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Supplement of

Influence of minor hydrocarbon seepage on sulfur cycling in marine subsurface sediments

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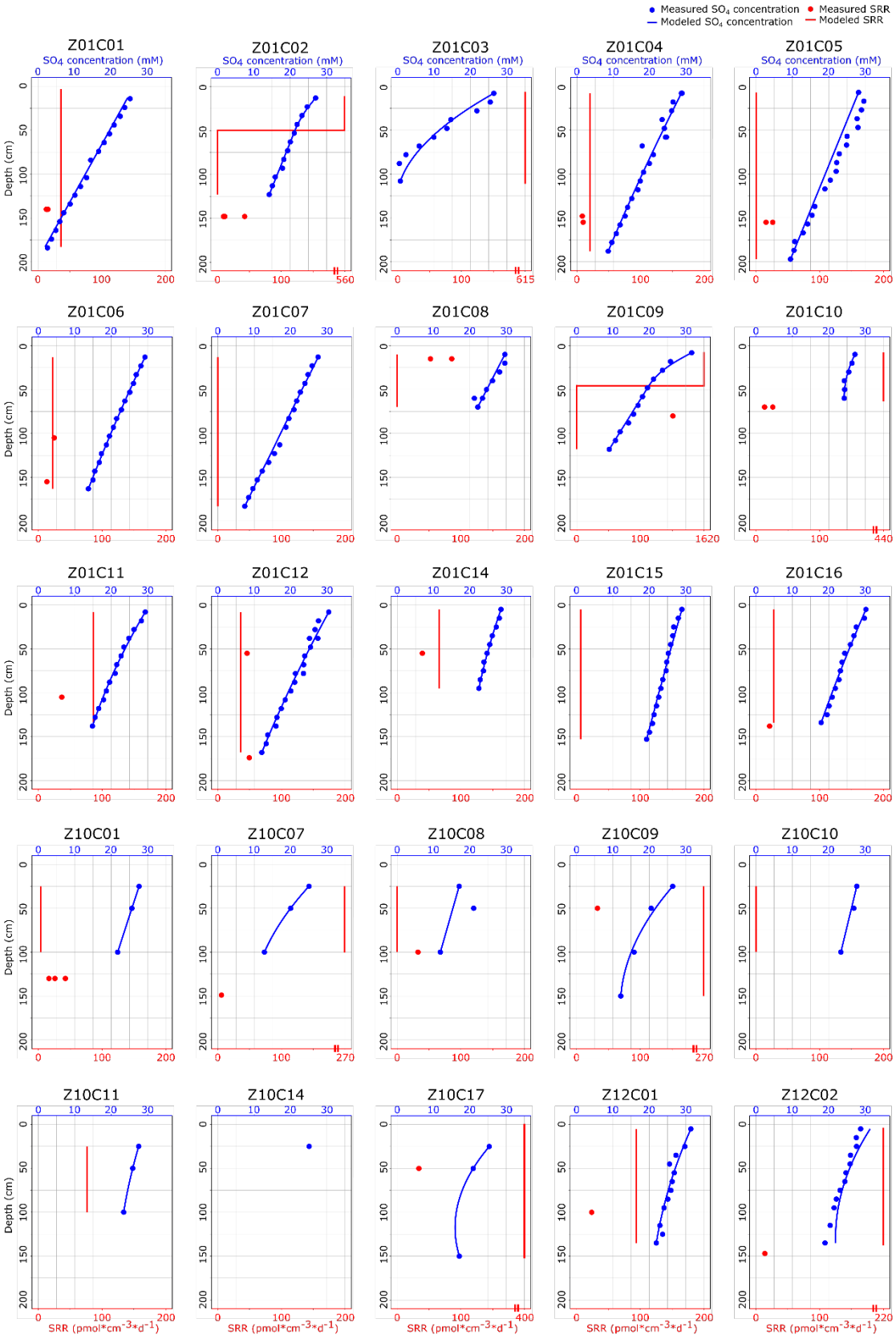
Measured SO_4 concentration
Modeled SO_4 concentration
Measured SRR
Modeled SRR
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Z01C03
