

Supporting information

Steffen Kiel: A biogeographic network reveals evolutionary links between deep sea hydrothermal vent and methane seep faunas

Table S1. Locality information.

Short name	Locality description	Habitat type	Depth (m)	Reference
AleutianT	Aleutian Trench, North Pacific	seep	4800-4960	(1)
Anaximander	Anaximander mud field, Mediterranean Sea	seep	1700-2000	(2)
AnyasGarden	Anyas's Garden, Logatchev vent field, Mid-Atlantic Ridge	sed. vent	3038	(3)
AntarcticWhale	South Sandwich Arc, southern Ocean	whale fall	1444-1447	(4)
BarbadosEP	Barbados-El Pilar, North Atlantic	seep	1300	(5)
BarbadosOA	Barbados-Orenoque A, North Atlantic	seep	1700	(5)
BarbadosOB	Barbados-Orenoque B, North Atlantic	seep	2000	(5)
Blake	Blake Ridge, off North Carolina, North Atlantic	seep	2200	(6)
CadizL	Gulf of Cadiz, lower slope, including the sites Carlos Ribeiro, Bonjordim, and Porto	seep	2200-3900	(7)
CadizM	Gulf of Cadiz, mid-slope, including the sites Darwin and Captain Arutyonov	seep	1000-2000	(7)
CadizU	Gulf of Cadiz, upper slope, including the sites Mercator, Kidd, and Meknes	seep	350-700	(7)
CatalinaWhale	Santa Catalina Basin, East Pacific	whale fall	1240	(8)
Chile	Chile, off Concepcion Bay, southeastern Pacific	seep	651-934	(9)
Colombia	Colombia, Caribbean Sea, stations E51 MACROI and E284 ANH-II	seep	500-705	(10)
CostaRicaM	the sites Mound 11, Mound Quepos, and Jaco Wall	seep	1007-1854	(11)
CostaRicaU	the sites Jaco Summit and Mound 12	seep	741-997	(11)
Edison	Edison Seamount, West Pacific	sed. vent	1450	(12)
EPRN	northern East Pacific Rise (9°-21°N)	vent	2500-2750	(13)
EPRS	southern East Pacific Rise (7°-23°S)	vent	2600	(13)
ESR	East Scotia Ridge, southern Ocean	vent	2600	(14)
Fiji	Fiji Basin, West Pacific	vent	1955-2765	(15)
Florida	Florida Escarpment, Gulf of Mexico	seep	3243-3314	(16)
Formosa	Formosa Ridge, South China Sea, West Pacific	seep	1120	(17)
Galapagos	Galapagos Rift, eastern Pacific	vent	2500-2700	(18)
GelaBasin	Gela Basin pockmarks, Mediterranean Sea	seep	800	(19)
GhostCity	Ghost City, Pleistocene age serpentinisation vent near Rainbow on the MAR	serp. vent	2100	(20)
Gorda	Gorda Ridge, East Pacific	sed. vent	2700-3271	(21)
Guaymas	Guaymas Basin, Gulf of California, East Pacific	sed. vent	2020-2033	(22)
GUINESS	GUINESS, eastern Atlantic	seep	650	(23)
HydrateRidge	Hydrate Ridge, off Oregon, East Pacific	seep	770	(24)
IcelandWhale	fauna associated with whale bones trawled around Iceland	whale fall	200-400	(25)
JacoScar	Jaco Scar hydrothermal seep, East Pacific	hydroth. seep	1752-1805	(26)
JaliscoBlock	Jalisco Block, East Pacific	seep	3800	(27)
JapanT	Japan Trench, northwestern Pacific	seep	5350-6400	(28)
JdFax	Juan de Fuca Ridge, Axial Seamount	vent	1500-1600	(13)

