
0.25
0.18
7.5
7.46
7.44
2.26
2.285
2.28
2.29

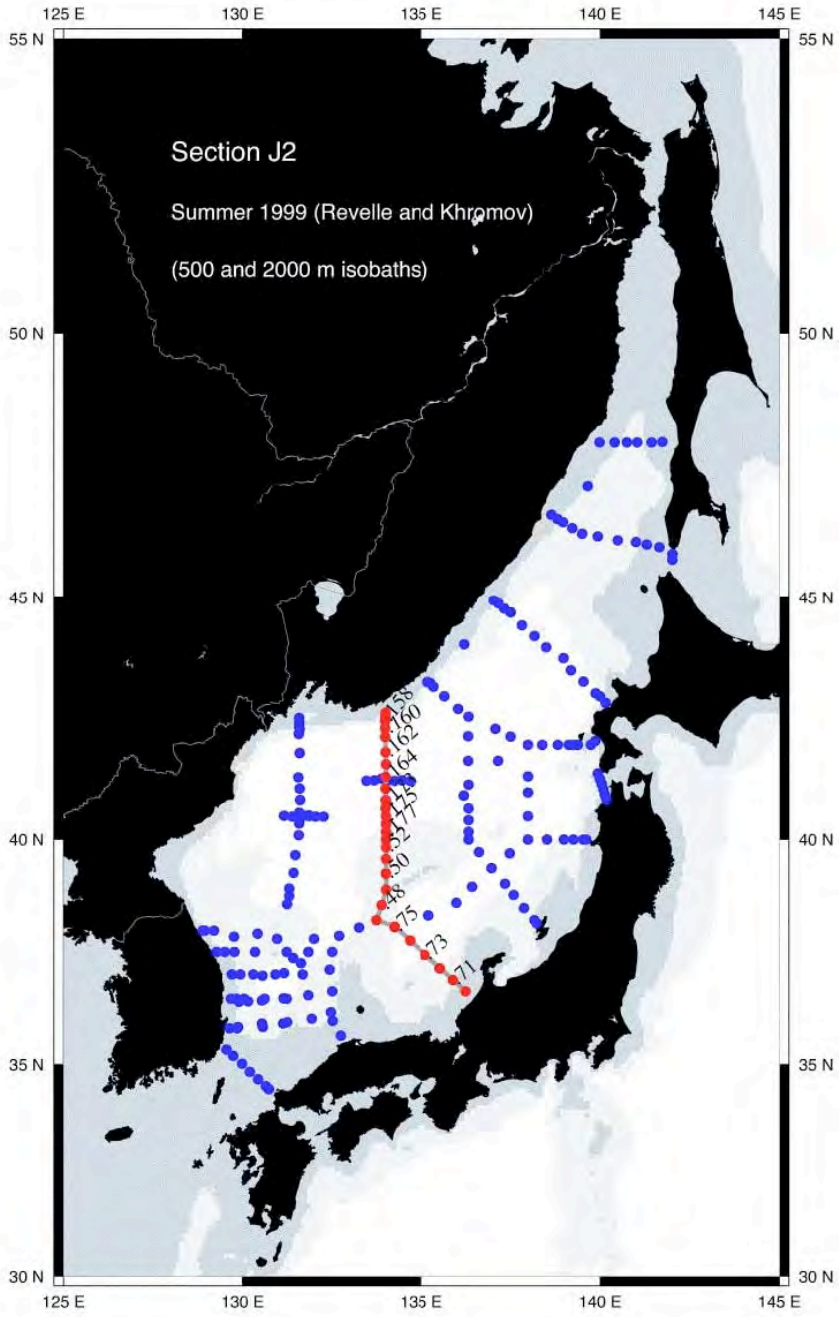
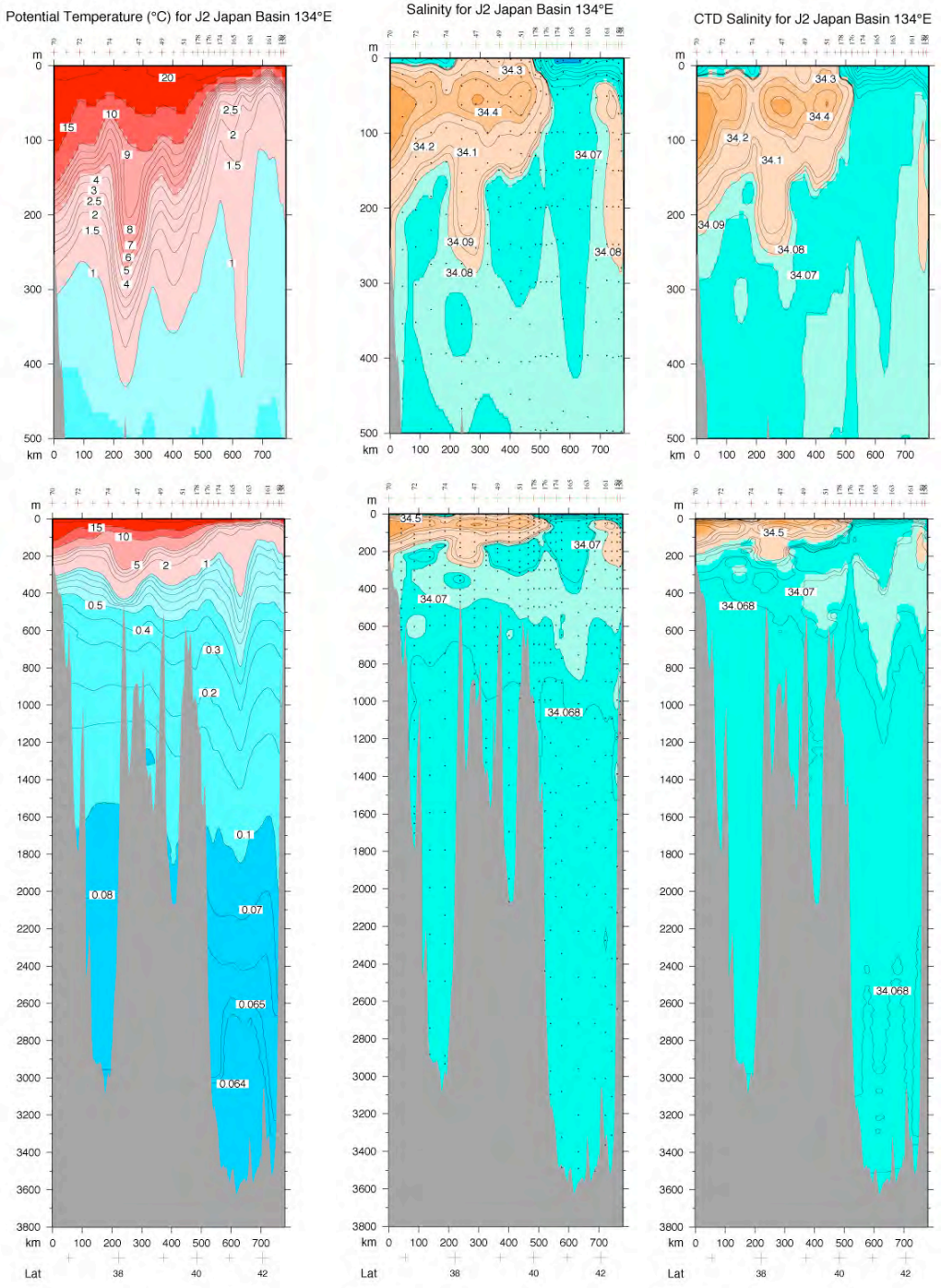
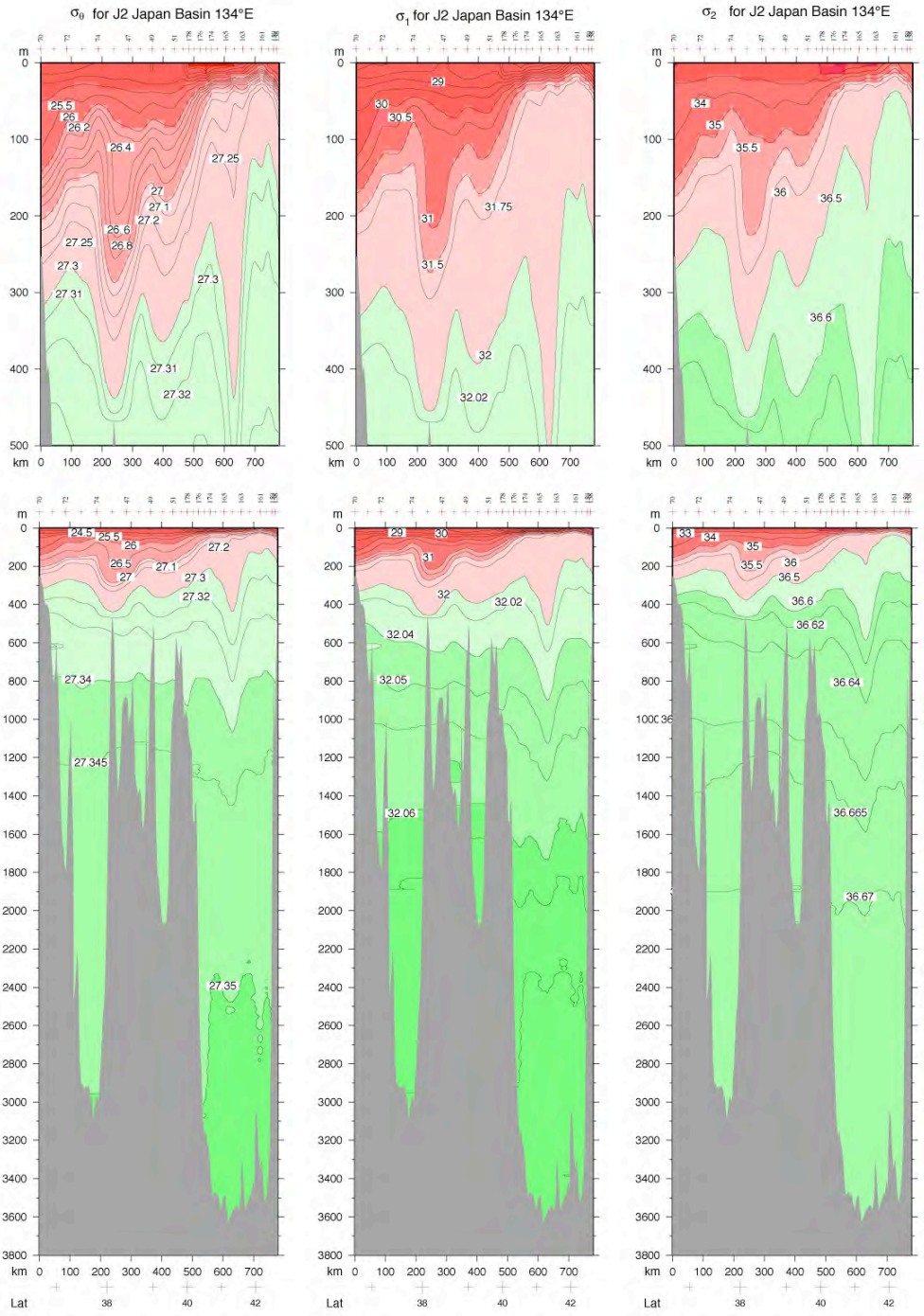
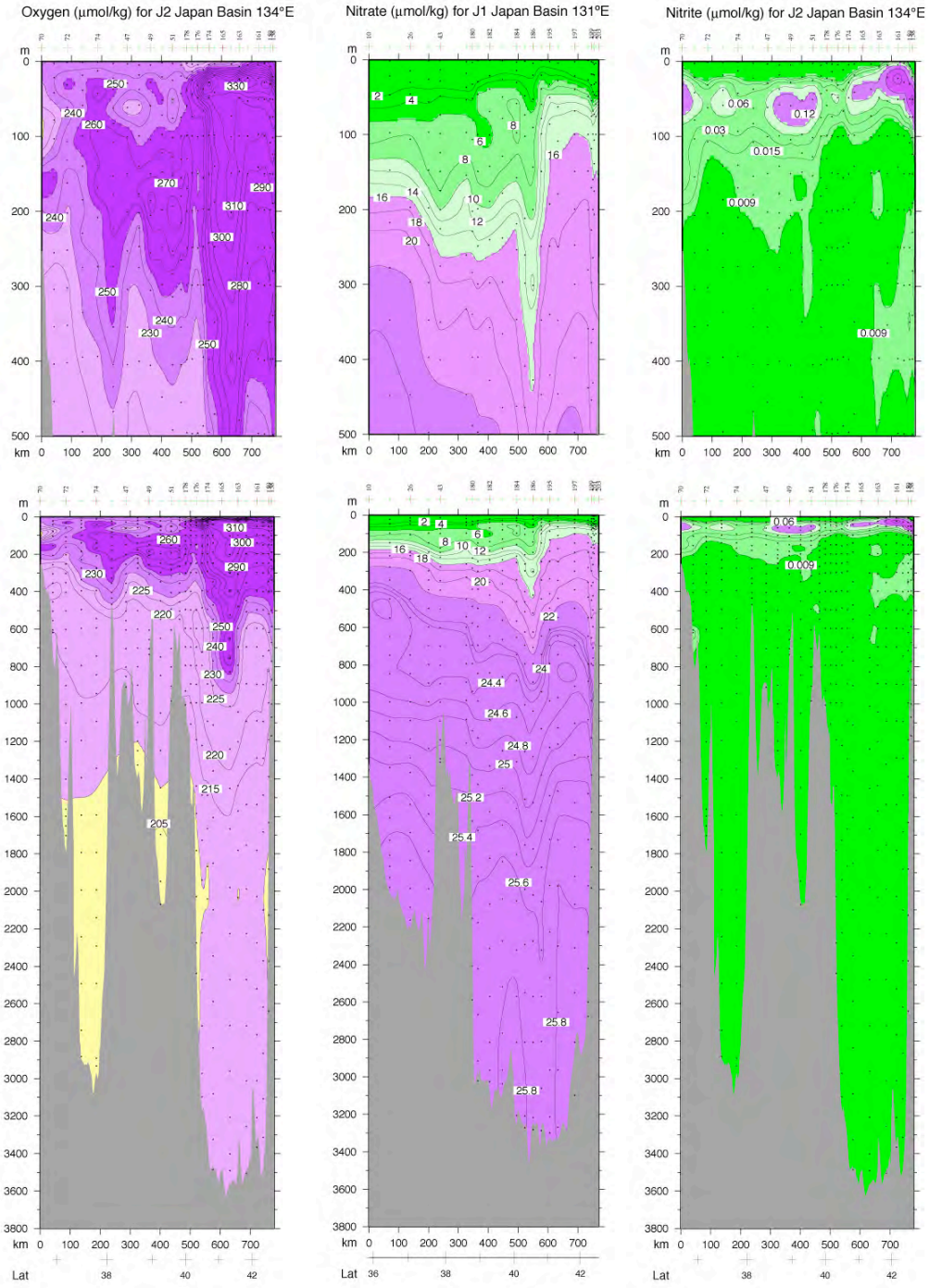
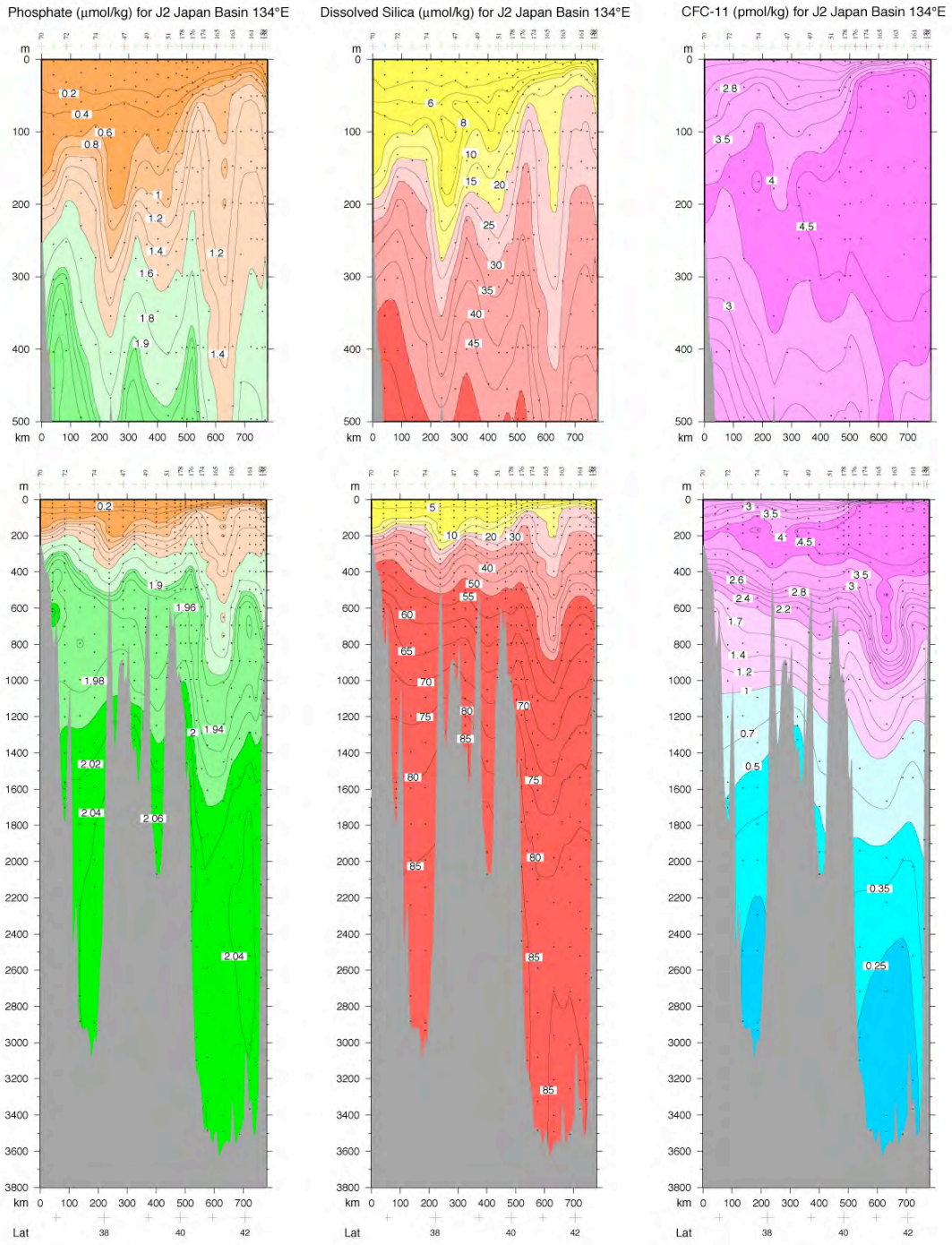


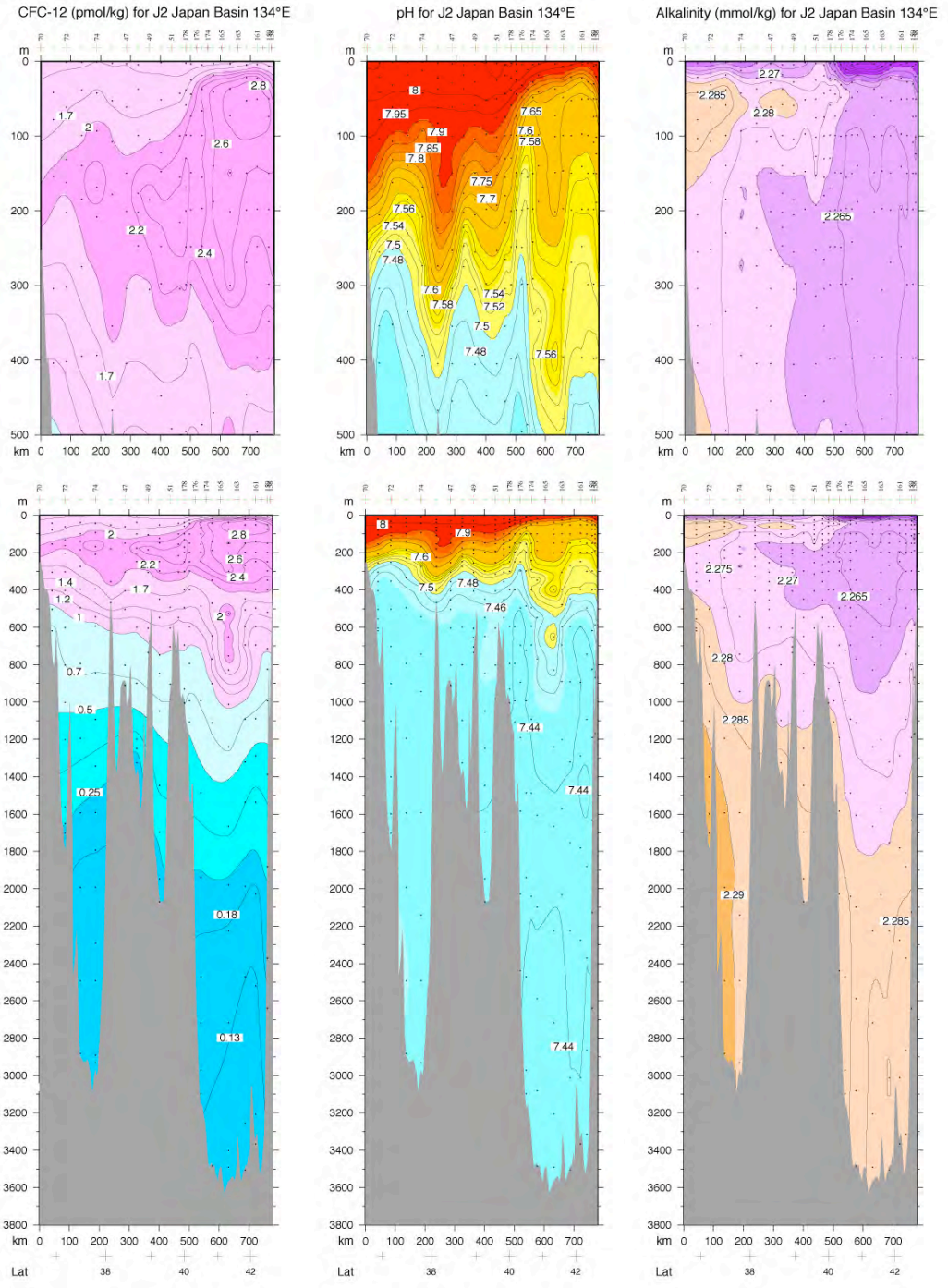
Figure D13. Vertical sections at approximately 134°E (Yamato Basin, Yamato Rise, and Japan Basin) (Y1 and J2 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panelvertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.


Potential Temperature (°C) for J2 Japan Basin 134°E
Salinity for J2 Japan Basin 134°E
CTD Salinity for J2 Japan Basin 134°E
m
km
Lat


σθ for J2 Japan Basin 134°E
σ1 for J2 Japan Basin 134°E
σ2 for J2 Japan Basin 134°E
m
km
Lat
25.5
26
26.2
26.4
27.25
27
27.1
27.2
26.6
26.8
27.3
27.31
27.32
29
30
30.5
31
31.75
31.5
32
32.02
34
35
35.5
36
36.5
36.6
24.5
27.34
27.345
27.35
32.04
32.05
32.06
33
36.62
36.64
36.665
36.67


Oxygen (µmol/kg) for J2 Japan Basin 134°E
Nitrate (µmol/kg) for J1 Japan Basin 131°E
Nitrite (µmol/kg) for J2 Japan Basin 134°E
m
km
Lat


Phosphate (µmol/kg) for J2 Japan Basin 134°E
Dissolved Silica (µmol/kg) for J2 Japan Basin 134°E
CFC-11 (pmol/kg) for J2 Japan Basin 134°E
m
km
Lat


CFC-12 (pmol/kg) for J2 Japan Basin 134°E
pH for J2 Japan Basin 134°E
Alkalinity (mmol/kg) for J2 Japan Basin 134°E
m
km
Lat

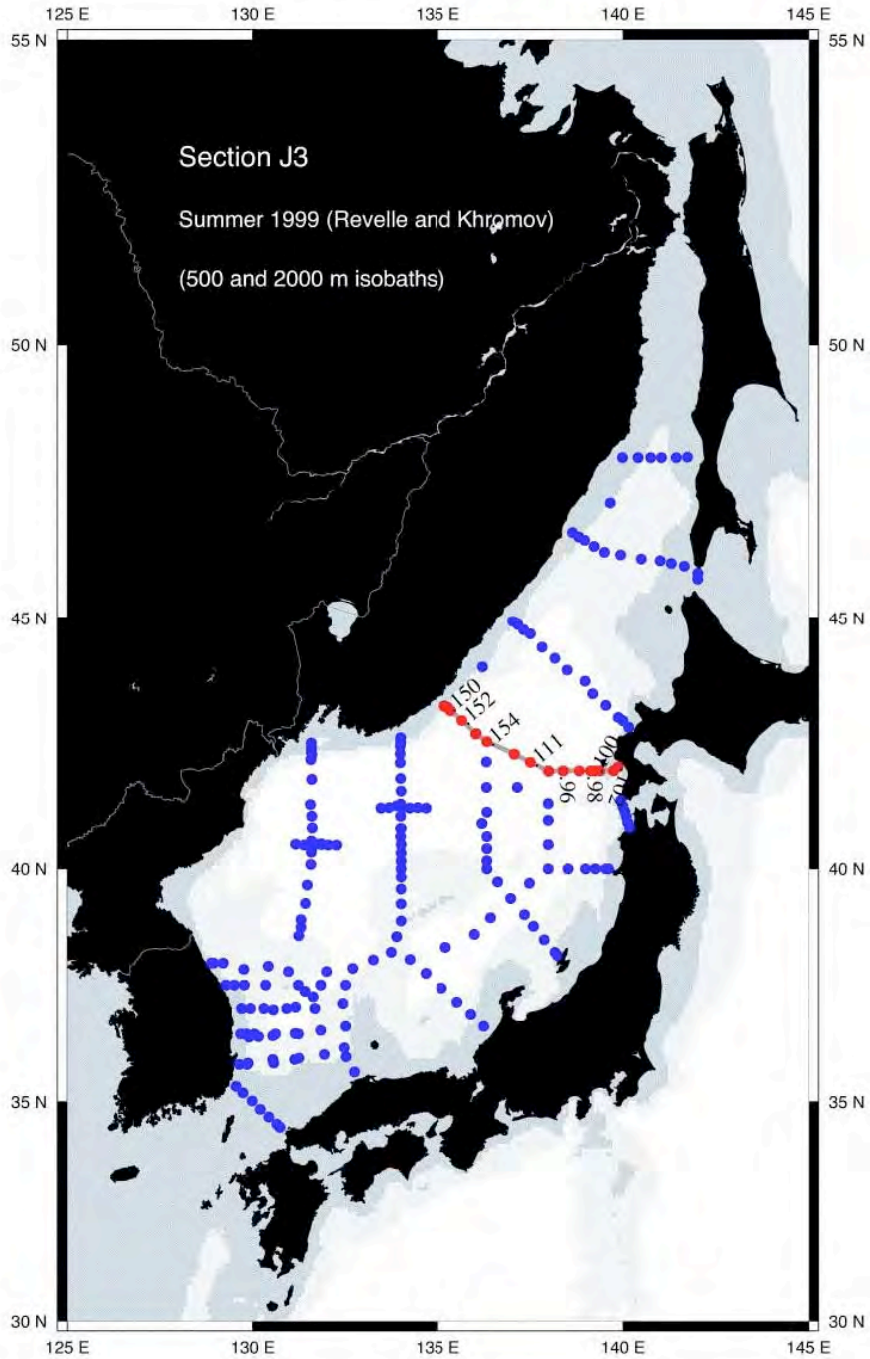
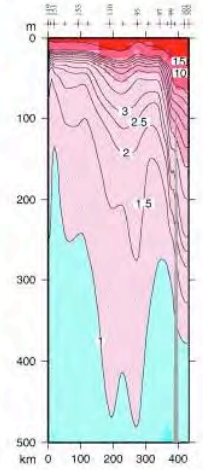
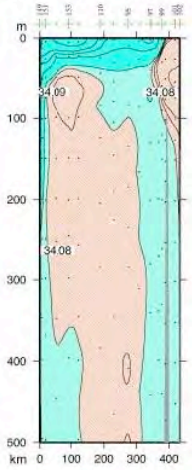


Figure D14. Vertical sections at approximately 42°N (Japan Basin) (J3 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

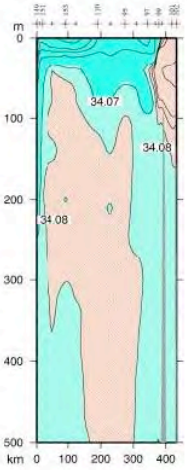
Potential Temperature (°C) for J3 Japan Basin 42°N

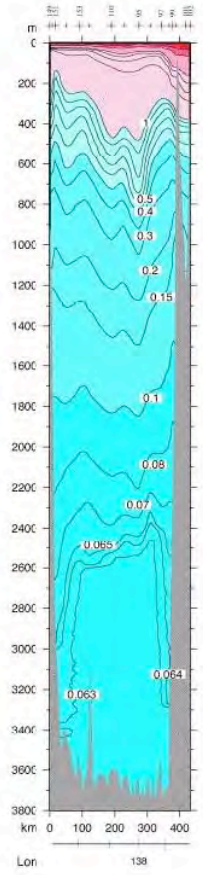


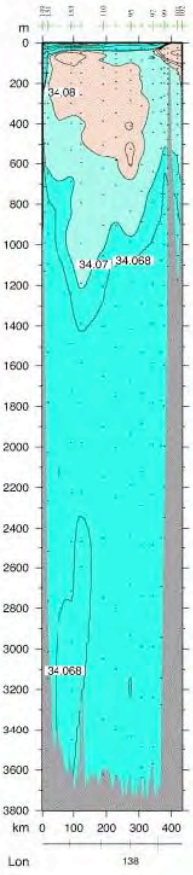
Salinity for J3 Japan Basin 42°N

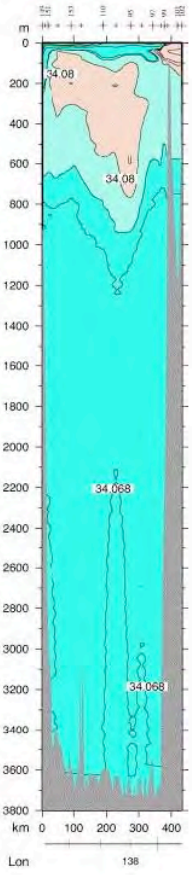


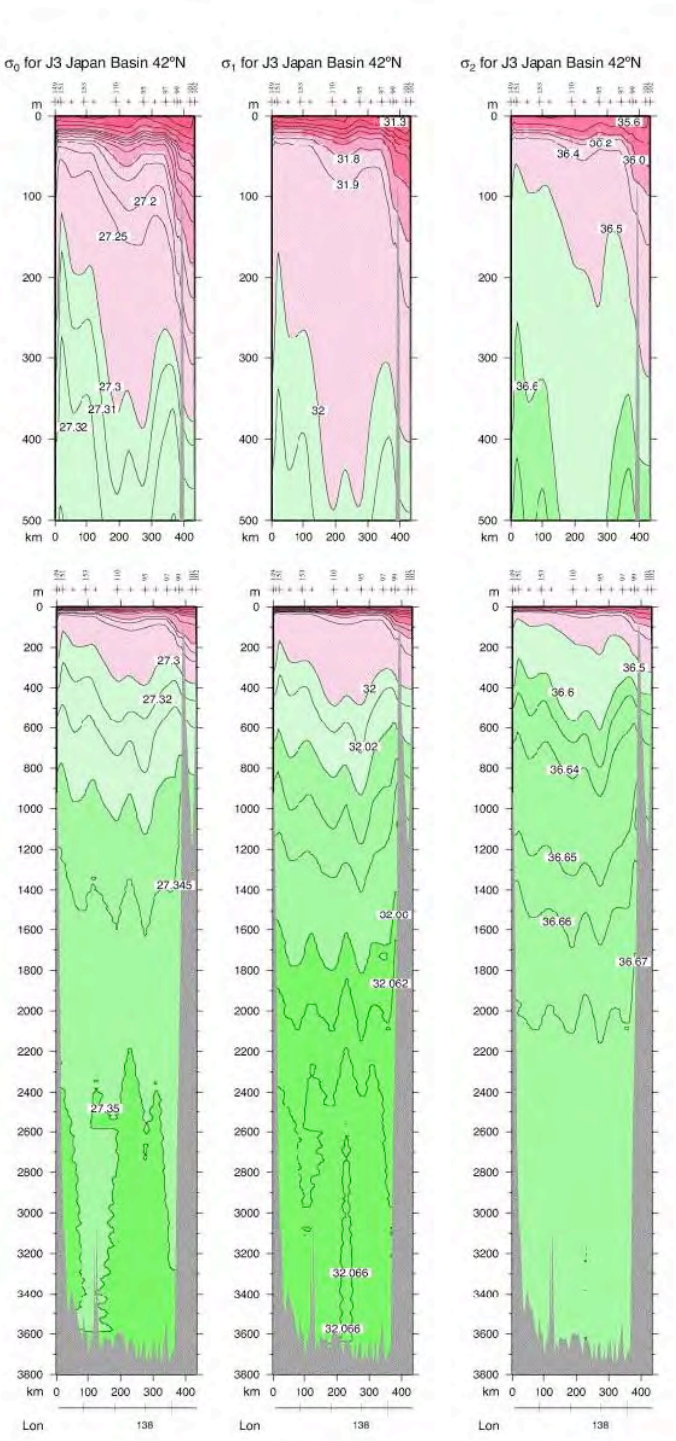
CTD Salinity for J3 Japan Basin 42°N

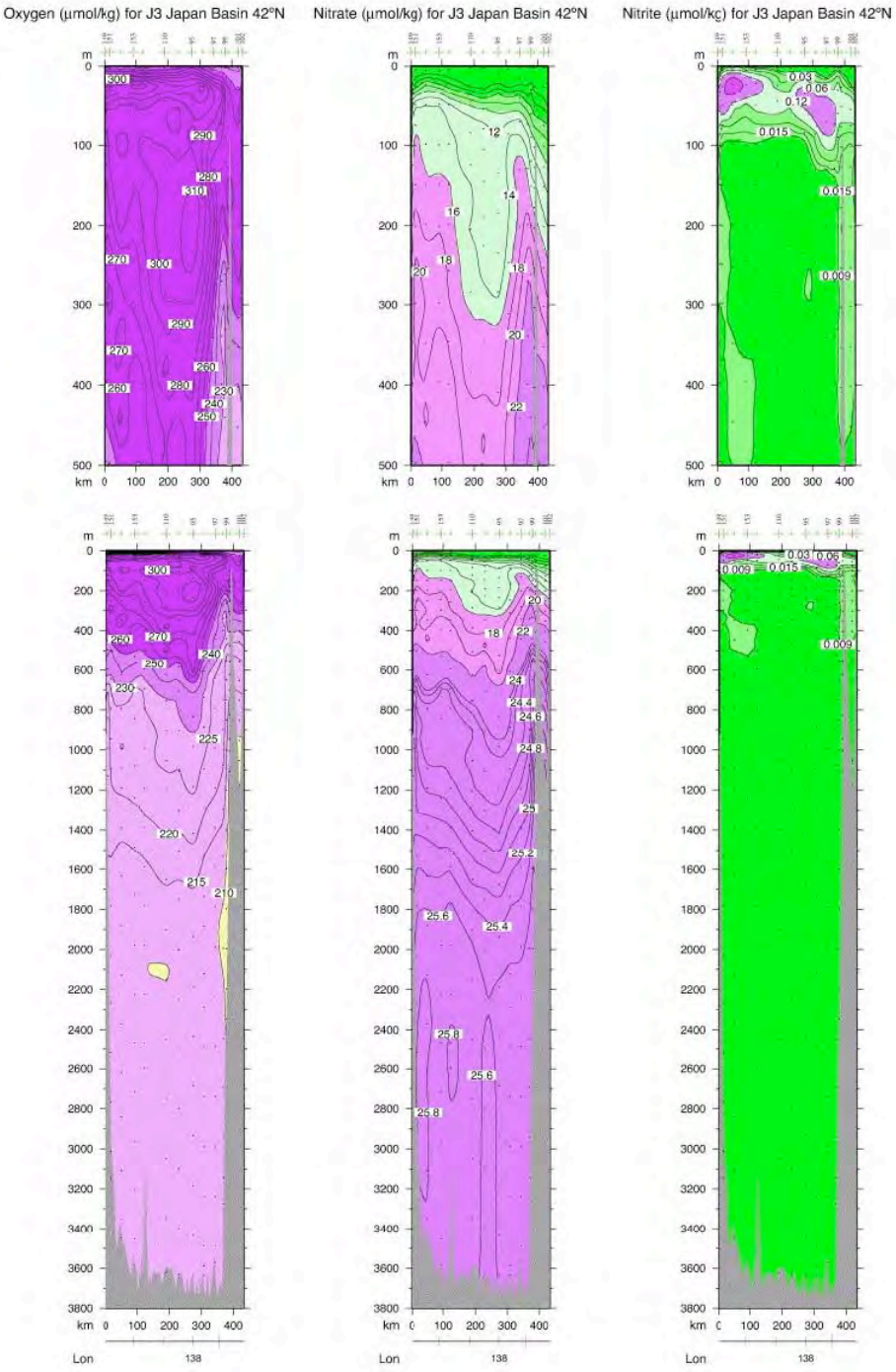




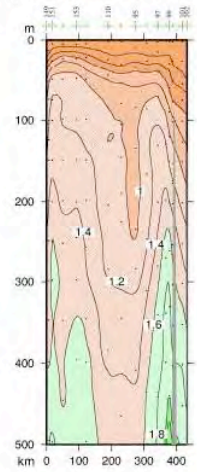




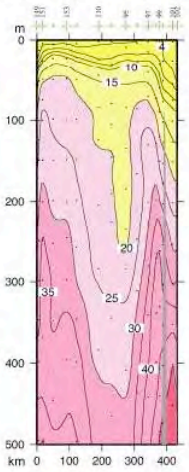

σ0 for J3 Japan Basin 42°N
σ1 for J3 Japan Basin 42°N
σ2 for J3 Japan Basin 42°N
m
km
Lon
27.2
27.25
27.3
27.31
27.32
31.8
31.9
31.9
32
35.6
36.2
36.4
36.0
36.5
36.6
27.3
27.32
27.345
27.35
32
32.02
32.00
32.062
32.066
32.066
36.5
36.6
36.64
36.65
36.66
36.67
138


Oxygen (µmol/kg) for J3 Japan Basin 42°N
Nitrate (µmol/kg) for J3 Japan Basin 42°N
Nitrite (µmol/kg) for J3 Japan Basin 42°N
m
km
Lon
138

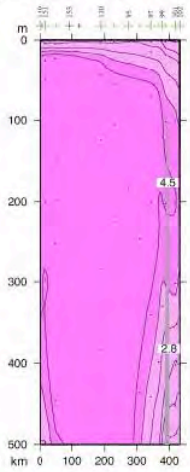
Phosphate (µmol/kg) for J3 Japan Basin 42°N

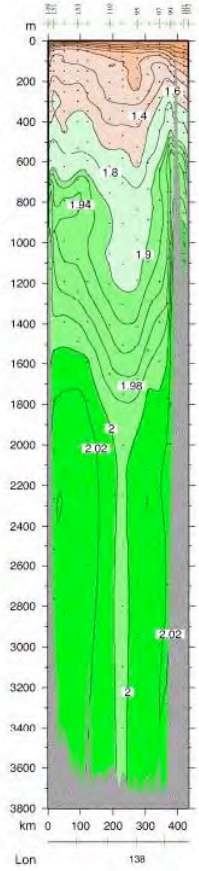


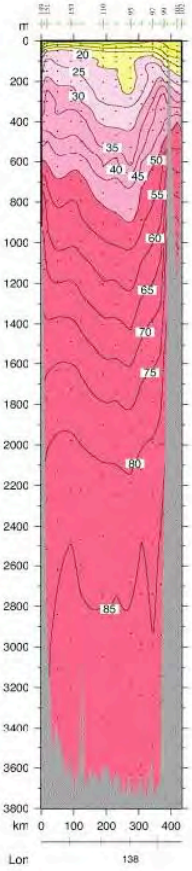
Dissolved Silica (µmol/kg) for J3 Japan Basin 42°N

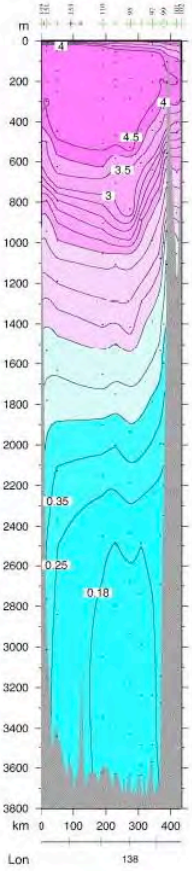


CFC-11 (pmol/kg) for J3 Japan Basin 42°N

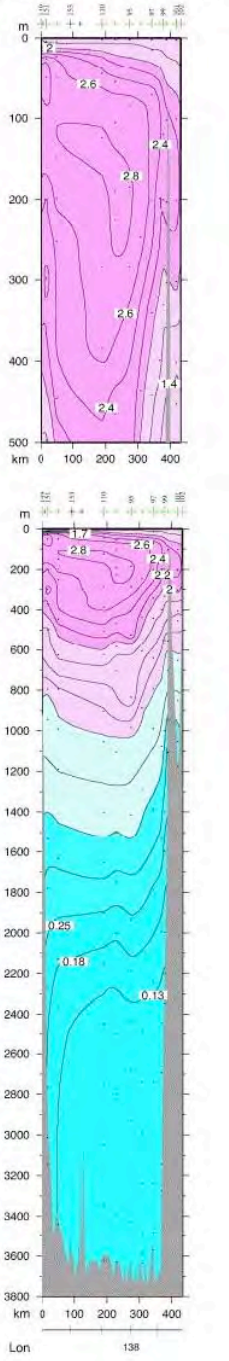




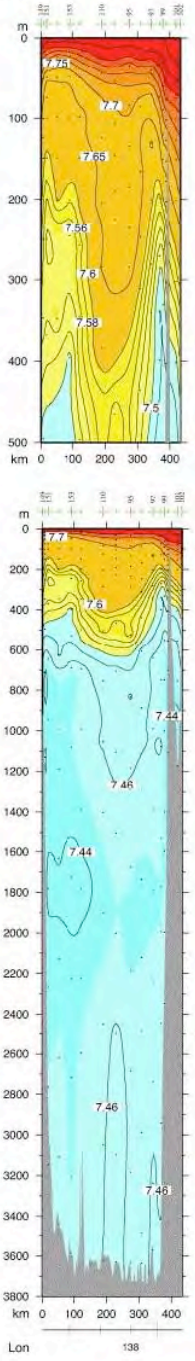




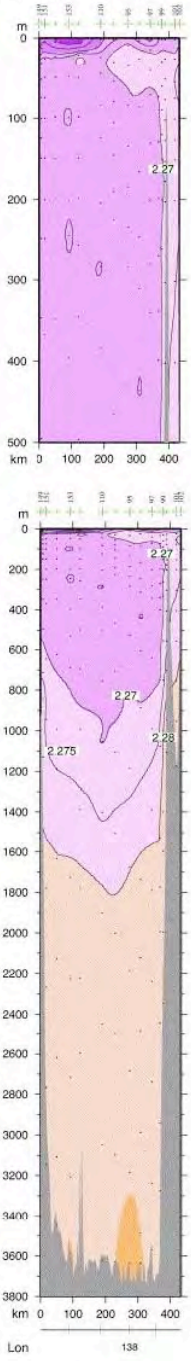
CFC-12 (pmol/kg) for J3 Japan Basin 42°N



pH for J3 Japan Basin 42°N



Alkalinity (mmol/kg) for J3 Japan Basin 42°N



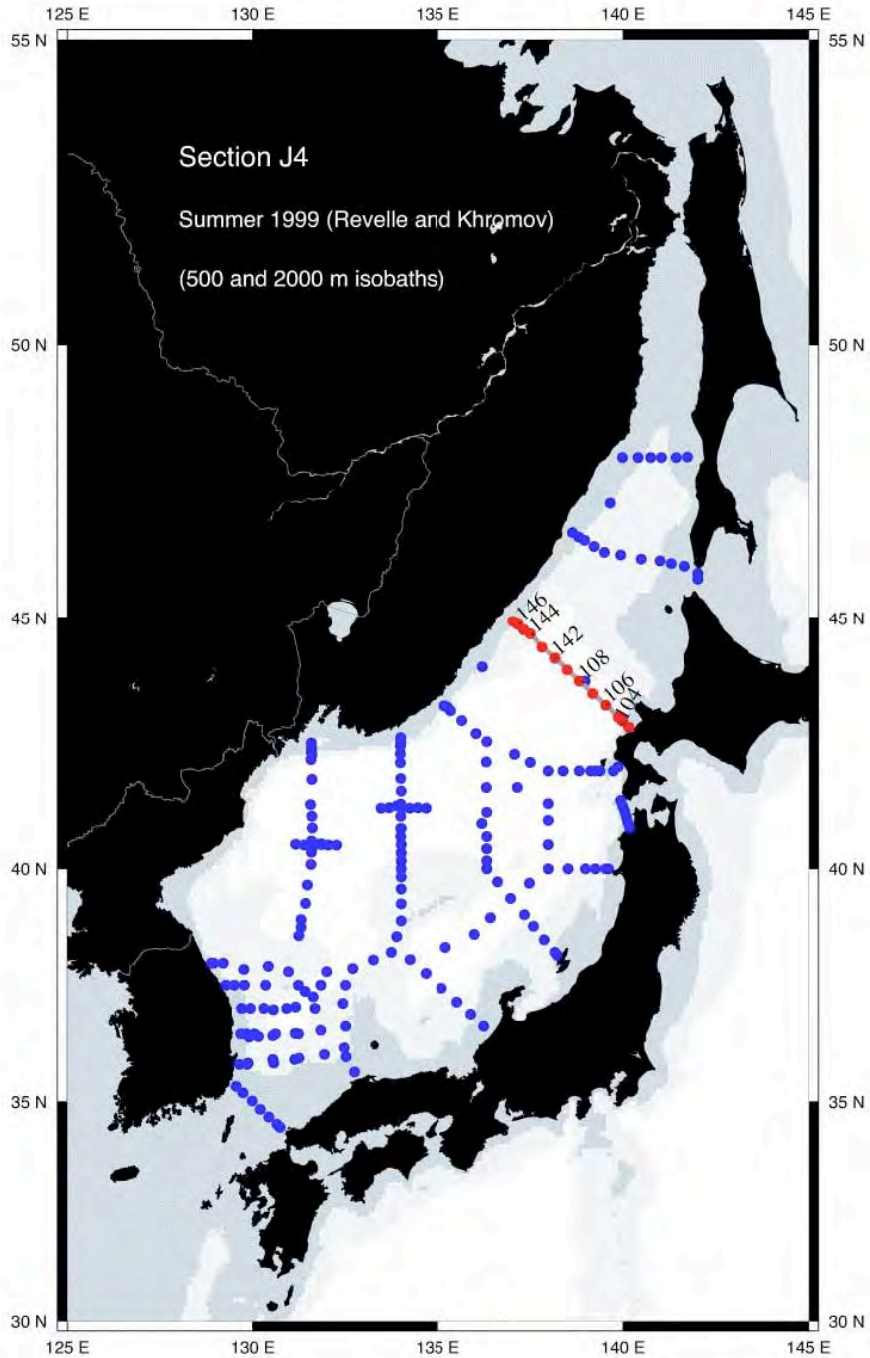
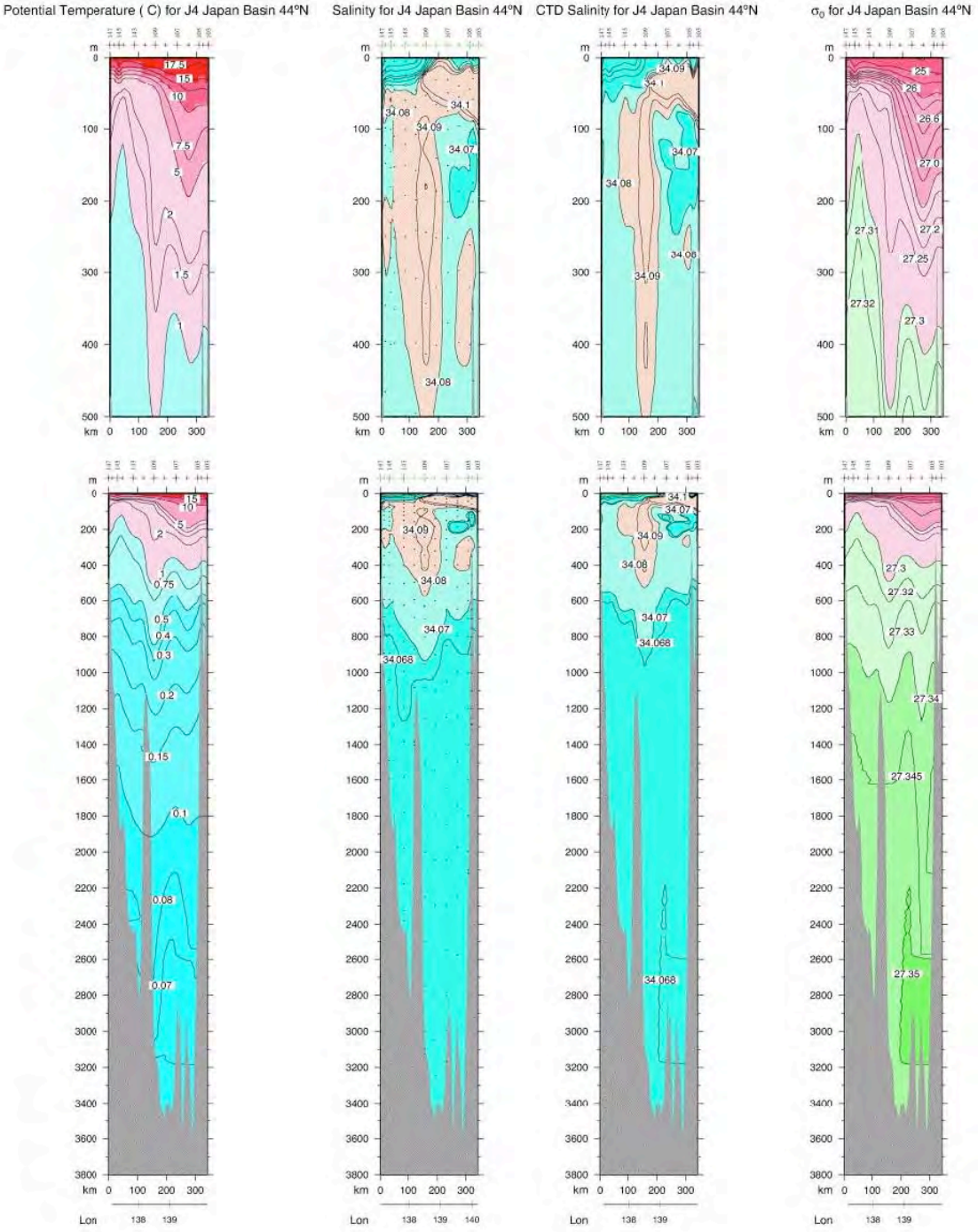
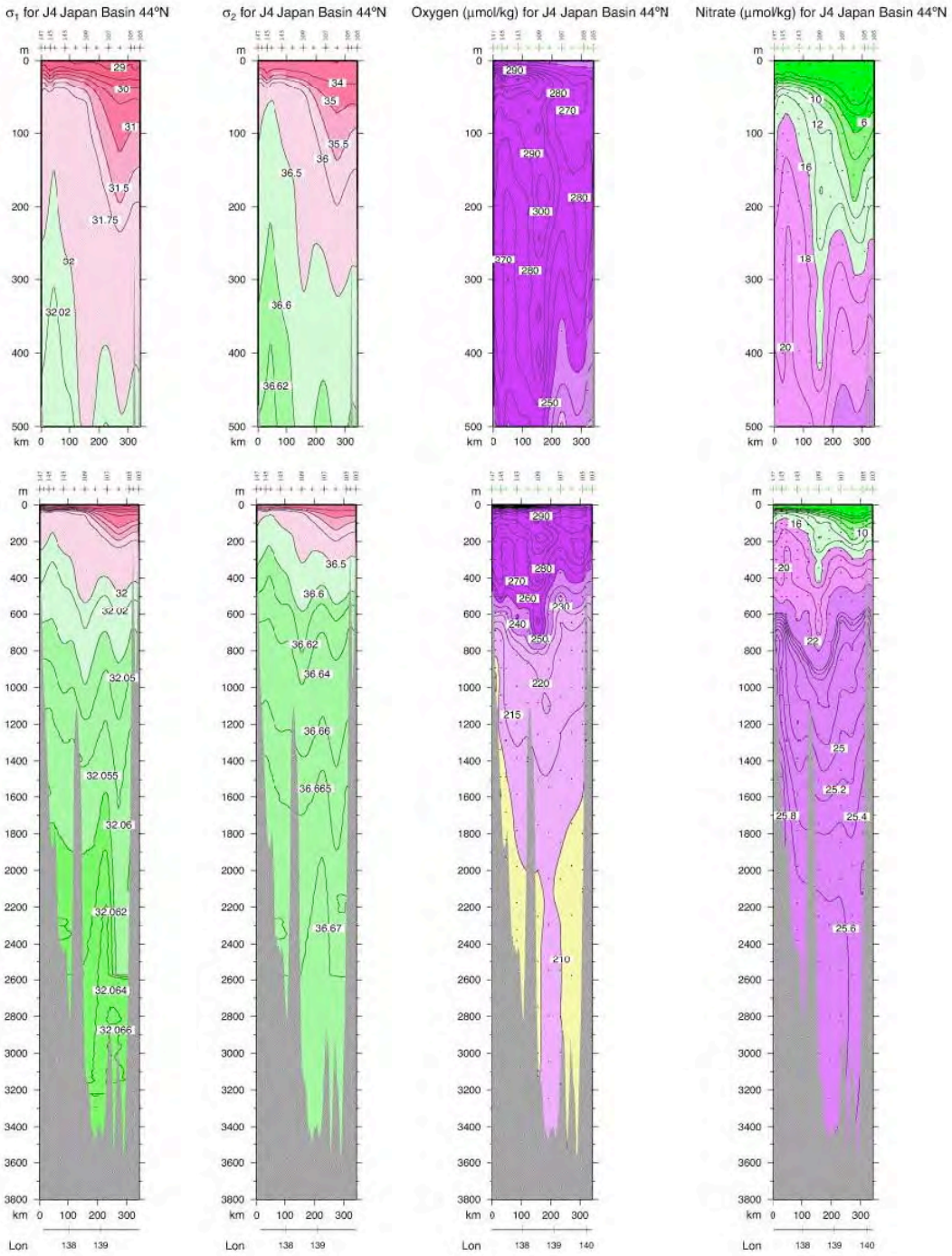
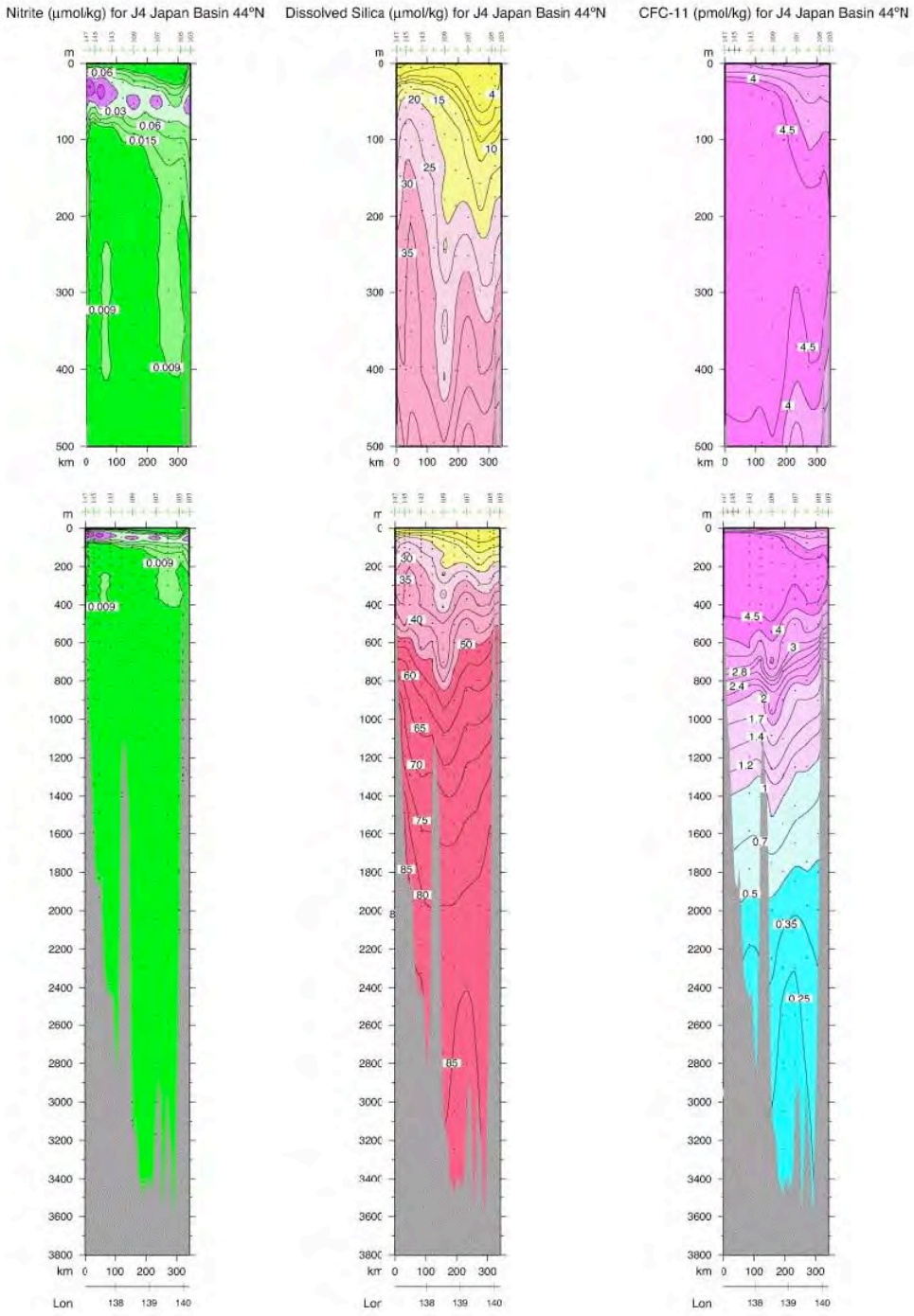


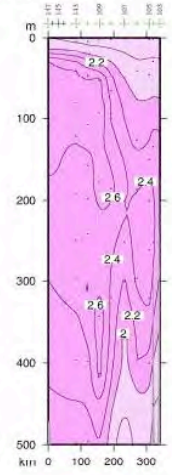
Figure D15. Vertical sections at approximately 44°N (Japan Basin) (J4 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.


Potential Temperature (C) for J4 Japan Basin 44°N
Salinity for J4 Japan Basin 44°N
CTD Salinity for J4 Japan Basin 44°N
σ0 for J4 Japan Basin 44°N
m
km
Lon

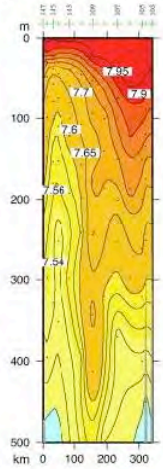

σ1 for J4 Japan Basin 44°N
σ2 for J4 Japan Basin 44°N
Oxygen (μmol/kg) for J4 Japan Basin 44°N
Nitrate (μmol/kg) for J4 Japan Basin 44°N
m
km
Lon


Nitrite (µmol/kg) for J4 Japan Basin 44°N
Dissolved Silica (µmol/kg) for J4 Japan Basin 44°N
CFC-11 (pmol/kg) for J4 Japan Basin 44°N
m
km
Lon
0 100 200 300
138 139 140

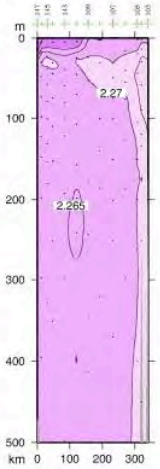
CFC-12 (pmol/kg) for J4 Japan Basin 44°N

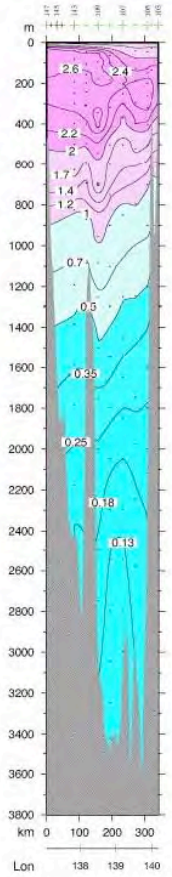


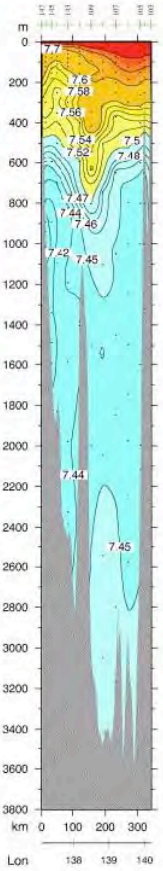
pH for J4 Japan Basin 44°N

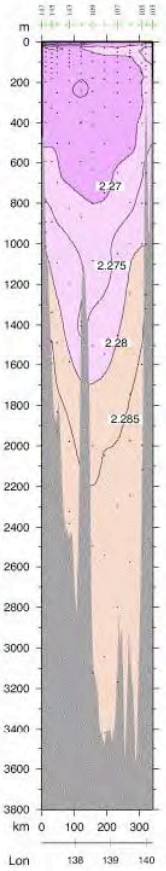


Alkalinity (mmol/kg) for J4 Japan Basin 44°N









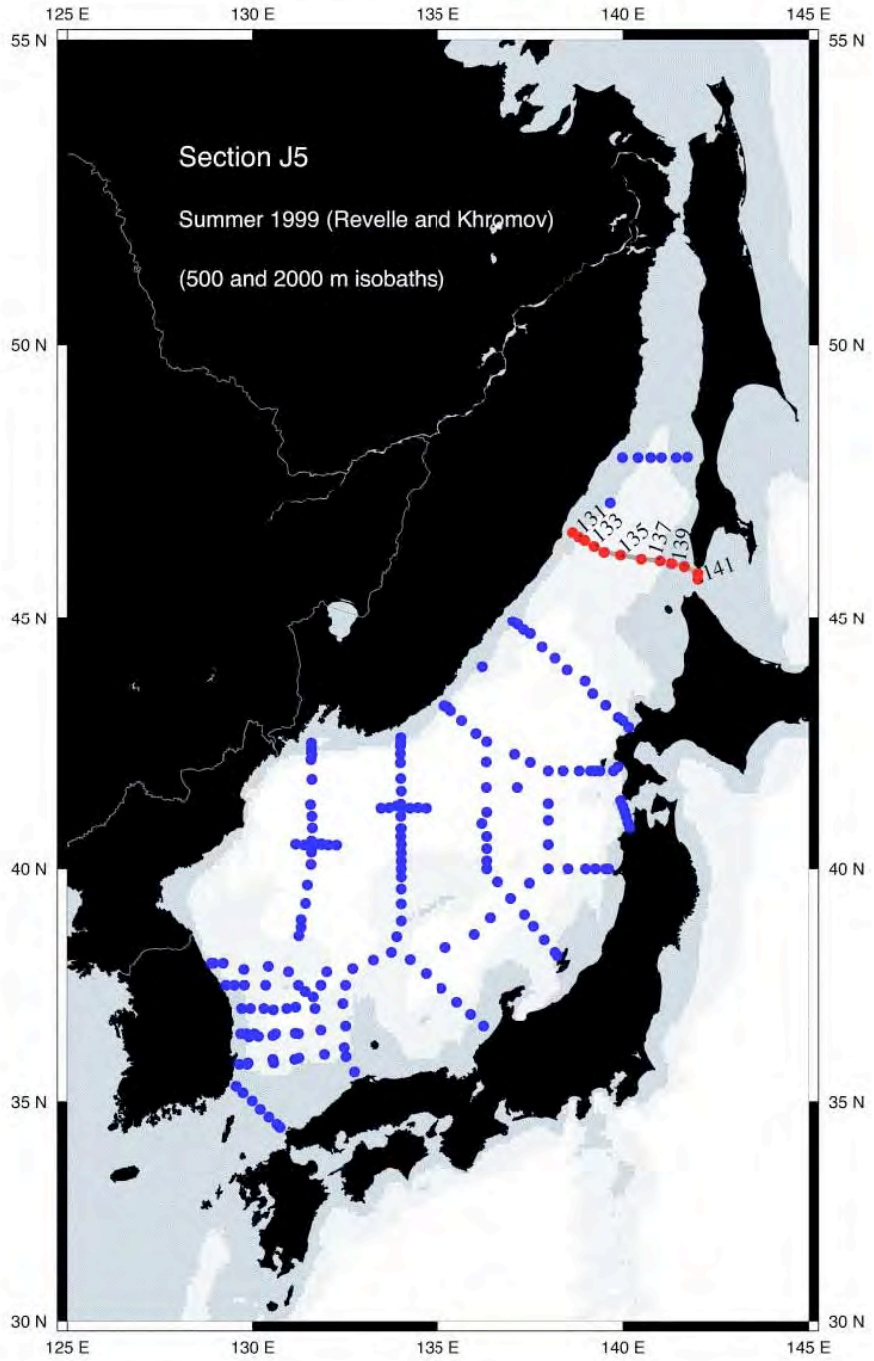
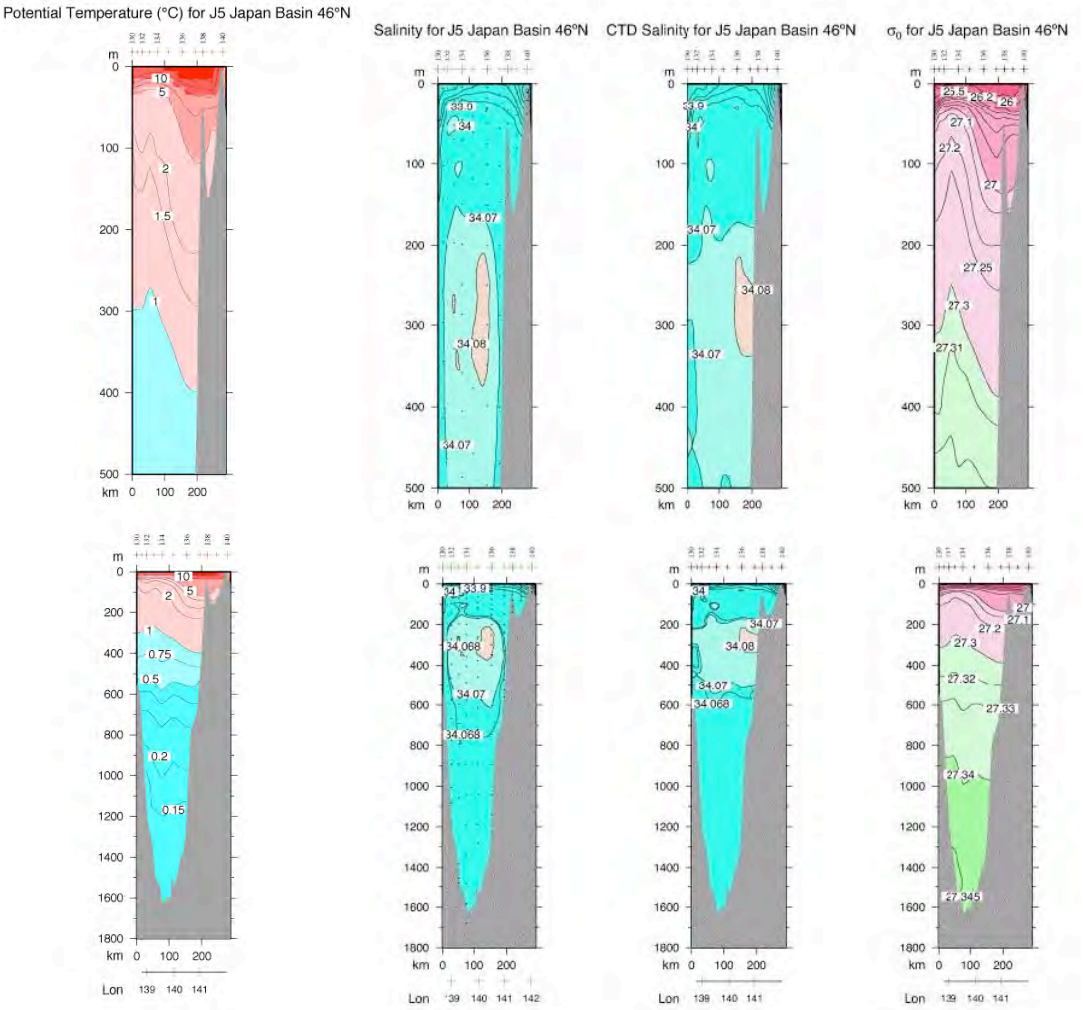
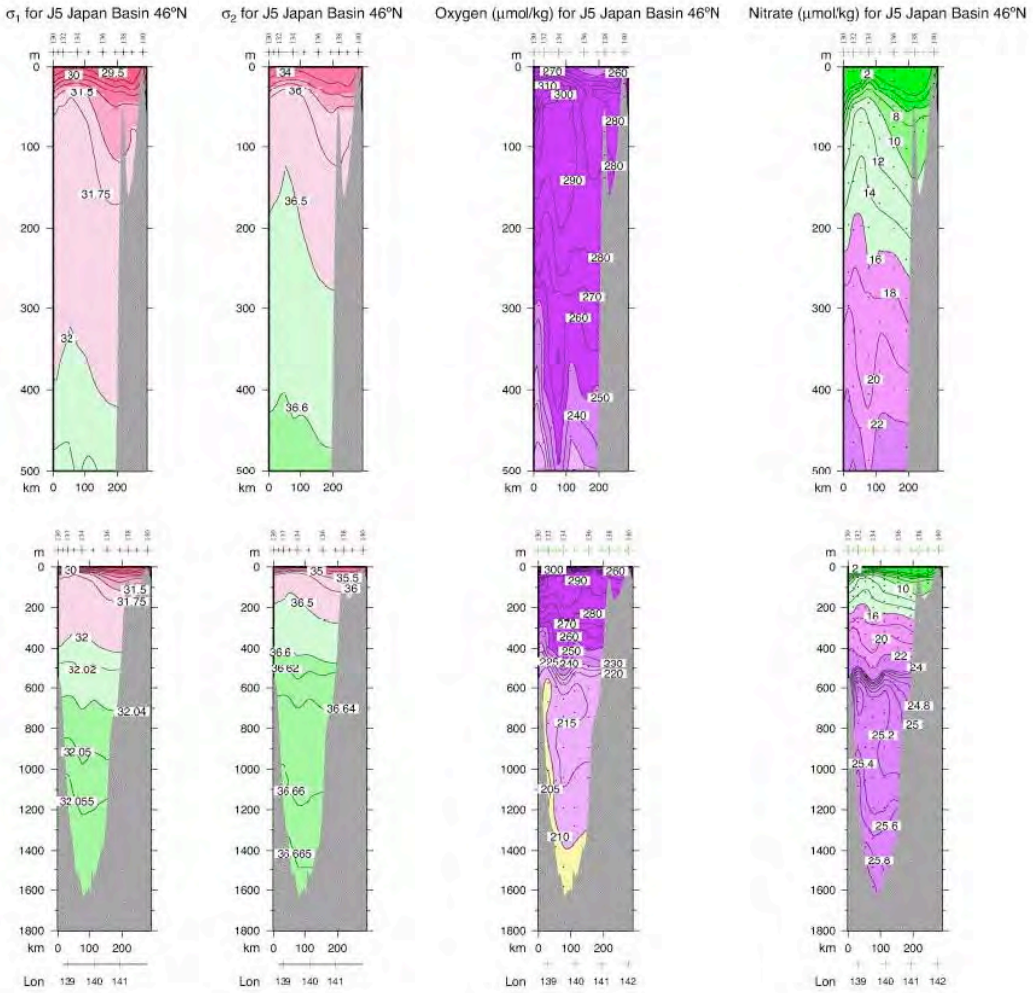
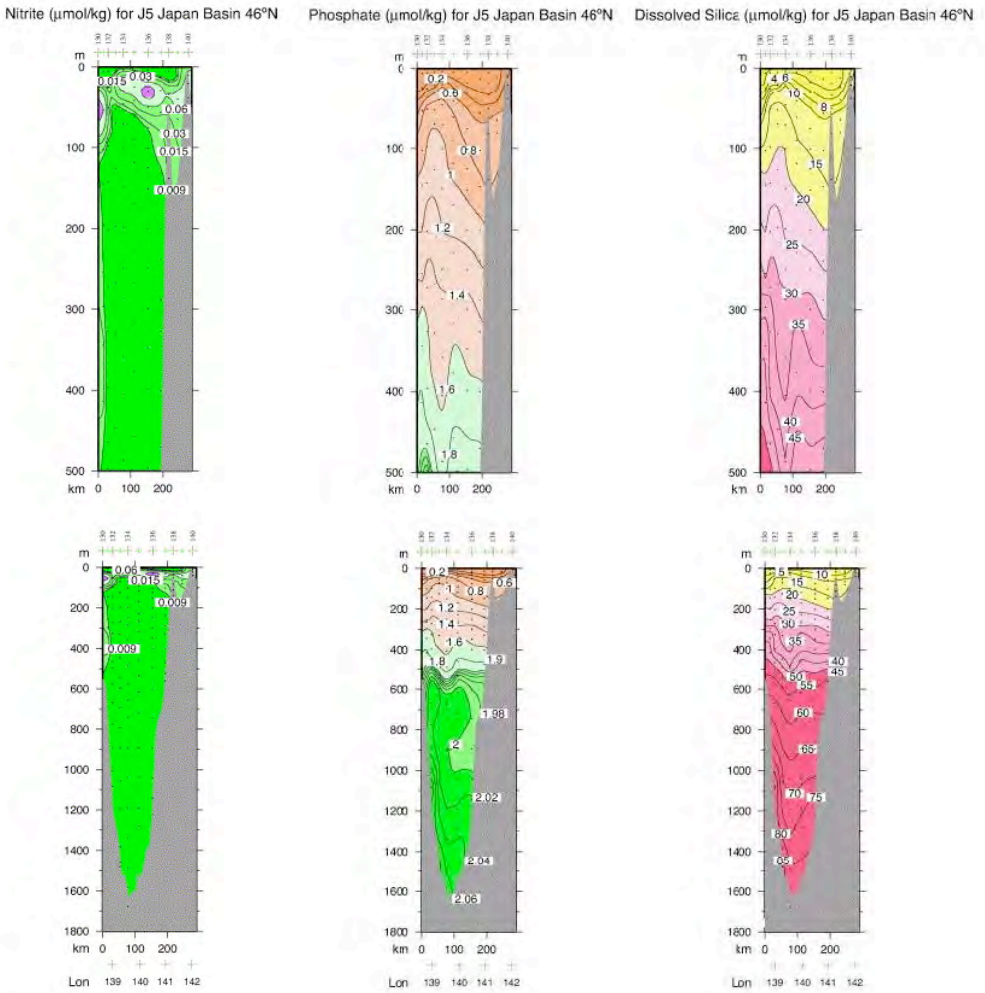


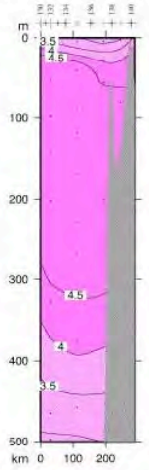
Figure D16. Vertical sections at approximately 46°N (Japan Basin) (J5 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.


Potential Temperature (°C) for J5 Japan Basin 46°N
Salinity for J5 Japan Basin 46°N
CTD Salinity for J5 Japan Basin 46°N
σ0 for J5 Japan Basin 46°N
m
km
Lon

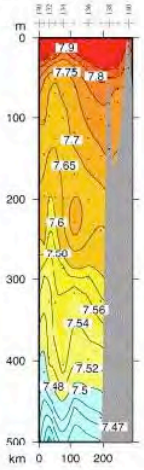

σ1 for J5 Japan Basin 46°N
σ2 for J5 Japan Basin 46°N
Oxygen (μmol/kg) for J5 Japan Basin 46°N
Nitrate (μmol/kg) for J5 Japan Basin 46°N
m
km
Lon


Nitrite (µmol/kg) for J5 Japan Basin 46°N
Phosphate (µmol/kg) for J5 Japan Basin 46°N
Dissolved Silica (µmol/kg) for J5 Japan Basin 46°N
m
km
Lon
0
100
200
139
140
141
142

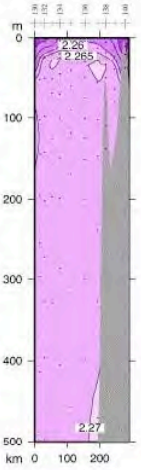
CFC-11 (pmol/kg) for J5 Japan Basin 46°N

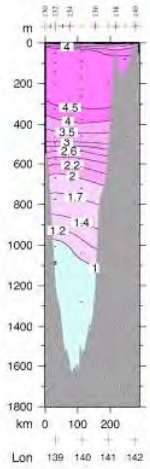


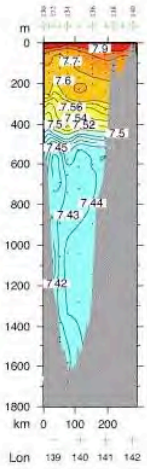
pH for J5 Japan Basin 46°N

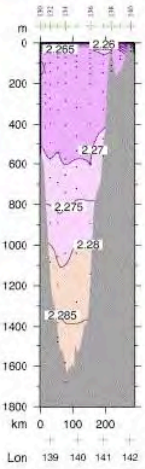


Alkalinity (mmol/kg) for J5 Japan Basin 46°N









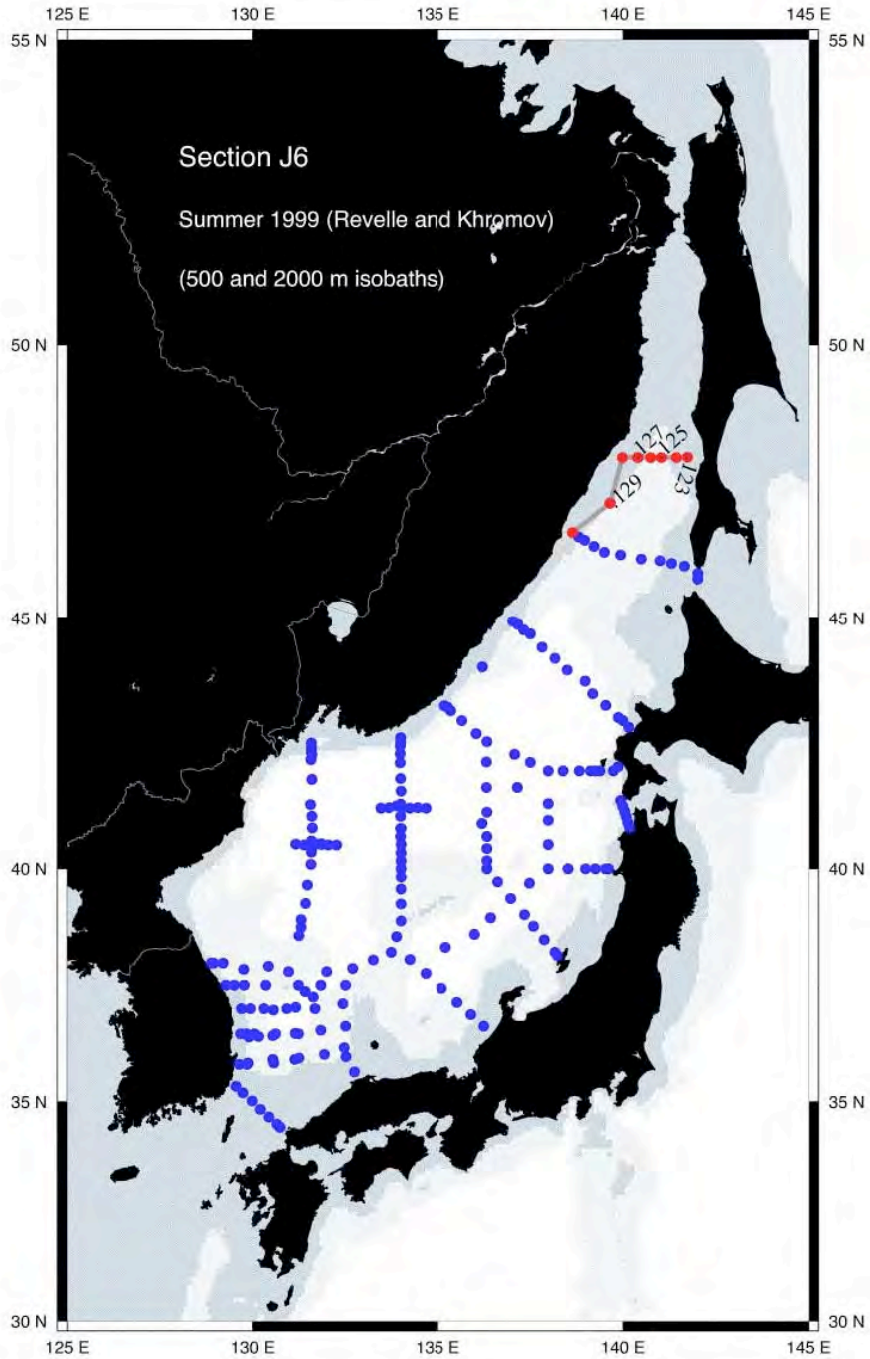
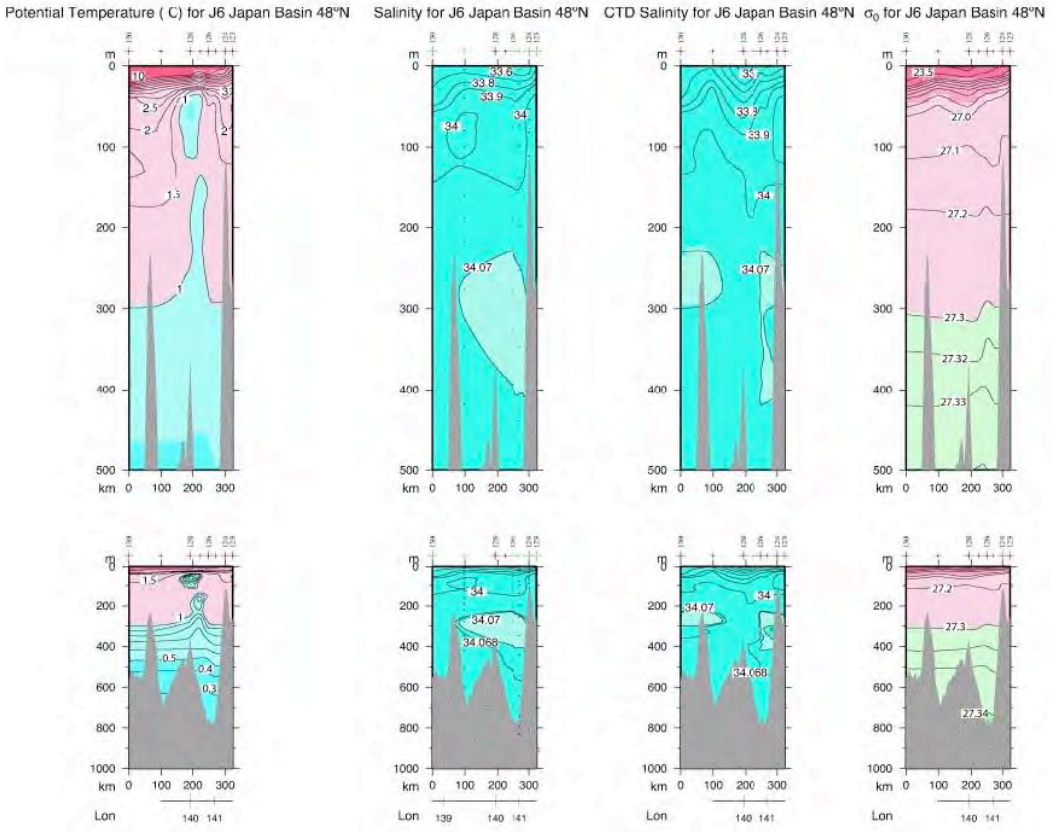
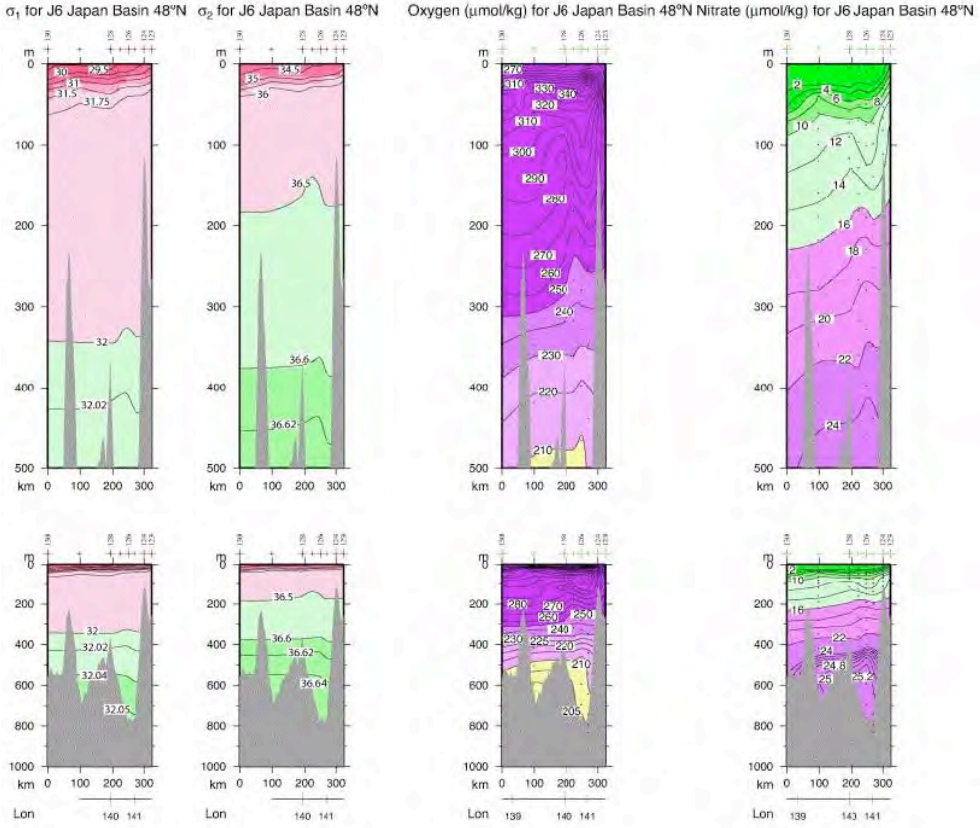
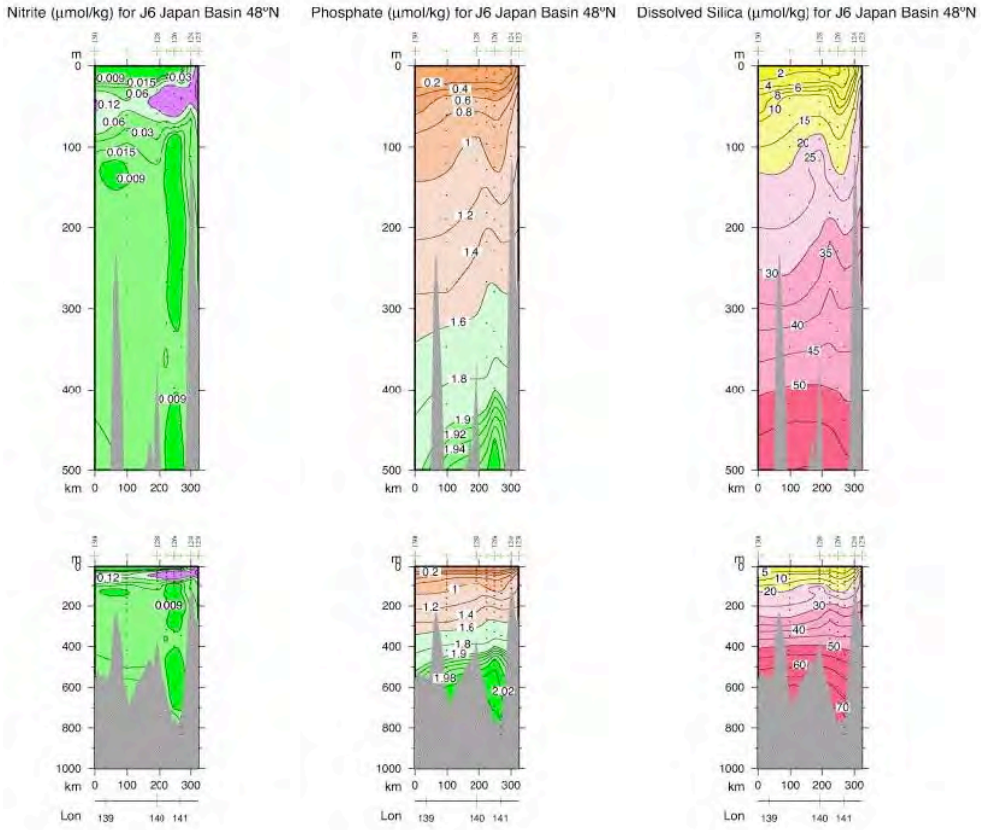


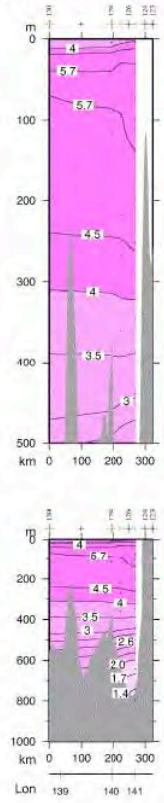
Figure D17. Vertical sections at approximately 48°N (Japan Basin) (J6 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.