Z01C04
Z01C05
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Z01C07
Z01C08
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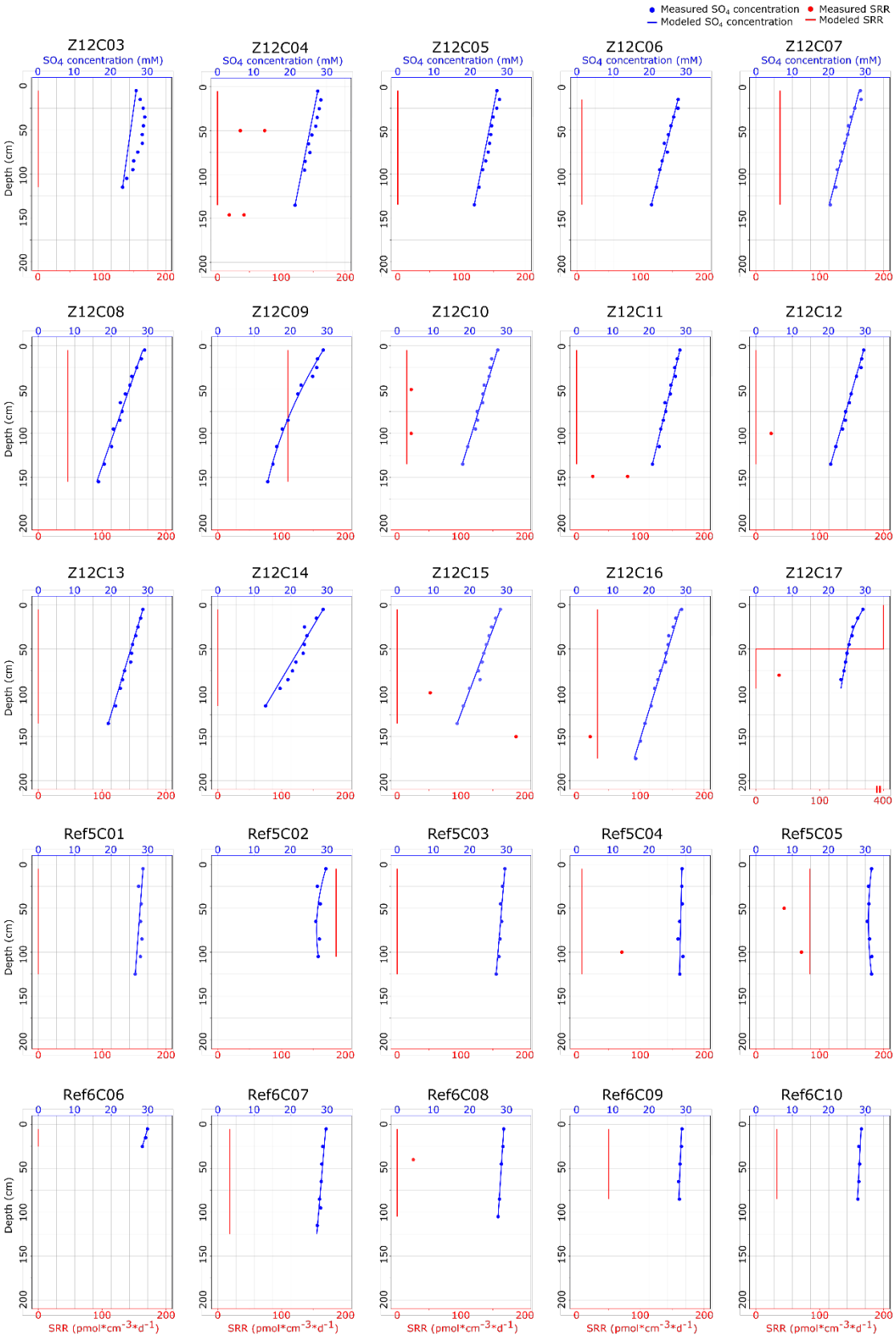
Z01C12
Z01C14
Z01C15
Z01C16
Z10C01
Z10C07
Z10C08
Z10C09
Z10C10
Z10C11
Z10C14
Z10C17
Z12C01
Z12C02
SO_4 concentration (mM)
Depth (cm)
SRR (pmol*cm^{-3}*d^{-1})


