

Frequency_Analysis

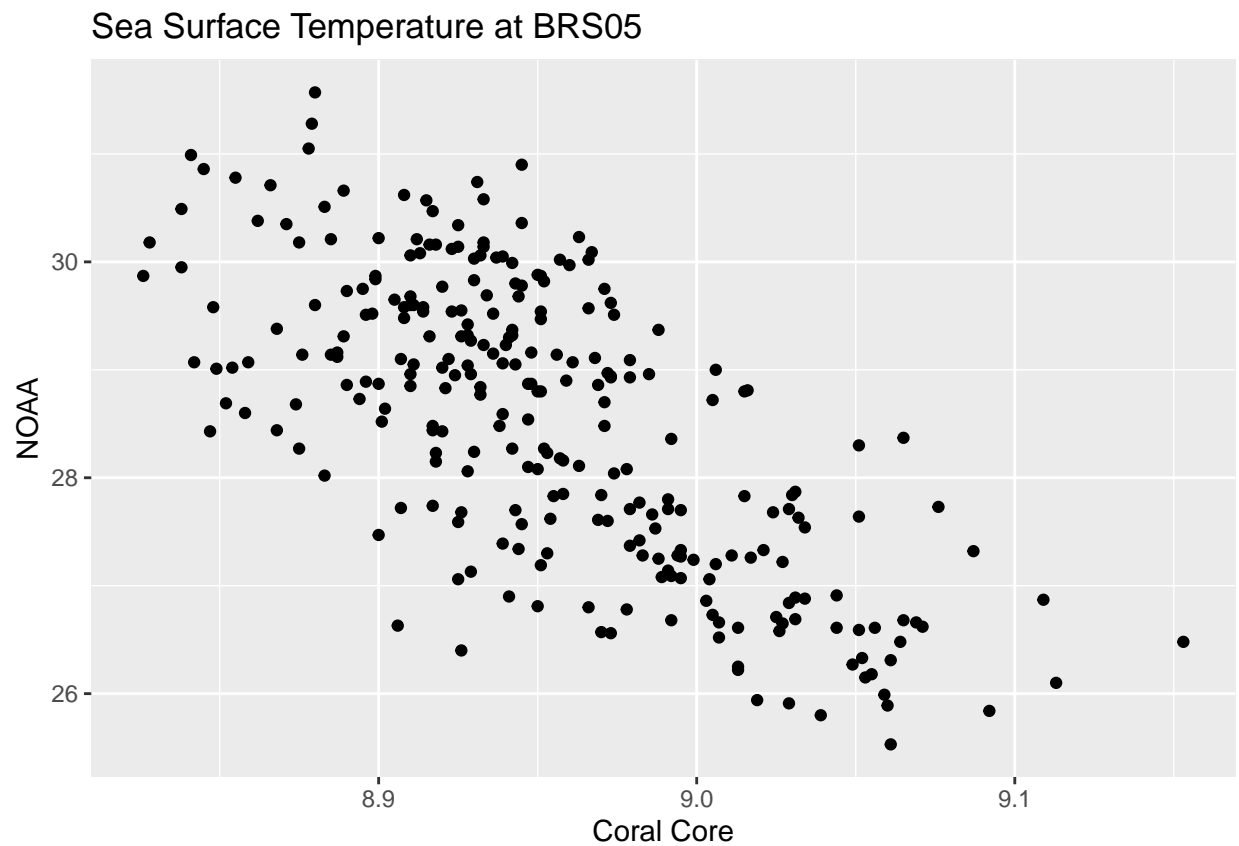
Vanessa Hui Fen Neo

2021-09-29

Comparison of CCI, NOAA and Coral Core SST variability in Browse Island sites

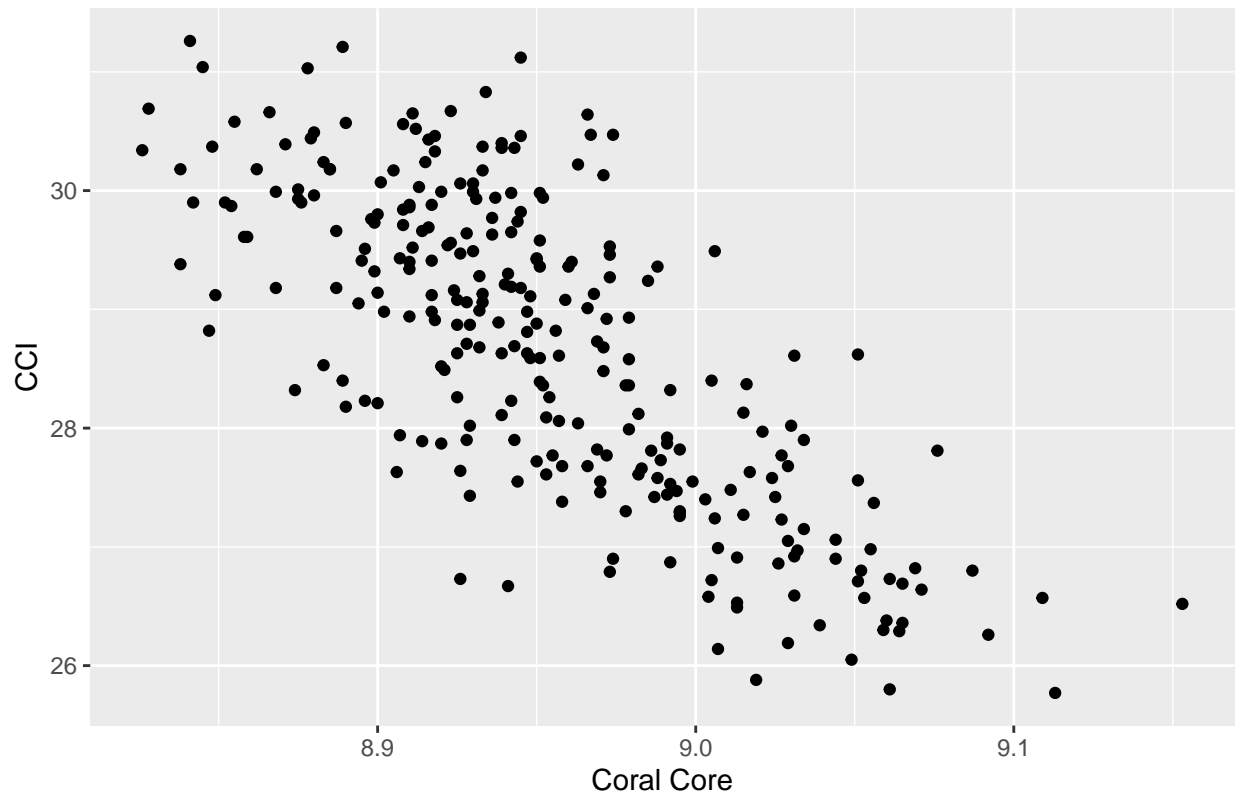
- BRS05 (-14.105, 123.5356924)
- BRS07 (-14.121, 123.5467277)

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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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	Model 1	Model 2
(Intercept)	170.798 (8.667)	177.080 (7.831)
browse_coral_core	-15.892 (0.968)	-16.577 (0.875)
Num.Obs.	273	273
R2	0.499	0.570
R2 Adj.	0.497	0.568
AIC	748.8	693.4
BIC	759.6	704.3
Log.Lik.	-371.397	-343.722
F	269.544	359.197

Sea Surface Temperature at BRS05



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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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NOAA

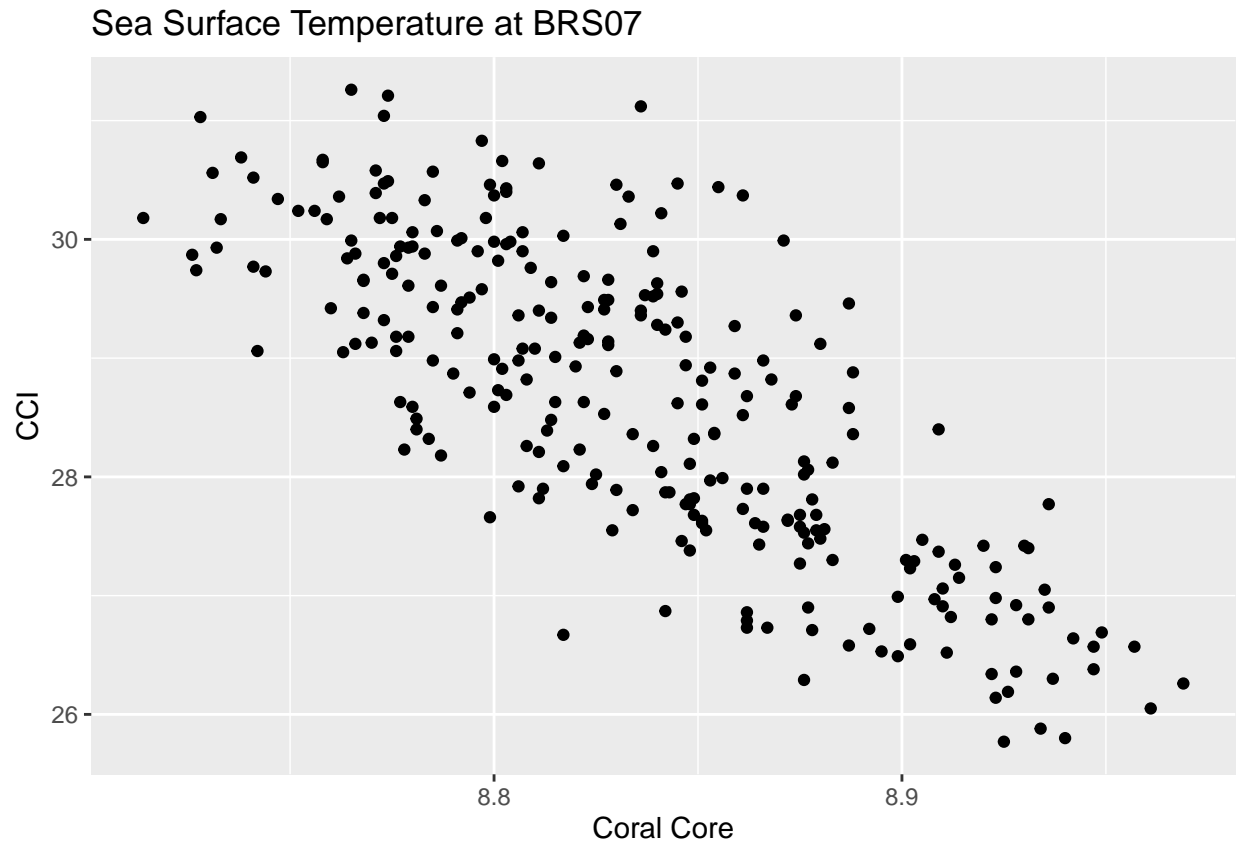
28

26

8.8

8.9

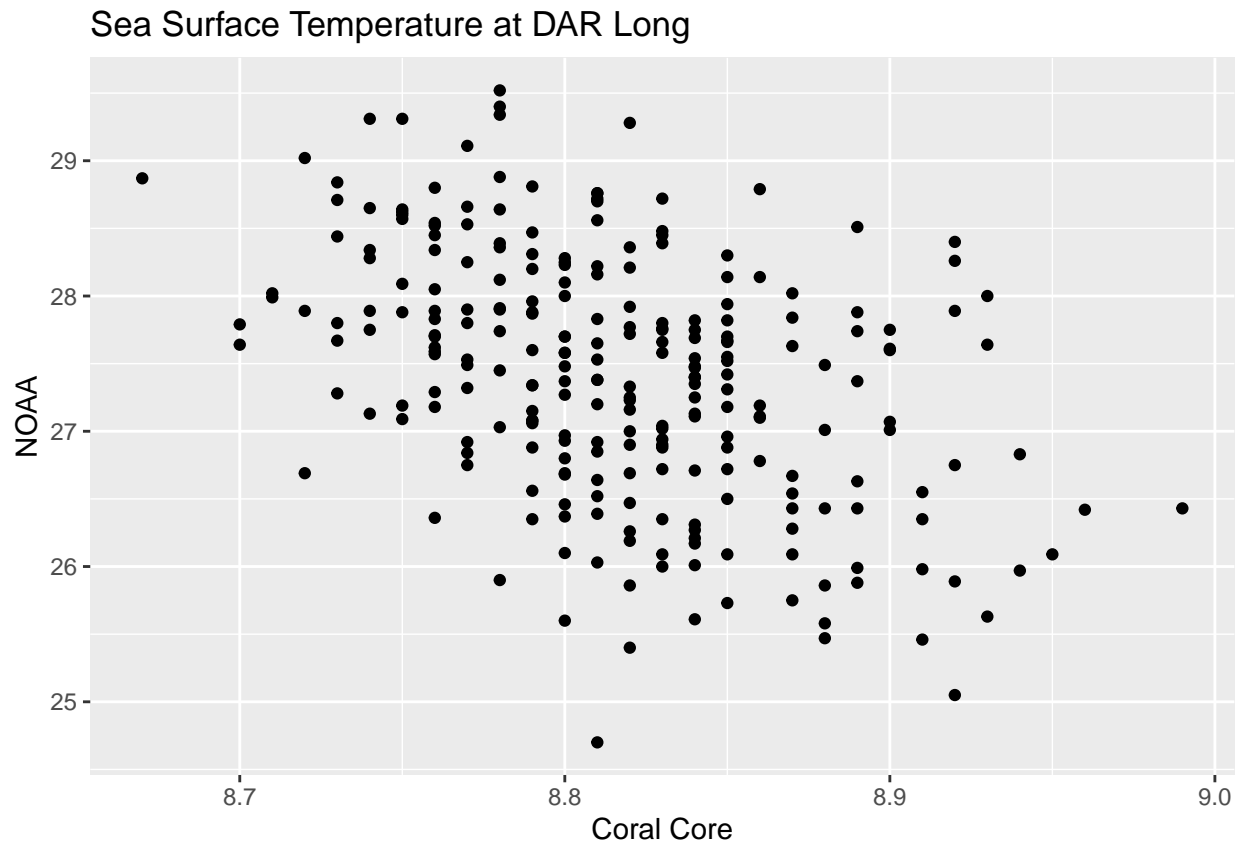
	Model 1	Model 2
(Intercept)	191.013 (8.542)	-2236.820 (1096.089)
browse_coral_core	-18.394 (0.967)	531.158 (247.970)
I(browse_coral_core^2)		-31.095 (14.024)
Num.Obs.	273	273
R2	0.572	0.624
R2 Adj.	0.570	0.622
AIC	705.7	658.5
BIC	716.6	672.9
Log.Lik.	-349.861	-325.252
F	361.923	224.423