JdFEndeavour	Juan de Fuca Ridge, Endeavour Segment	vent	2200-2400	(13)
JdFExplorer	Juan de Fuca Ridge, Explorer Ridge	vent	1762	(13)
JdFMV	Juan de Fuca Ridge, Middle Valley	vent	2423	(13)
Kaikata	Kaikata Seamount, West Pacific	vent	470	(29)
Kairei	Kairei Field, Central Indian Ridge	vent	2420-2450	(30)
KurileT	Kurile Trench, northwest Pacific	seep	4700-6200	(31)
KuroshimaKnoll	Kuroshima Knoll, West Pacific	sed. vent	637-812	(29)
Lau	Lau Basin, West Pacific	vent	1750-1900	(15)
Logatchev	Logatchev, excluding the Anya's Garden site, Mid-Atlantic Ridge	vent	3040	(32)
LouisianaL	Louisiana Slope (Gulf of Mexico) lower slope	seep	2000-3000	(33)
LouisianaM	Louisiana Slope (Gulf of Mexico) mid-slope	seep	1000-2000	(33)
LouisianaU	Louisiana Slope (Gulf of Mexico) upper slope	seep	<1000	(33)
LuckyStrike	Lucky Strike, Mid-Atlantic Ridge	vent	1620-1720	(34)
ManusDC	Manus Basin, Desmos Cauldron, West Pacific	sed. vent	2000	(35)
ManusPac	Manus Basin, Pacmanus, West Pacific	sed. vent	1700	(36)
ManusVW	Manus Basin, Vienna Woods, West Pacific	sed. vent	2500	(37)
MarianaAS	Mariana Trough, Alice Springs, West Pacific	vent	3650	(38)
MarianaForecast	Mariana Trough, Forecast, West Pacific	vent	1450	(38)
MarmaraSea	Marmara Sea, Mediterranean Sea	seep	1120	(39)
MenezGwen	Menez Gwen, Mid-Atlantic Ridge	vent	850	(34)
MohnRidge	Mohn Ridge, northern Mid-Atlantic Ridge	sed. vent	500-750	(40)
Monterey	Monterey Canyon, upper slope including sites Mt Crushmore, Clam field, and Clam flat	seep	635-1000	(41)
MontereyWhale	whale-fall in Monterey Canyon in 2893 m	whale fall	2893	(42)
NankaiL	Nankai Trough, lower slope	seep	2500-3800	(29)
NankaiM	Nankai Trough, middle slope	seep	1600-2400	(29)
NankaiU	Nankai Trough, upper slope	seep	<1500	(29)
NicolasWhale	San Nicolas slope, East Pacific	whale fall	960	(8)
NZ	Hikurangi Margin, New Zealand	seep	1100-1200	(43)
NZwhale	fauna associated with whale bones trawled around New Zealand	whale fall	13-1242	(44)
Okhotsk	Sea of Okhotsk, upper slope	seep	370-380	(45)
Okinawall	Okinawa Basin, Iheya and Izena sites, West Pacific	sed. vent	1340-1350	(29)
OkinawaMEK	Okinawa Basin, Minami-Ensei Knoll, West Pacific	sed. vent	700	(29)
Olimpi	Olimpi area mud field, Mediterranean Sea	seep	2000	(2)
Paita	Peru, off Paita, East Pacific	seep	2600-3400	(46)
PNG	Broken Water Bay, off Papua New Guinea, West Pacific	seep	400	(47)
Rainbow	Rainbow, Mid-Atlantic Ridge	vent	2260	(48)
REGAB	REGAB, West Atlantic	seep	3150	(33)
SagamiBay	Sagami Bay, West Pacific	seep	750-1500	(29)
SebutalCow	off Portugal, Sebutal canyon cow experiment, northeast Atlantic	whale fall	1000	(49)
SnakePit	Snake Pit, Mid-Atlantic Ridge	vent	3478-3515	(50)
Solitaire	Solitaire vent field, Central Indian Ridge	vent	2606	(51)
Sonora	Sonora Margin transform faults, East Pacific	seep	1550	(52)
VonDamm	Von Damm vent field, Mid-Cayman Ridge, Caribbean Sea	vent	2300	(53)

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Sutilizona					4																						4		
Symmetriapelta																													
Symmetromphalus	4						4	4	4	4																			
Syrnola																													
Tamu					5																								
Taranis																												13	
Temnocinclis																													
Tentaoculus																4													
Thyasira					5									68												5			75
Toledonia													68																
Tractolira																	4												
Trophon																													
Waisiuconcha																													
Wareniconcha																											82		
Ventsia	4										4	4																	
Vesicomya																	3												
Vetulonia	54																												
Viridibuccinum																													
Volutomitra																													
Volvarina																													
Xenophora																													
Xylodiscula						4					80	4						4	72									78	
Xyloskenea																													
Yoldia															67														
Yoldiella										80	68																		
Zetela																													

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Table S3. Total and observed numbers of links within and across depth ranges. Spearman's $\rho=0.13$ for total numbers versus numbers in network thresholded at 0.7; Spearman's $\rho=0.06$ for total numbers versus numbers in minimum spanning tree.

Numbers of sites per depth range: upper range (U)=33, middle range (M)=33, lower range (L)=13						
Link	N of total possible links	N of links in minimum spanning tree	N of links in network thresholded at 0.7	% of total possible links	% of links in minimum spanning tree	% of links in network thresholded at 0.7
U-U	1089	15	14	25.4	19.2	15.4
U-M	1089	24	20	25.4	30.8	22.0
U-L	429	2	3	10.0	2.6	3.3
M-M	1089	20	32	25.4	25.6	35.2
M-L	429	11	16	10.0	14.1	17.6
L-L	169	6	6	3.9	7.7	6.6