Measured SO_4 concentration
Modeled SO_4 concentration
Measured SRR
Modeled SRR
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Z12C04
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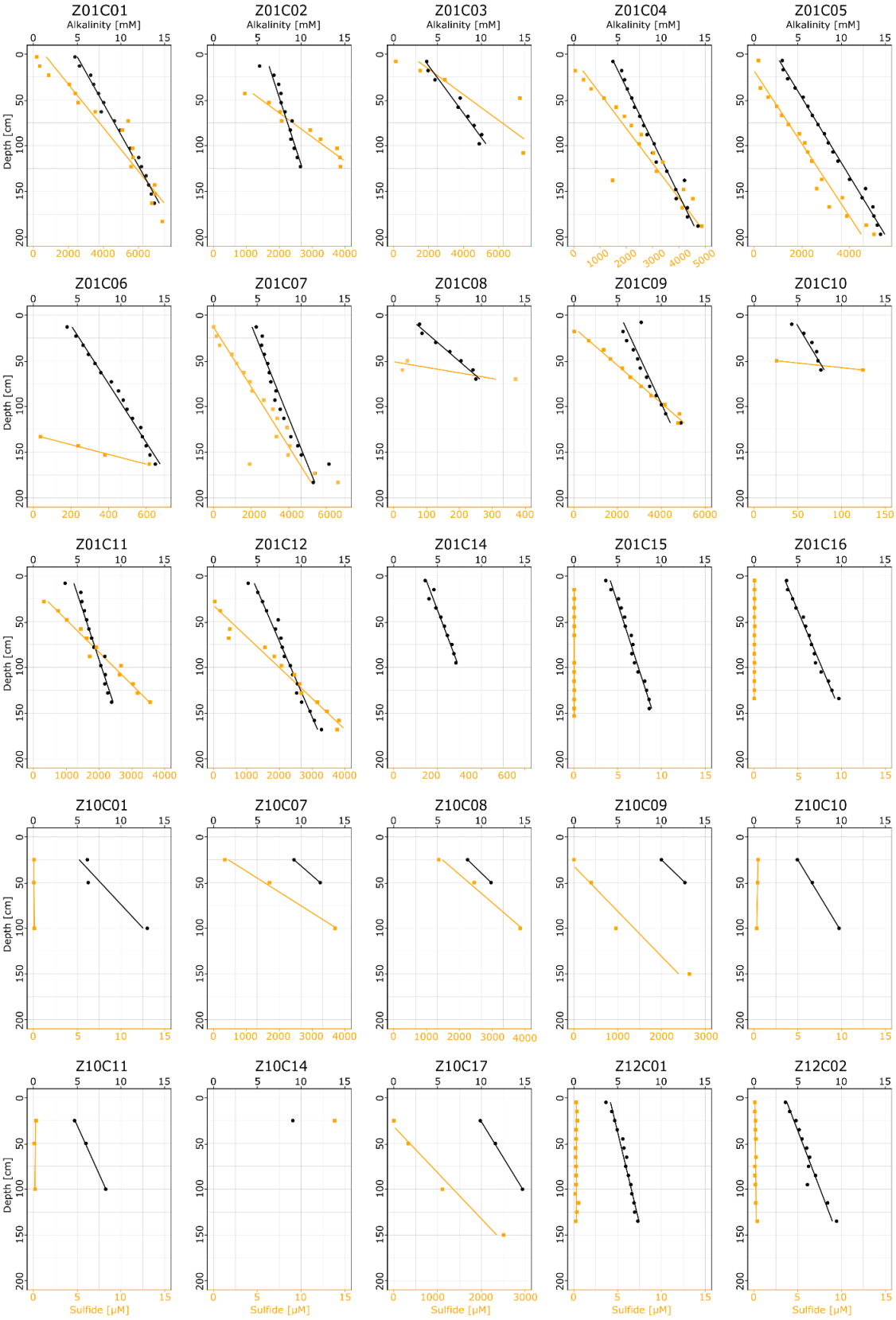
Z12C06
Z12C07
Z12C08
Z12C09
Z12C10
Z12C11
Z12C12
Z12C13
Z12C14
Z12C15
Z12C16
Z12C17
Ref5C01
Ref5C02
Ref5C03
Ref5C04
Ref5C05
Ref6C06
Ref6C07
Ref6C08
Ref6C09
Ref6C10
SO_4 concentration (mM)
Depth (cm)
SRR (pmol*cm^{-3}*d^{-1})