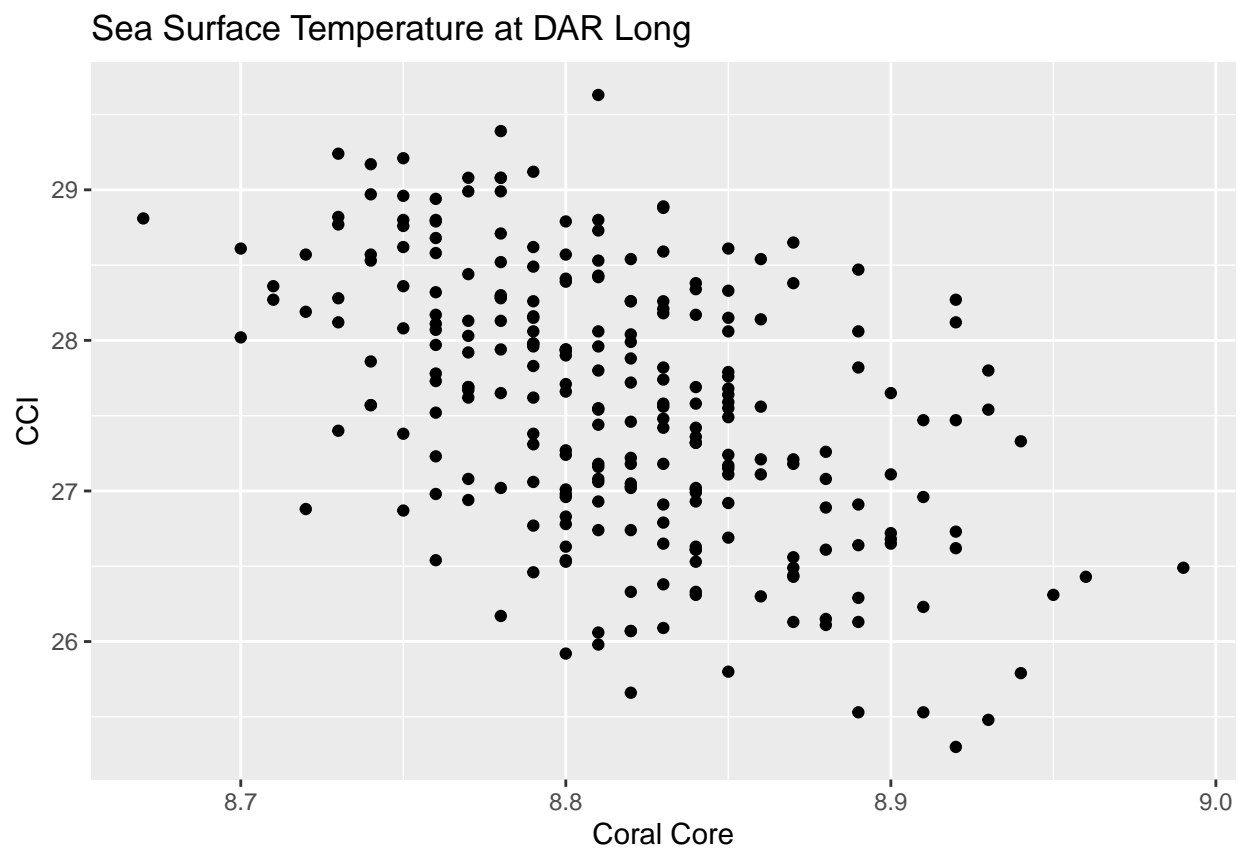
Comparison of CCI, NOAA and Coral Core SST variability in Cocos (Keeling) Island sites

- DAR3 (-12.095, 96.8805)
- DAR Long (-12.0875, 96.875)

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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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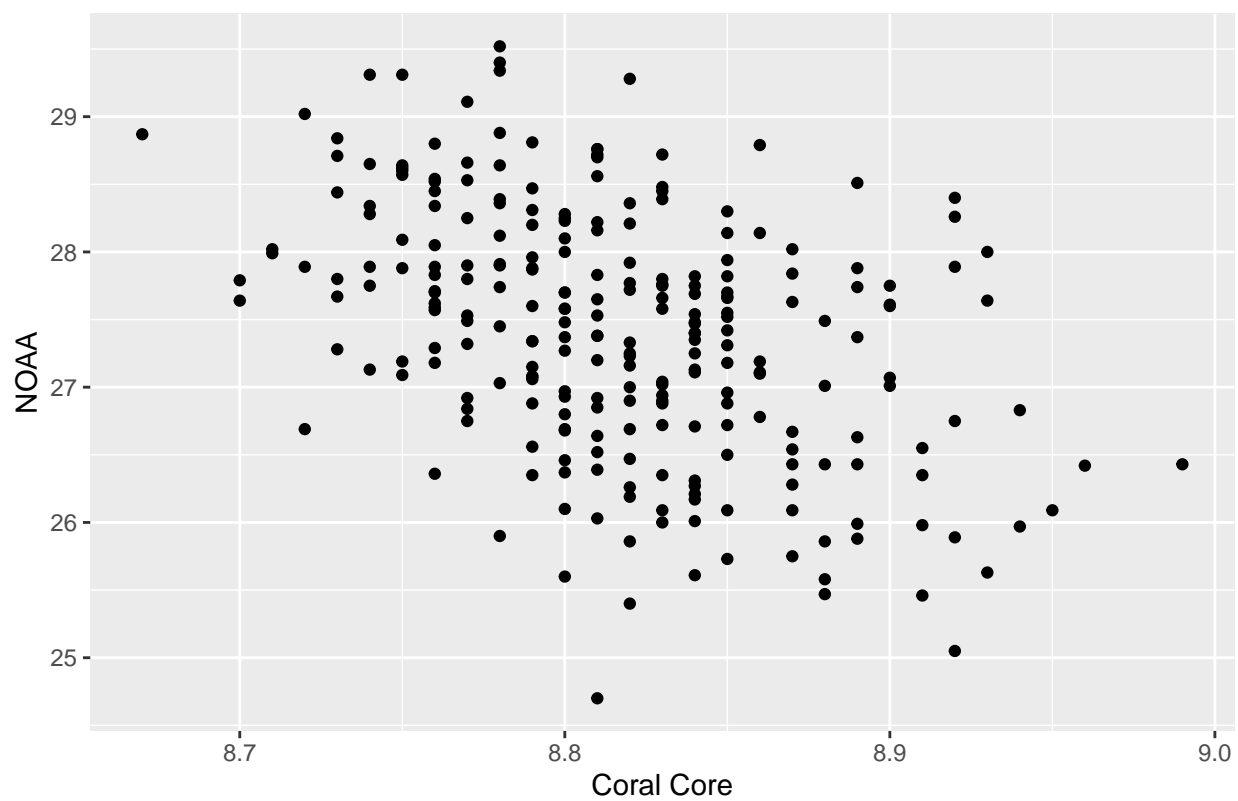


	Model 1	Model 2
(Intercept)	92.767 (8.442)	98.952 (7.846)
Cocos_coral_core	-7.413 (0.957)	-8.096 (0.890)
Num.Obs.	255	255
R2	0.192	0.247
R2 Adj.	0.188	0.244
AIC	632.0	594.6
BIC	642.6	605.3
Log.Lik.	-312.987	-294.314
F	59.943	82.776

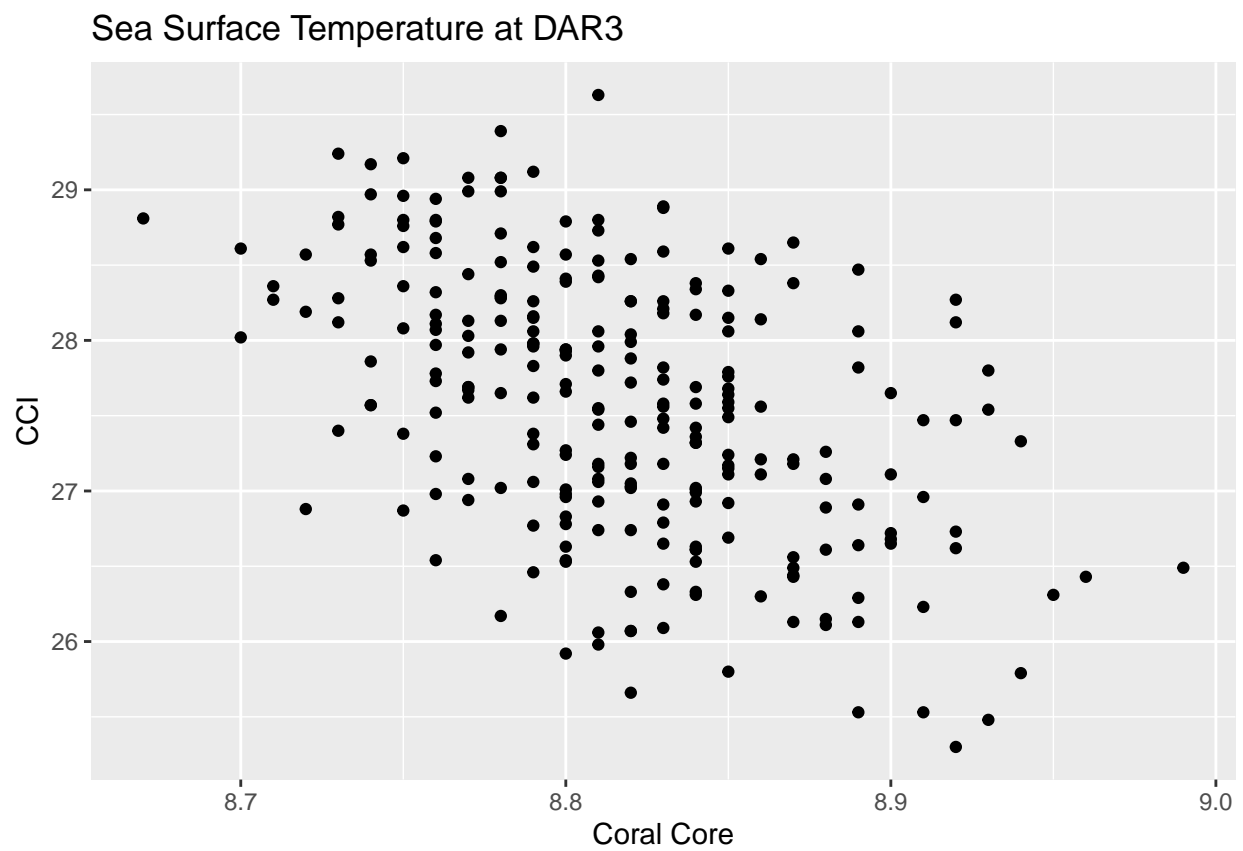


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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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Sea Surface Temperature at DAR3



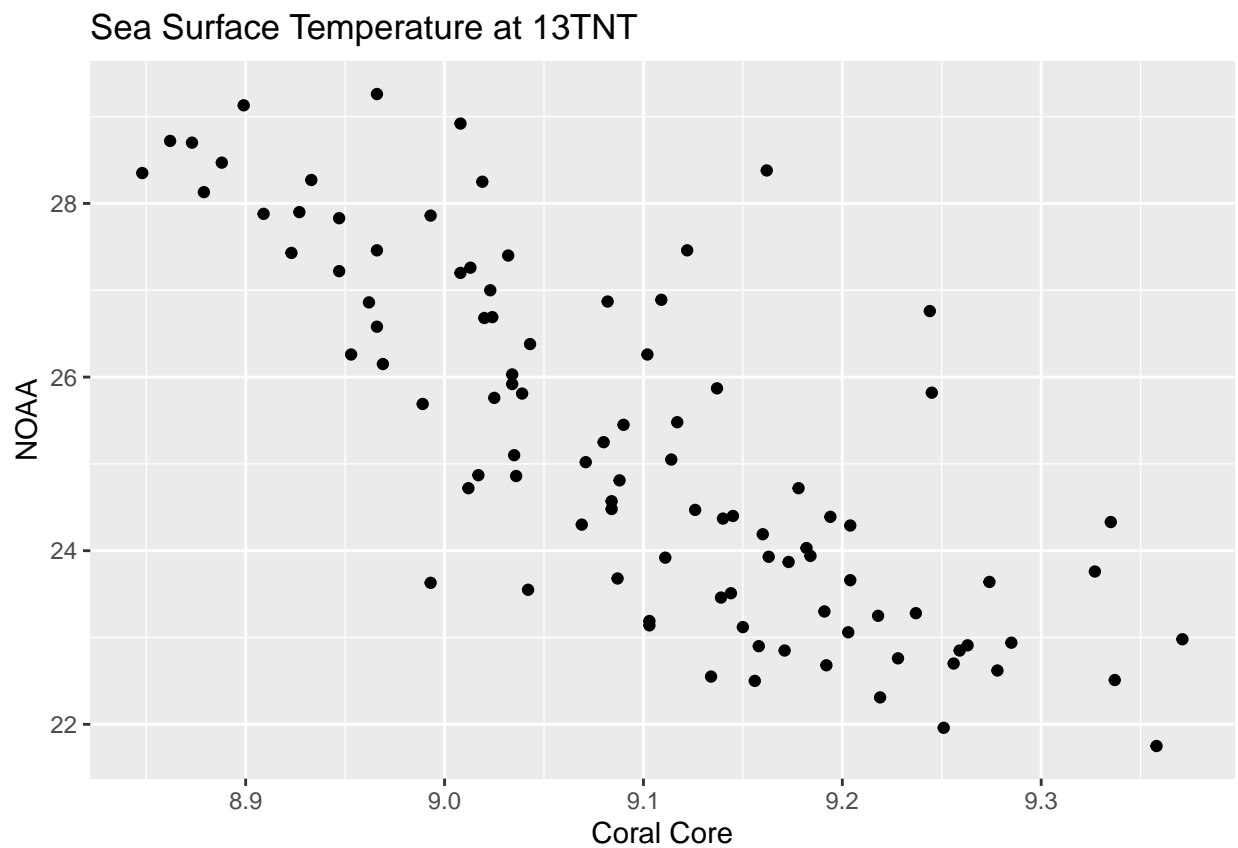
	Model 1	Model 2
(Intercept)	92.767 (8.442)	98.952 (7.846)
Cocos_coral_core	-7.413 (0.957)	-8.096 (0.890)
Num.Obs.	255	255
R2	0.192	0.247
R2 Adj.	0.188	0.244
AIC	632.0	594.6
BIC	642.6	605.3
Log.Lik.	-312.987	-294.314
F	59.943	82.776



