
Supplementary information

Flourishing chemosynthetic life at the greatest depths of hadal trenches

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Supplementary Table 1 Location of all dive sites during the expedition and descriptions of seep fields.

	Dive #	Latitude Longitude	Area	Max. dive depth (m)	Geological setting	Description	Depth range of seeps (m)	Seep length (m)	Max. density of seep community (individuals / m ²)	Seep field name
1	FDZ 268	44.4347°N 150.0809°E	KKT	5961.0	Inner slope of the overriding plate	No seeps	/	/	/	/
2	FDZ 269	43.9728°N 150.122°E	KKT	9298.4	Trench bottom toward overriding plate	Potential seepage sites. Black sediment spots were observed.	/	/	/	/
3	FDZ 270	44.6984°N 151.8013°E	KKT	9341.2	Trench bottom with a subducting seamount	No seeps	/	/	/	/
4	FDZ 271	45.1642°N 152.6803°E	KKT	9573.2	Trench bottom toward overriding plate	Seep communities consisting primarily of dense frenulate siboglinid clusters with tube- dwelling and free-moving polychaetes.	9496- 9533	60	Siboglinidae: 5813±1335	The Deepest
5	FDZ 272	45.0491°N 152.6332°E	KKT	8385.5	Inner slope of the incoming plate	No seeps	/	/	/	//
6	FDZ 273	45.2665°N 152.8456°E	KKT	9578.8	Trench bottom toward overriding plate	Seep communities consisting of sparse frenulate siboglinid clusters. Black sediment spots	9554- 9570	880	Siboglinidae: 27±5	/
7	FDZ 274	44.5822°N 151.4700°E	KKT	9142.8	Trench bottom toward overriding plate	Seep communities consisting primarily of dense frenulate siboglinid clusters with associated gastropods, tube- dwelling and free-moving polychaetes, sea lilies, holothurians, and amphipods.	9126- 9135	780	Siboglinidae: 4417±581	Wintersweet Valley
8	FDZ 275	44.1482 °N 150.4577 °E	KKT	9547.9	Trench bottom toward overriding plate	Seep communities consisting primarily of dense frenulate siboglinid clusters with tube- dwelling and free-moving polychaetes	9522- 9546	1500	Siboglinidae: 1844±277	Dead Valley, Cotton Field

9	FDZ 276	45.2377° N 152.8498° E	KKT	9580.8	Trench bottom toward incoming plate	No seeps	/	/	/	/
10	FDZ 277	45.3457° N 152.4173° E	KKT	7300.1	Inner slope of the overriding plate	No seeps	/	/	/	/
11	FDZ 278	45.6475° N 153.3556° E	KKT	8798.3	Trench bottom toward overriding plate	Seep community consisting of sparse frenulate siboglinid clusters, bivalves and tube- dwelling polychaetes	8757- 8780	730	Siboglinidae: 221±53; Bivalvia: 48±34	/
12	FDZ 279	48.6421° N 157.0684° E	KKT	8569.1	Trench bottom toward overriding plate	Potential seepage sites. Black sediment spots were observed.	8551- 8568	2220	/	/
13	FDZ 280	48.8193° N 156.8333° E	KKT	6397.0	Inner slope of overriding plate	Seep community consisting of dense frenulate siboglinid clusters on the accretionary prism	6383- 6397	800	Siboglinidae: 71±12	/
14	FDZ 281	50.2212° N 159.3504° E	KKT	7647.0	Trench bottom toward overriding plate	Seep community consisting of sparse frenulate siboglinid clusters.	7585- 7637	1200	Siboglinidae: 13±6	/
15	FDZ 282	51.1733° N 160.2718° E	KKT	7805.9	Trench bottom toward overriding plate	Seep community consisting of sparse frenulate siboglinid clusters.	7775- 7779	100	Siboglinidae: 4±2	/
16	FDZ 283	53.5328° N 162.5984° E	KKT	7046.9	Trench bottom toward overriding plate	Seep community consisting of sparse frenulate siboglinid clusters.	6919- 6923	190	Siboglinidae: 2±1	/
17	FDZ 284	54.6723° N 163.8315° E	KAT	6018.1	Trench bottom toward overriding plate	Seep community consisting of dense aggregations of bivalves and tube-dwelling polychaetes	5988- 6010	860	Ampharetidae: 168±80; Bivalvia: 204±61	Turtle Egg
18	FDZ 285	54.7681° N 165.8007° E	AT	6933.9	Trench bottom toward overriding plate	Seep communities consisting primarily of dense bivalve aggregations, sea anemones and tube-dwelling polychaetes	6913- 6934	2150	Ampharetidae: 10±2; Bivalvia: 49±12	Aleutian Deepest