Supplementary Figure S1. Measured pore water sulfate concentrations (blue dots) and modelled sulfate reduction rates (red lines) and sulfate concentrations (blue lines).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Z01C02
Z01C03
Z01C04
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Z01C06
Z01C07
Z01C08
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Z01C10
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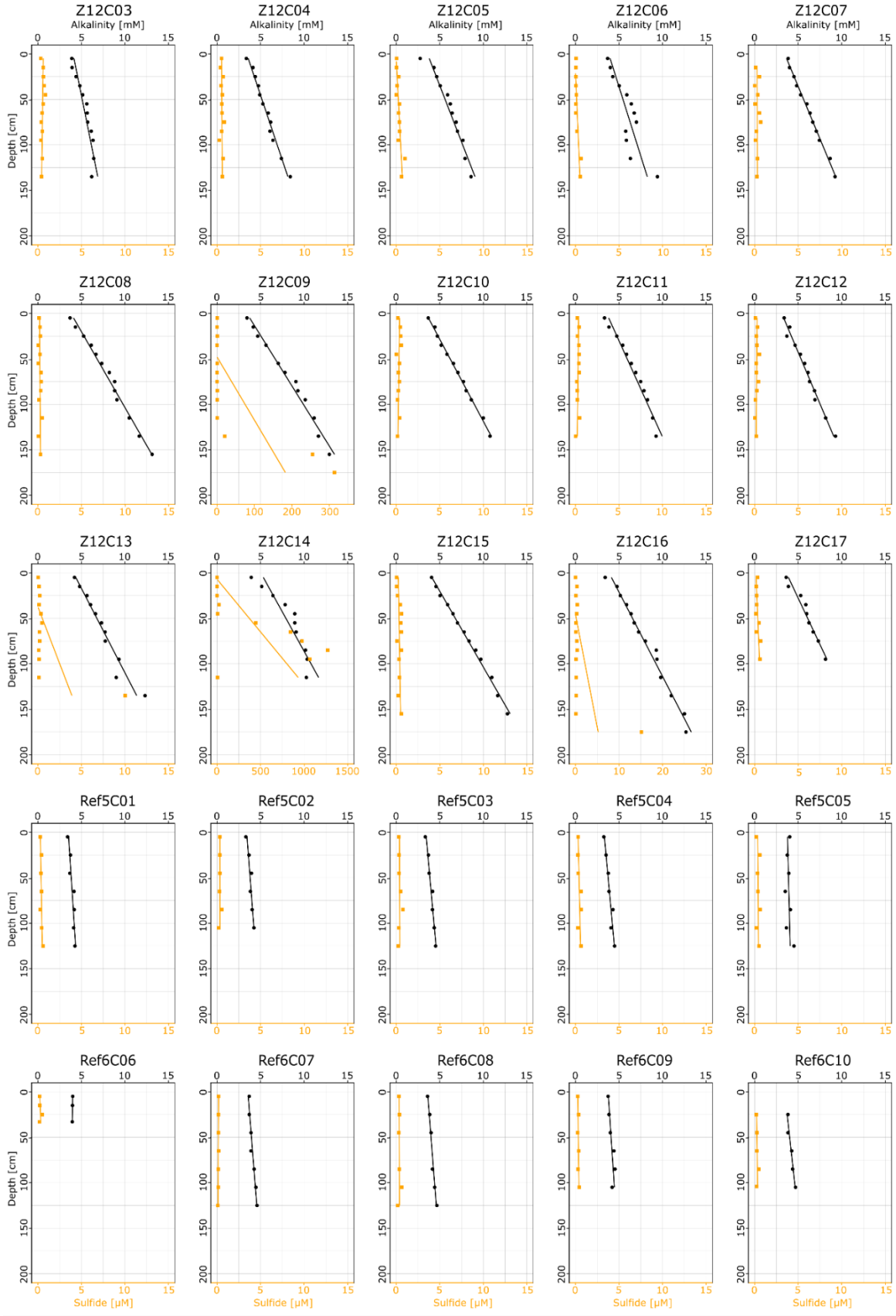
Z01C12
Z01C14
Z01C15
Z01C16
Z10C01
Z10C07
Z10C08
Z10C09
Z10C10
Z10C11
Z10C14
Z10C17
Z12C01
Z12C02
Alkalinity [mM]
Depth [cm]
Sulfide [µM]