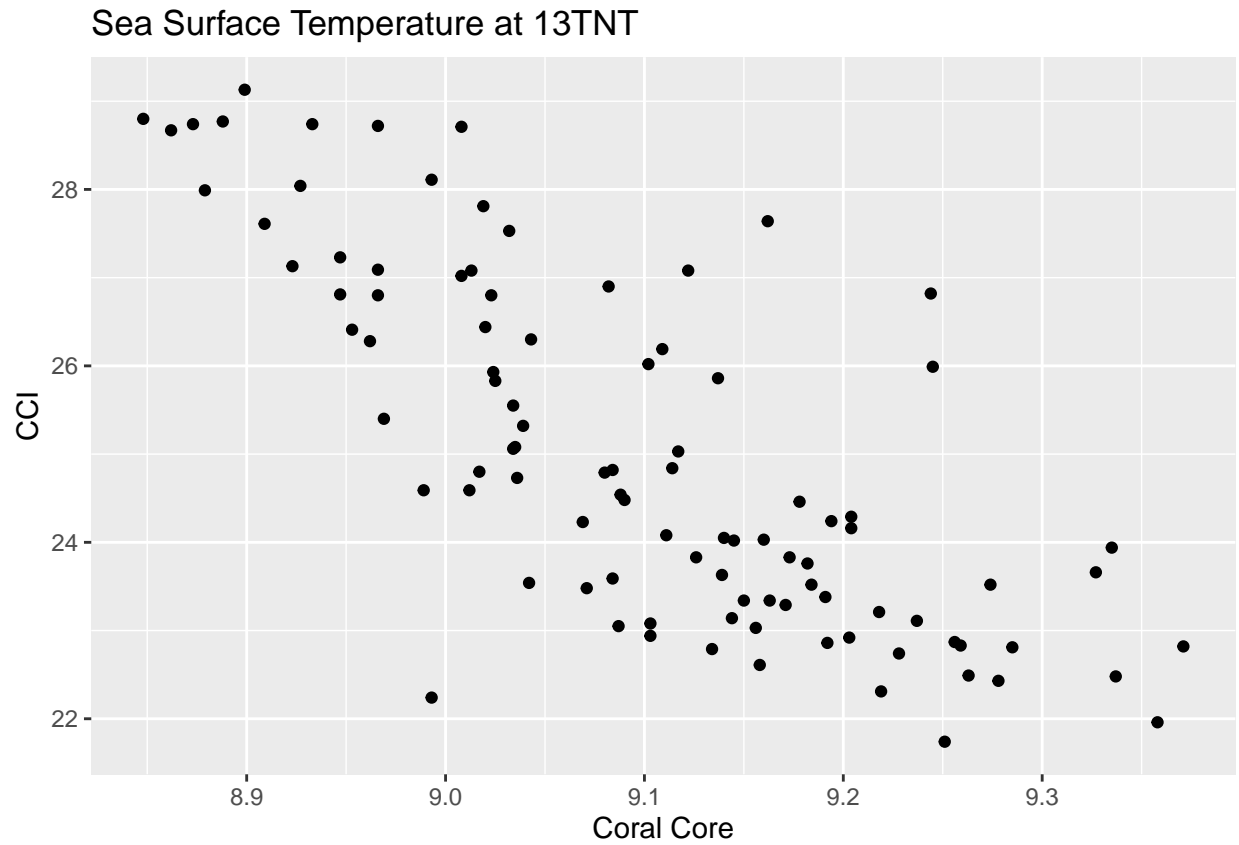
Comparison of CCI, NOAA and Coral Core SST variability in Ningaloo Reef sites

- Tantabiddi (13TNT) and Tantabiddi (08TNT) (-21.91, 113.97)
- TNT (-21.9, 113.97)
- TNT07C (-21.893, 113.963)
- Bundegi (13BND) and Bundegi (08BND) (-21.87, 114.156)
- BUN05A (-21.836, 114.178)

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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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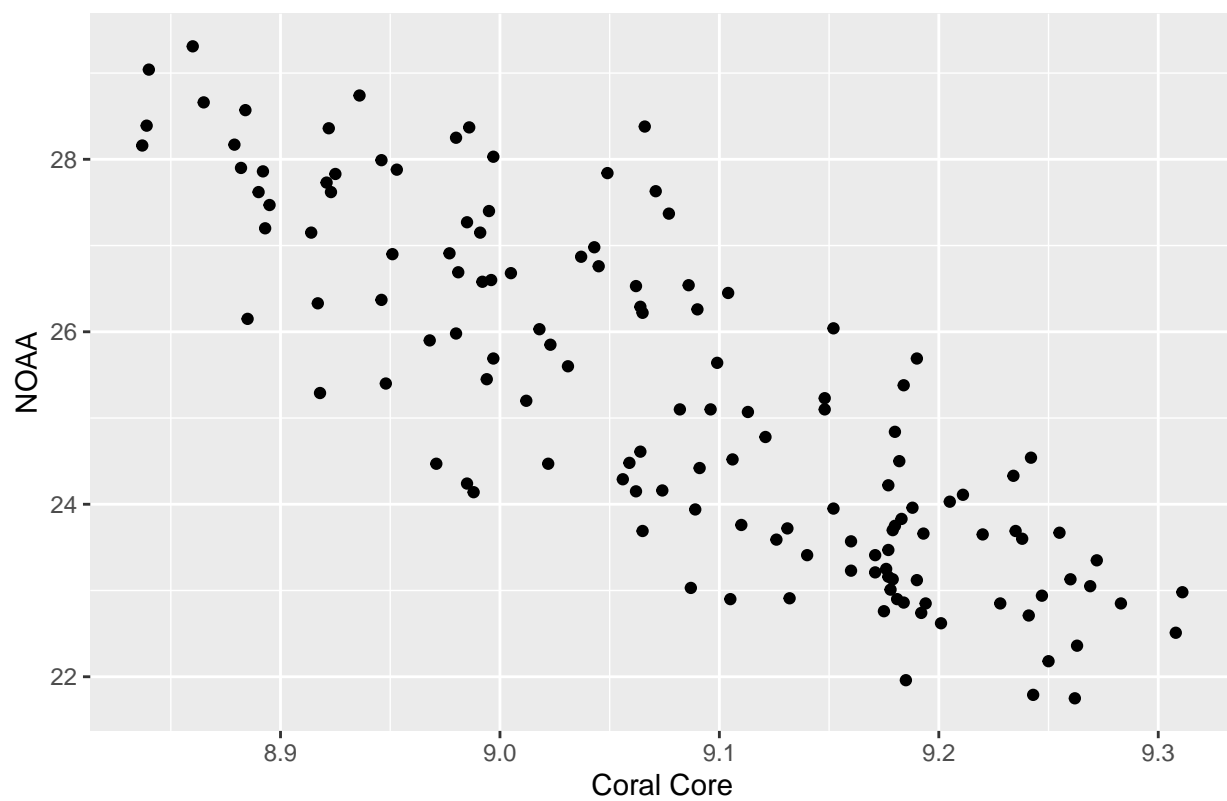


	Model 1	Model 2
(Intercept)	1649.093 (587.966)	2061.773 (596.788)
ningaloo_coral_core	-344.021 (129.197)	-435.076 (131.135)
I(ningaloo_coral_core^2)	18.191 (7.096)	23.210 (7.203)
Num.Obs.	98	98
R2	0.639	0.626
R2 Adj.	0.631	0.618
AIC	321.9	324.8
BIC	332.3	335.2
Log.Lik.	-156.955	-158.415
F	83.924	79.575



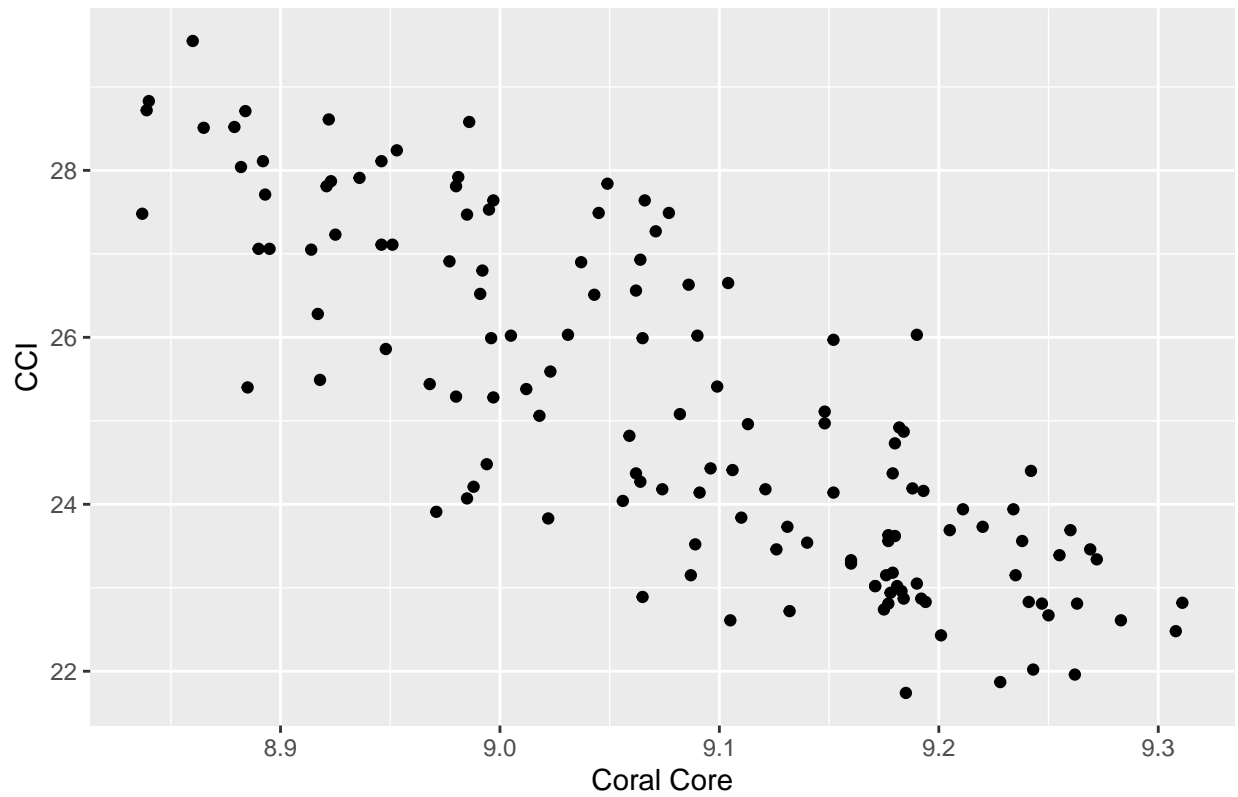
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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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Sea Surface Temperature at 08TNT

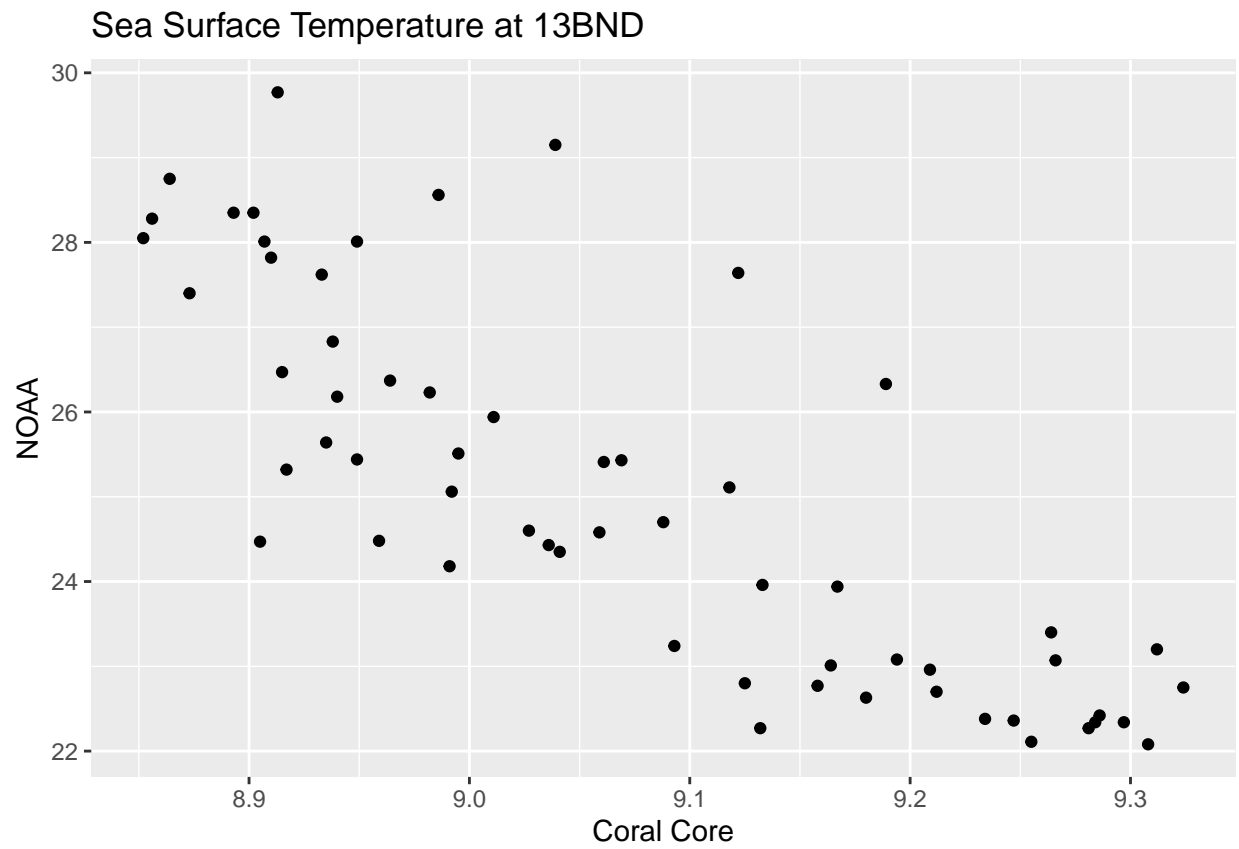


	Model 1	Model 2
(Intercept)	147.763 (6.924)	146.786 (7.397)
ningaloo_coral_core	-13.498 (0.762)	-13.400 (0.815)
Num.Obs.	135	135
R2	0.702	0.671
R2 Adj.	0.700	0.668
AIC	406.1	424.0
BIC	414.8	432.7
Log.Lik.	-200.056	-208.992
F	313.514	270.644

