

We thank the reviewer for the constructive comments and positive assessment of our dataset and interpretations in the manuscript. We have addressed all comments point by point as below.

We thank the reviewer for this comment. The S/M/B classification is now clearly defined and justified in the revised manuscript:

S/M/B are station-relative sampling layers, not fixed-depth bins or water masses. In the revised Methods (Section 2.1), we explicitly define S (surface layer), M (mid-water layer), and B (near-bottom layer) as relative vertical layers within each station. Because bottom depth varied from 162 m to 1175 m across shelf, slope, and basin-margin settings (Table S1a), a fixed-depth scheme would make the same "layer" correspond to different hydrographic environments across stations.

Sampling depths and hydrographic data are now provided in Table S1b. We added a Sampling_depth_m column listing the actual sampling depth for each sample, together with temperature and salinity. Sampling depths were 0 m (S), 100–500 m (M), and 162–1175 m (B), confirming that the three layers represent consistent vertical positions within each station.

The Discussion now interprets community shifts in relation to measured temperature–salinity characteristics rather than relying solely on the three simplified groups.

We believe these revisions make the sampling scheme transparent and oceanographically justified. All changes are marked in the manuscript.

Minor comment:

- The abstract is bringing up the value of their findings in the context of climate change, but I didn't see any discussion on this and I wasn't clear what the implications are.

Response:

We thank the reviewer for this comment. We agree that the original Abstract implied a climate-change relevance that was not developed in the Discussion.

We have revised the final sentence of the Abstract to remove this unsupported framing. The sentence now reads: These findings advance our understanding of depth-stratified bacterial ecology in the Chukchi Sea and provide a baseline for future studies on bacterial community assembly in this region.

This revision aligns the Abstract with the scope of our data and Discussion. We have not added a climate-change discussion because our dataset does not include temporal or climate-related variables, and we prefer to avoid speculation beyond what our results can support. However, climate change considerations will be incorporated in future long-term time-series investigations, and the present work lays a foundational baseline for such follow-up assessments.

All changes are marked in the revised manuscript.

- Fig 4c: Information on different colors for the individual data points is missing.

Response:

We thank the reviewer for pointing this out. We apologize for the missing color legend in Fig. 4c.

We have revised Fig. 4c by adding a legend that explains the color coding of the individual data points, consistent with Fig. 4d. The colors correspond to the three water layers: red = S (surface), blue = M (middle), and green = B (bottom).

The revised Fig. 4c is included in the updated manuscript. All changes are marked in the revised version.

- Table S1: Units are missing.

Response

Thank you for this important comment.

We have added complete units for each environmental variable within the table header. Numerical precision has been standardized across the whole supplementary table.

We have also revised the table caption and footnote following journal formatting requirements. The updated Table S1(b) is included in the revised supplementary material.

- Spaces are missing throughout the manuscript.

Response:

We thank the reviewer for pointing this out. We have carefully checked the entire manuscript and corrected all missing spaces, including those between words, after punctuation, and between numbers and units. The revised manuscript has been formatted according to the journal's style requirements. All changes are marked in the revised version.

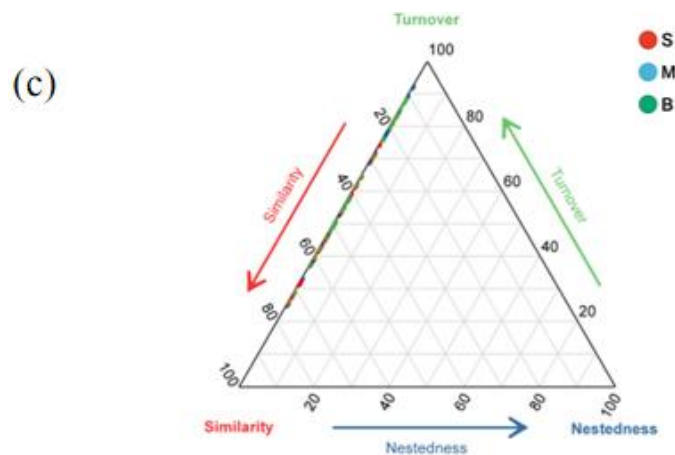


Figure 4: (c) Ternary plot partitioning total β -diversity into similarity, species turnover and nestedness components.