Z12C03
Z12C04
Z12C05
Z12C06
Z12C07
Z12C08
Z12C09
Z12C10
Z12C11
Z12C12
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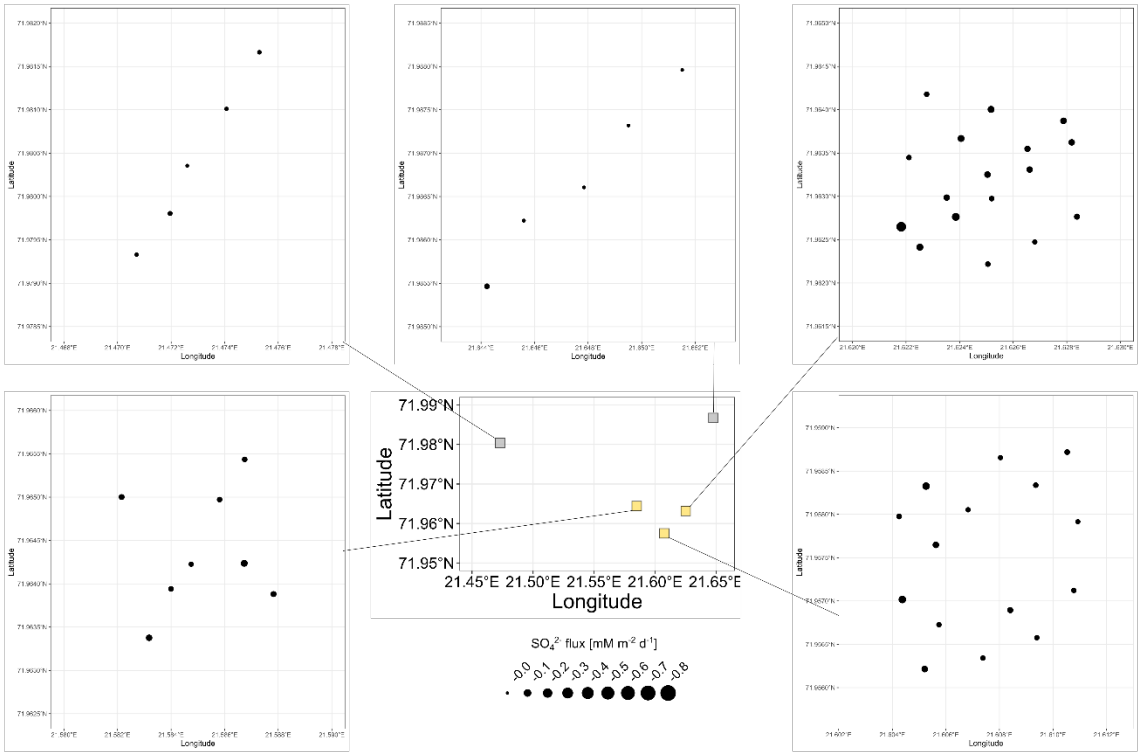
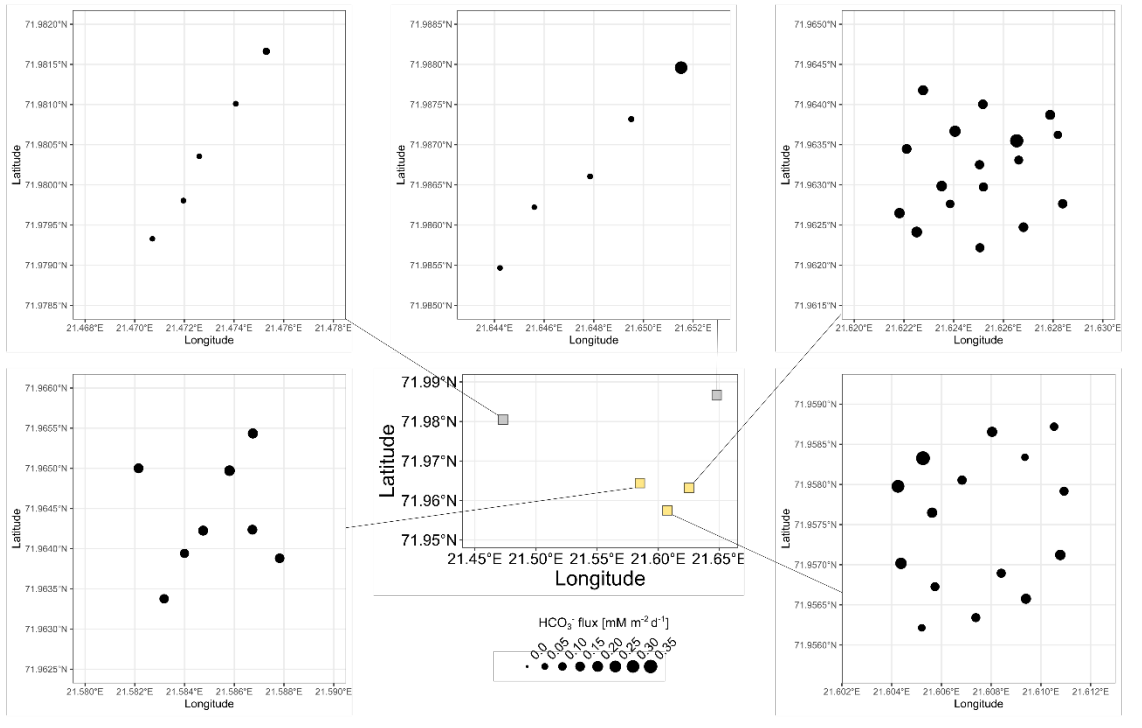
Z12C14
Z12C15
Z12C16
Z12C17
Ref5C01
Ref5C02
Ref5C03
Ref5C04
Ref5C05
Ref6C06
Ref6C07
Ref6C08
Ref6C09
Ref6C10
Alkalinity [mM]
Sulfide [µM]
Depth [cm]