Sea Surface Temperature at 08TNT

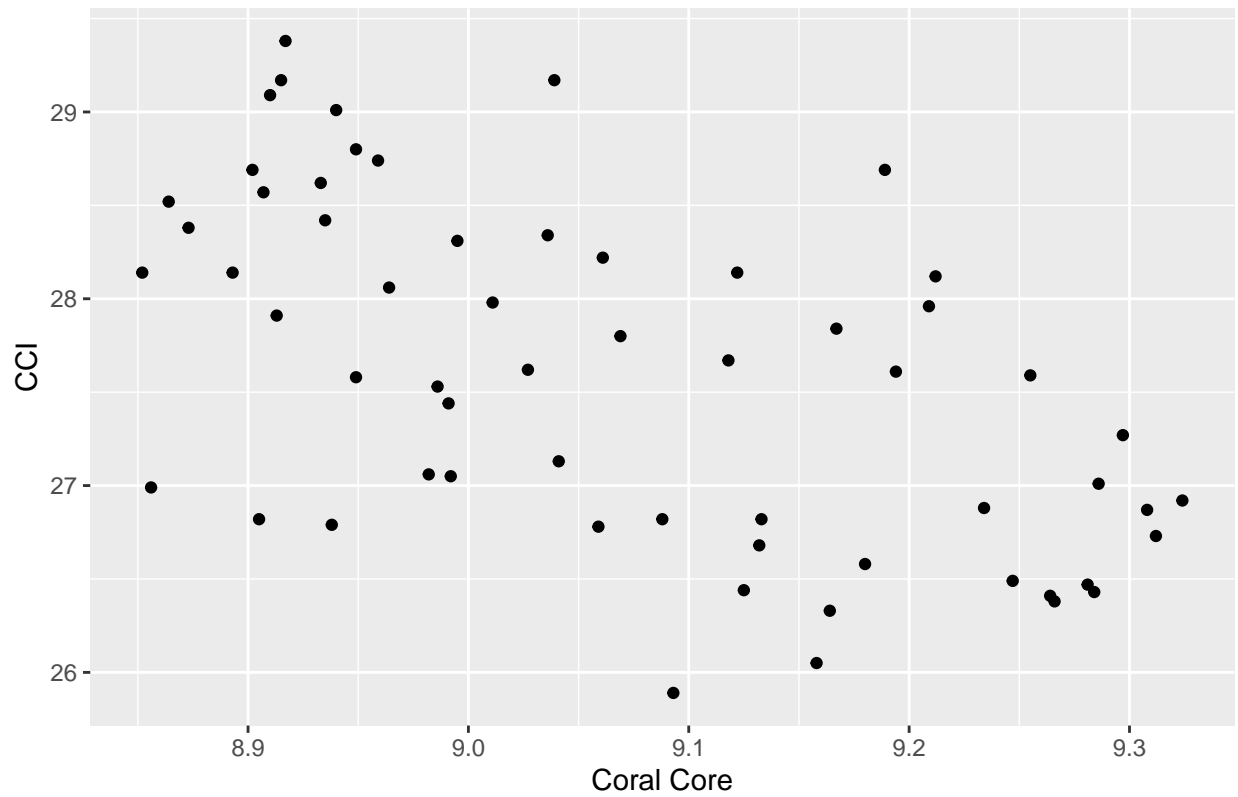


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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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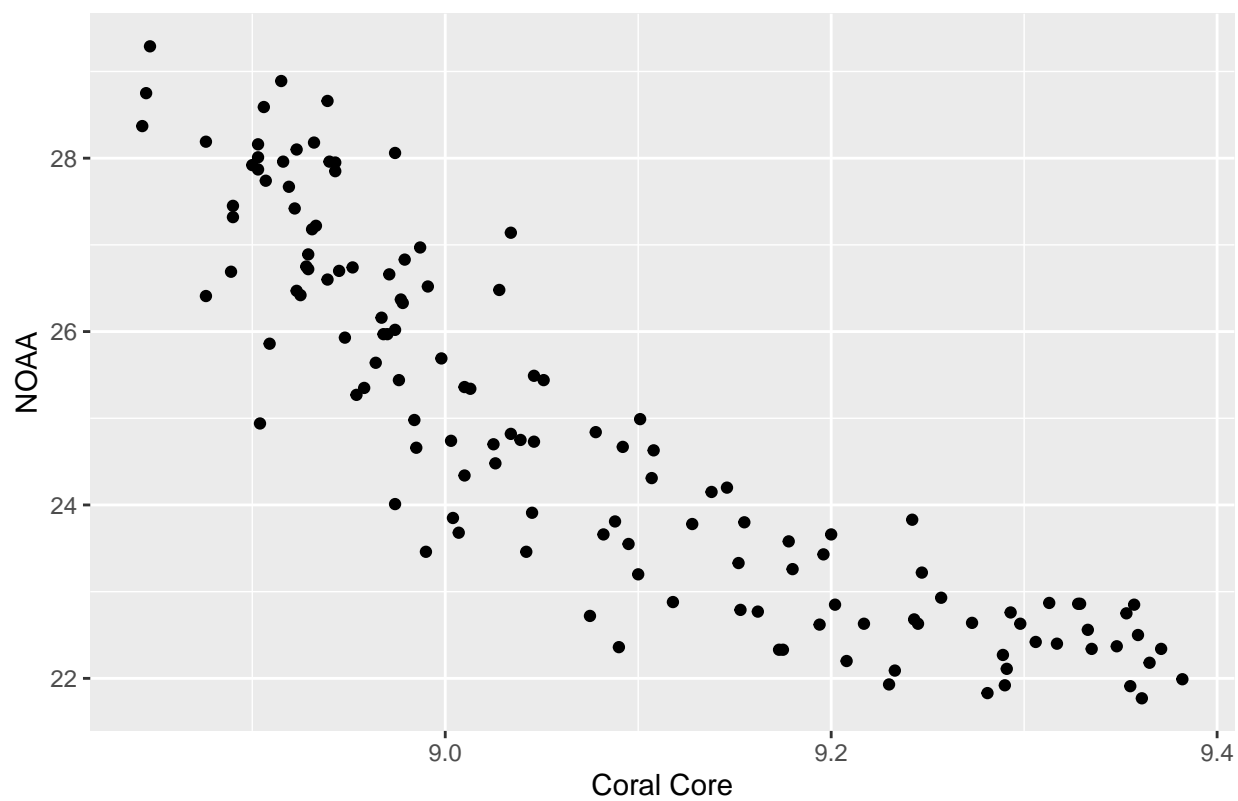
	Model 1	Model 2
(Intercept)	139.828 (10.616)	60.731 (6.185)
ningaloo_coral_core	-12.655 (1.170)	-3.654 (0.682)
Num.Obs.	60	60
R2	0.668	0.331
R2 Adj.	0.663	0.320
AIC	204.6	139.8
BIC	210.9	146.1
Log.Lik.	-99.313	-66.897
F	116.921	28.720

Sea Surface Temperature at 13BND

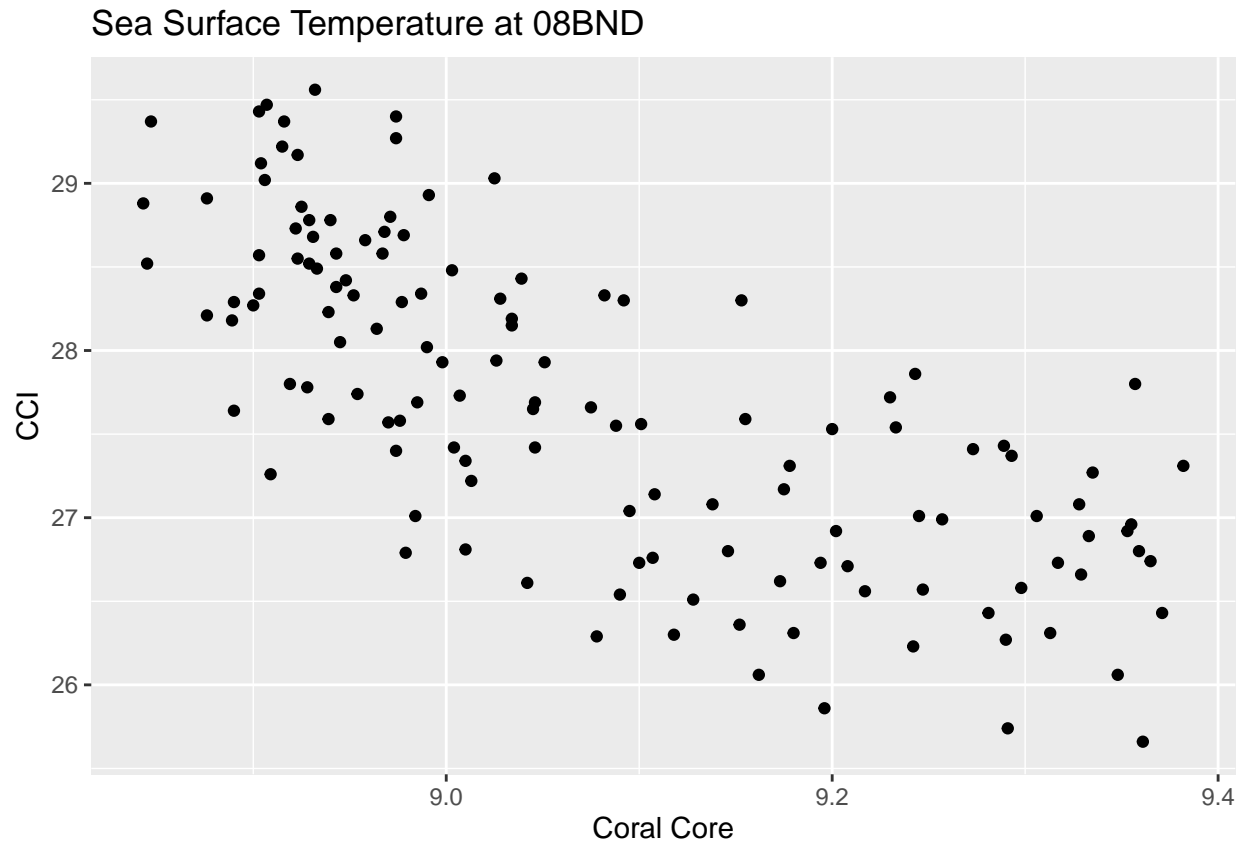


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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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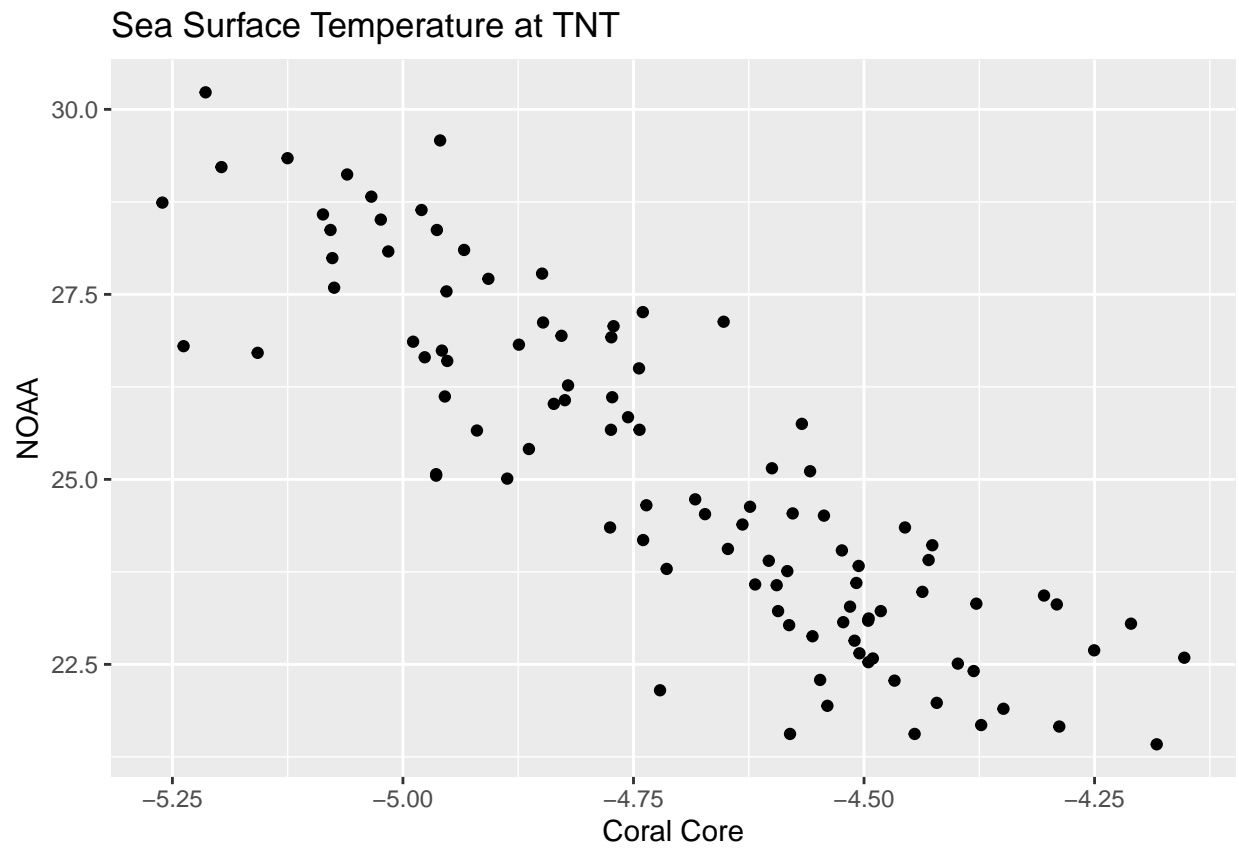
Sea Surface Temperature at 08BND



	Model 1	Model 2
(Intercept)	2368.444 (310.709)	894.520 (226.123)
ningaloo_coral_core	-502.398 (68.200)	-185.807 (49.633)
I(ningaloo_coral_core^2)	26.896 (3.741)	9.946 (2.723)
Num.Obs.	133	133
R2	0.842	0.580
R2 Adj.	0.839	0.574
AIC	338.5	253.9
BIC	350.0	265.5
Log.Lik.	-165.237	-122.973
F	345.103	89.877