Potential Temperature (C) for J6 Japan Basin 48°N
Salinity for J6 Japan Basin 48°N
CTD Salinity for J6 Japan Basin 48°N
σθ for J6 Japan Basin 48°N
m
km
Lon
0
100
200
300
400
500
600
800
1000
140
141
139
10
2.5
2
1.5
1
3
1.5
0.5
0.4
0.3
33.6
33.8
33.9
34
34.07
34.068
33.3
23.5
27.0
27.1
27.2
27.3
27.32
27.33
27.34

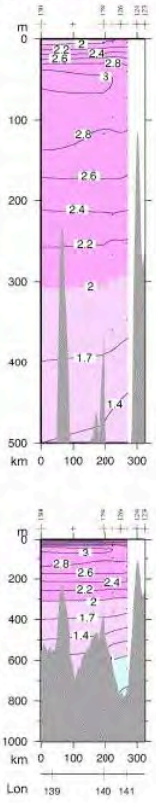

σ1 for J6 Japan Basin 48°N
σ2 for J6 Japan Basin 48°N
Oxygen (μmol/kg) for J6 Japan Basin 48°N
Nitrate (μmol/kg) for J6 Japan Basin 48°N
m
km
Lon


Nitrite (µmol/kg) for J6 Japan Basin 48°N
Phosphate (µmol/kg) for J6 Japan Basin 48°N
Dissolved Silica (µmol/kg) for J6 Japan Basin 48°N
m
km
Lon
0
100
200
300
400
500
600
800
1000
139
140
141

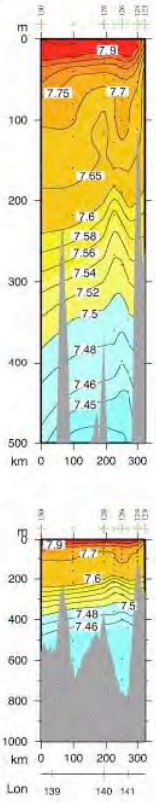
CFC-11 (pmol/kg) for J6 Japan Basin 48°N



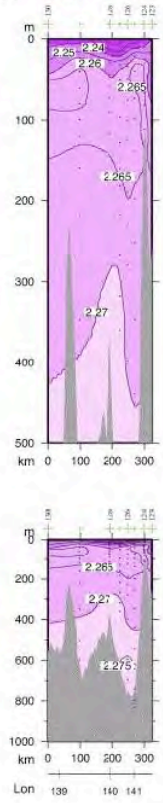
CFC-12 (pmol/kg) for J6 Japan Basin 48°N



pH for J6 Japan Basin 48°N



Alkalinity (mmol/kg) for J6 Japan Basin 48°N



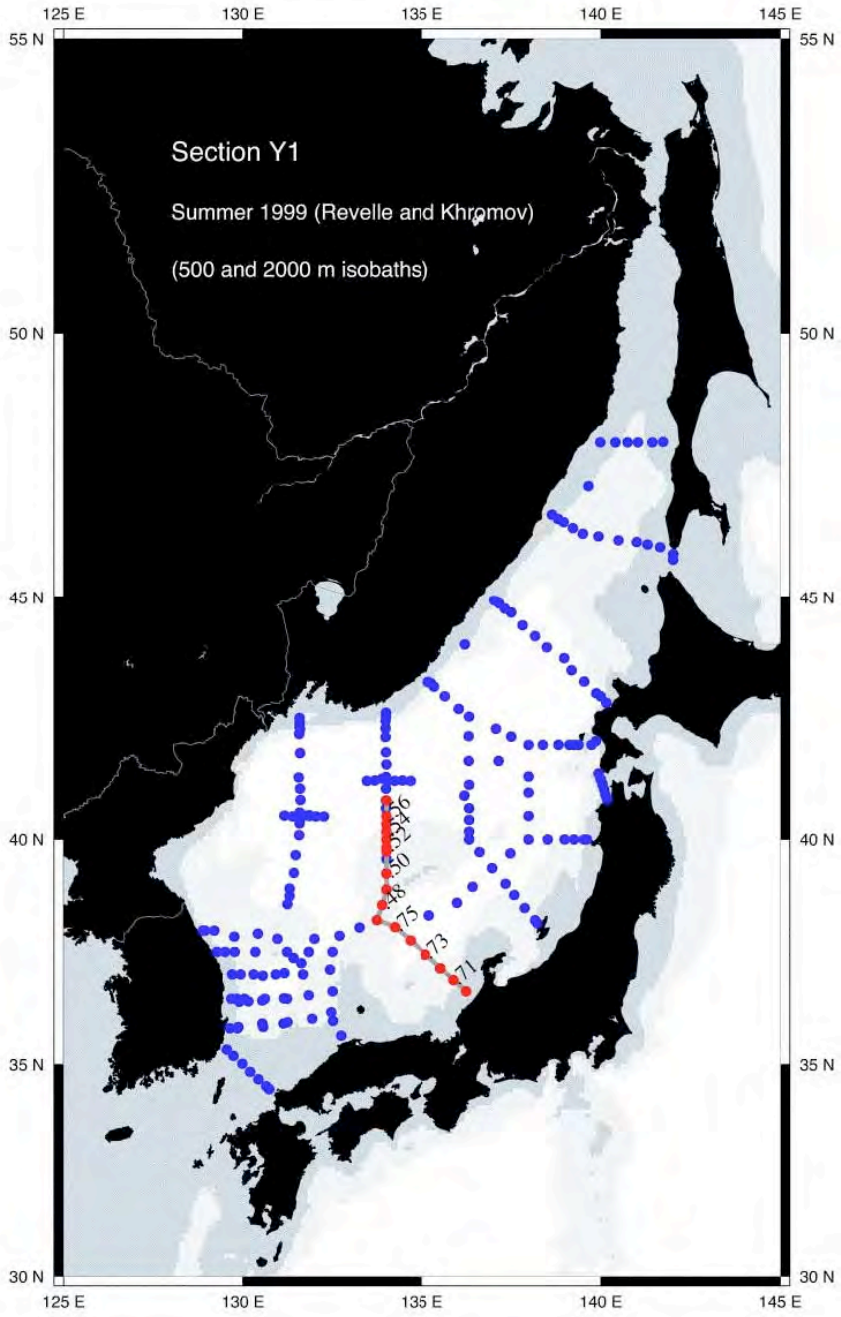
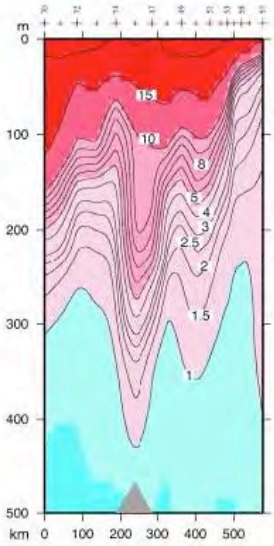
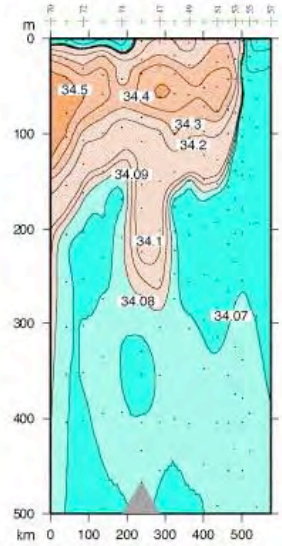


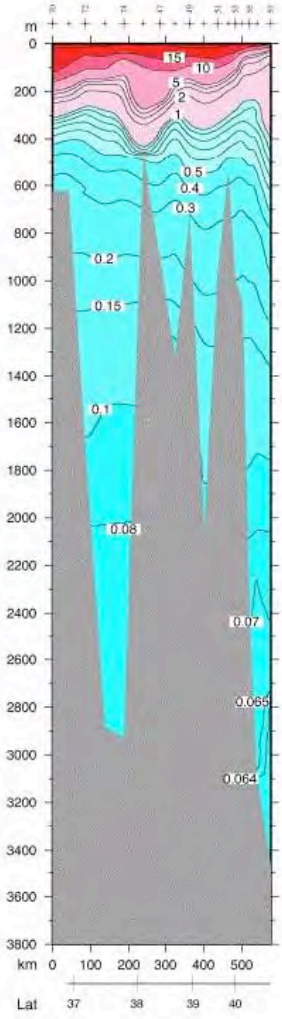
Figure D18. Vertical sections at approximately 135°E (Yamato Rise and Yamato Basin) (Y1 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated latitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

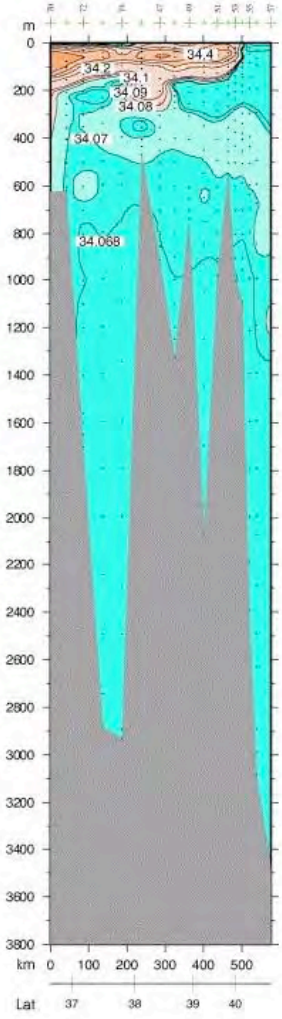
Potential Temperature (C) for Y1 Yamato Rise 134° E and Yamato Basin



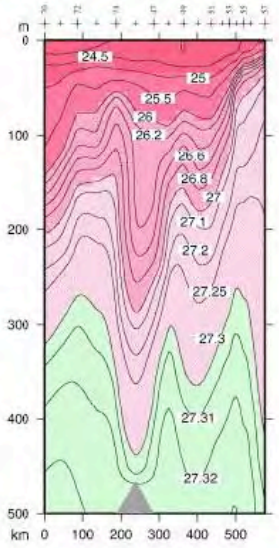
Salinity for Y1 Yamato Rise 134° E and Yamato Basin



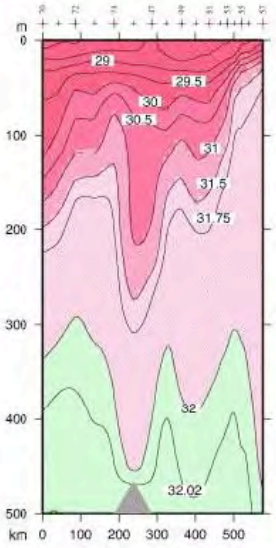


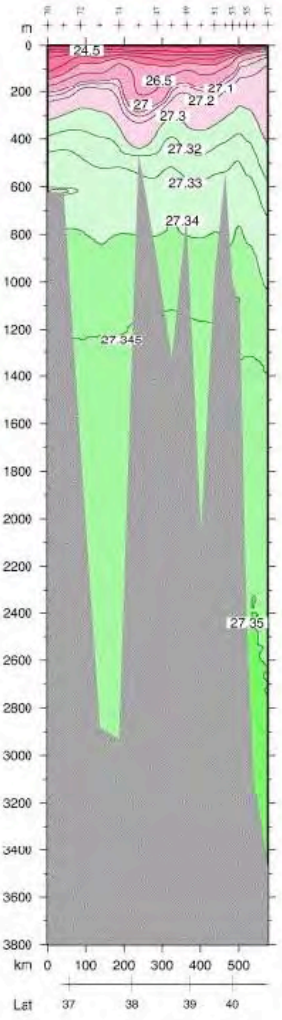


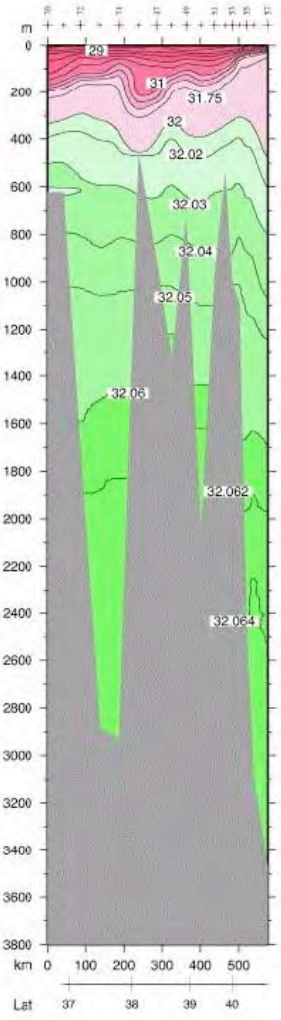
σ_0 for YI Yamato Rise 134° E and Yamato Basin



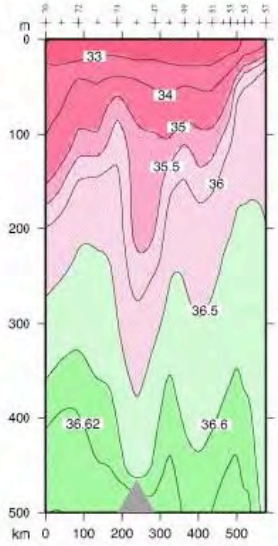
σ_1 for YI Yamato Rise 134° E and Yamato Basin



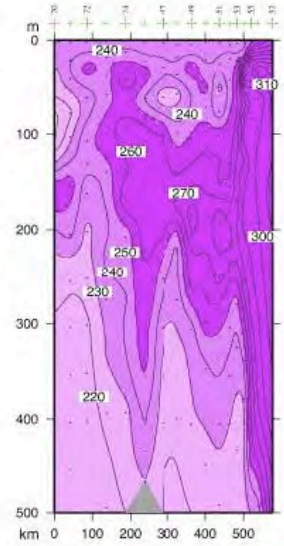


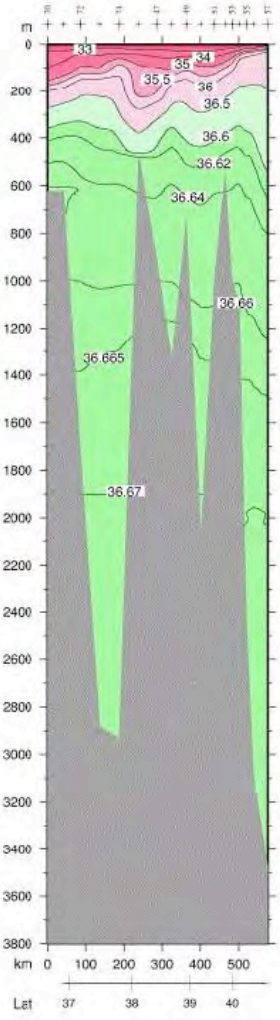


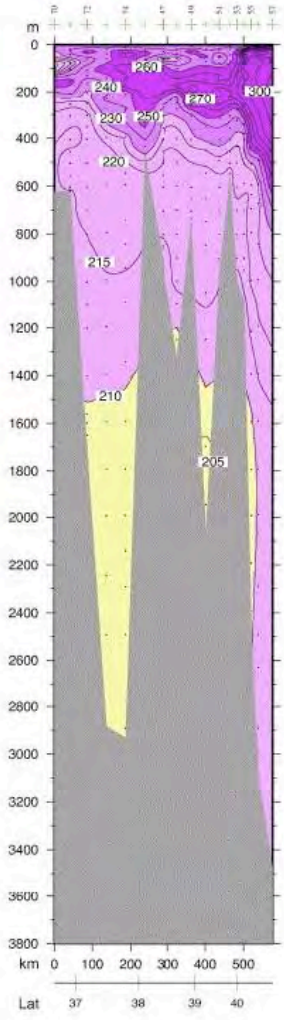
σ_2 for Y1 Yamato Rise 134° E and Yamato Basin



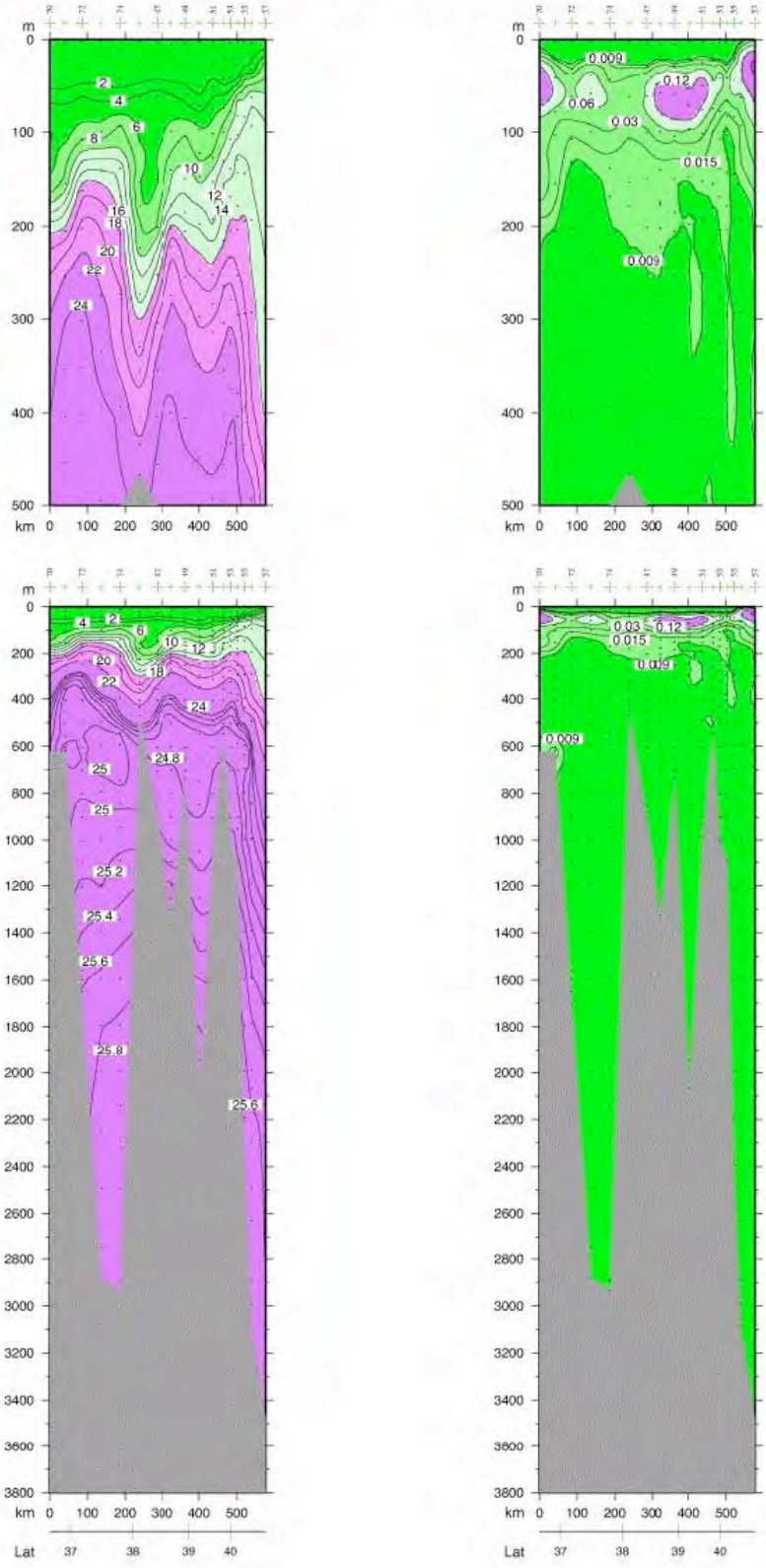
Oxygen (µmol/kg) for Y1 Yamato Rise 134° E and Yamato Basin



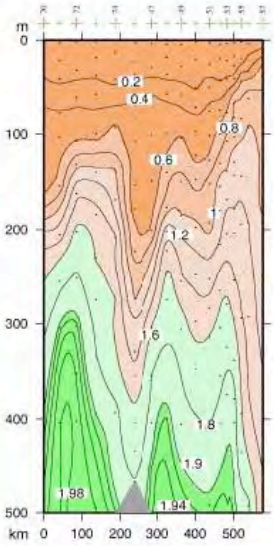


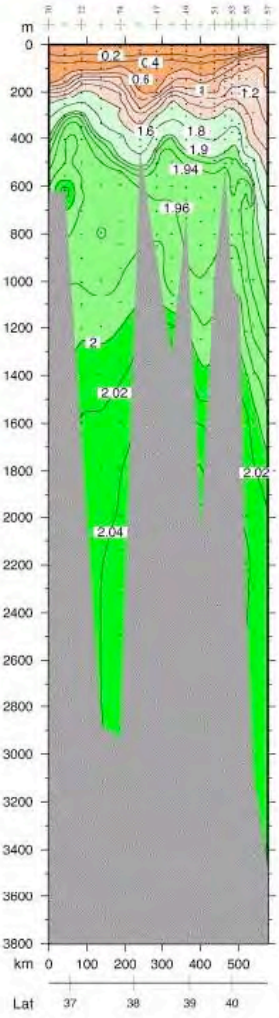


Nitrate (µmol/kg) for Y1 Yamato Rise 134° E and Yamato Basin Nitrite (µmol/kg) for Y1 Yamato Rise 134° E and Yamato Basin

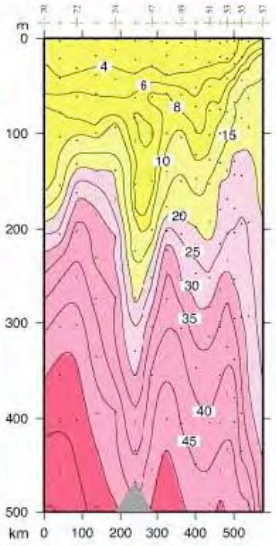


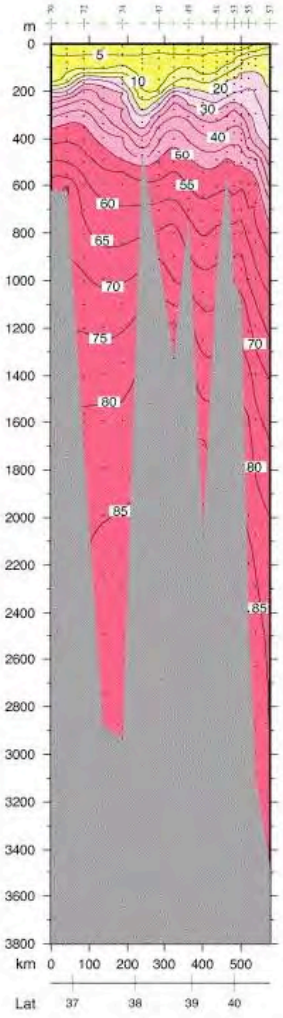
Phosphate (μmol/kg) for Y1 Yamato Rise 134° E and Yamato Basin



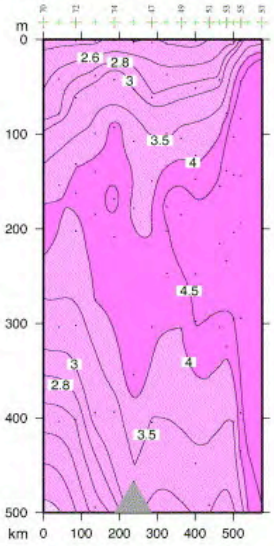


Dissolved Silica (μmol/kg) for Y1 Yamato Rise 134° E and Yamato Basin

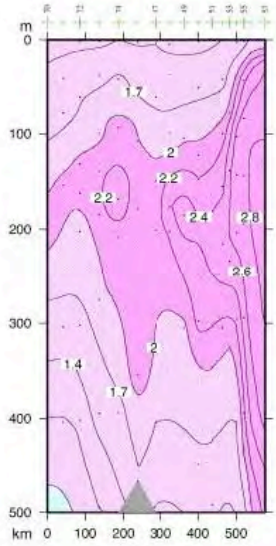


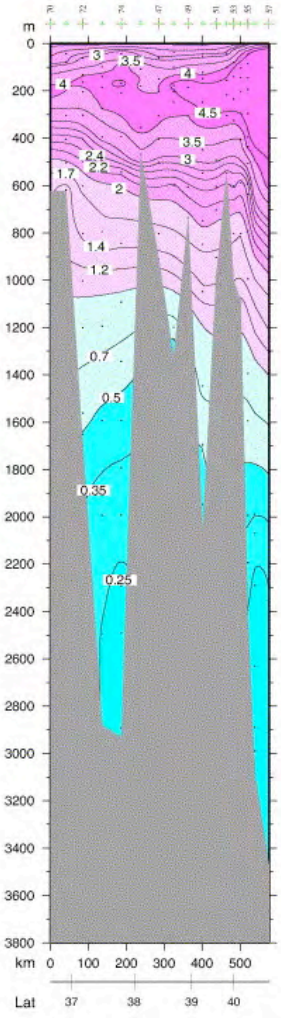


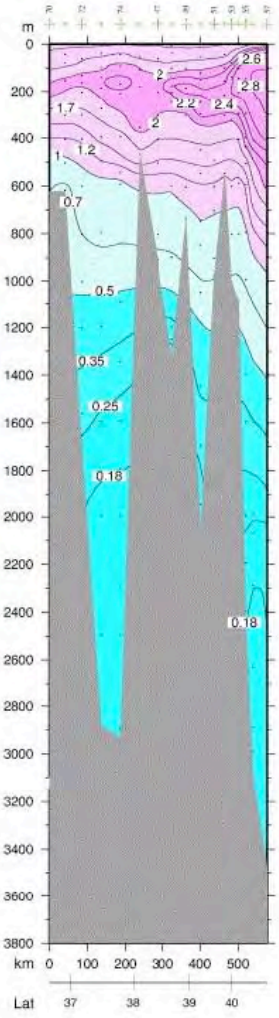
CFC-11 (pmol/kg) for Y1 Yamato Rise 134 E and Yamato Basin



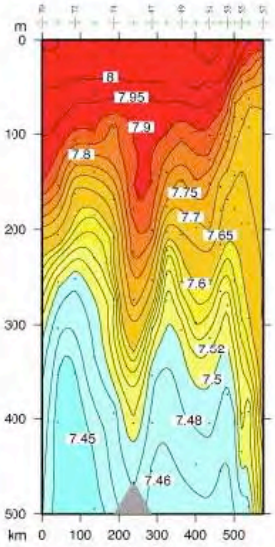
CFC-12 (pmol/kg) for Y1 Yamato Rise 134 E and Yamato Basin

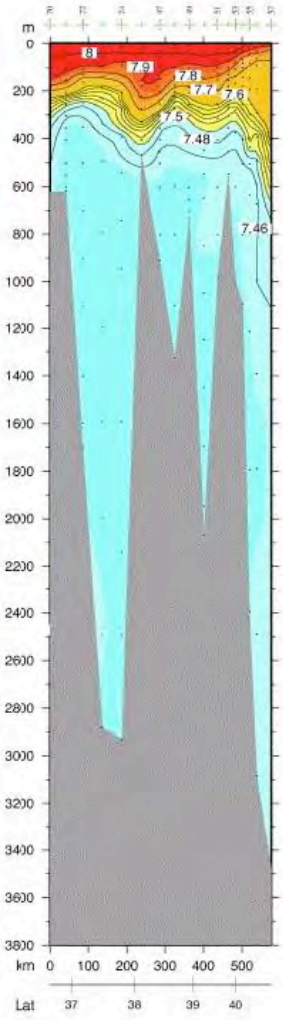




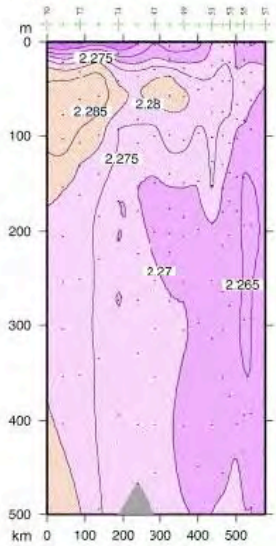


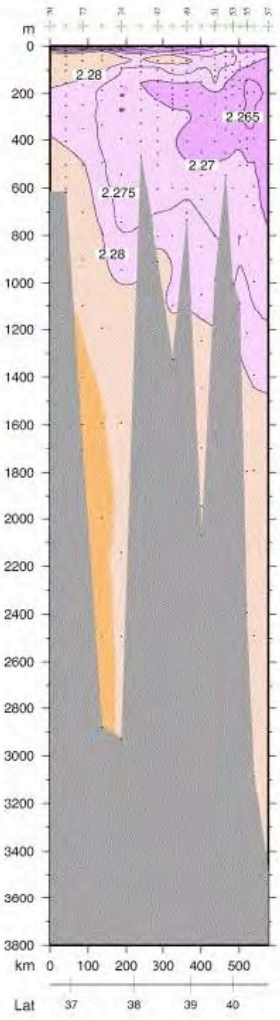
pH for Y1 Yamato Rise 134° E and Yamato Basin





Alkalinity (mmol/kg) for Y1 Yamato Rise 134° E and Yamato Basin





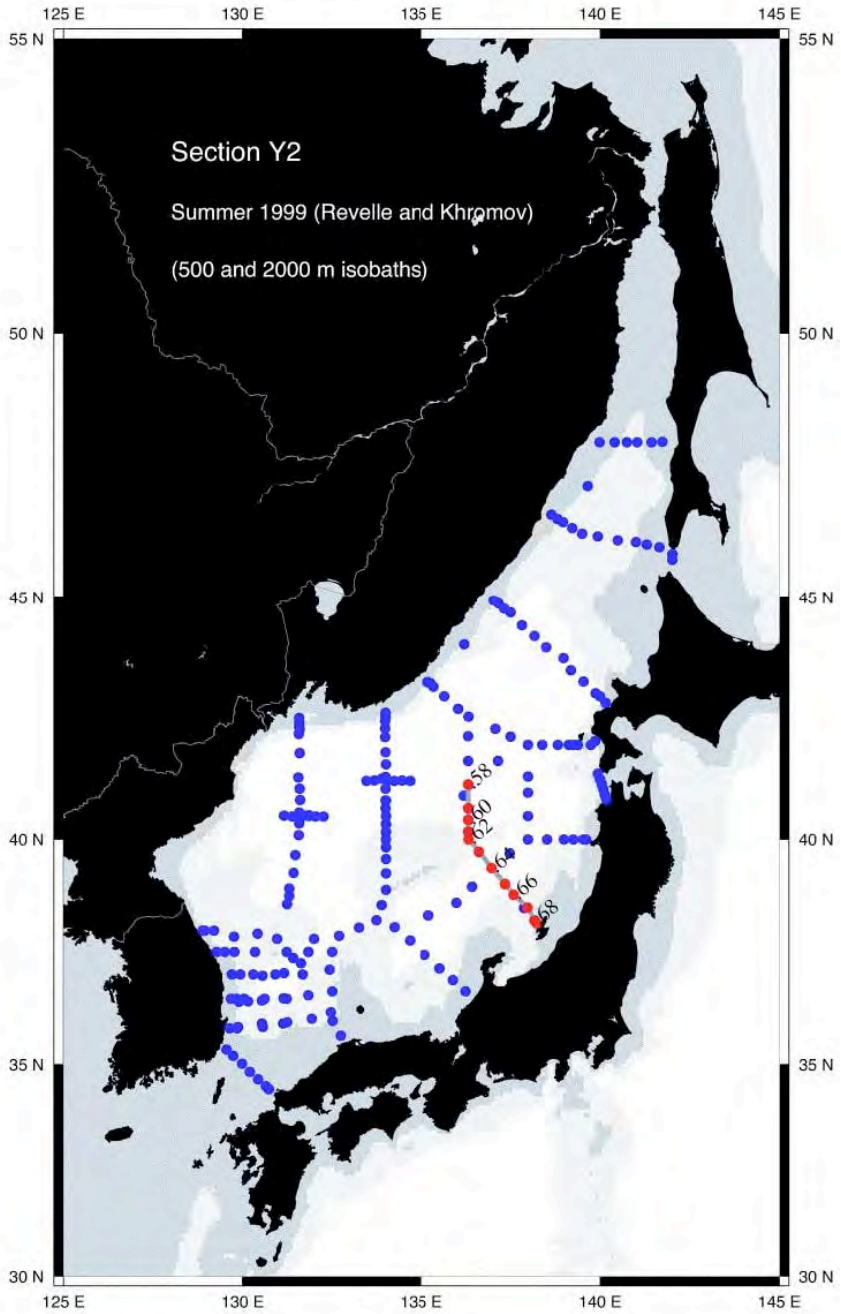
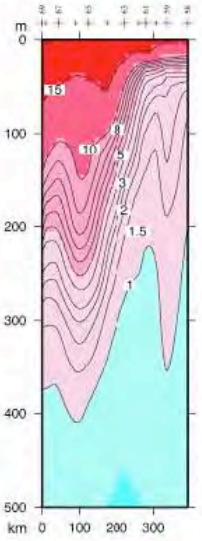
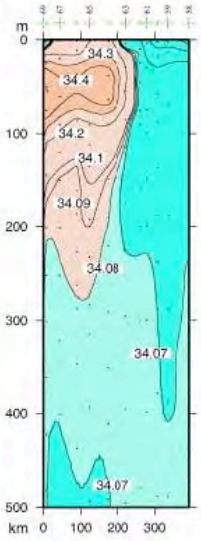


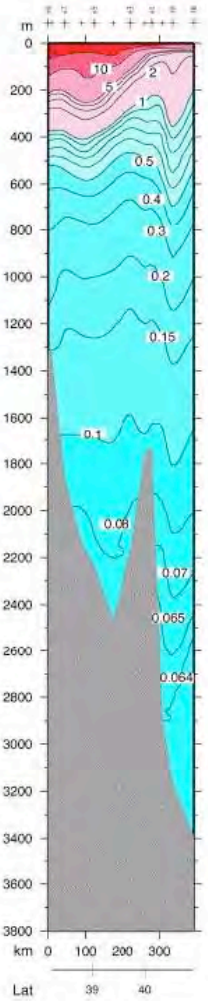
Figure D19. Vertical sections at approximately 136°20'E (Yamato Rise and Yamato Basin) (Y2 and part of J3 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated latitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

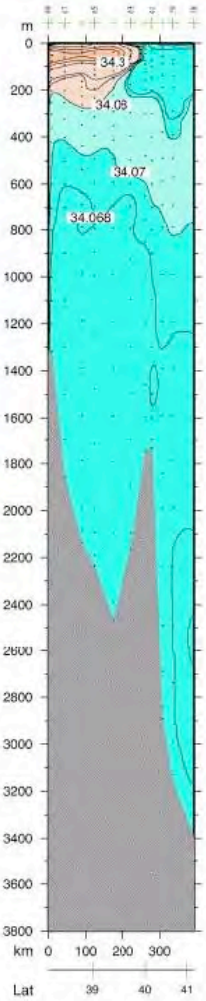
Potential Temperature (°C) for Y2 Yamato Rise 136° 20'E and Yamato Basin



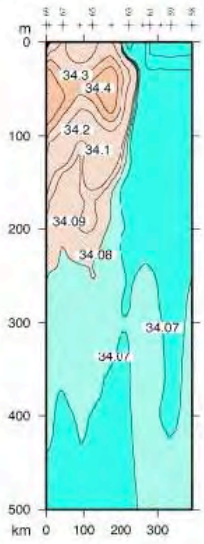
Salinity for Y2 Yamato Rise 136° 20'E and Yamato Basin



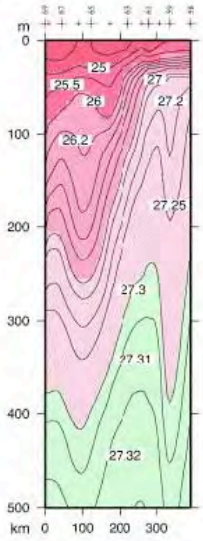


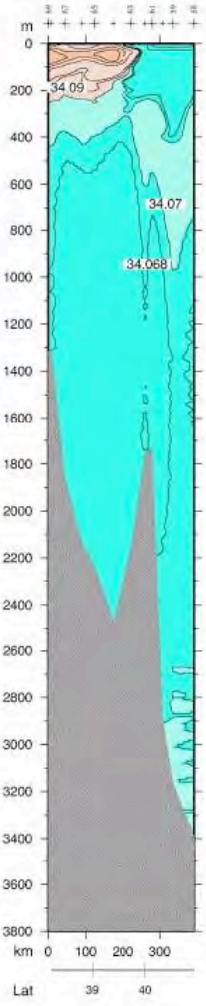


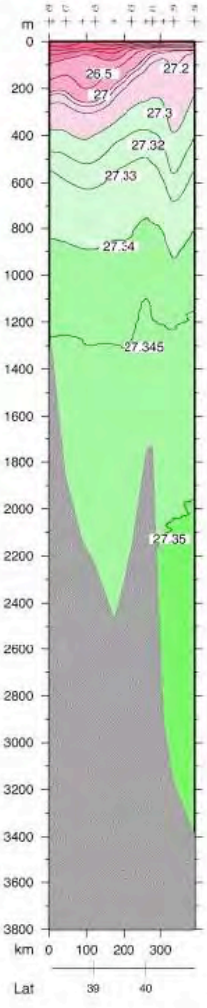
CTD Salinity for Y2 Yamato Rise 136° 20'E and Yamato Basin



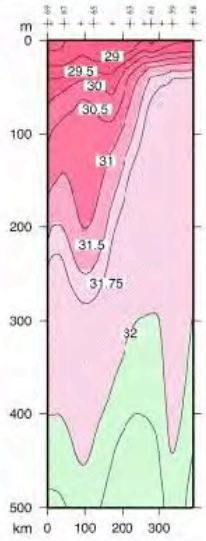
σ_0 for Y2 Yamato Rise 136° 20'E and Yamato Basin



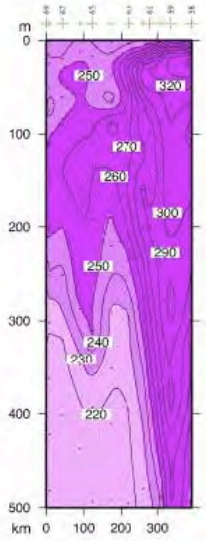


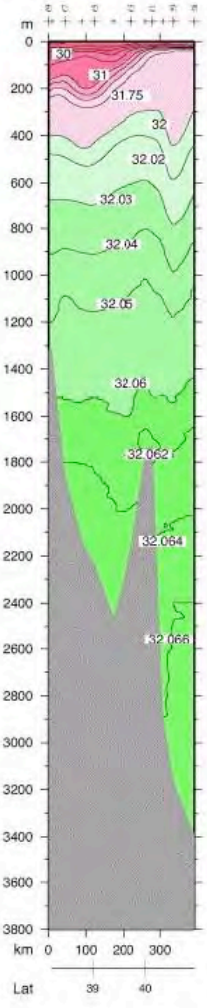


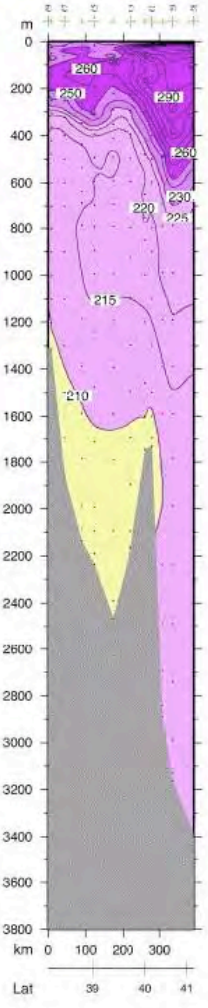
σ_t for Y2 Yamato Rise 136° 20'E and Yamato Basin



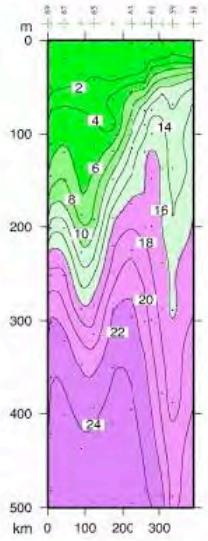
Oxygen (µmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato Basin



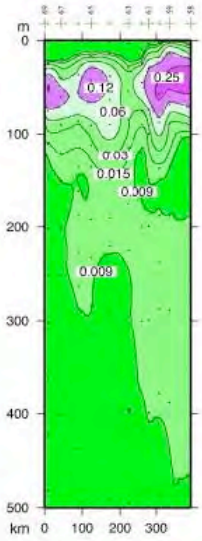


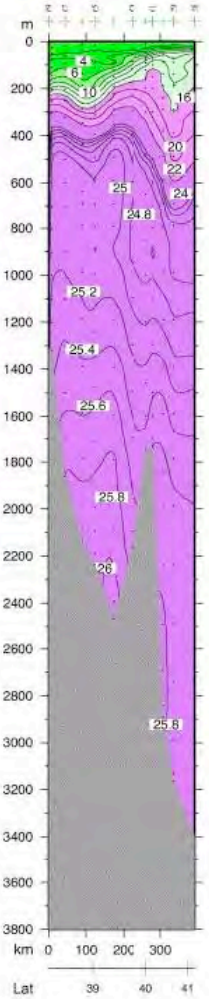


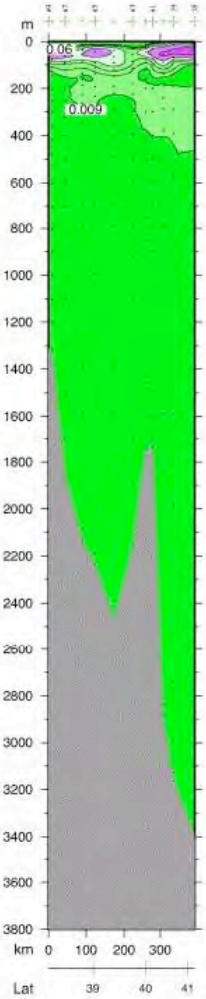
Nitrate (µmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato Basin



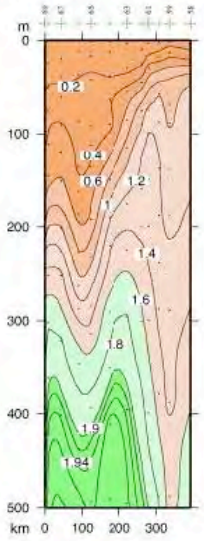
Nitrite (µmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato Basin



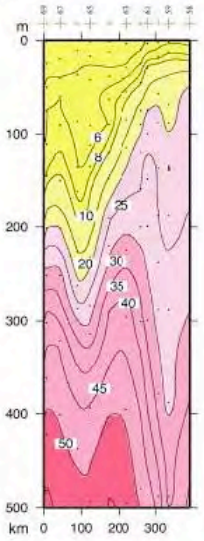


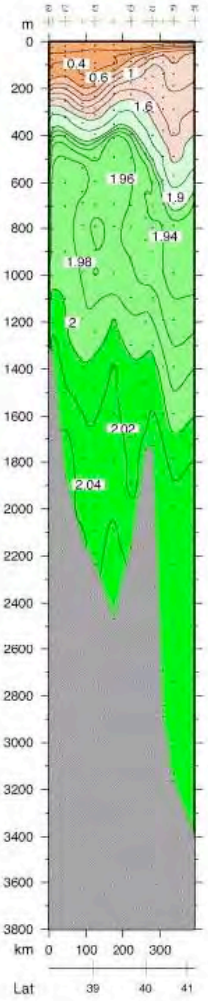


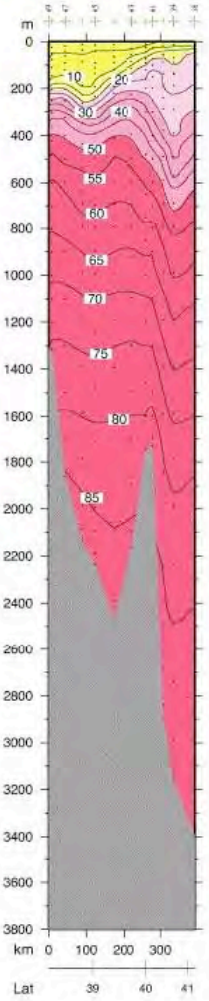
Phosphate (µmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato



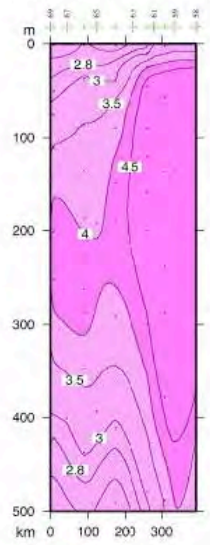
Dissolved Silica (µmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato B

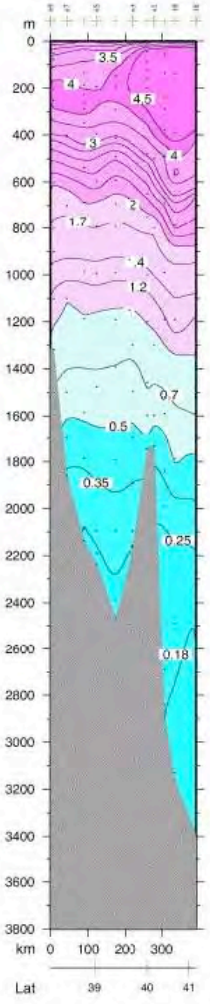




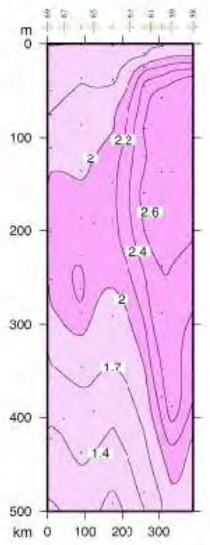


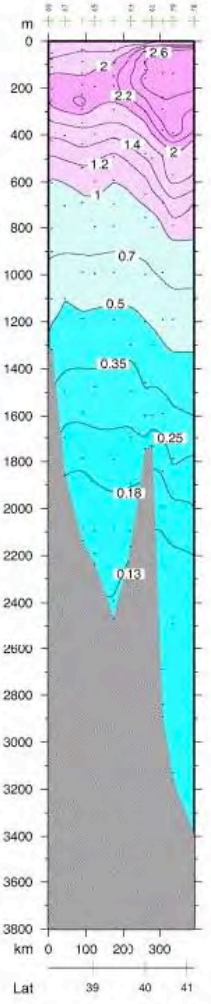
CFC-11 (pmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato Basin



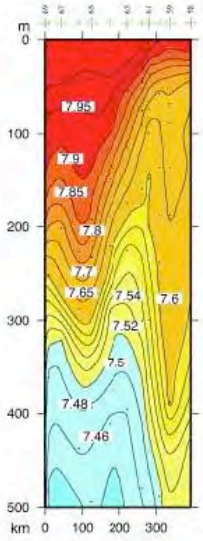


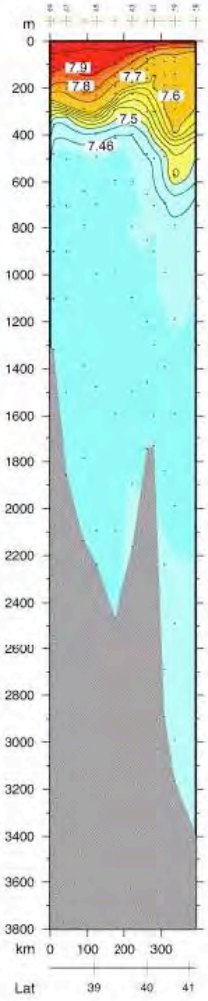
CFC-12 (pmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato Basin



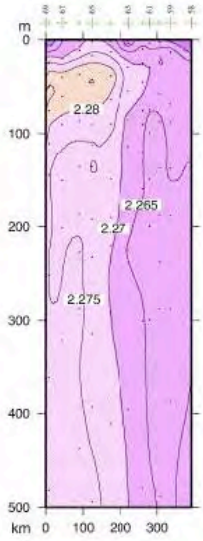


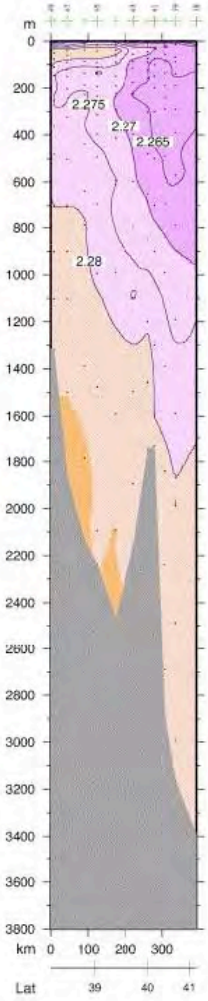
pH for Y2 Yamato Rise 136 20E and Yamato Basin





Alkalinity (mmol/kg) for Y2 Yamato Rise 136° 20'E and Yamato Basin





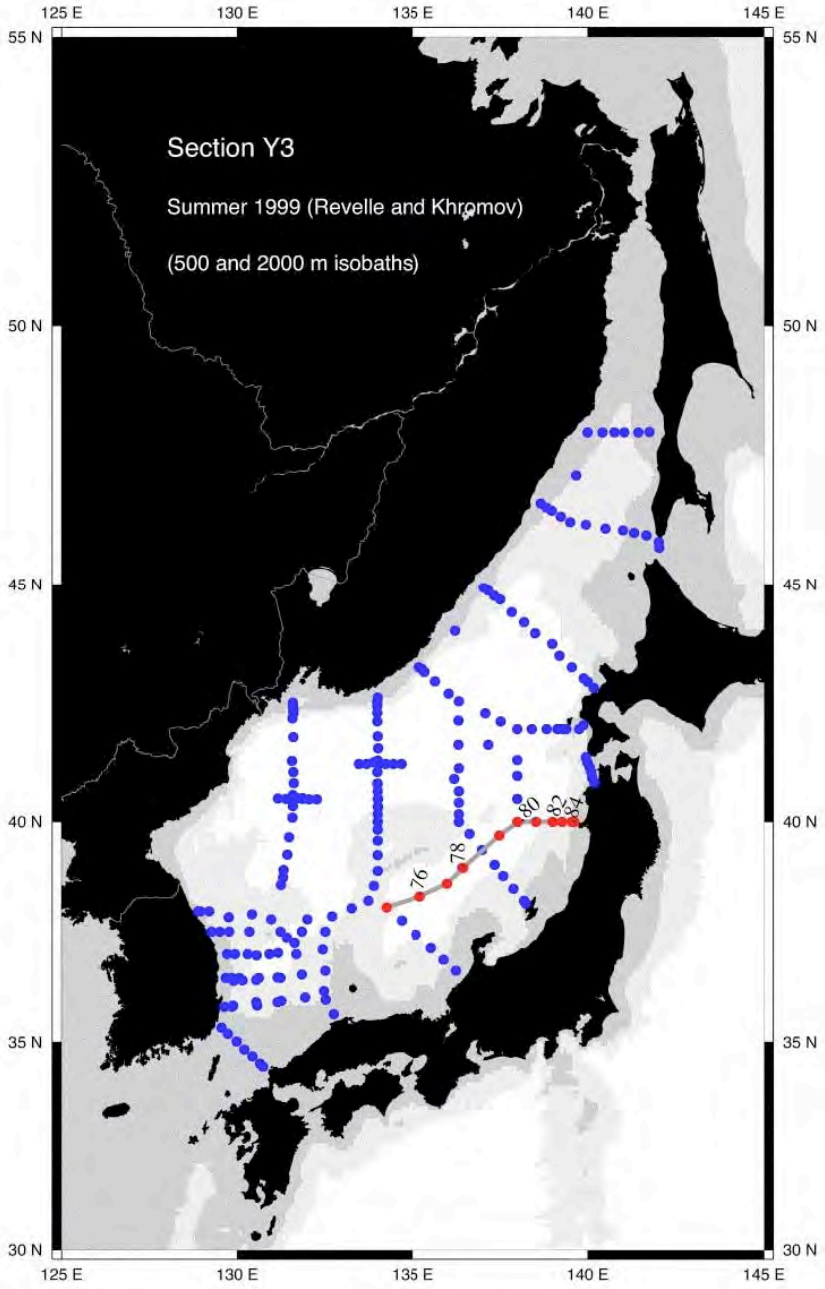
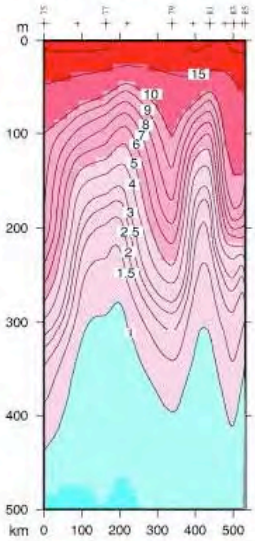
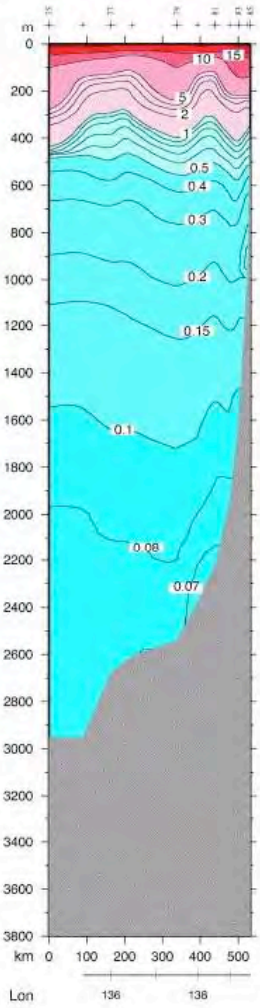


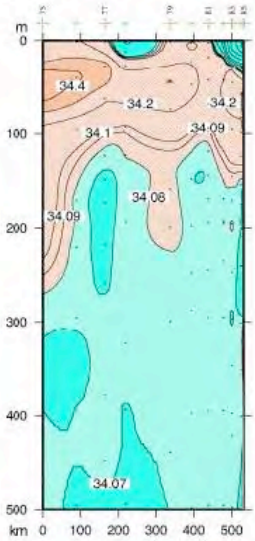
Figure D20. Vertical sections at approximately 137°E to 40°N (Yamato Basin) (Y3 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC-12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated longitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

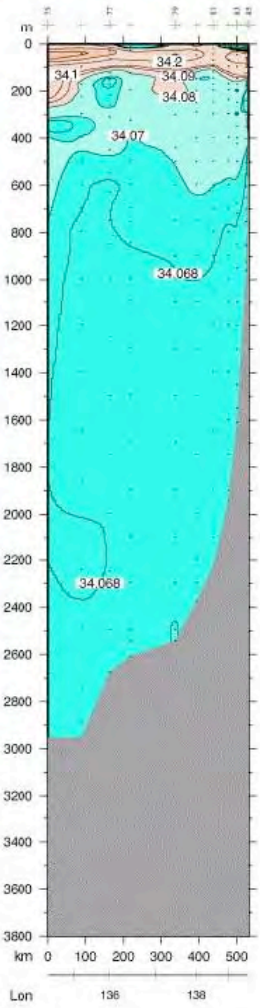
Potential Temperature (°C) for Y3 Yamato Basin to 40° N



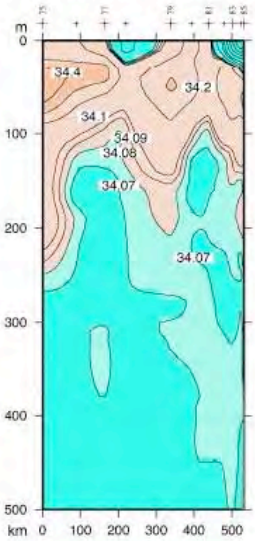


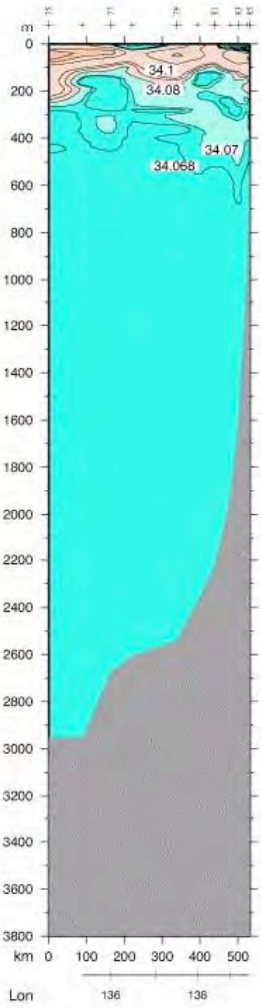
Salinity for Y3 Yamato Basin to 40° N

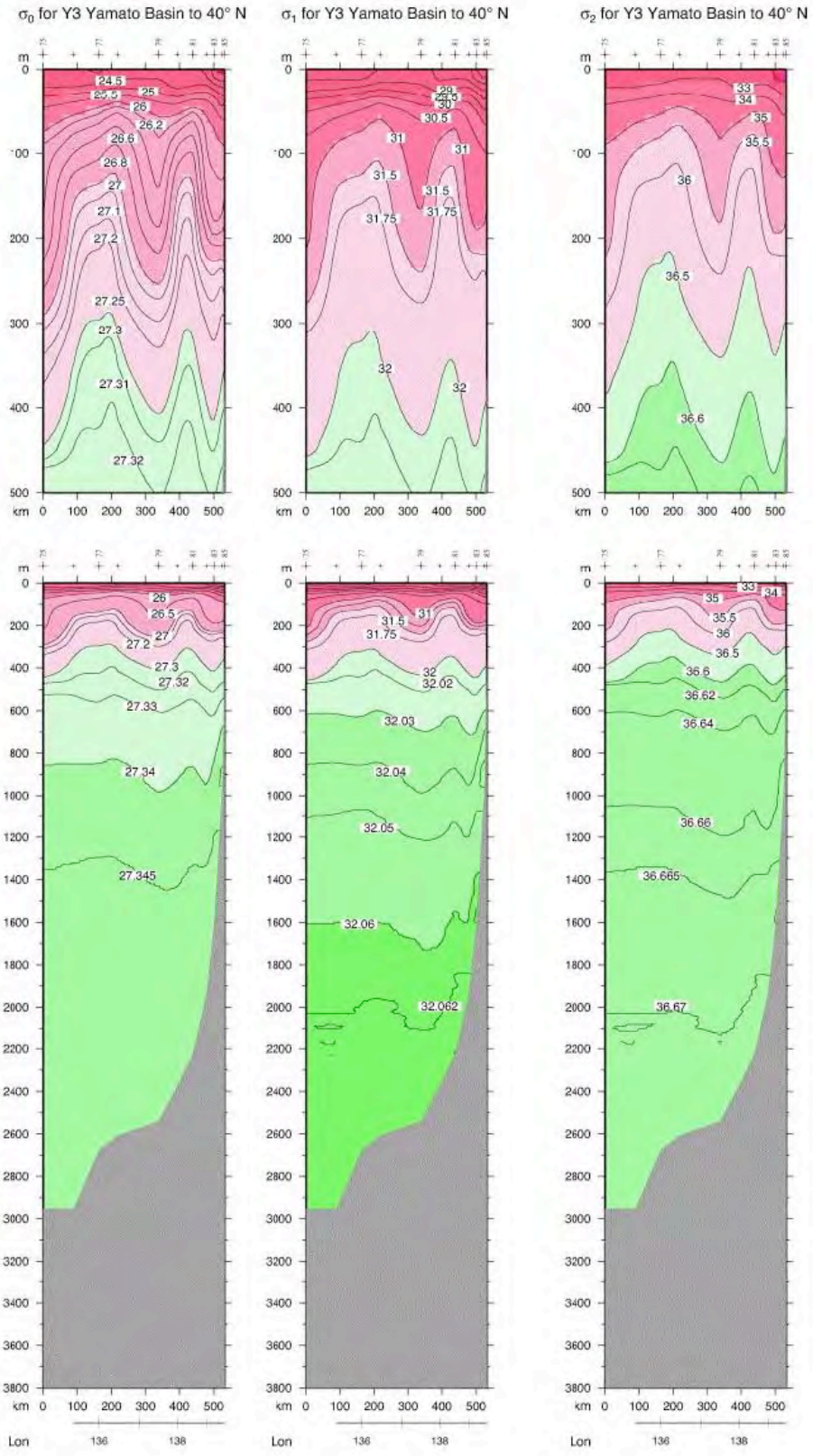




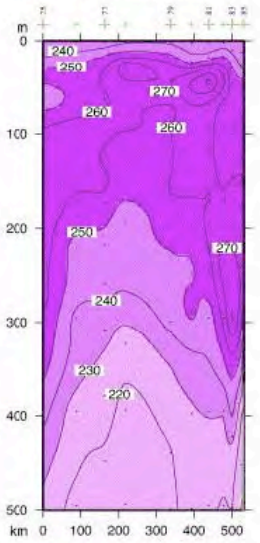
CTD Salinity for Y3 Yamato Basin to 40° N



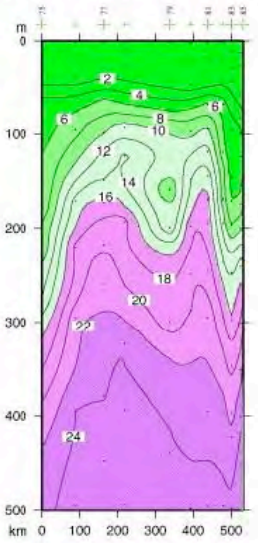



σ0 for Y3 Yamato Basin to 40° N
σ1 for Y3 Yamato Basin to 40° N
σ2 for Y3 Yamato Basin to 40° N
m
km
Lon
24.5
25.5
25
26
26.2
26.6
26.8
27
27.1
27.2
27.25
27.3
27.31
27.32
29
29.5
30
30.5
31
31.5
31.75
32
32.02
32.03
32.04
32.05
32.06
32.062
33
34
35
35.5
36
36.5
36.6
36.62
36.64
36.66
36.665
36.67
26.5
27.33
27.34
27.345

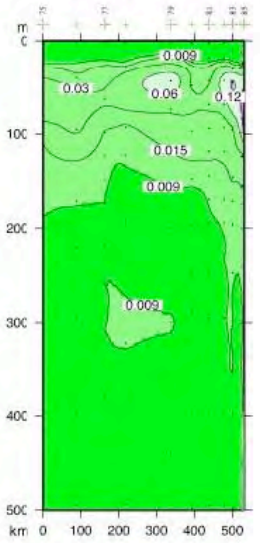
Oxygen (µmol/kg) for Y3 Yamato Basin to 40° N

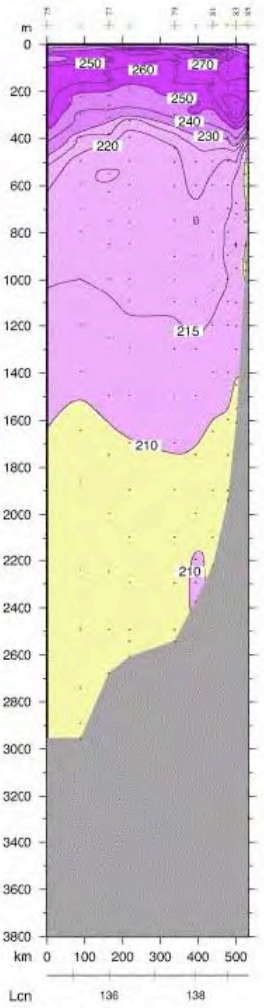


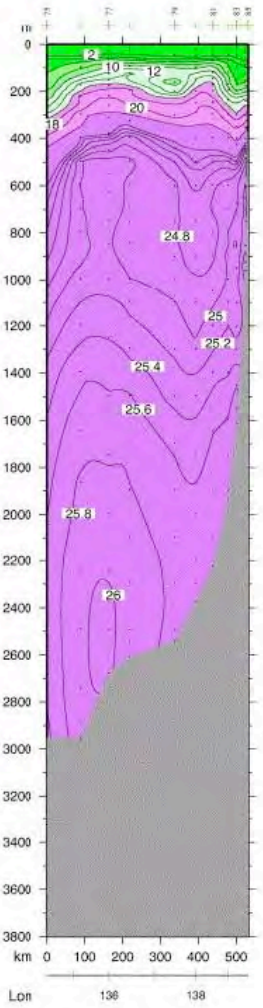
Nitrate (µmol/kg) for Y3 Yamato Basin to 40° N

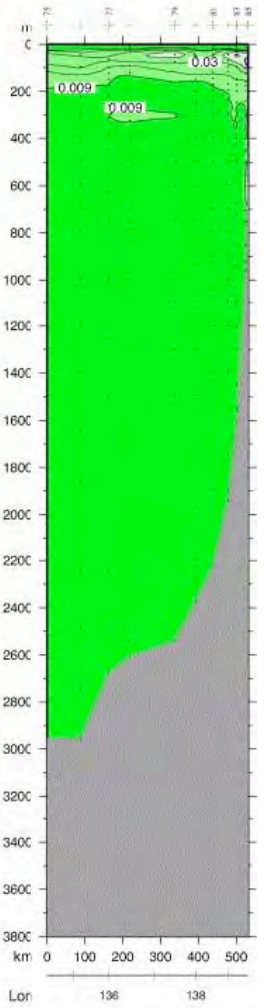


Nitrite (µmol/kg) for Y3 Yamato Basin to 40° N

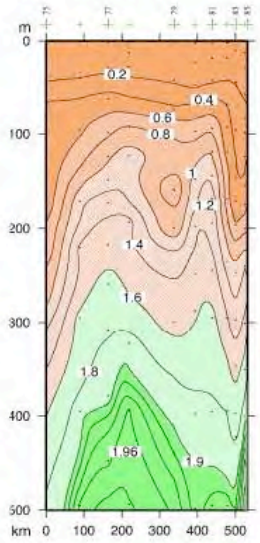




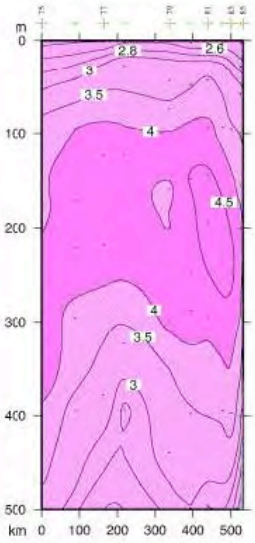


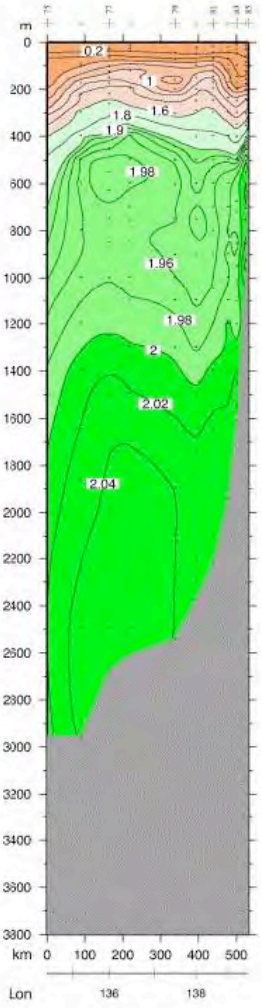


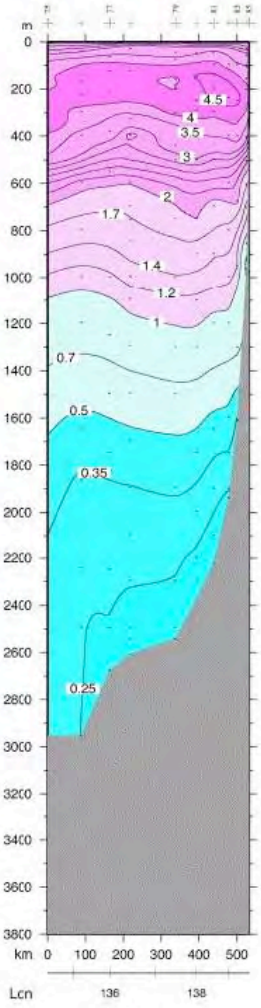
Phosphate (µmol/kg) for Y3 Yamato Basin to 40° N

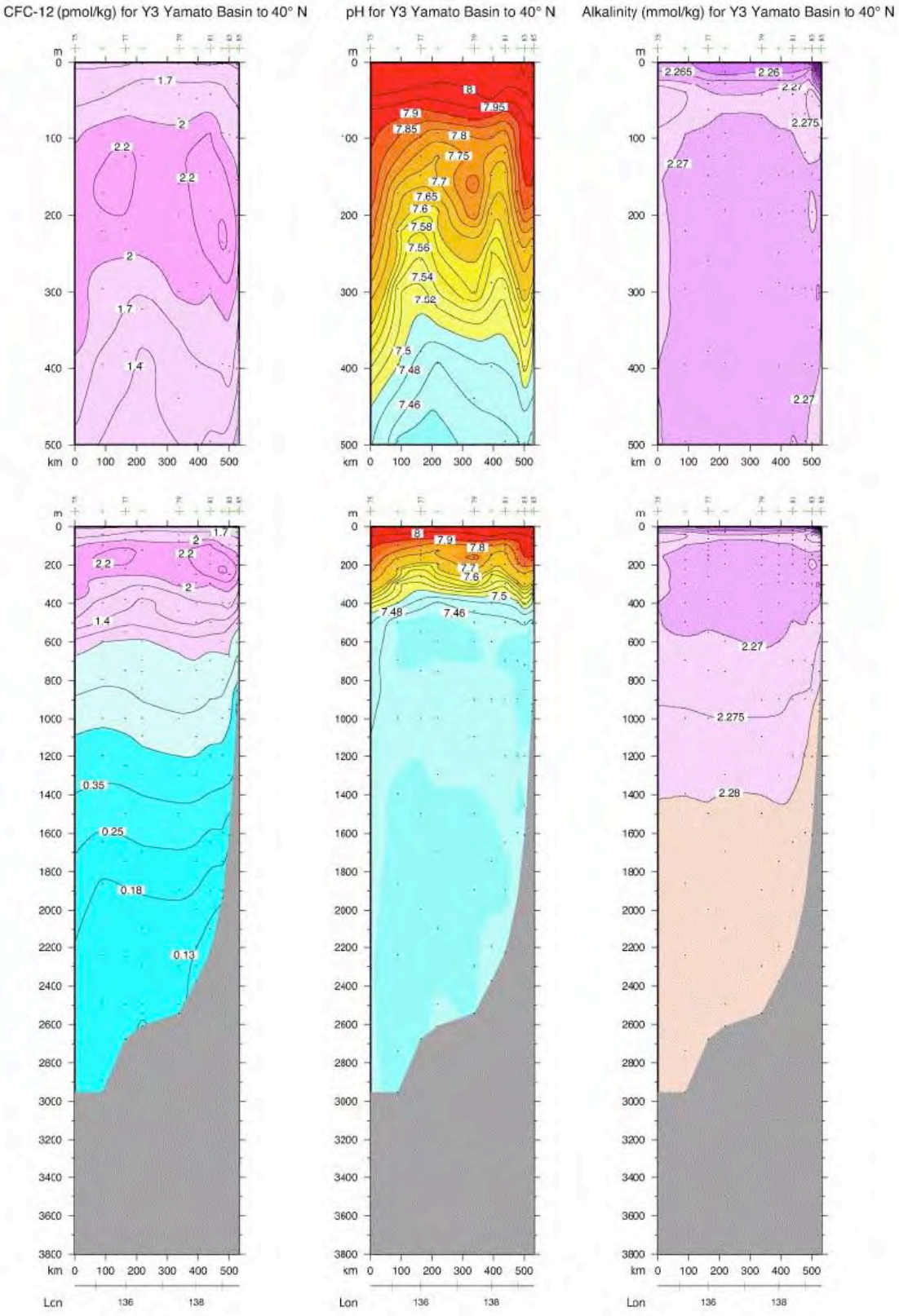


CFC-11 (pmol/kg) for Y3 Yamato Basin to 40° N








CFC-12 (pmol/kg) for Y3 Yamato Basin to 40° N
pH for Y3 Yamato Basin to 40° N
Alkalinity (mmol/kg) for Y3 Yamato Basin to 40° N
m
km
Lon
1.7
2
2.2
1.4
0.35
0.25
0.18
0.13
8
7.95
7.9
7.85
7.8
7.75
7.7
7.65
7.6
7.58
7.56
7.54
7.52
7.5
7.48
7.46
2.265
2.26
2.27
2.275
2.28
0
100
200
300
400
500
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
136
138

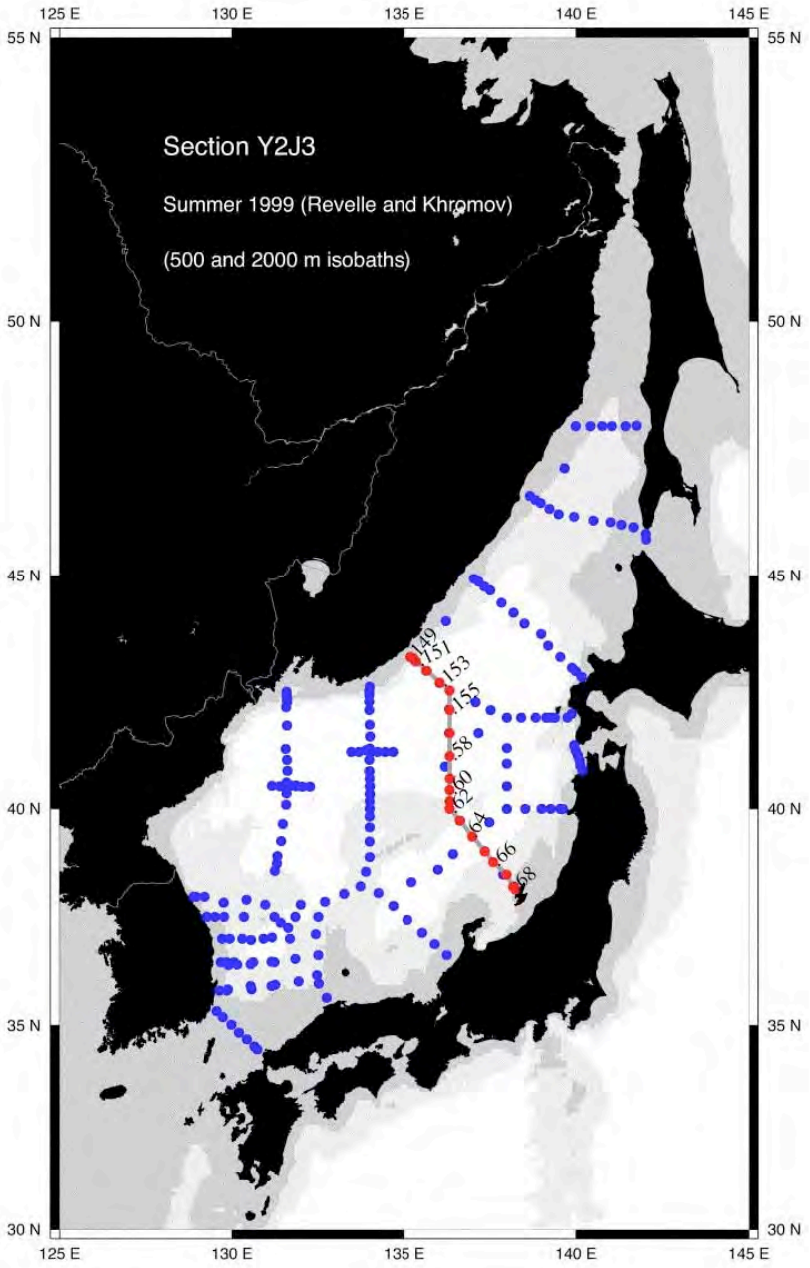
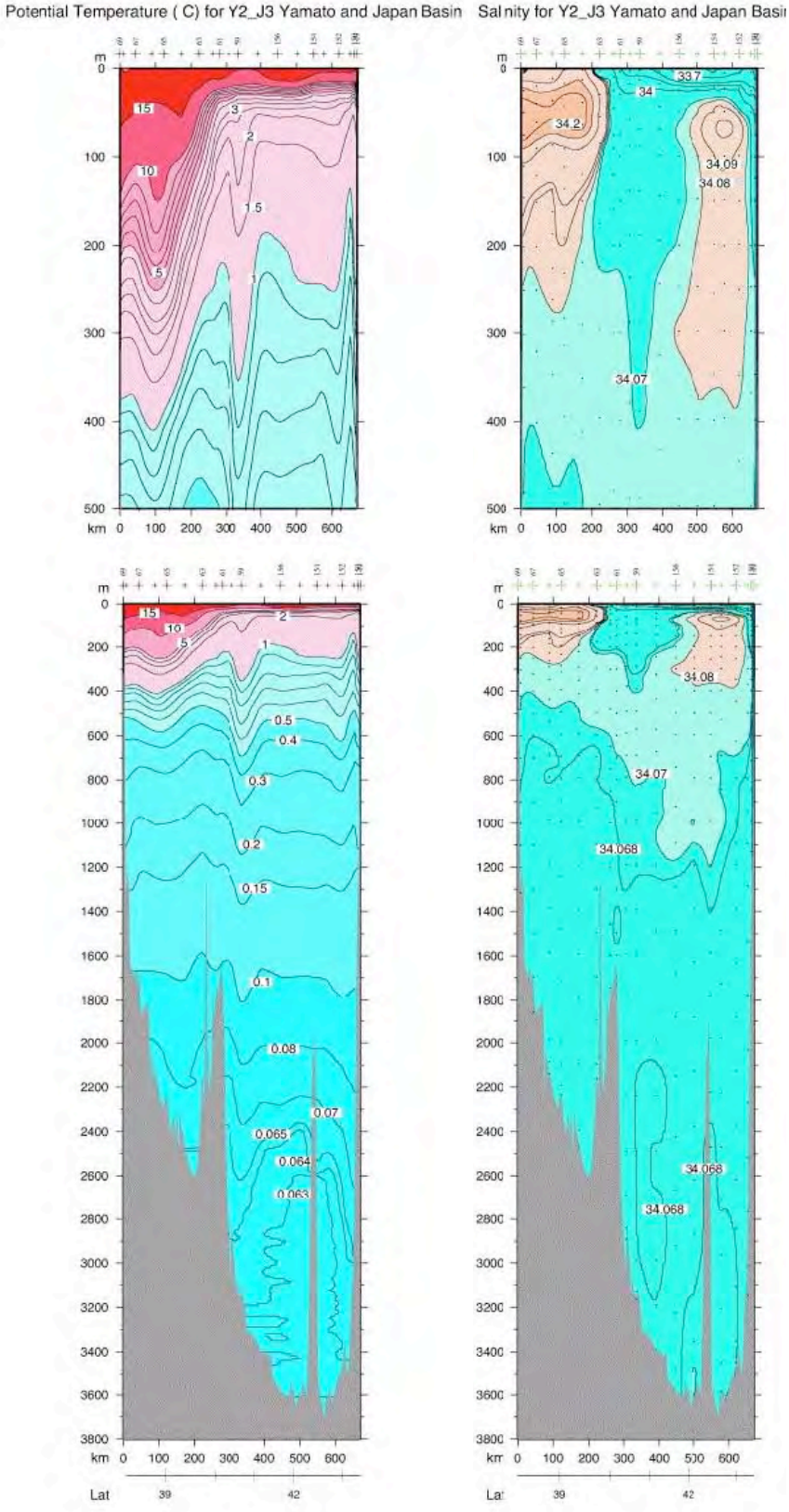
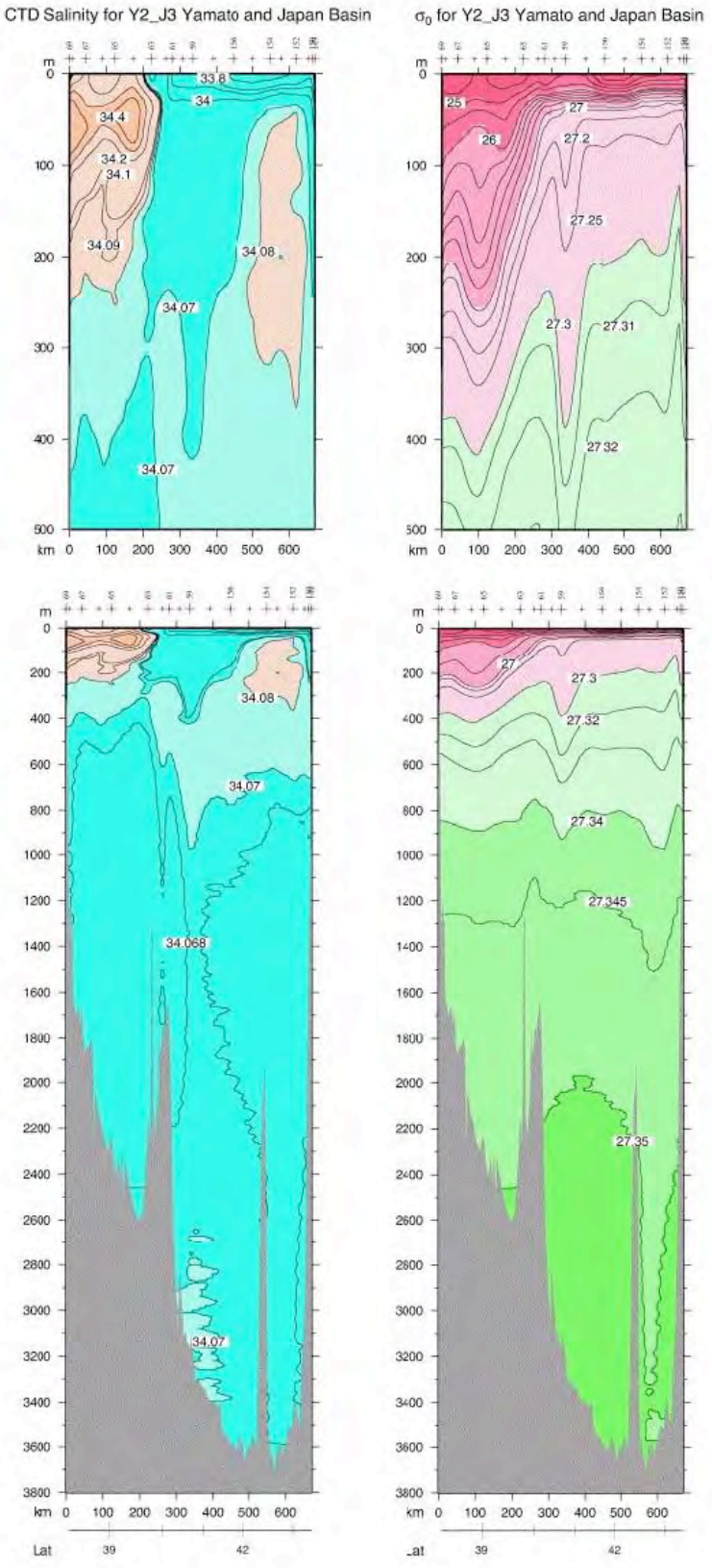
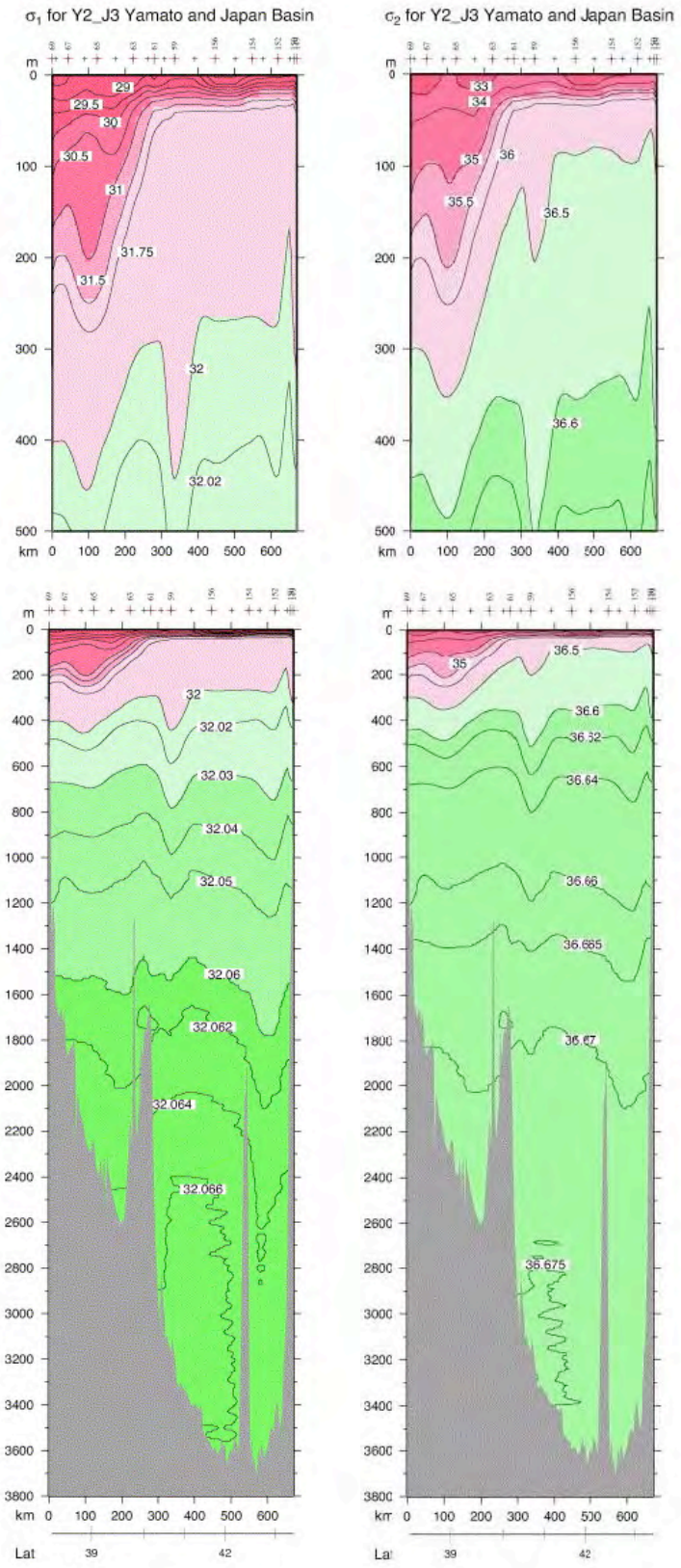
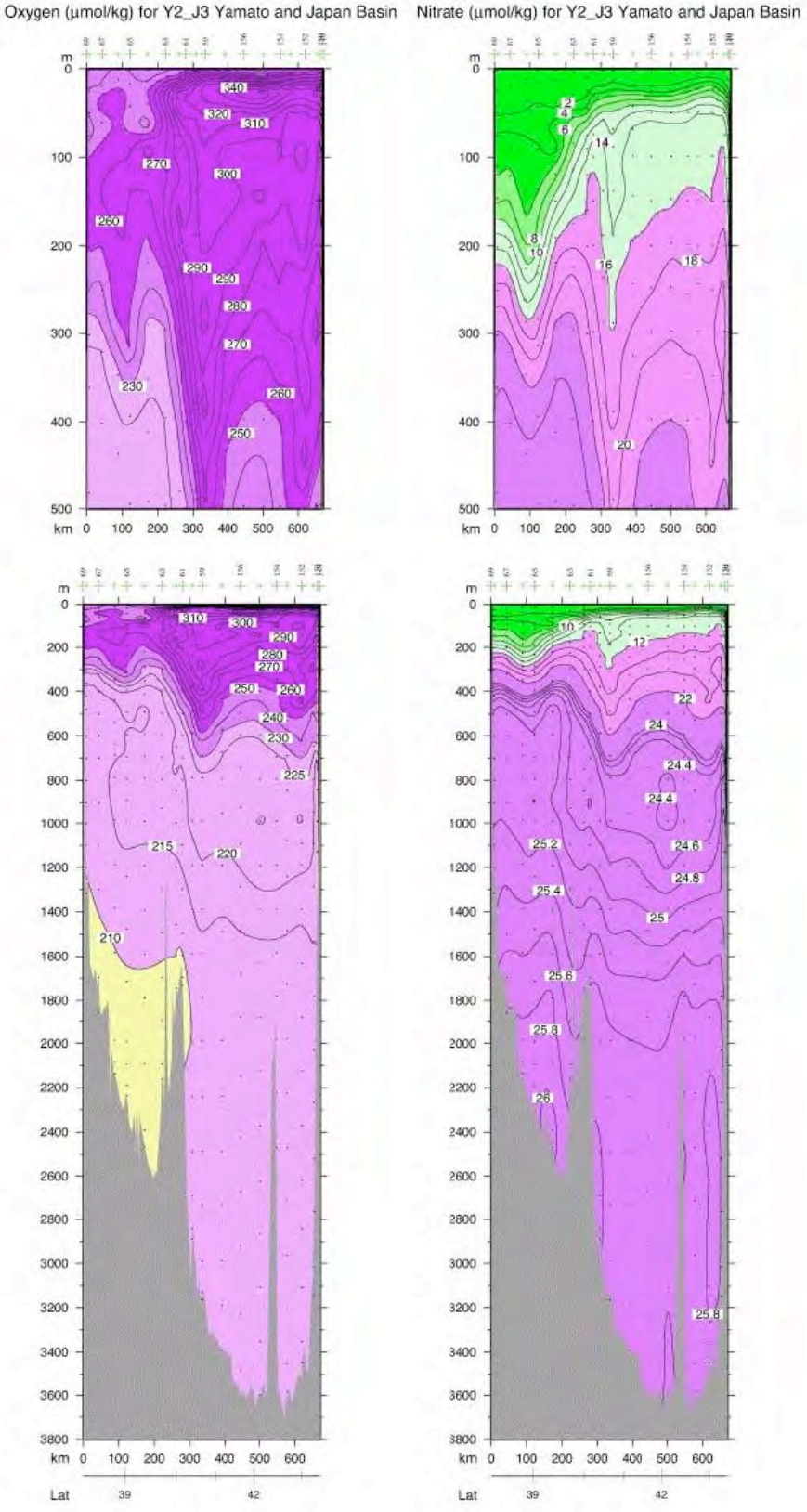


Figure D21. Vertical sections at approximately 136°E (Yamato and Japan Basins) (combined Y2 and J3 in Fig. 1b): (a) Station locations, (b) potential temperature (°C), (c) salinity (bottle data), (d) salinity (CTD data), (e) potential density σ_θ, (f) potential density σ_1, (g) potential density σ_2, (h) oxygen (μmol/kg), (i) nitrate (μmol/kg), (j) nitrite (μmol/kg), (k) phosphate (μmol/kg), (l) dissolved silica (μmol/kg), (m) CFC-11 (pmol/kg), (n) CFC12 (pmol/kg), (o) pH, and (p) alkalinity (mmol/kg). The vertical axis is depth (m) and the horizontal axis is distance (km). Interpolated latitudes along the sections are also shown. Upper panel vertical exaggeration is 2500:1. Lower panel vertical exaggeration is 625:1.