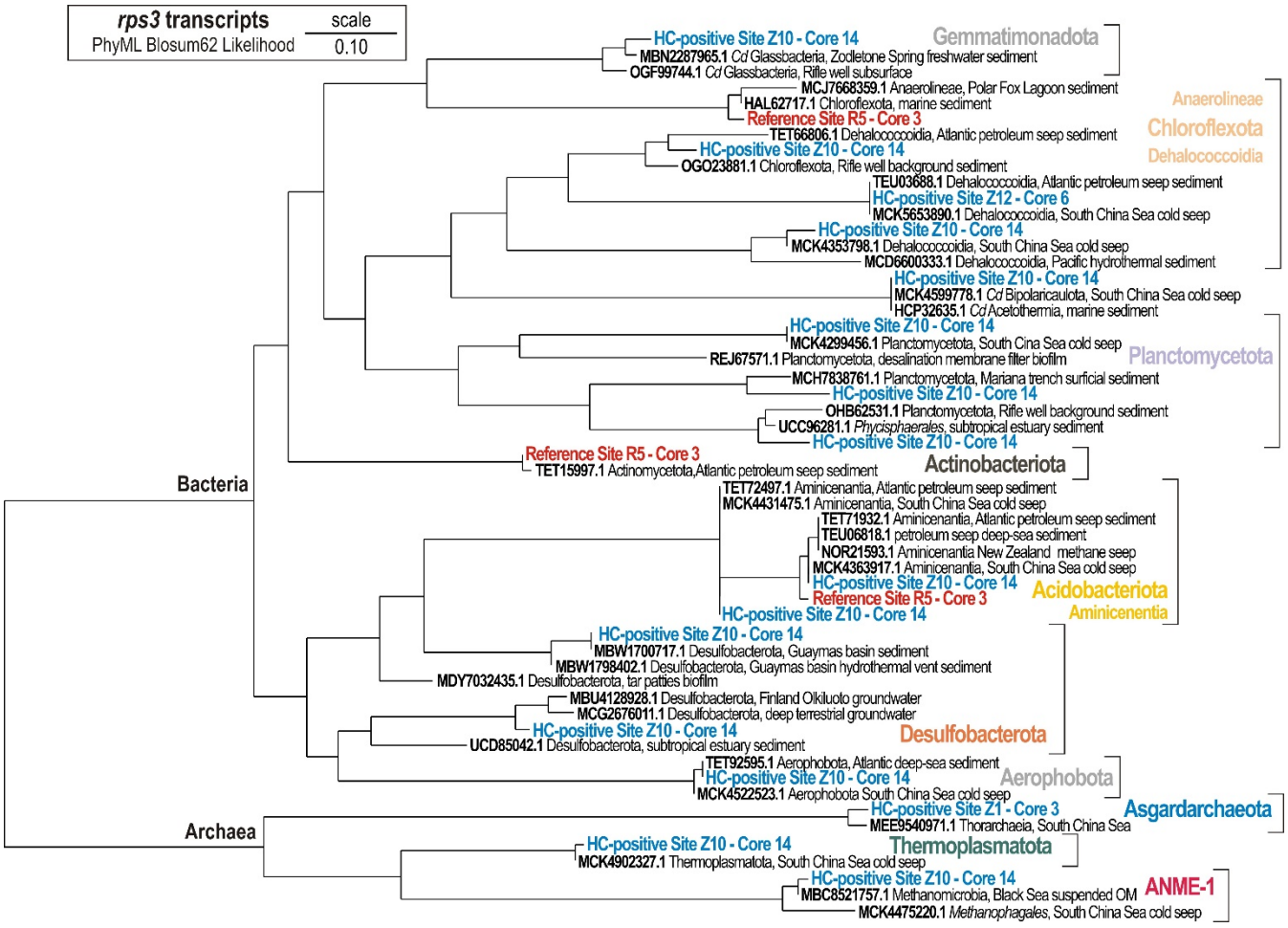
Supplementary Figure S2. Measured pore water alkalinity (black dots) and sulfide profiles (yellow dots) and their respective linear regressions