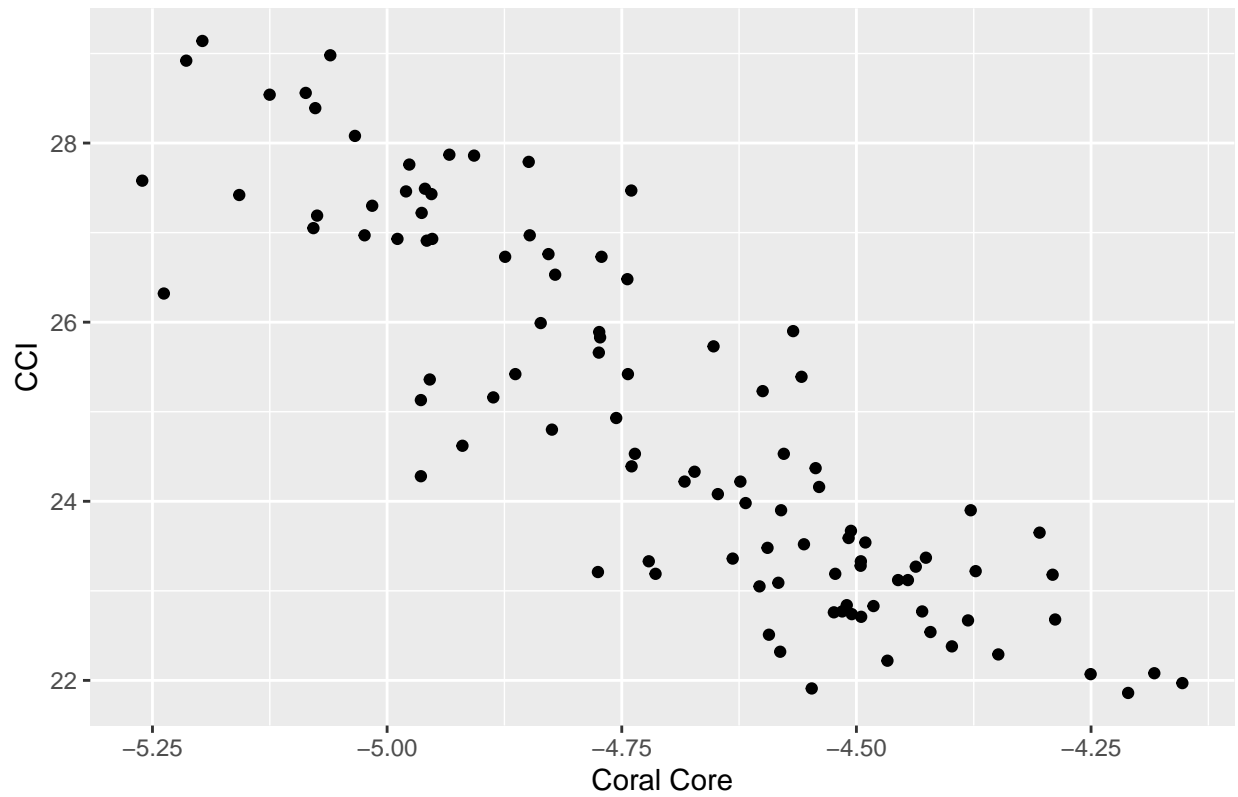


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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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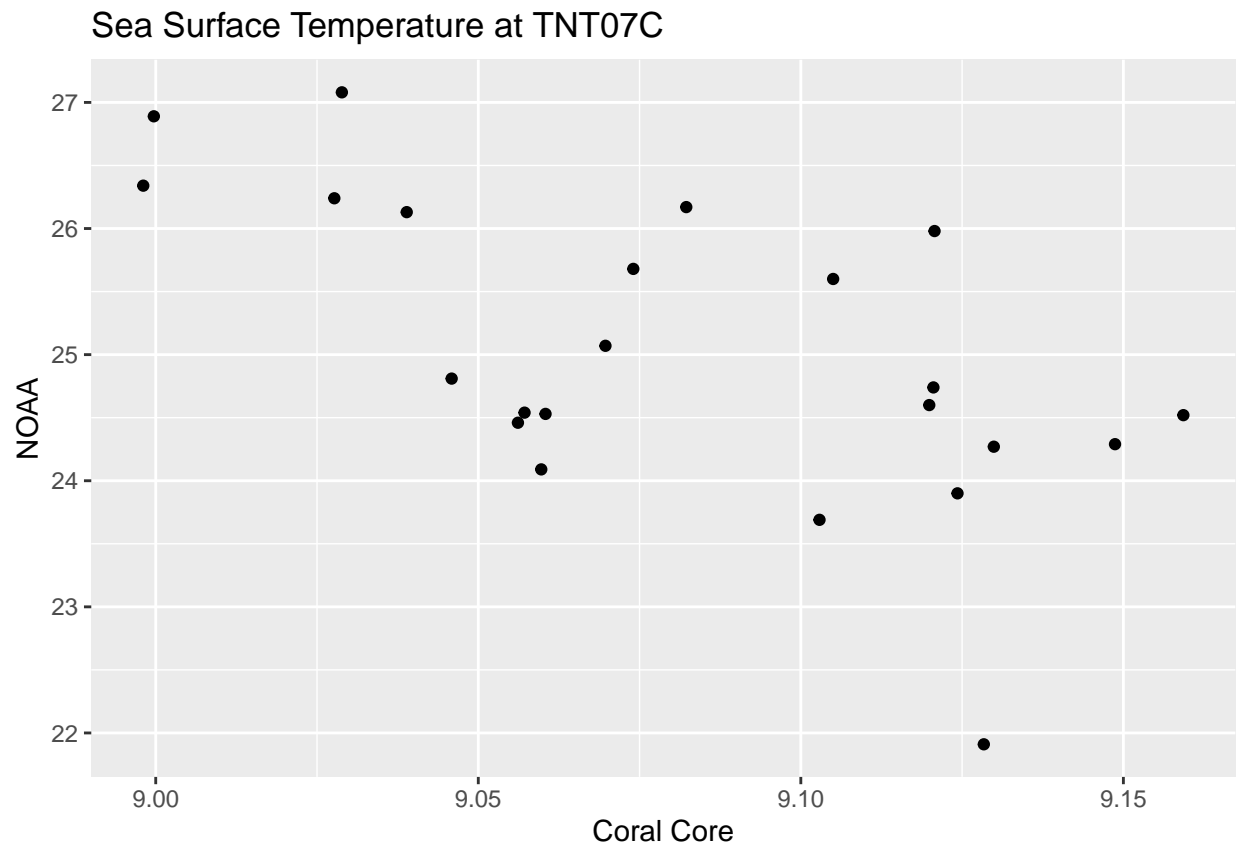


	Model 1	Model 2
(Intercept)	−10.513 (2.022)	−7.134 (1.802)
ningaloo_coral_core	−7.569 (0.429)	−6.812 (0.383)
Num.Obs.	102	102
R2	0.757	0.760
R2 Adj.	0.754	0.758
AIC	318.0	294.6
BIC	325.9	302.5
Log.Lik.	−156.000	−144.289
F	310.888	316.848

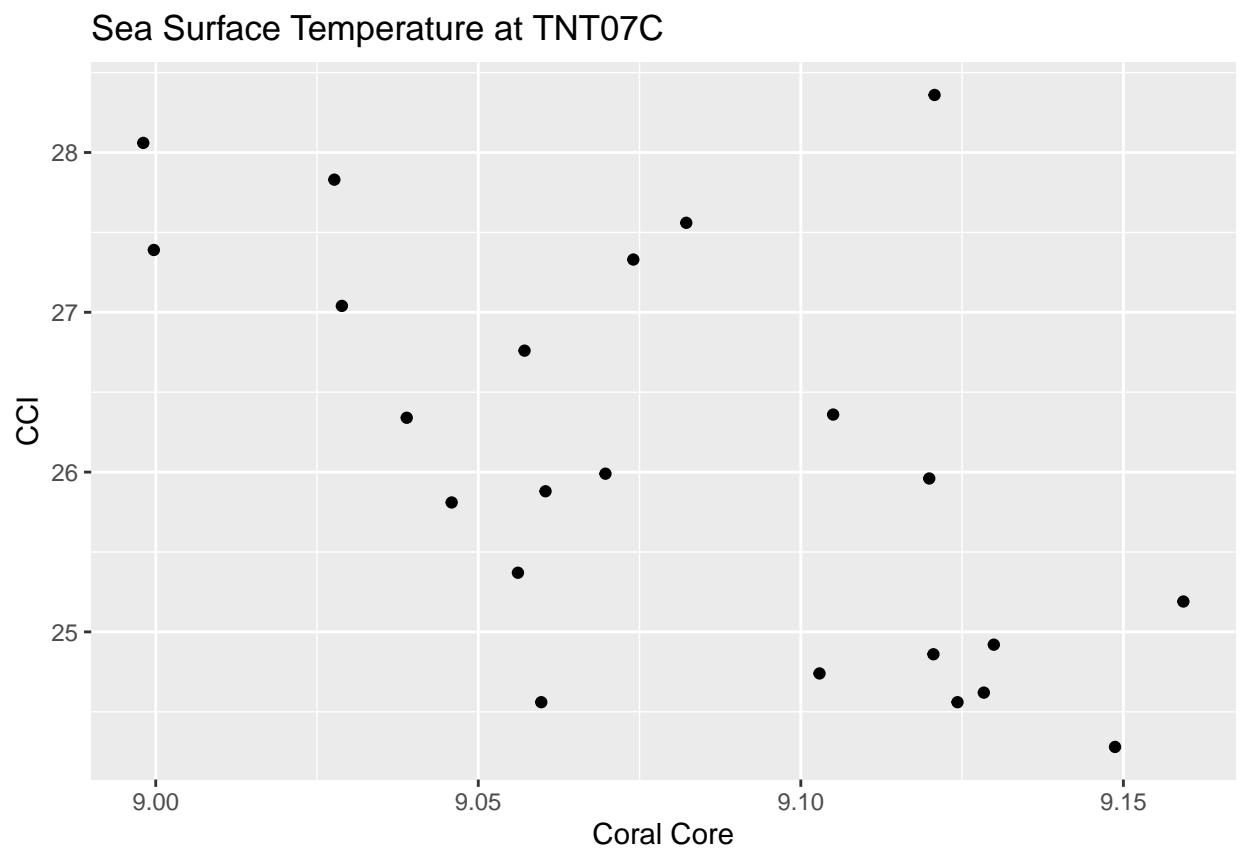
Sea Surface Temperature at TNT



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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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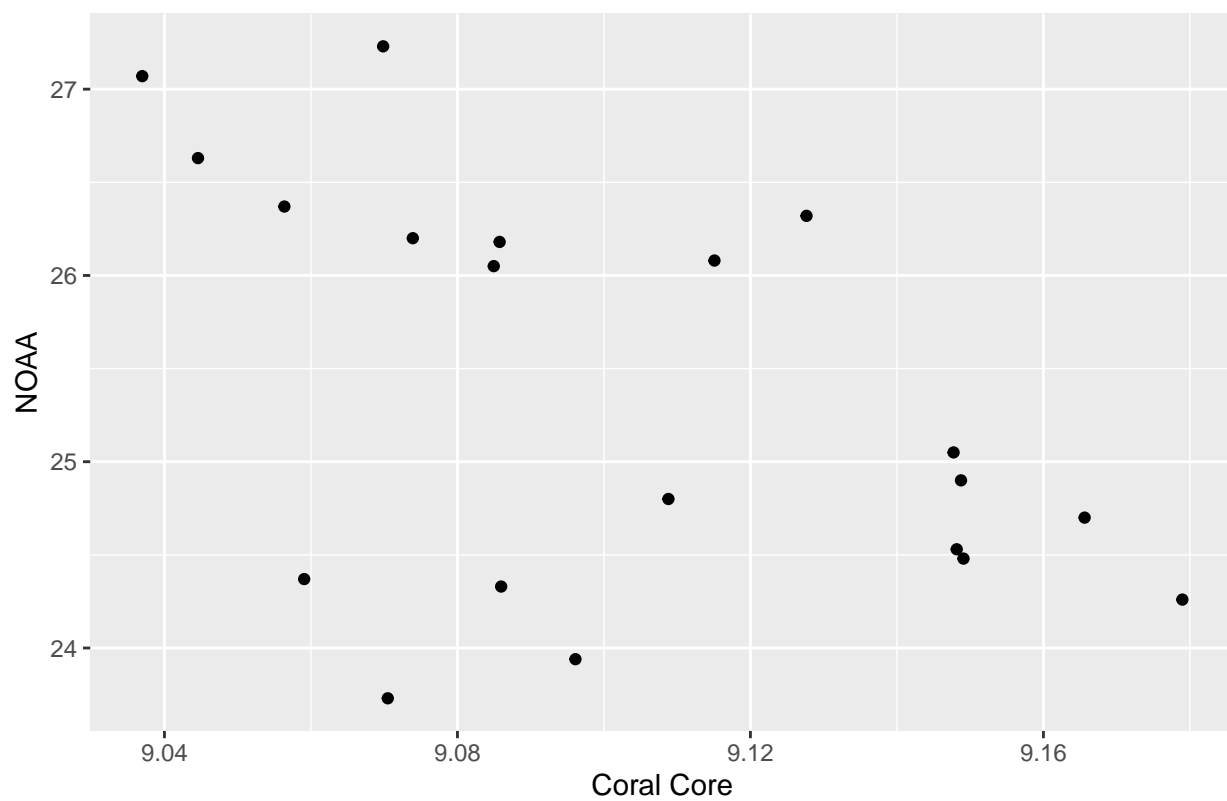


	Model 1	Model 2
(Intercept)	168.726 (40.147)	170.627 (43.985)
ningaloo_coral_core	-15.825 (4.421)	-15.918 (4.844)
Num.Obs.	23	23
R2	0.379	0.340
R2 Adj.	0.349	0.308
AIC	67.3	71.5
BIC	70.7	74.9
Log.Lik.	-30.669	-32.768
F	12.812	10.800



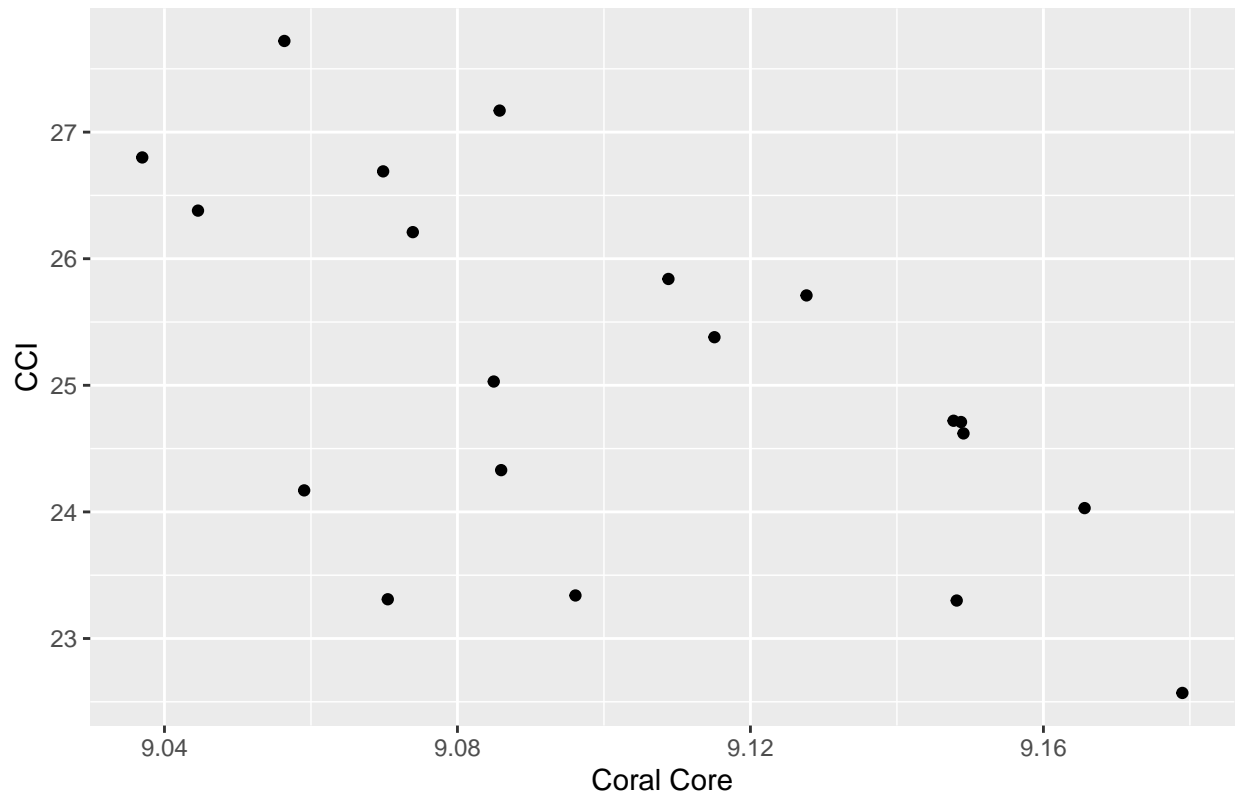
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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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Sea Surface Temperature at BUN05A