19	FDZ 286	53.7571° N 167.3102° E	AT	6756.0	Trench bottom toward overriding plate	Seep communities consisting of dense bivalve aggregations and frenulate siboglinid clusters	6734- 6747	550	Siboglinidae: 30±13; Bivalvia: 142±43	Clam Valley
20	FDZ 287	53.4484° N 167.3179° E	AT	5633.9	Inner slope of incoming plate	No seeps	/	/	/	/
21	FDZ 288	53.499° N 168.0493° E	AT	6989.1	Trench bottom toward overriding plate	Seep communities consisting of sparse frenulate siboglinid clusters	6798- 6989	1600	Siboglinidae: 4±2	
22	FDZ 289	53.0102° N 169.2191° E	AT	6725.4	Trench bottom toward overriding plate	No seeps	/	/	/	/
23	FDZ 290	53.5751° N 167.8743° E	AT	6982.2	Trench bottom toward overriding plate	No seeps	/	/	/	/
24	FDZ 291	53.6653° N 167.6165° E	AT	6704.6	Trench bottom toward overriding plate om	No seeps	/	/	/	/
25	FDZ 292	53.7584° N 167.3137° E	AT	6755.5	Trench bottom toward overriding plate	Seep communities consisting of dense bivalve aggregations and frenulate siboglinid clusters	6736- 6747	900	Siboglinidae: 38±19; Bivalvia: 95±35	Clam Valley
26	FDZ 293	53.8536° N 167.1373° E	AT	6746.8	Trench bottom toward overriding plate	No seeps	/	/	/	/
27	FDZ 294	54.2163° N 166.5617° E	AT	6706.8	Trench bottom toward overriding plate	Seep communities consisting of dense frenulate siboglinid clusters, tube-dwelling polychaetes, spoon-worms, sea anemones, gastropods and microbial mats	6625- 6704	370	Siboglinidae: 125±68	Blue Marsh, Icy River
28	FDZ 295	54.2339° N 166.5161° E	AT	6650.2	Trench bottom toward overriding plate	Seep communities consisting of dense frenulate siboglinid clusters, tube-dwelling polychaetes, spoon-worms, gastropods and microbial mats	6630- 6645	500	Siboglinidae: 2800±418	Blue Marsh, Icy River

29	FDZ 296	54.7769° N 165.7363° E	AT	6929.6	Trench bottom toward overriding plate	Seep communities with dense bivalve aggregations	6853- 6928	1800	Siboglinidae: 27±9; Bivalvia: 204±104	Aleutian Deepest
30	FDZ 297	55.2952° N 163.8234° E	KAT	5802.5	Trench bottom toward overriding plate	Seep communities consisting of dense clams aggregations, together with associated gastropods, tube-dwelling and free-moving polychaetes, amphipods and sea anemones.	5662- 5743	460	Ampharetidae: 9±4; Bivalves: 293±69	Clam Bed
31	FDZ 298	51.9974° N 161.2892° E	KKT	7617.2	Trench bottom toward overriding plate	Seep communities consisting of sparse frenulate siboglinid clusters and bivalves	7583- 7605	1440	Siboglinidae: 18±6; Bivalvia: 25±3	/