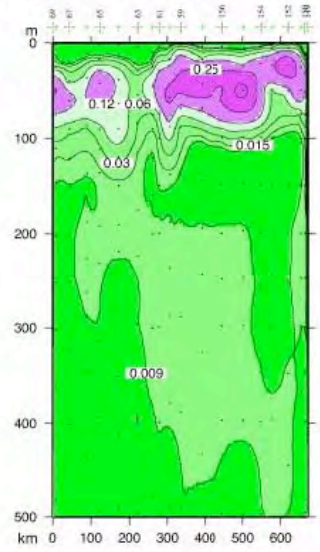

Potential Temperature (C) for Y2_J3 Yamato and Japan Basin
Salinity for Y2_J3 Yamato and Japan Basi
m
km
Lat
15
10
5
3
2
1.5
1
0.5
0.4
0.3
0.2
0.15
0.1
0.08
0.07
0.065
0.064
0.063
33.7
34
34.2
34.09
34.08
34.07
34.068
39
42

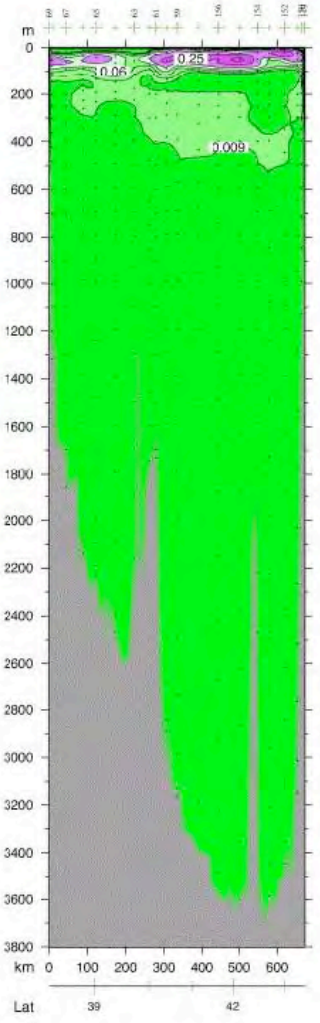

CTD Salinity for Y2_J3 Yamato and Japan Basin
σ0 for Y2_J3 Yamato and Japan Basin
m
km
Lat
33.8
34
34.4
34.2
34.1
34.09
34.08
34.07
25
26
27
27.2
27.25
27.3
27.31
27.32
34.068
27.34
27.345
27.35


σ1 for Y2_J3 Yamato and Japan Basin
σ2 for Y2_J3 Yamato and Japan Basin
m
km
Lat
29
29.5
30
30.5
31
31.5
31.75
32
32.02
33
34
35
35.5
36
36.5
36.6
32.03
32.04
32.05
32.06
32.062
32.064
32.066
36.32
36.64
36.66
36.665
36.67
36.675

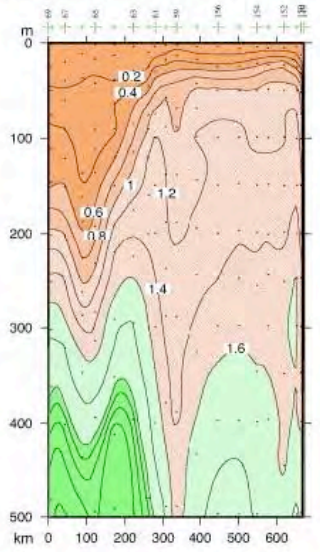

Oxygen (µmol/kg) for Y2_J3 Yamato and Japan Basin
Nitrate (µmol/kg) for Y2_J3 Yamato and Japan Basin
m
km
Lat
39
42

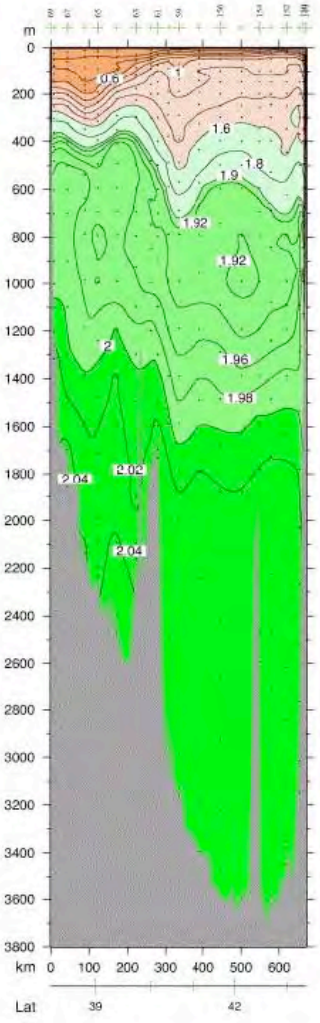
Nitrite (µmol/kg) for Y2_J3 Yamato and Japan Basin



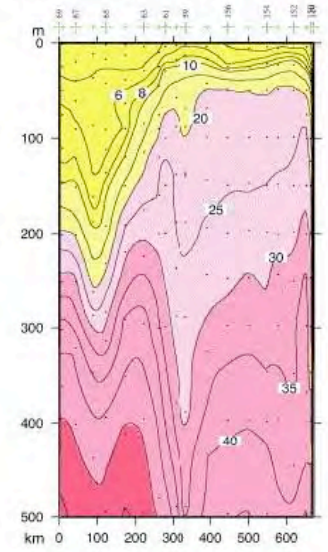


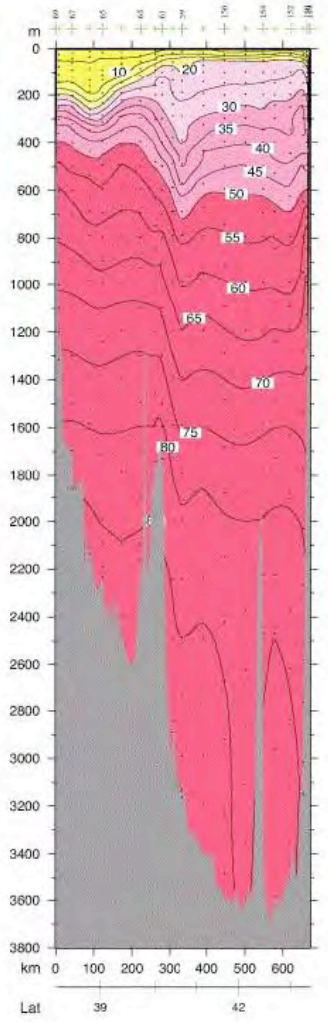
Phosphate (µmol/kg) for Y2_J3 Yamato and Japan Basin



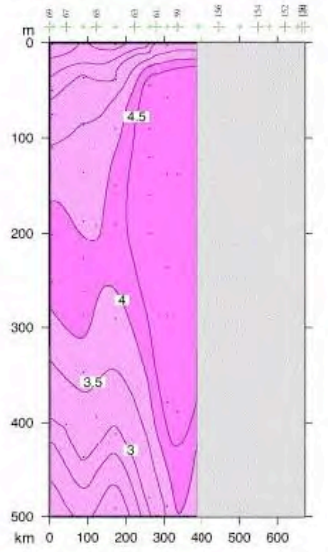


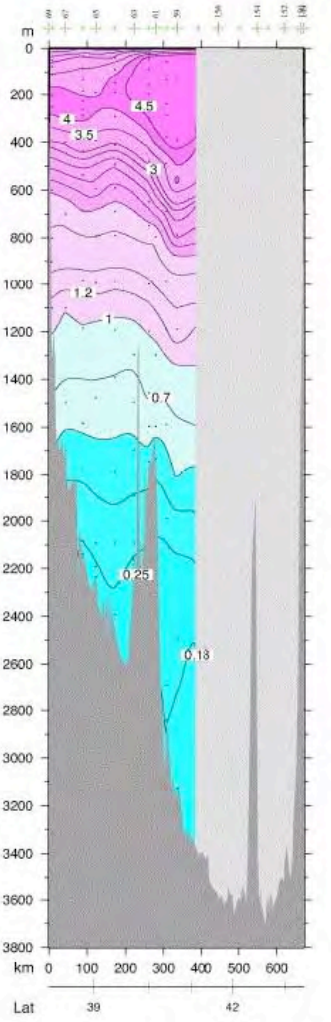
Dissolved Silica (µmol/kg) for Y2_J3 Yamato and Japan Basin



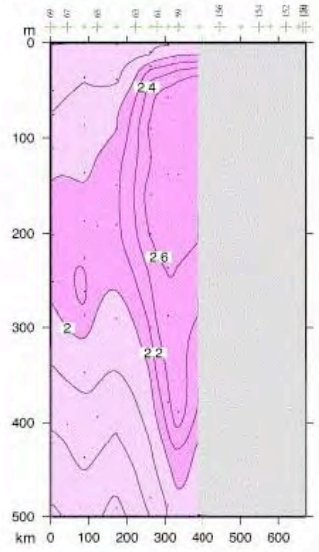


CFC-11 (pmol/kg) for Y2_J3 Yamato and Japan Basin

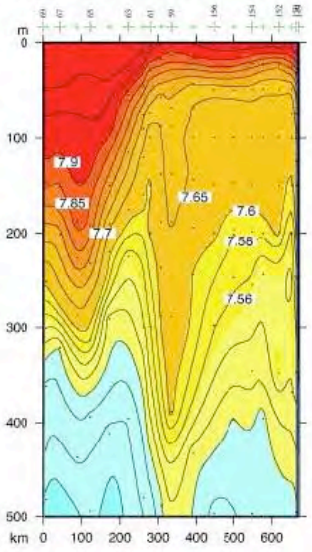


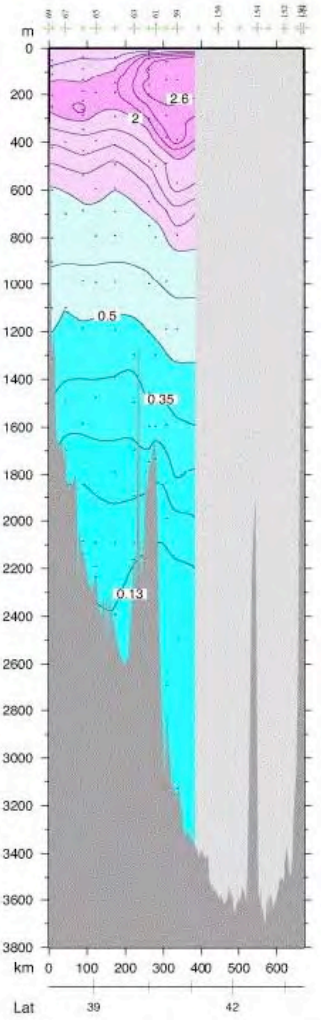


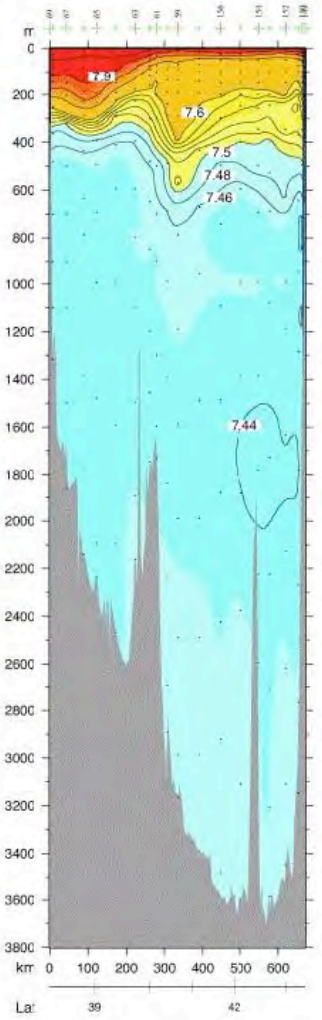
CFC-12 (pmol/kg) for Y2_J3 Yamato and Japan Basin



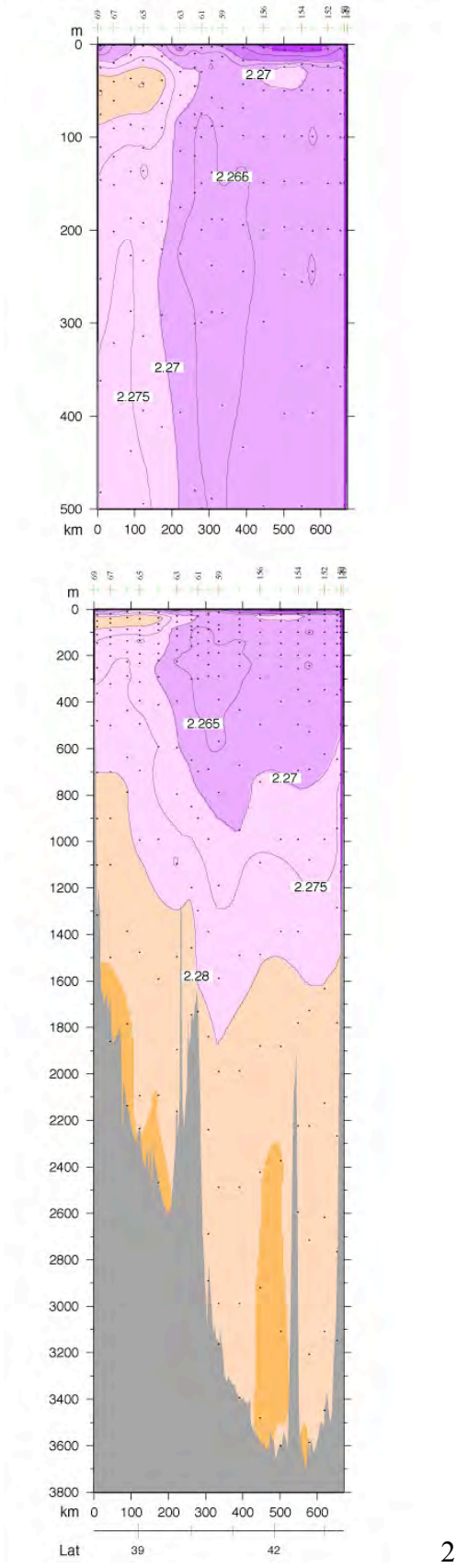
pH for Y2_J3 Yamato and Japan Basin







Alkalinity (mmol/kg) for Y2_J3 Yamato and Japan Basin



2

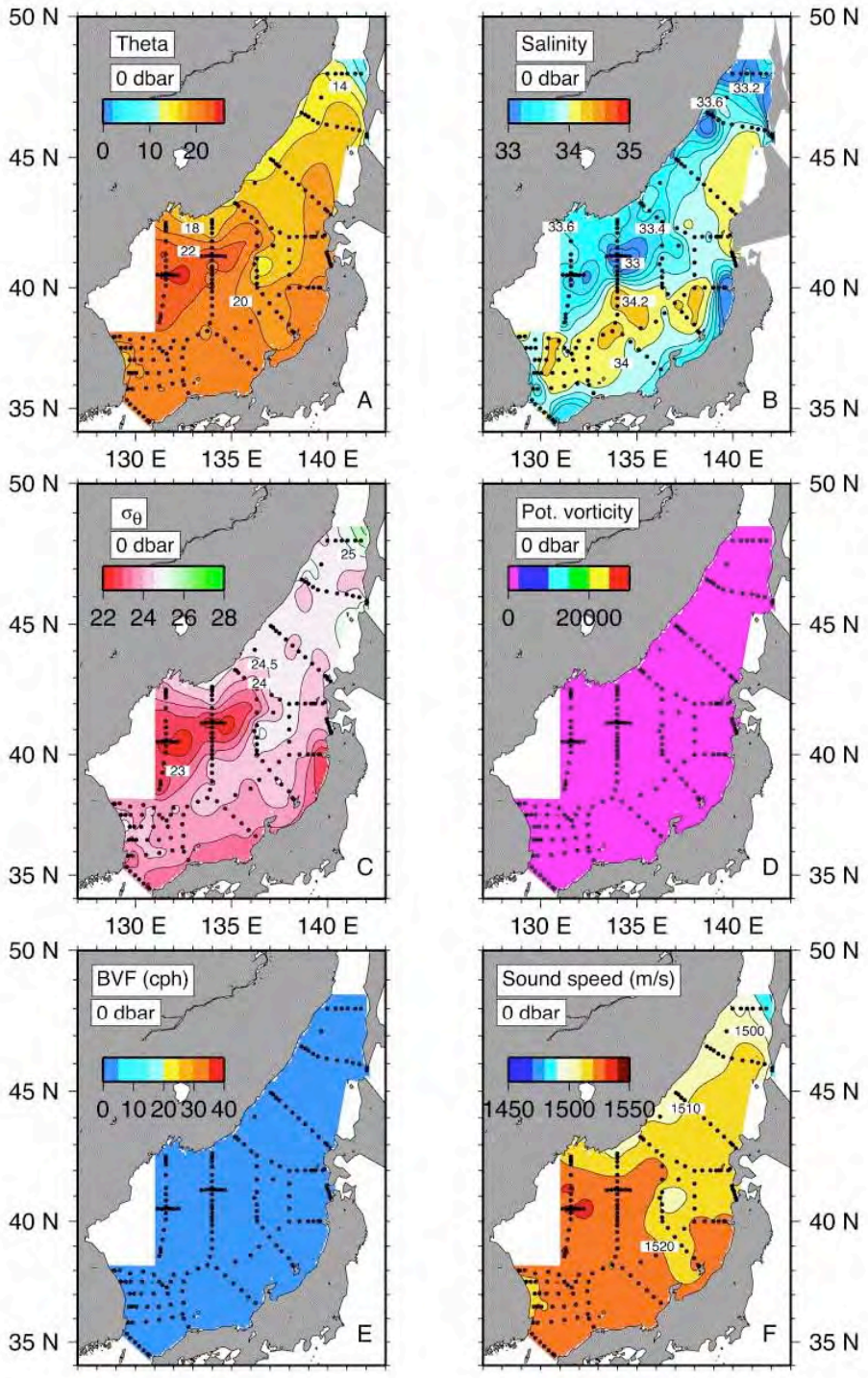
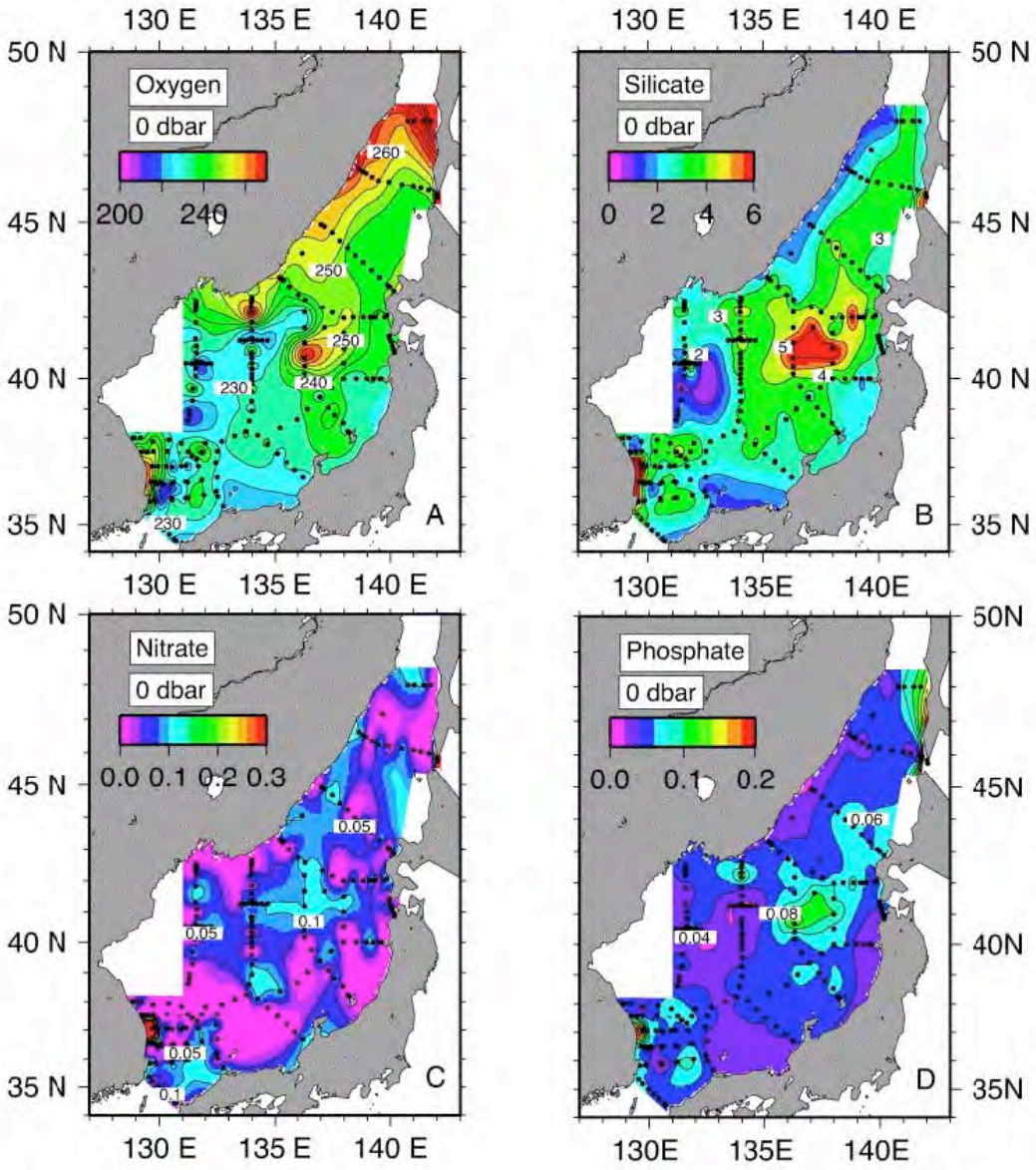


Figure D22. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at the sea surface.


130 E
135 E
140 E
50 N
45 N
40 N
35 N
Oxygen
0 dbar
200
240
260
250
250
230
240
230
A
Silicate
0 dbar
0
2
4
6
3
3
2
5
4
B
Nitrate
0 dbar
0.0 0.1 0.2 0.3
0.05
0.05
0.1
0.05
0.1
C
130E
135E
140E
50N
45N
40N
35N
Phosphate
0 dbar
0.0
0.1
0.2
0.06
0.08
0.04
D

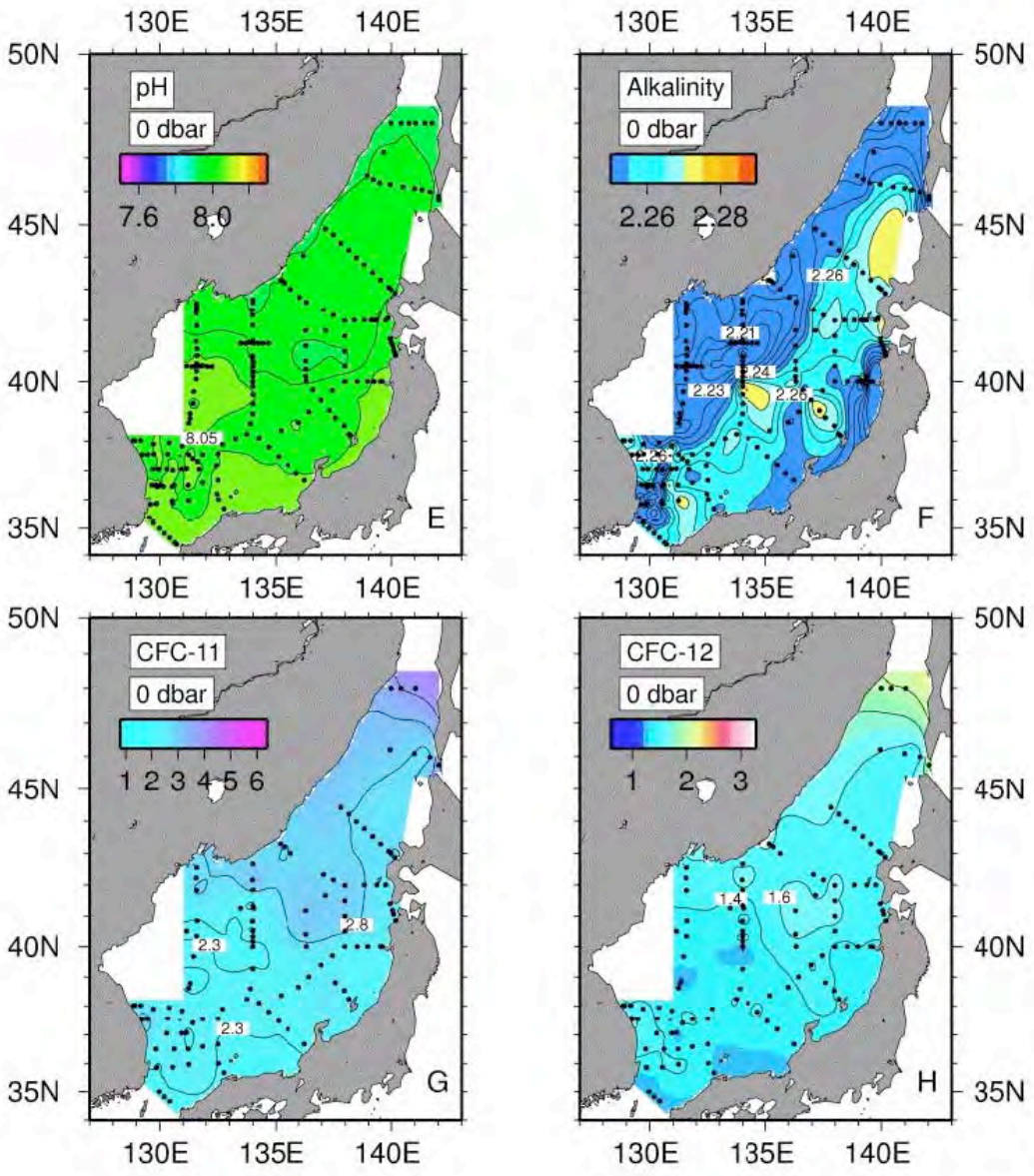


Figure D23. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at the sea surface.

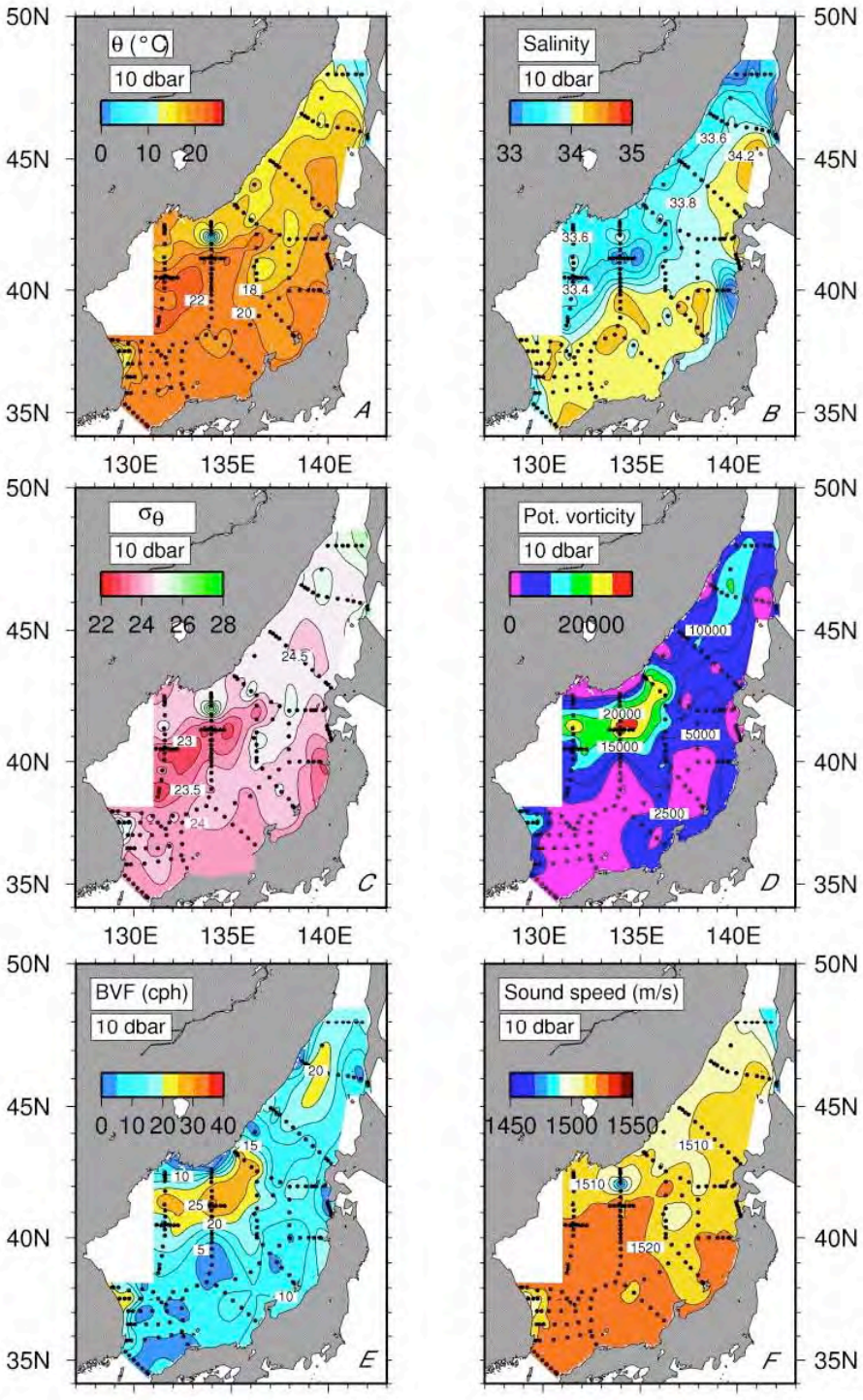
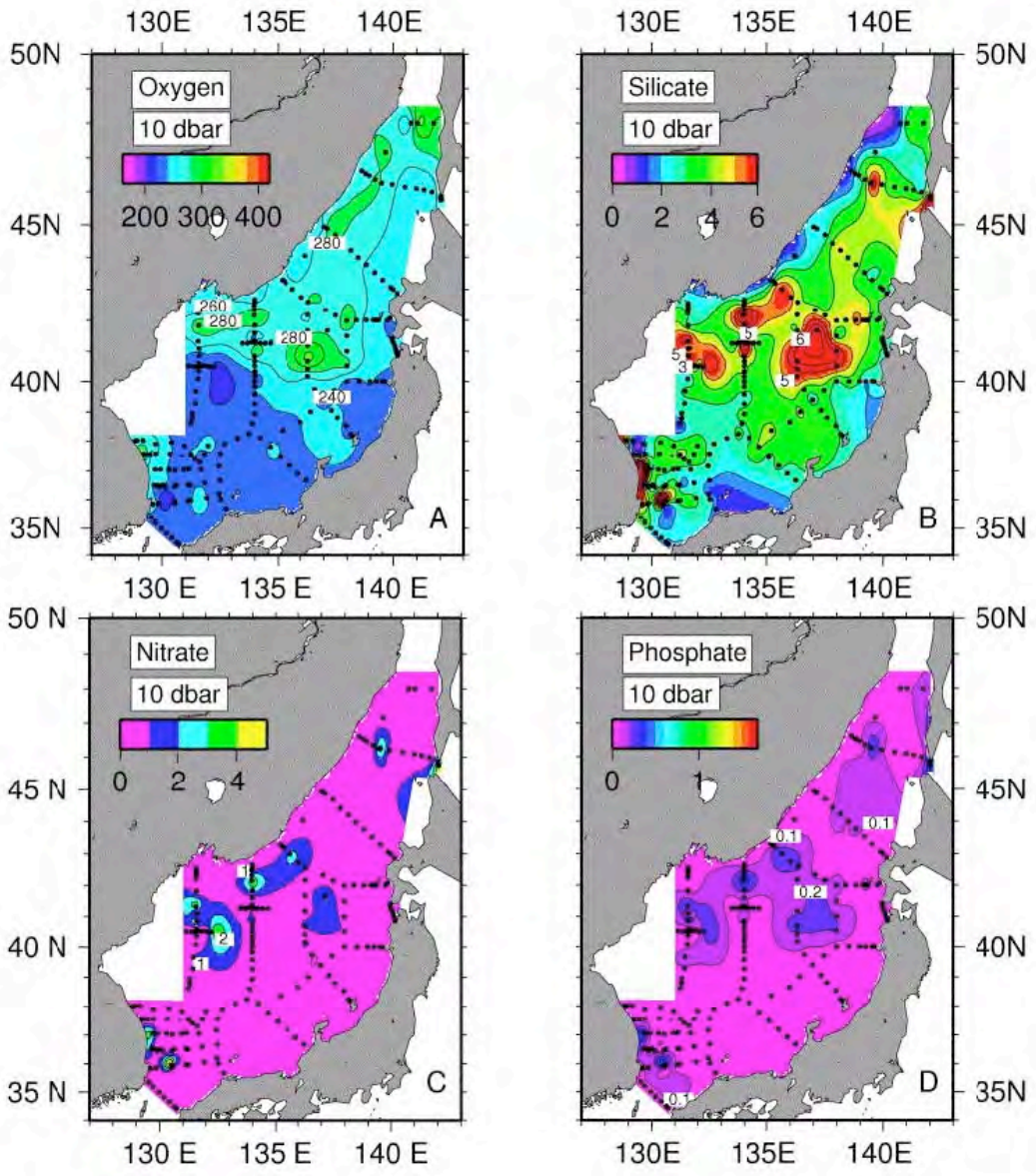


Figure D24. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 10 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
10 dbar
200 300 400
280
260
280
280
240
A
Silicate
10 dbar
0 2 4 6
5
3
5
6
5
B
130 E
135 E
140 E
50 N
45 N
40 N
35 N
Nitrate
10 dbar
0 2 4
1
2
1
C
Phosphate
10 dbar
0 1
0.1
0.2
0.1
0.1
D

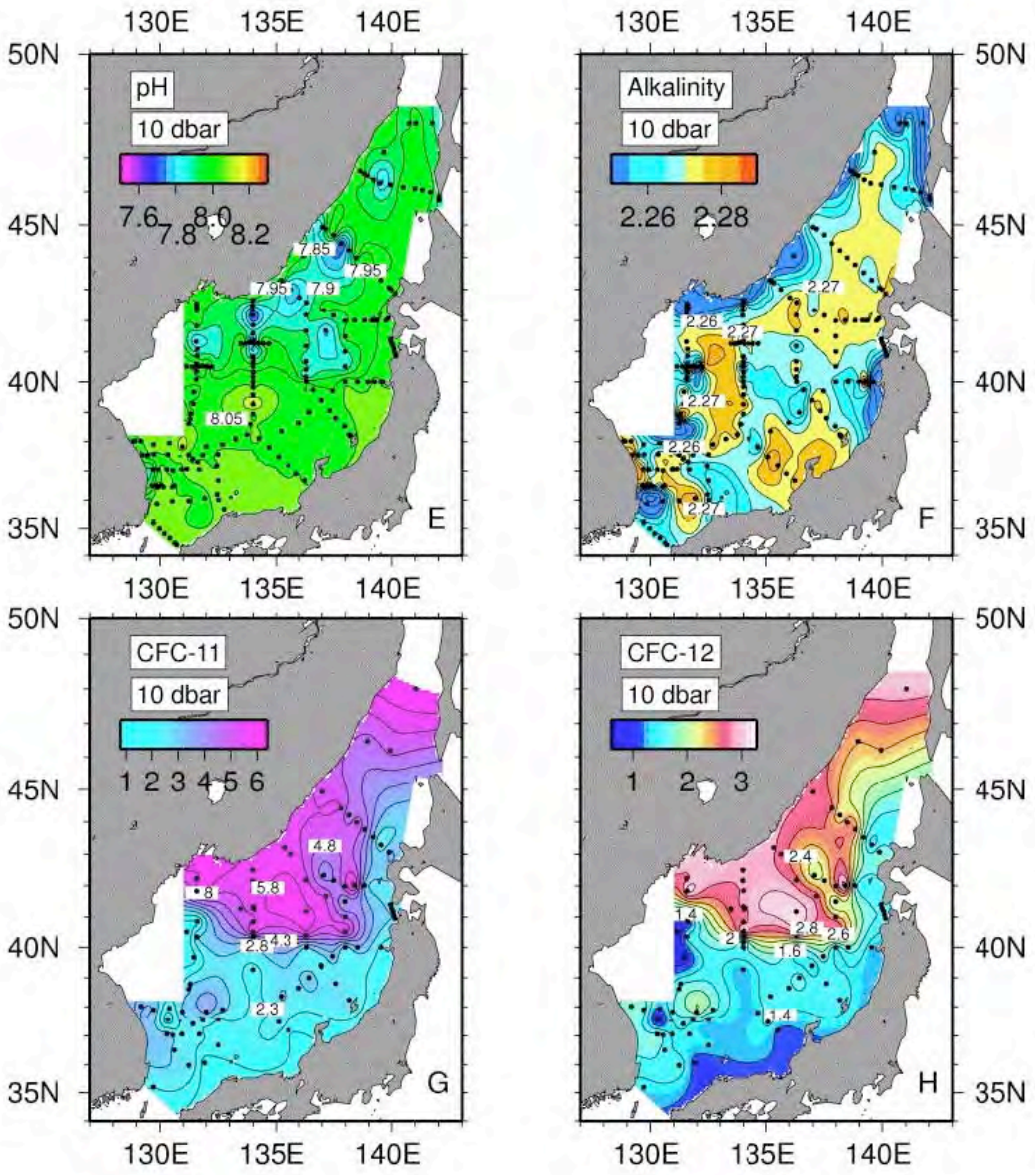


Figure D25. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 10 dbar.

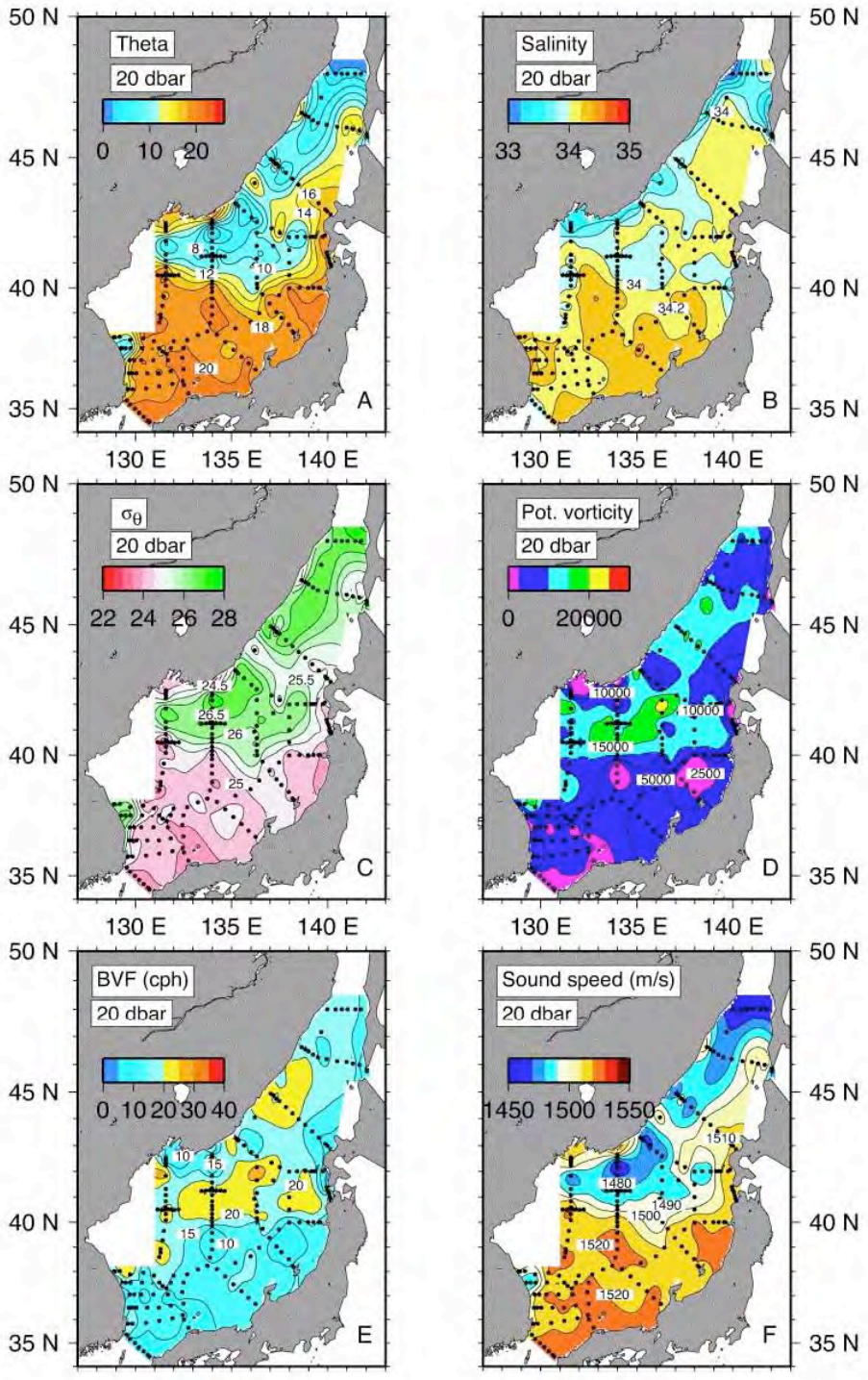
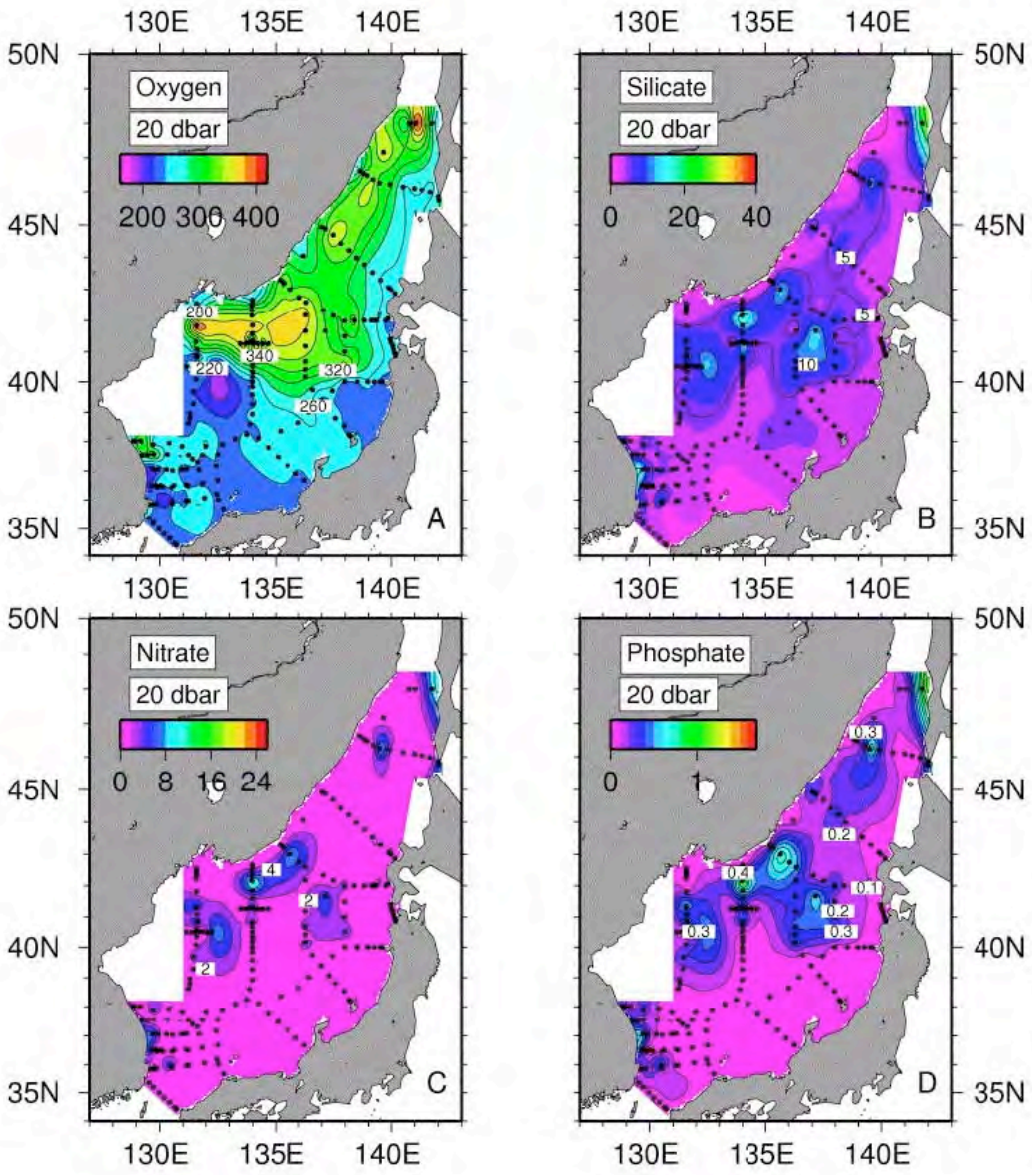


Figure D26. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 20 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
20 dbar
200 300 400
200
340
220
320
260
A
Silicate
20 dbar
0 20 40
5
5
10
B
Nitrate
20 dbar
0 8 16 24
4
2
2
C
Phosphate
20 dbar
0 1
0.3
0.2
0.4
0.1
0.2
0.3
D

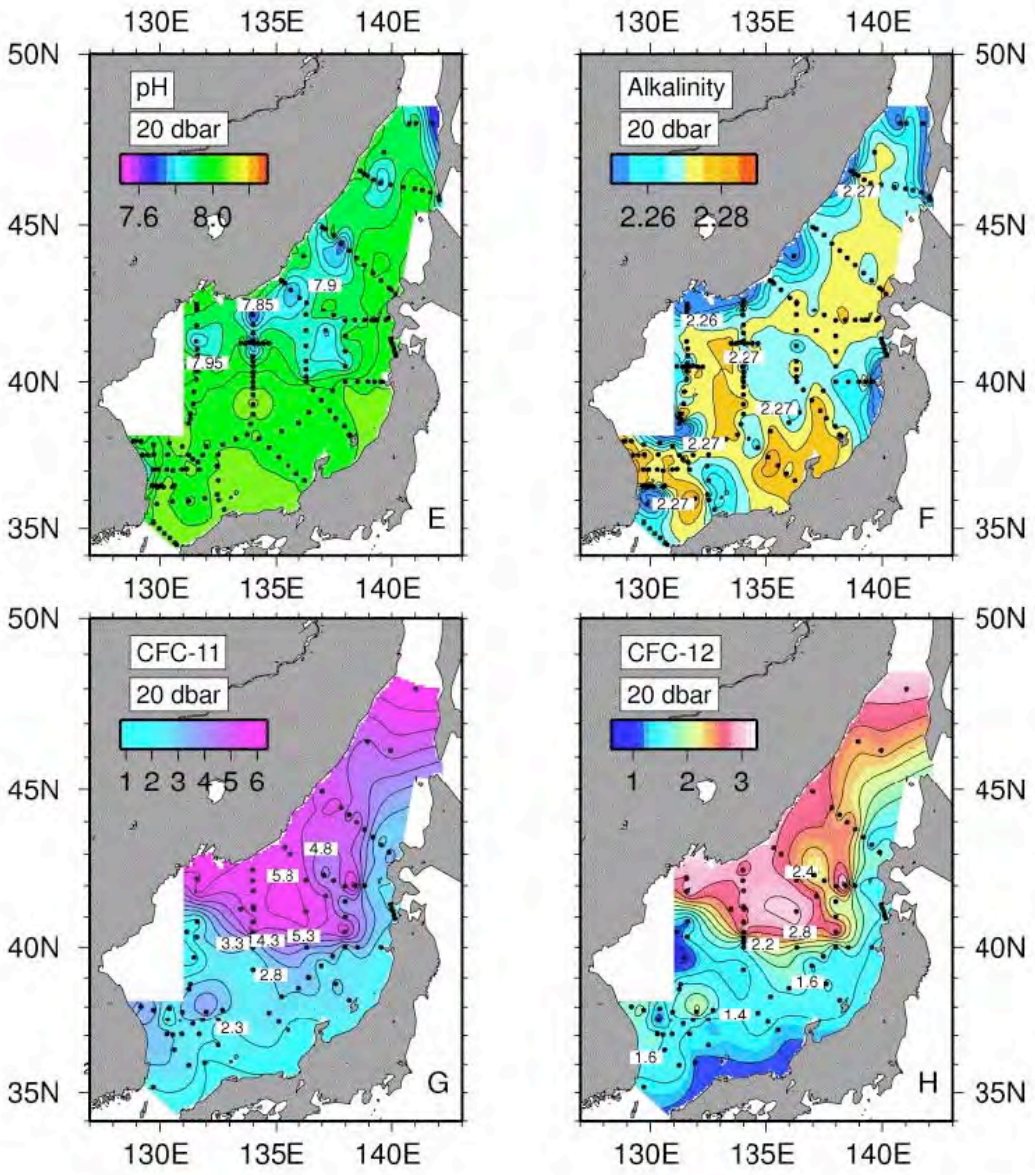


Figure D27. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 20 dbar.

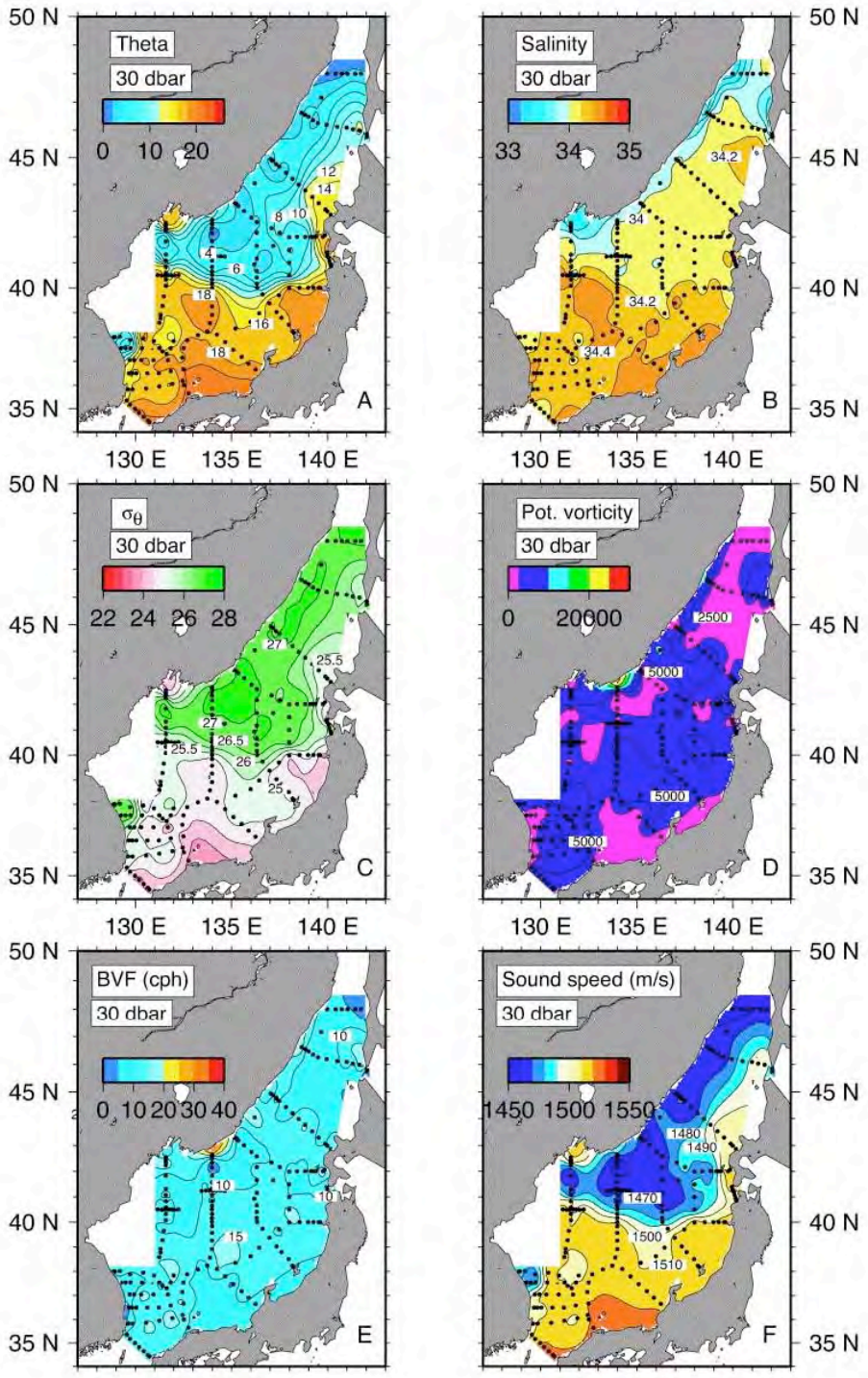
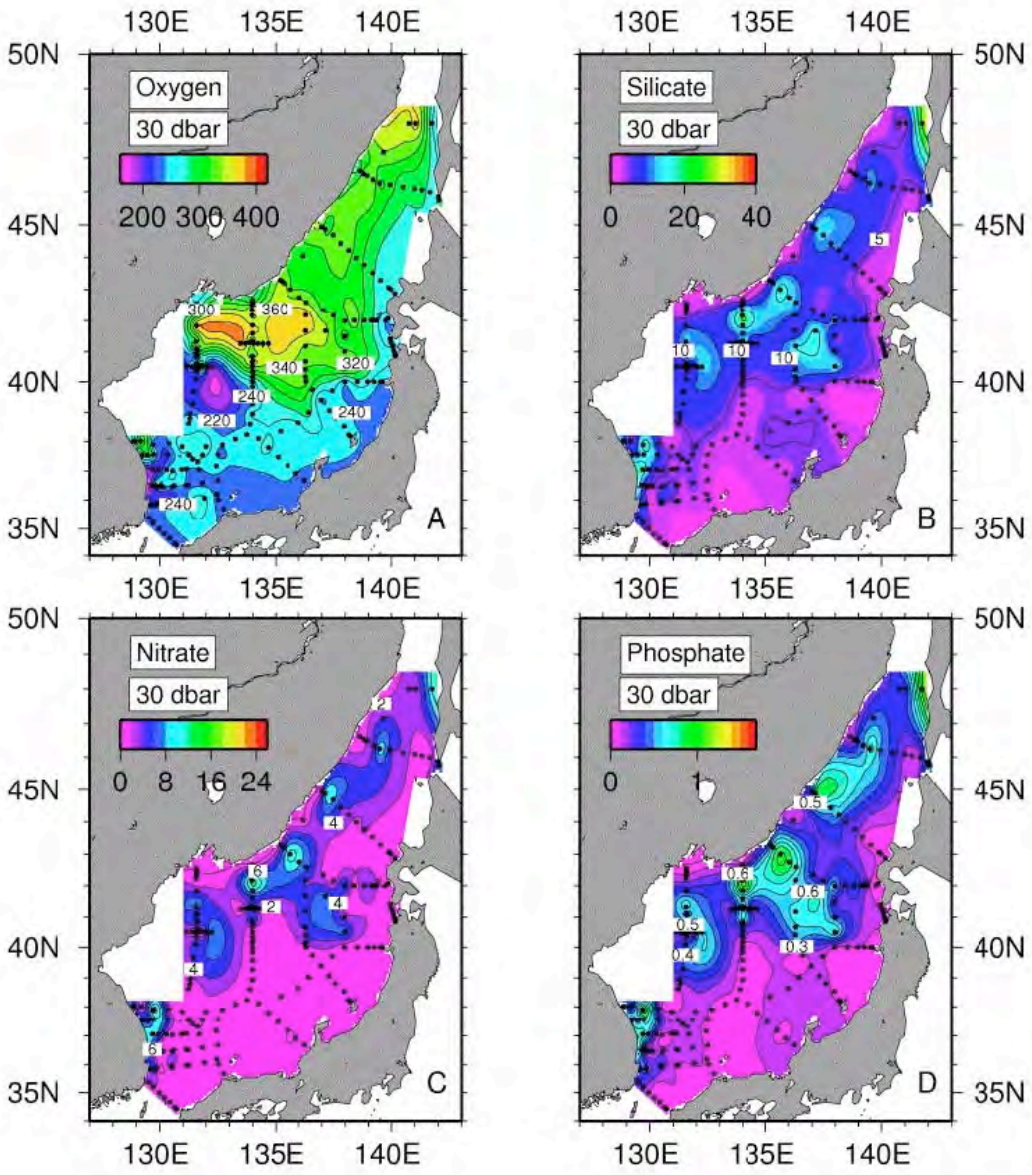


Figure D28. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 30 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
30 dbar
200 300 400
300
360
340
320
240
220
240
240
A
Silicate
30 dbar
0 20 40
5
10
10
10
B
Nitrate
30 dbar
0 8 16 24
2
4
6
2
4
4
6
C
Phosphate
30 dbar
0 1
0.5
0.6
0.6
0.5
0.4
0.3
D

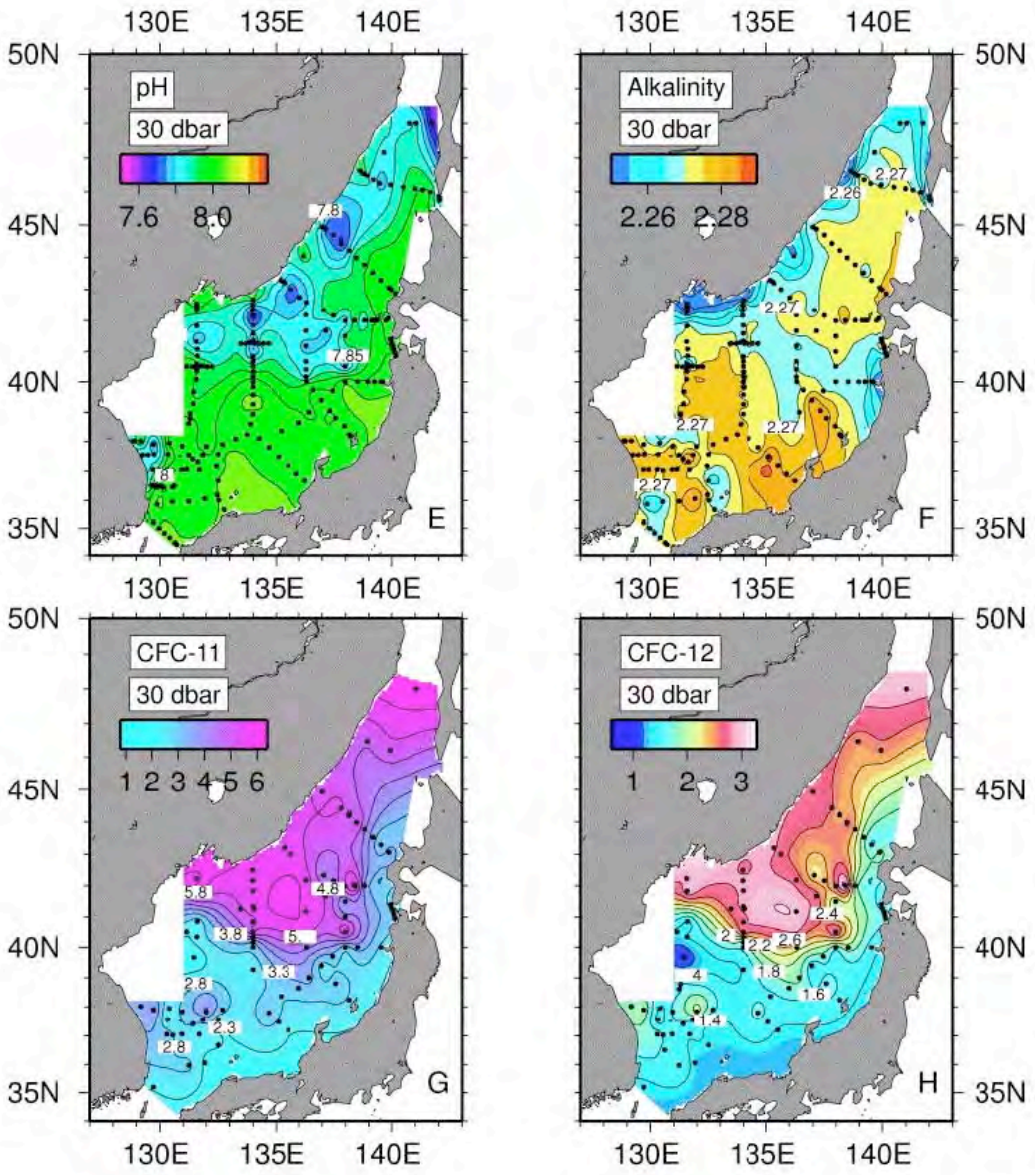


Figure D29. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 30 dbar.

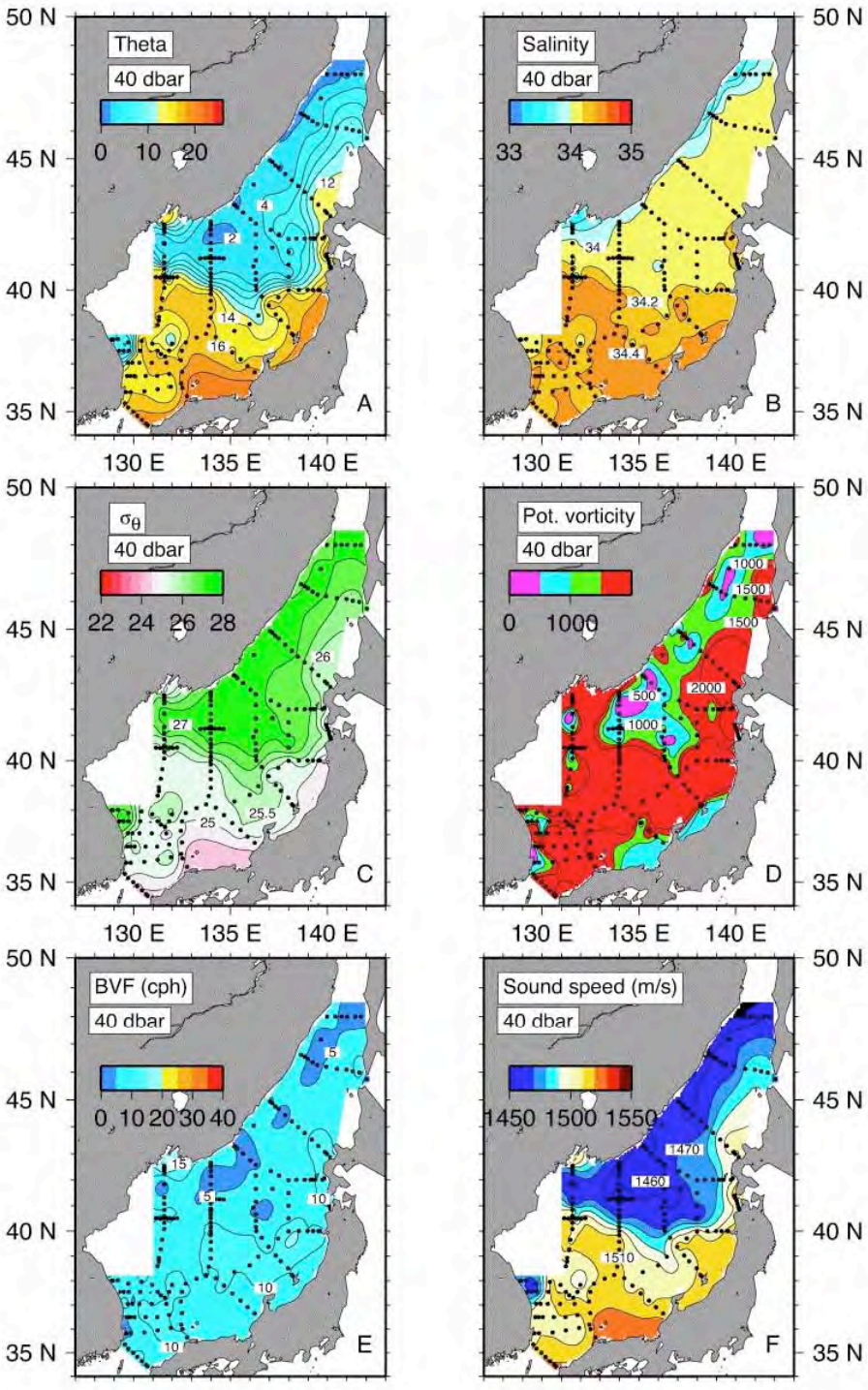
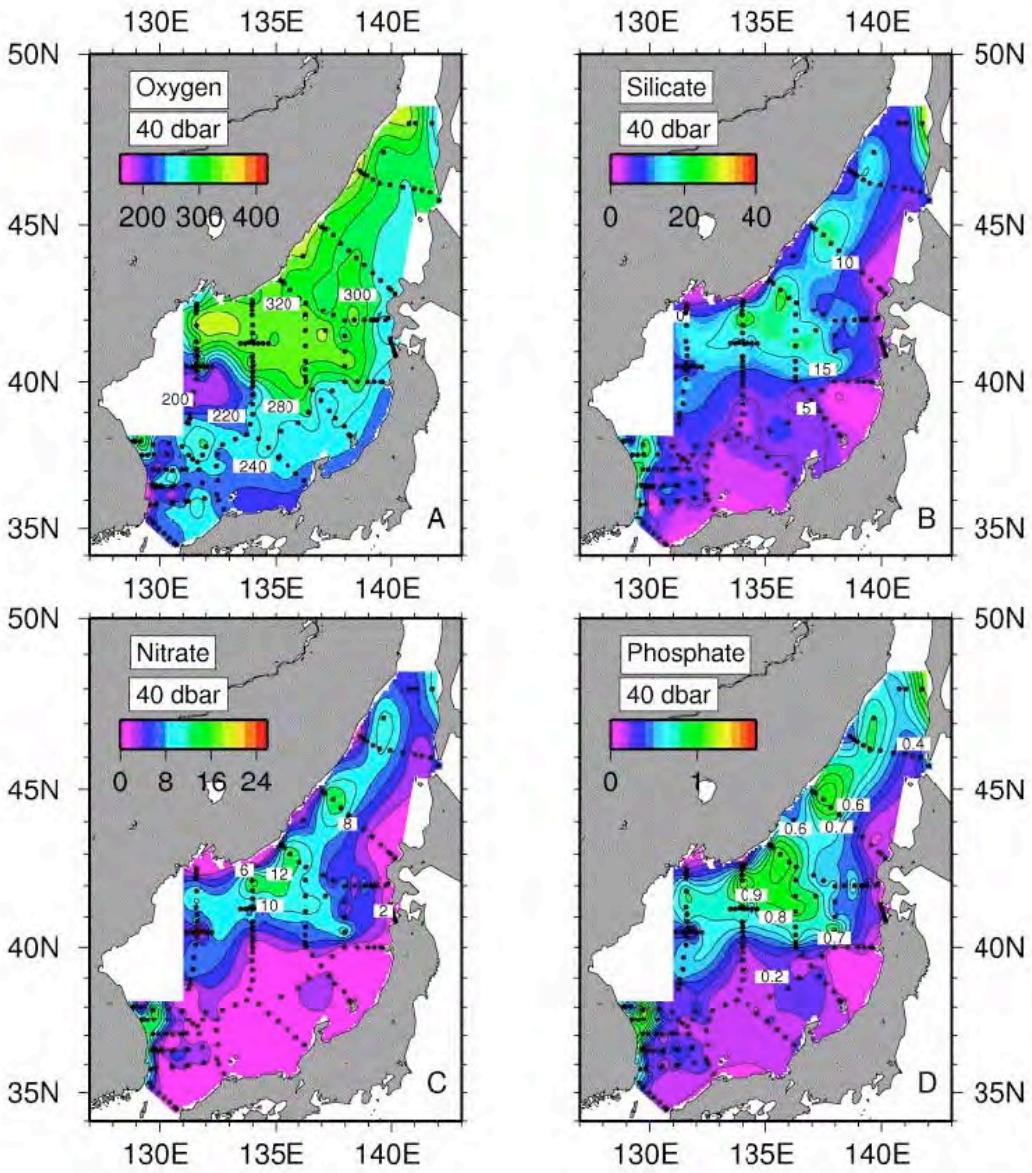


Figure D30. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 40 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
40 dbar
200 300 400
320
300
200
220
280
240
A
Silicate
40 dbar
0 20 40
10
15
5
B
Nitrate
40 dbar
0 8 16 24
8
6
12
10
2
C
Phosphate
40 dbar
0 1
0.4
0.6
0.6
0.7
0.9
0.8
0.7
0.2
D

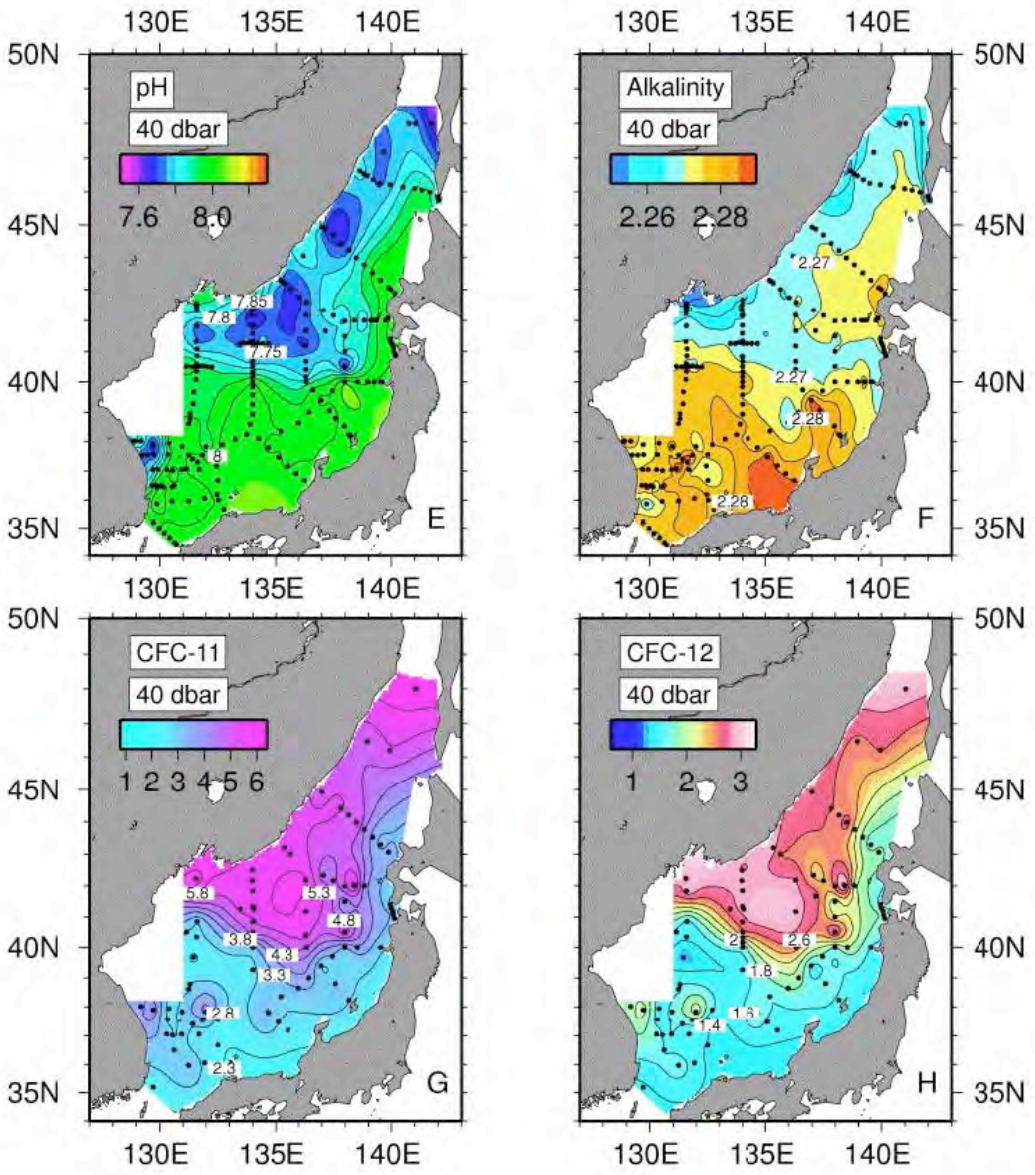


Figure D31. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 40 dbar.