71.99°N
71.98°N
71.97°N
71.96°N
71.95°N
Latitude
21.45°E 21.50°E 21.55°E 21.60°E 21.65°E
Longitude
SO_4^{2-} flux [mM m^{-2} d^{-1}]
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8

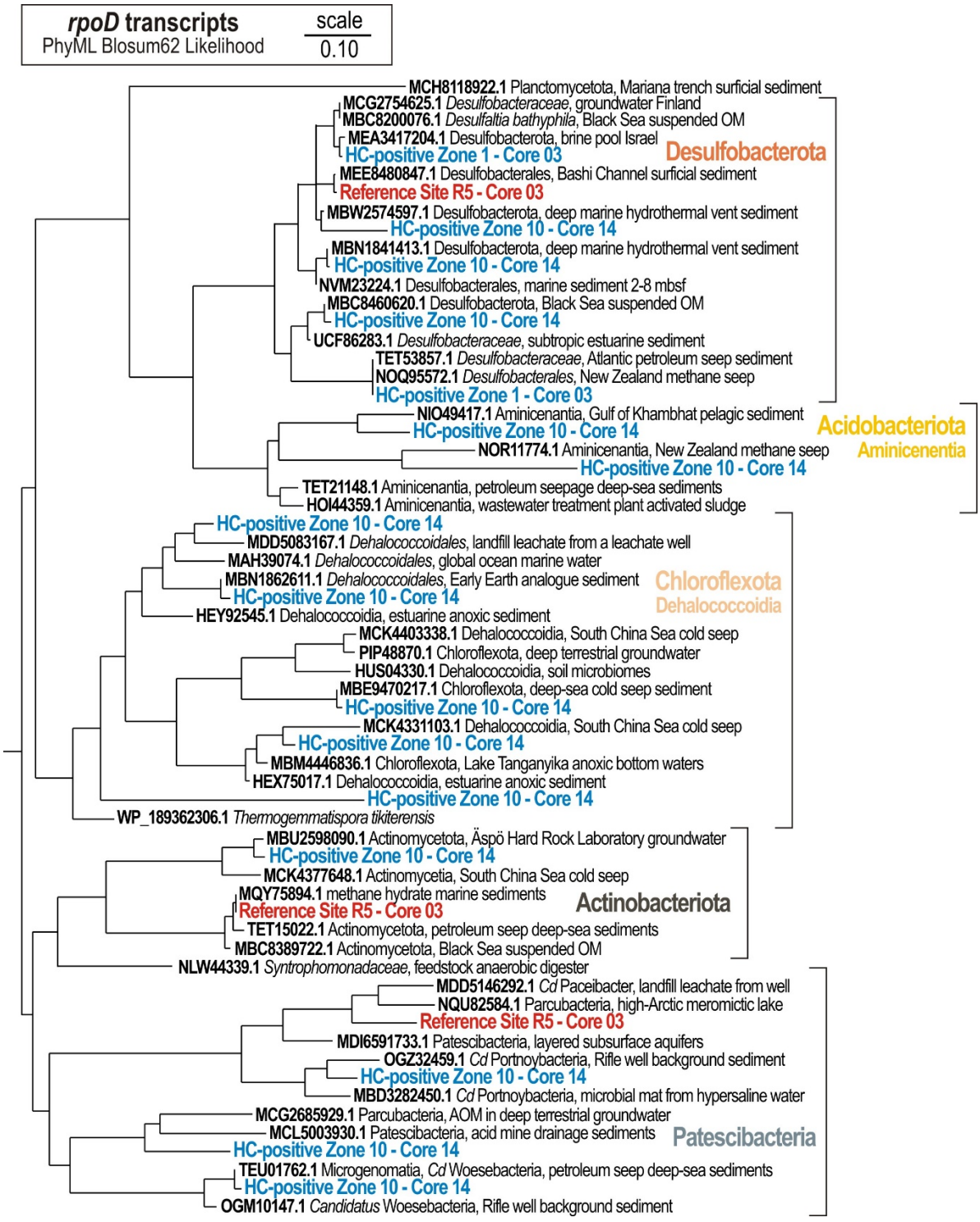

71.99°N
71.98°N
71.97°N
71.96°N
71.95°N
Latitude
21.45°E 21.50°E 21.55°E 21.60°E 21.65°E
Longitude
HCO_3^- flux [mM m^{-2} d^{-1}]
0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35

25

Supplementary Figure S3. Fluxes of SO_4^{2-} (top) and HCO_3^- (bottom) at each sampling site.