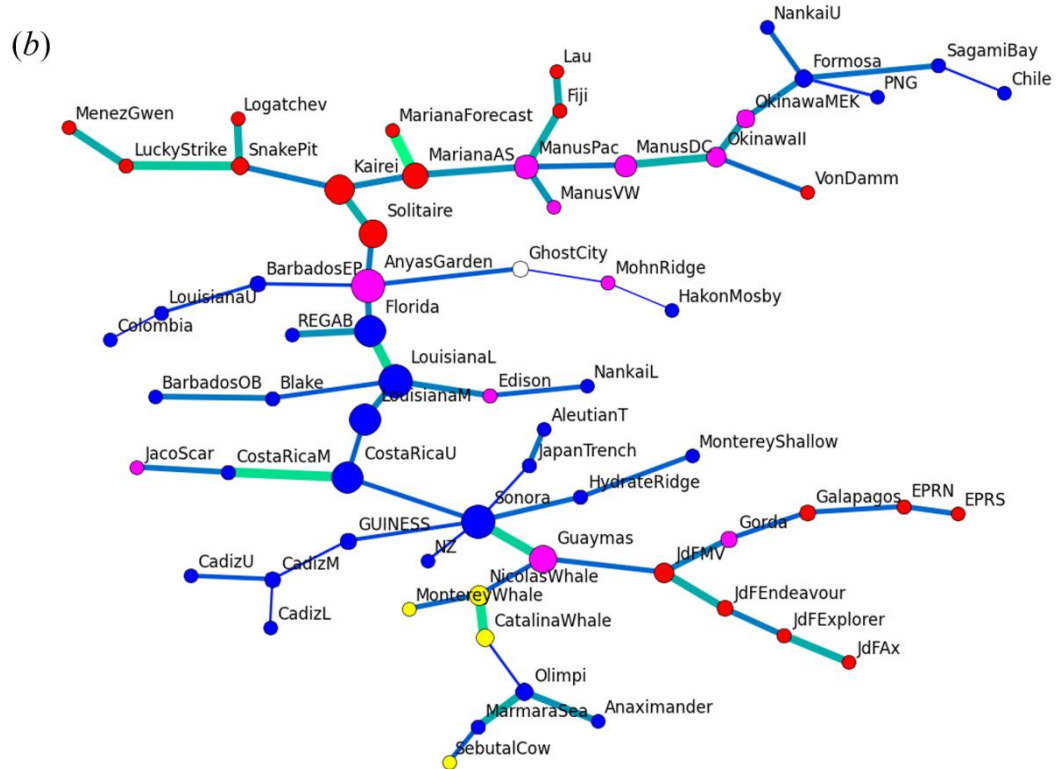
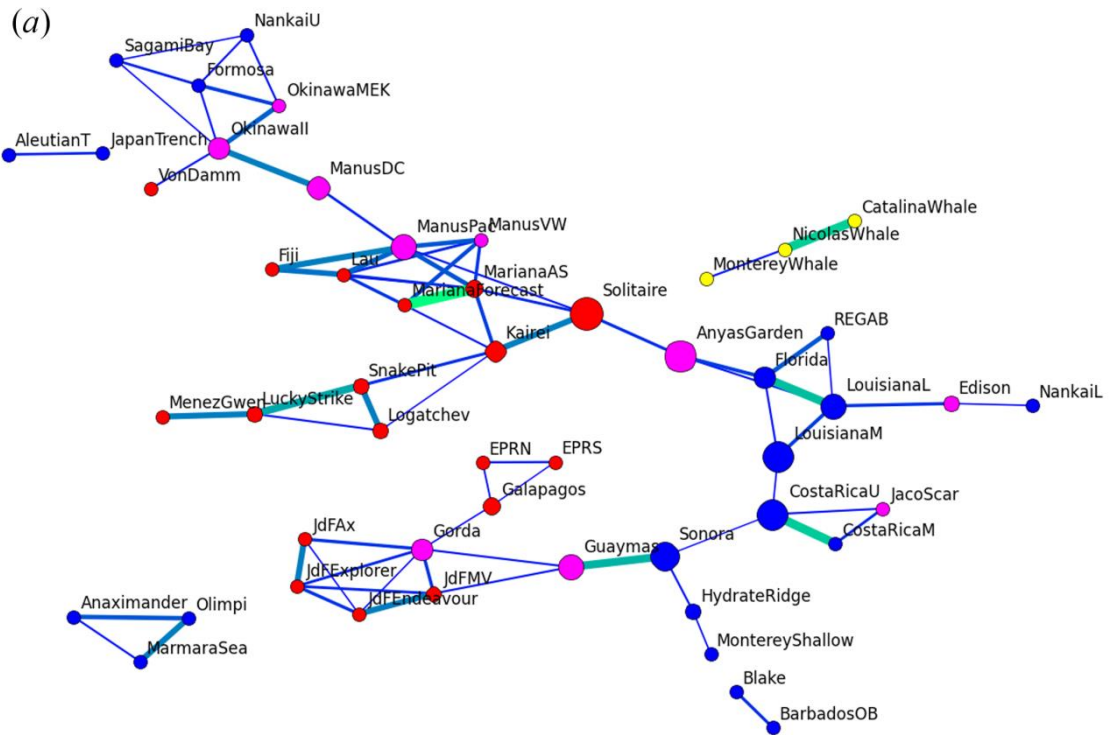


Figure S1. Network including only sites with at least five taxa, with the nodes coloured by habitat type (see main paper for colour coding and table S2 for details on sites). *A*, at a threshold of 0.7. *B*, minimum spanning tree.