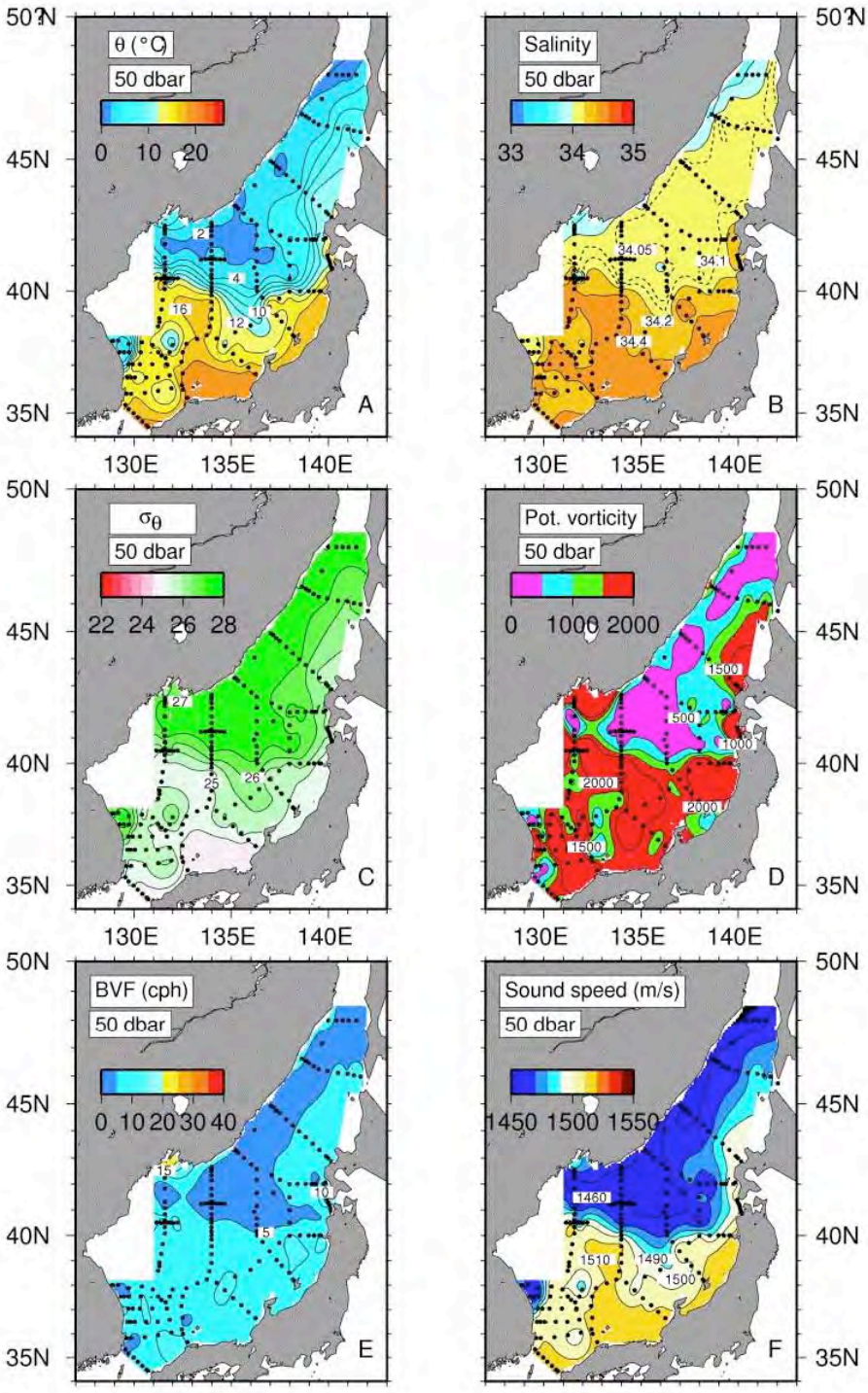
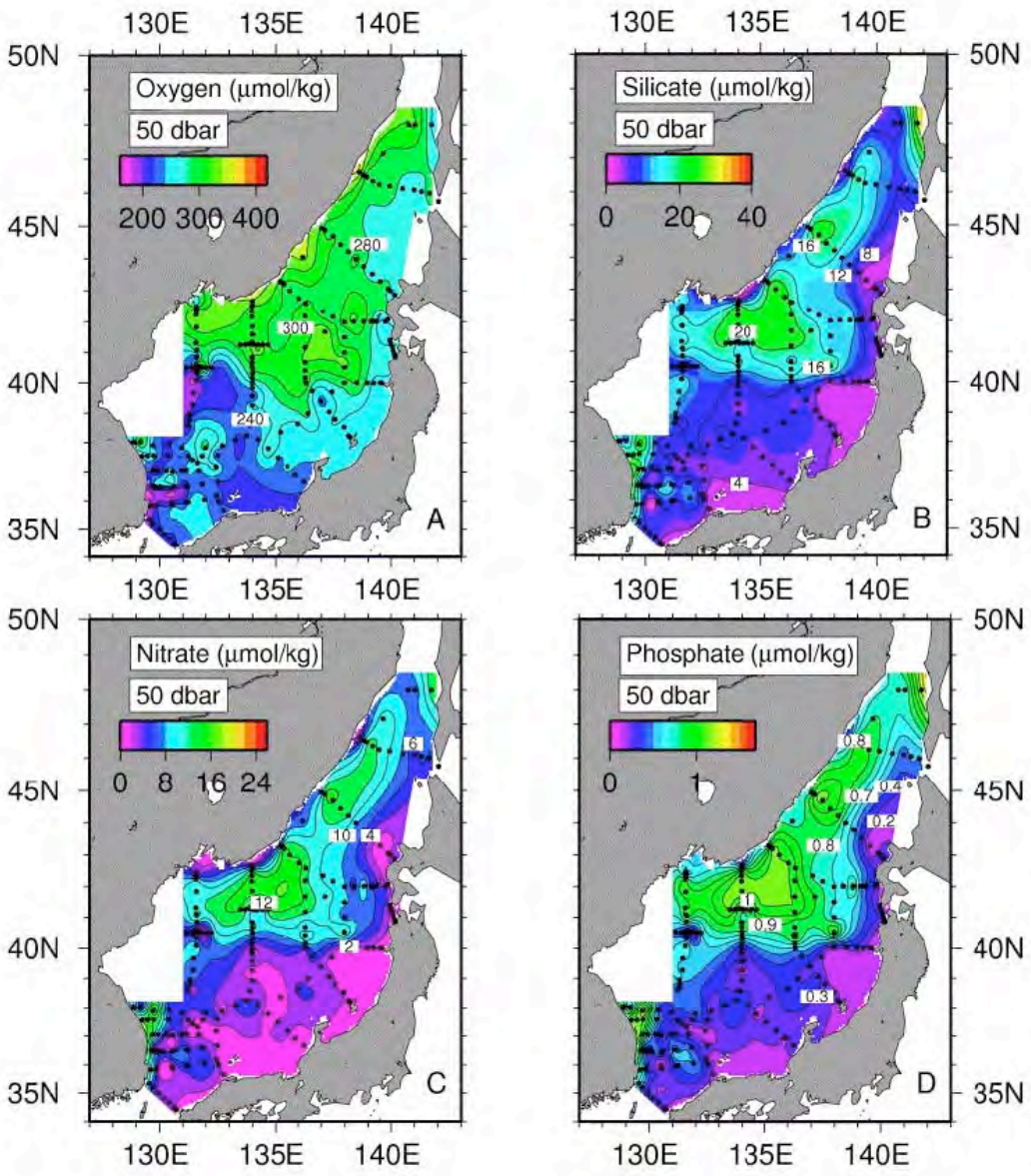


Figure D32. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 50 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen (µmol/kg)
50 dbar
200 300 400
280
300
240
A
Silicate (µmol/kg)
50 dbar
0 20 40
16
8
12
20
16
4
B
Nitrate (µmol/kg)
50 dbar
0 8 16 24
6
10
4
12
2
C
Phosphate (µmol/kg)
50 dbar
0 1
0.8
0.7
0.4
0.2
0.8
1
0.9
0.3
D

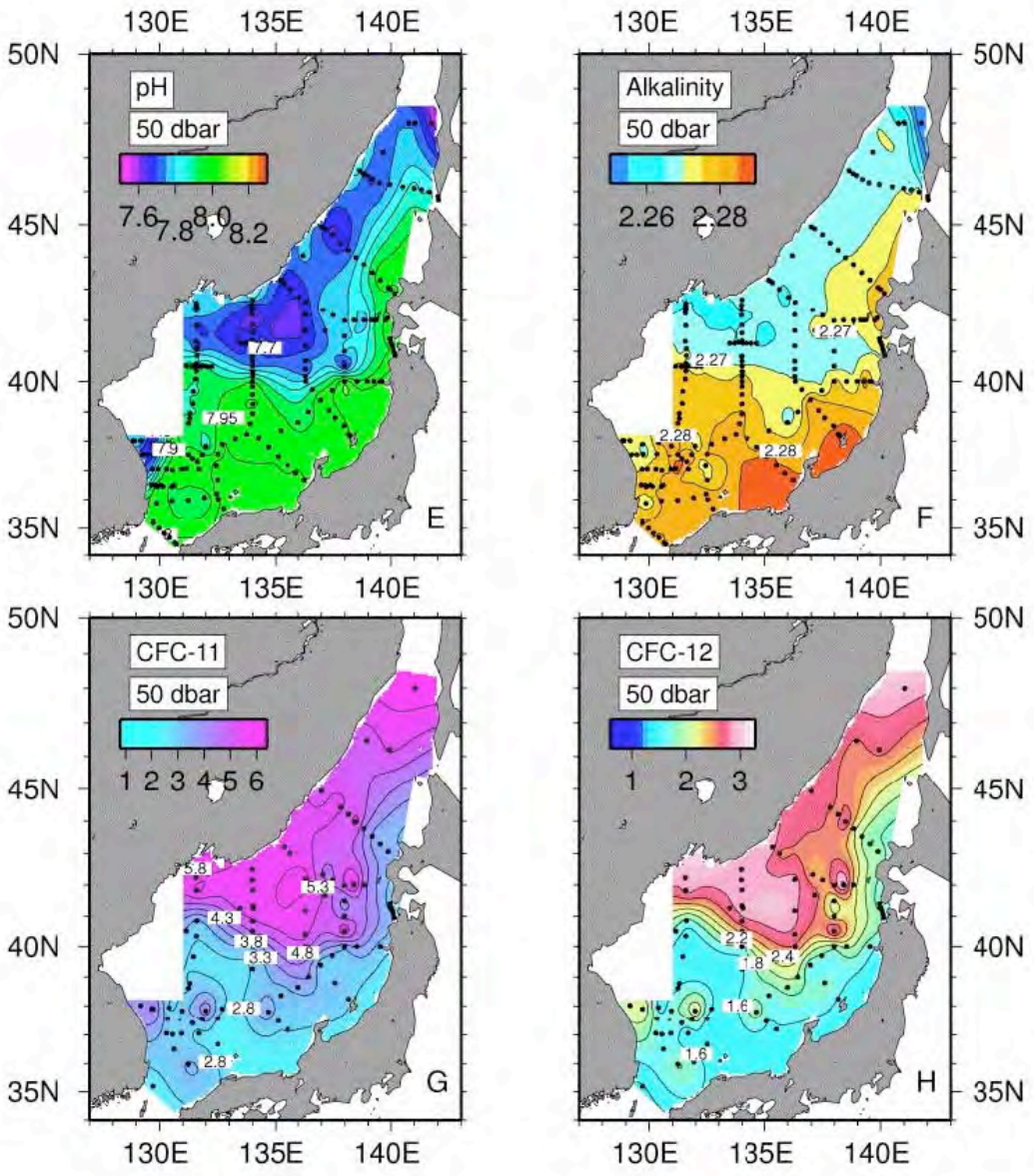


Figure D33. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 50 dbar.

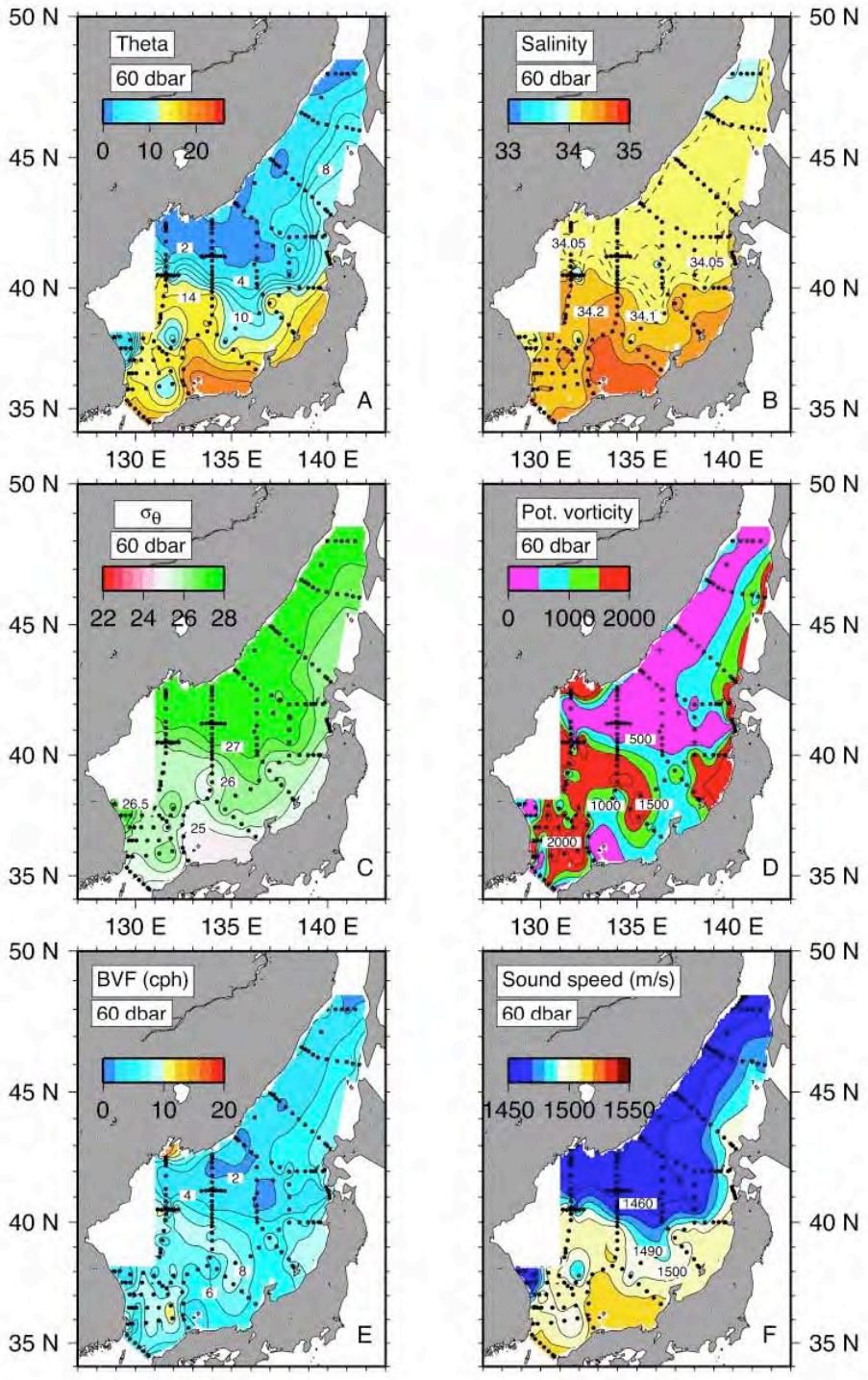
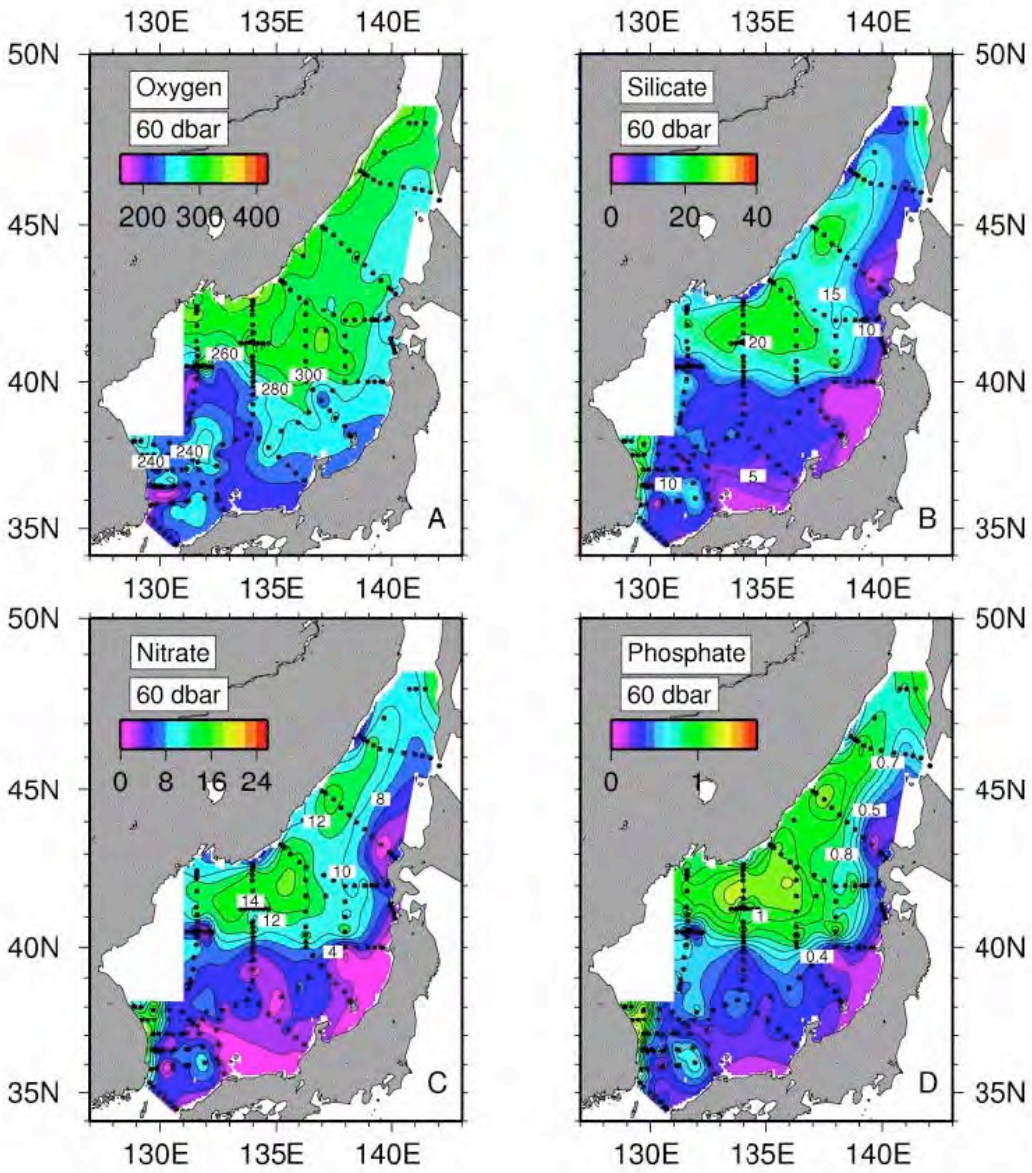


Figure D34. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 60 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
60 dbar
200 300 400
260
300
280
240
240
A
Silicate
60 dbar
0 20 40
15
10
20
10
5
B
Nitrate
60 dbar
0 8 16 24
8
12
10
14
12
4
C
Phosphate
60 dbar
0 1
0.7
0.5
0.8
1
0.4
D

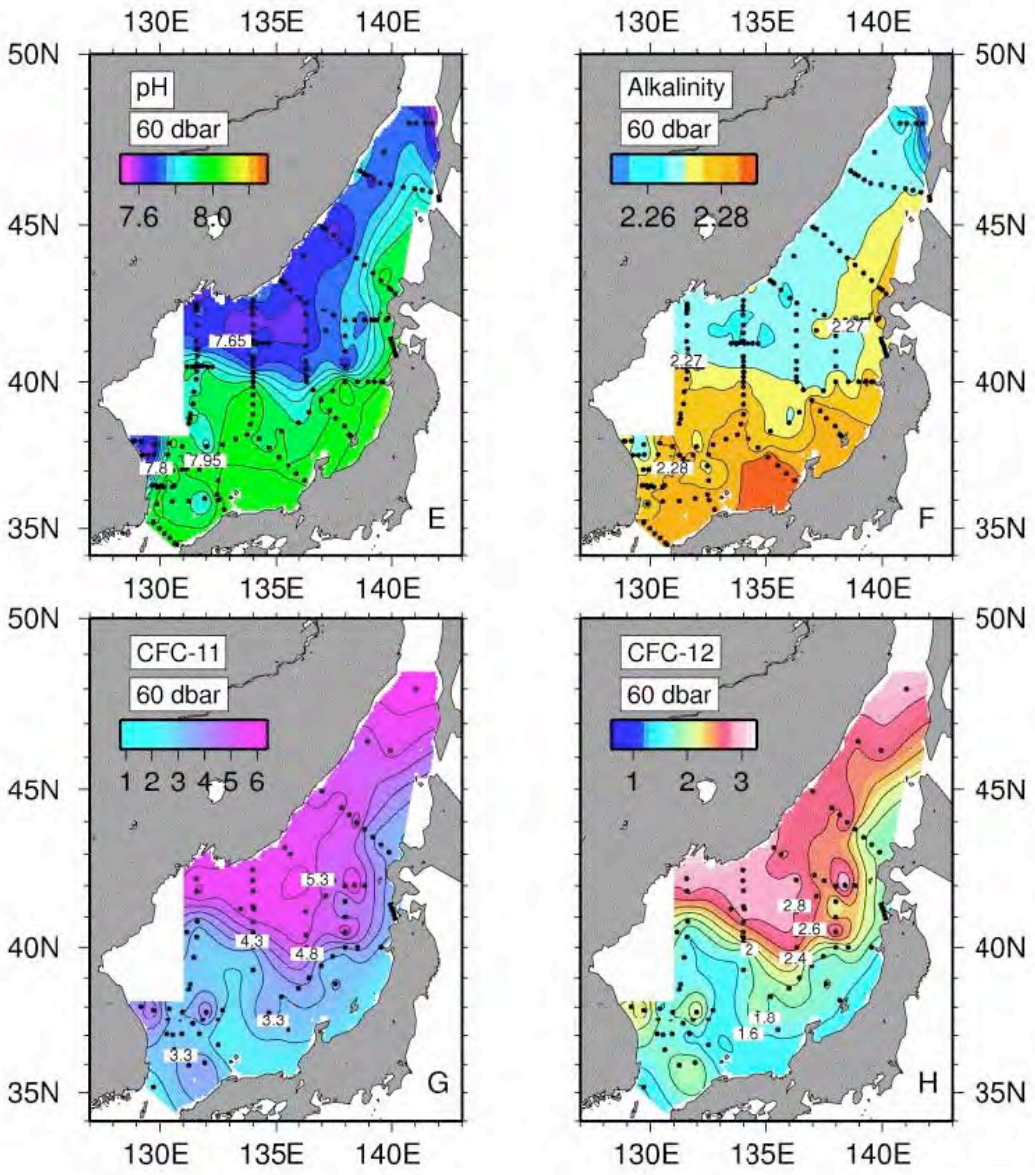


Figure D35. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 60 dbar.

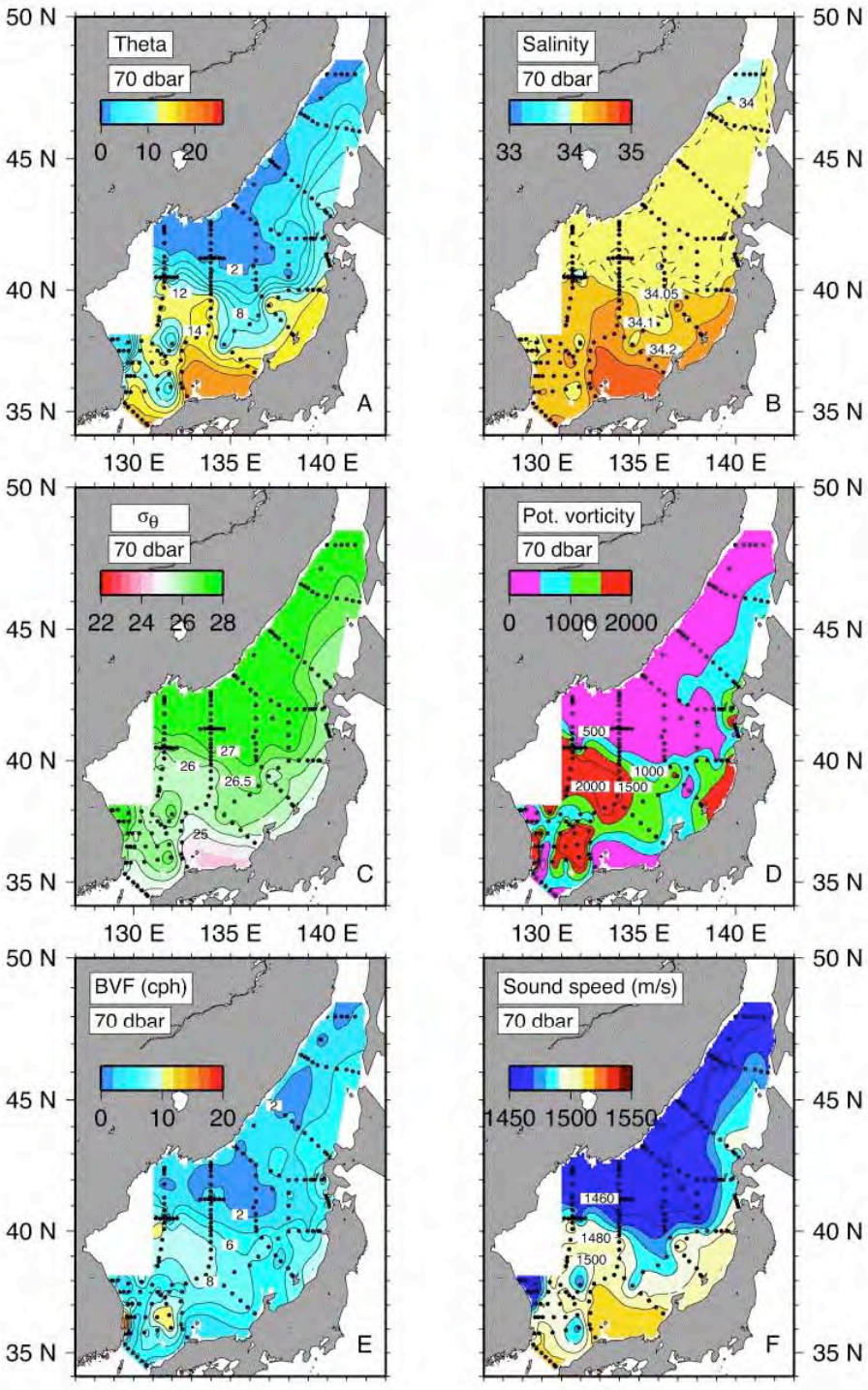
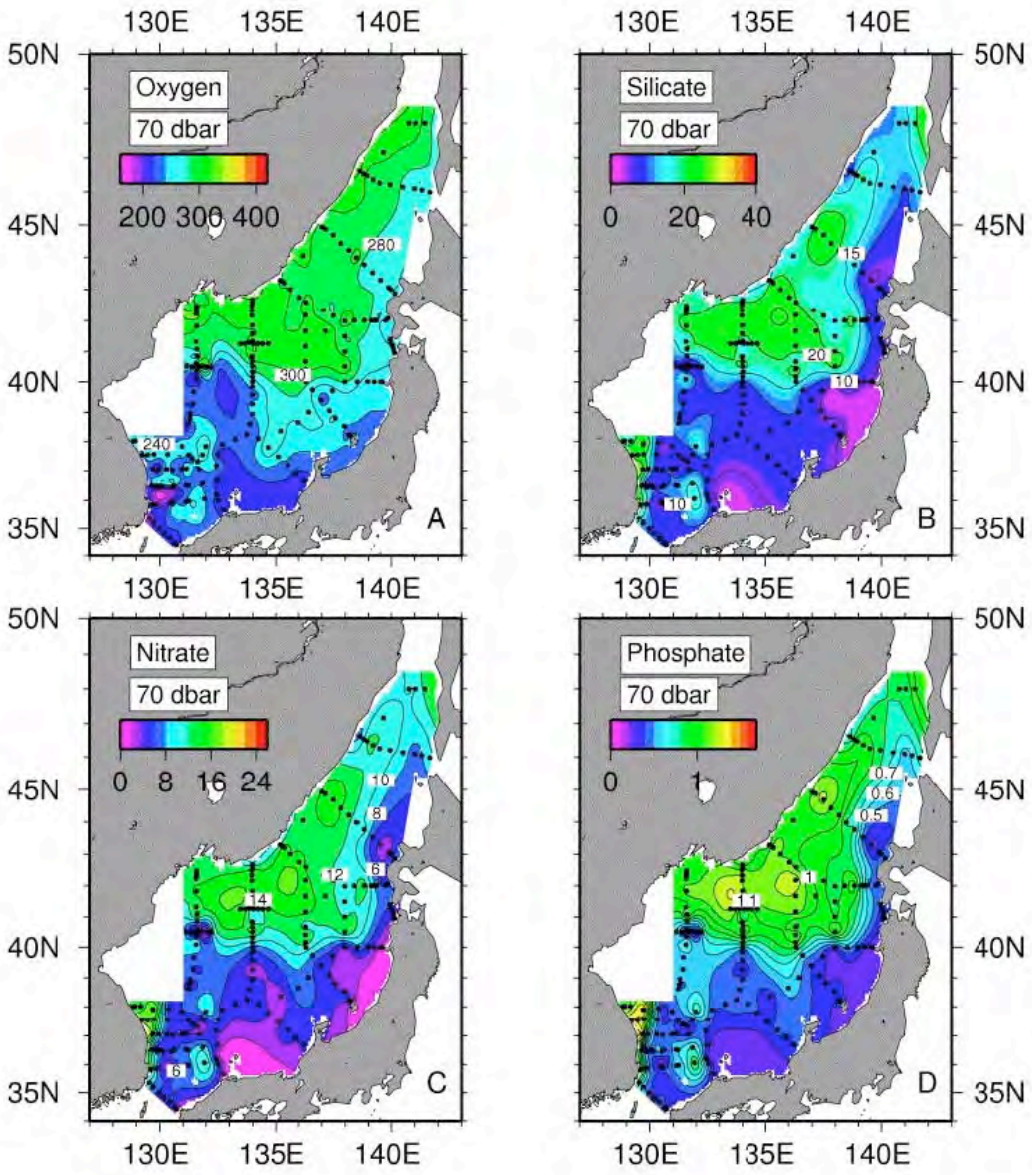


Figure D36. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 70 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
70 dbar
200 300 400
280
300
240
A
Silicate
70 dbar
0 20 40
15
20
10
10
B
Nitrate
70 dbar
0 8 16 24
10
8
12
6
14
6
C
Phosphate
70 dbar
0 1
0.7
0.6
0.5
1
1.1
D

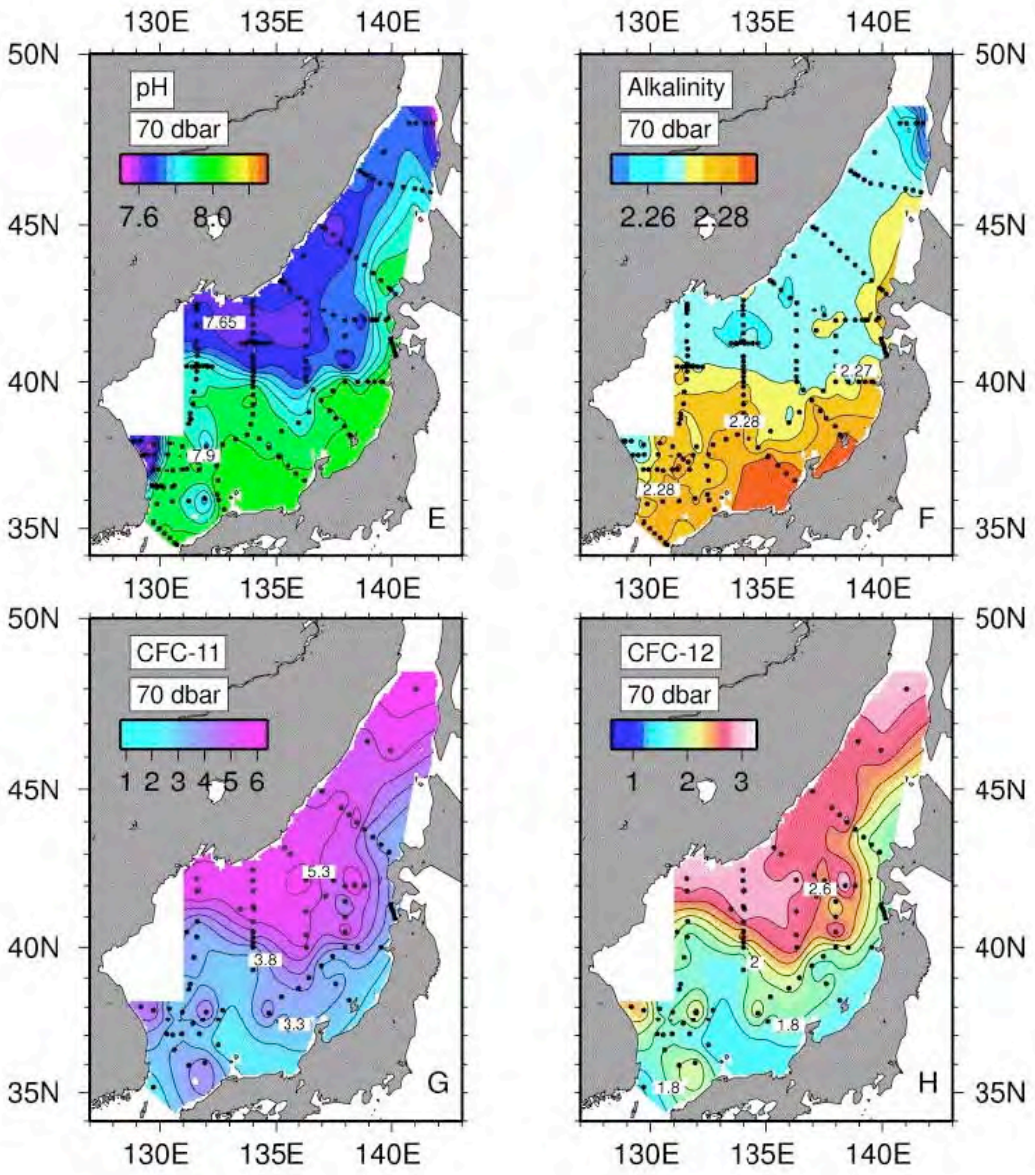


Figure D37. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 70 dbar.

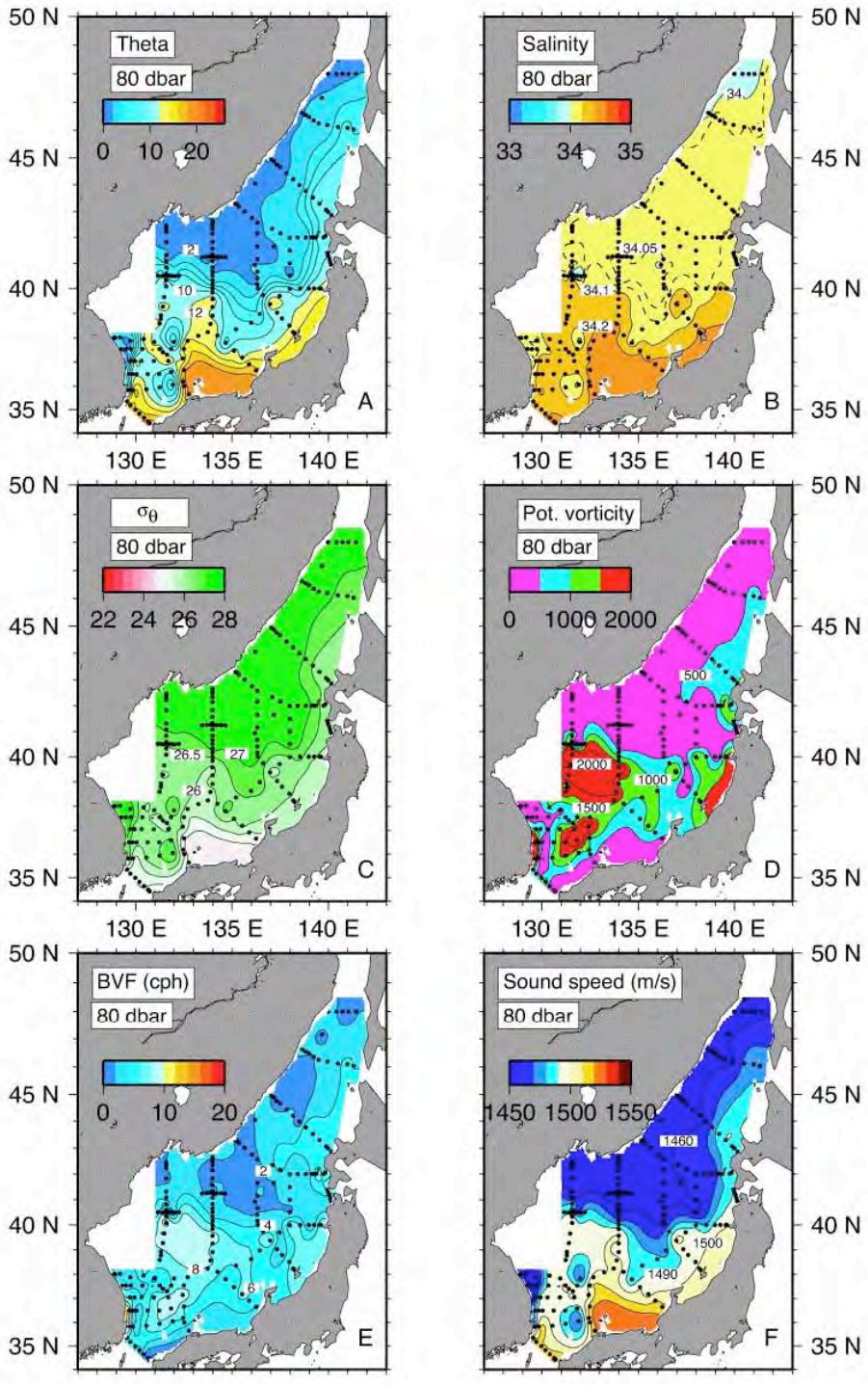


Figure D38. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 80 dbar.

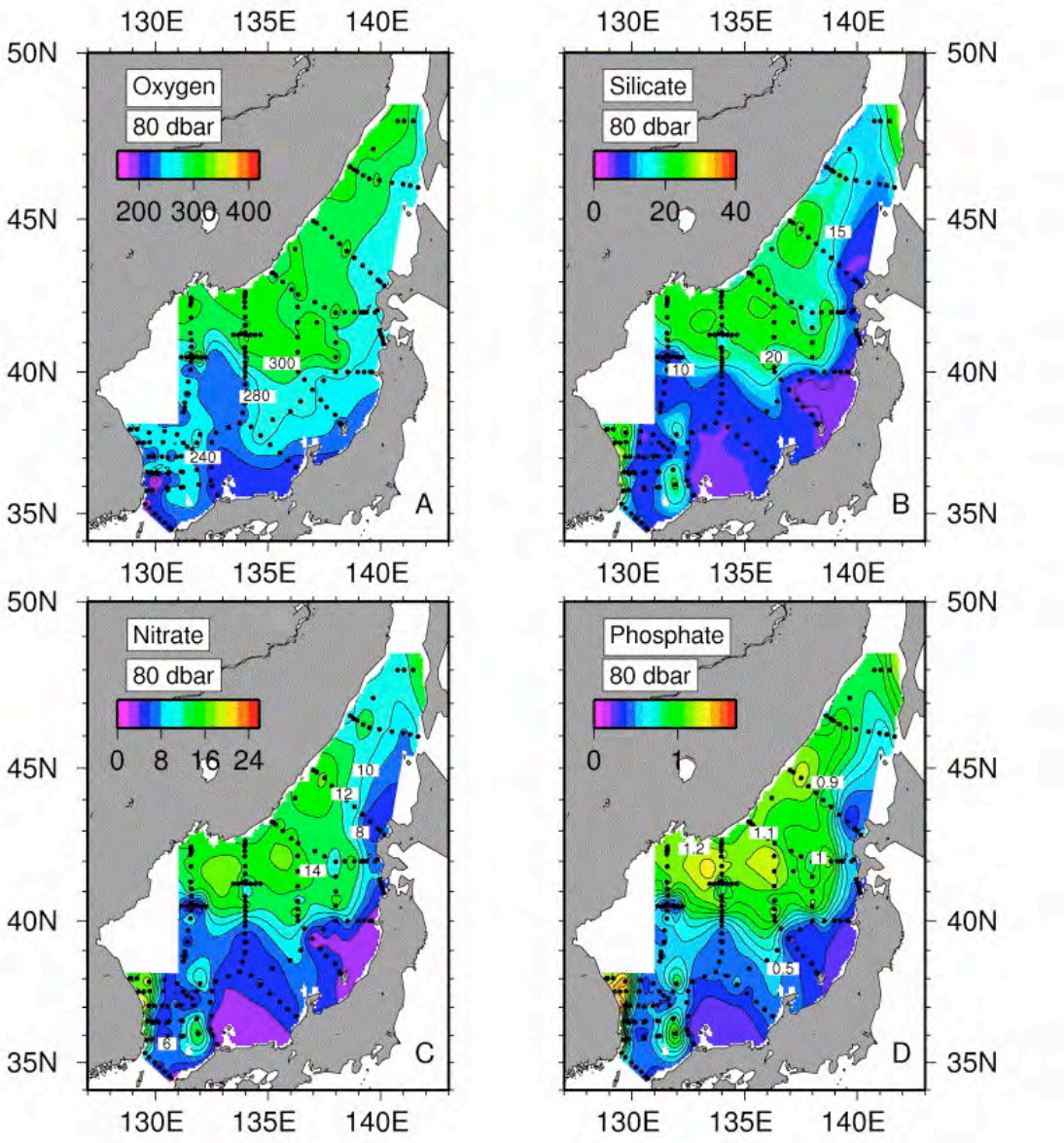
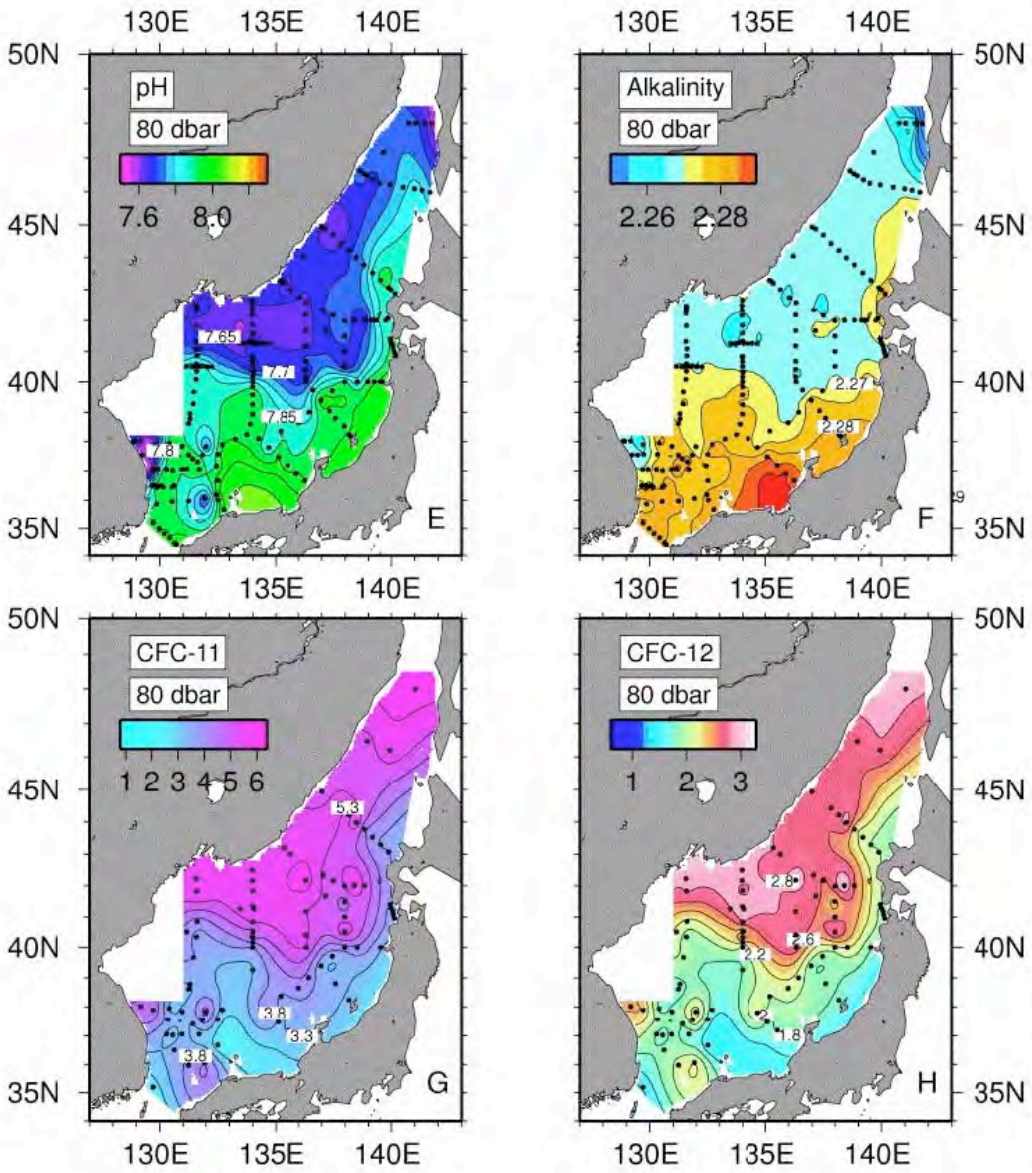


Figure D39. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 80 dbar.


130E
135E
140E
50N
45N
40N
35N
pH
80 dbar
7.6
8.0
7.65
7.7
7.85
7.8
E
Alkalinity
80 dbar
2.26
2.28
2.27
2.28
F
CFC-11
80 dbar
1 2 3 4 5 6
5.3
3.8
3.3
3.8
G
CFC-12
80 dbar
1
2
3
2.8
2.6
2.2
1.8
H

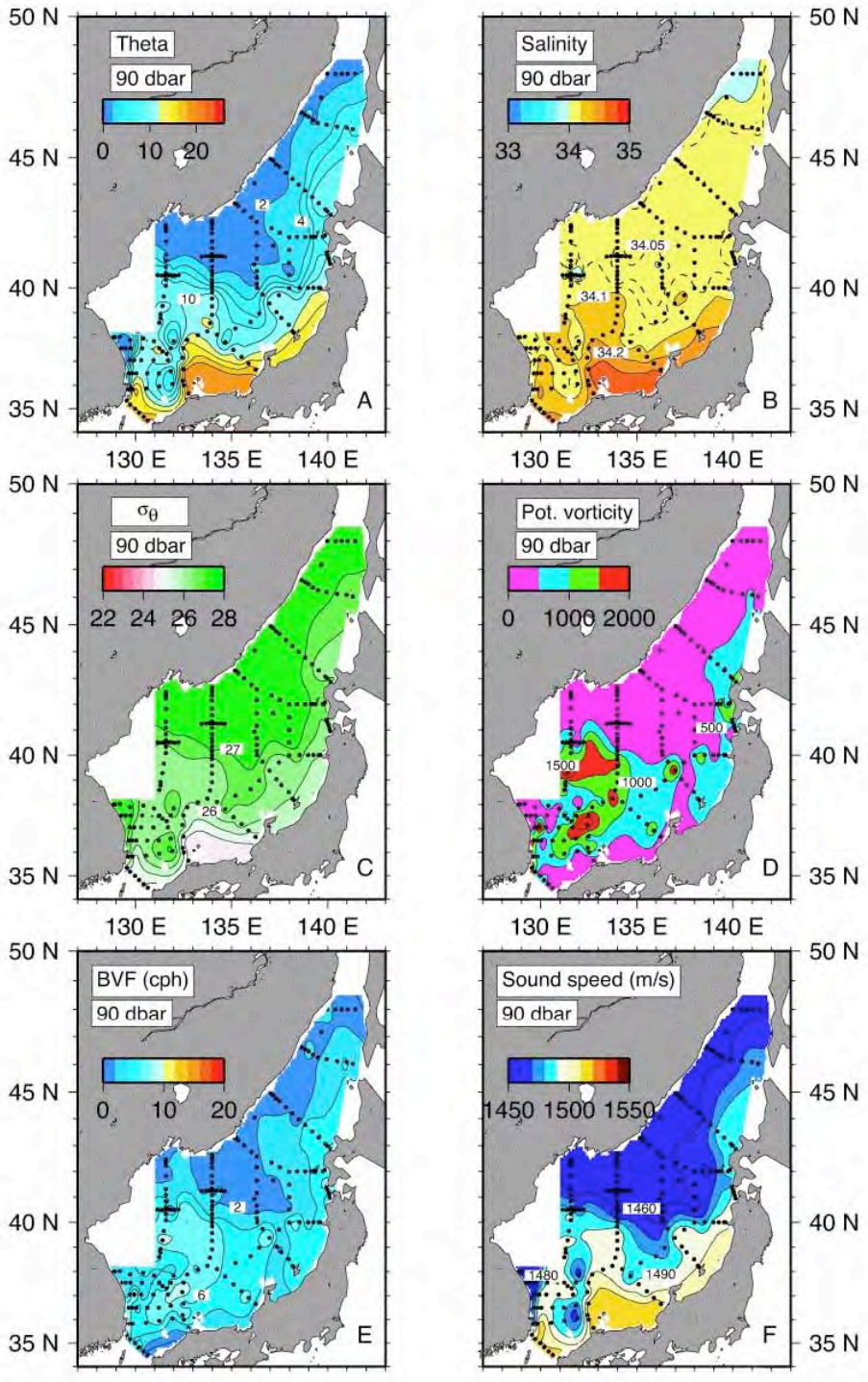
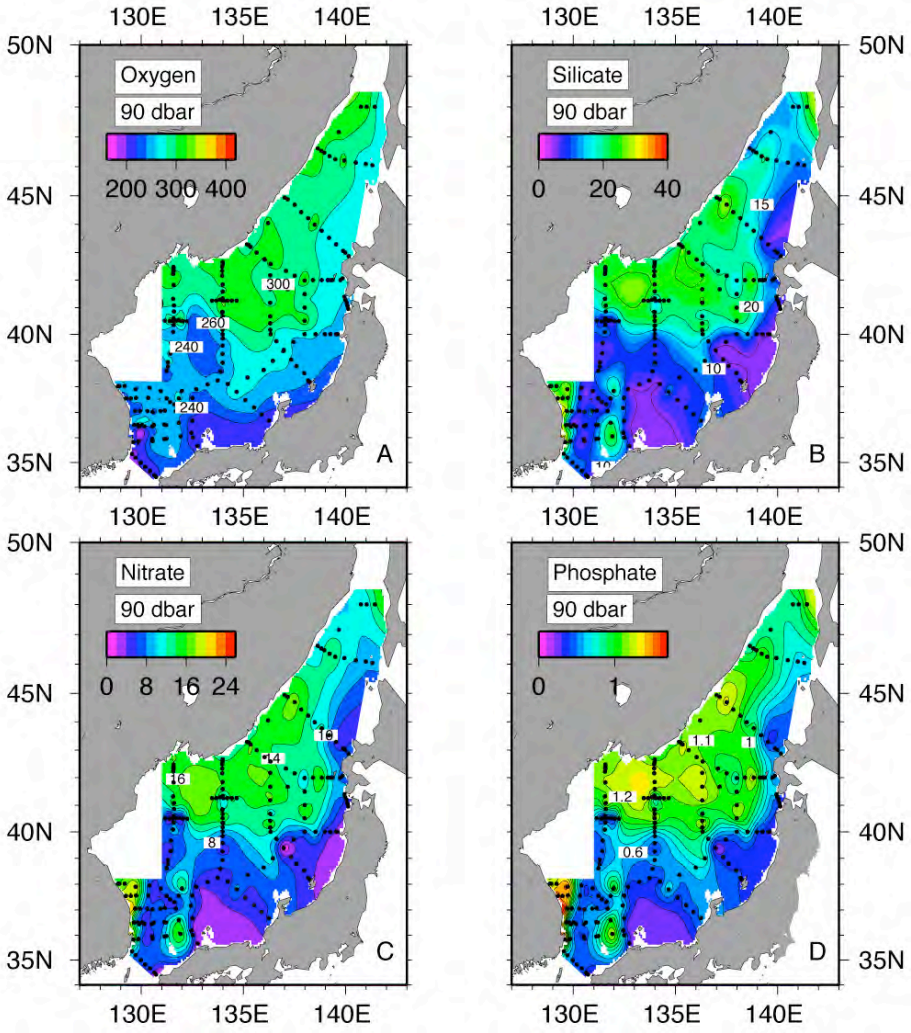


Figure D40. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 90 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
90 dbar
200 300 400
300
260
240
240
A
Silicate
90 dbar
0 20 40
15
20
10
B
Nitrate
90 dbar
0 8 16 24
16
14
16
8
C
Phosphate
90 dbar
0 1
1.1
1
1.2
0.6
D

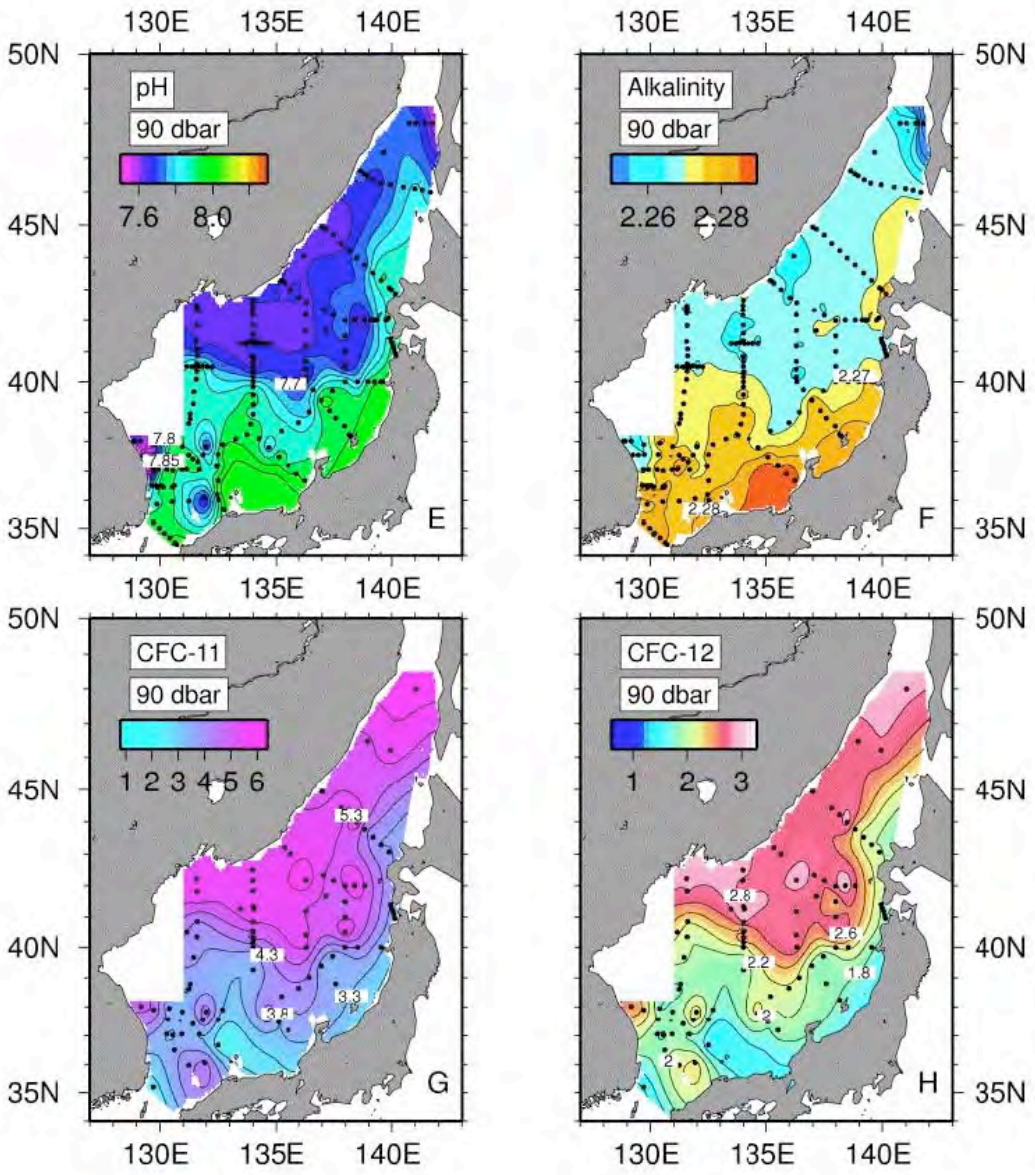


Figure D41. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 90 dbar.

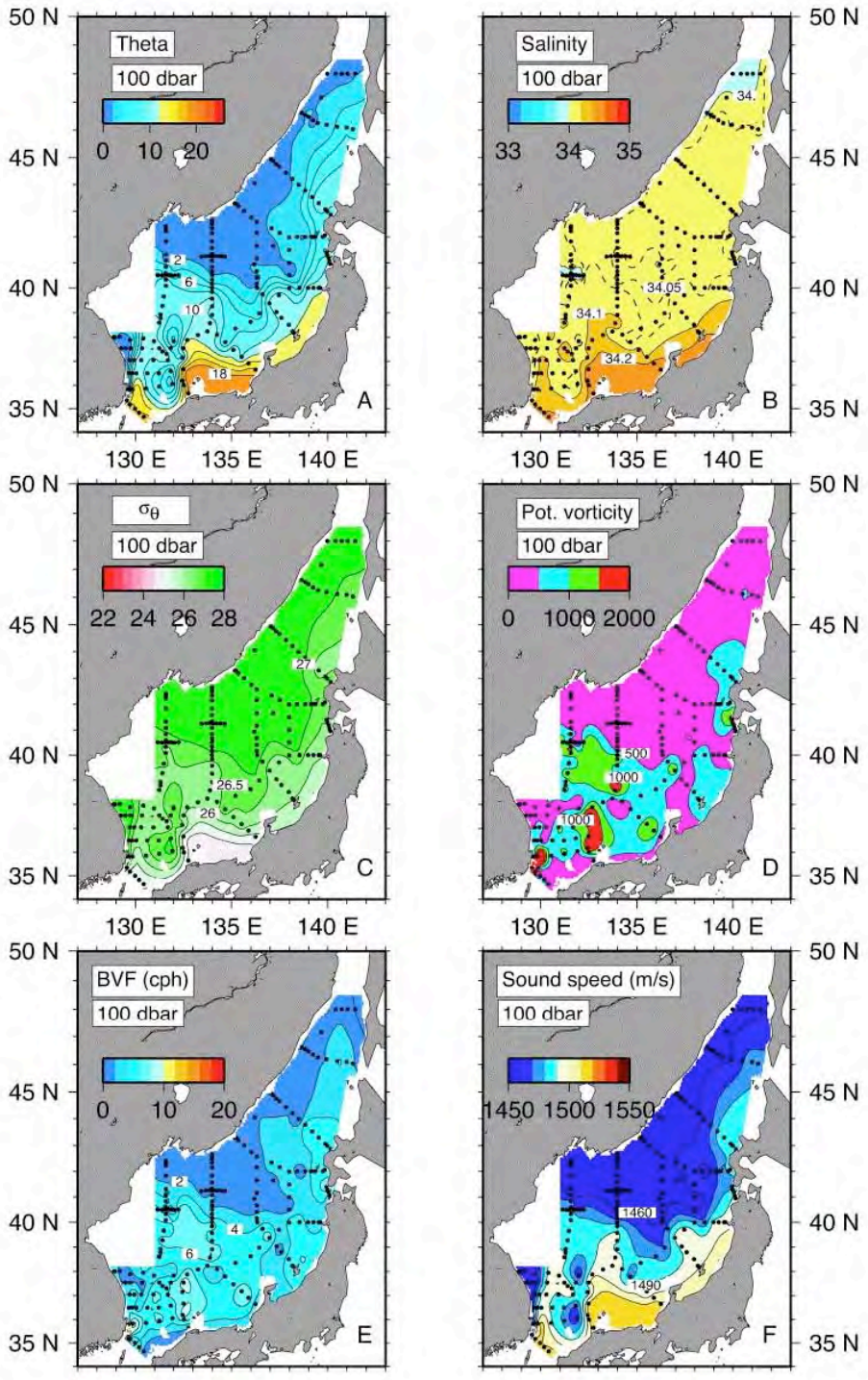
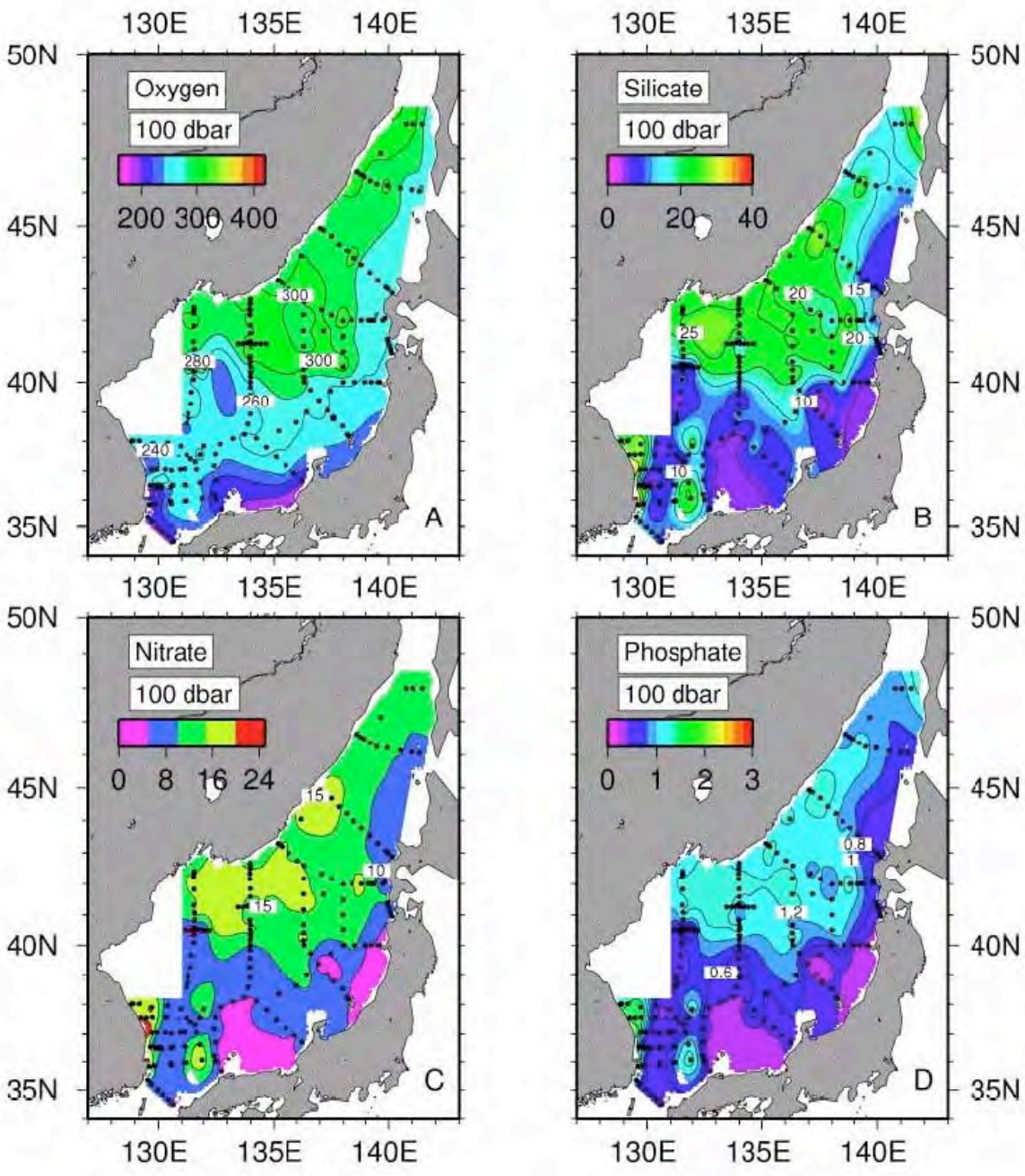


Figure D42. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 100 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
100 dbar
200 300 400
300
280
300
260
240
A
Silicate
100 dbar
0 20 40
20
15
25
20
10
10
B
Nitrate
100 dbar
0 8 16 24
15
10
15
C
Phosphate
100 dbar
0 1 2 3
0.8
1
1.2
0.6
D

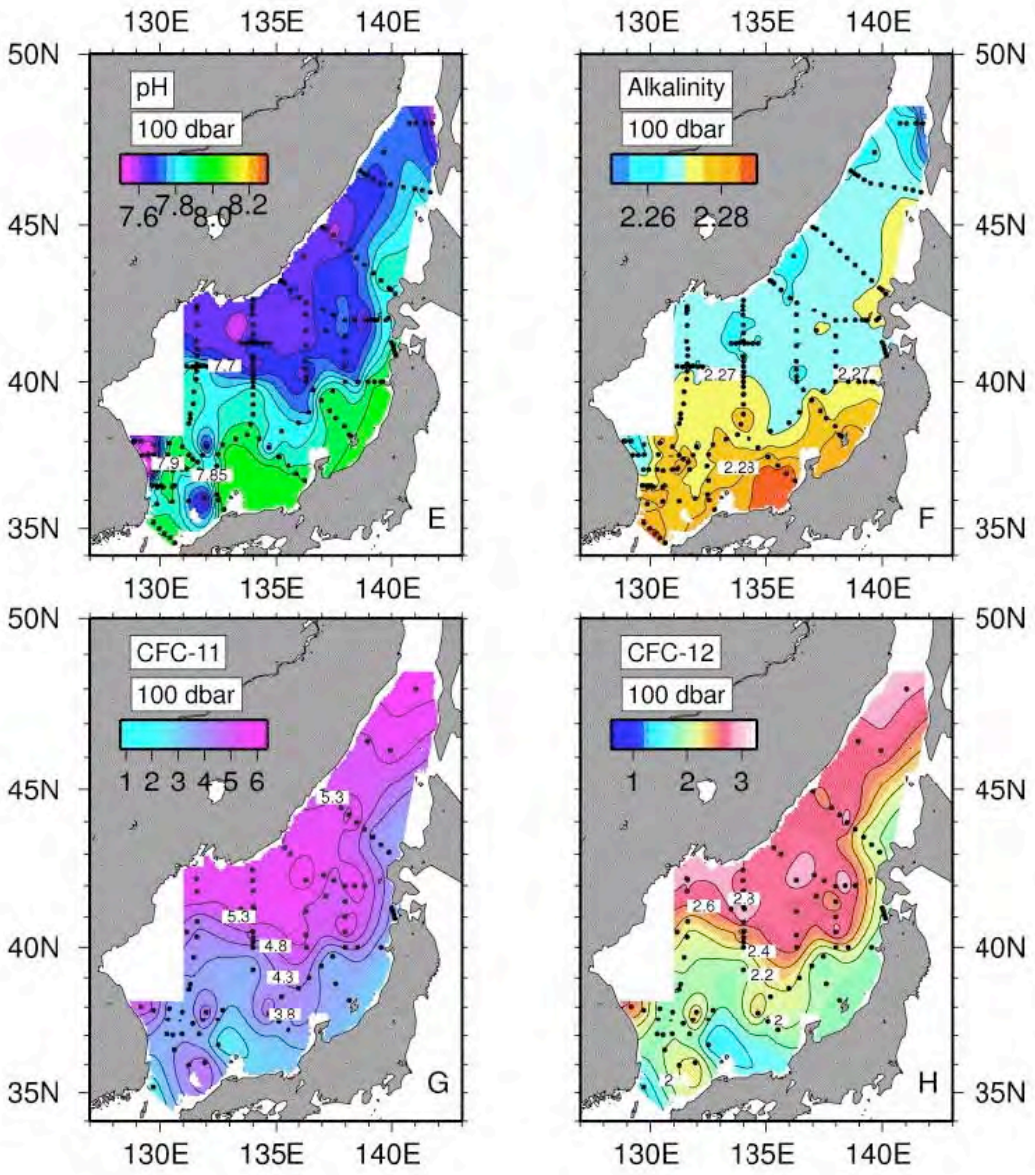


Figure D43. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 100 dbar.

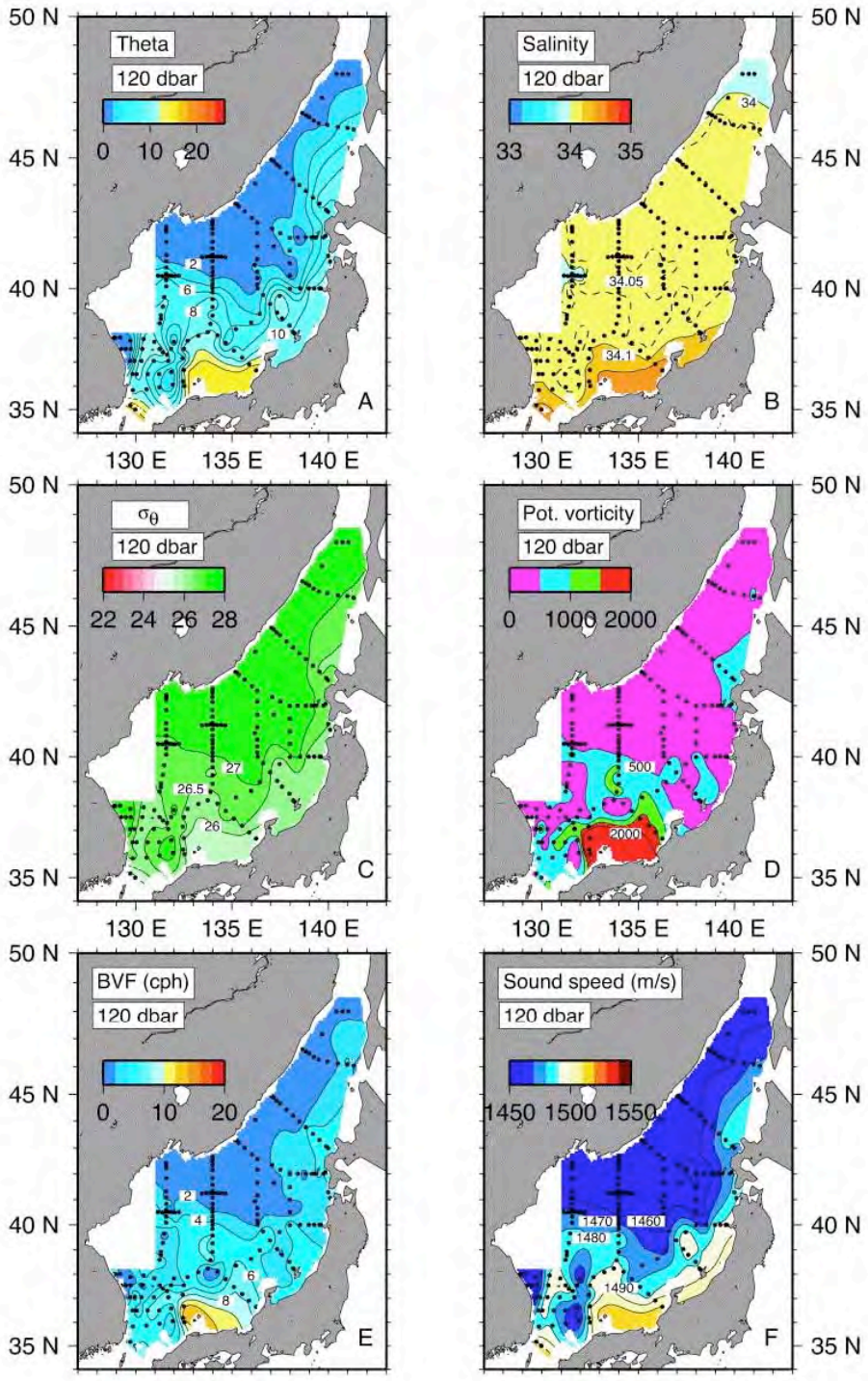
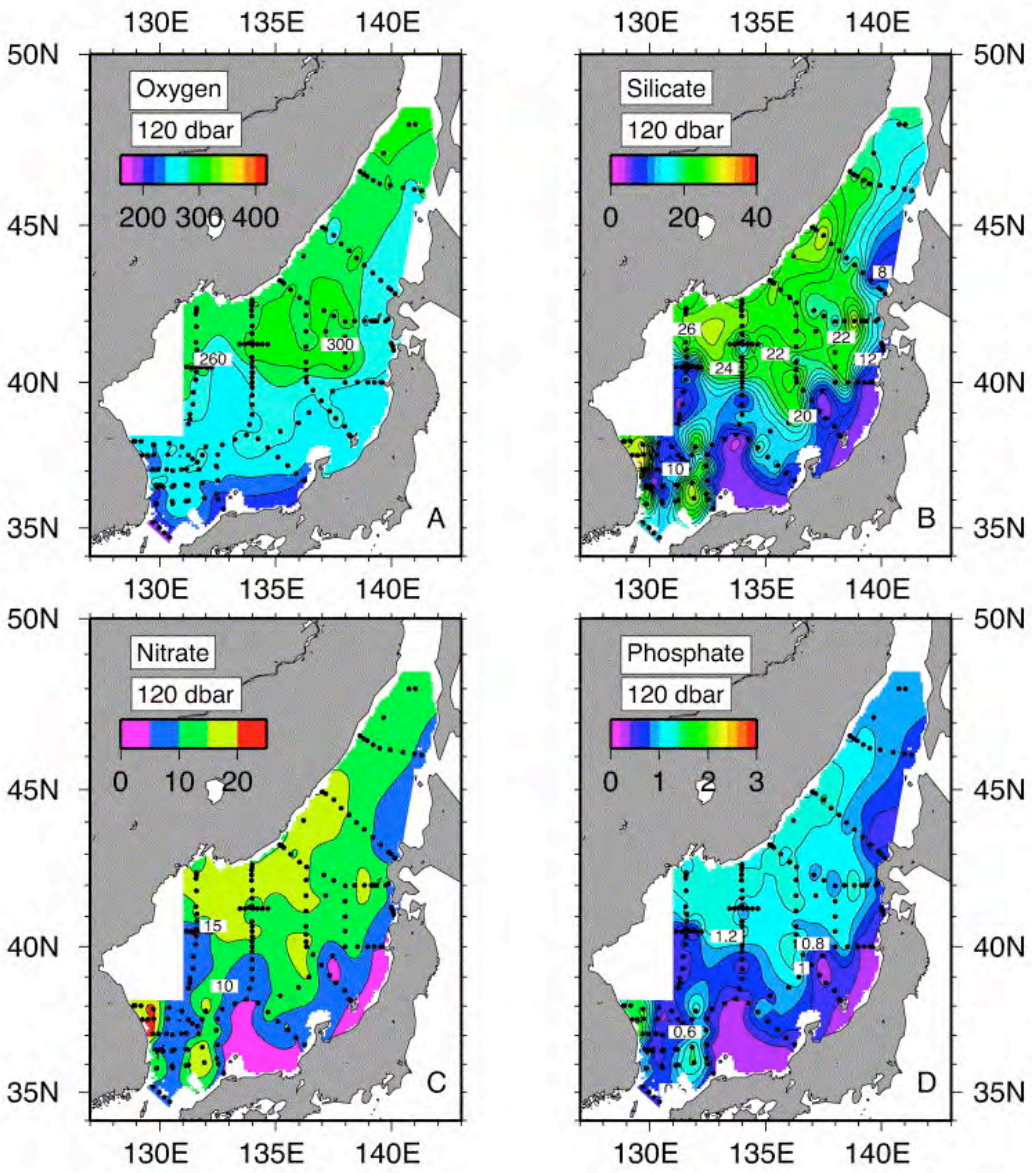


Figure D44. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 120 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
120 dbar
200 300 400
260
300
A
Silicate
120 dbar
0 20 40
8
26
22
24
22
12
20
10
B
Nitrate
120 dbar
0 10 20
15
10
C
Phosphate
120 dbar
0 1 2 3
1.2
0.8
1
0.6
D

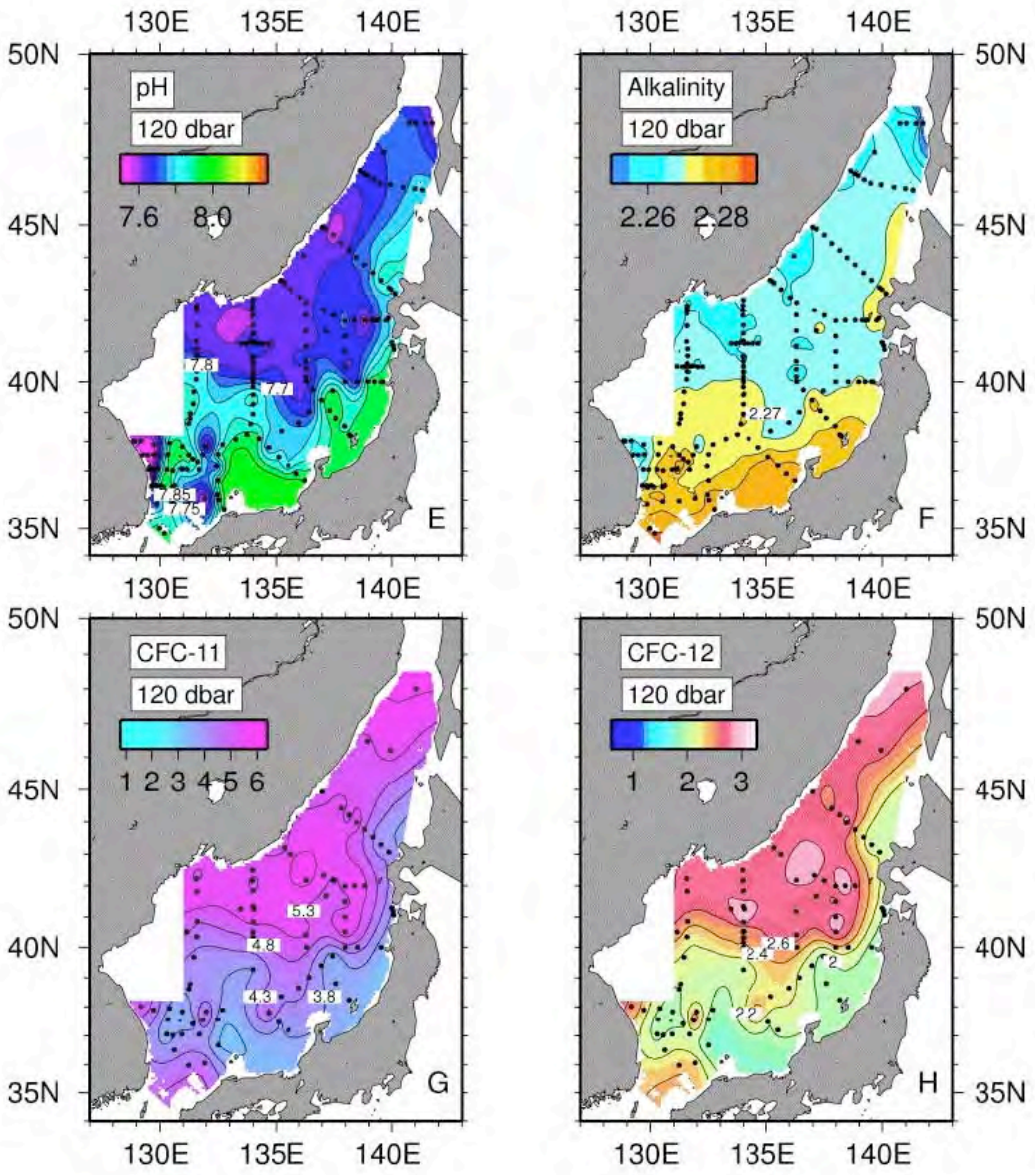


Figure D45. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 120 dbar.