Supplementary Figure S4. Tree rps3



Supplementary Figure S5. Tree rpoD

Supplementary Table S1. Assembly statistics for all samples.

		Sampling area				
		Zone 1	**Zone 10**	**Zone 12**	**Reference 5**	**Reference 6**
MetaG	**Replicates**	4	2	2	3	1
	Reads	25119029	13313285	12378731	21674342	7,700,785
	Scaffolds	228,637	153,150	144,433	285,446	116,305
	Average length	2,780	2,876	2,361	2,443	2,344
	Predicted genes*	353,429	233,499	234,922	404,878	144,642
	ORFs	153,976	111,101	108,403	140,145	85,781
	High-Q MAGs	61	51	45	98	23
MetaT	**Replicates**	1	1	1	1	1
	Sequencing depth	93.9 Gps (pooled)			1.2 Gps (pooled)	
	Mapped reads	86.30%	94.60%	47.90%	95.20%	94.70%
	ribosomal RNA	72.5%	80.3%	20.5%	78.8%	78.2%
	Assigned CDS	8.9%	2.9%	15.7%	7.0%	5.6%
	Predicted genes	4,072	35,288	1,151	6,169	636
	ORFs	3,743	24,098	1,137	5,461	614

Supplementary Table S2. Pearson correlations

Zone	Core	SO_4^{2-}/Alkalinity	SO_4^{2-}/Sulfide	Alkalinity/Sulfide
Ref5	1	-0.51	N.A.	N.A.
Ref5	2	-0.60	N.A.	N.A.
Ref5	3	-0.90	N.A.	N.A.
Ref5	4	-0.57	N.A.	N.A.
Ref5	5	0.53	N.A.	N.A.
Ref6	6	1.00	N.A.	N.A.
Ref6	7	-0.84	N.A.	N.A.
Ref6	8	-0.98	N.A.	N.A.
Ref6	9	-0.91	N.A.	N.A.
Ref6	10	-0.76	N.A.	N.A.
Z01	1	-0.99	-0.86	0.87
Z01	2	-0.97	-0.98	0.92
Z01	3	-0.99	-0.93	0.99
Z01	4	-0.98	-0.92	0.88
Z01	5	-0.99	-0.98	0.97
Z01	6	-1.00	-0.65	0.60
Z01	7	-0.96	-0.89	0.75
Z01	8	-0.99	-0.68	0.61
Z01	9	-0.82	-0.97	0.91
Z01	10	-0.97	-0.52	0.55
Z01	11	-0.97	-0.99	0.93
Z01	12	-0.98	-0.97	0.94
Z01	14	-0.97	N.A.	N.A.
Z01	15	-0.99	N.A.	N.A.
Z01	16	-0.99	N.A.	N.A.
Z10	1	-0.95	N.A.	N.A.
Z10	7	-1.00	-1.00	1.00
Z10	8	-0.76	-0.62	0.98
Z10	9	-0.99	-0.90	0.94

Z10	10	-0.98	N.A.	N.A.
Z10	11	-1.00	N.A.	N.A.
Z10	17	-0.94	-0.90	0.98
Z12	1	-0.97	N.A.	N.A.
Z12	2	-0.95	N.A.	N.A.
Z12	3	-0.58	N.A.	N.A.
Z12	4	-0.90	N.A.	N.A.
Z12	5	-0.92	N.A.	N.A.
Z12	6	-0.82	N.A.	N.A.
Z12	7	-0.98	N.A.	N.A.
Z12	8	-0.99	N.A.	N.A.
Z12	9	-0.99	N.A.	N.A.
Z12	10	-0.99	N.A.	N.A.
Z12	11	-0.97	N.A.	N.A.
Z12	12	-0.99	N.A.	N.A.
Z12	13	-0.97	N.A.	N.A.
Z12	14	-0.86	-0.87	0.63
Z12	15	-0.98	N.A.	N.A.
Z12	16	-0.99	N.A.	N.A.
Z12	17	-0.98	N.A.	N.A.