	Model 1	Model 2
(Intercept)	139.124 (48.119)	203.879 (59.033)
ningaloo_coral_core	-12.498 (5.286)	-19.640 (6.485)
Num.Obs.	20	20
R2	0.237	0.338
R2 Adj.	0.195	0.301
AIC	60.0	68.1
BIC	63.0	71.1
Log.Lik.	-26.981	-31.070
F	5.590	9.172

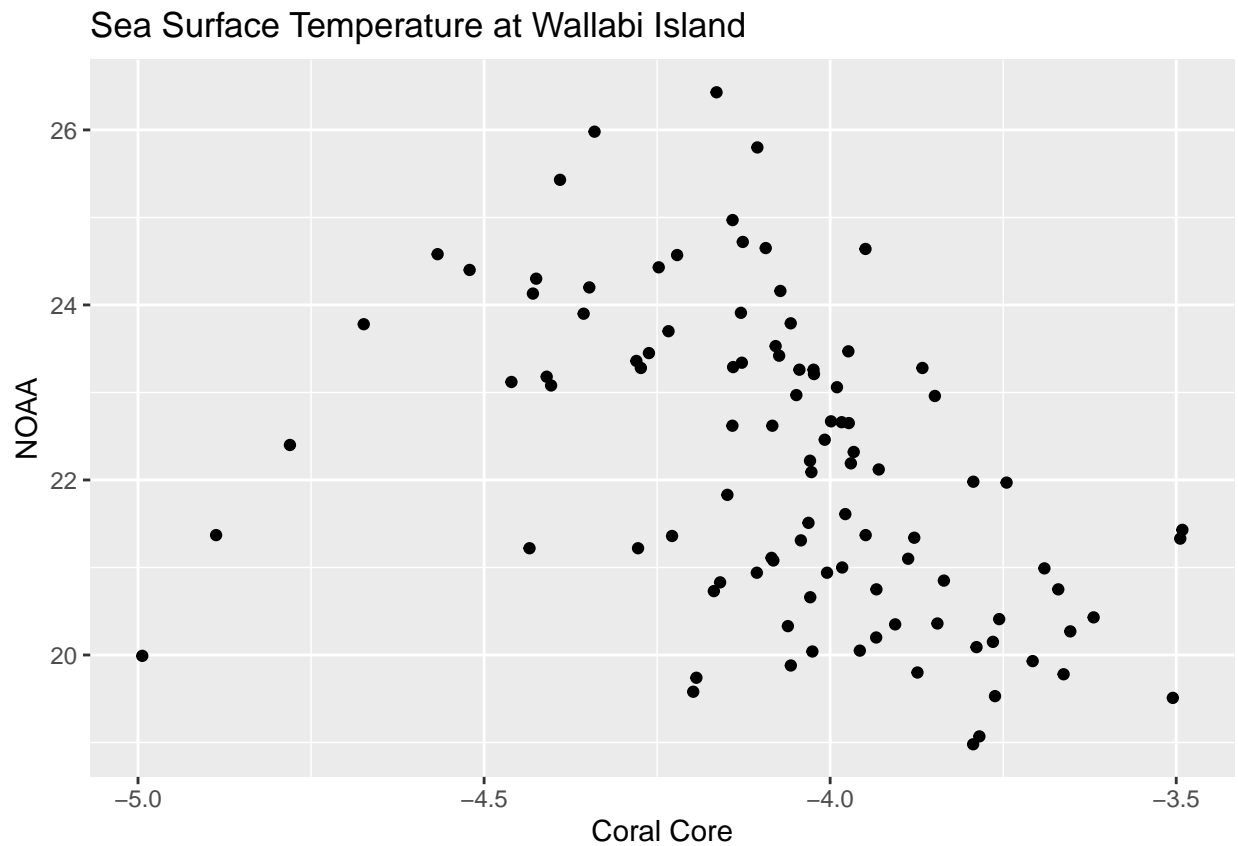
Sea Surface Temperature at BUN05A



Comparison of CCI, NOAA and Coral Core SST variability in Houtman Abrolhos Island sites