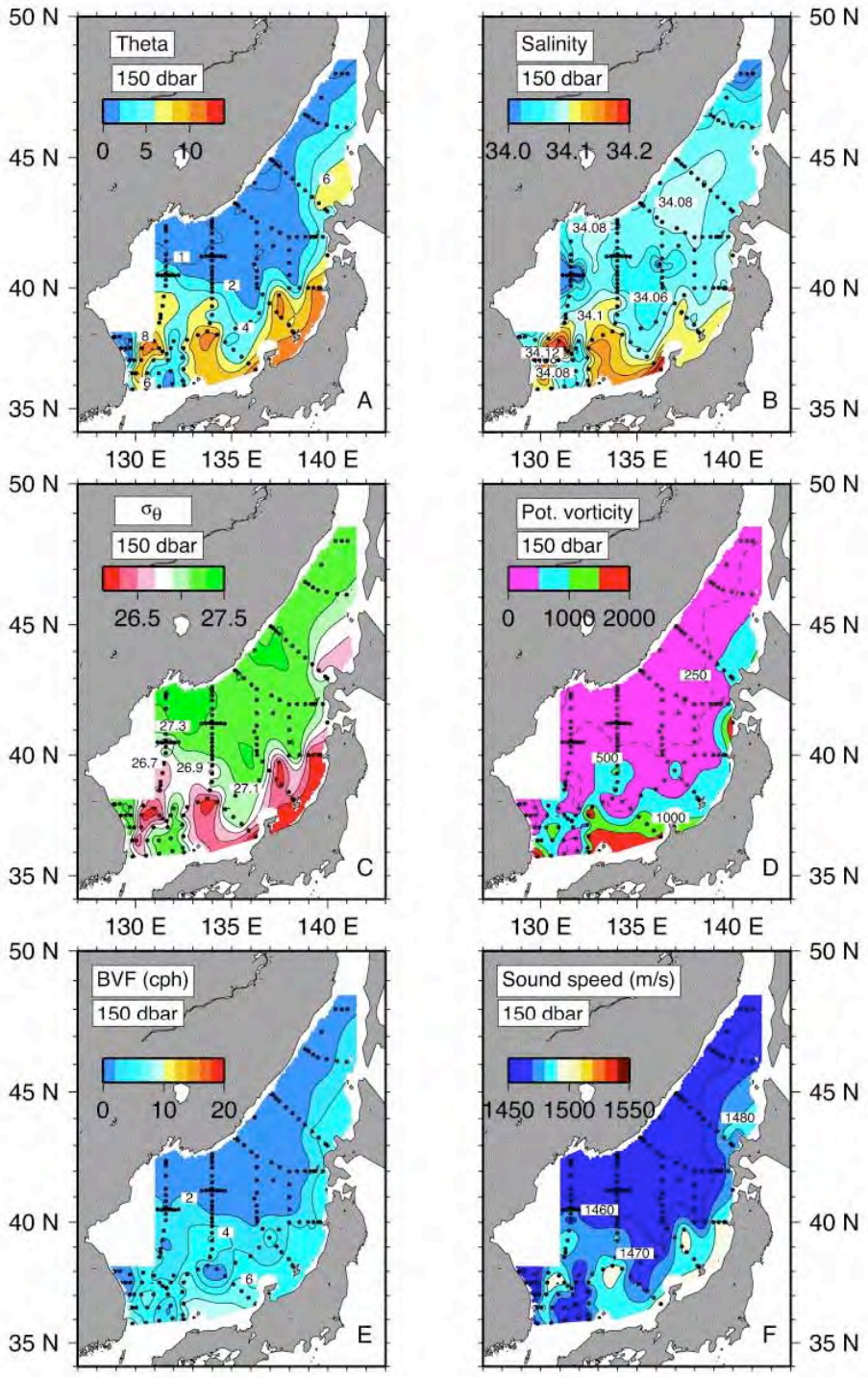
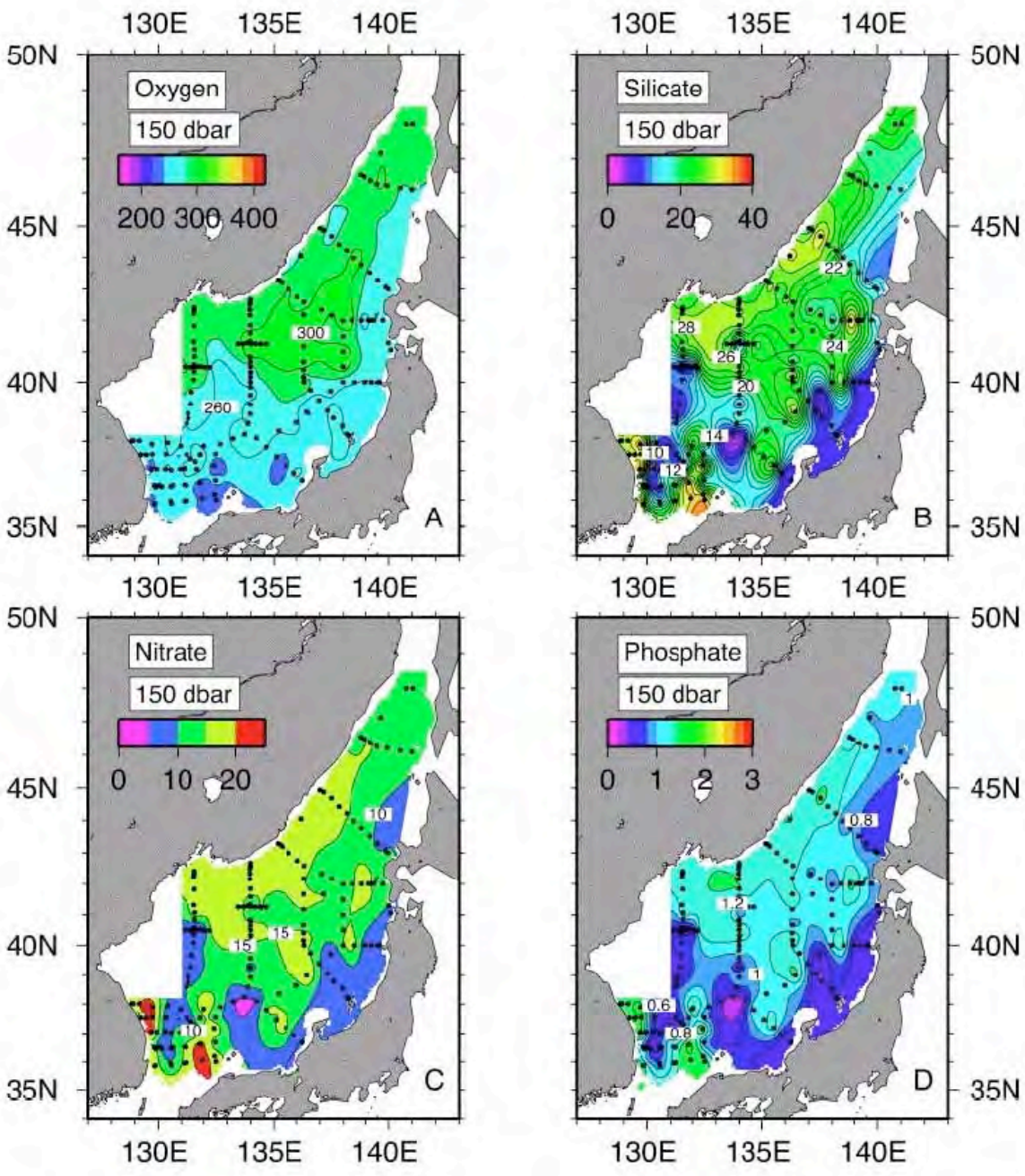


Figure D46. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 150 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
150 dbar
200 300 400
300
260
A
Silicate
150 dbar
0 20 40
22
28
26
24
20
14
10
12
B
Nitrate
150 dbar
0 10 20
10
15
15
10
C
Phosphate
150 dbar
0 1 2 3
1
0.8
1.2
1
0.6
0.8
D

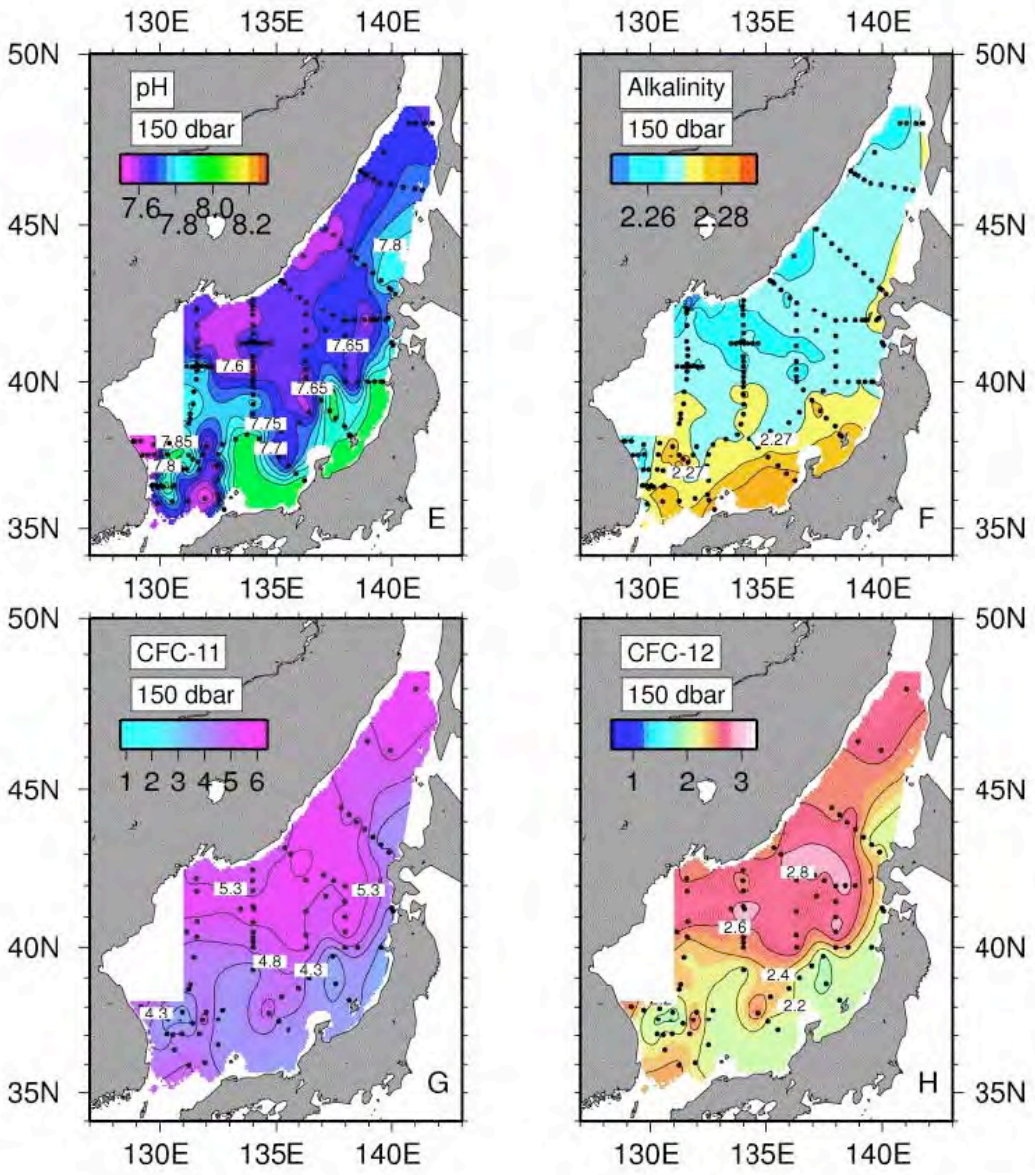


Figure D47. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 150 dbar.

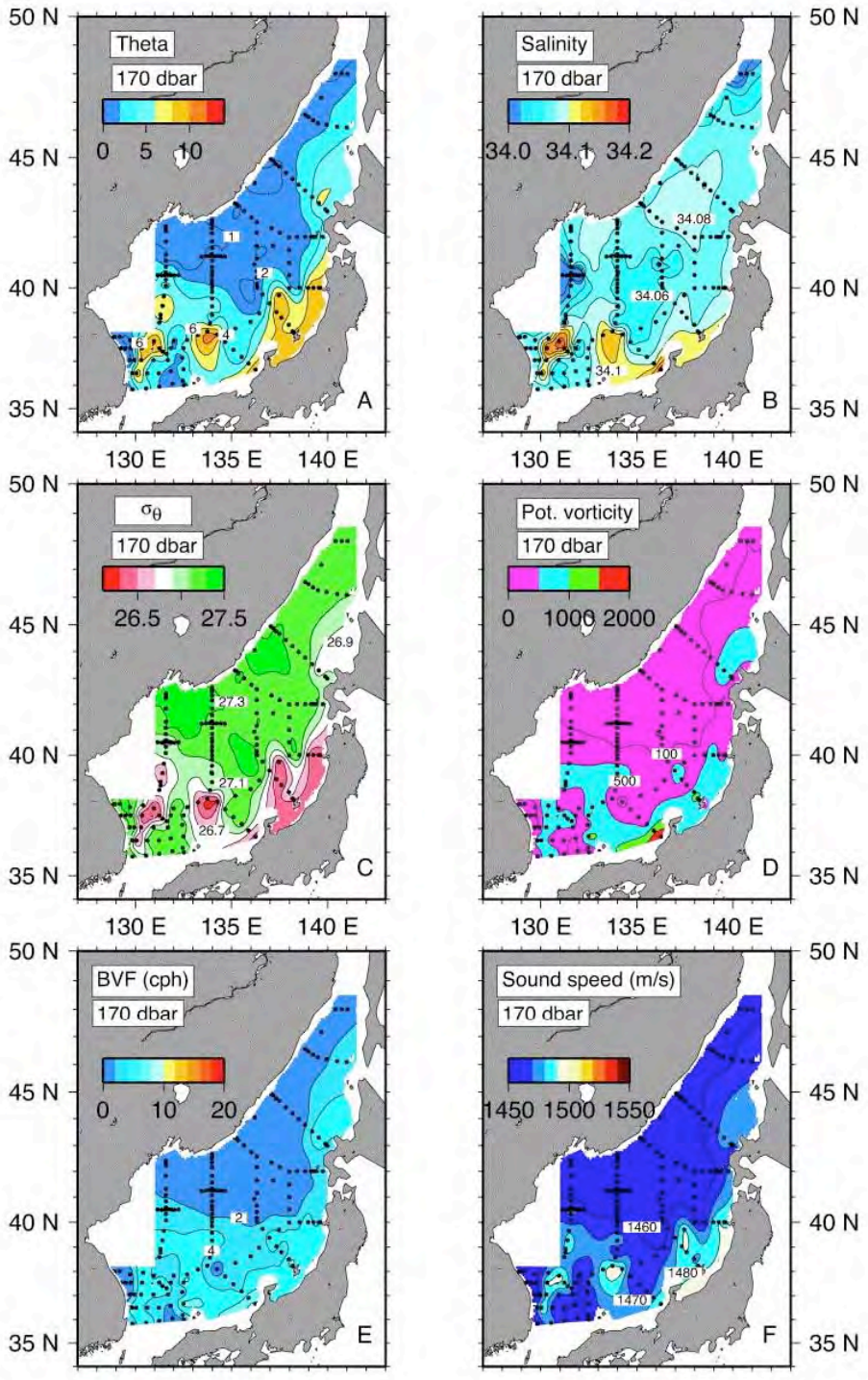
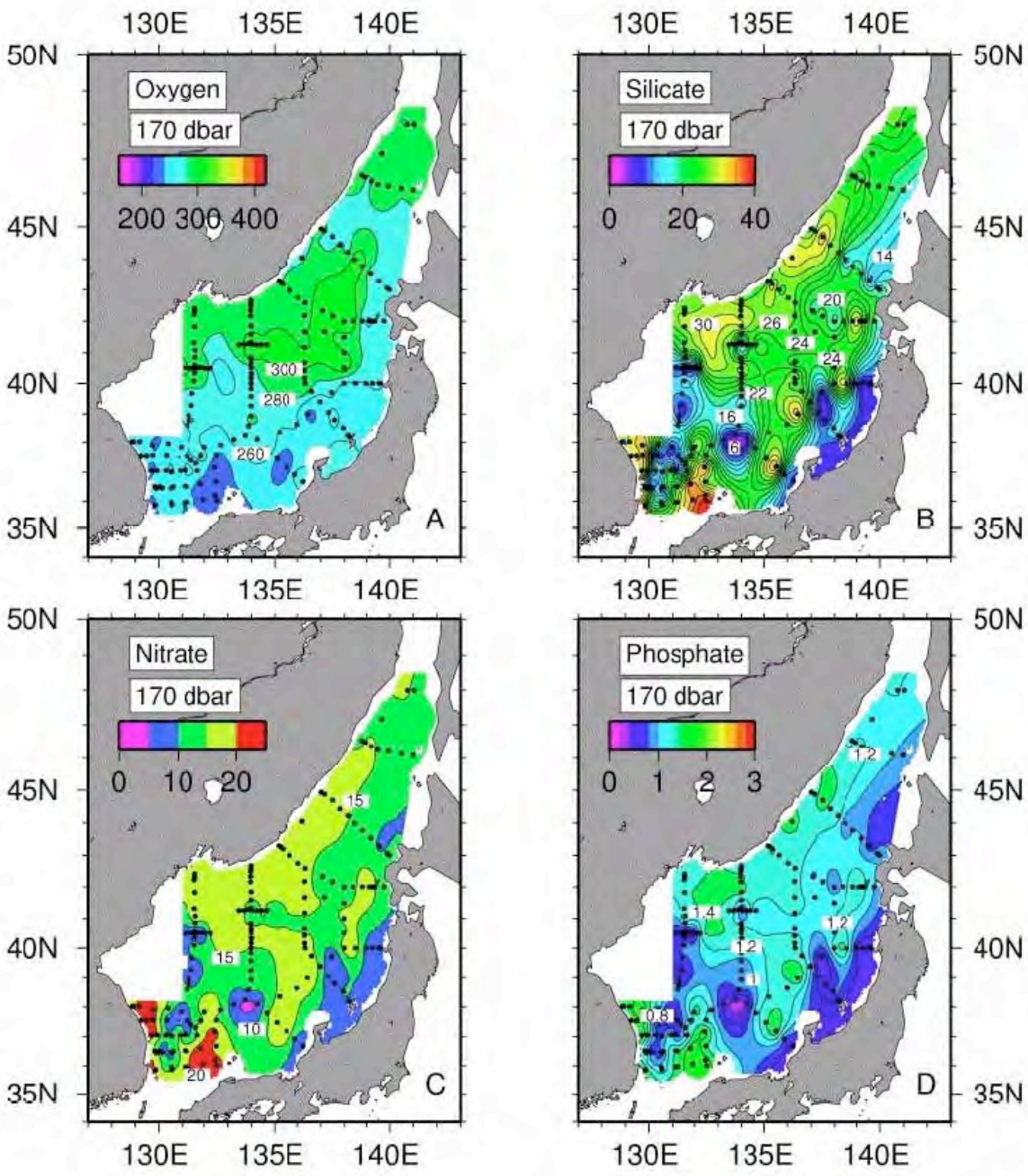


Figure D48. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 170 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
170 dbar
200 300 400
300
280
260
A
Silicate
170 dbar
0 20 40
30
26
24
22
20
16
14
6
B
Nitrate
170 dbar
0 10 20
15
10
20
C
Phosphate
170 dbar
0 1 2 3
1.4
1.2
1
0.8
D

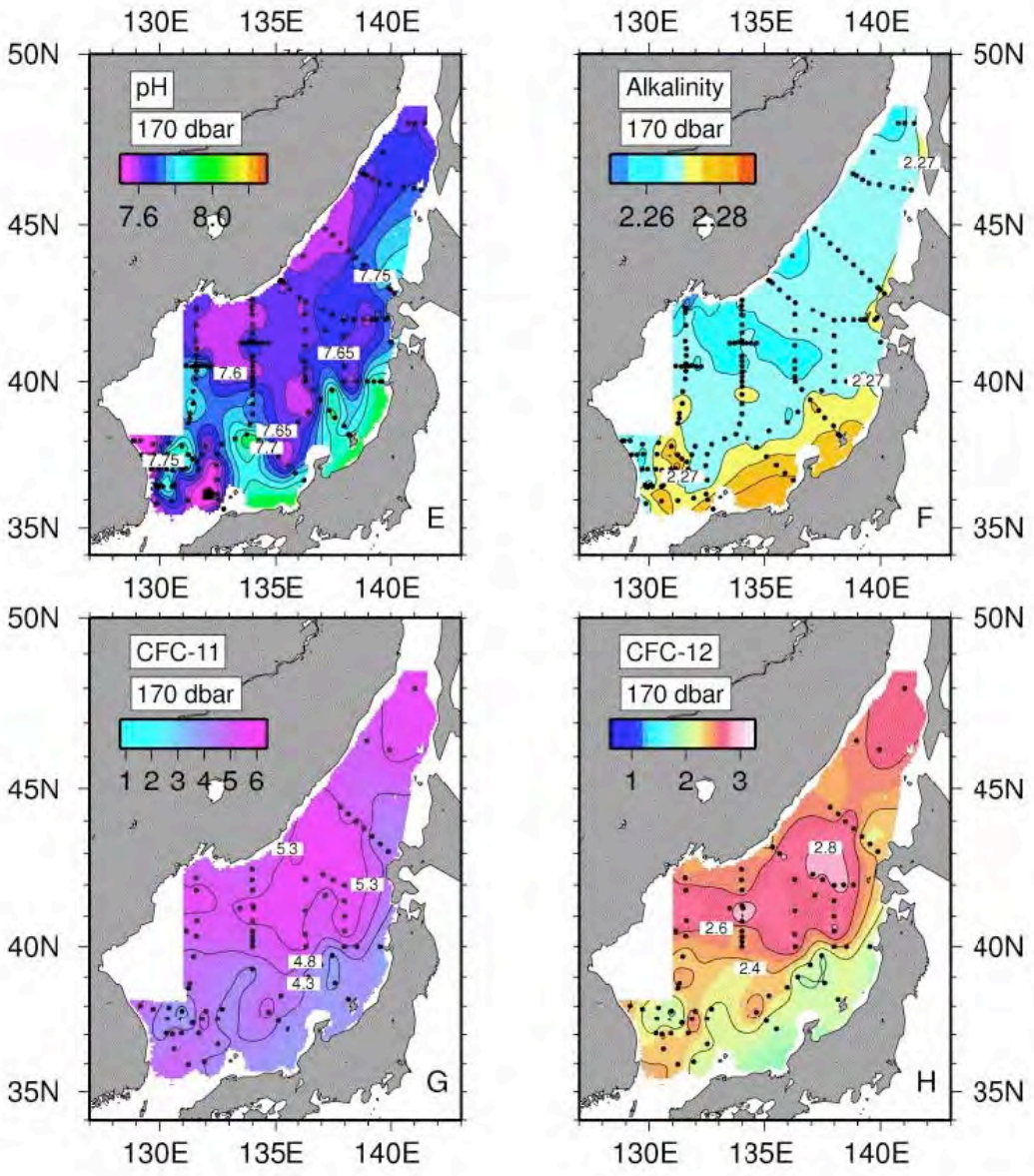


Figure D49. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 170 dbar.

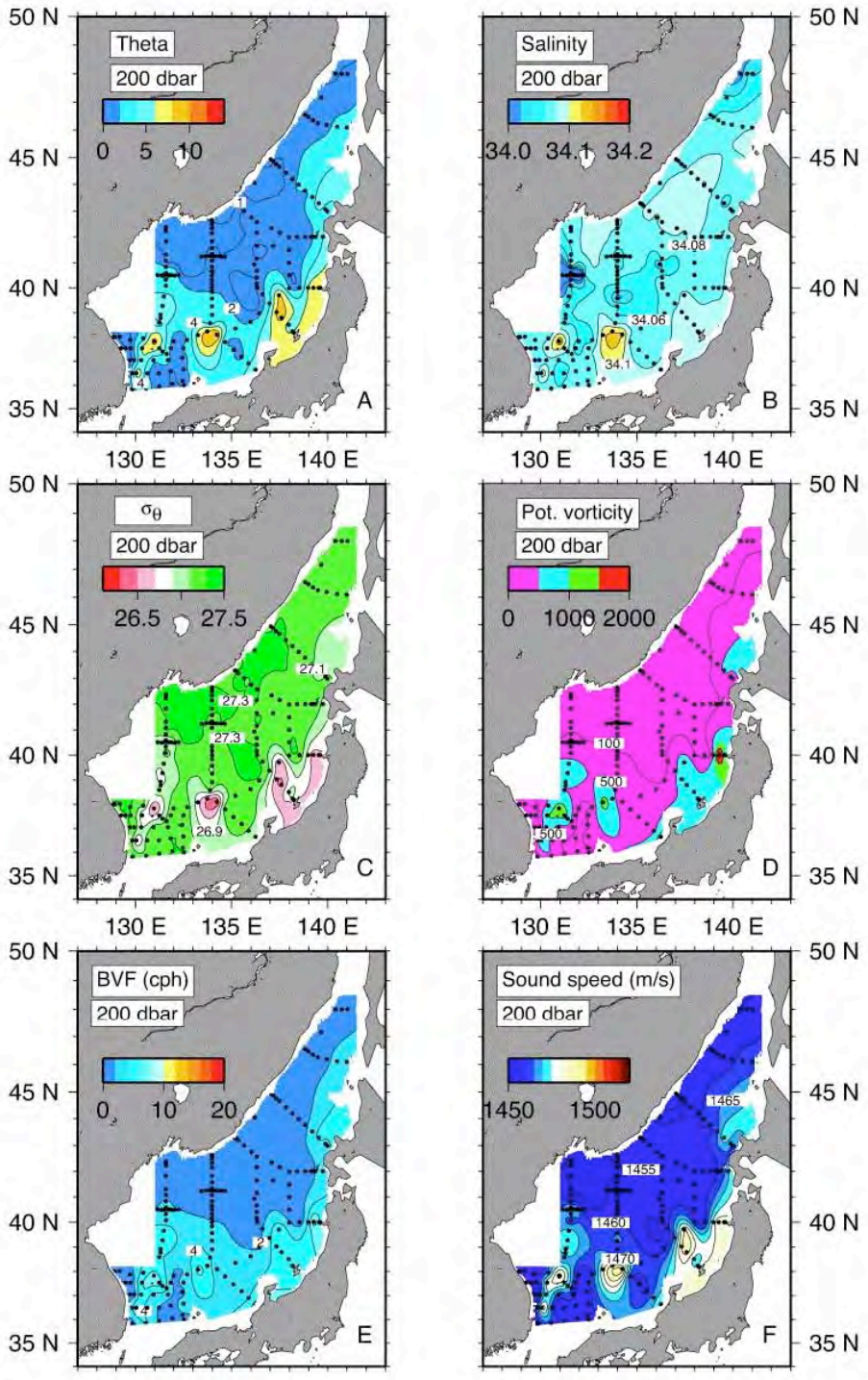
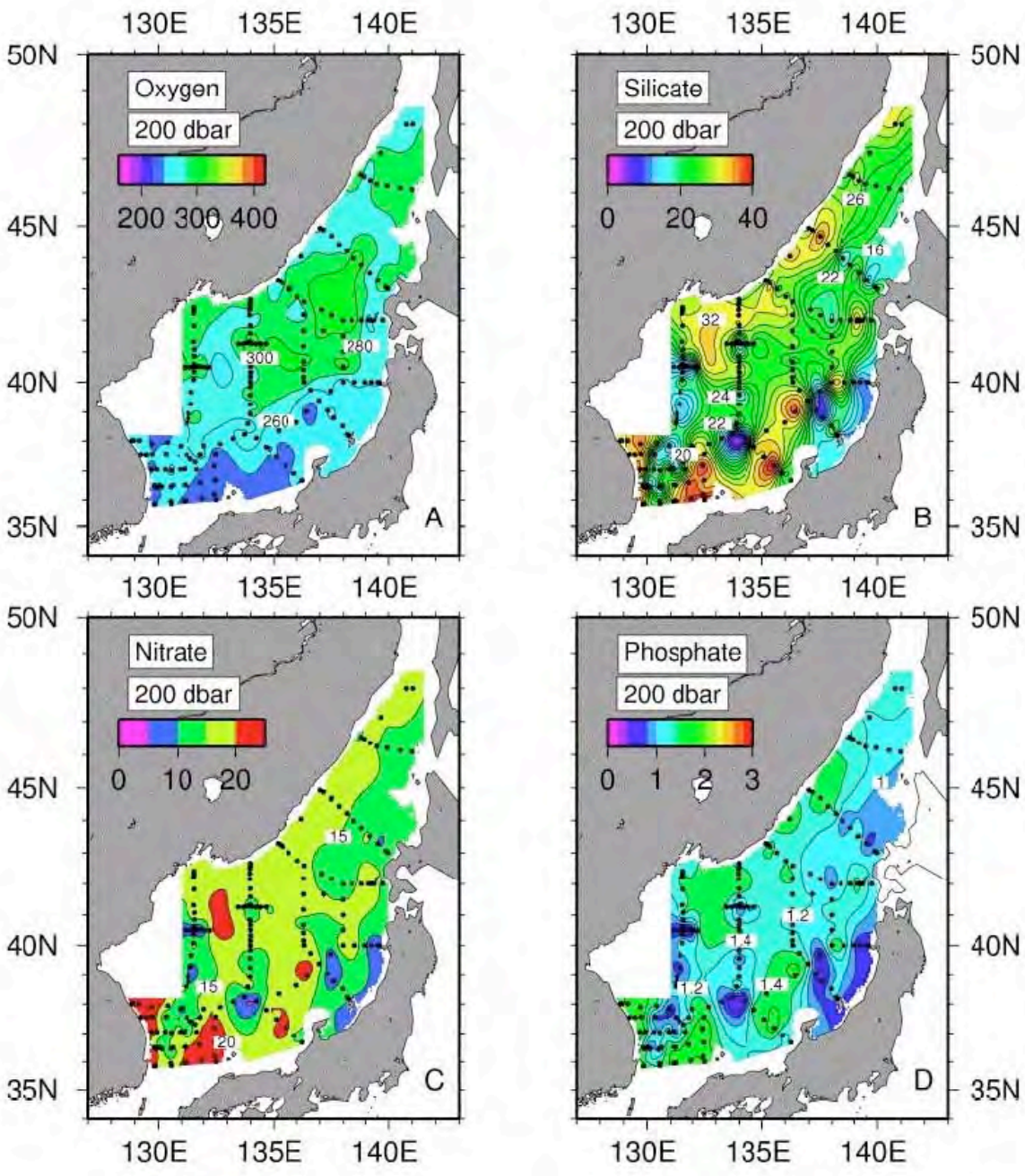


Figure D50. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 200 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
200 dbar
200 300 400
300
280
260
A
Silicate
200 dbar
0 20 40
26
16
22
32
24
22
20
B
Nitrate
200 dbar
0 10 20
15
15
20
C
Phosphate
200 dbar
0 1 2 3
1
1.2
1.4
1.2
1.4
D

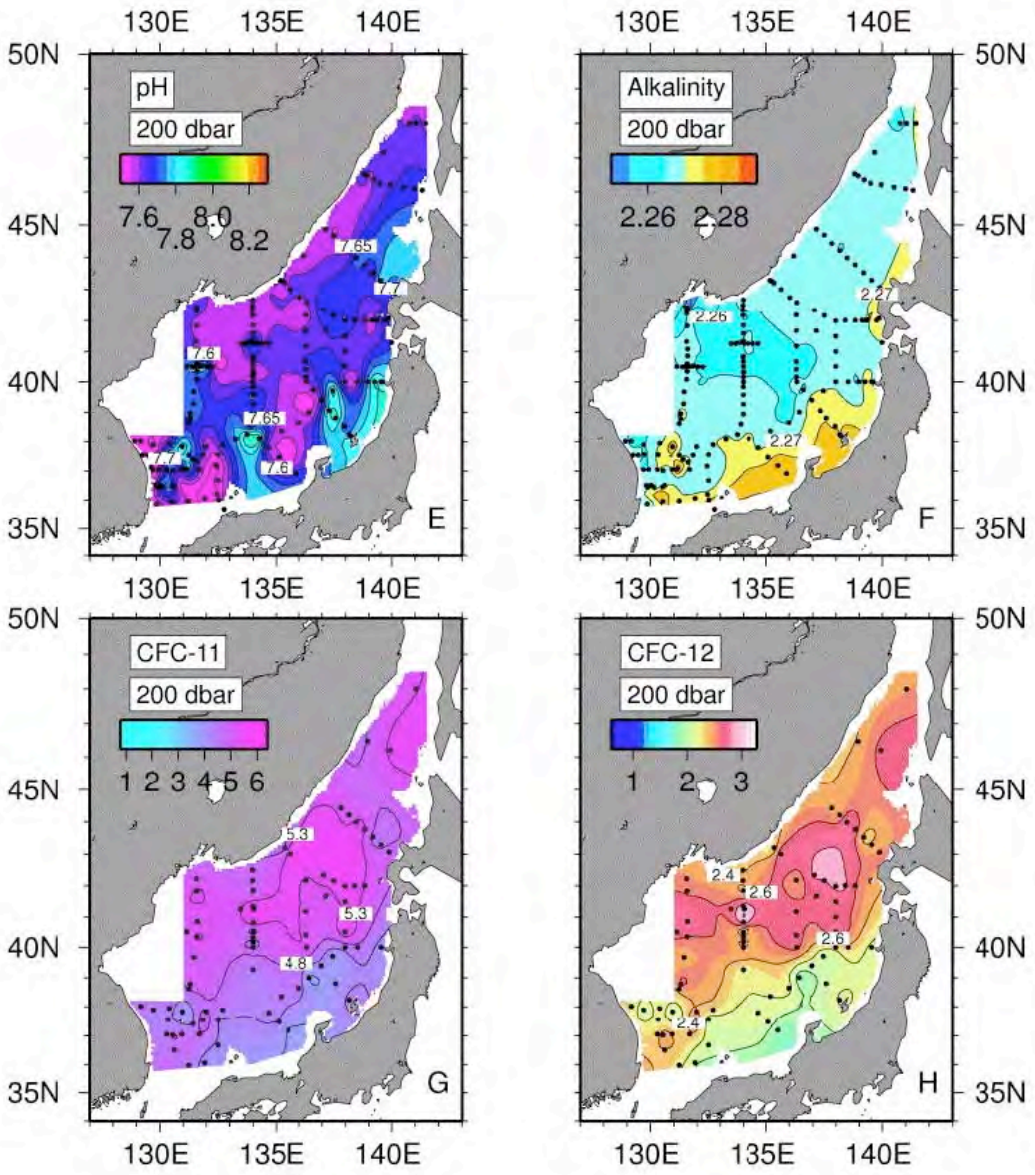


Figure D51. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 200 dbar.

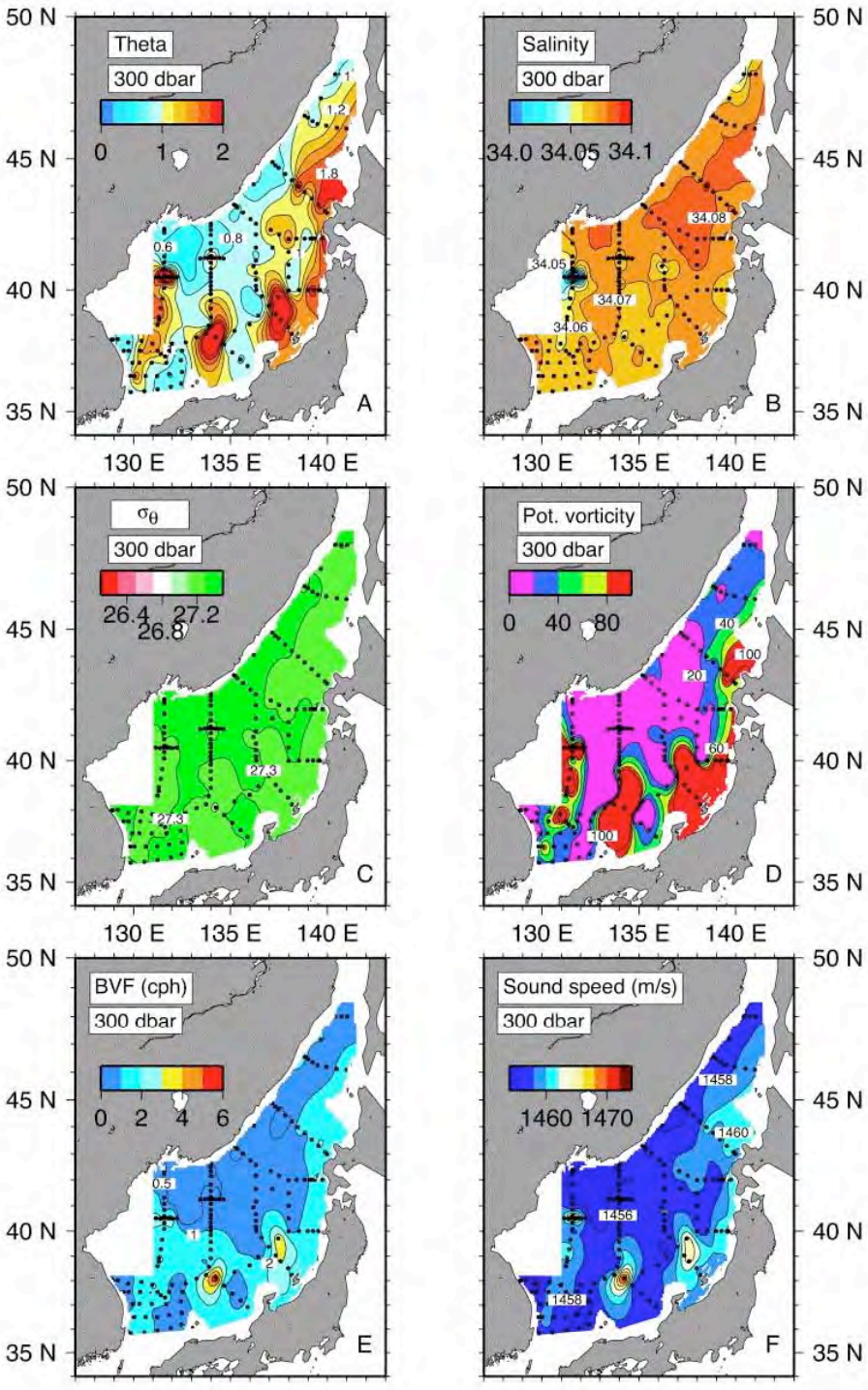
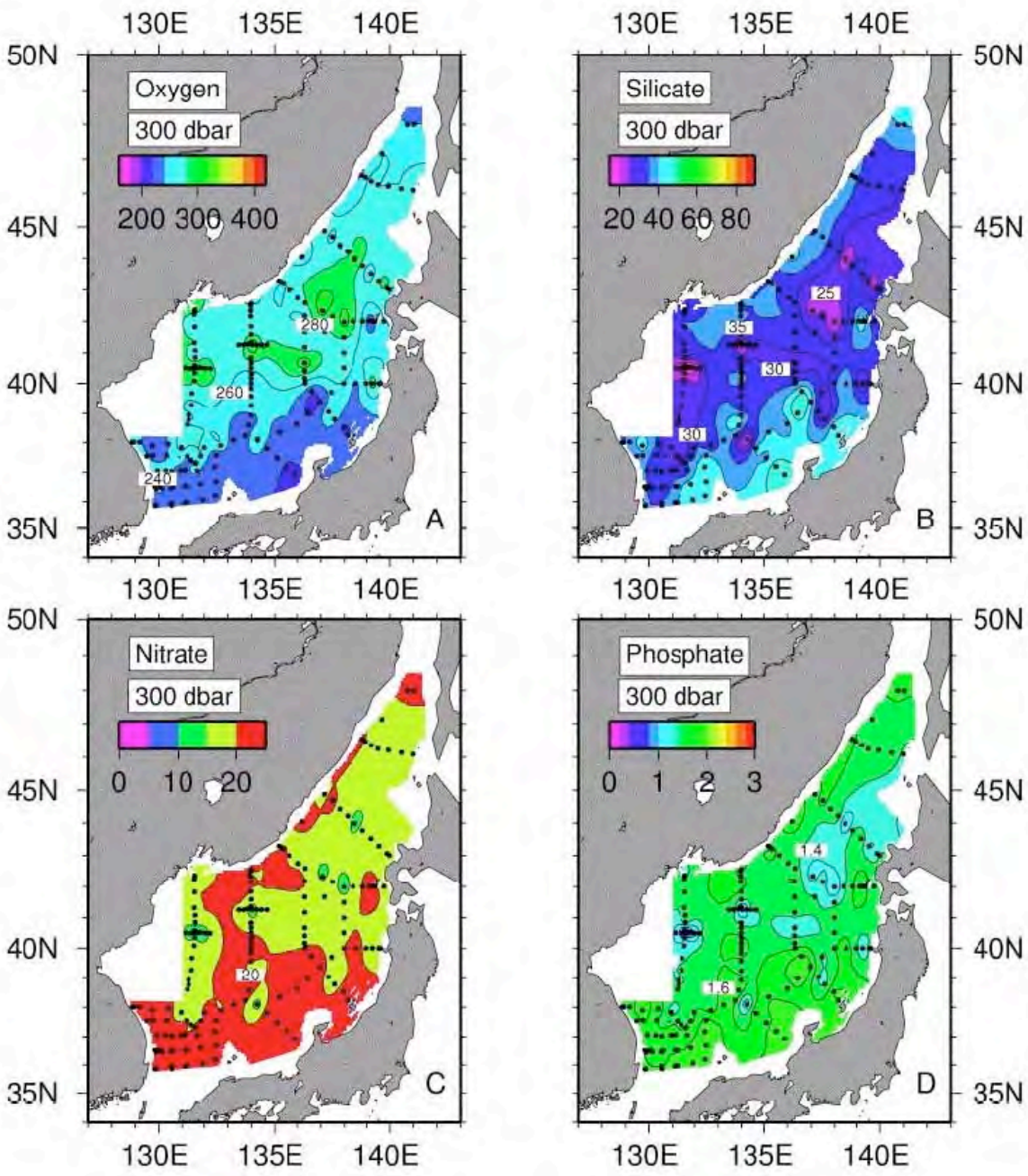


Figure D52. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 300 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
300 dbar
200 300 400
280
260
240
A
Silicate
300 dbar
20 40 60 80
25
35
30
30
B
Nitrate
300 dbar
0 10 20
20
C
Phosphate
300 dbar
0 1 2 3
1.4
1.6
D

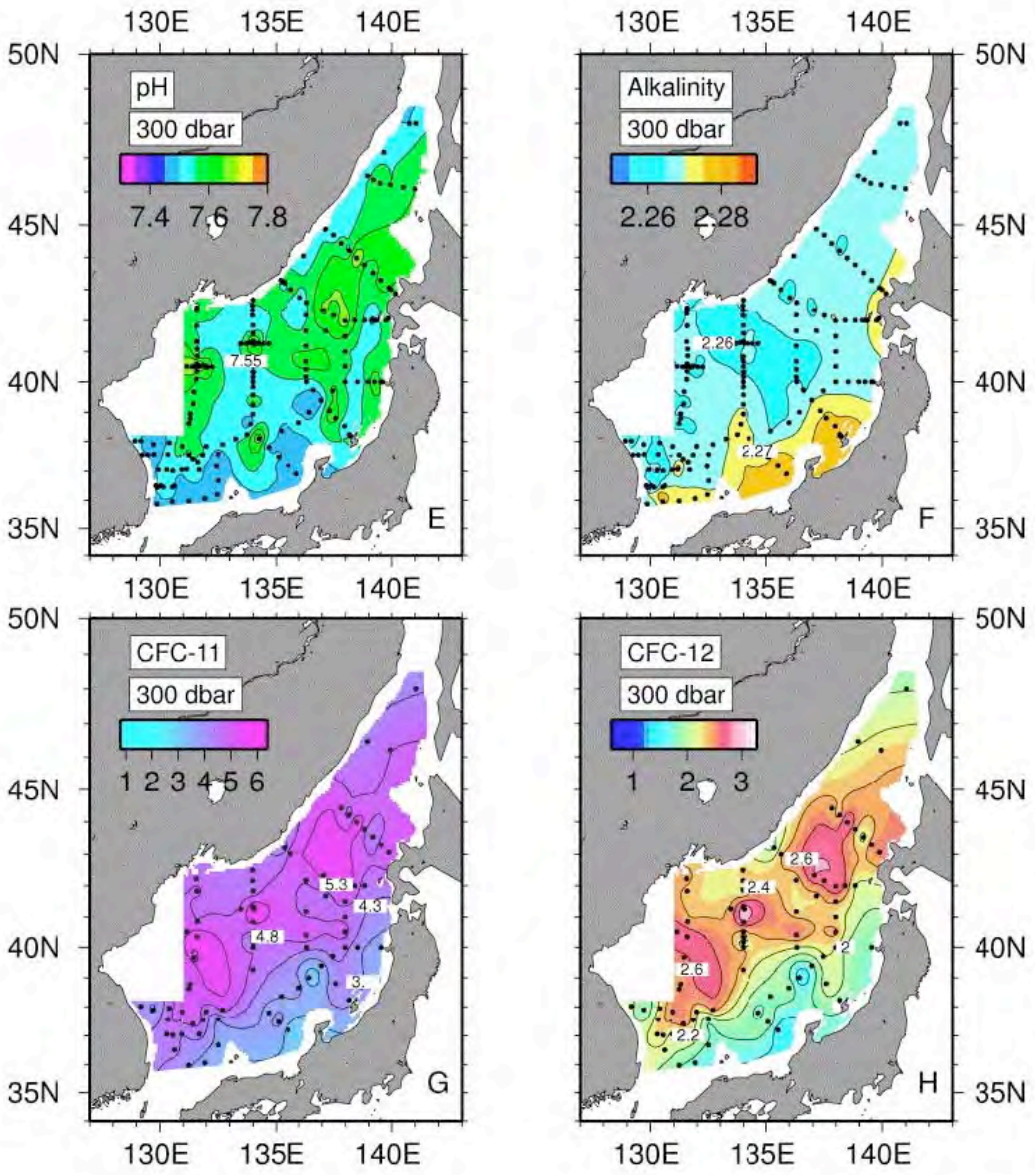


Figure D53. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 300 dbar.

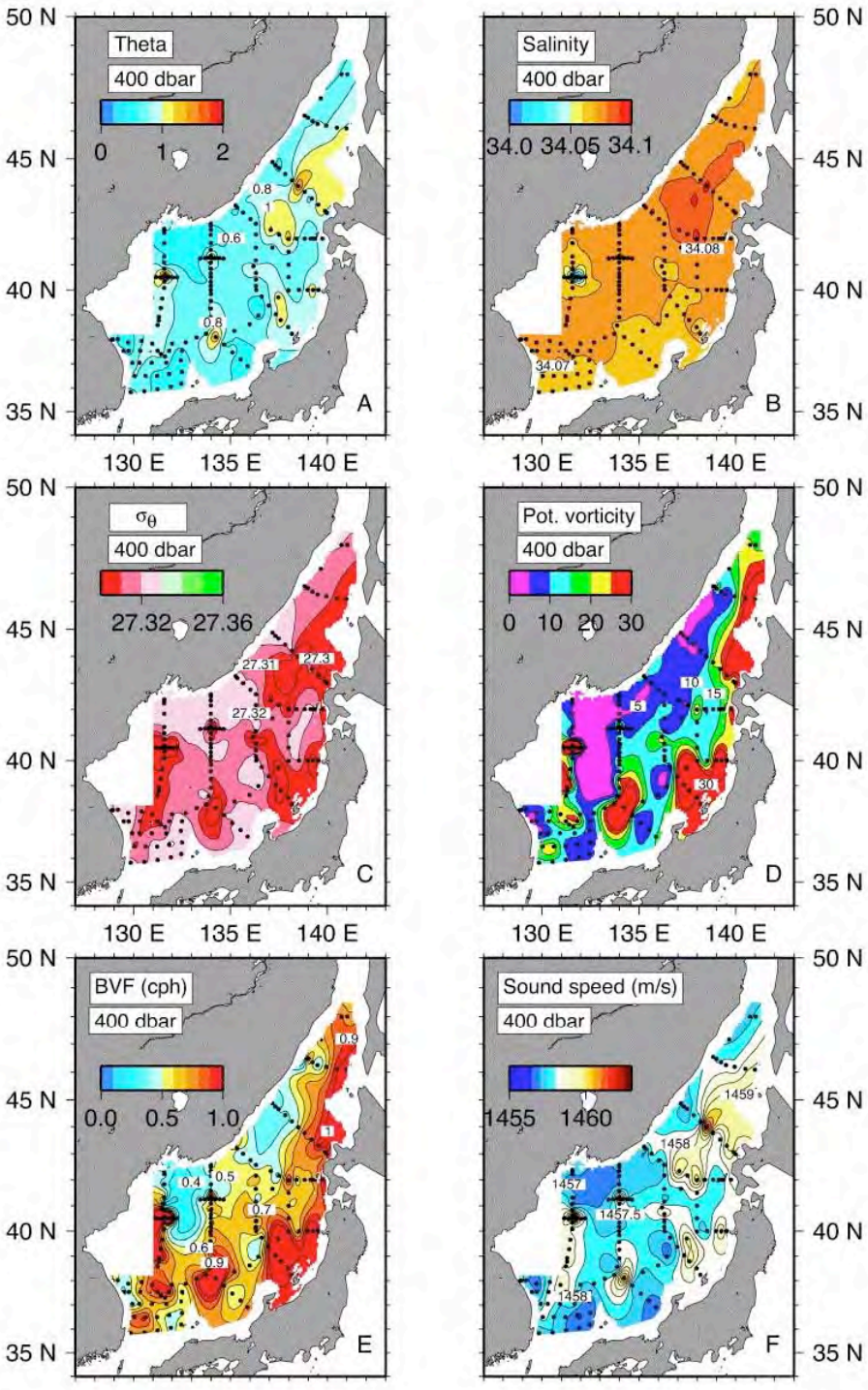
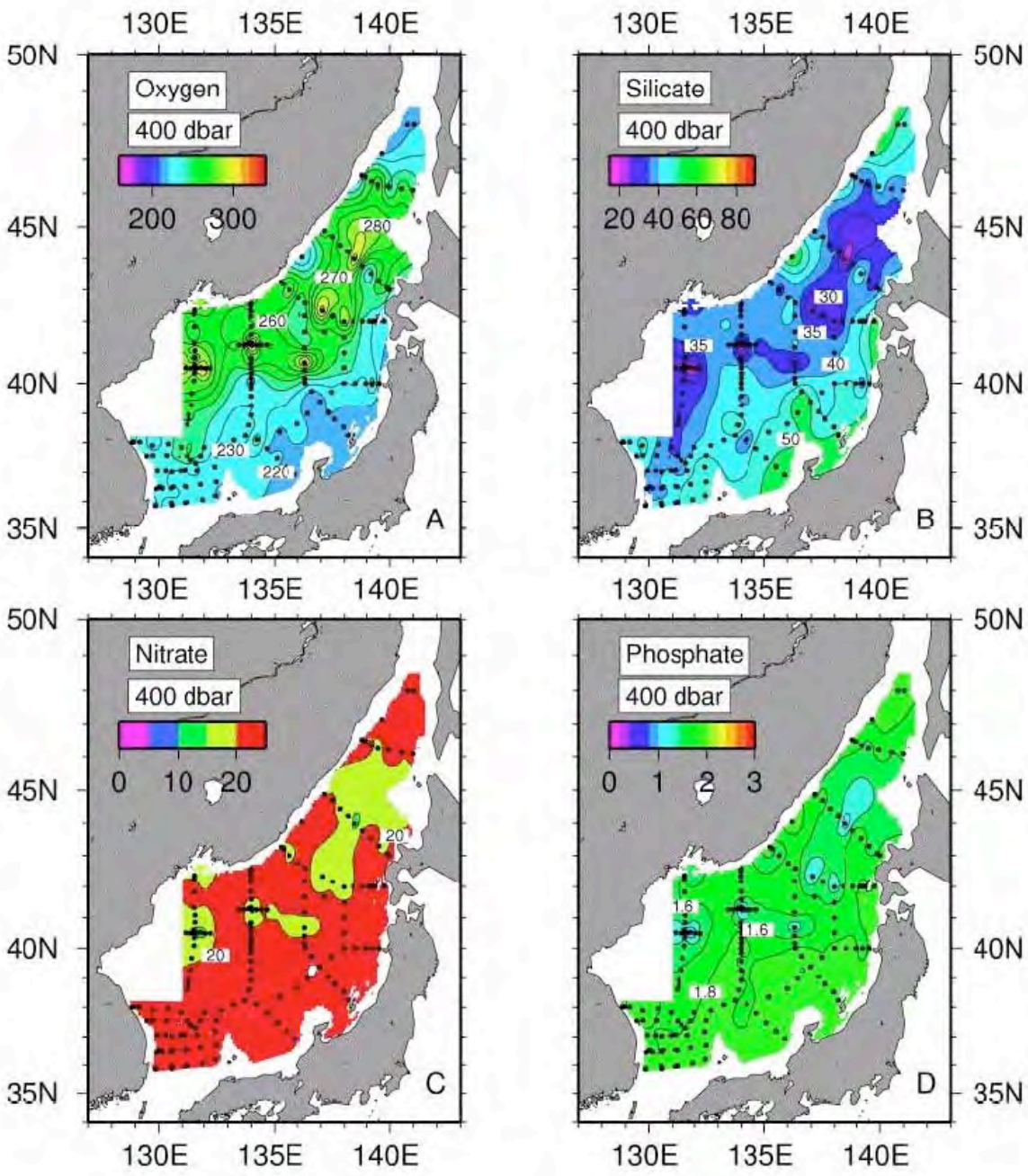


Figure D54. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 400 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
400 dbar
200 300
260
270
260
230
220
A
Silicate
400 dbar
20 40 60 80
30
35
35
40
50
B
Nitrate
400 dbar
0 10 20
20
20
C
Phosphate
400 dbar
0 1 2 3
1.6
1.6
1.8
D

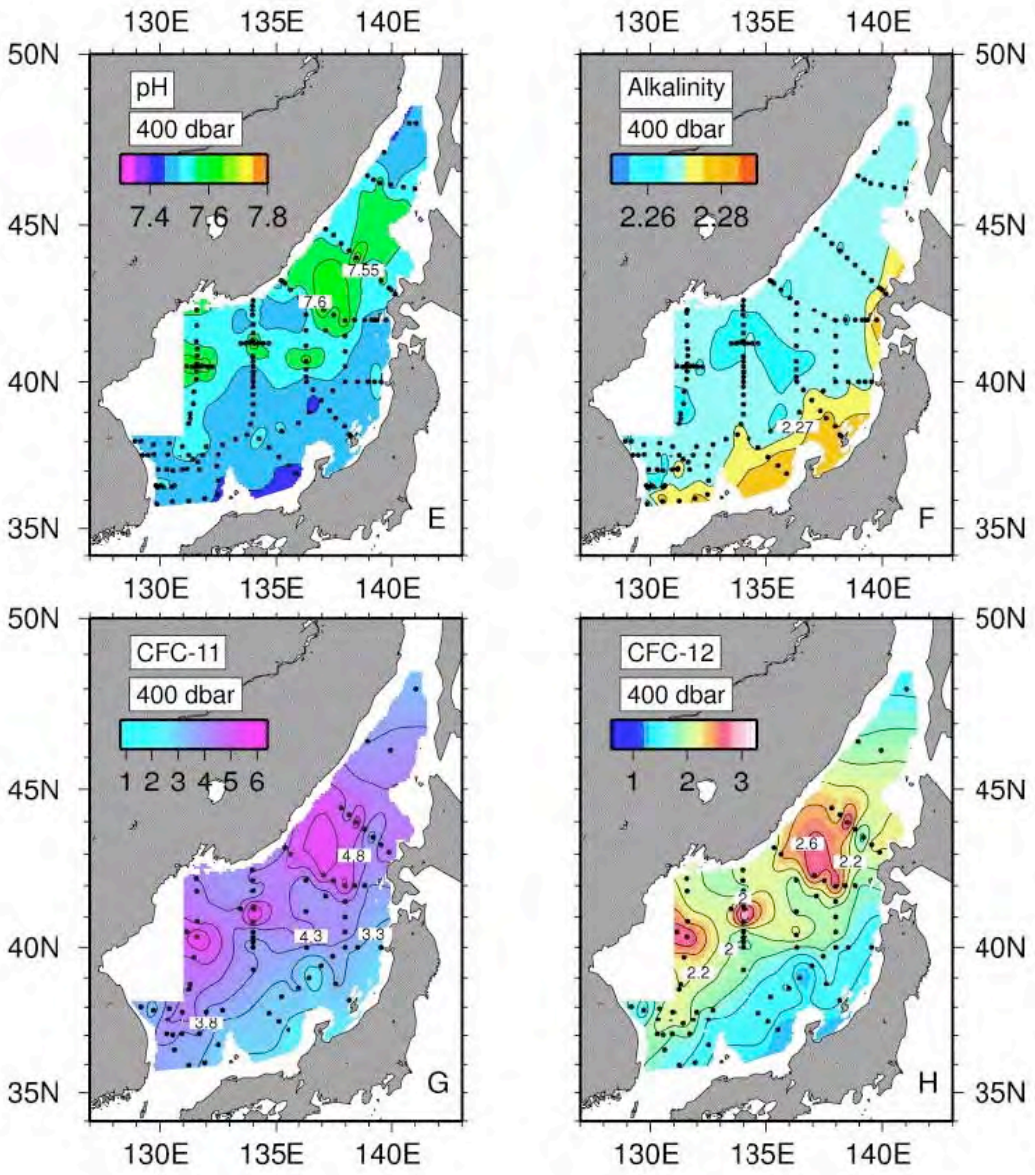


Figure D55. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 400 dbar.

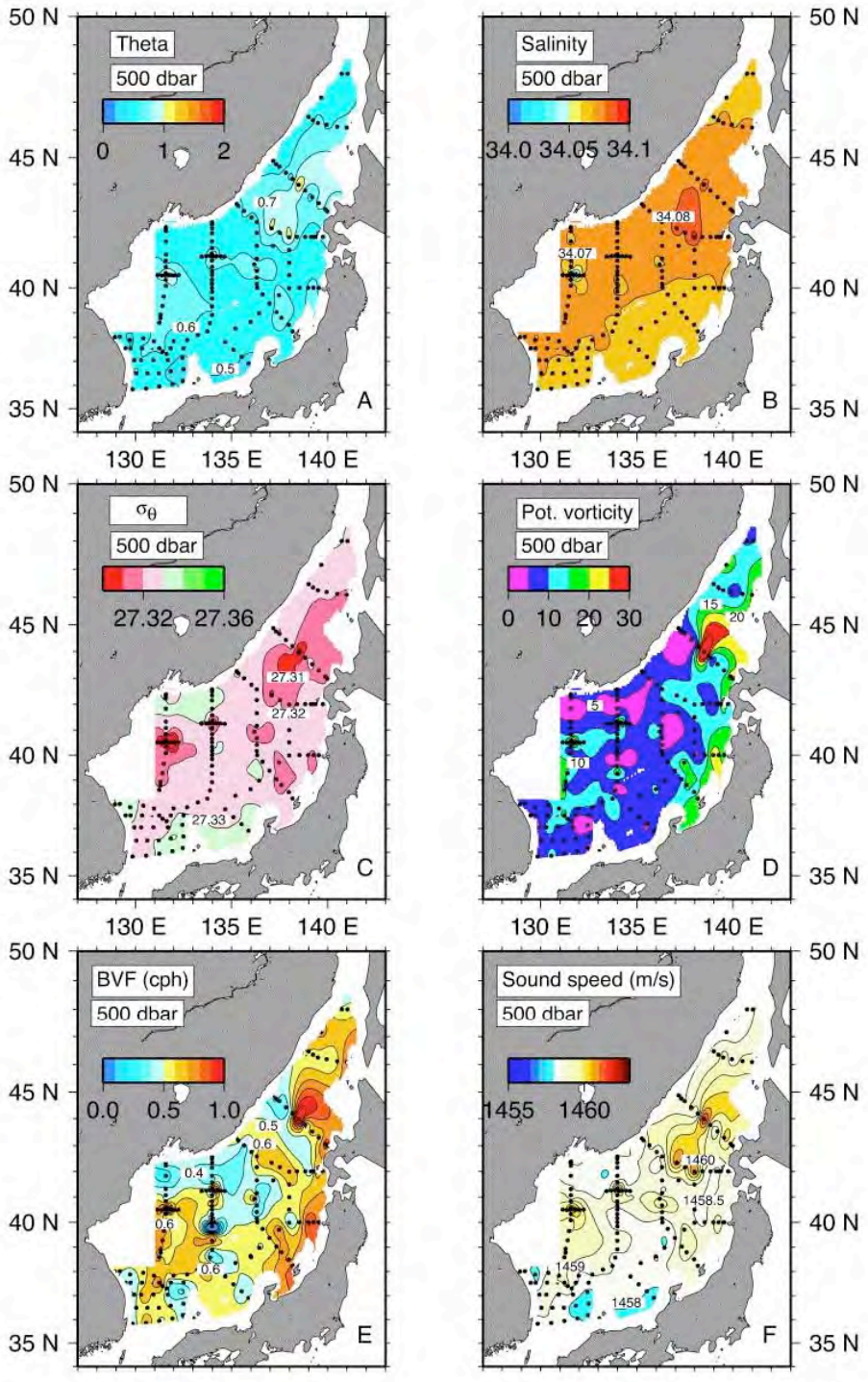
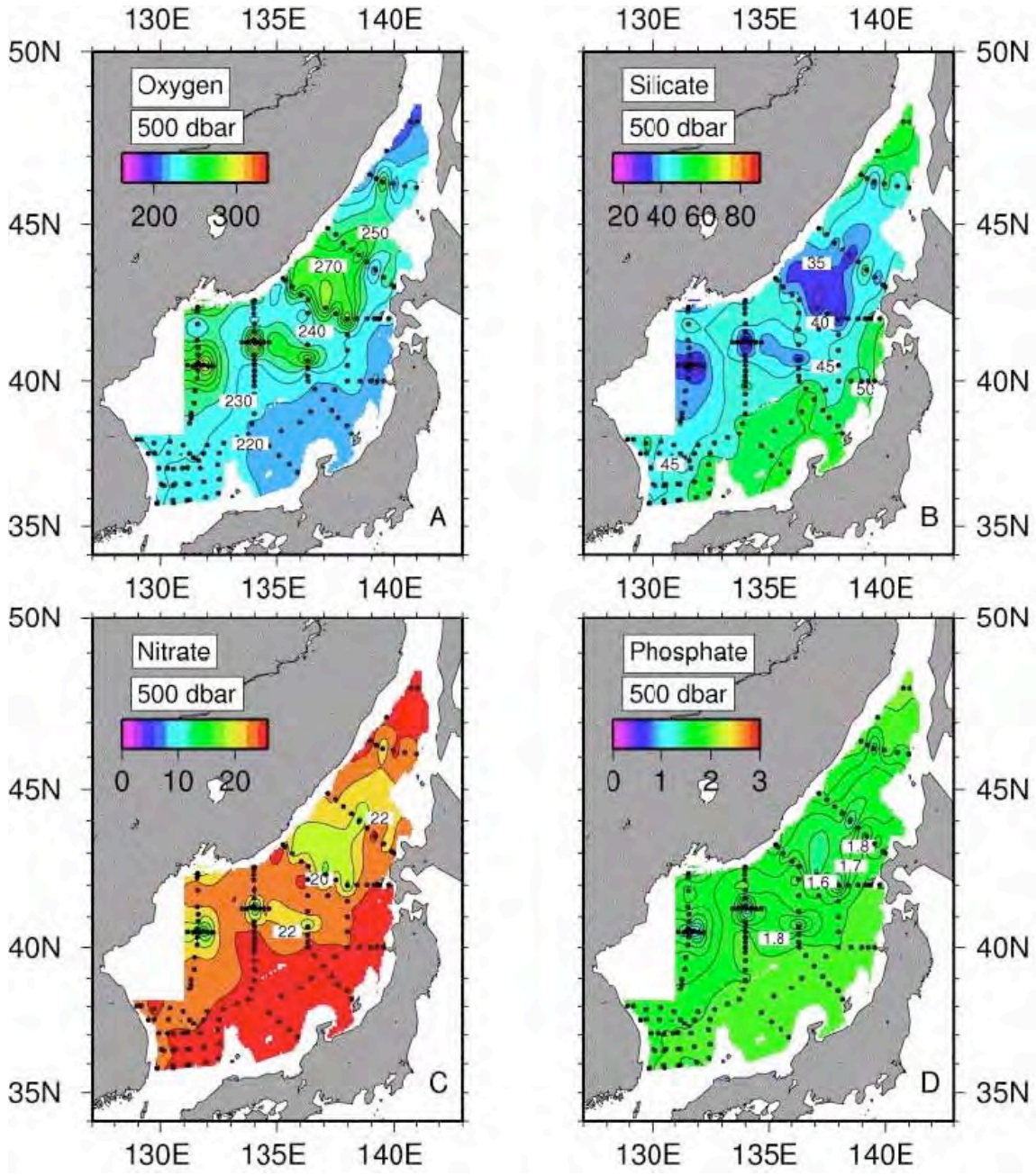


Figure D56. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 500 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
500 dbar
200 300
250
270
240
230
220
A
Silicate
500 dbar
20 40 60 80
35
40
45
50
45
B
Nitrate
500 dbar
0 10 20
22
20
22
C
Phosphate
500 dbar
0 1 2 3
1.8
1.7
1.6
1.8
D

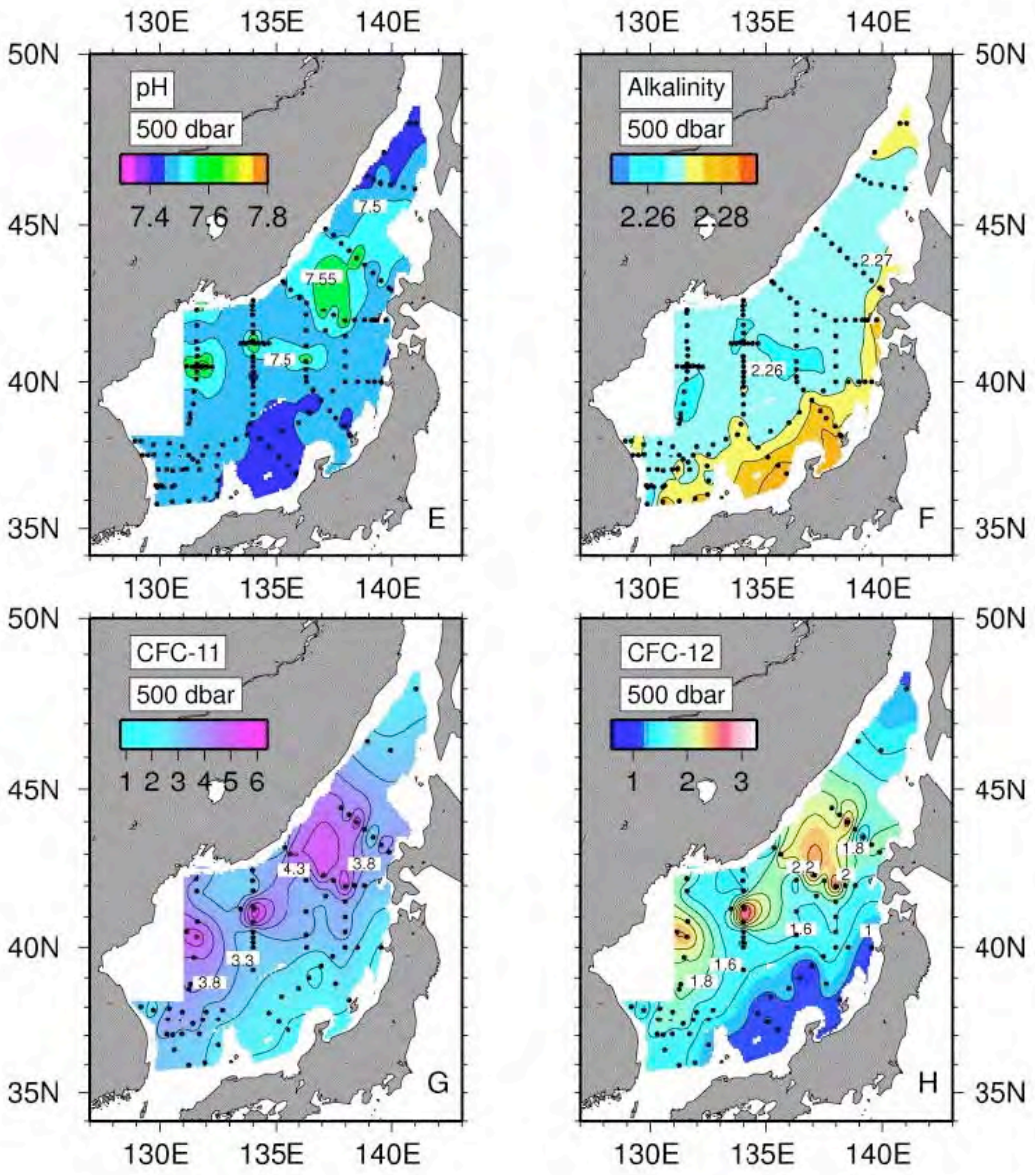


Figure D57. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 500 dbar.

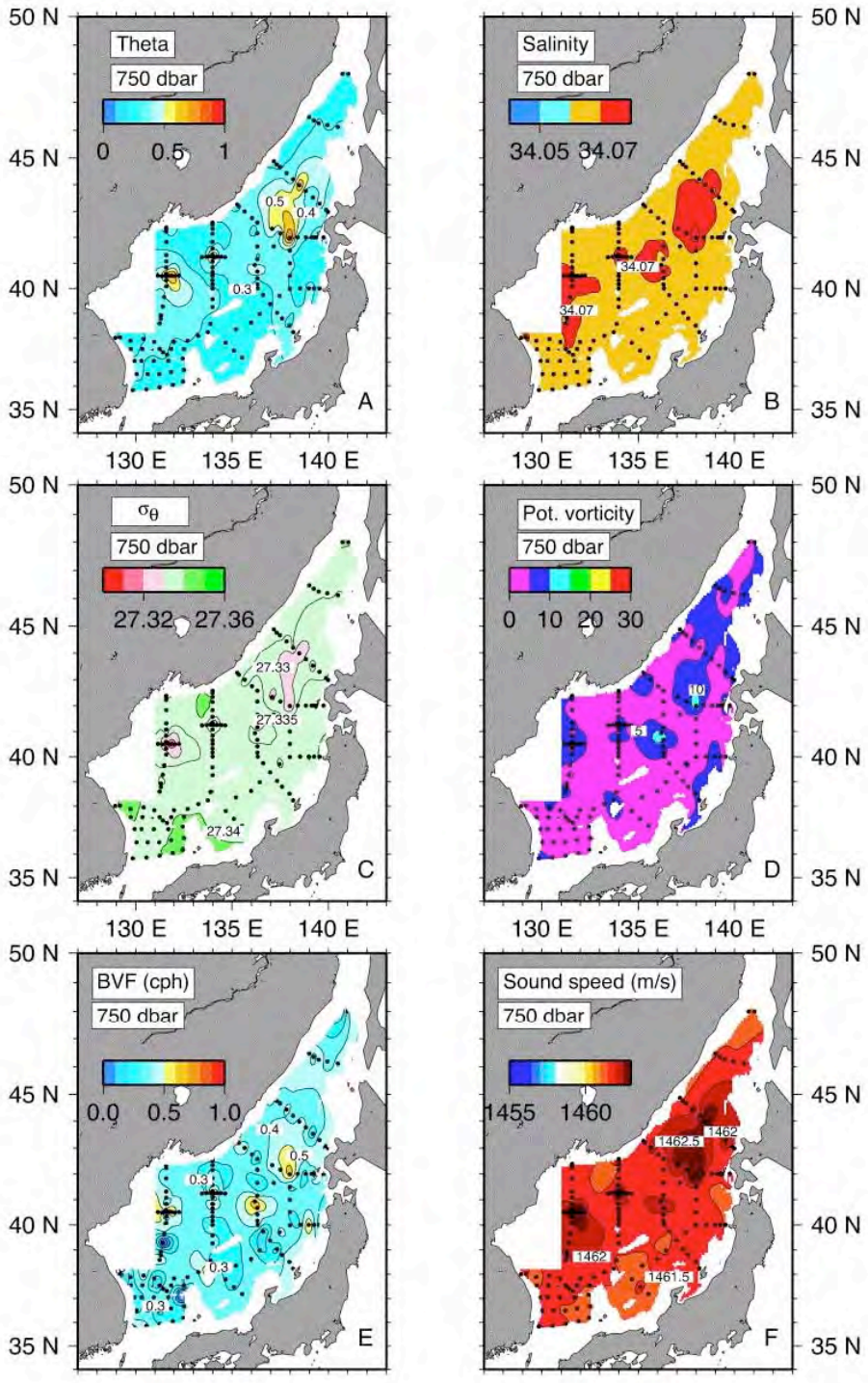
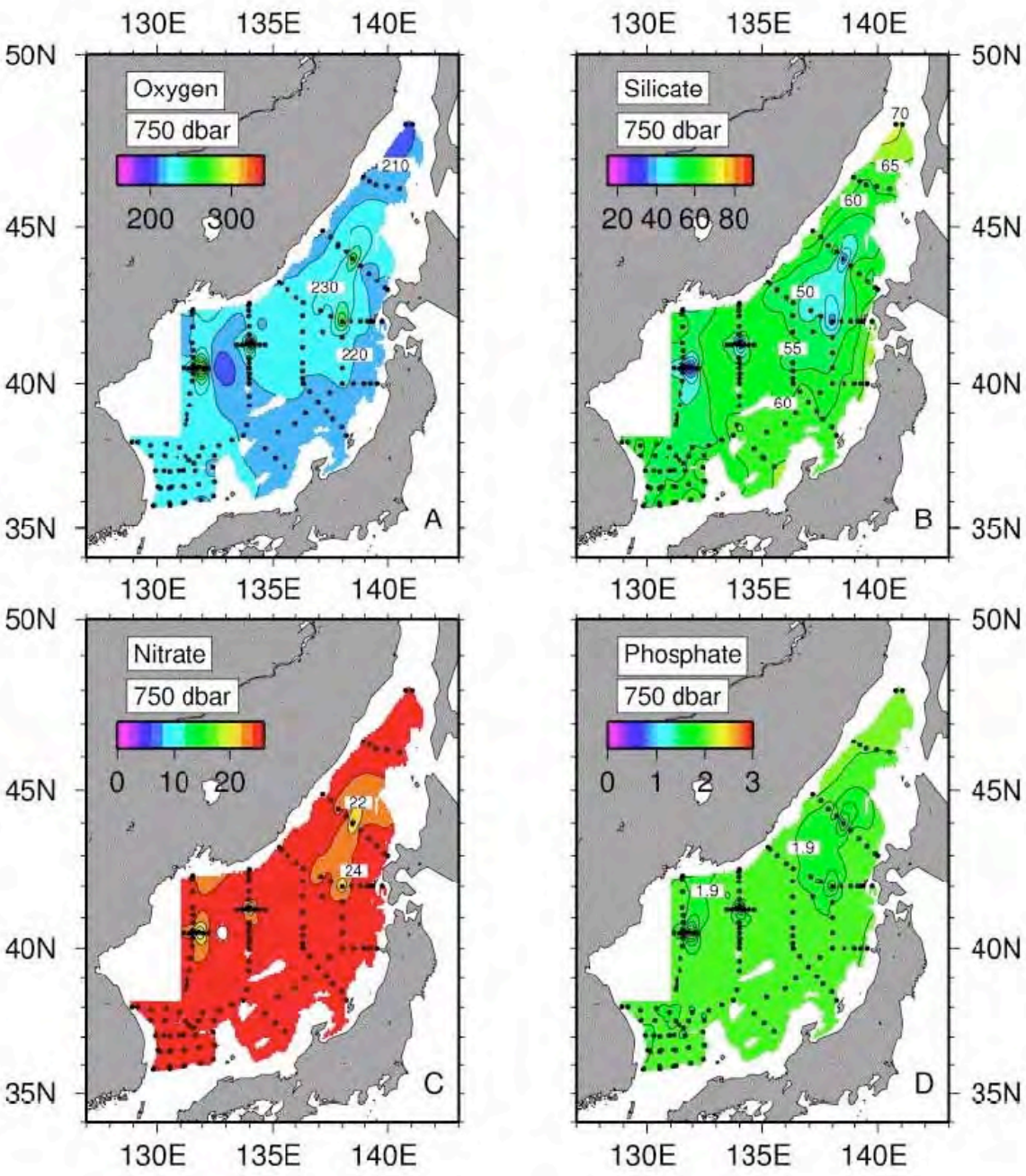


Figure D58. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 750 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
750 dbar
200 300
210
230
220
A
Silicate
750 dbar
20 40 60 80
70
65
60
50
55
60
B
Nitrate
750 dbar
0 10 20
22
24
C
Phosphate
750 dbar
0 1 2 3
1.9
1.9
D

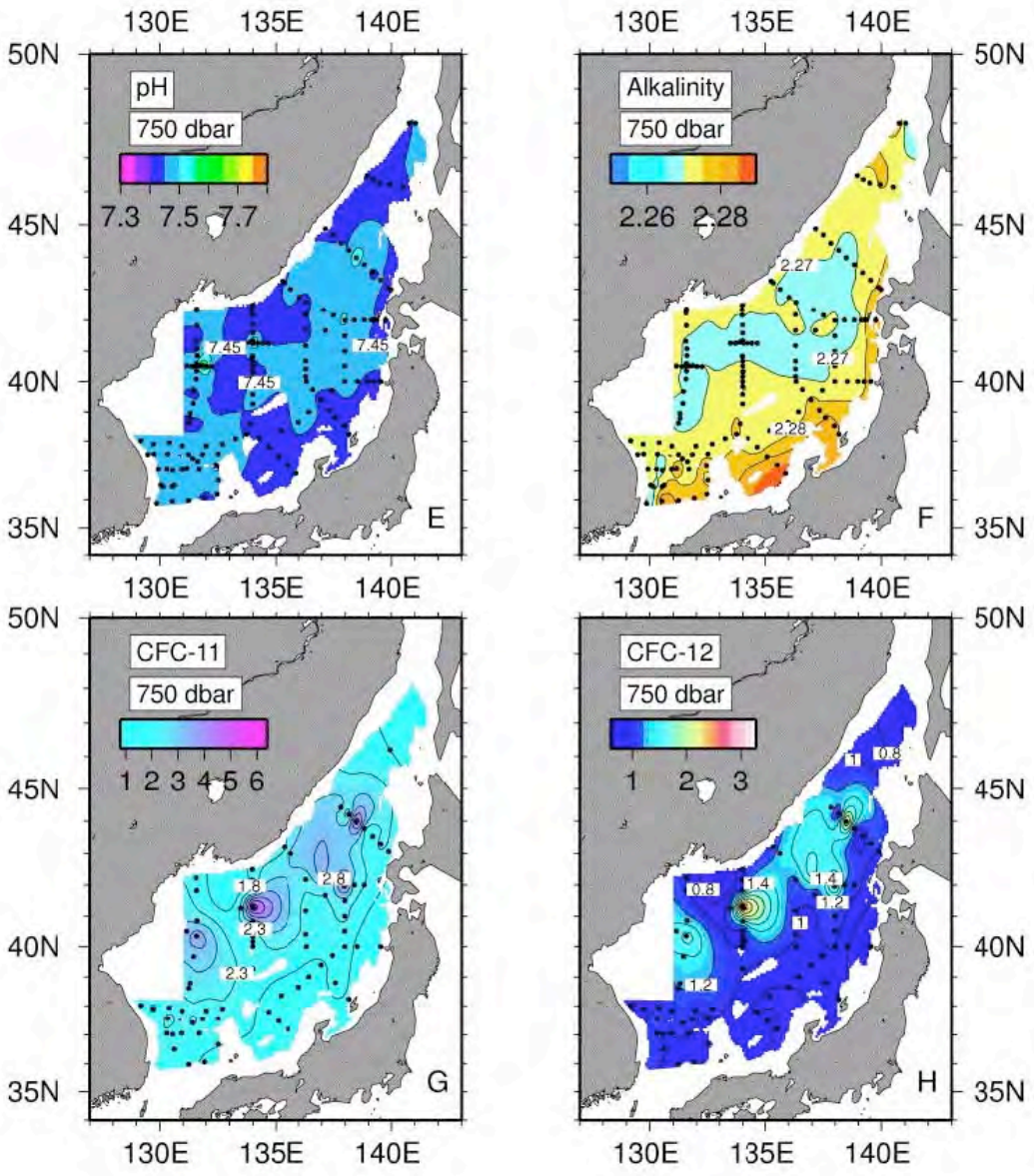


Figure D59. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 750 dbar.

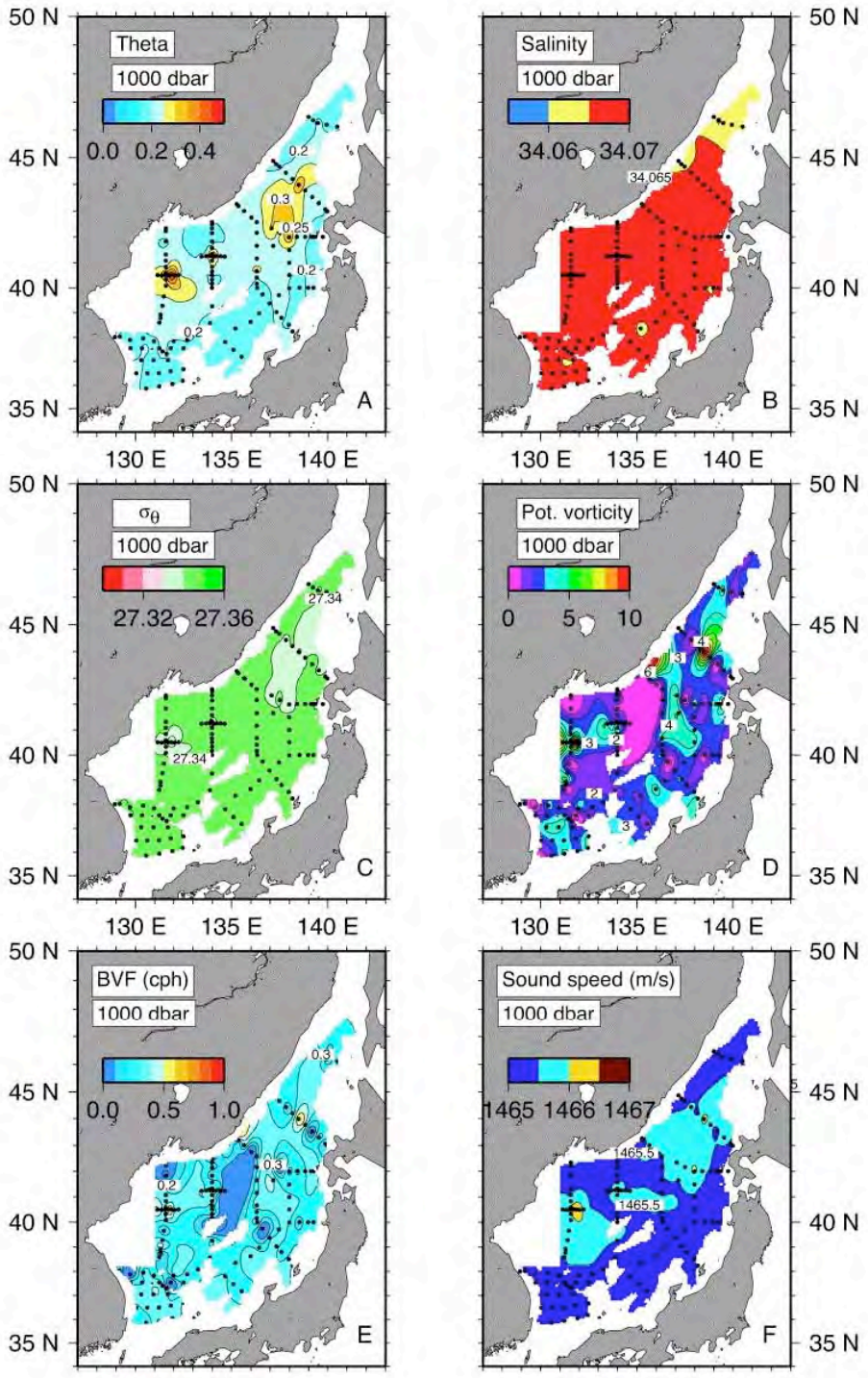
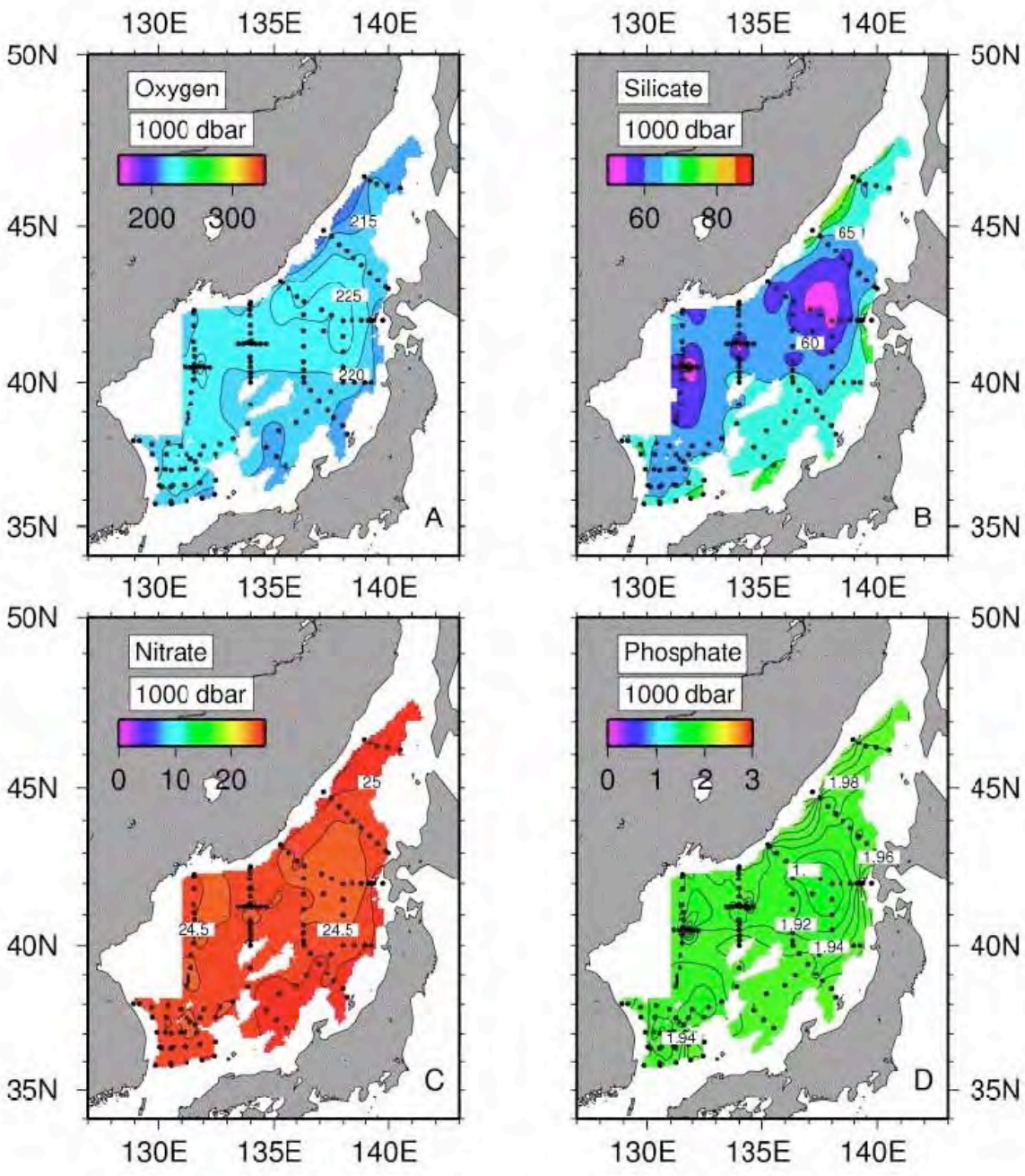


Figure D60. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 1000 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
1000 dbar
200
300
215
225
220
A
Silicate
1000 dbar
60
80
65
60
B
Nitrate
1000 dbar
0
10
20
25
24.5
24.5
C
Phosphate
1000 dbar
0
1
2
3
1.98
1.96
1.92
1.94
1.94
D

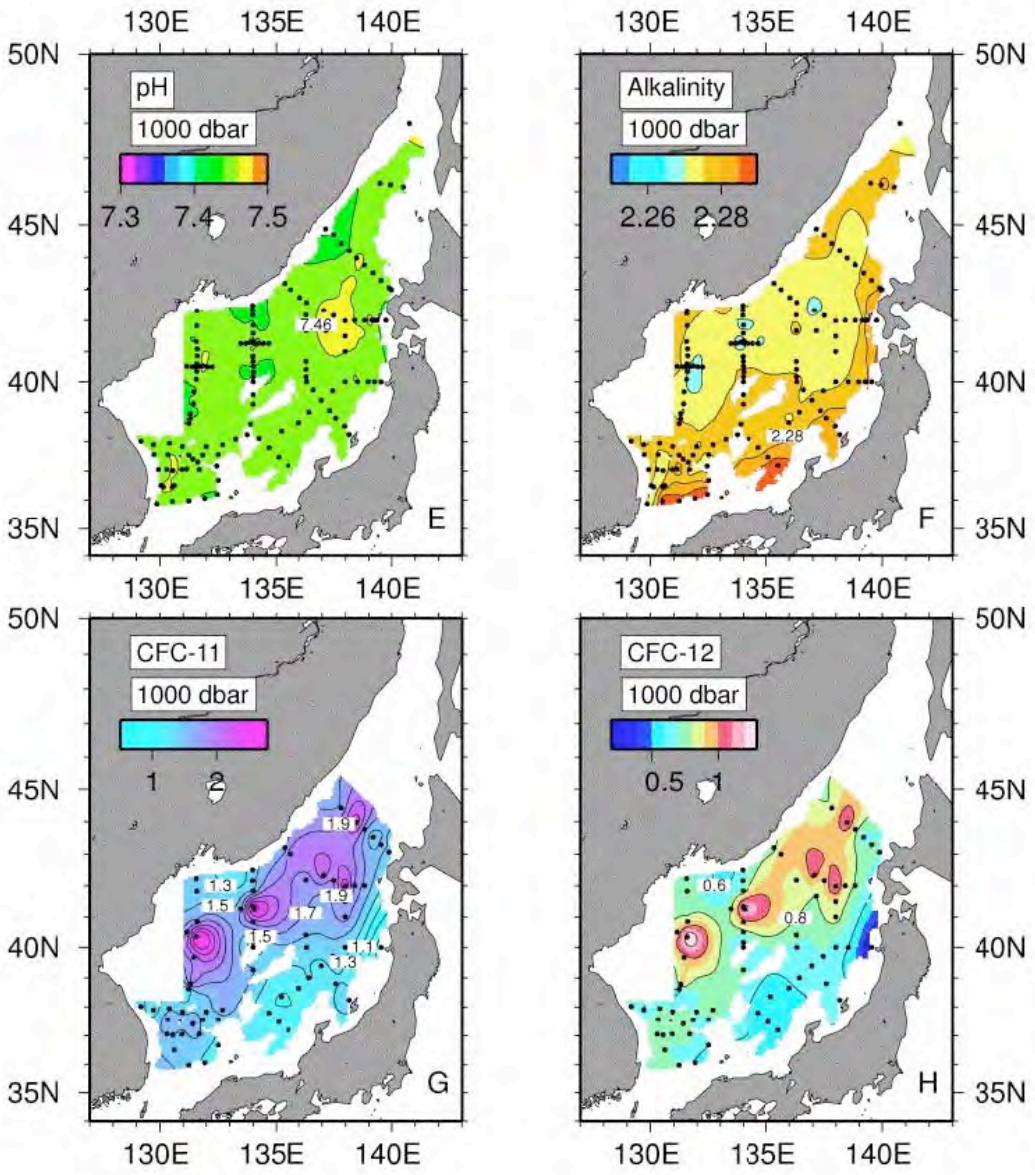


Figure D61. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 1000 dbar.