(a)

STATION_NAME	Latitude	Longitude	Bottom_depth_m	Geographical_category
R11_S	73.99468	-168.50477	162	Shelf
R11_M	73.99468	-168.50477	162	Shelf
R11_B	73.99468	-168.50477	162	Shelf
R12_S	74.73367	-168.4864	170	Shelf
R12_M	74.73367	-168.4864	170	Shelf
R12_B	74.73367	-168.4864	170	Shelf
R13_S	75.50528	-168.6236	164	Slope
R13_M	75.50528	-168.6236	164	Slope
R13_B	75.50528	-168.6236	164	Slope
R16_S	77.76623	-168.42512	515	Slope
R16_M	77.76623	-168.42512	515	Slope
R16_B	77.76623	-168.42512	515	Slope
P1_07_S	75.03767	-164.19582	575	Shelf
P1_07_M	75.03767	-164.19582	575	Shelf
P1_07_B	75.03767	-164.19582	575	Shelf
P2_04_S	76.87042	-165.79413	1076	Slope
P2_04_M	76.87042	-165.79413	1076	Slope
P2_04_B	76.87042	-165.79413	1076	Slope
P2_05_S	76.6204	-163.73822	544	Slope
P2_05_M	76.6204	-163.73822	544	Slope
P2_05_B	76.6204	-163.73822	544	Slope
P2_08_S	75.66578	-156.5149	1175	Basin-margin
P2_08_M	75.66578	-156.5149	1175	Basin-margin
P2_08_B	75.66578	-156.5149	1175	Basin-margin

(b)

STATION_NAME	NH ₄ ⁺ (µg L ⁻¹)	SiO ₂ -Si (µg L ⁻¹)	DO (µmol L ⁻¹)	PO ₄ ³⁻ (µg L ⁻¹)	NO ₂ ⁻ (µg L ⁻¹)	D (m)	chl _a (mg m ⁻³)	T(°C)	Salinity
R11_S	0.44	25.0	917.45	134.0	5.31	0	0.02	-1.34	30.13
R12_S	0.80	144.0	821.18	19.7	0.43	0	0.00	-1.3	29.83
R13_S	8.11	175.0	869.22	134.0	0.00	0	0.34	-1.32	29.96
R16_S	0.00	142.0	962.91	21.2	0.00	0	3.61	-1.29	29.35
P1_07_S	4.87	144.0	813.59	27.3	0.00	0	0.02	-1.21	28.98
P2_04_S	2.55	148.0	840.77	22.3	0.00	0	0.00	-1.26	28.50
P2_05_S	0.64	154.0	805.45	28.6	0.00	0	0.01	-1.12	28.50
P2_08_S	8.20	124.0	791.74	74.9	0.00	0	0.00	-0.63	27.18
R11_M	1.61	1334.0	529.82	43.0	0.72	100	0.02	-1.54	32.77
R12_M	0.00	1005.0	612.40	60.7	0.78	100	0.00	-1.65	32.71
R13_M	0.00	787.0	529.18	43.0	0.31	150	0.01	-0.57	34.14
R16_M	0.00	250.0	601.17	26.9	0.00	200	0.01	-0.58	34.47
P1_07_M	0.00	725.0	528.46	43.3	0.40	200	0.00	-0.66	34.15
P2_04_M	0.00	154.0	605.57	29.4	0.00	500	0.00	0.88	34.86
P2_05_M	0.00	389.0	537.86	40.2	0.00	200	0.00	-0.68	34.27
P2_08_M	0.00	244.0	601.98	28.0	0.00	500	0.00	0.84	34.86
R11_B	1.34	1593.2	514.67	41.4	1.13	162	0.00	-0.12	34.49
R12_B	0.94	750.0	511.04	43.3	1.74	170	0.00	-0.43	34.26
R13_B	0.00	736.0	525.46	41.4	0.86	164	0.01	-0.42	34.29
R16_B	0.00	184.0	605.11	28.3	0.00	515	0.00	0.84	34.87
P1_07_B	0.00	219.0	609.23	26.5	0.63	575	0.00	0.81	34.87
P2_04_B	0.00	214.0	604.36	29.9	0.00	1076	0.00	0.52	34.88
P2_05_B	0.00	124.0	604.16	27.7	0.00	544	0.00	0.78	34.88
P2_08_B	1.85	256.0	617.89	45.4	0.00	1175	0.00	-0.06	34.90

NH₄⁺: ammonium nitrogen; SiO₂-Si: silicate; DO: dissolved oxygen; PO₄³⁻: phosphate; NO₂⁻: nitrite; D: Sampling_depth_m; chl_a: chlorophyll-*a*; T: temperature

TableS1. Physical and chemical properties in 8 Stations.