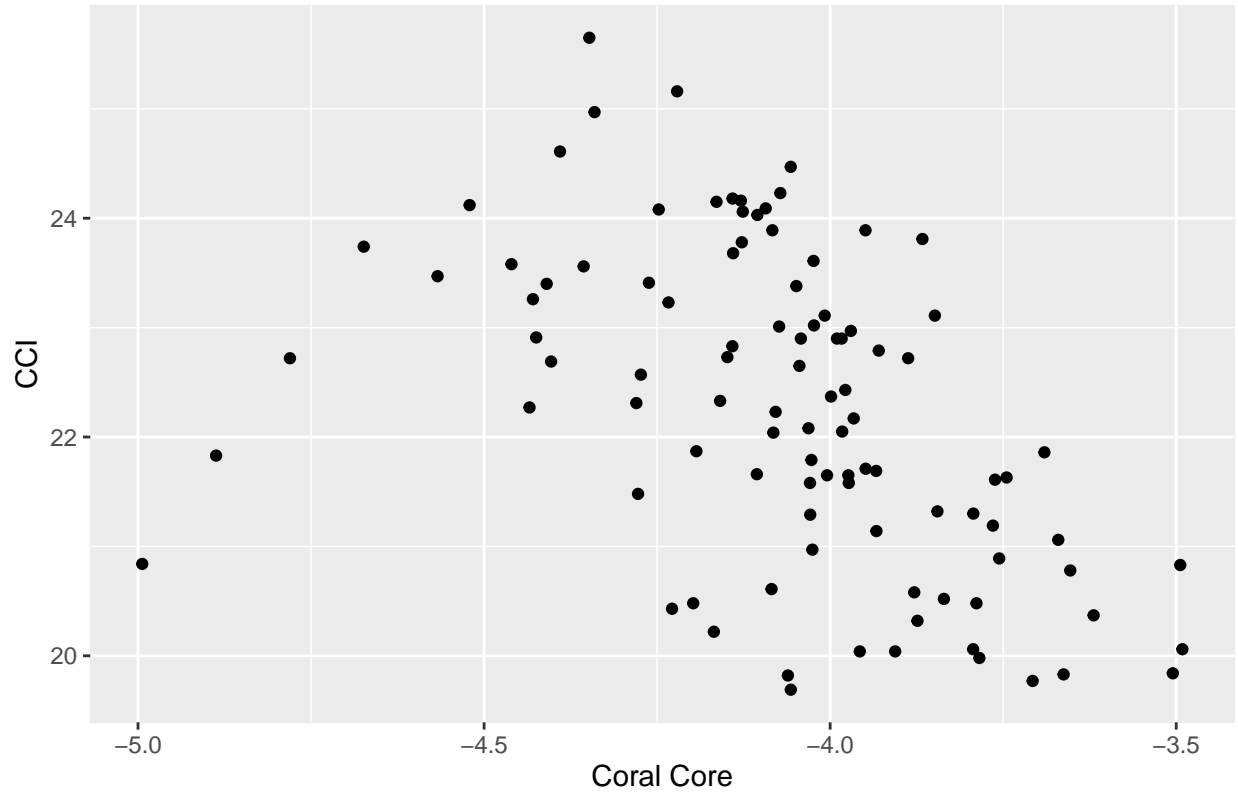
- Wallabi Island (-28.28, 113.46)
- HAB10A (-28.4589, 113.749)
- HAB05B (-28.4609, 113.772)

```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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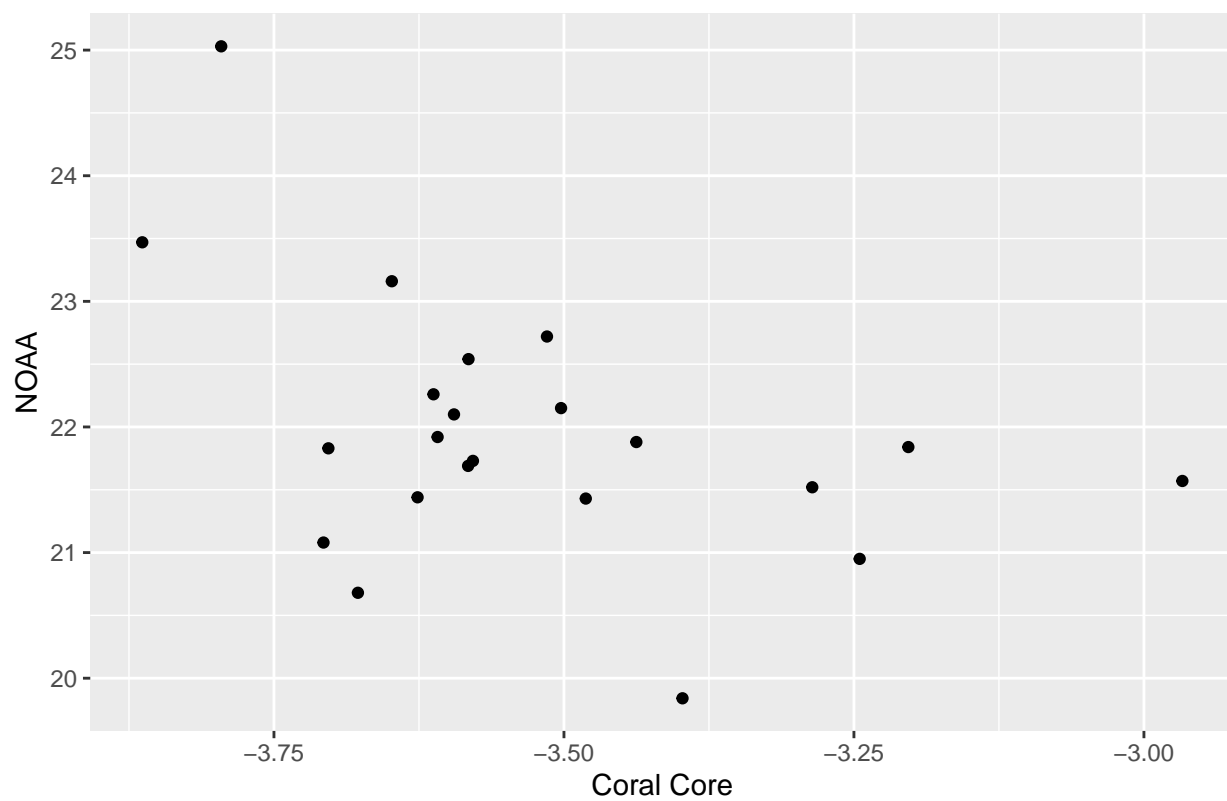
	Model 1	Model 2
(Intercept)	−66.247 (20.347)	−58.788 (16.317)
HAbrol_coral_core	−40.056 (9.792)	−36.775 (7.852)
I(HAbrol_coral_core^2)	−4.484 (1.176)	−4.124 (0.943)
Num.Obs.	100	100
R2	0.297	0.349
R2 Adj.	0.282	0.336
AIC	366.4	322.3
BIC	376.8	332.7
Log.Lik.	−179.208	−157.133
F	20.454	26.037

Sea Surface Temperature at Wallabi Island



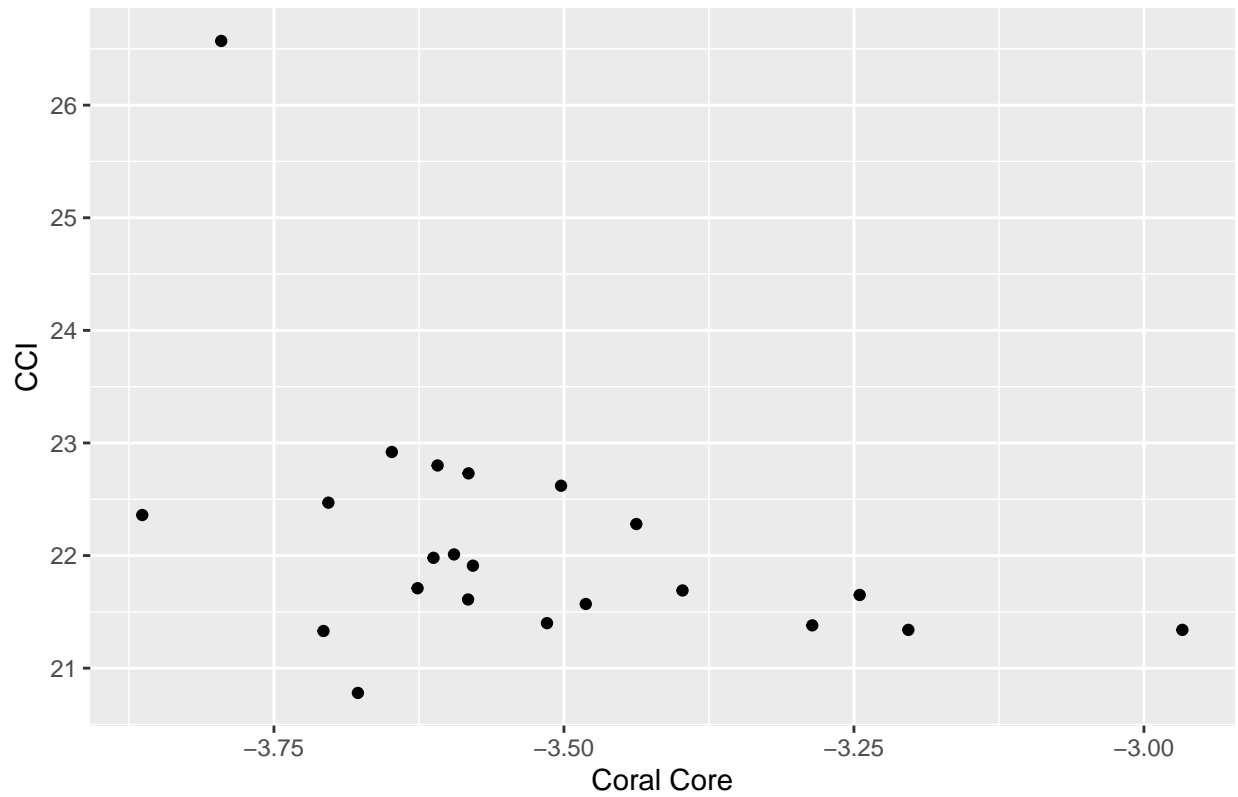
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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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Sea Surface Temperature at HAB10A d18O



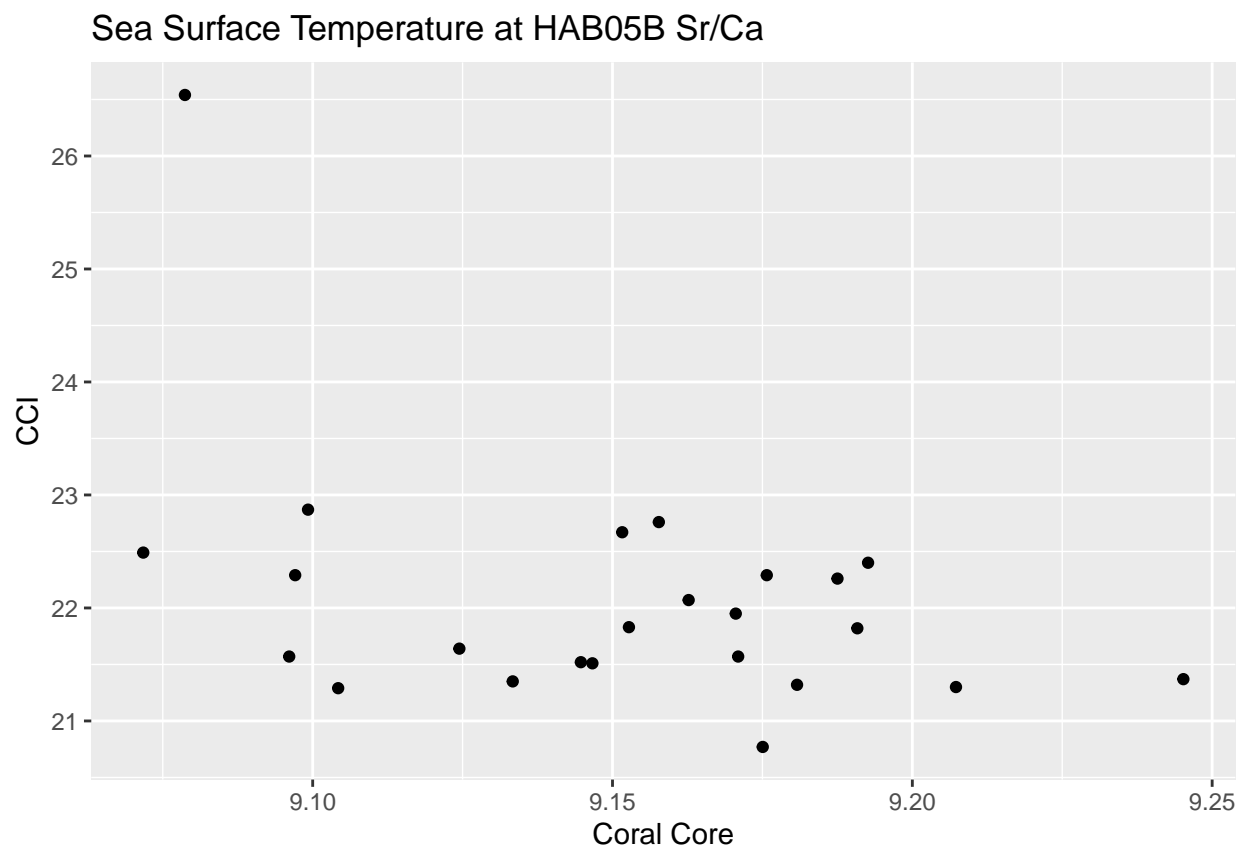
	Model 1	Model 2
(Intercept)	14.058 (3.583)	13.776 (3.942)
HAbrol_coral_core	-2.236 (1.014)	-2.363 (1.115)
Num.Obs.	22	22
R2	0.196	0.183
R2 Adj.	0.155	0.142
AIC	64.8	69.0
BIC	68.1	72.3
Log.Lik.	-29.402	-31.503
F	4.864	4.487

Sea Surface Temperature at HAB10A d18O



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## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
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	Model 1
(Intercept)	121.911 (44.710)
HAbrol_coral_core	-10.912 (4.886)
Num.Obs.	24
R2	0.185
R2 Adj.	0.148
AIC	72.7
BIC	76.2
Log.Lik.	-33.354
F	4.988



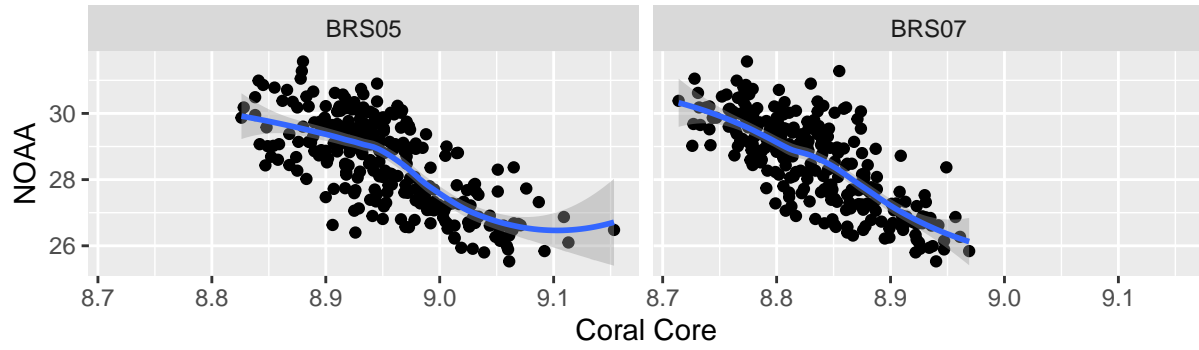
No Coral Core Data for Scott Reef

Linear Relationship between Coral Core and CCI, Coral Core and NOAA, was found to be insignificant in HAB10A_SrCa and HAB05B_d18O

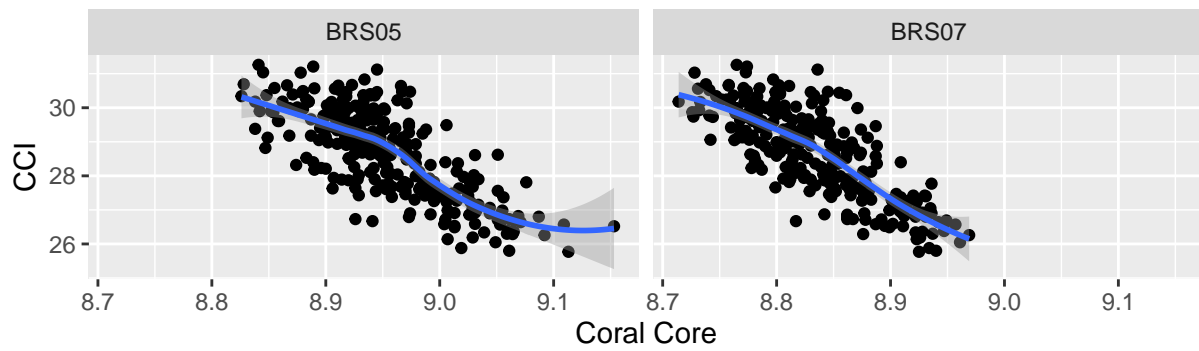
Linear Relationship between Coral Core and NOAA was found to be insignificant in HAB05B_SrCa (Significant for Coral Core and CCI in this site)