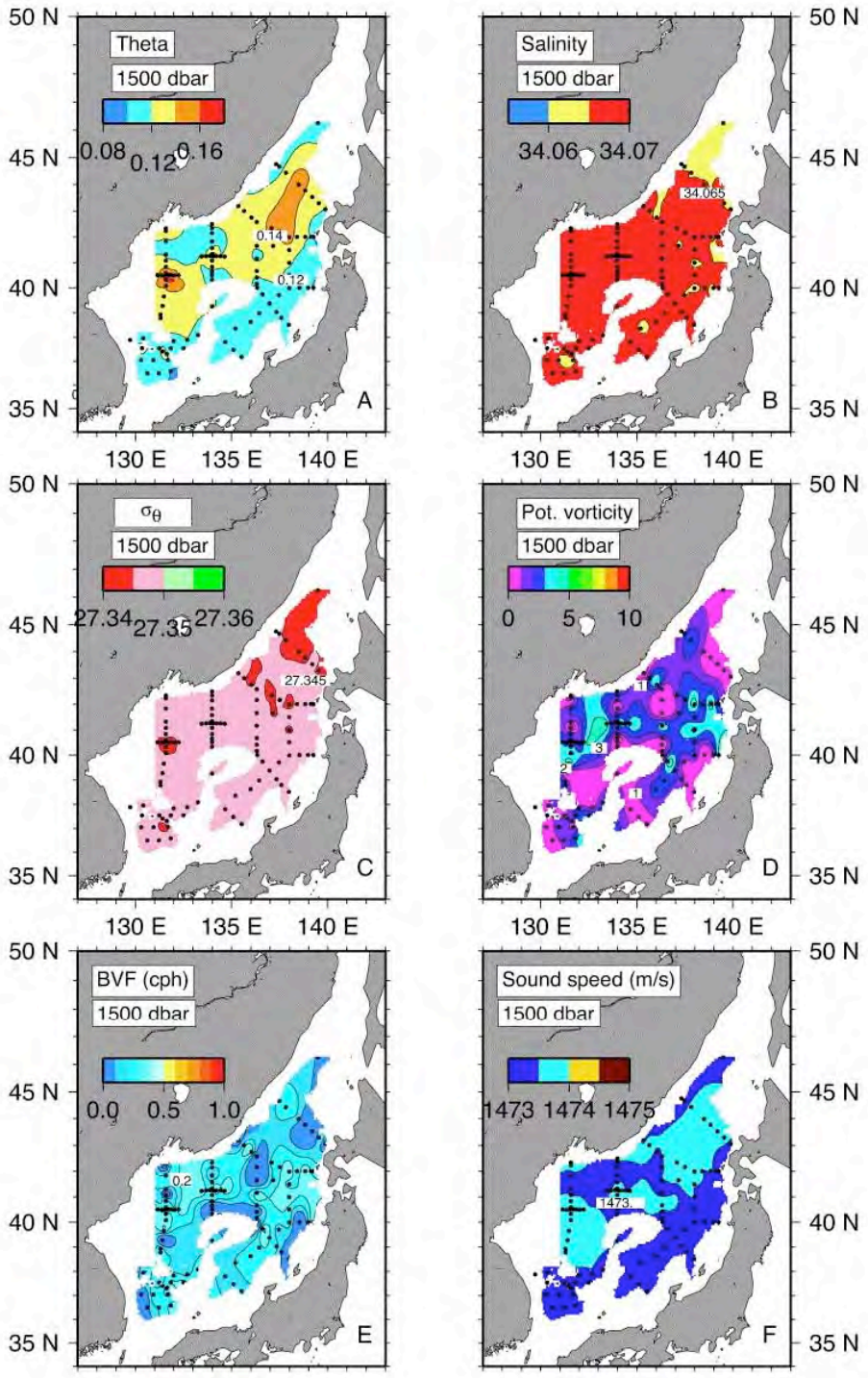
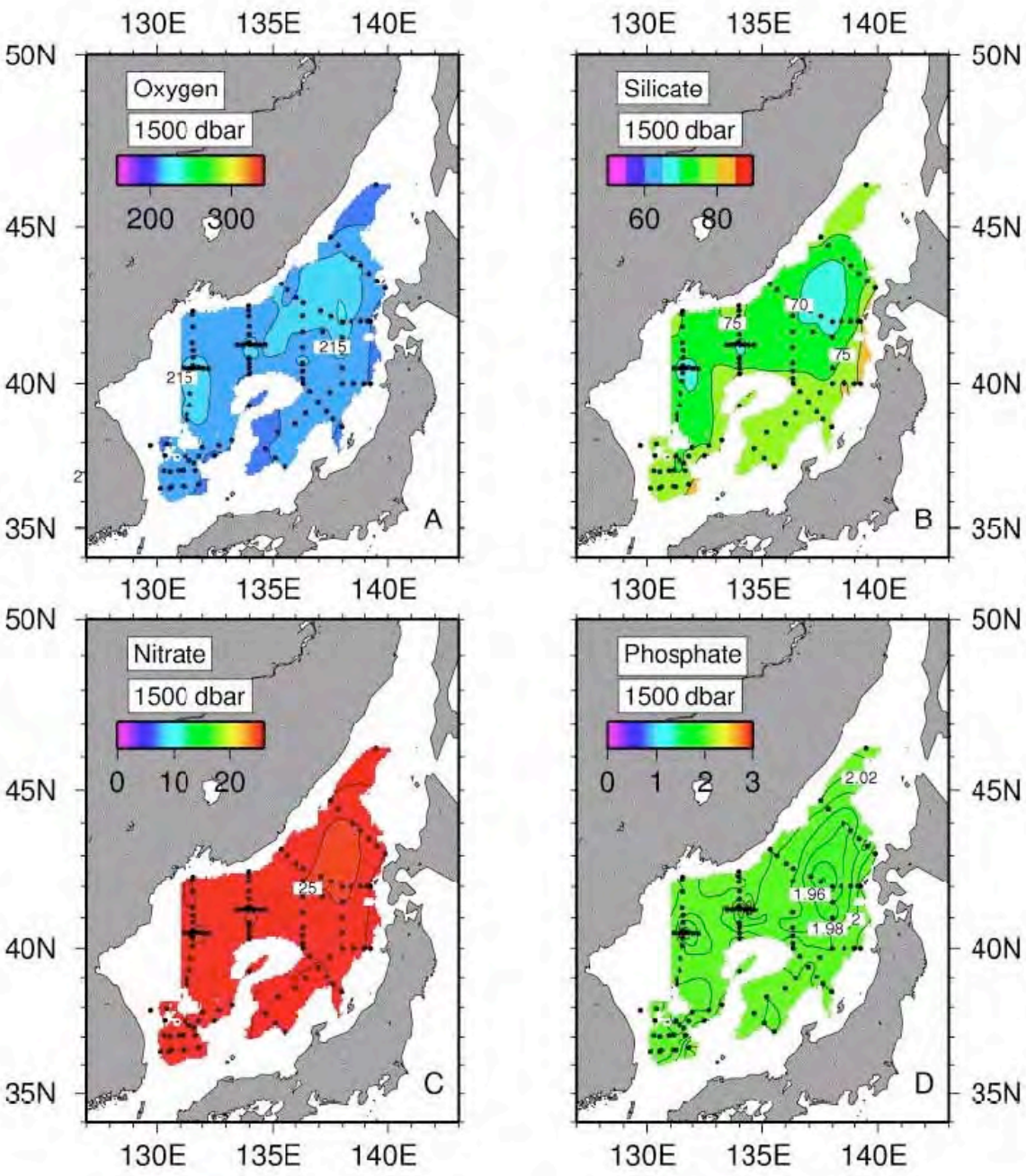


Figure D62. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 1500 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
1500 dbar
200
300
215
215
A
Silicate
1500 dbar
60
80
70
75
75
B
Nitrate
1500 dbar
0
10
20
25
C
Phosphate
1500 dbar
0
1
2
3
2.02
1.96
1.98
2
D

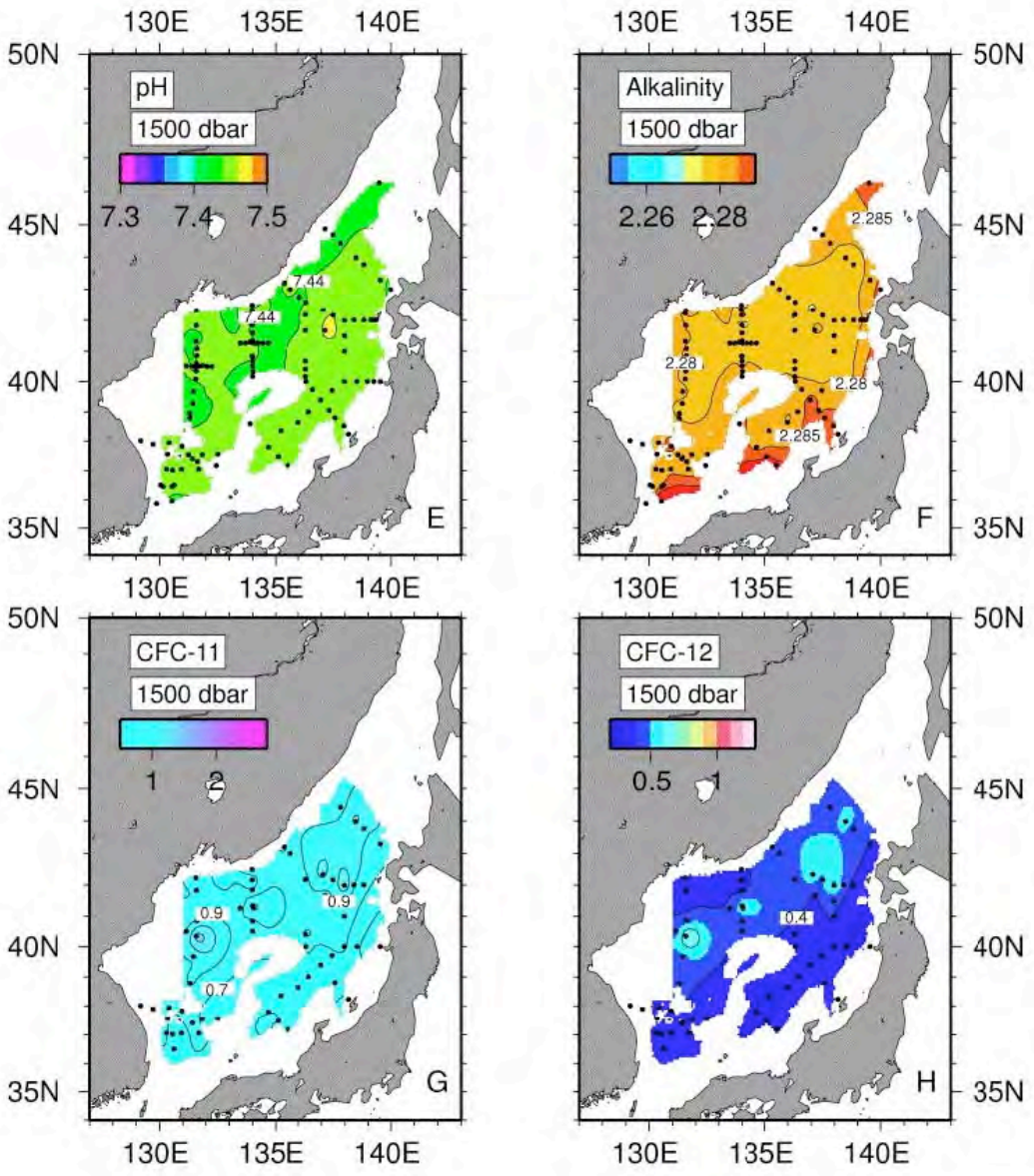


Figure D63. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 1500 dbar.

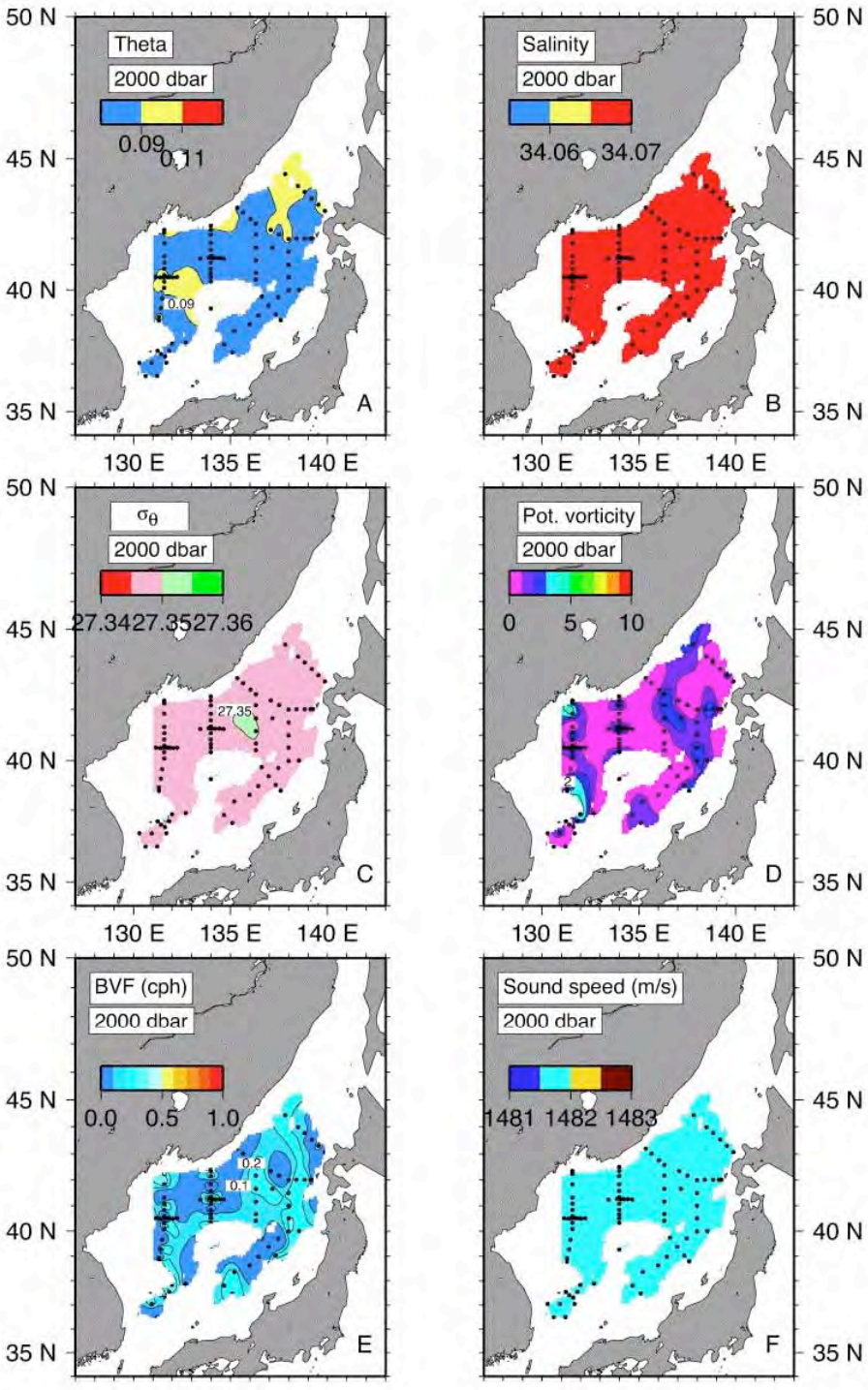
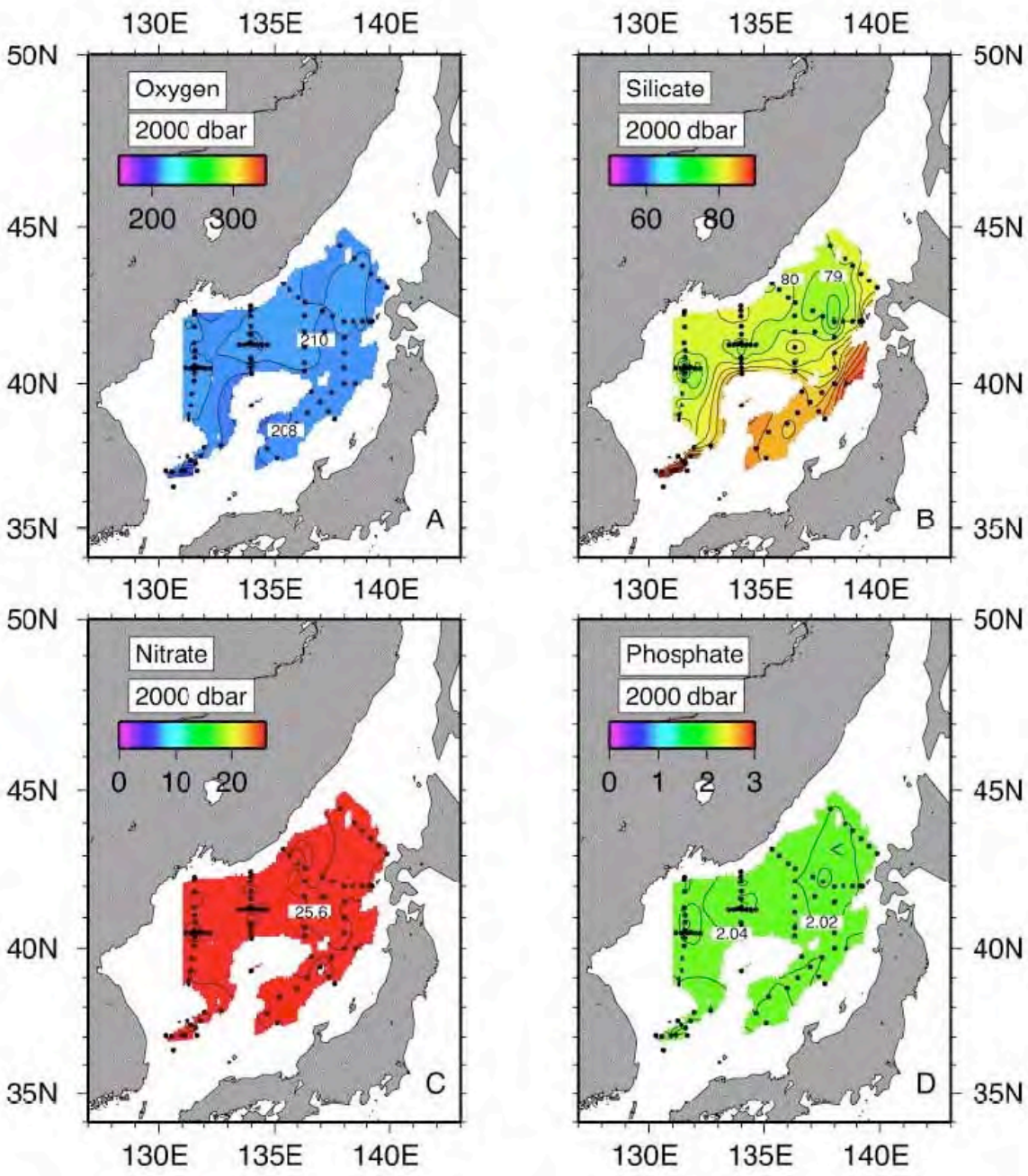


Figure D64. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 2000 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
2000 dbar
200
300
210
208
A
Silicate
2000 dbar
60
80
80
79
B
Nitrate
2000 dbar
0
10
20
25.6
C
Phosphate
2000 dbar
0
1
2
3
2.04
2.02
D

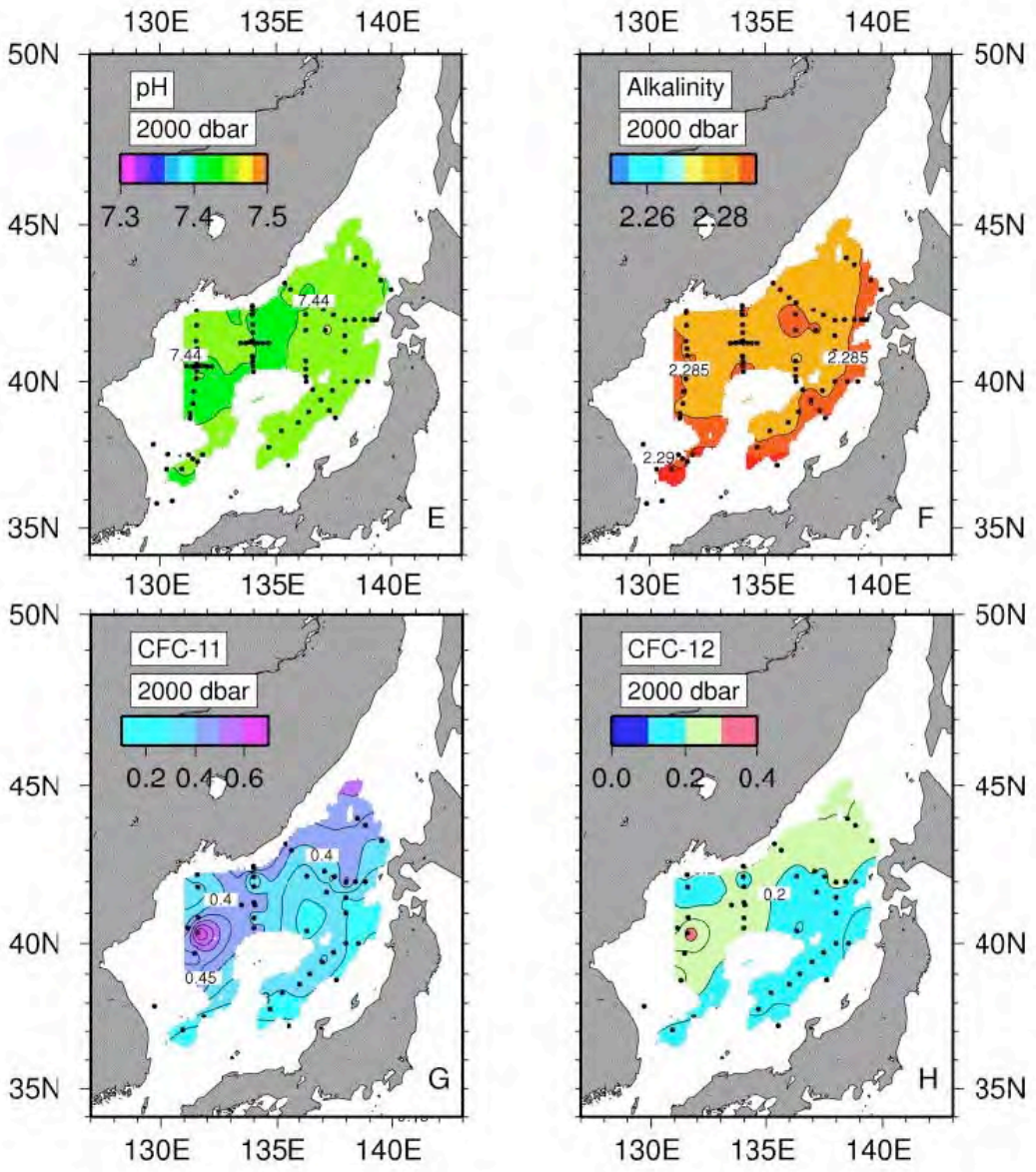


Figure D65. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 2000 dbar.

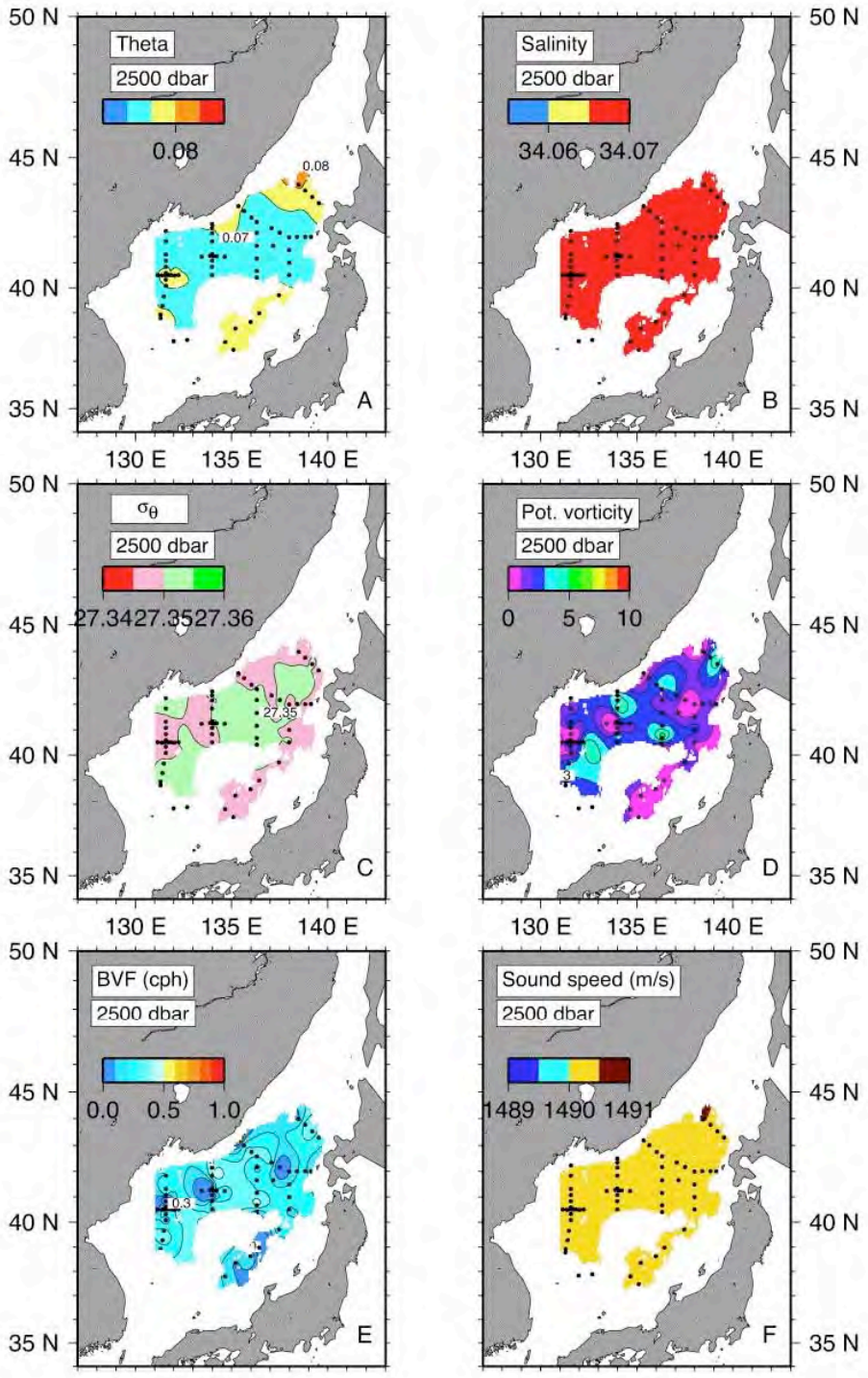
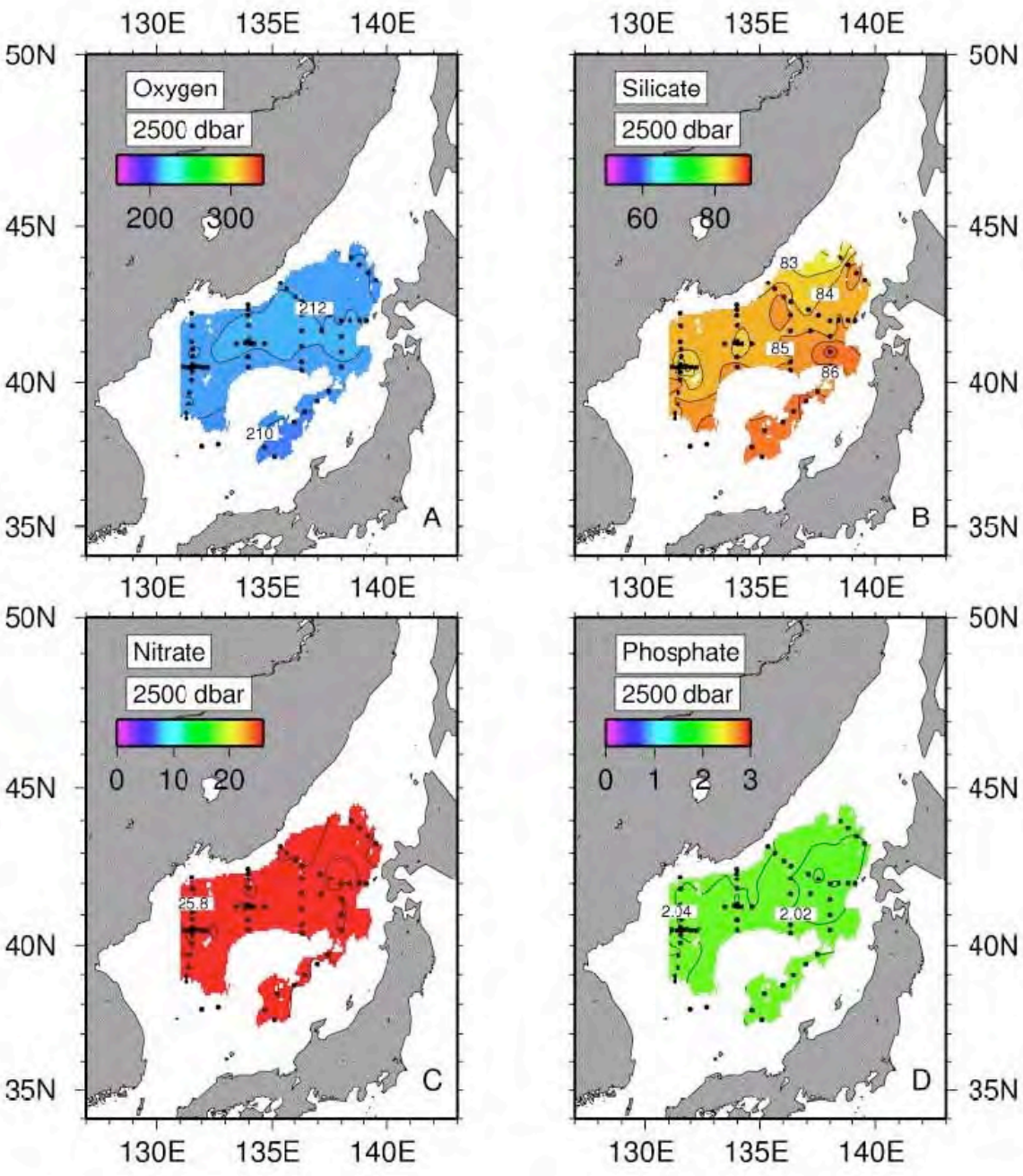


Figure D66. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 2500 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
2500 dbar
200
300
212
210
A
Silicate
2500 dbar
60
80
83
84
85
86
B
Nitrate
2500 dbar
0
10
20
25.8
C
Phosphate
2500 dbar
0
1
2
3
2.04
2.02
D

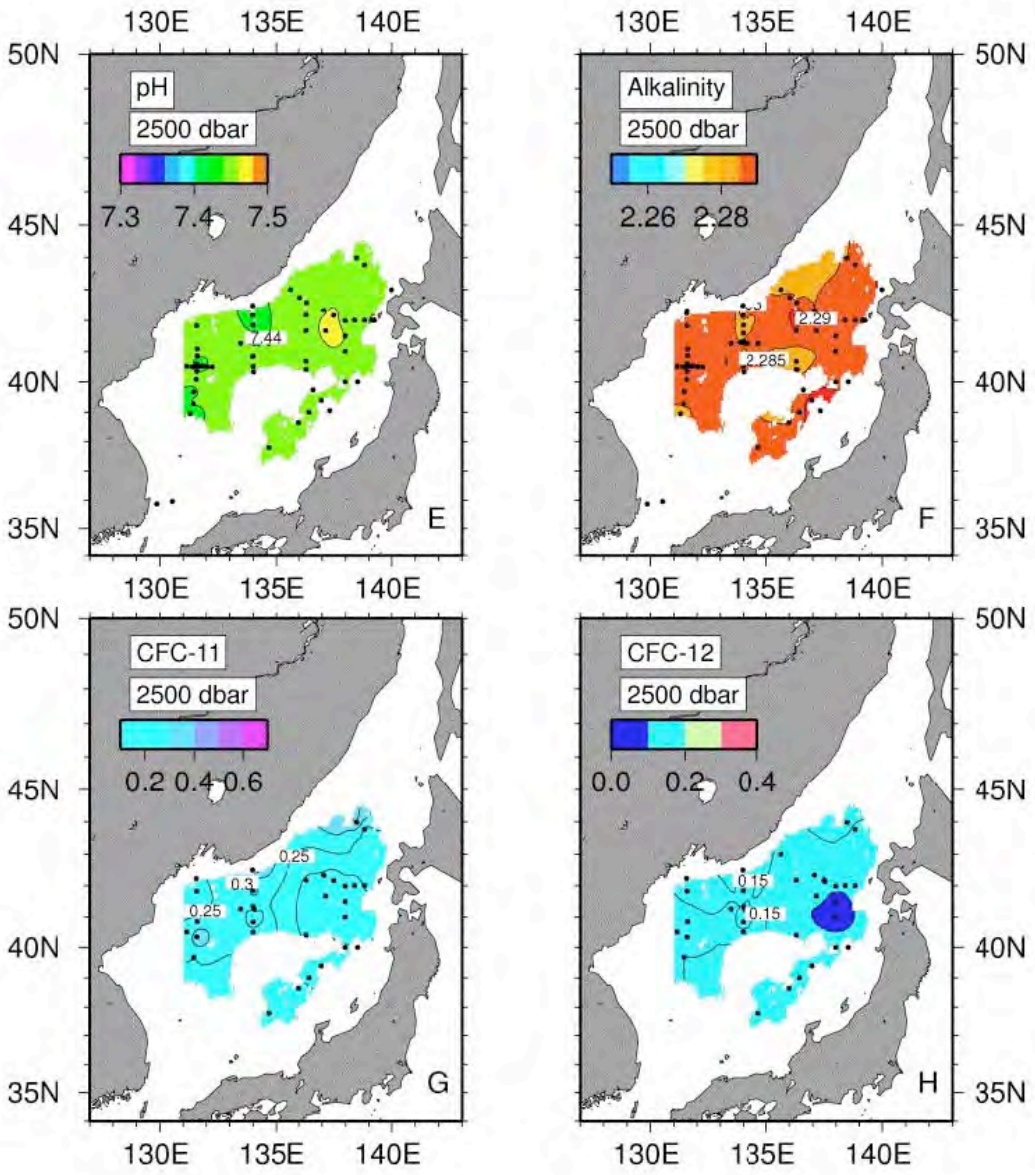


Figure D67. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 2500 dbar.

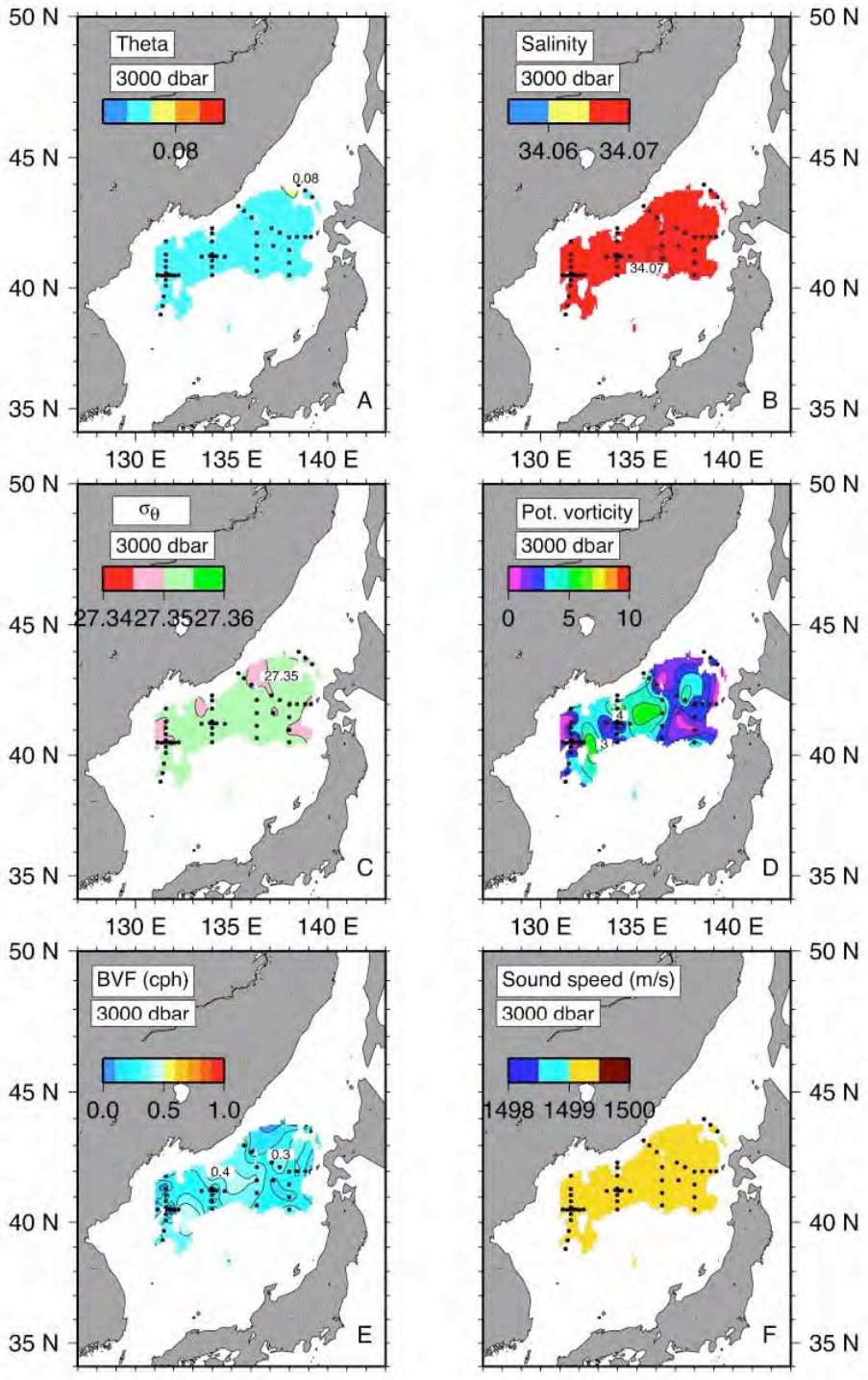
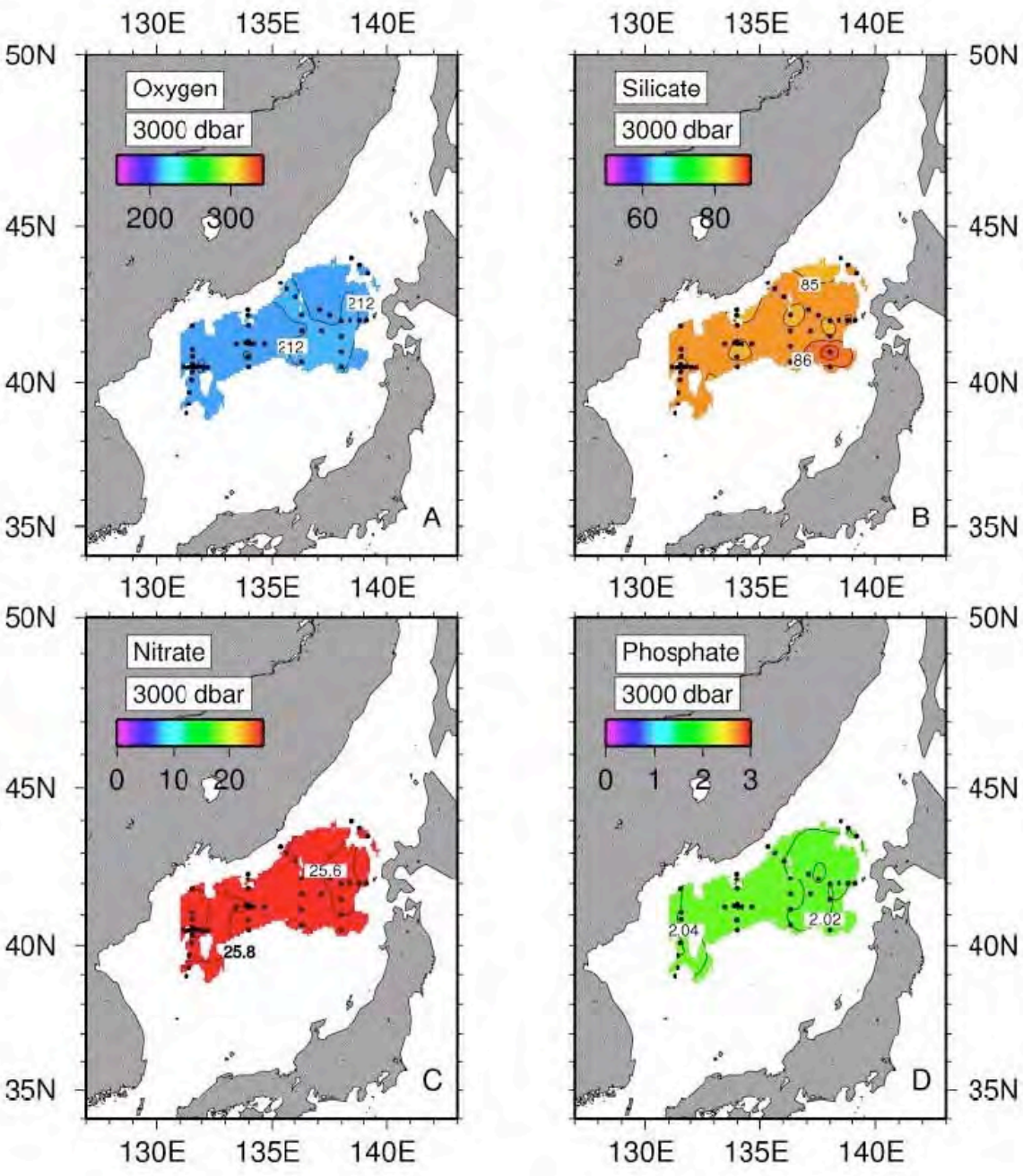


Figure D68. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 3000 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
3000 dbar
200
300
212
212
A
Silicate
3000 dbar
60
80
85
86
B
Nitrate
3000 dbar
0
10
20
25.6
25.8
C
Phosphate
3000 dbar
0
1
2
3
2.04
2.02
D

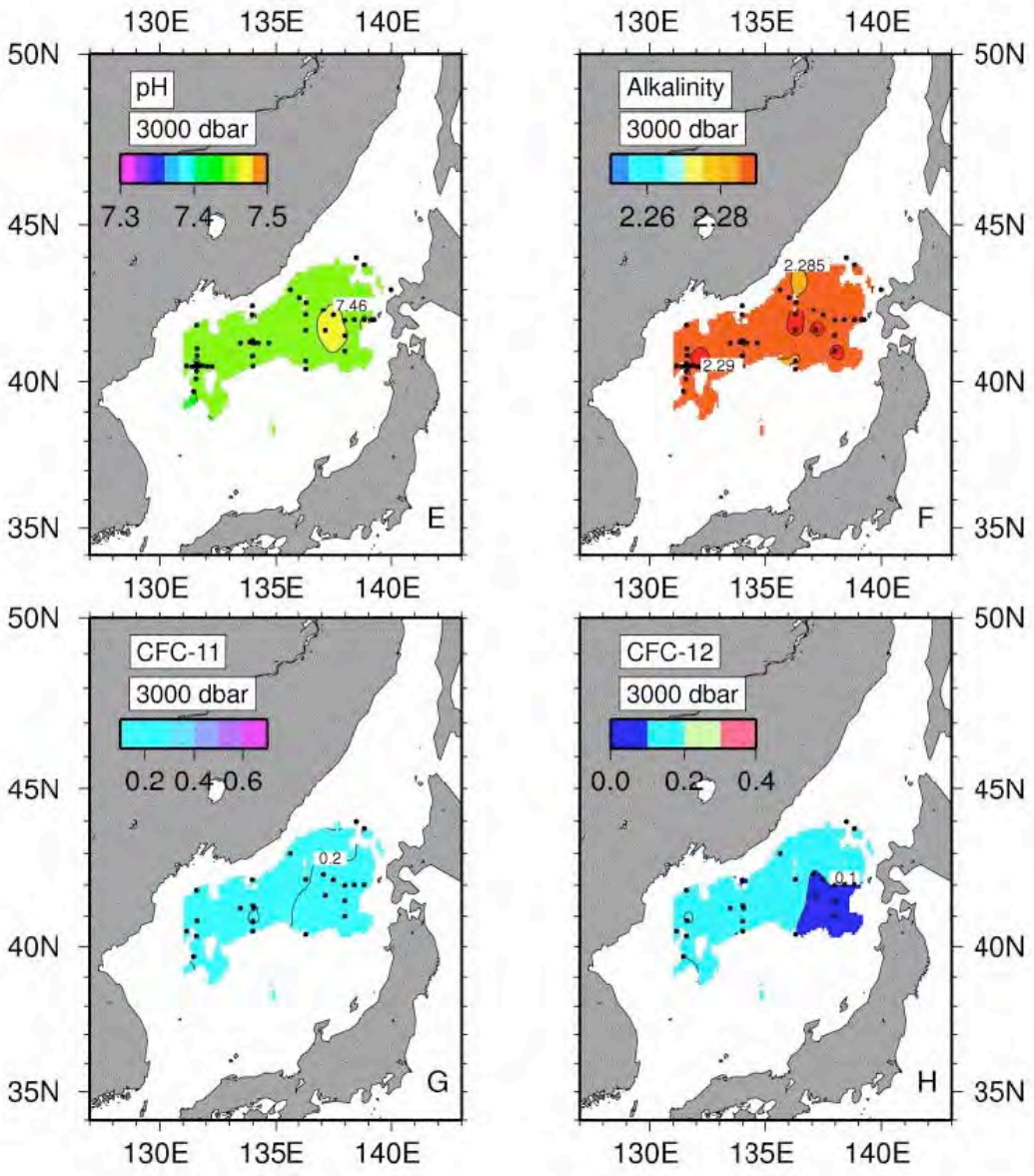


Figure D69. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 3000 dbar.

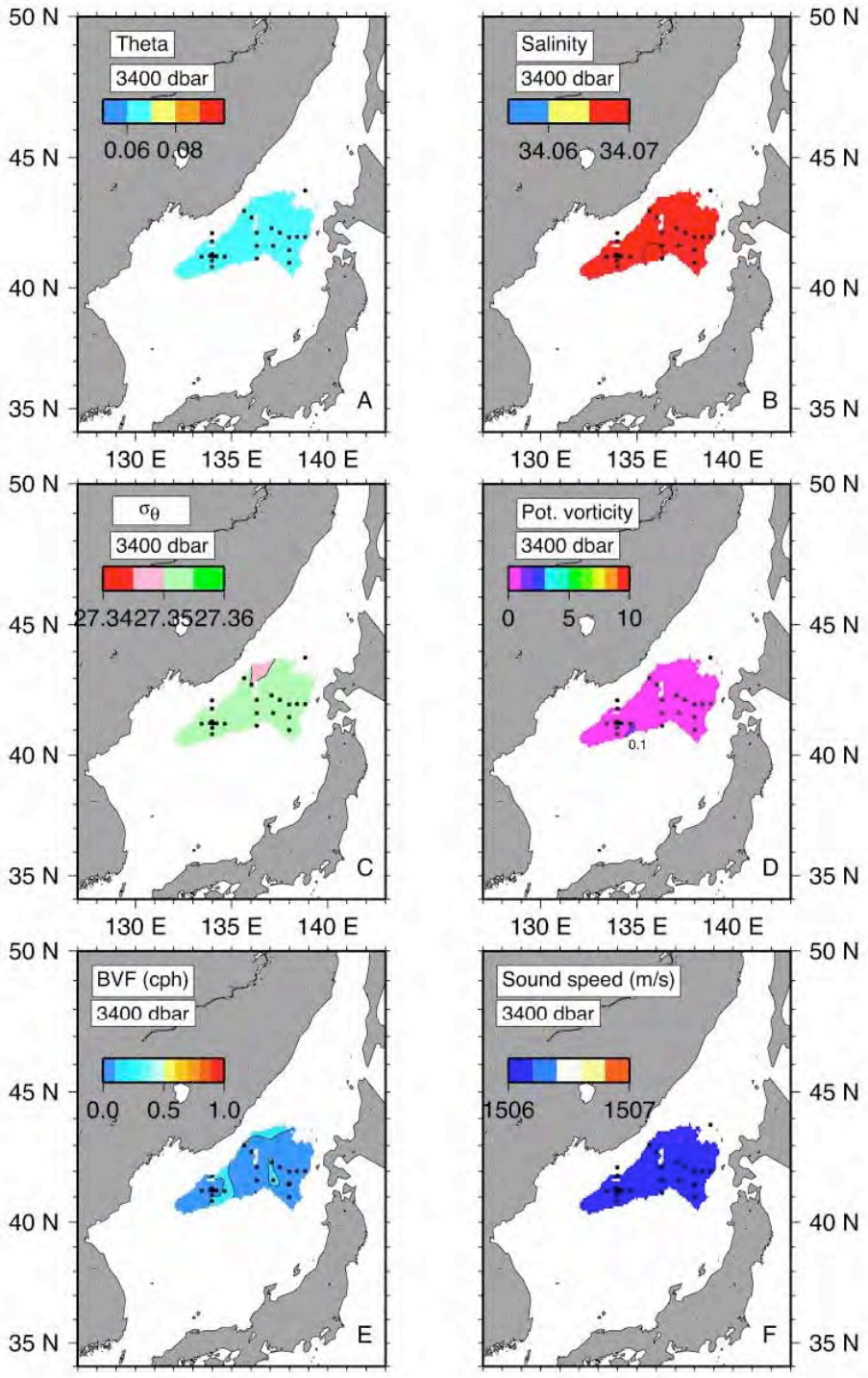
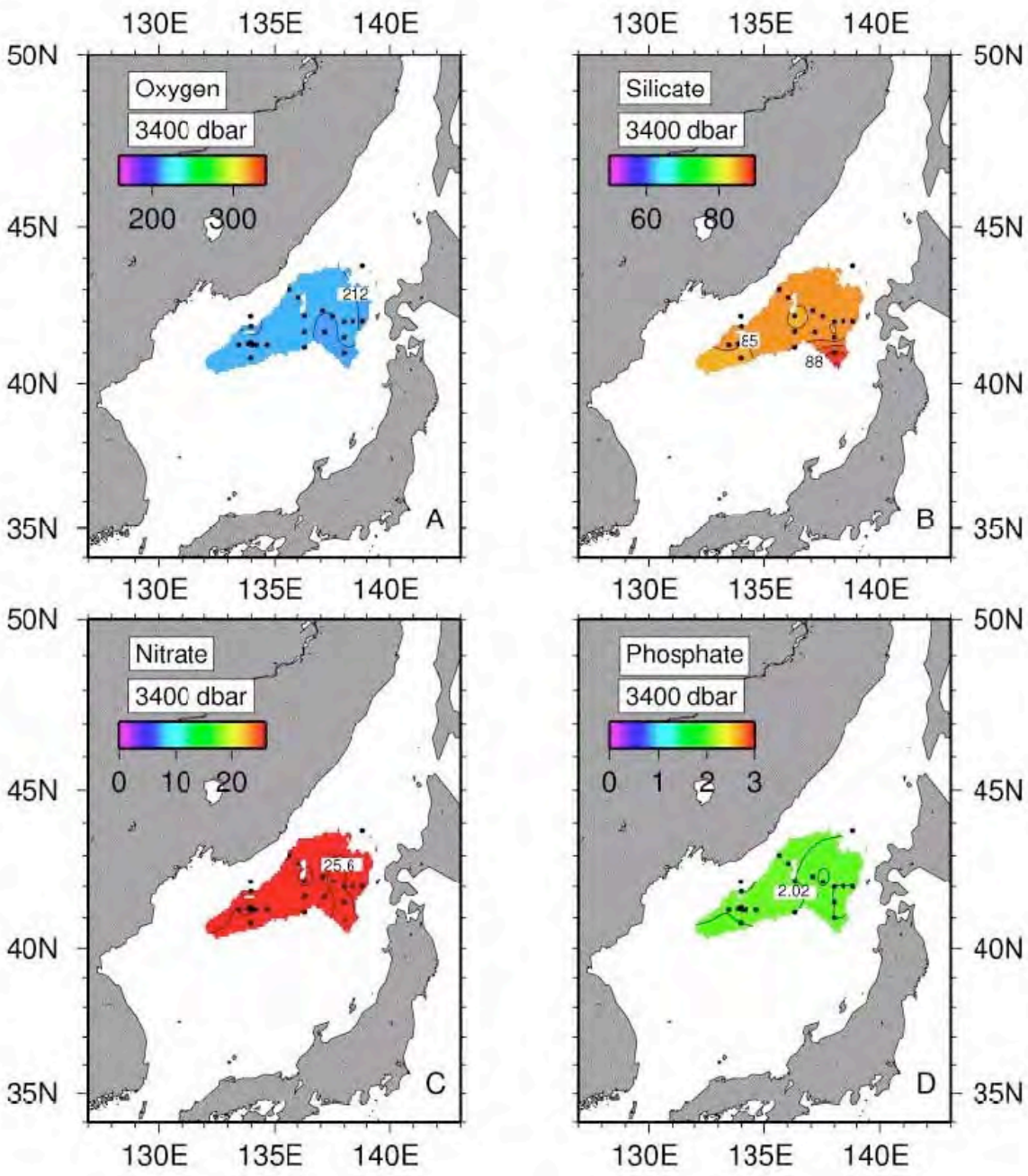


Figure D70. Maps of (a) potential temperature (°C), (b) salinity, (c) potential density (σ_θ), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}), (e) Brunt-Vaisala frequency (cph), and (f) sound speed (m/sec) at 3400 dbar.


130E
135E
140E
50N
45N
40N
35N
Oxygen
3400 dbar
200
300
212
A
Silicate
3400 dbar
60
80
65
88
B
Nitrate
3400 dbar
0
10
20
25.6
C
Phosphate
3400 dbar
0
1
2
3
2.02
D

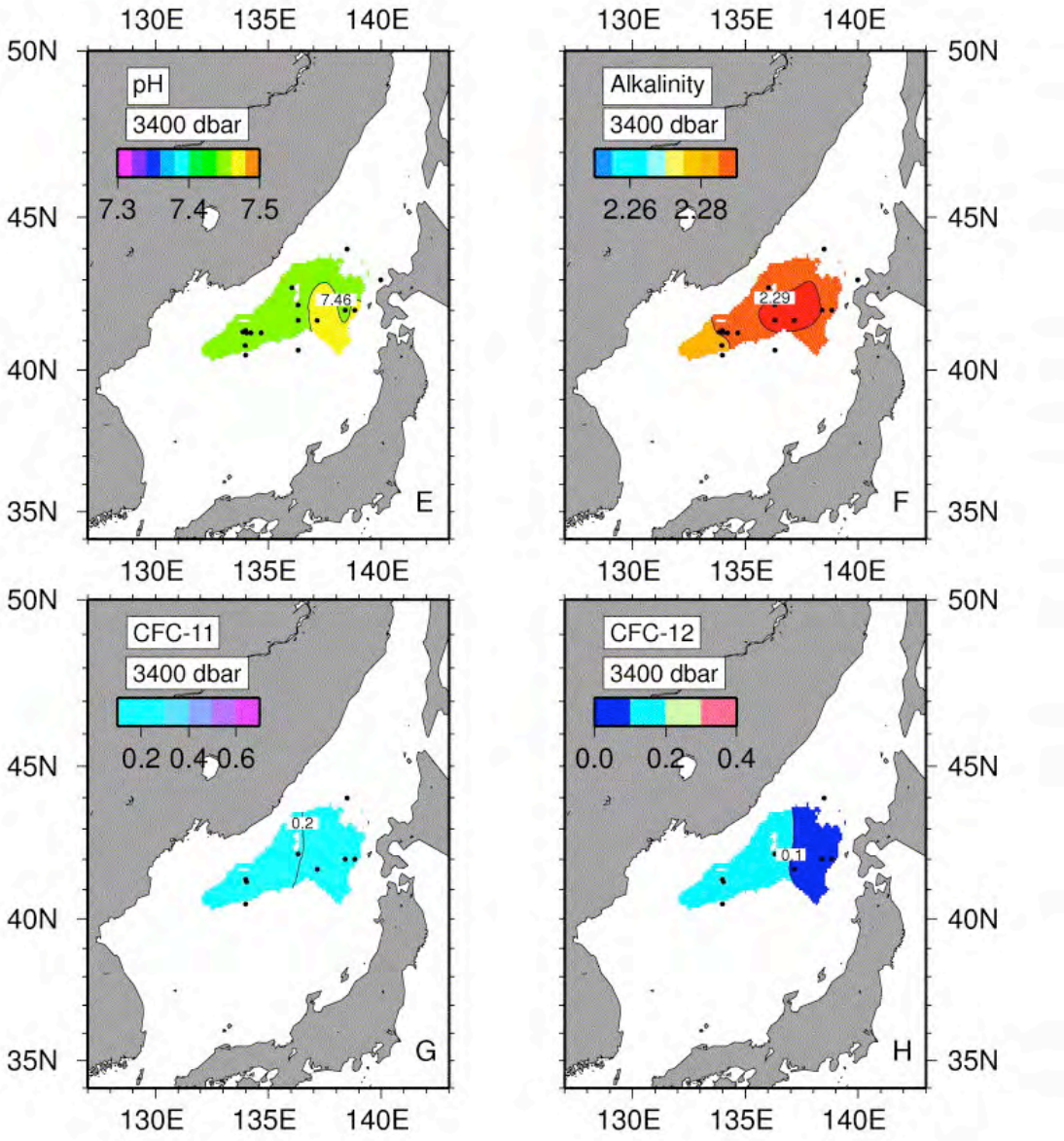


Figure D71. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 3400 dbar.

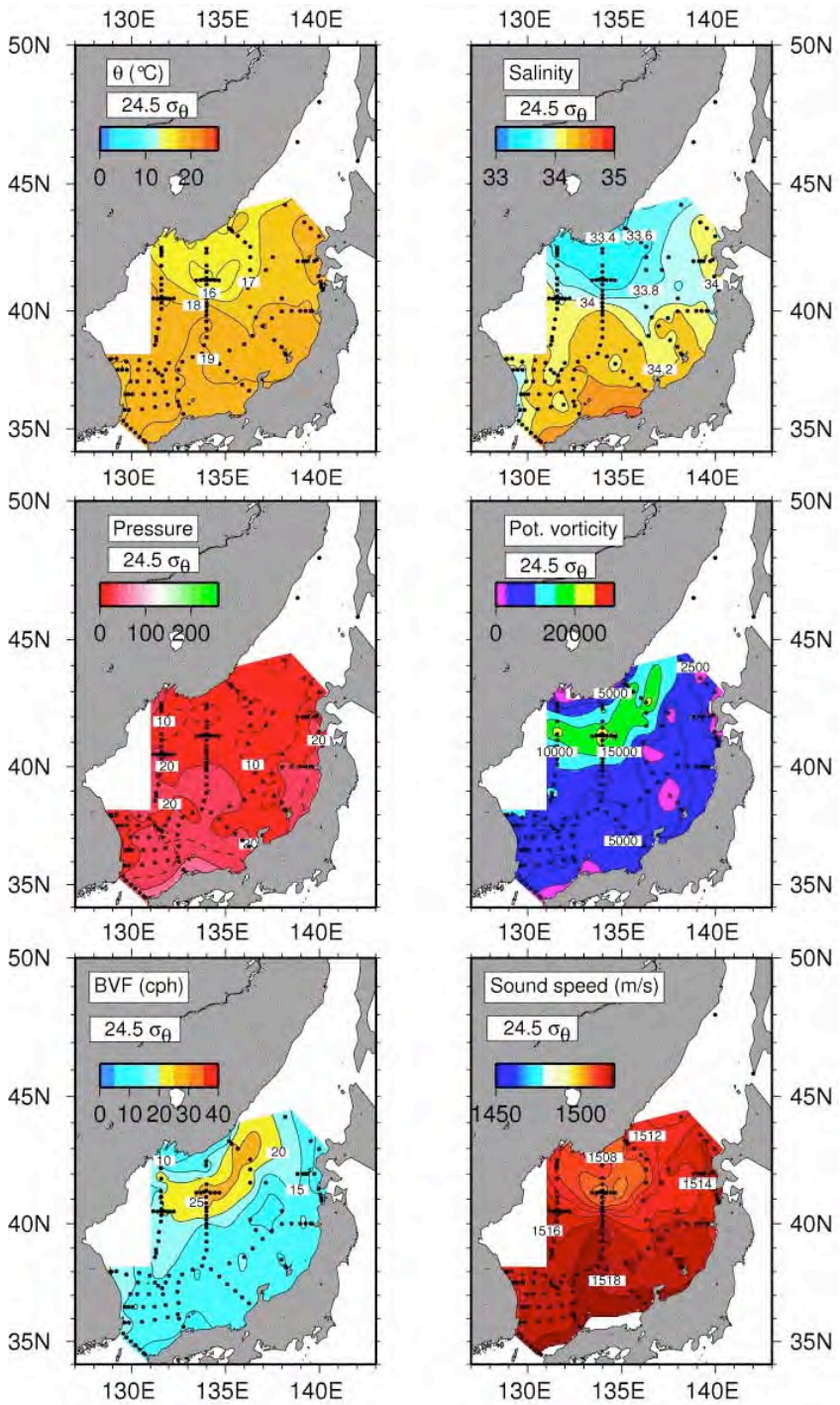
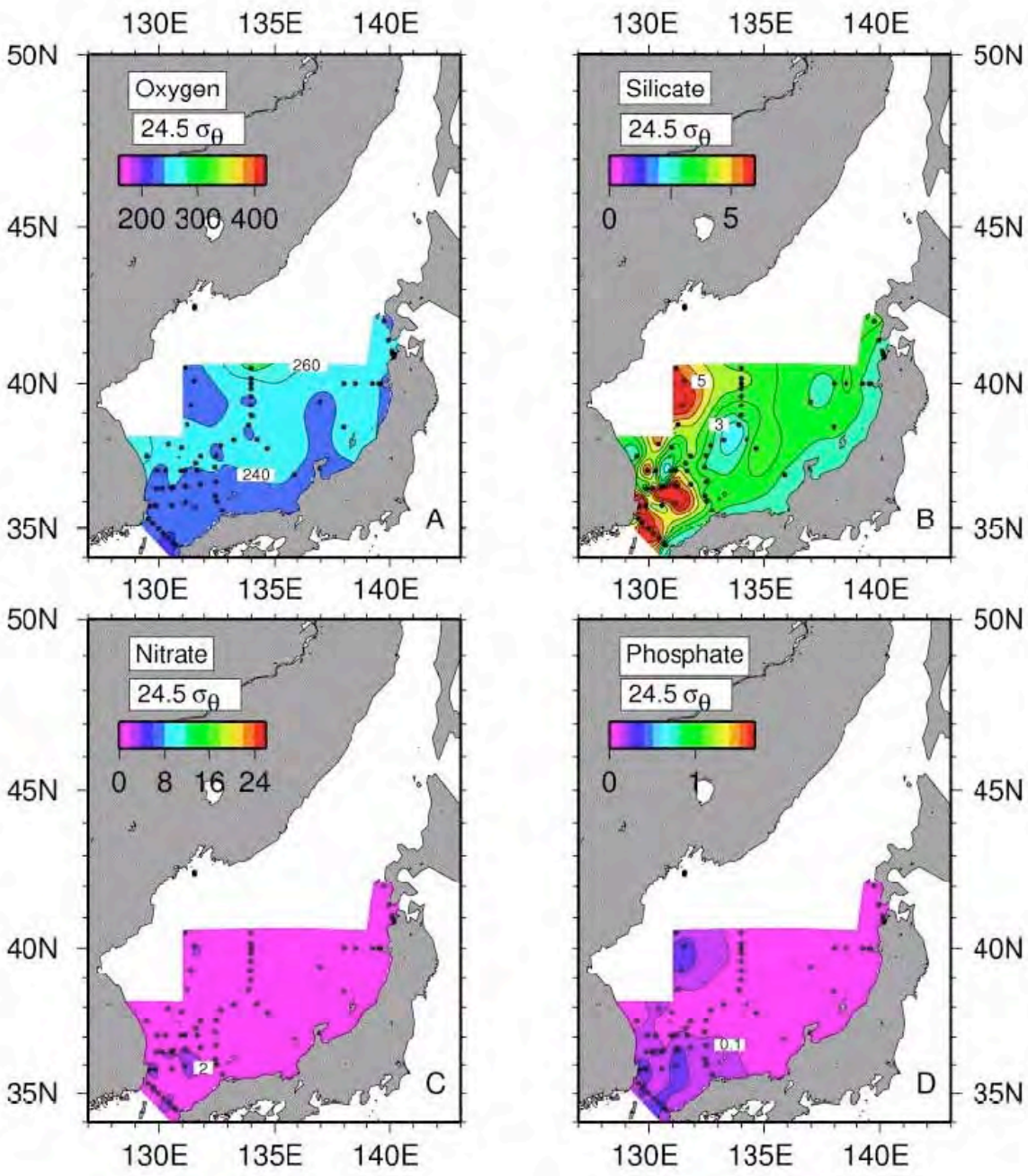


Figure D72. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 24.5 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
24.5 σθ
200 300 400
260
240
A
Silicate
24.5 σθ
0 5
5
3
B
Nitrate
24.5 σθ
0 8 16 24
2
C
Phosphate
24.5 σθ
0 1
0.1
D

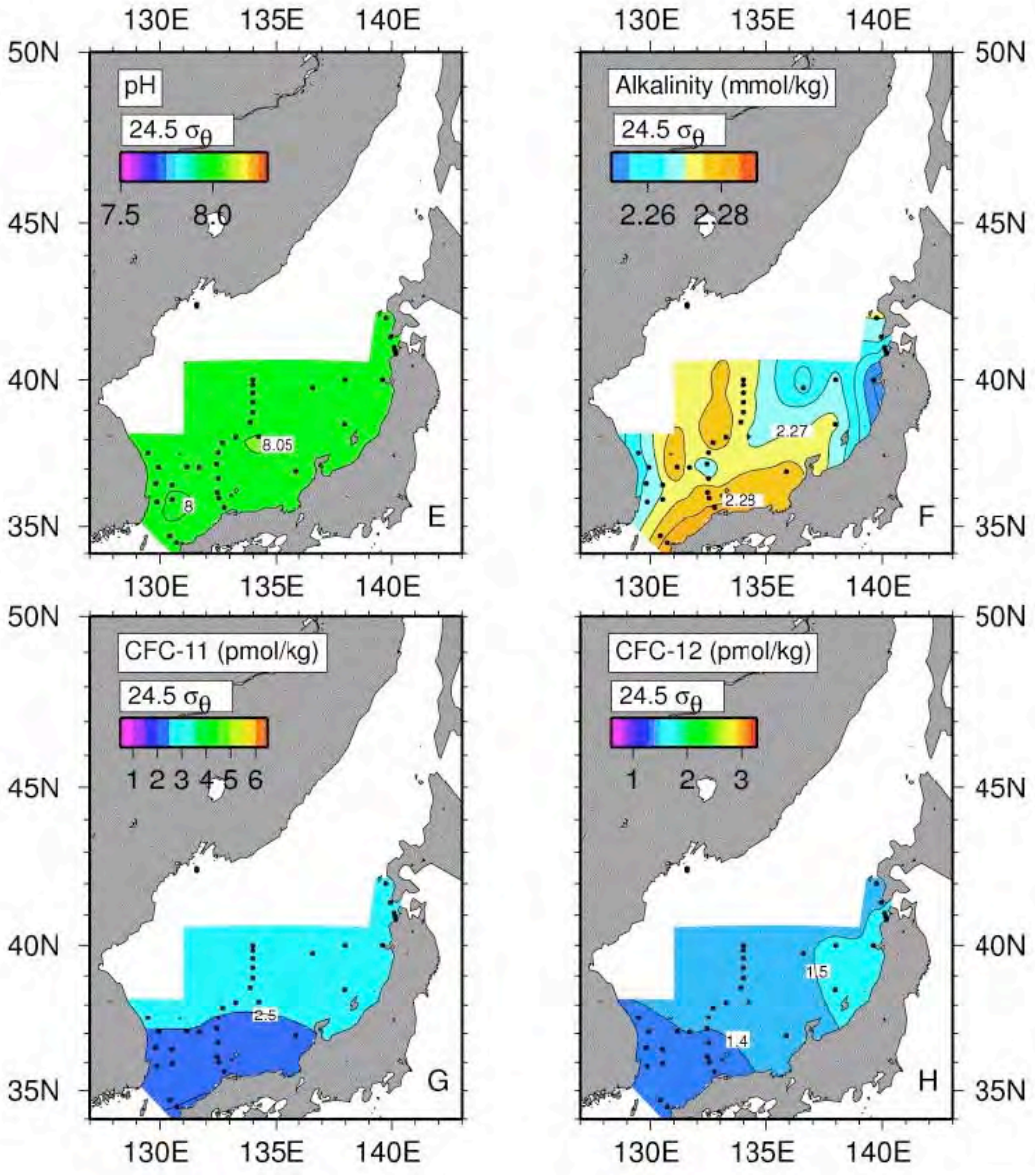


Figure D73. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 24.5 σ_θ.

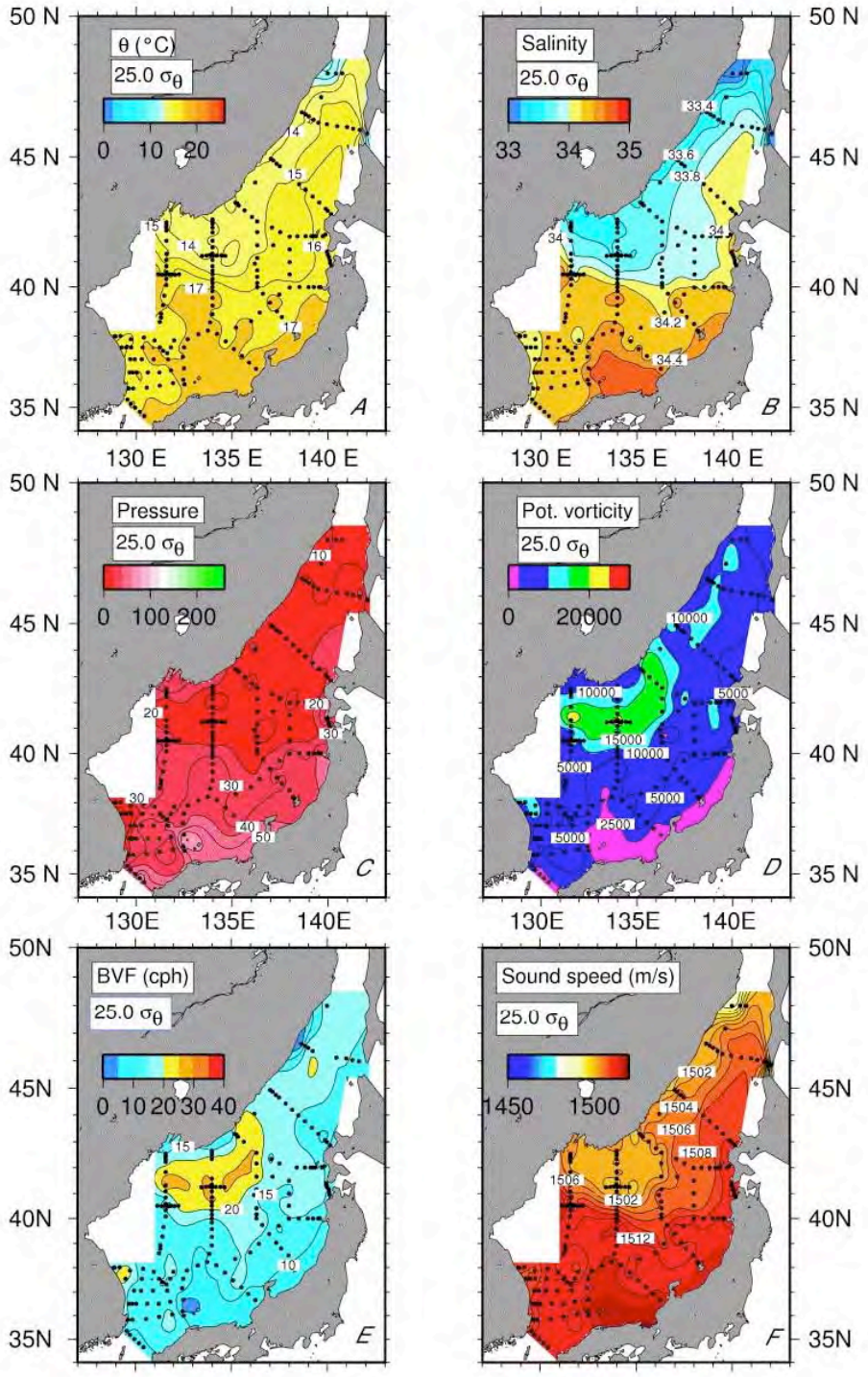
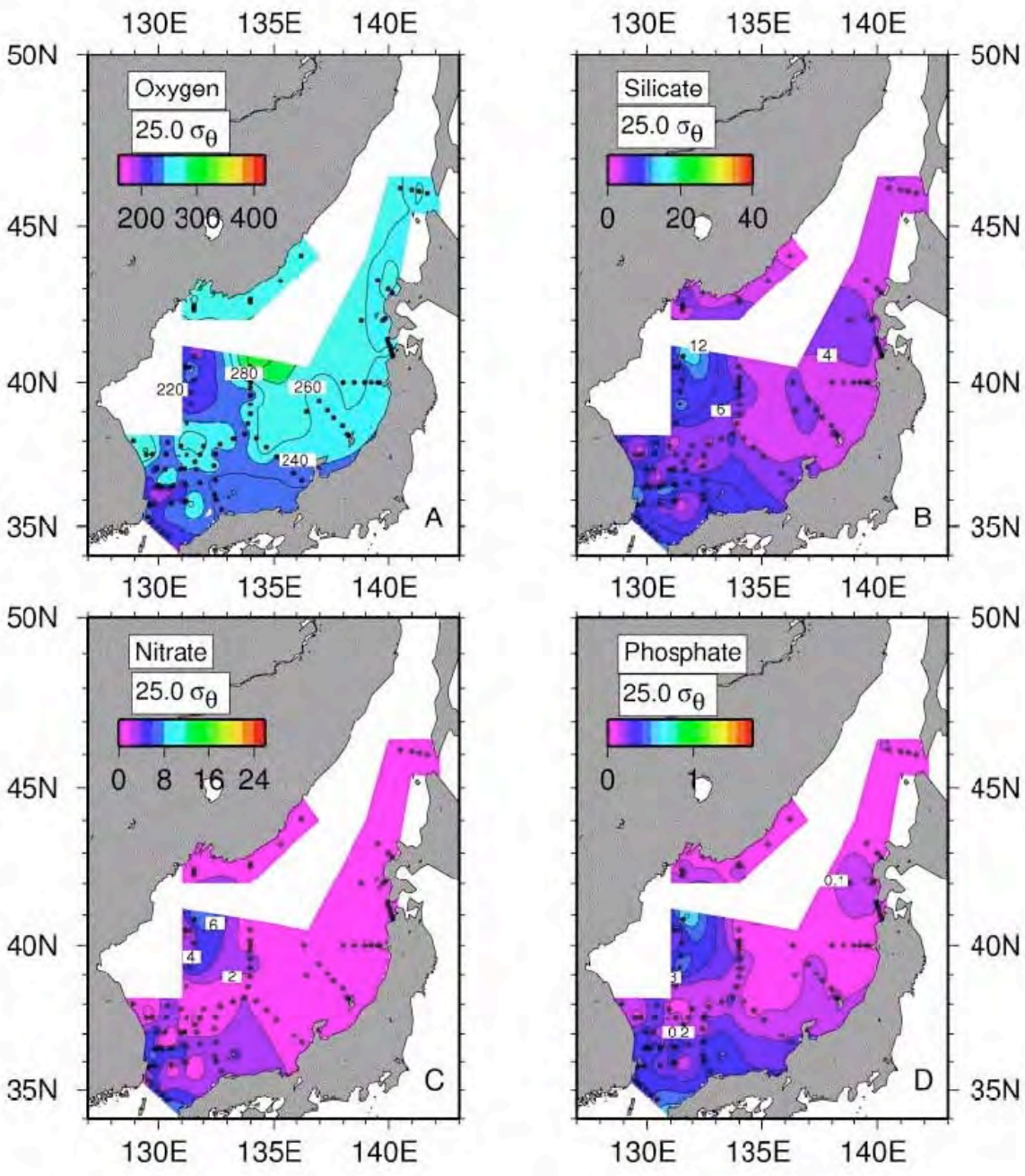


Figure D74. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 25.0 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
25.0 σθ
200 300 400
220
280
260
240
A
Silicate
25.0 σθ
0 20 40
12
4
6
B
Nitrate
25.0 σθ
0 8 16 24
6
4
2
C
Phosphate
25.0 σθ
0 1
0.1
0.2
D

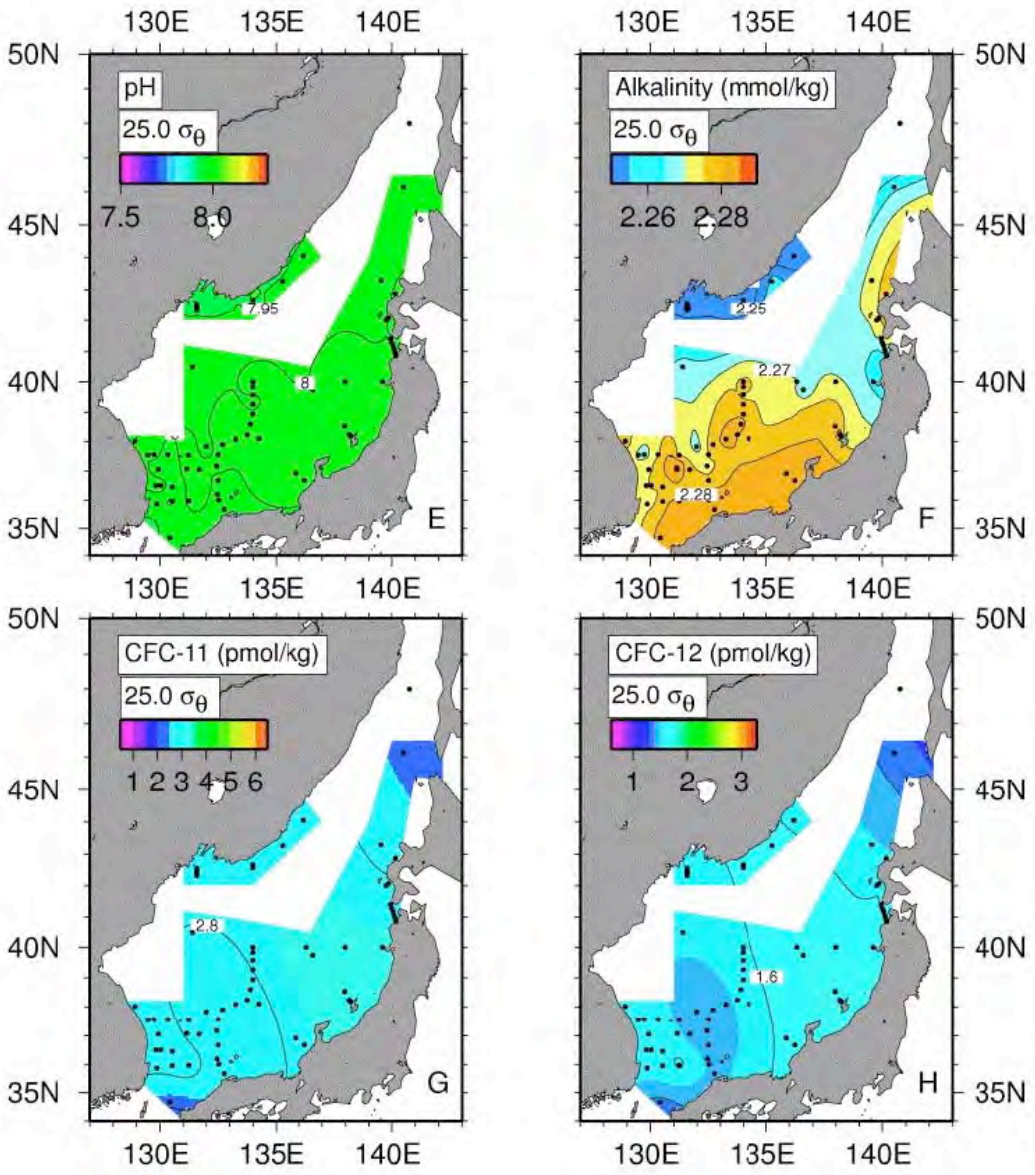


Figure D75. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 25.0 σ_θ.

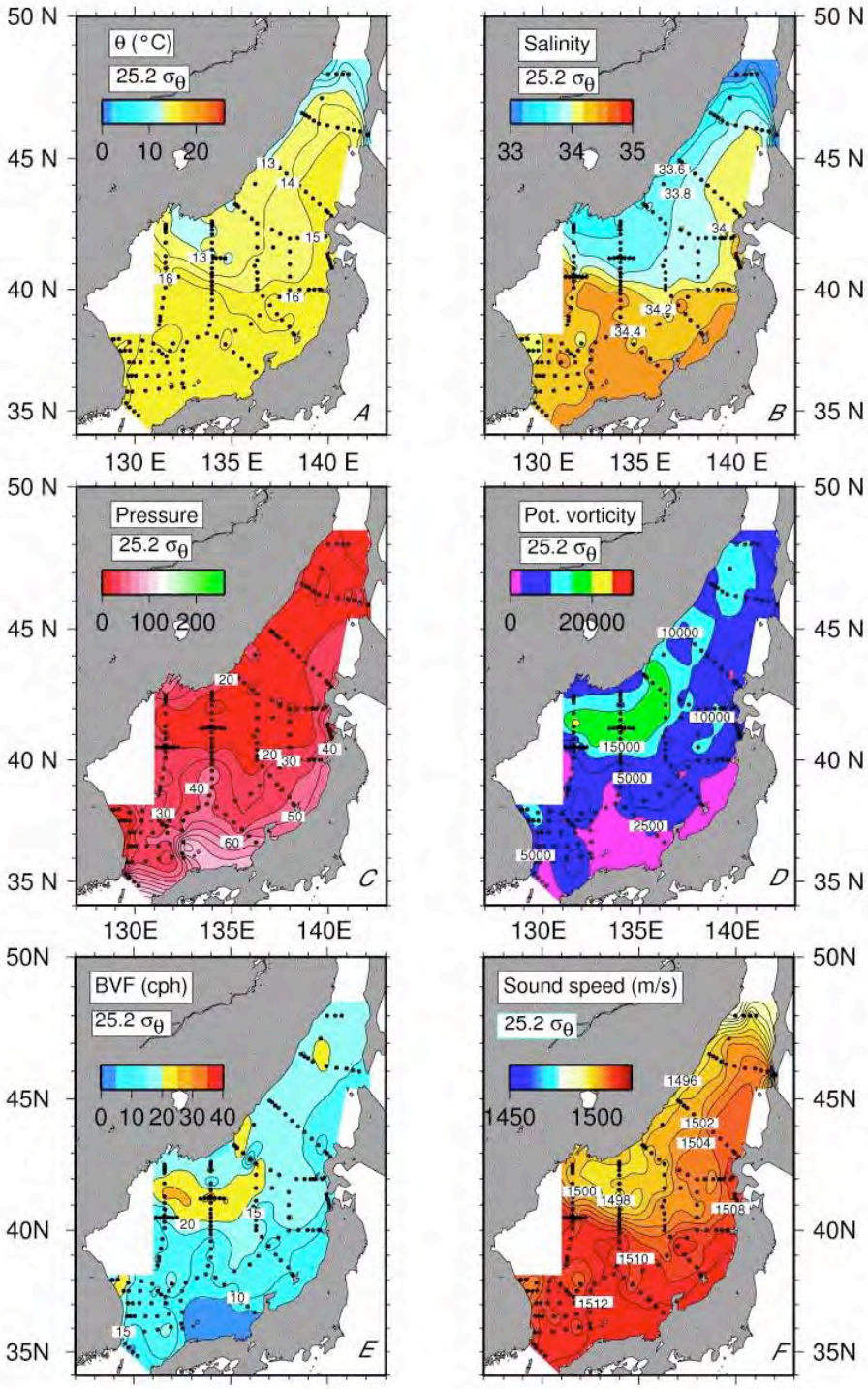
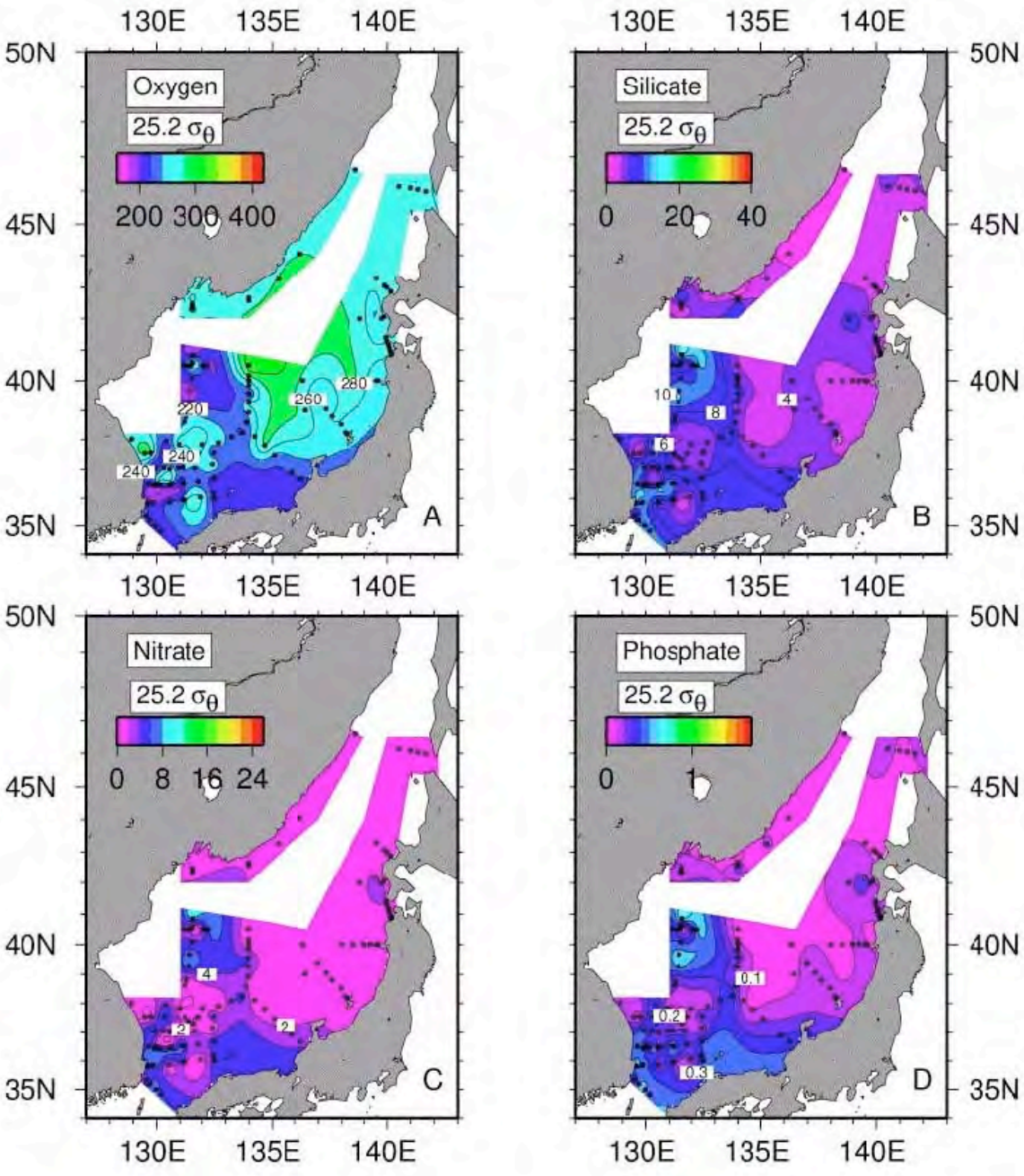


Figure D76. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 25.2 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
25.2 σθ
200 300 400
220
240
240
260
280
A
Silicate
25.2 σθ
0 20 40
10
8
6
4
B
Nitrate
25.2 σθ
0 8 16 24
4
2
2
C
Phosphate
25.2 σθ
0 1
0.1
0.2
0.3
D

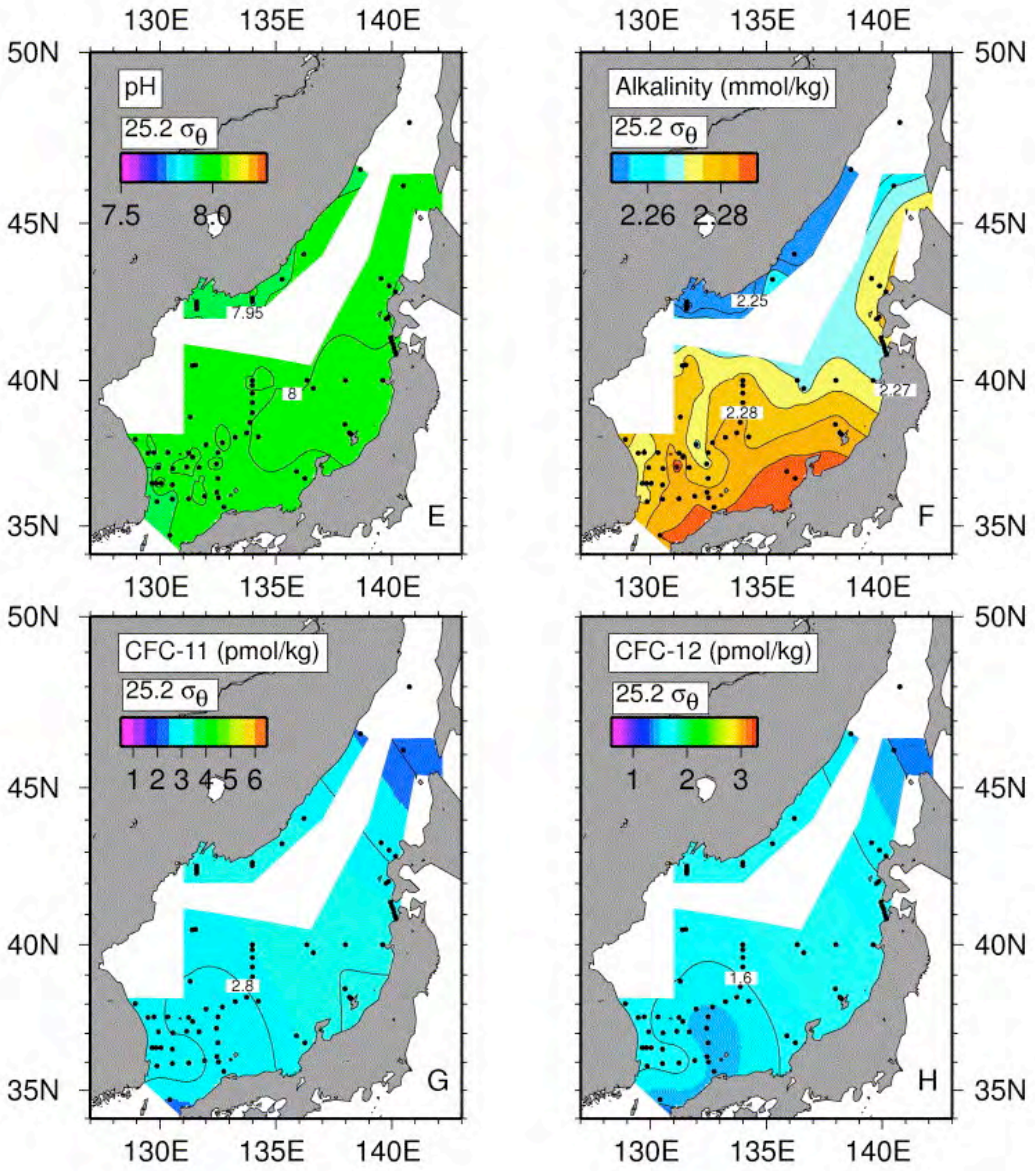


Figure D77. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 25.2 σ_θ.

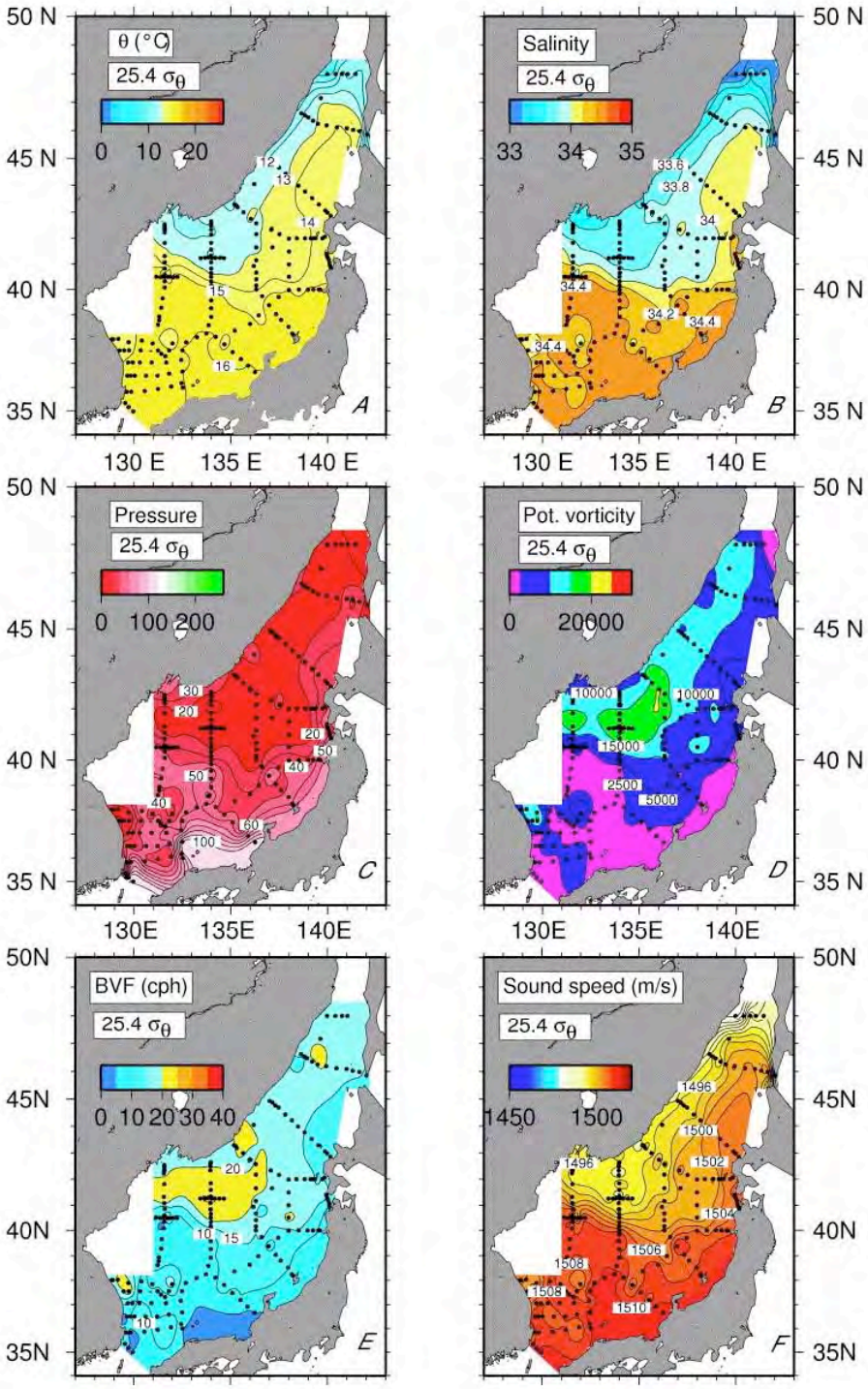
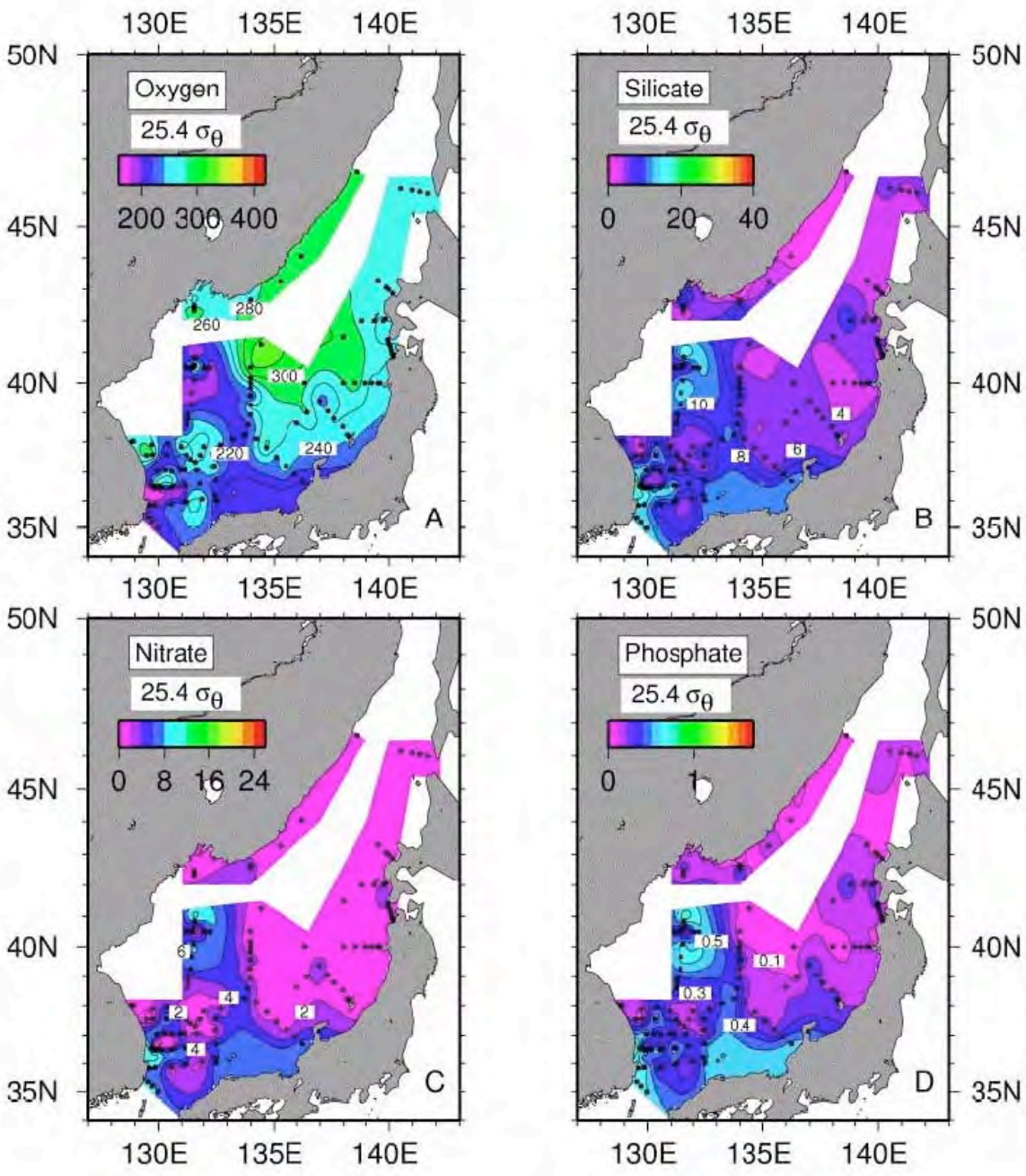


Figure D78. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 25.4 σ_θ (Tsushima water shallow salinity maximum).


130E
135E
140E
50N
45N
40N
35N
Oxygen
25.4 σθ
200 300 400
260
280
300
220
240
A
Silicate
25.4 σθ
0 20 40
10
4
8
6
B
Nitrate
25.4 σθ
0 8 16 24
6
4
2
2
4
C
Phosphate
25.4 σθ
0 1
0.5
0.1
0.3
0.4
D

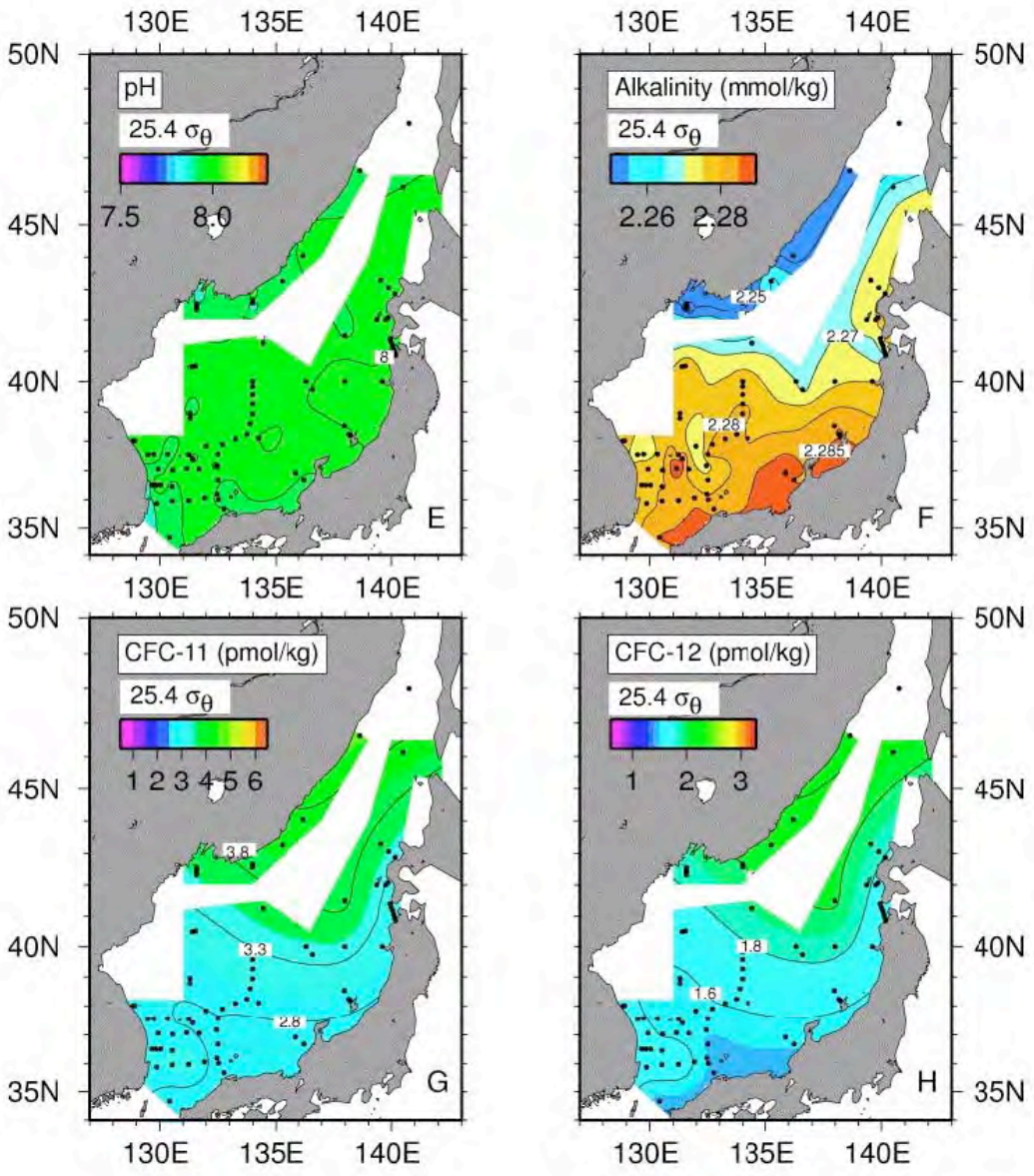


Figure D79. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 25.4 σ_θ (Tsushima water shallow salinity maximum).

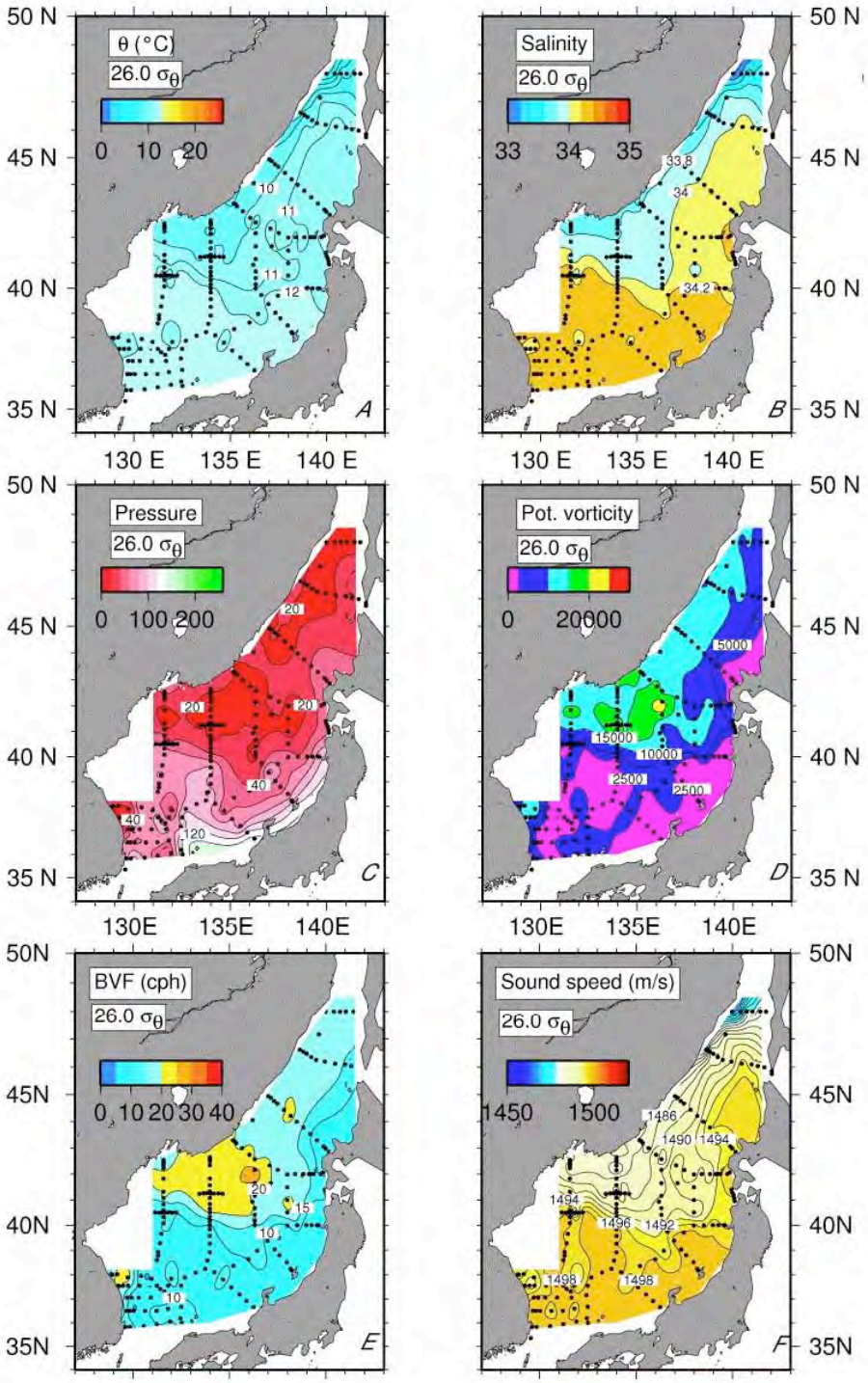
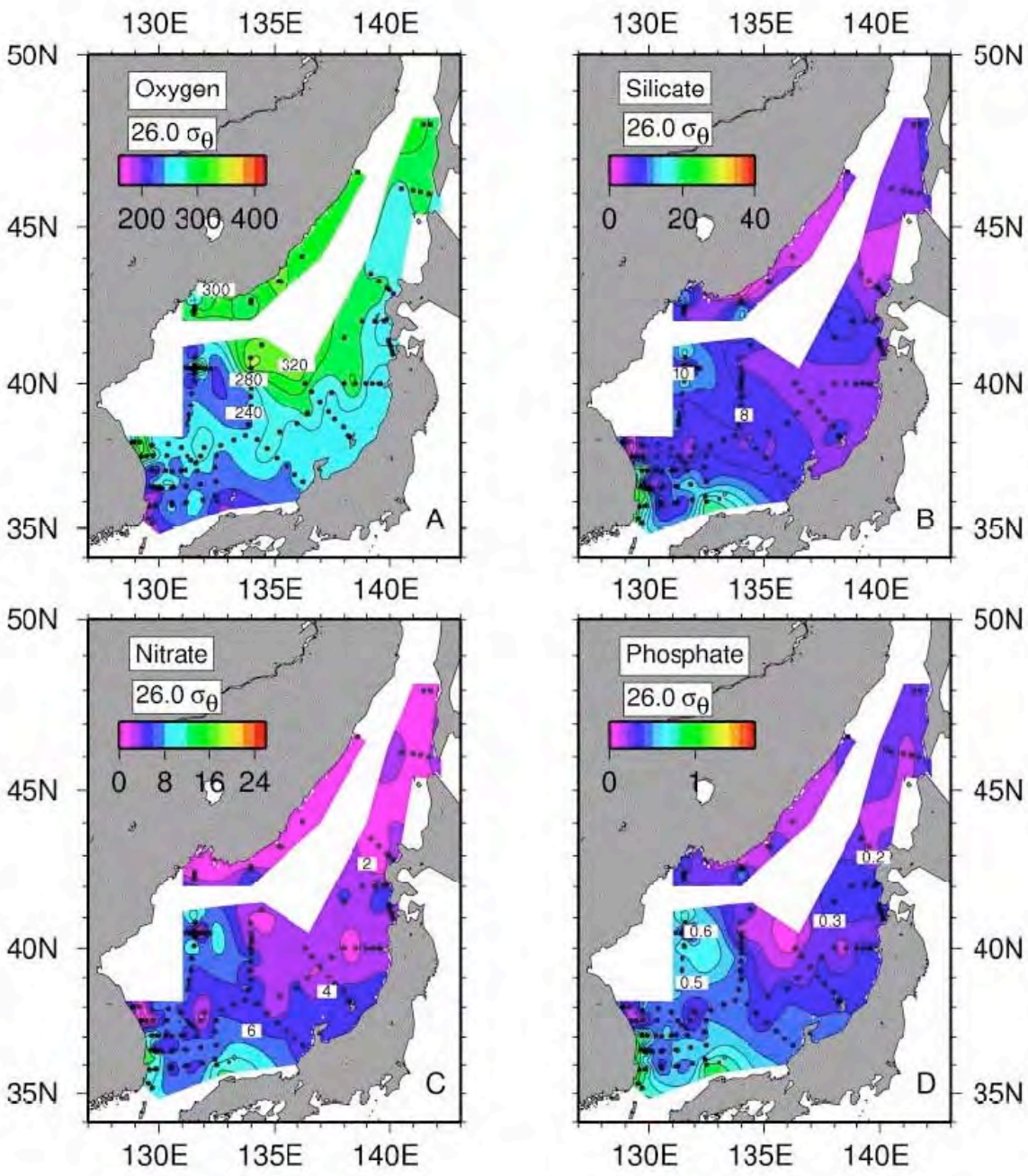


Figure D80. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 26.0 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
26.0 σθ
200 300 400
300
320
280
240
A
Silicate
26.0 σθ
0 20 40
10
8
B
Nitrate
26.0 σθ
0 8 16 24
2
4
6
C
Phosphate
26.0 σθ
0 1
0.2
0.3
0.6
0.5
D

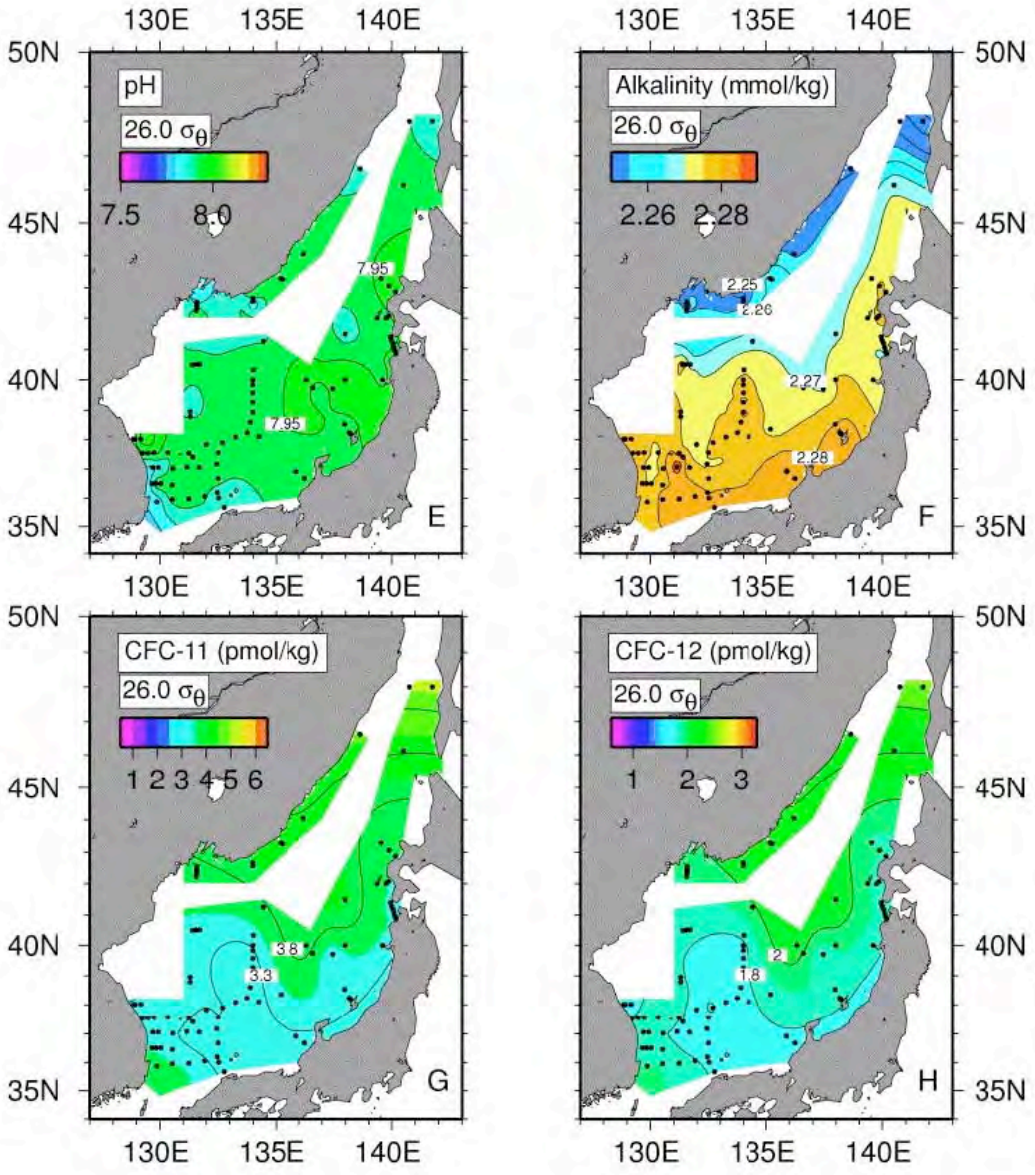


Figure D81. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 26.0 σ_θ.

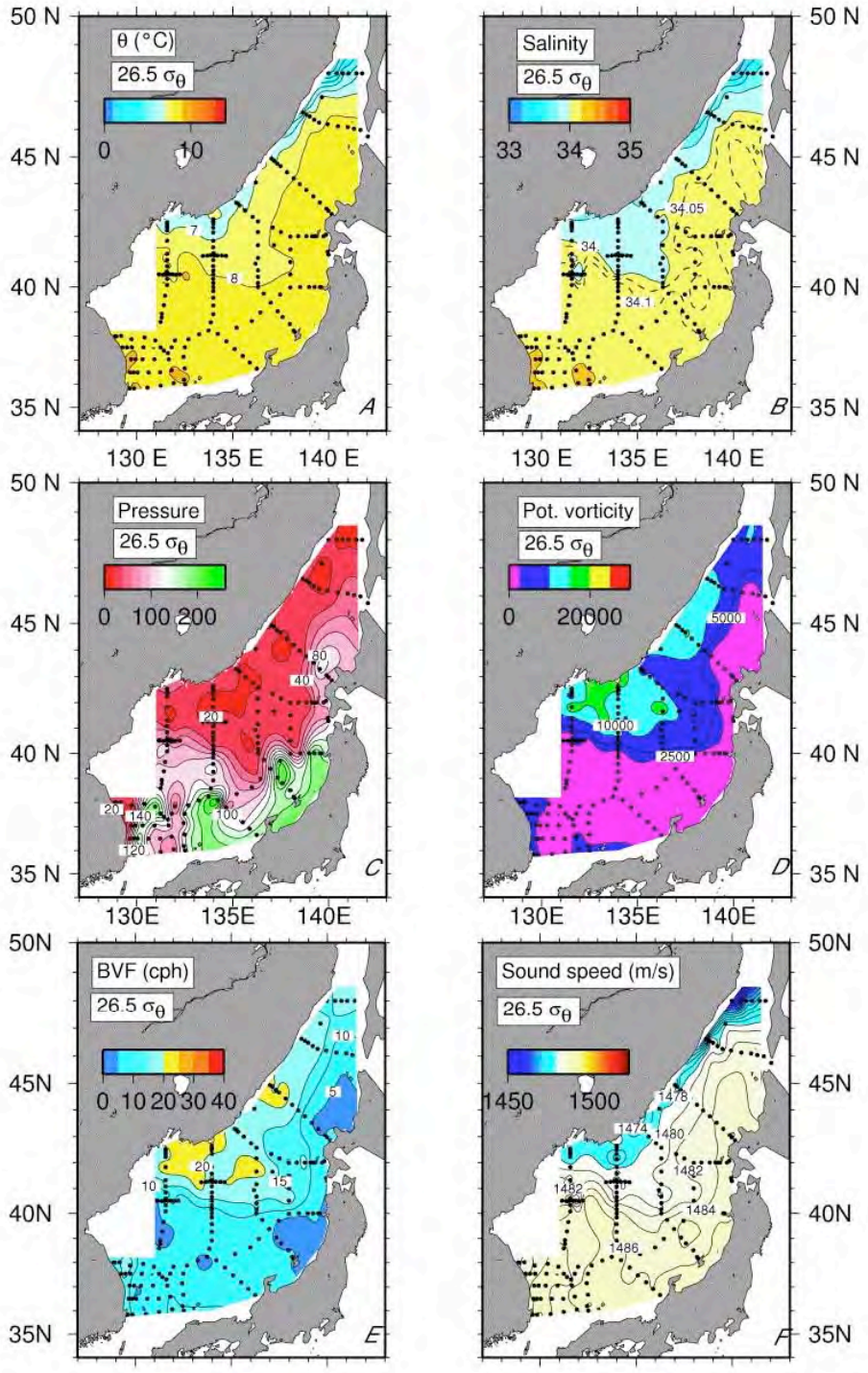
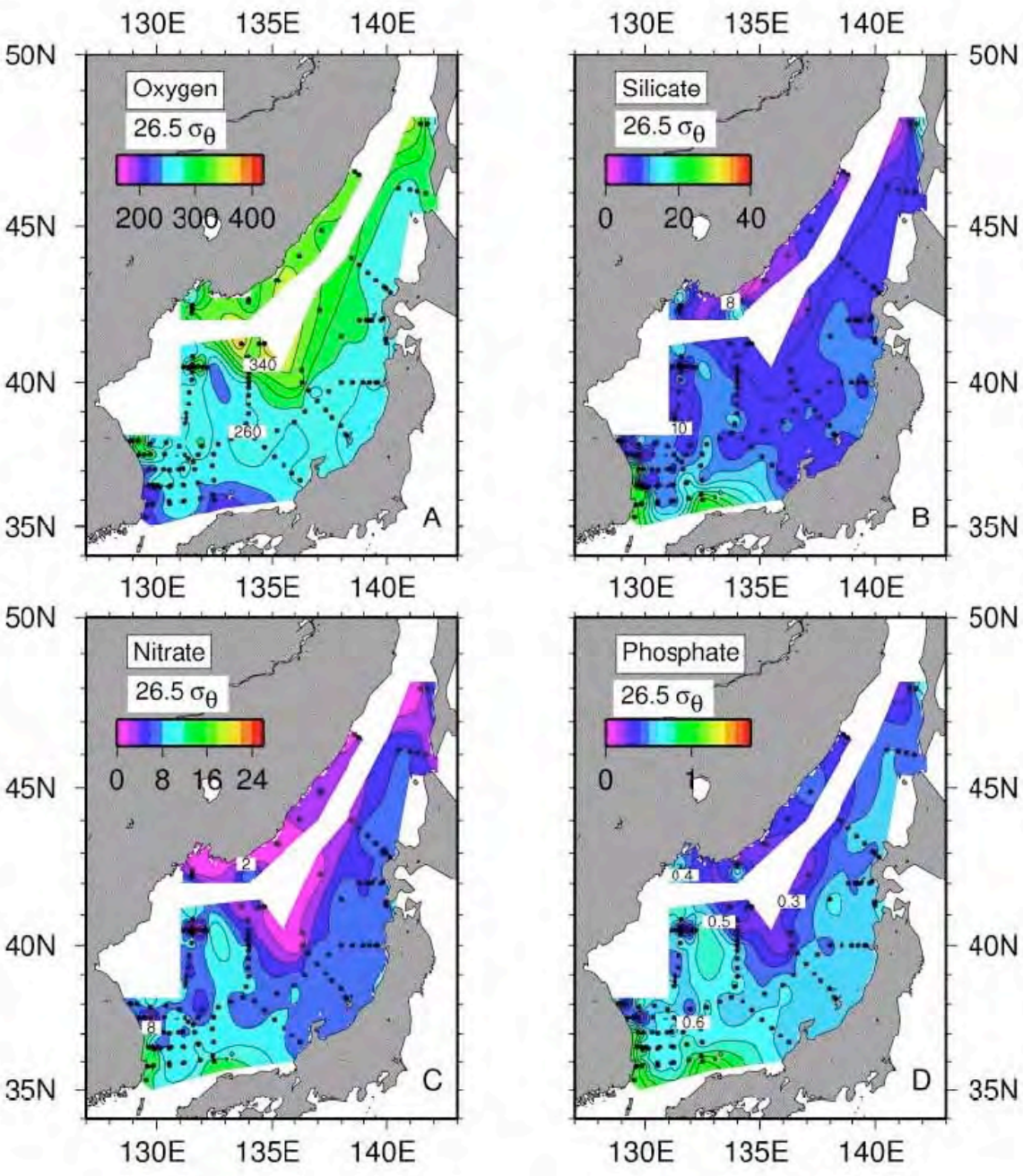


Figure D82. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 26.5 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
26.5 σθ
200 300 400
340
260
A
Silicate
26.5 σθ
0 20 40
8
10
B
Nitrate
26.5 σθ
0 8 16 24
2
8
C
Phosphate
26.5 σθ
0 1
0.4
0.3
0.5
0.6
D

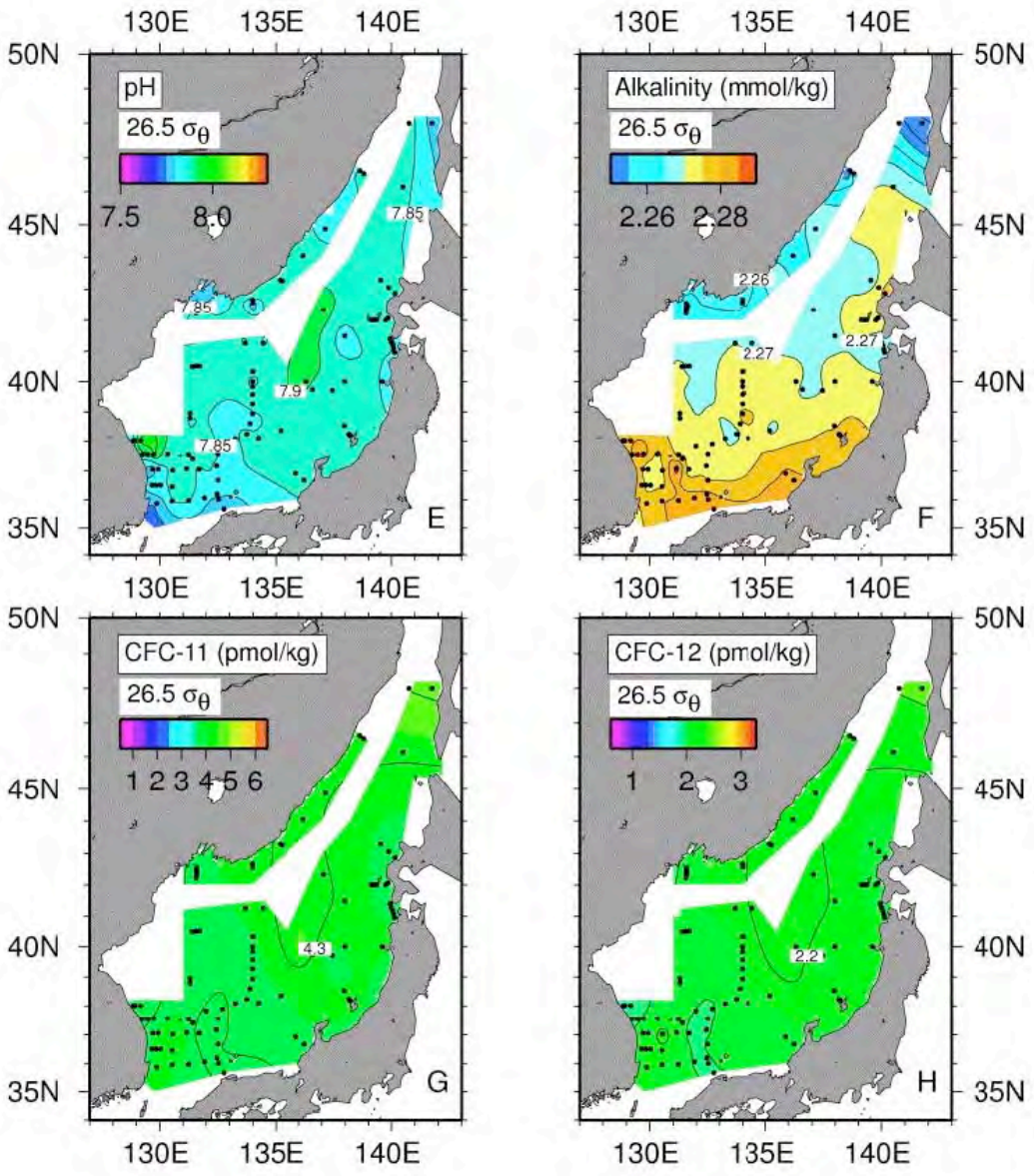


Figure D83. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 26.5 σ_θ.

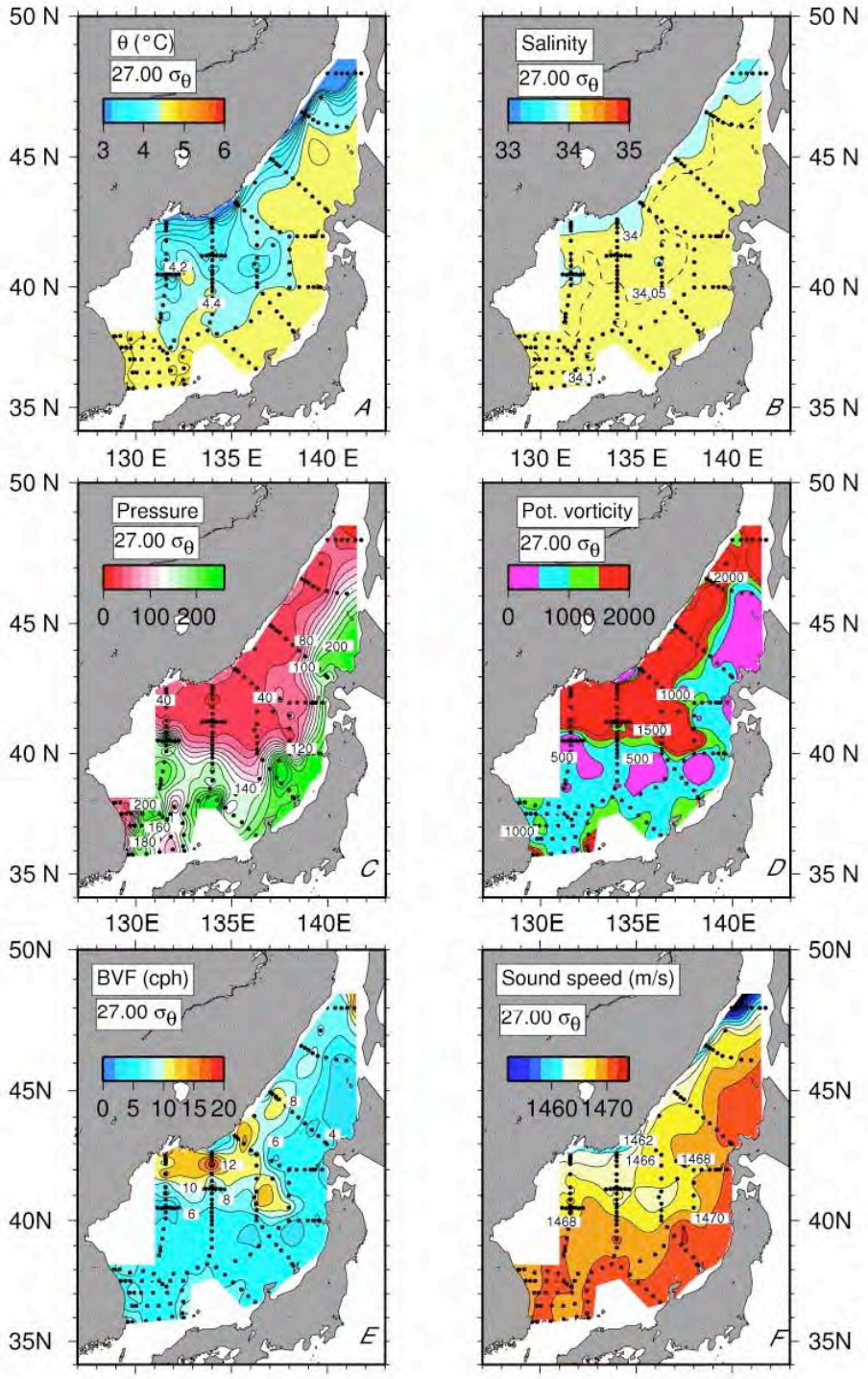
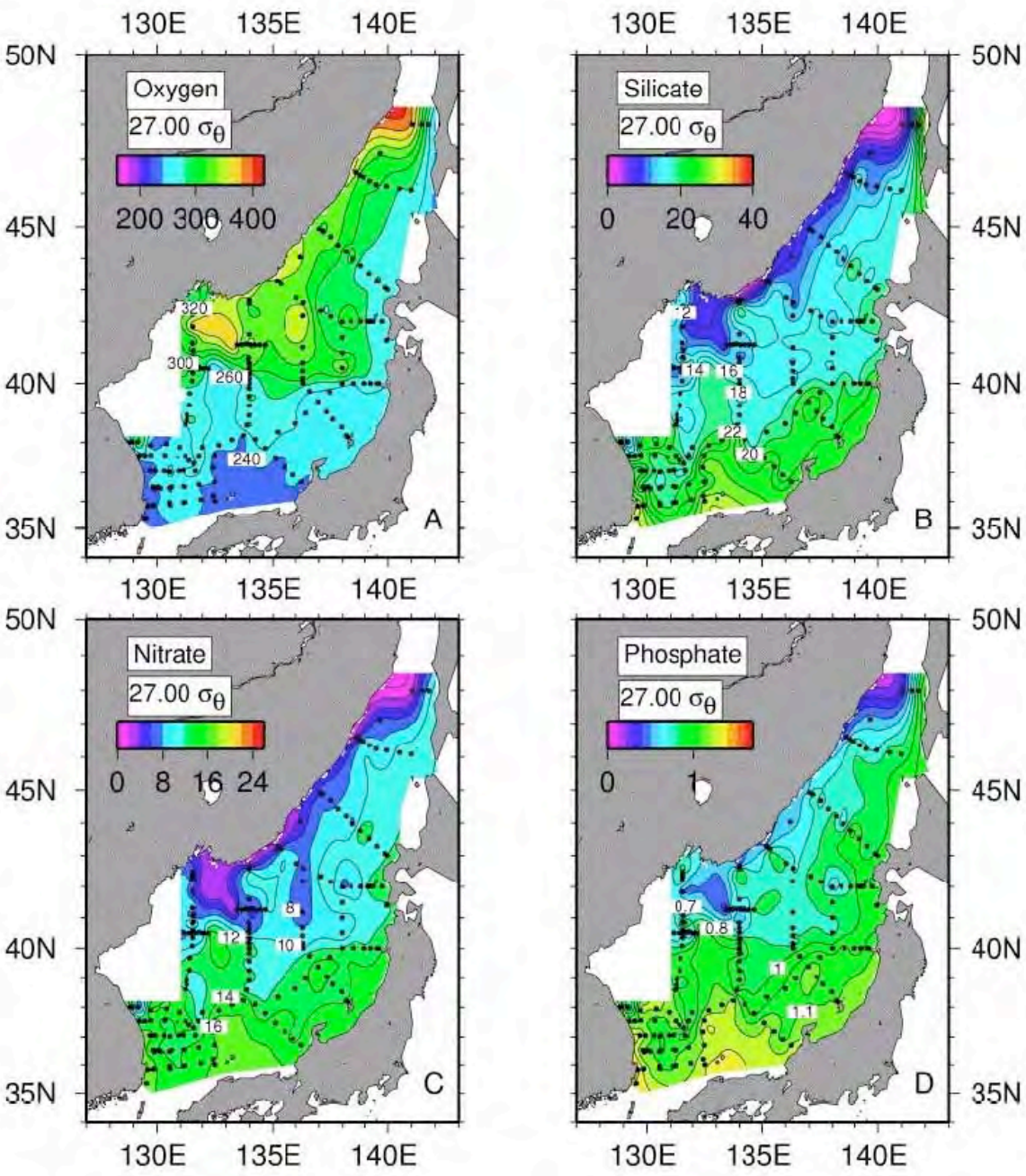


Figure D84. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.0 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
27.00 σθ
200 300 400
320
300
260
240
A
Silicate
27.00 σθ
0 20 40
2
14
16
18
22
20
B
Nitrate
27.00 σθ
0 8 16 24
8
12
10
14
16
C
Phosphate
27.00 σθ
0 1
0.7
0.8
1
1.1
D

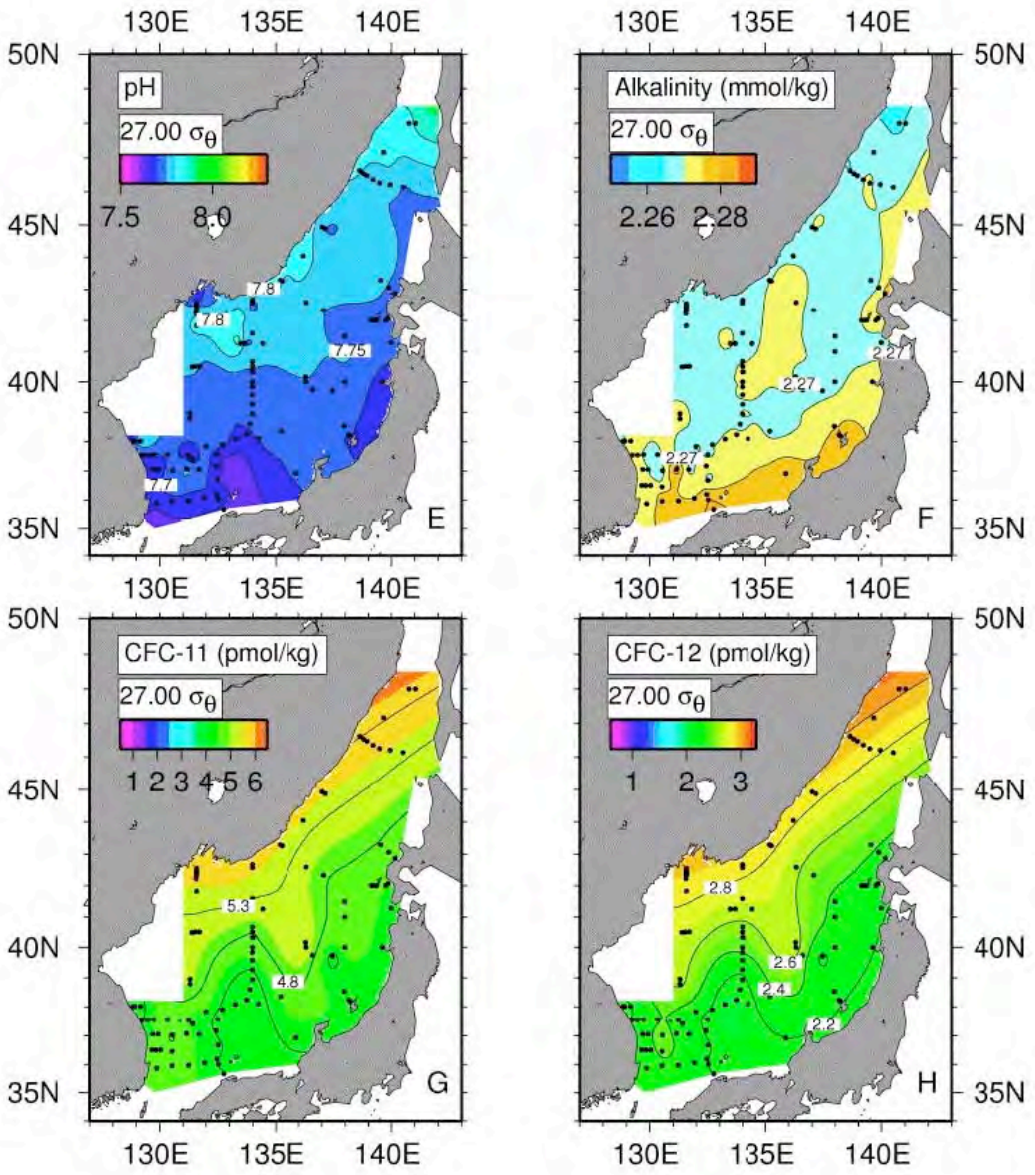


Figure D85. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.0 σ_θ.

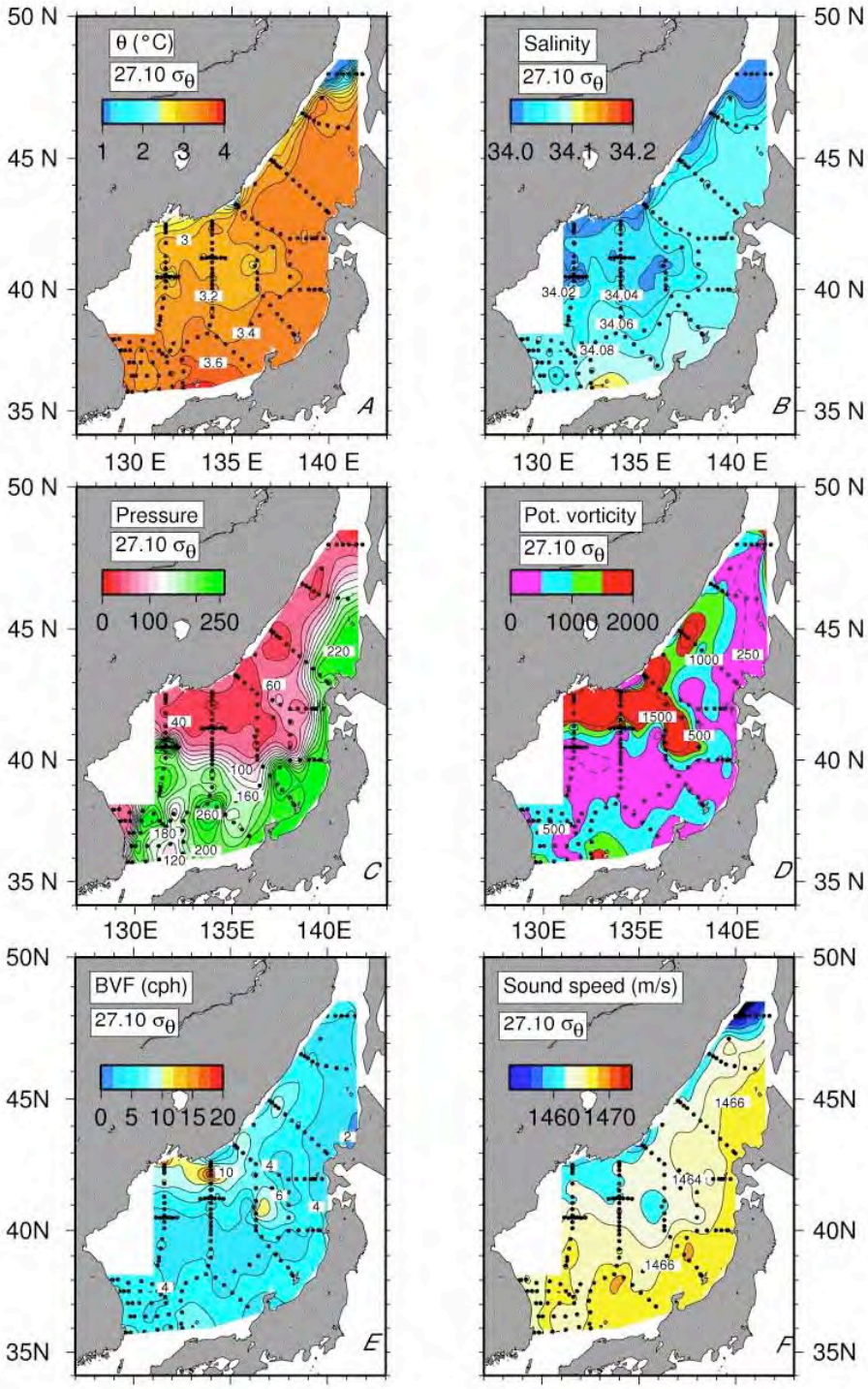
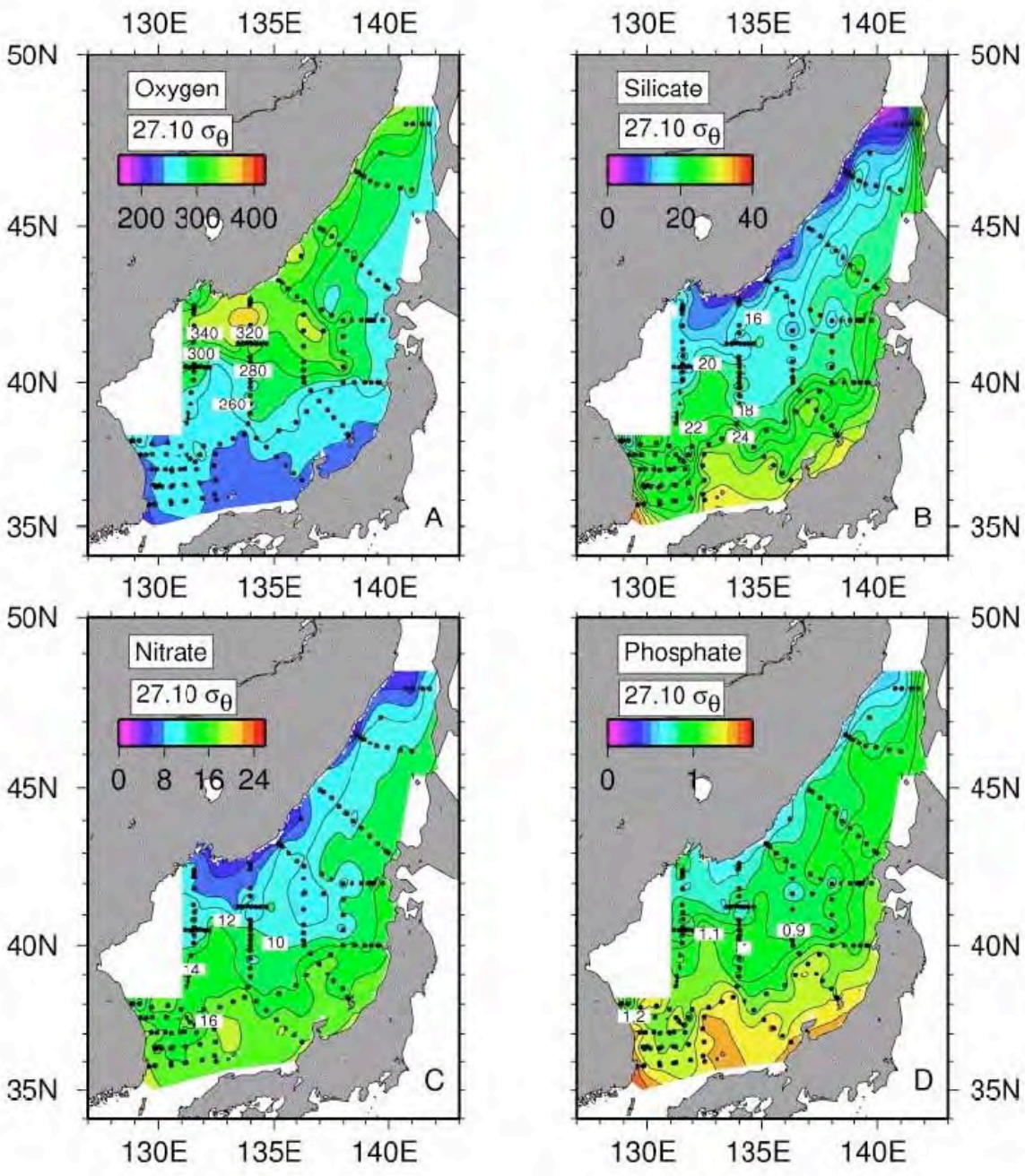


Figure D86. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.1 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
27.10 σθ
200 300 400
340
320
300
280
260
A
Silicate
27.10 σθ
0 20 40
16
20
18
22
24
B
Nitrate
27.10 σθ
0 8 16 24
12
10
16
C
Phosphate
27.10 σθ
0 1
1.1
0.9
1.2
D

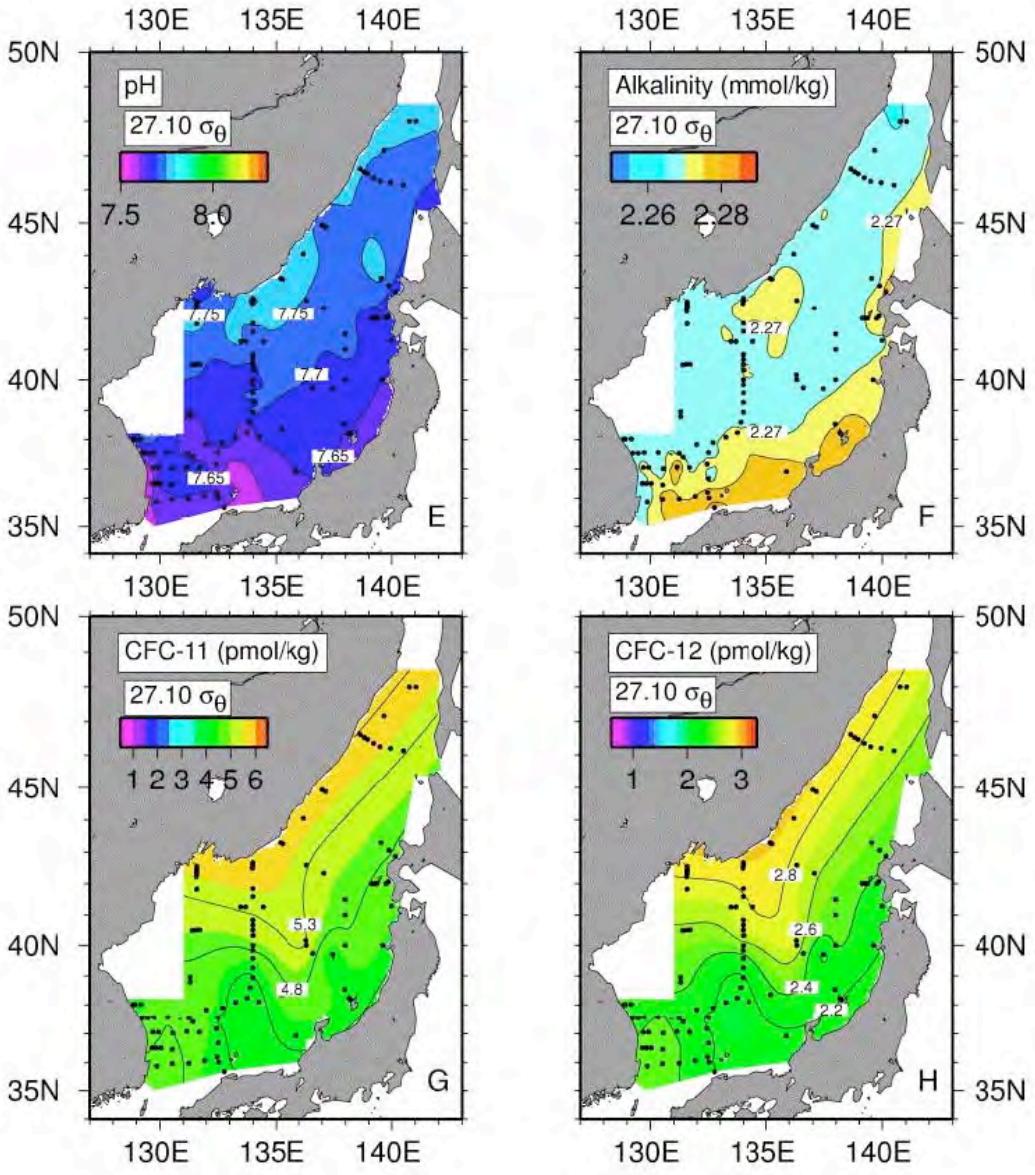


Figure D87. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.1 σ_θ.

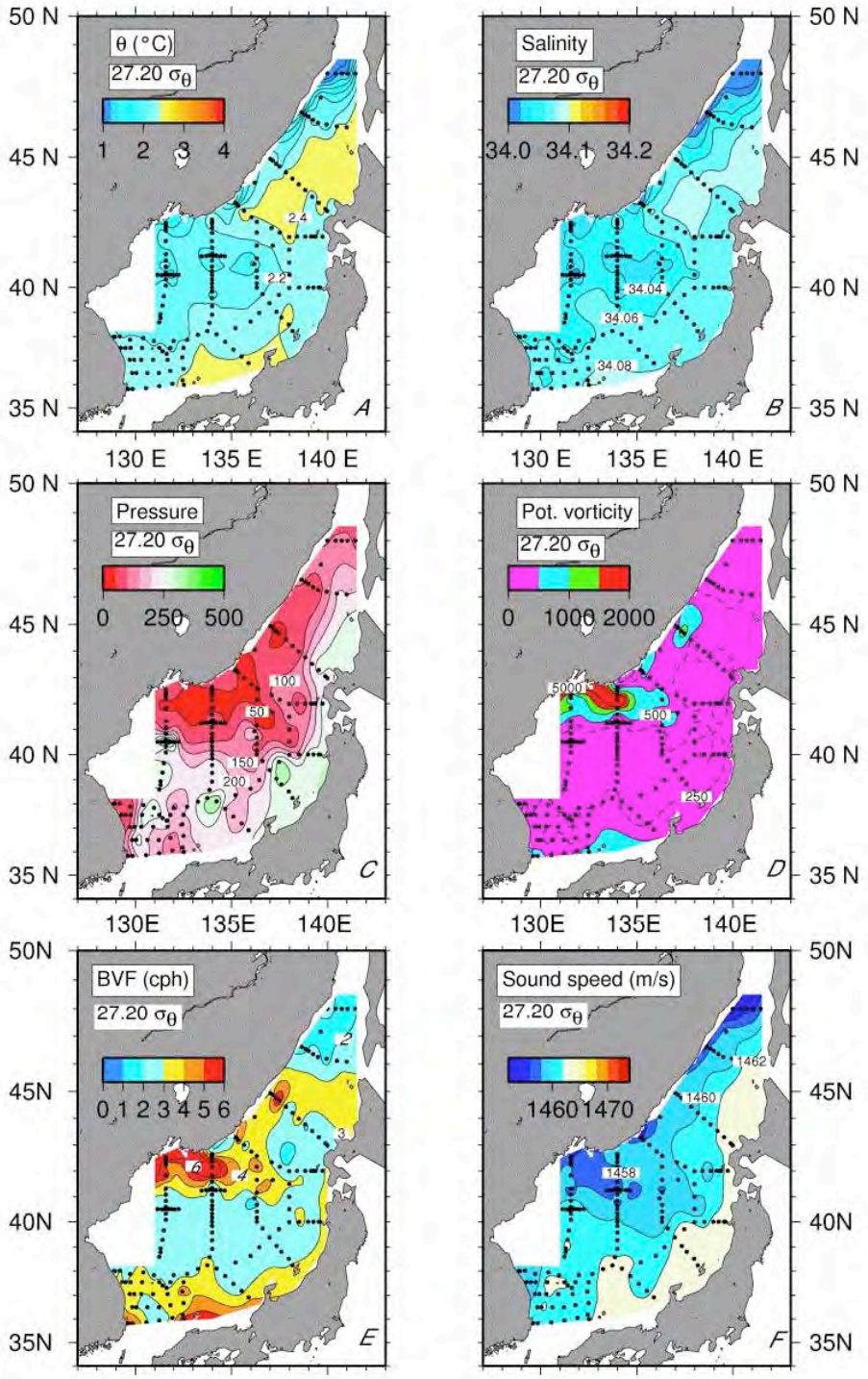
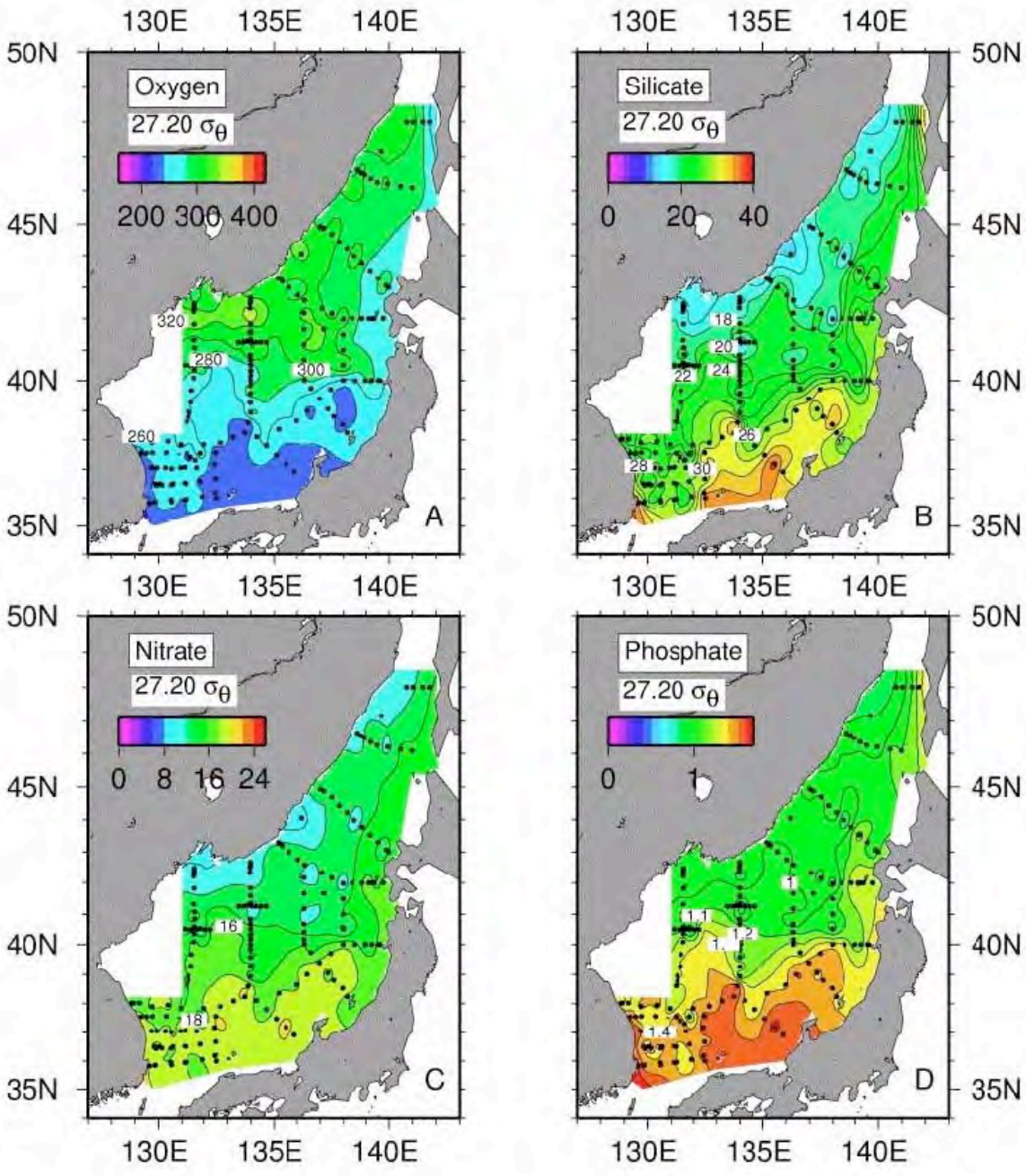


Figure D88. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.2 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
27.20 σθ
200 300 400
320
280
300
260
A
Silicate
27.20 σθ
0 20 40
18
20
22
24
26
28
30
B
Nitrate
27.20 σθ
0 8 16 24
16
18
C
Phosphate
27.20 σθ
0 1
1
1.1
1.2
1.4
D

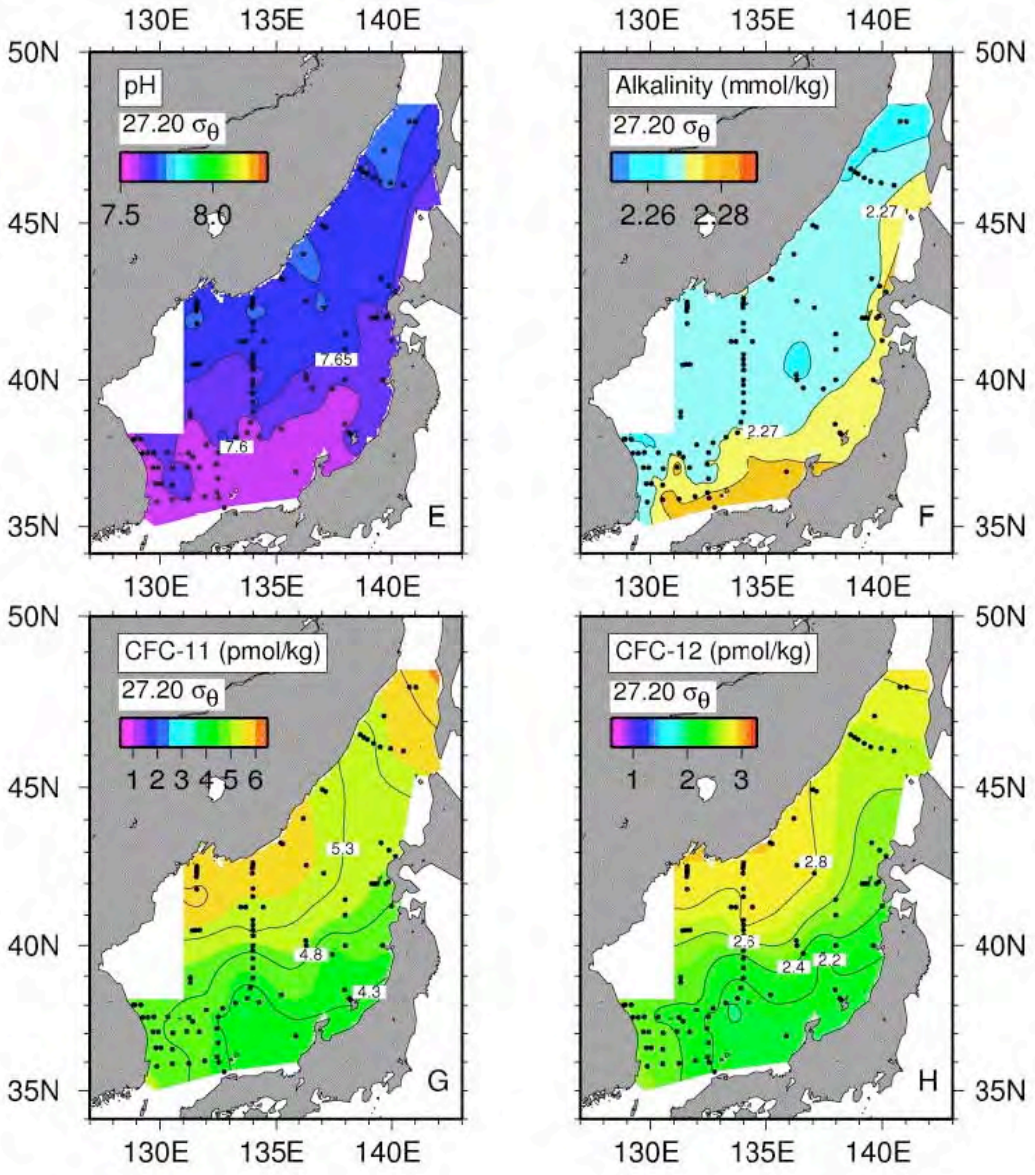


Figure D89. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.2 σ_θ.

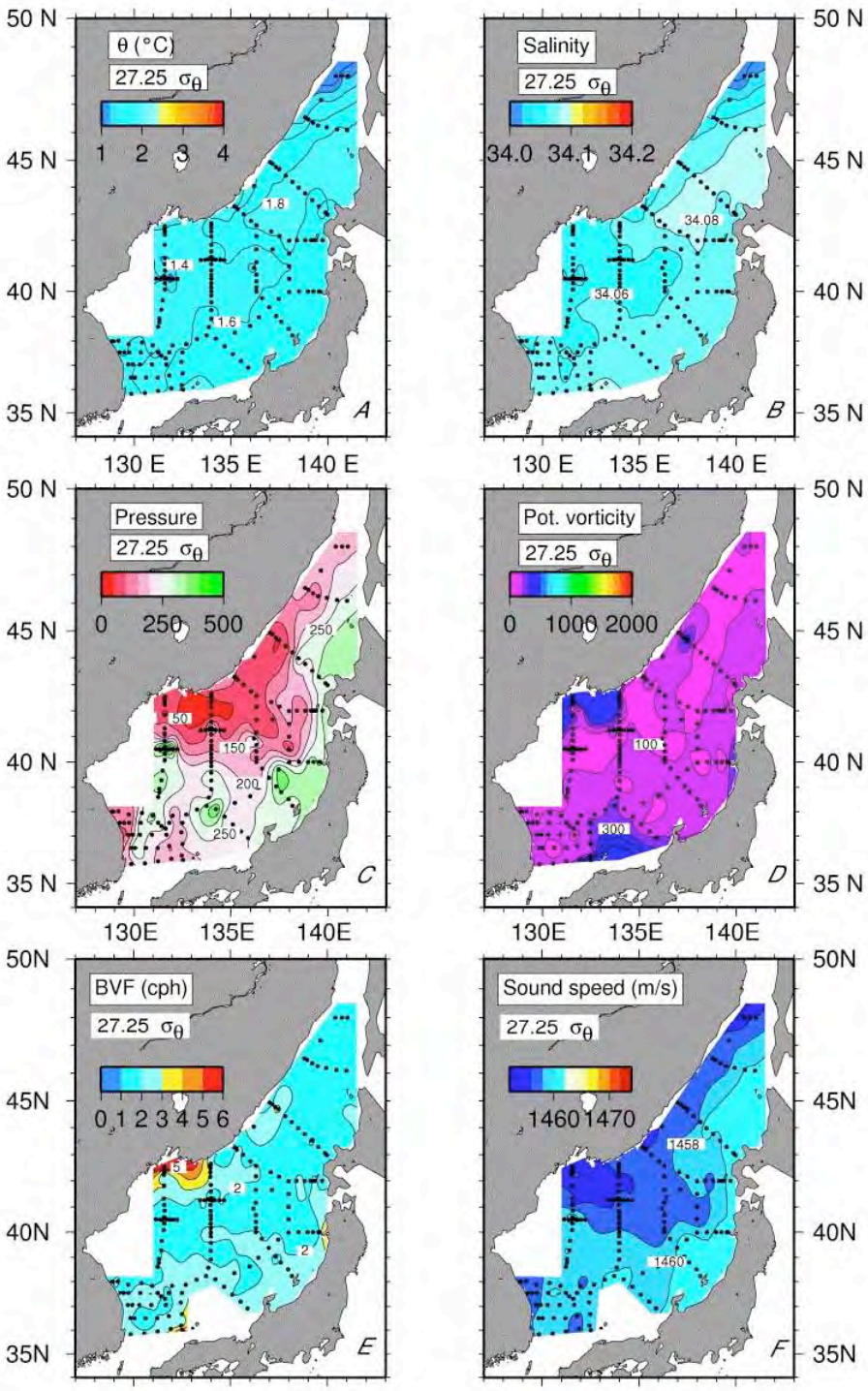
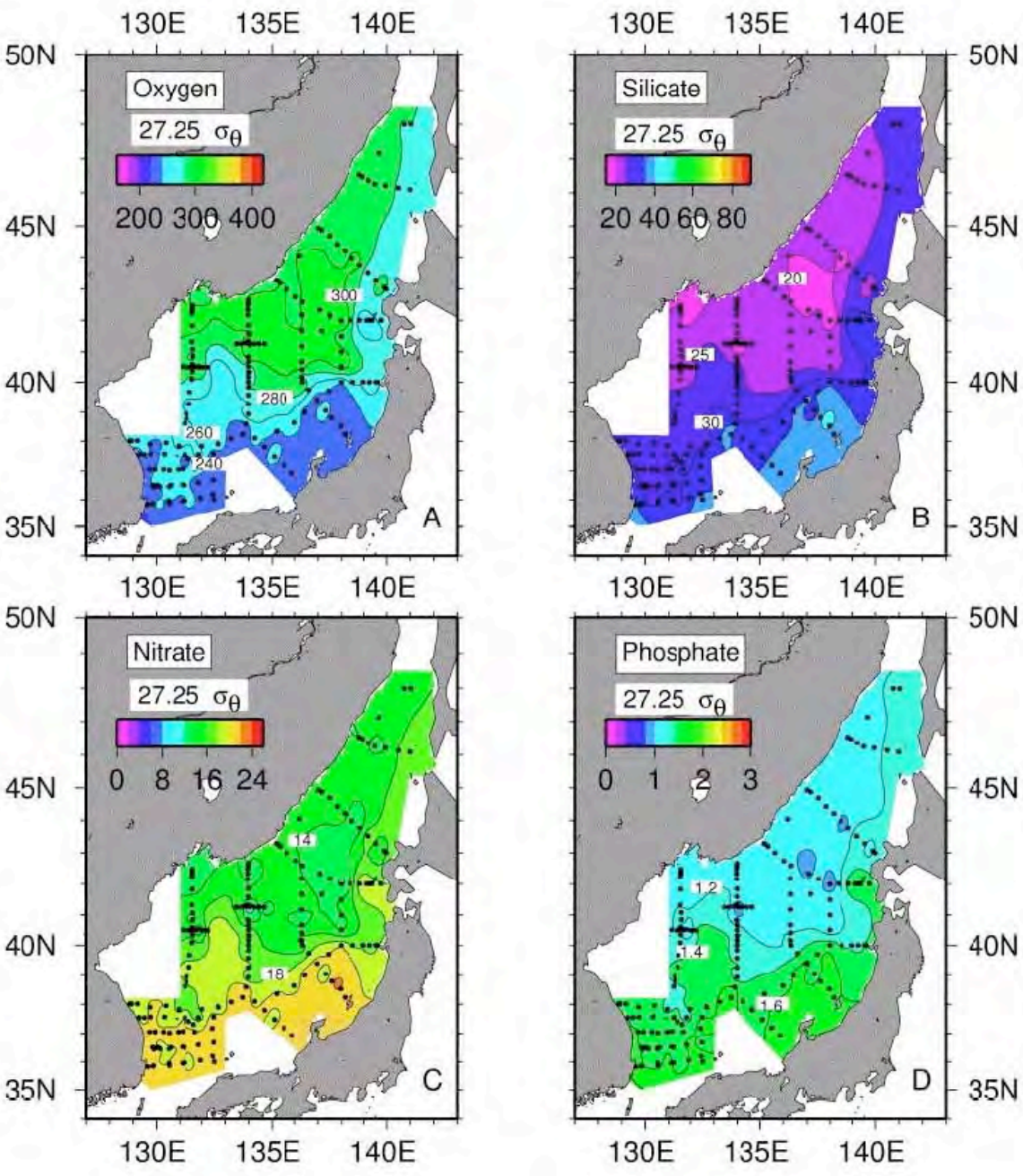


Figure D90. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.25σ_θ (East Sea Intermediate Water salinity minimum).


130E
135E
140E
50N
45N
40N
35N
Oxygen
27.25 σθ
200 300 400
300
280
260
240
A
Silicate
27.25 σθ
20 40 60 80
20
25
30
B
Nitrate
27.25 σθ
0 8 16 24
14
18
C
Phosphate
27.25 σθ
0 1 2 3
1.2
1.4
1.6
D

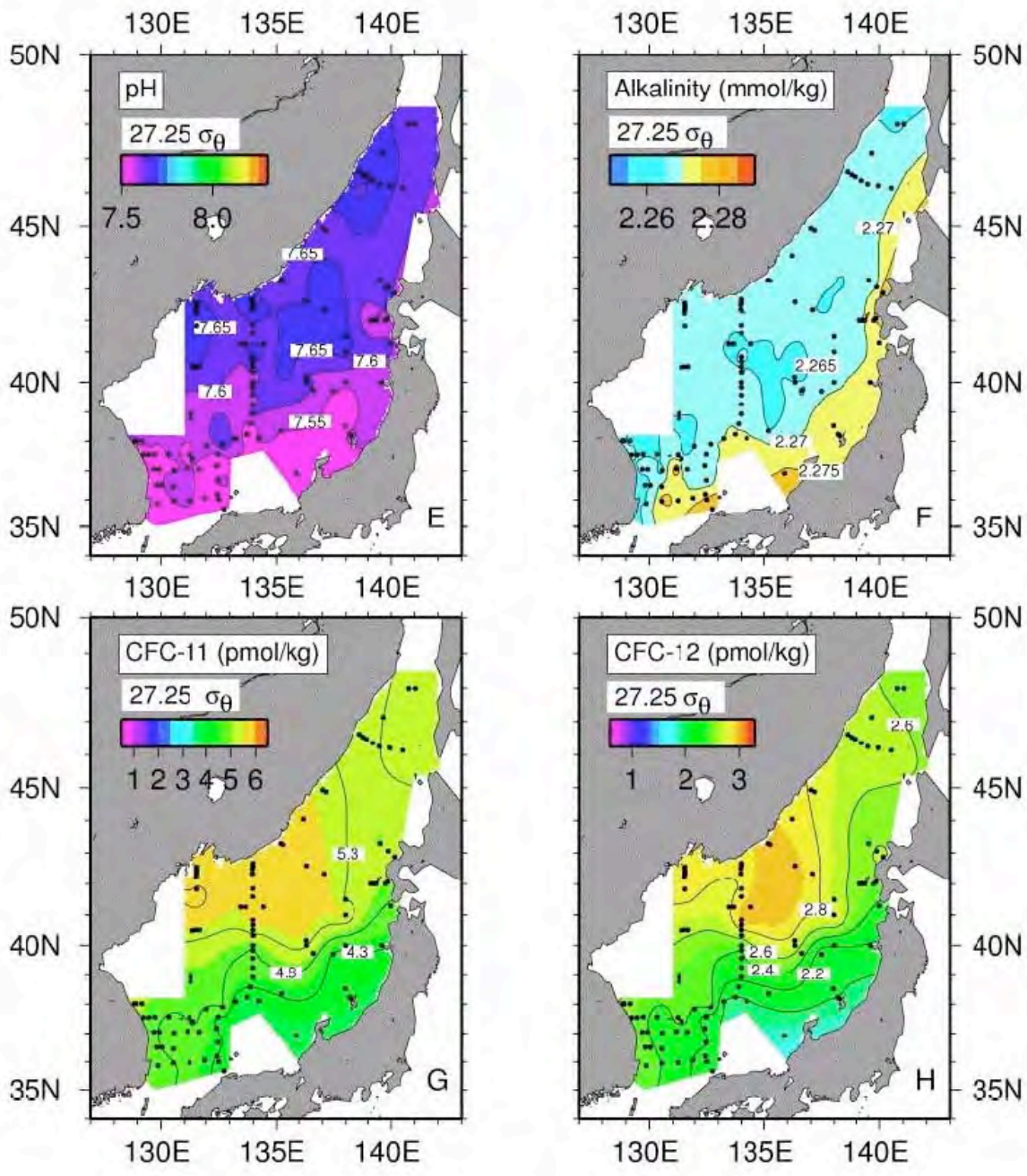


Figure D91. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.25σ_θ (East Sea Intermediate Water salinity minimum).

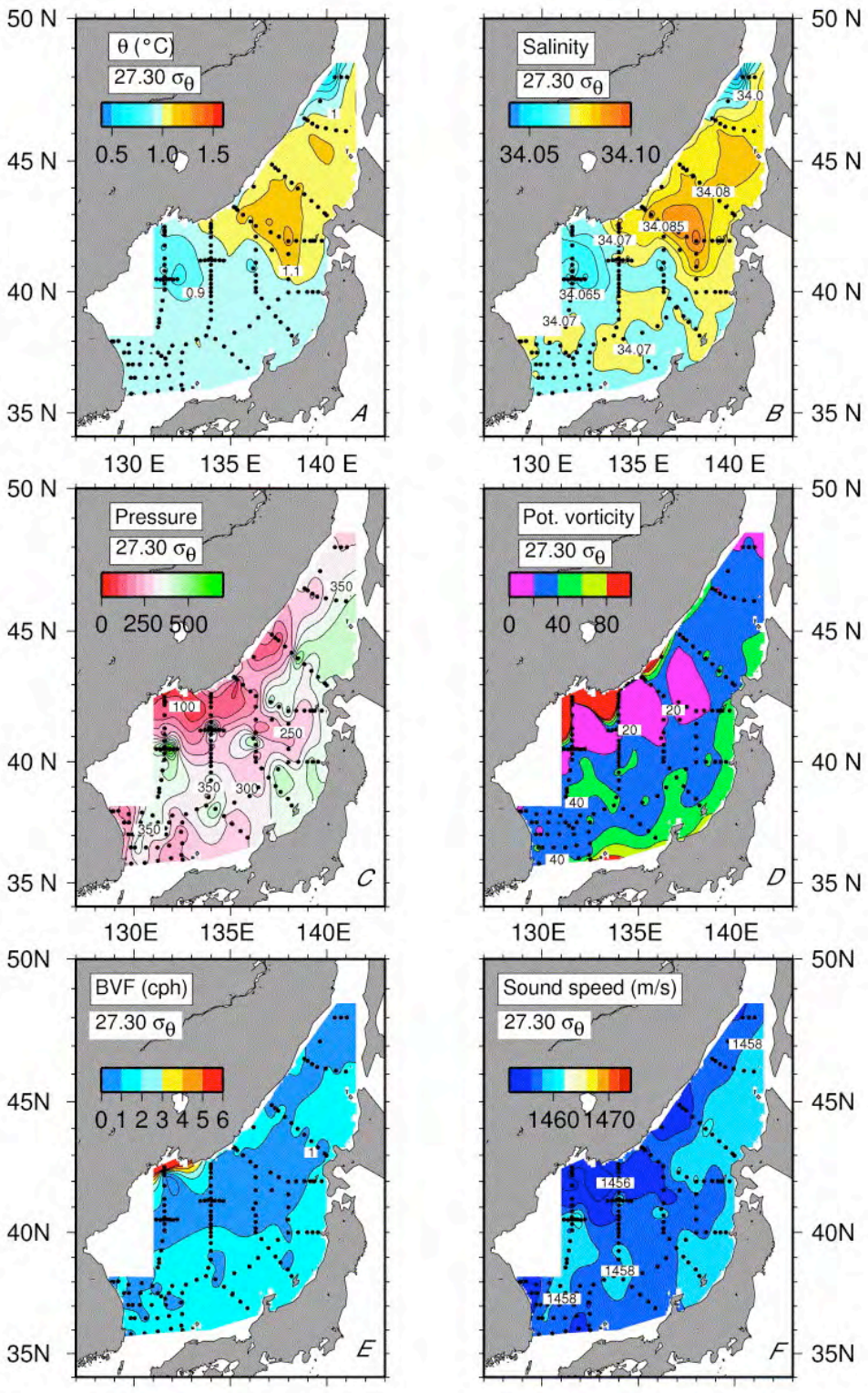
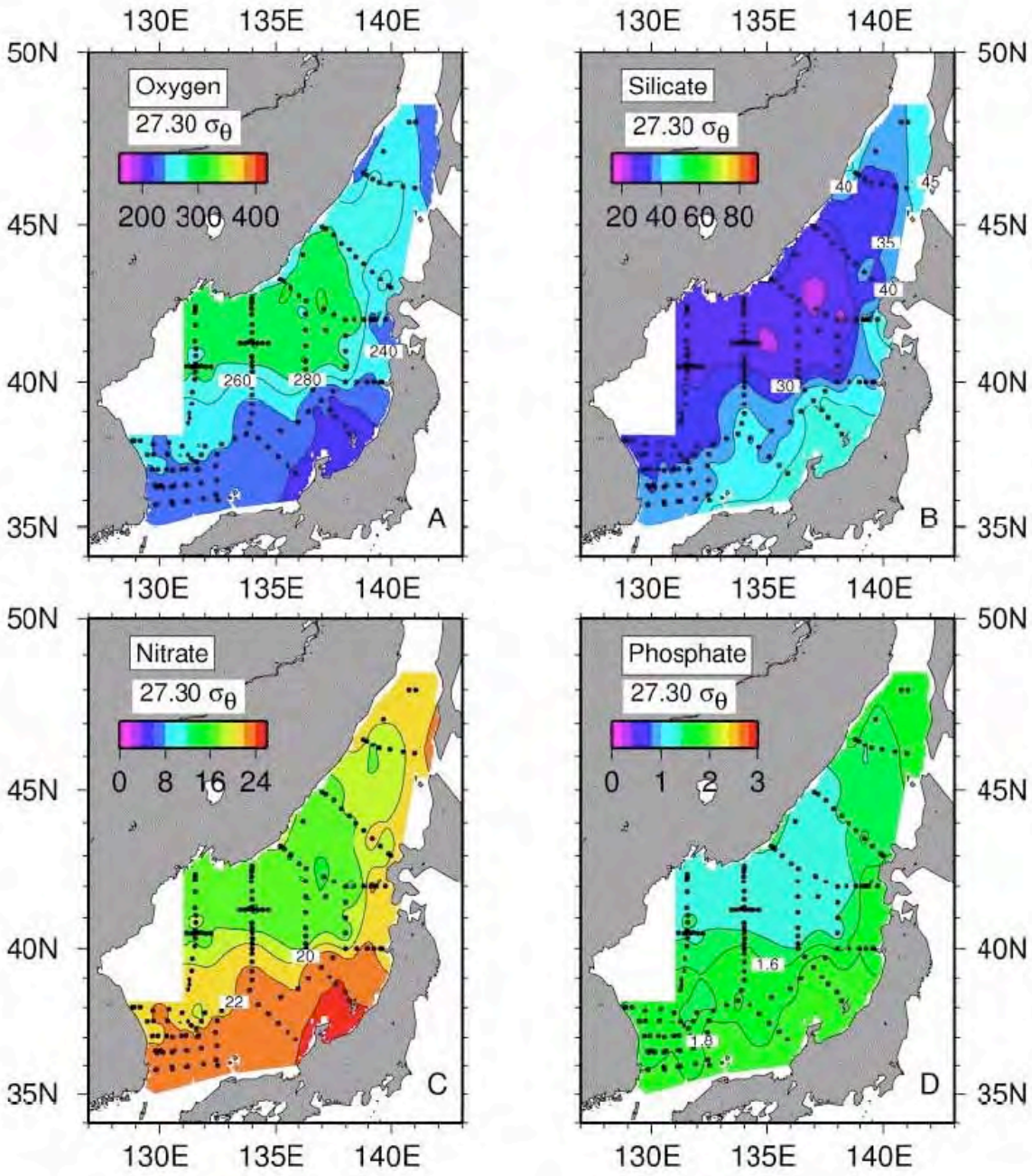


Figure D92. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.3 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
27.30 σθ
200 300 400
240
260
280
A
Silicate
27.30 σθ
20 40 60 80
40
45
35
40
30
B
Nitrate
27.30 σθ
0 8 16 24
20
22
C
Phosphate
27.30 σθ
0 1 2 3
1.6
1.8
D

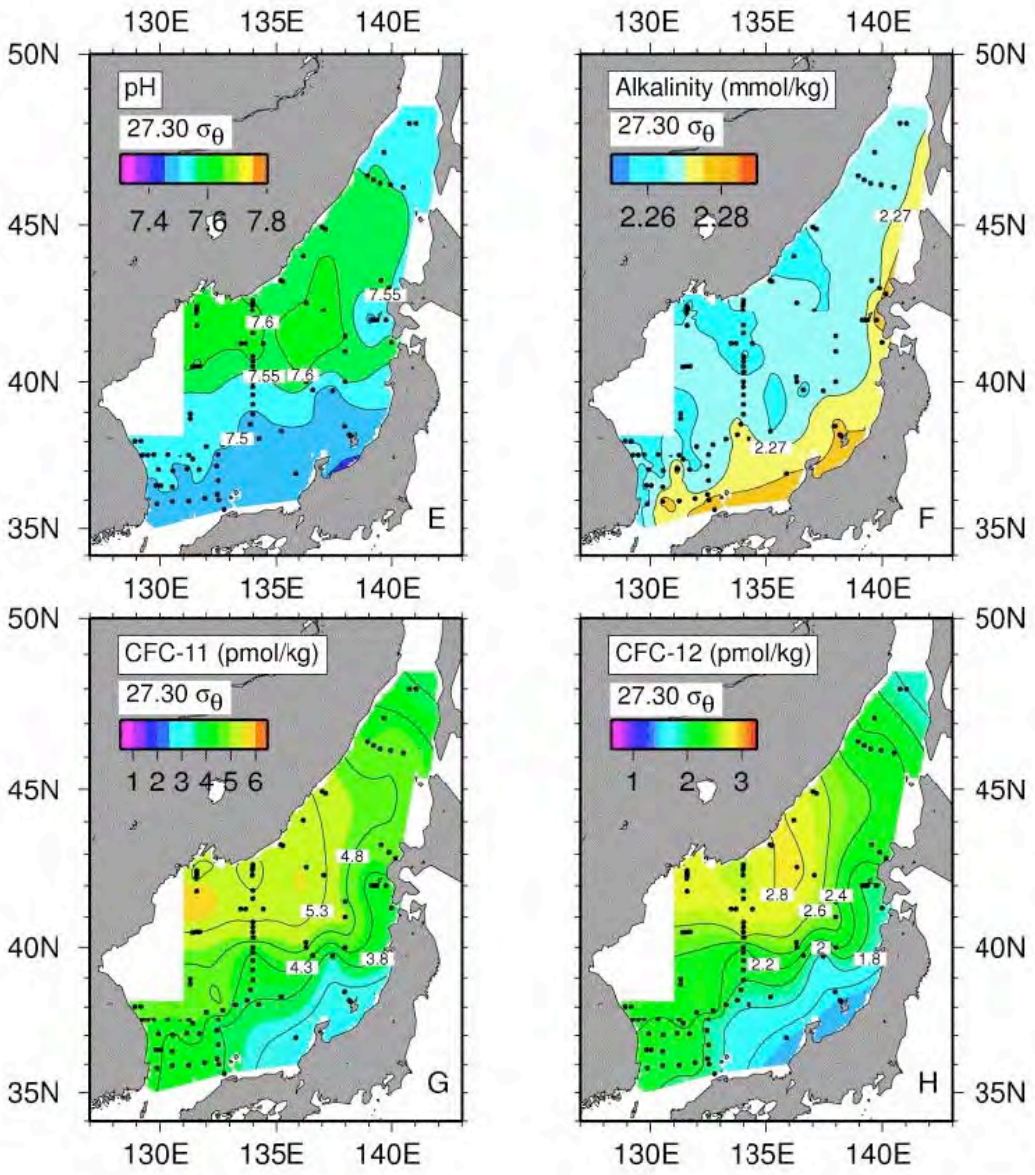


Figure D93. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.3 σ_θ.

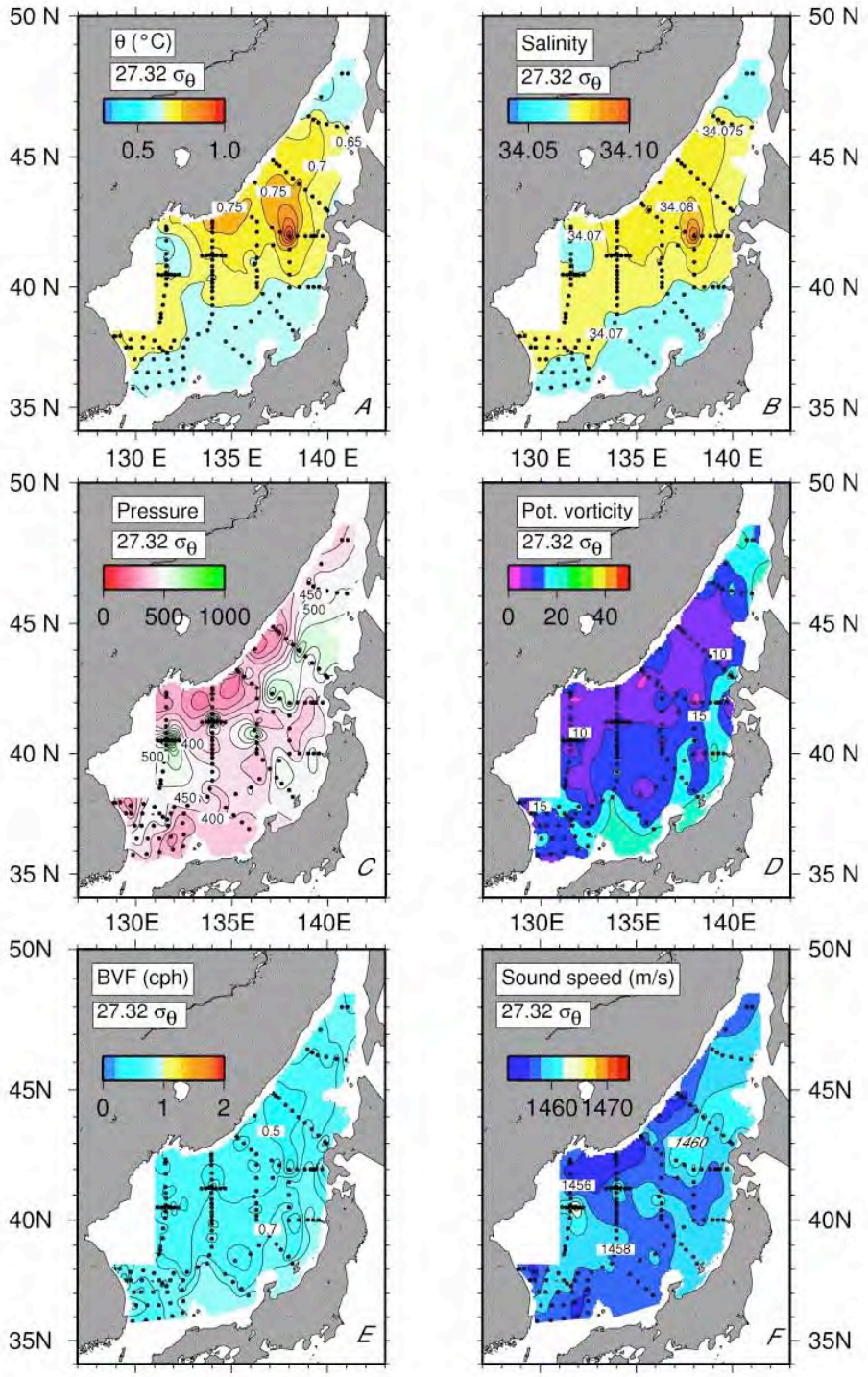
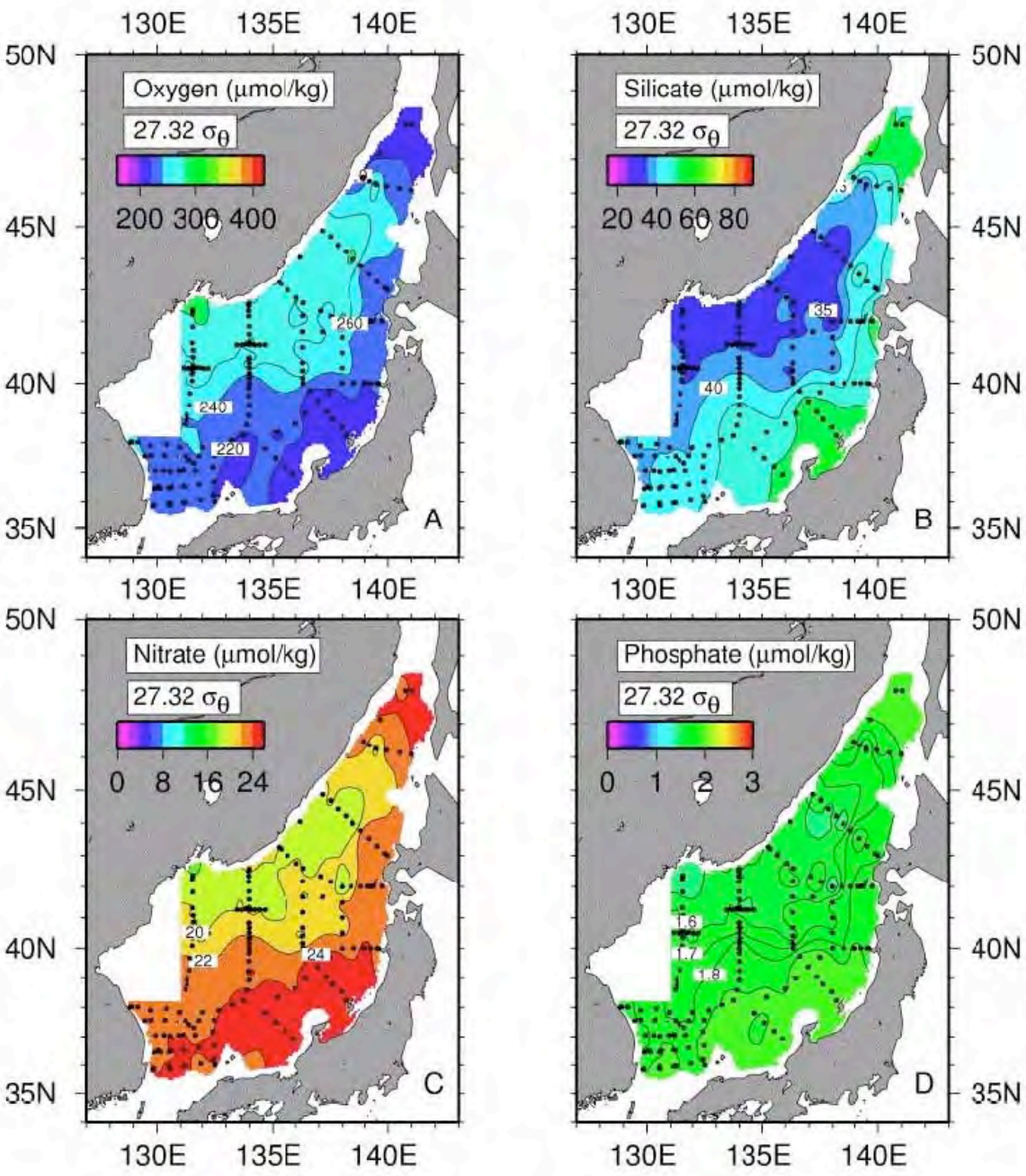


Figure D94. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.32 σ_θ (Upper Japan Sea Proper Water main salinity maximum).


130E
135E
140E
50N
45N
40N
35N
Oxygen (µmol/kg)
27.32 σθ
200 300 400
260
240
220
A
Silicate (µmol/kg)
27.32 σθ
20 40 60 80
35
40
B
Nitrate (µmol/kg)
27.32 σθ
0 8 16 24
20
22
24
C
Phosphate (µmol/kg)
27.32 σθ
0 1 2 3
1.6
1.7
1.8
D

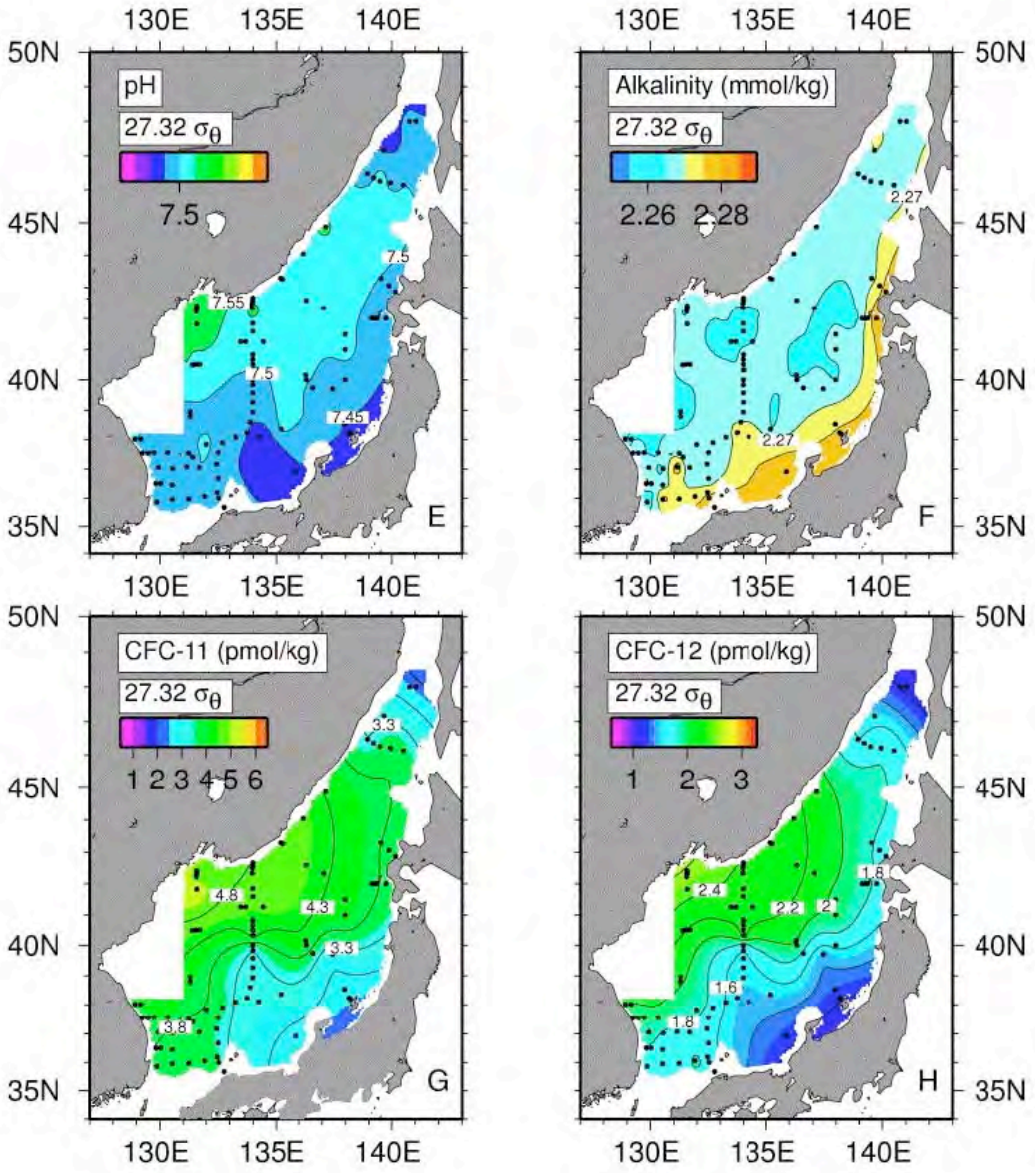


Figure D95. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.32 σ_θ (Upper Japan Sea Proper Water main salinity maximum).

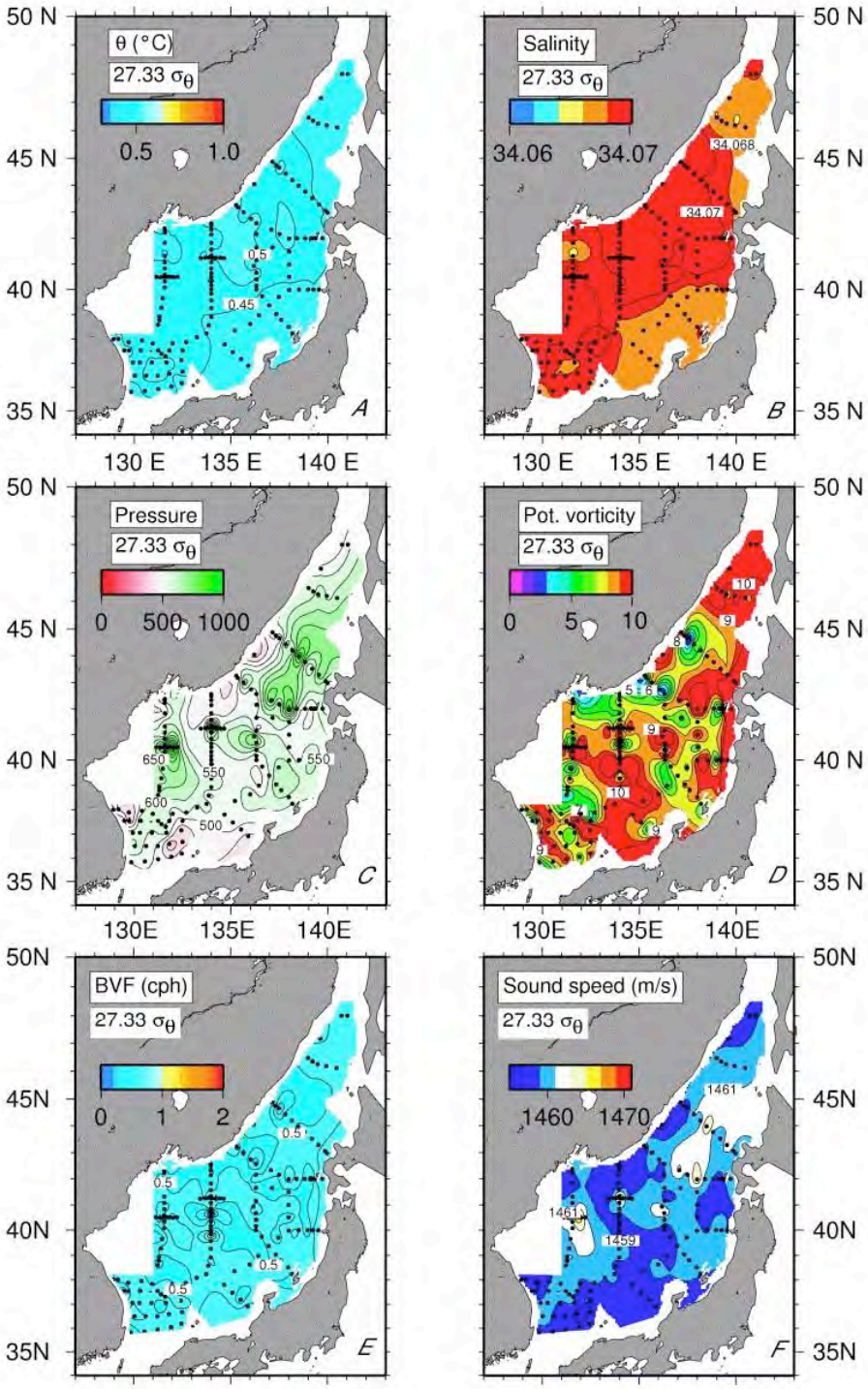
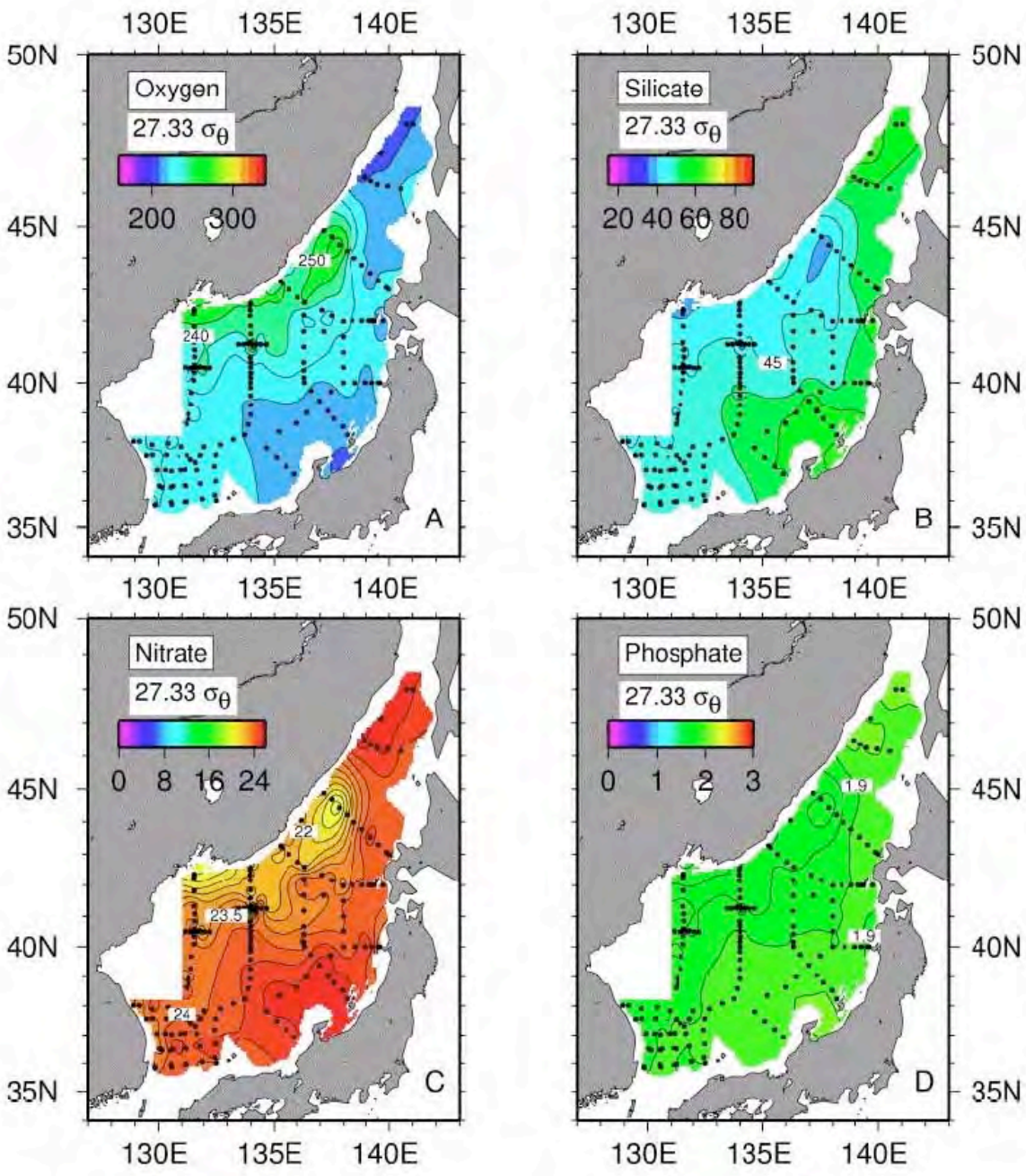


Figure D96. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.33 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
27.33 σθ
200 300
250
240
A
Silicate
27.33 σθ
20 40 60 80
45
B
Nitrate
27.33 σθ
0 8 16 24
22
23.5
24
C
Phosphate
27.33 σθ
0 1 2 3
1.9
1.9
D

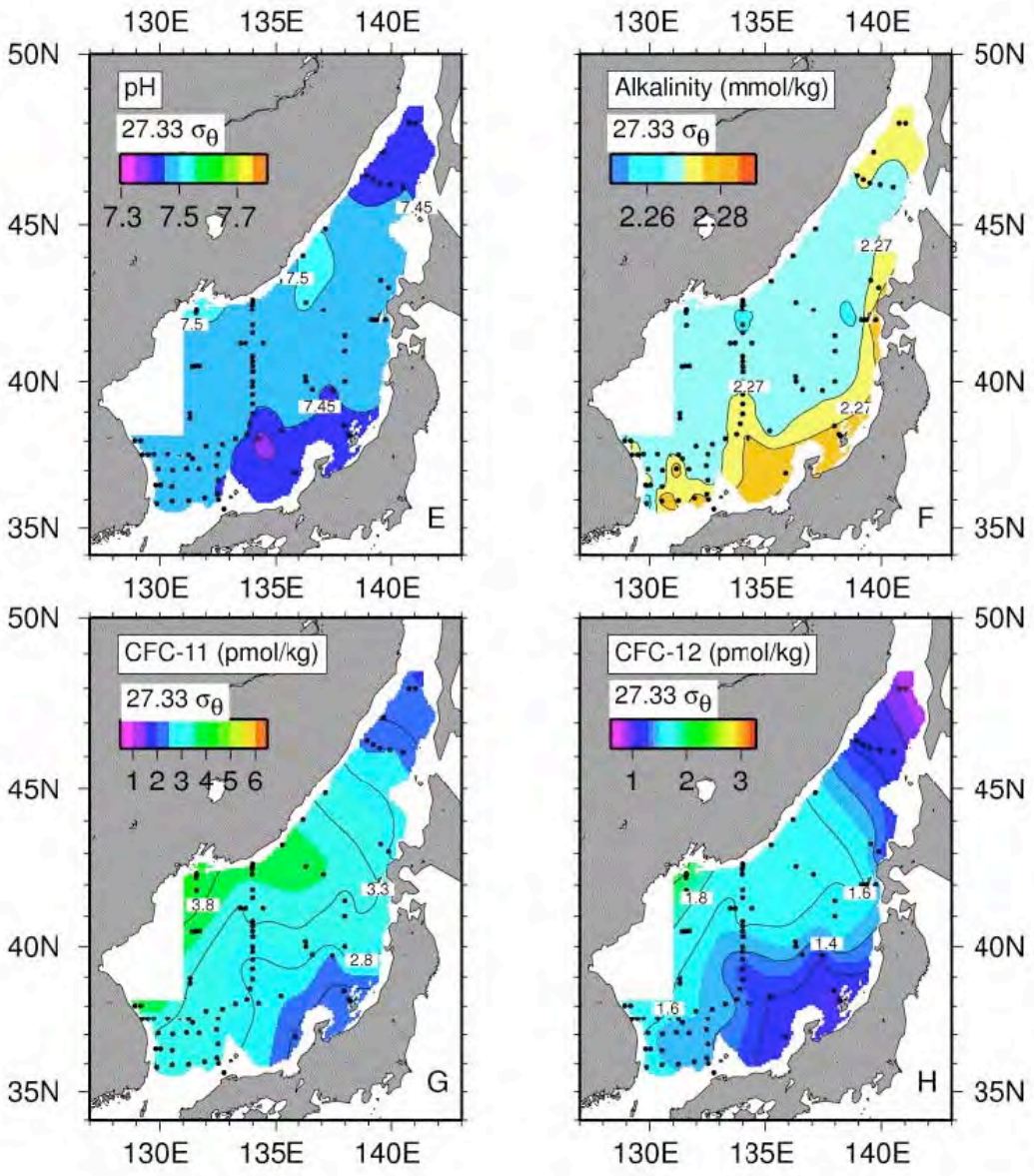


Figure D97. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.33 σ_θ.

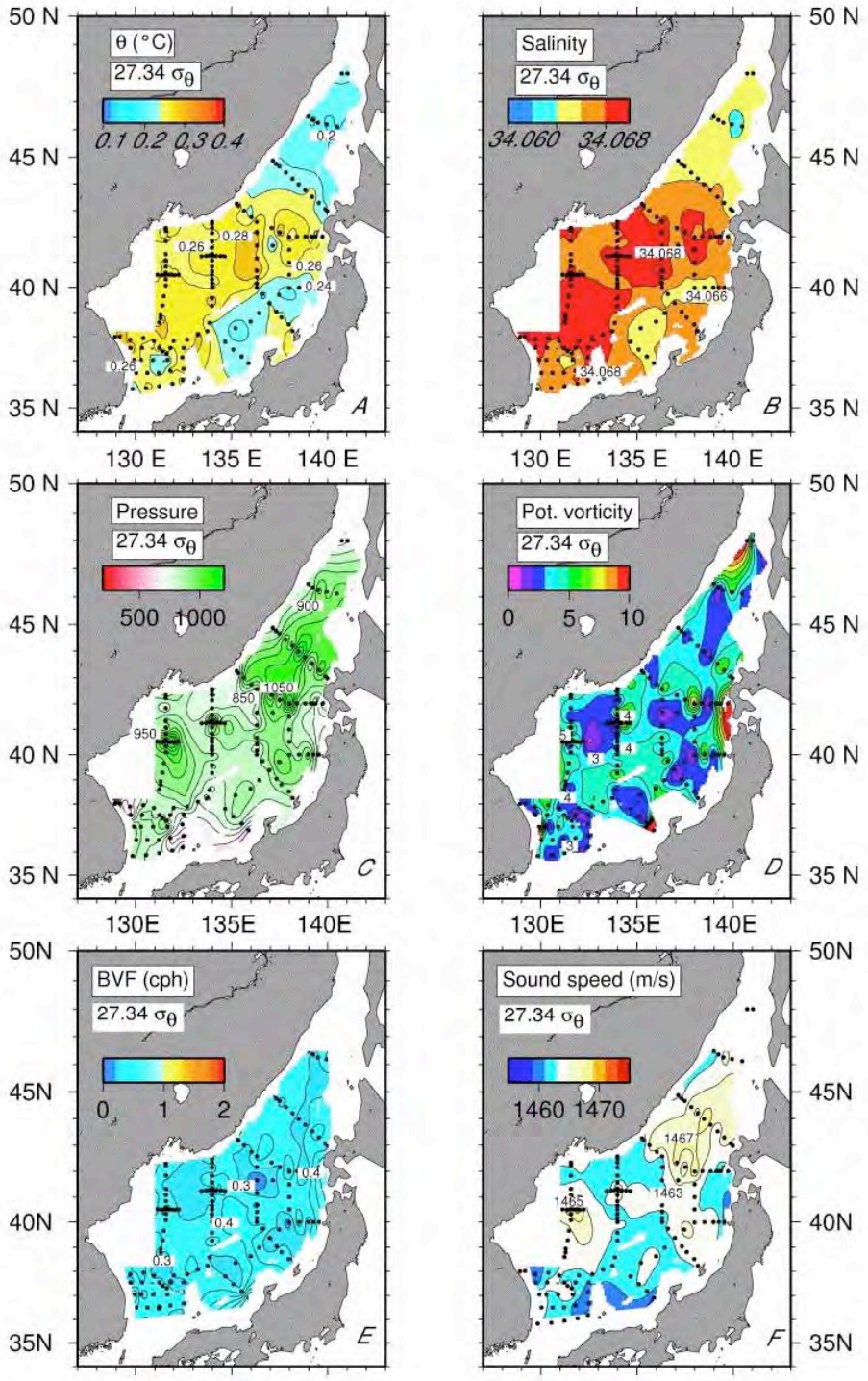
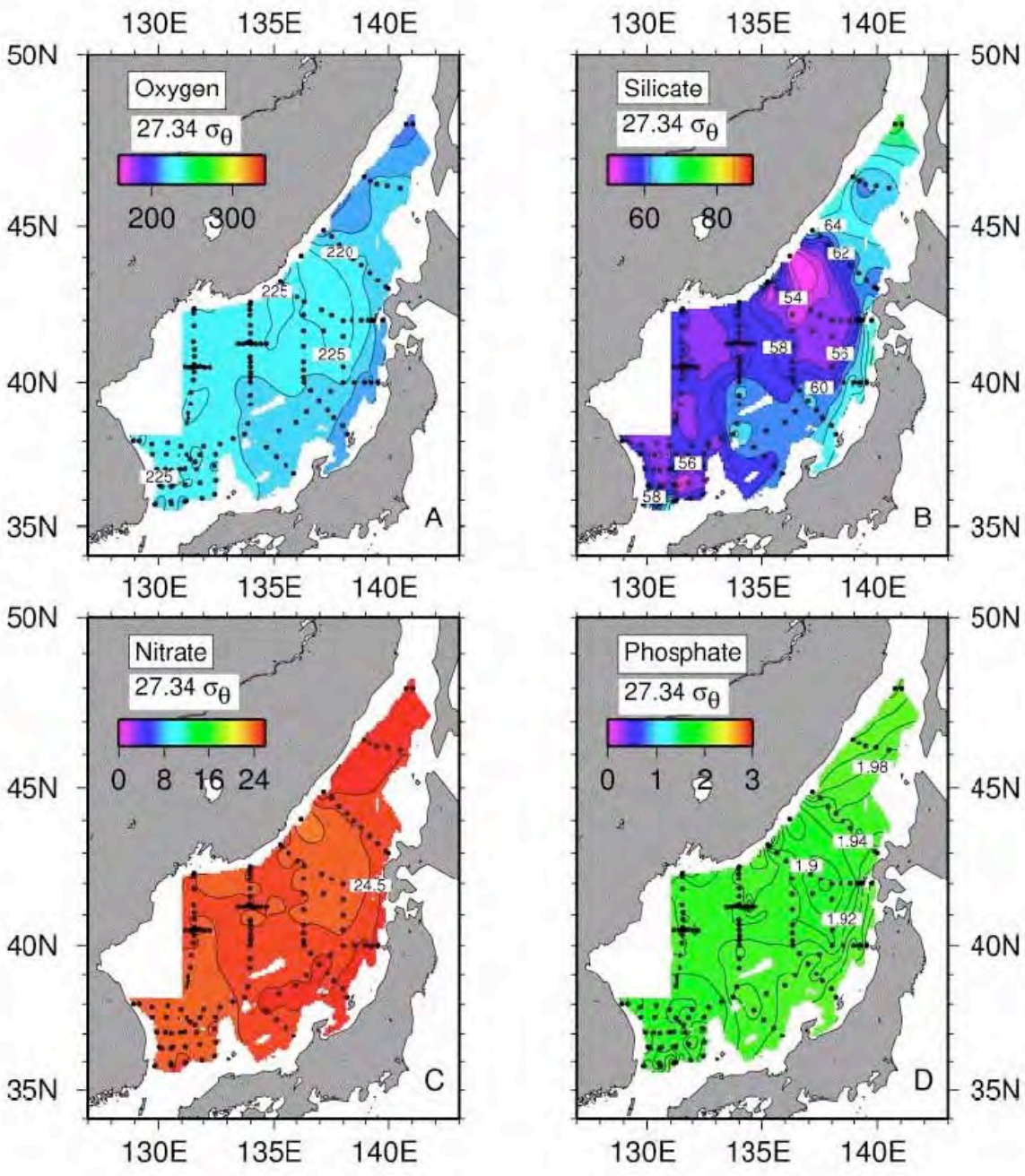


Figure D98. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 27.34 σ_θ.


130E
135E
140E
50N
45N
40N
35N
Oxygen
27.34 σθ
200
300
220
225
225
225
A
Silicate
27.34 σθ
60
80
64
62
54
58
56
60
58
B
Nitrate
27.34 σθ
0
8
16
24
24.5
C
Phosphate
27.34 σθ
0
1
2
3
1.98
1.94
1.9
1.92
D

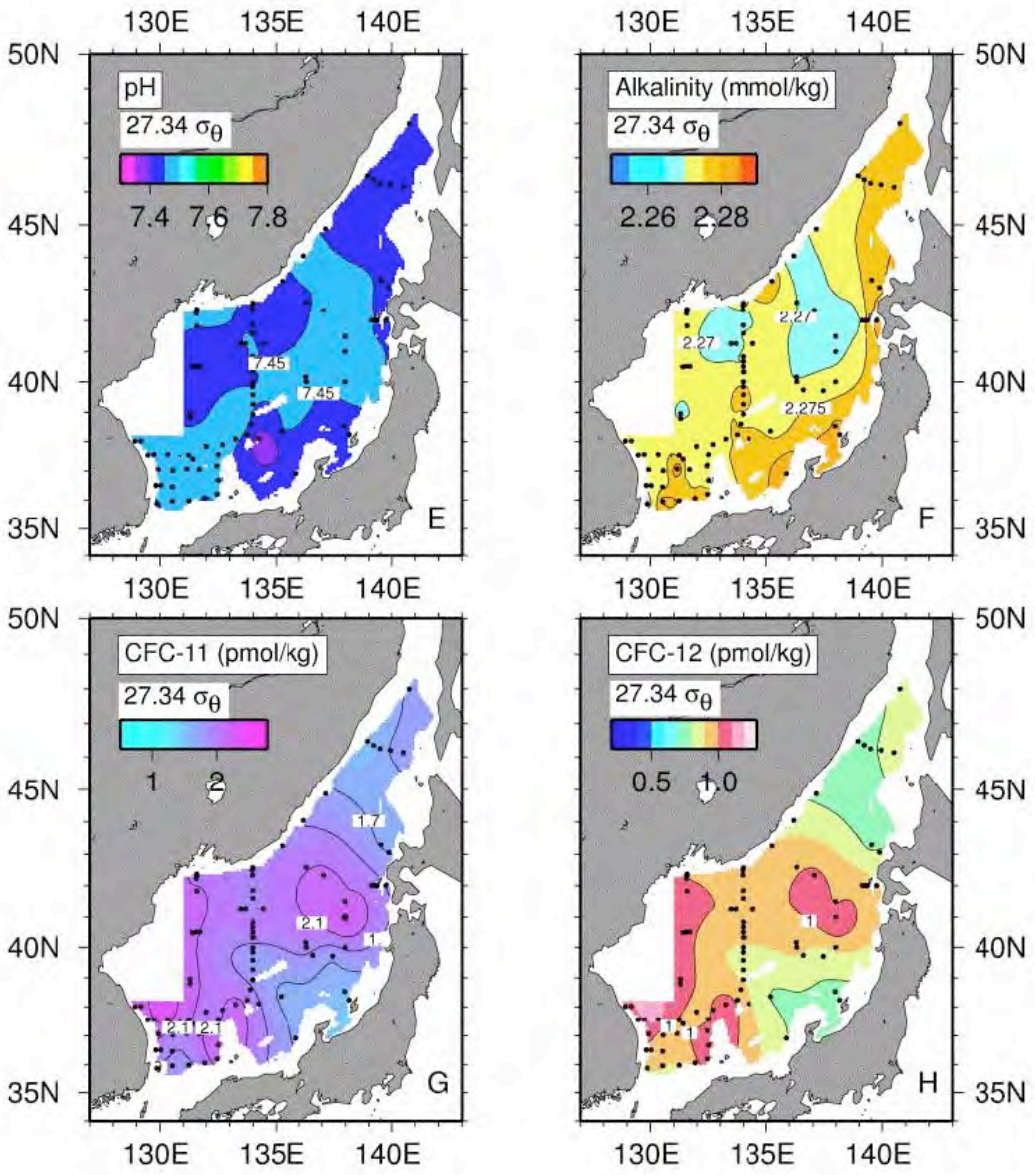


Figure D99. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 27.34 σ_θ.

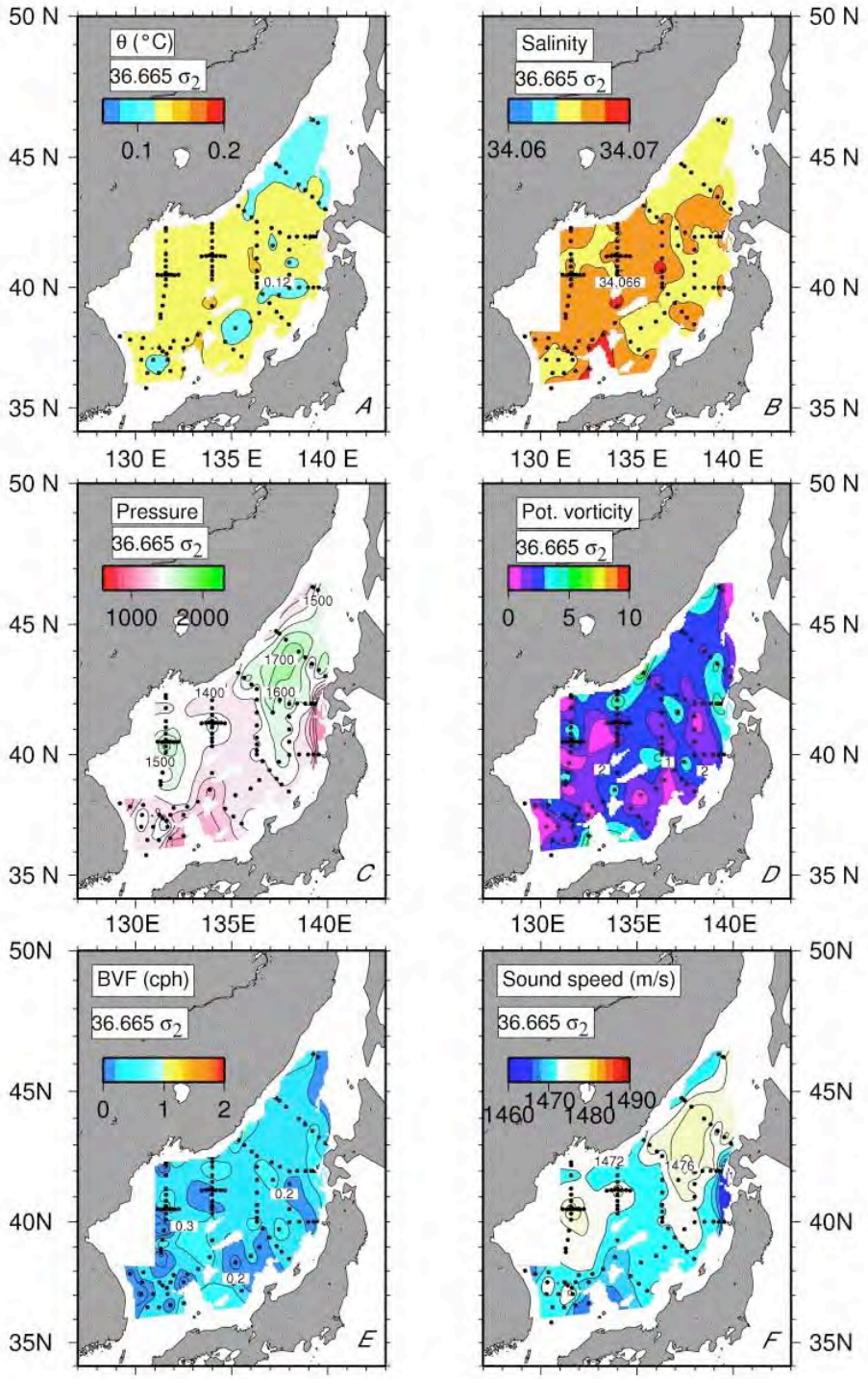
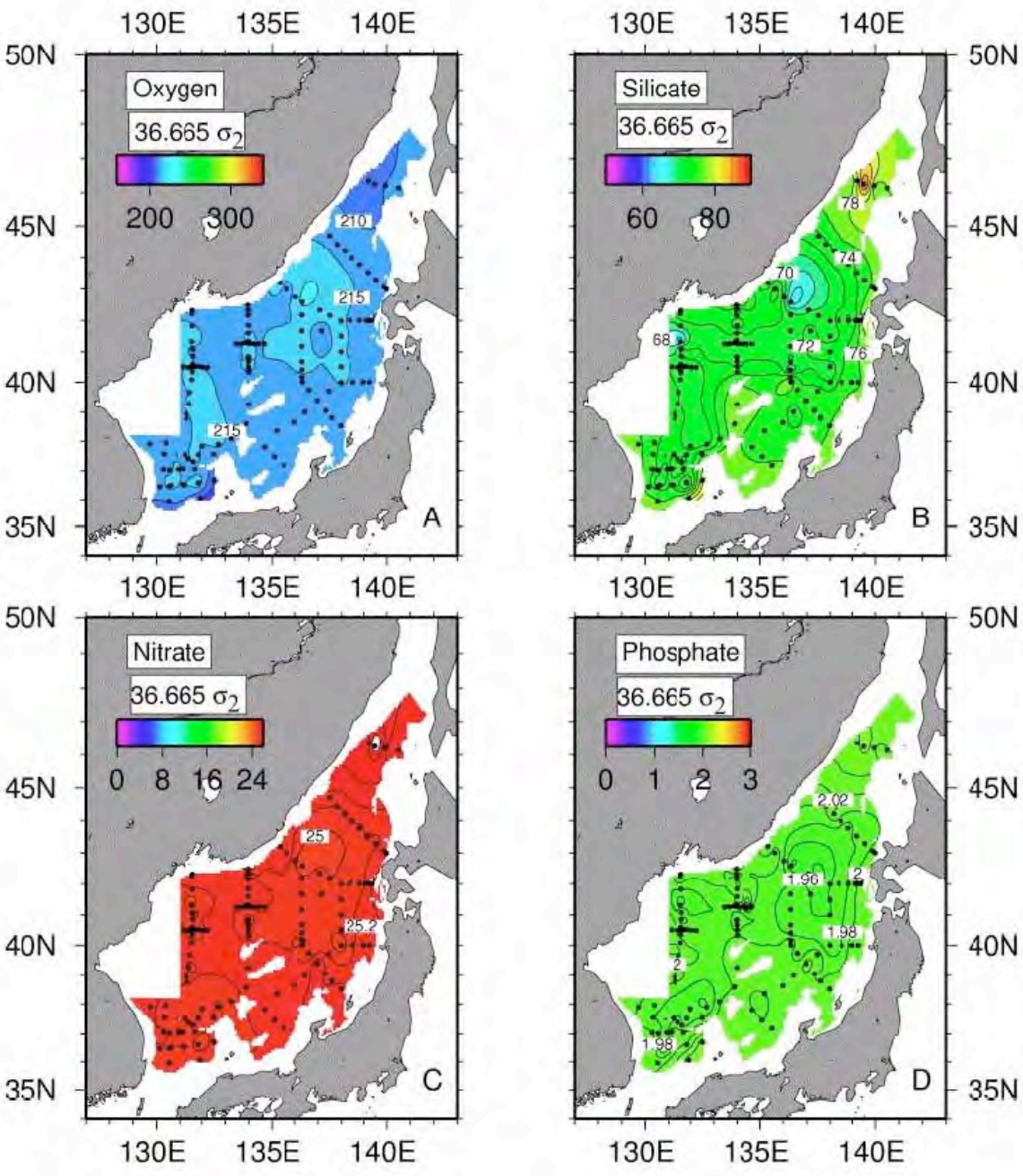


Figure D100. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 36.665 σ_2 (East Sea Deep Intermediate Water salinity minimum).


130E
135E
140E
50N
45N
40N
35N
Oxygen
36.665 σ2
200
300
210
215
215
A
Silicate
36.665 σ2
60
80
78
74
70
68
72
76
B
Nitrate
36.665 σ2
0
8
16
24
25
25.2
C
Phosphate
36.665 σ2
0
1
2
3
2.02
1.96
2
1.98
2
1.98
D

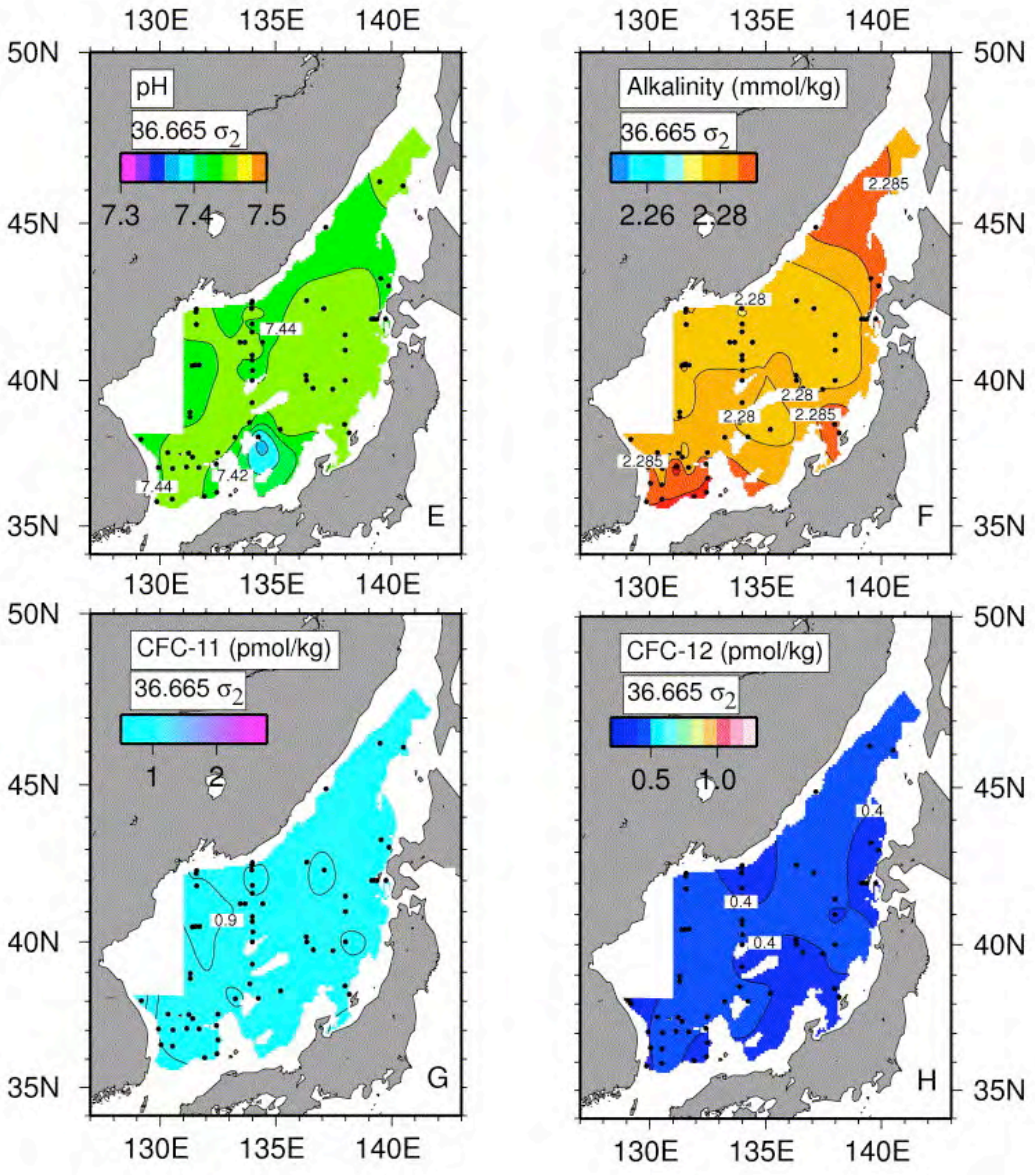


Figure D101. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 36.665 σ_2 (East Sea Deep Intermediate Water salinity minimum).

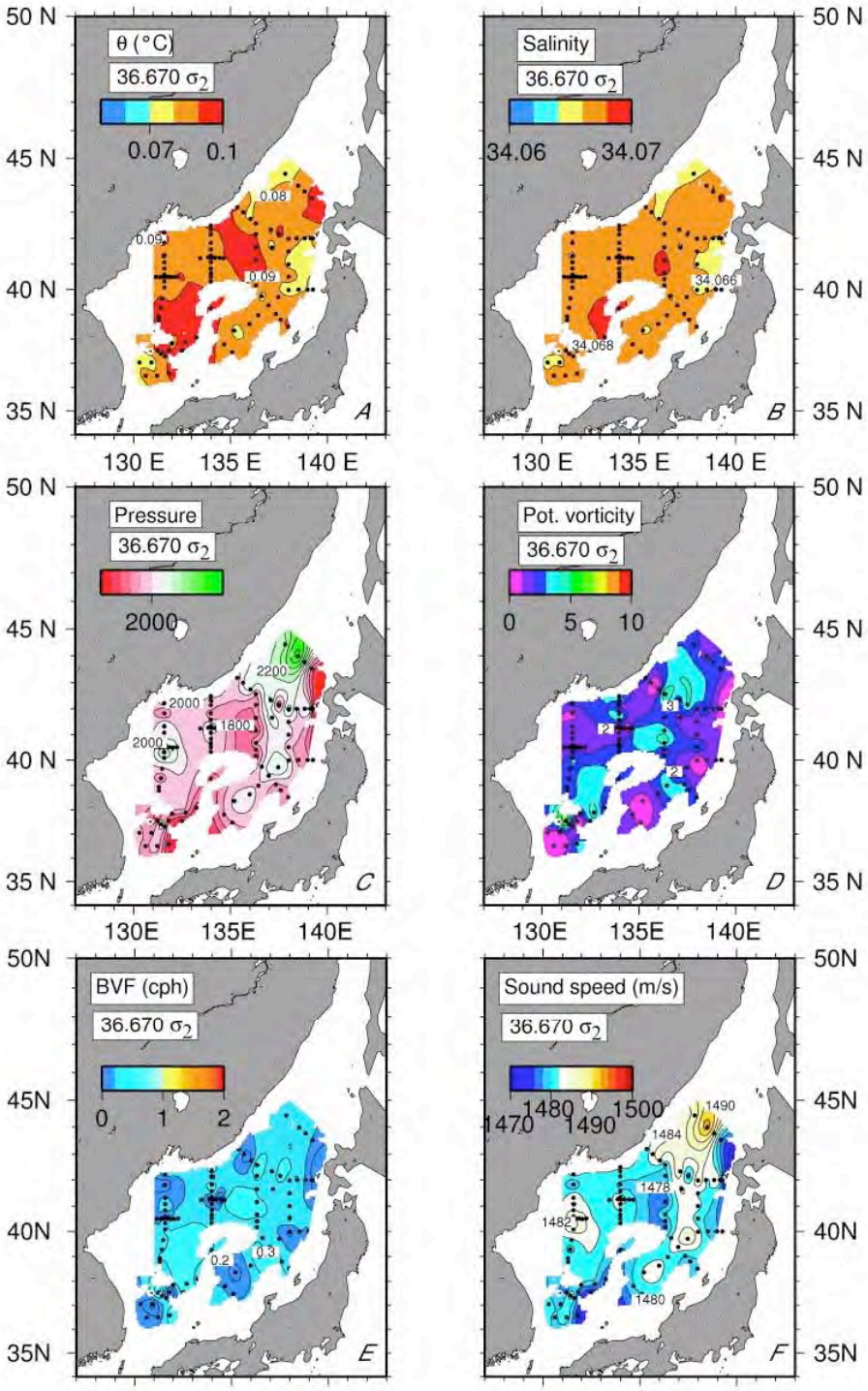
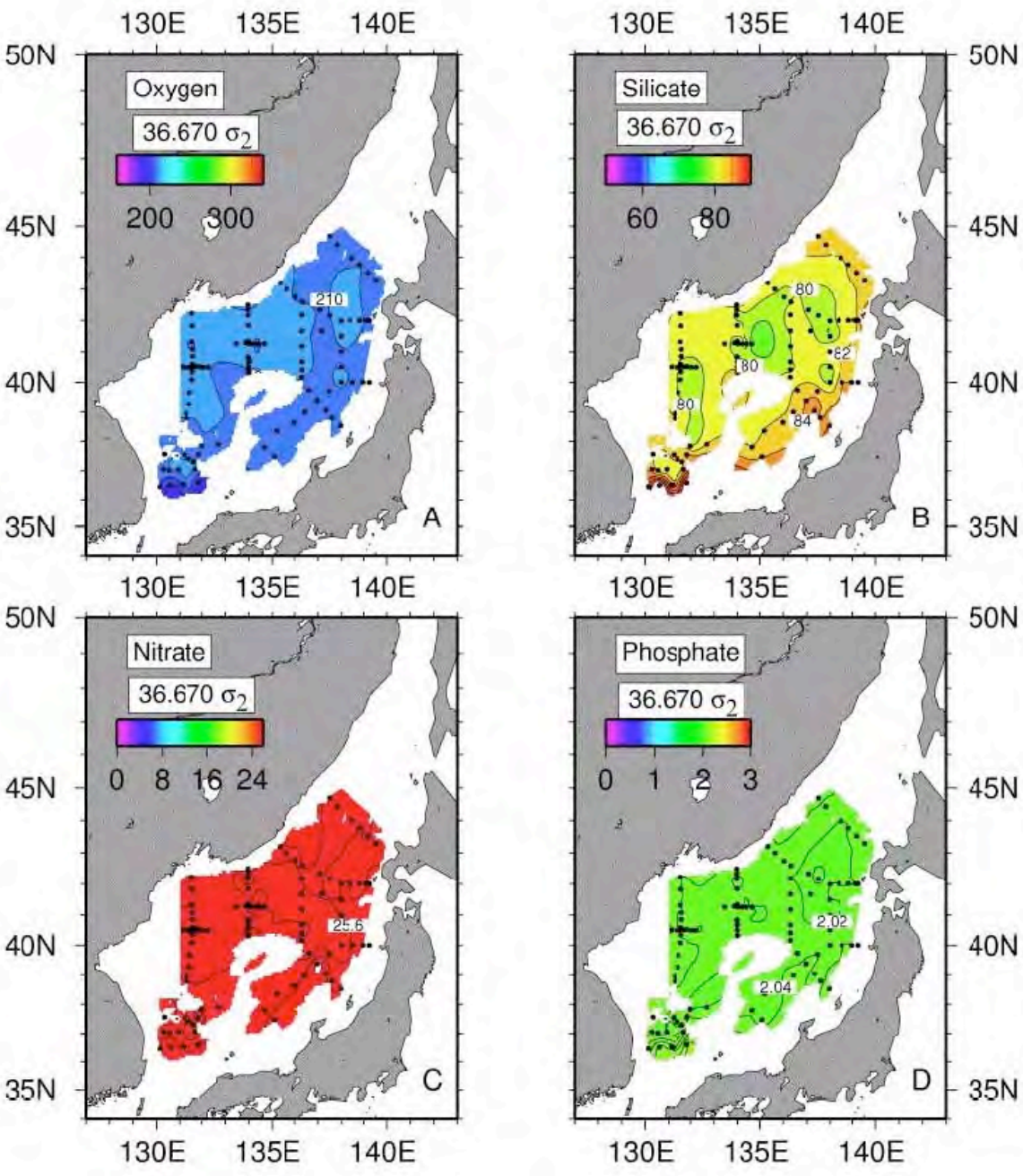


Figure D102. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 36.670 σ_2 (oxygen minimum).


130E
135E
140E
50N
45N
40N
35N
Oxygen
36.670 σ2
200
300
210
A
Silicate
36.670 σ2
60
80
80
82
80
84
B
Nitrate
36.670 σ2
0
8
16
24
25.6
C
Phosphate
36.670 σ2
0
1
2
3
2.02
2.04
D

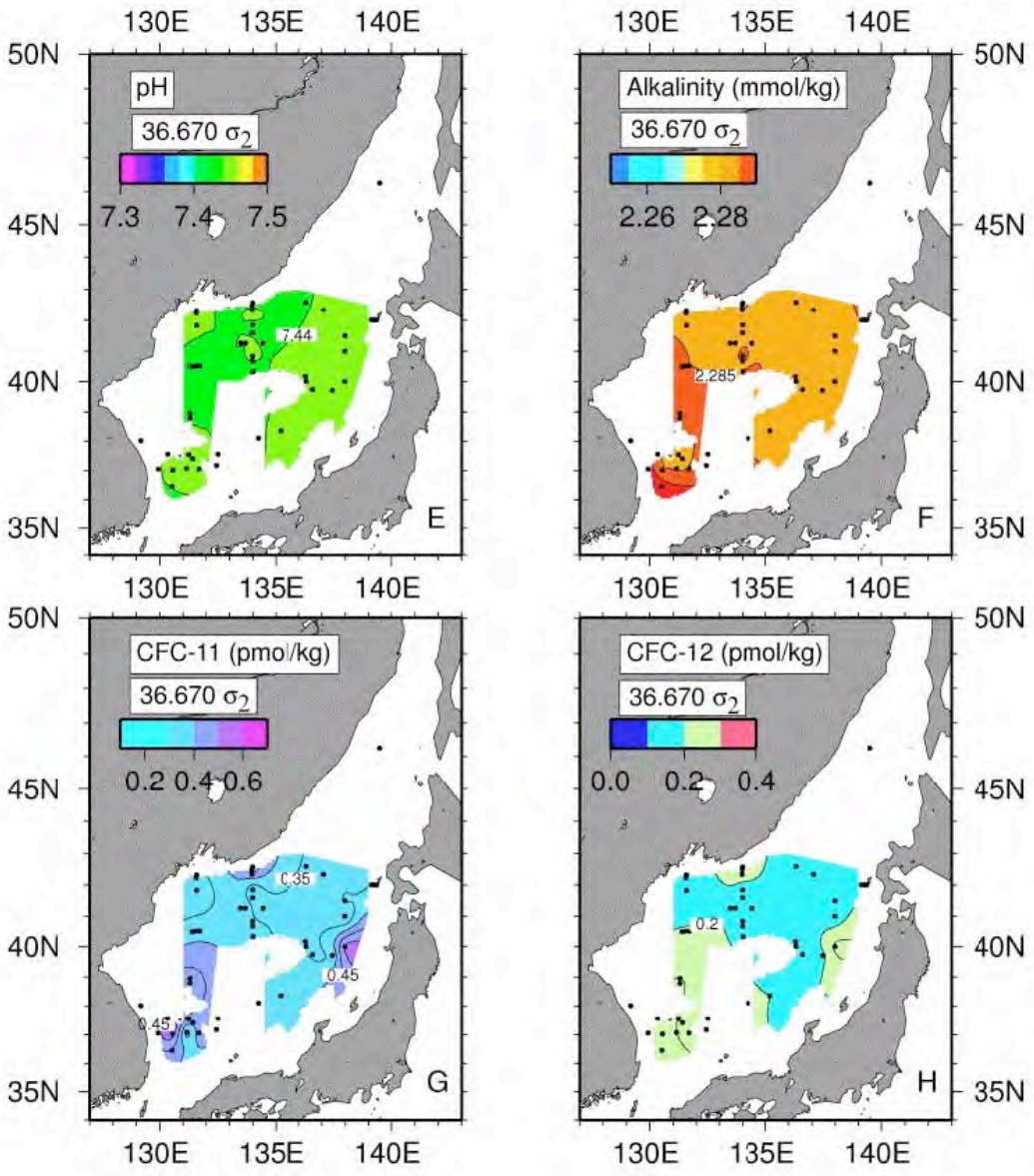


Figure D103. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg), (e) pH, (f) alkalinity (mmol/kg), (g) CFC-11 (pmol/kg), and (h) CFC-12 (pmol/kg) at 36.670 σ_2 (oxygen minimum).

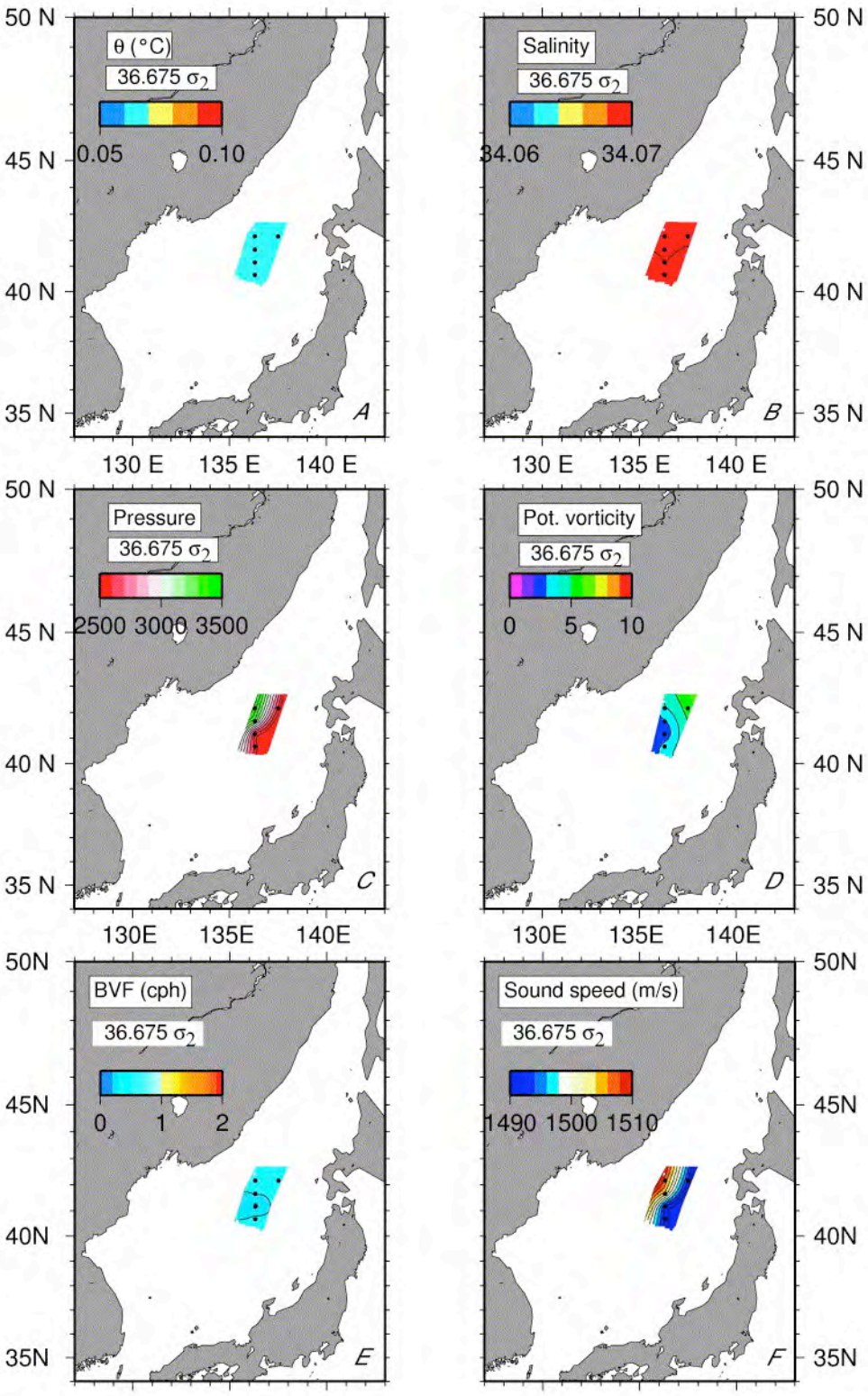


Figure D104. Maps of (a) potential temperature (°C), (b) salinity, (c) pressure (dbar), (d) isopycnal potential vorticity (x 10^{-14} cm^{-1} sec^{-1}) at 36.675 σ_2 (near bottom).

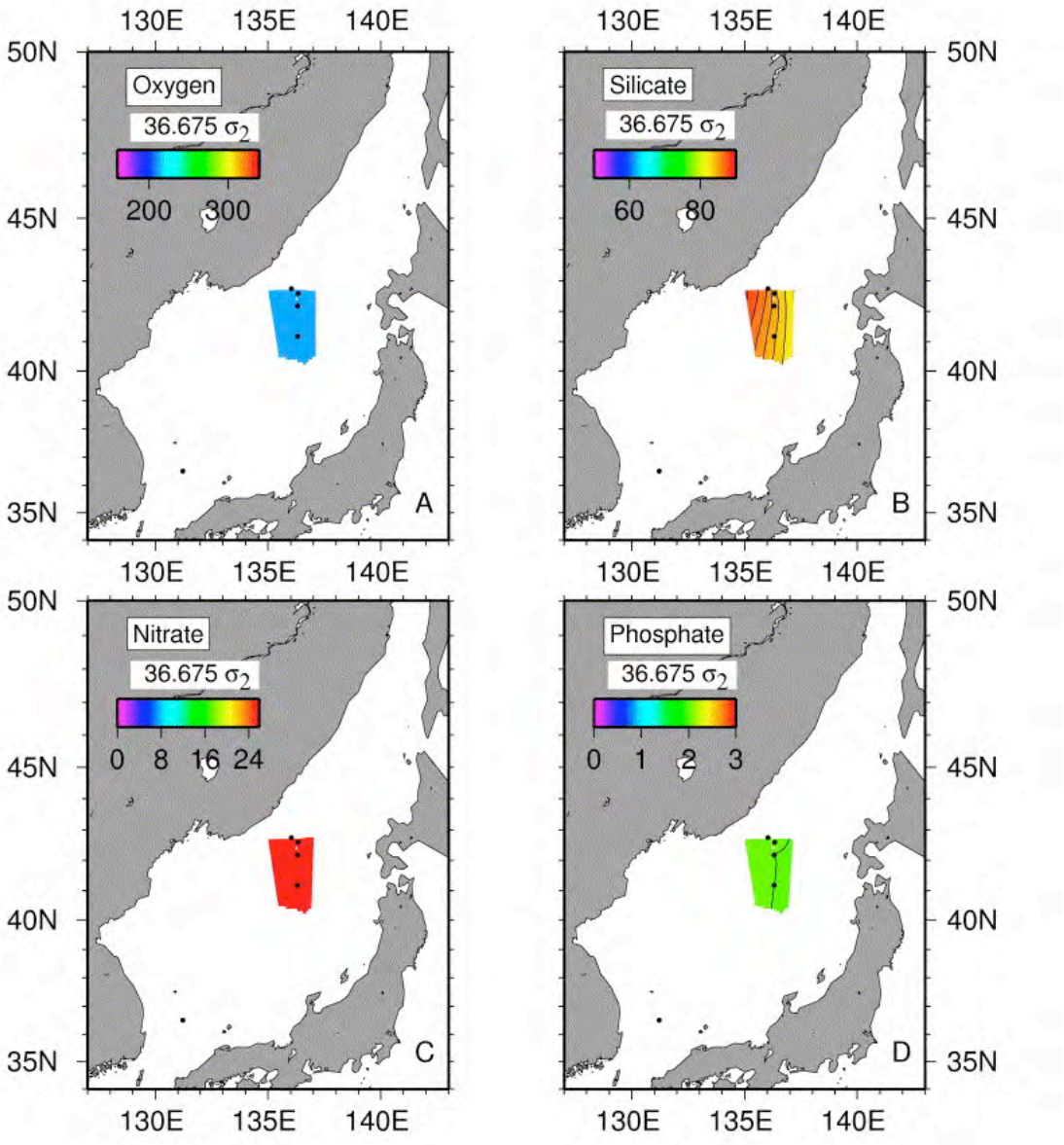


Figure D105. (a) Oxygen (μmol/kg), (b) dissolved silica (μmol/kg), (c) nitrate (μmol/kg), (d) phosphate (μmol/kg) at 36.675 σ_2 (near bottom).