Too many missing gaps in Logger Data for comparison

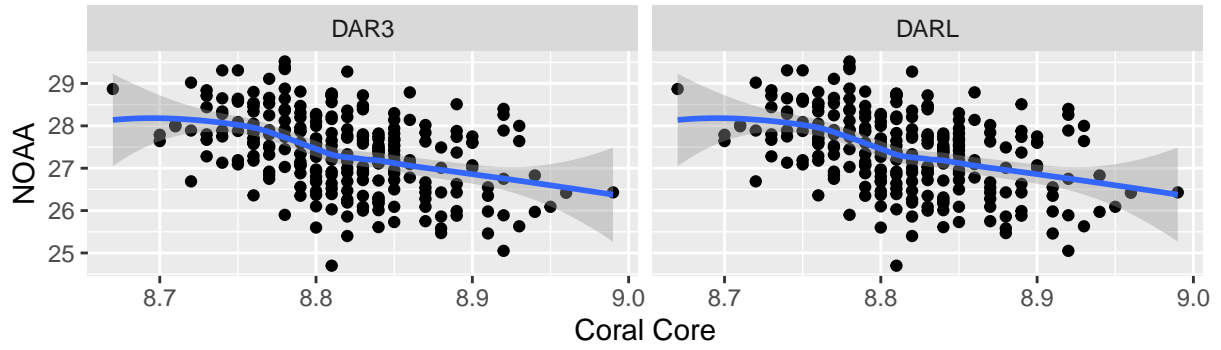
Browse Island NOAA SST and Coral Core Proxy



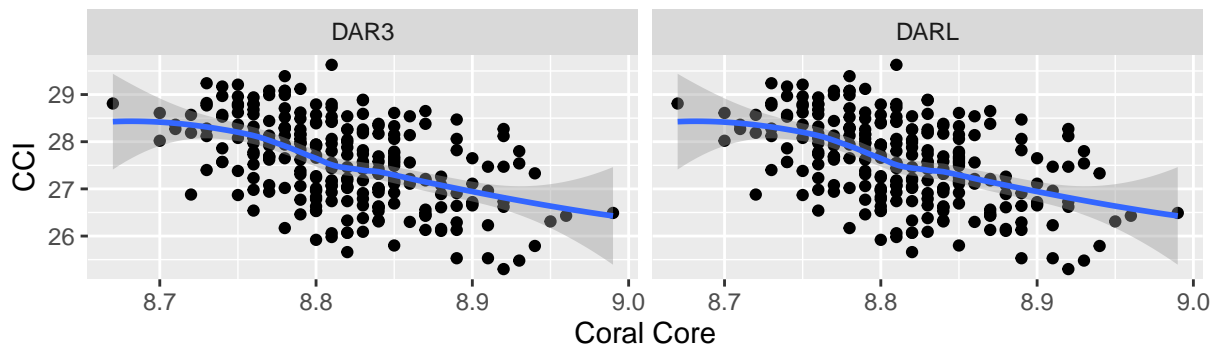
Browse Island CCI SST and Coral Core Proxy



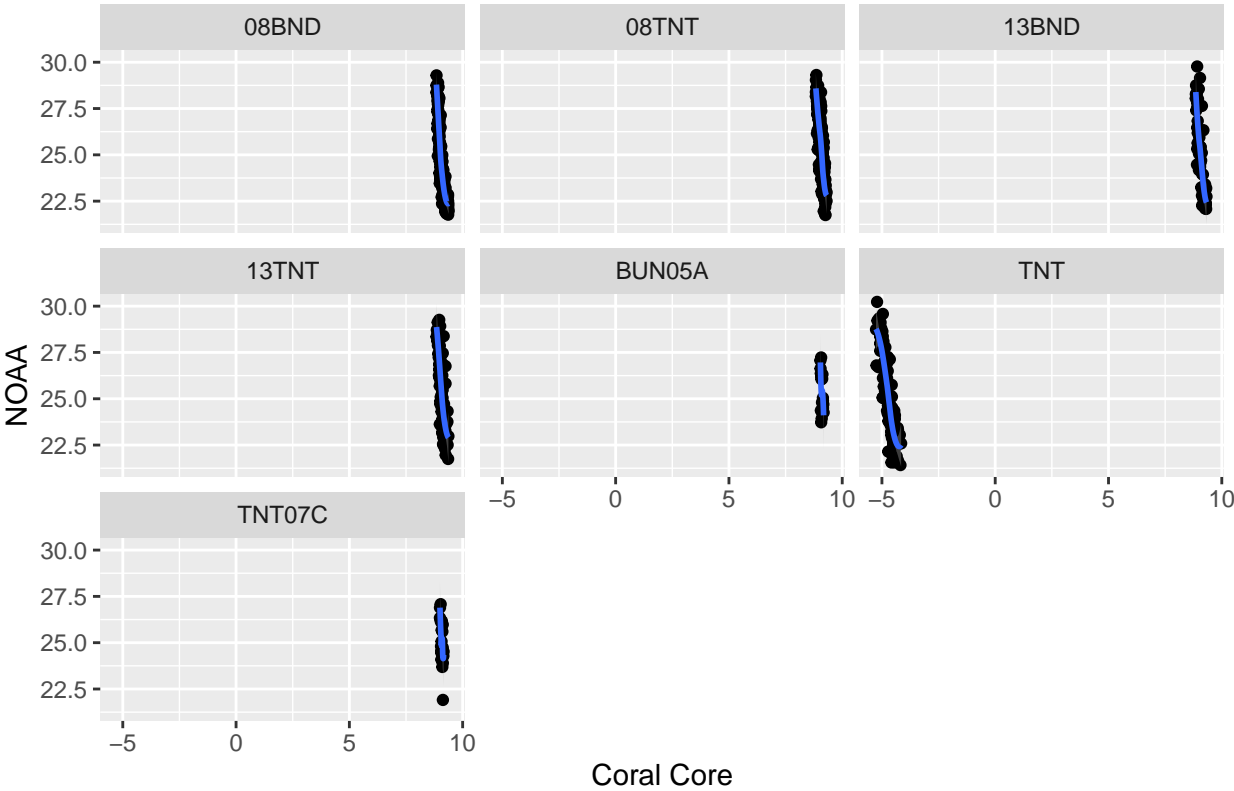
Cocos Keeling Island NOAA SST and Coral Core Proxy



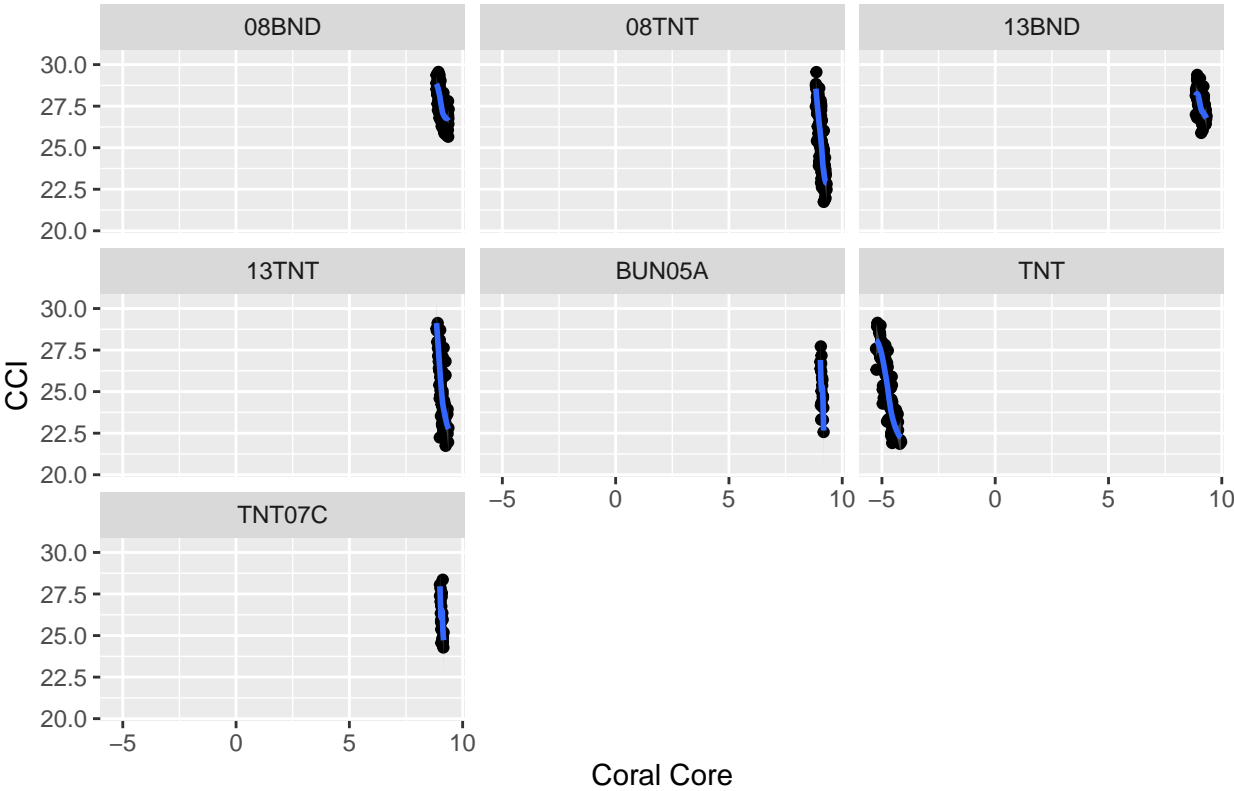
Cocos Keeling Island CCI SST and Coral Core Proxy



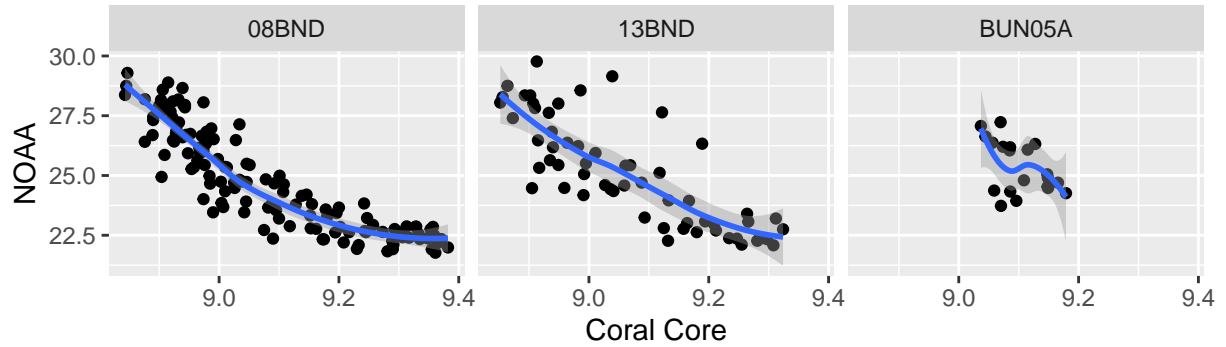
Ningaloo Reef NOAA SST and Coral Core Proxy



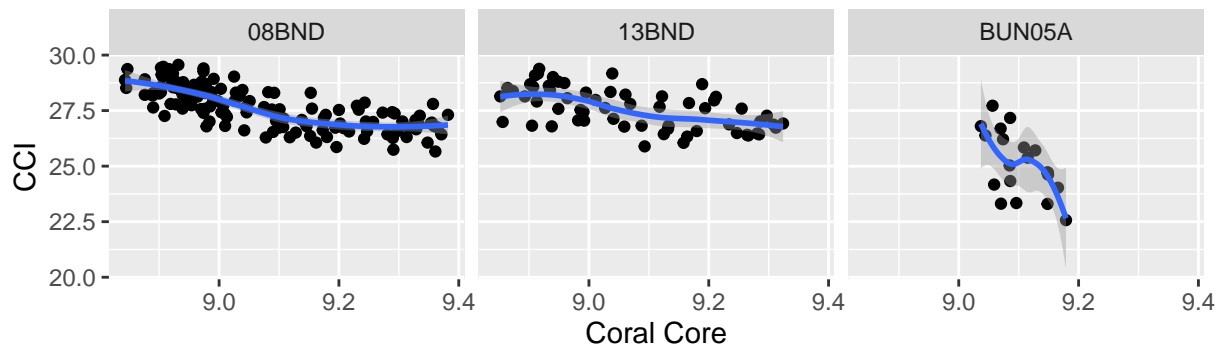
Ningaloo Reef CCI SST and Coral Core Proxy



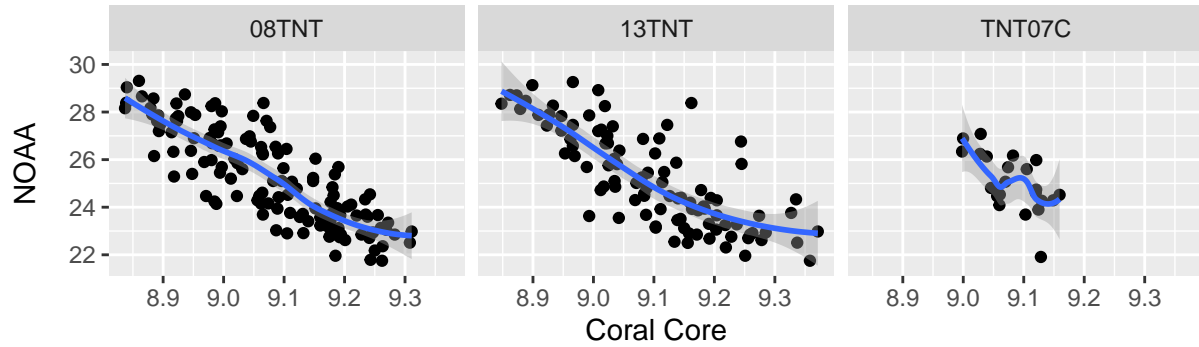
Ningaloo Reef Bundegi and BUN05A NOAA SST and Coral Core Proxy



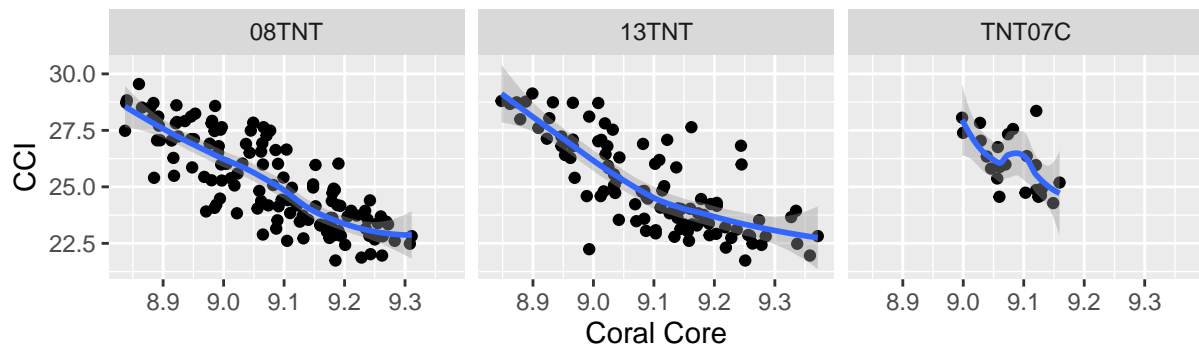
Ningaloo Reef Bundegi and BUN05A CCI SST and Coral Core Proxy



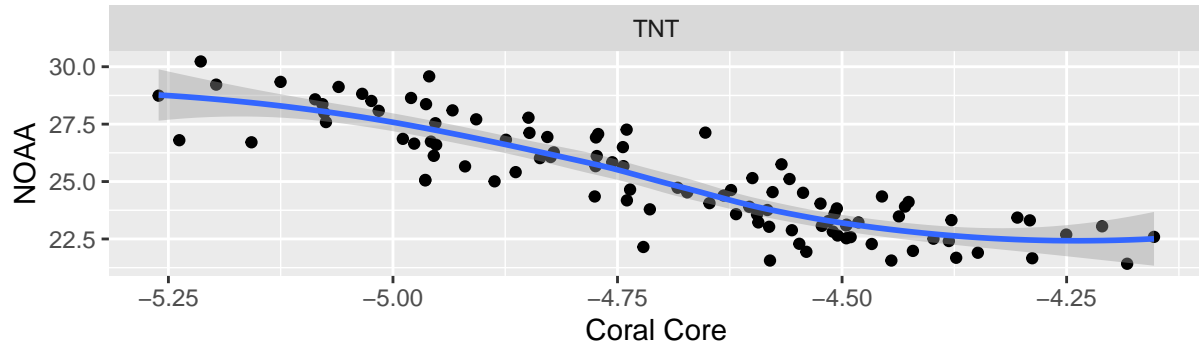
Ningaloo Reef Tantabiddi NOAA SST and Coral Core Proxy



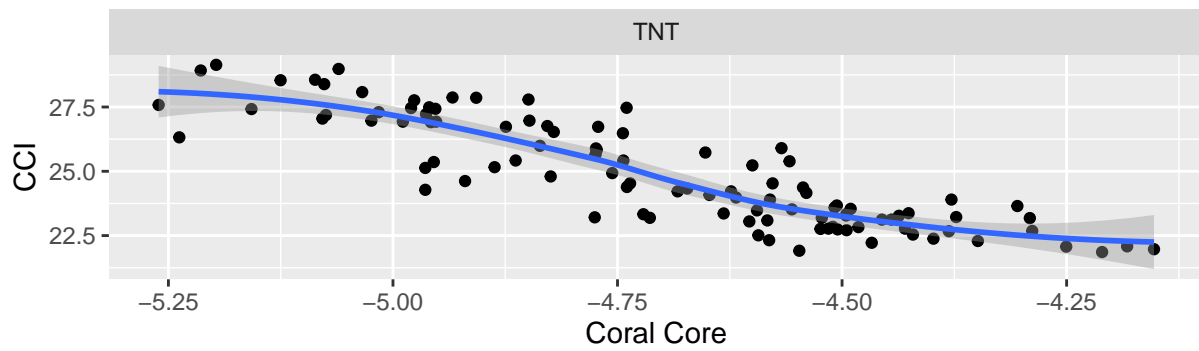
Ningaloo Reef Tantabiddi CCI SST and Coral Core Proxy



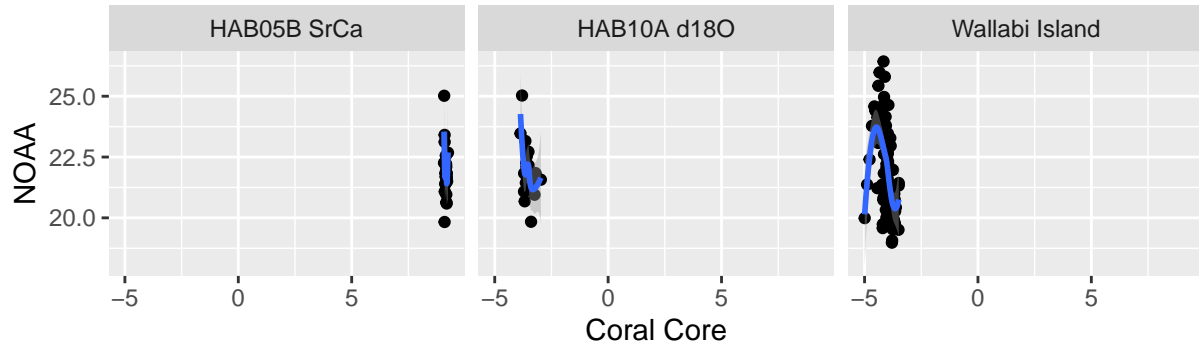
Ningaloo Reef TNT NOAA SST and Coral Core Proxy



Ningaloo Reef TNT CCI SST and Coral Core Proxy



Houtman Abrolhos NOAA SST and Coral Core Proxy



Houtman Abrolhos CCI SST and Coral Core Proxy

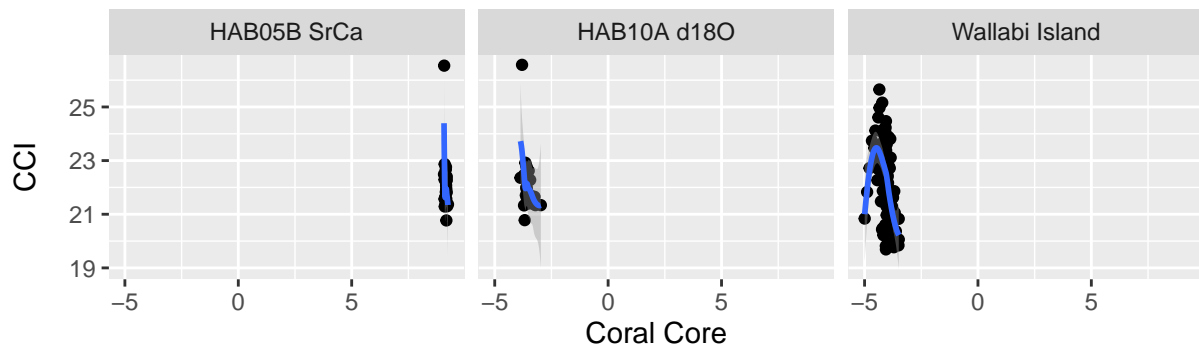


Table 1: NOAA

	BRS05	BRS07	DARL	DAR3	13TNT	08TNT	TNT	TNT07C	13BND	08BND	BUN05A	Wallabi Island	HAB10A d18O
L_Browse	−15.892 (0.968)	−18.394 (0.967)											
L_Cocos			−7.413 (0.957)	−7.413 (0.957)									
L_Ningaloo					−344.021 (129.197)	−13.498 (0.762)	−7.569 (0.429)	−15.825 (4.421)	−12.655 (1.170)	−502.398 (68.200)	−12.498 (5.286)		
Q_Ningaloo					18.191 (7.096)					26.896 (3.741)			
L_HAbrol												−40.056 (9.792)	−2.236 (1.014)
Q_HAbrol												−4.484 (1.176)	
Num.Obs.	273	273	255	255	98	135	102	23	60	133	20	100	22
R2	0.499	0.572	0.192	0.192	0.639	0.702	0.757	0.379	0.668	0.842	0.237	0.297	0.196
R2 Adj.	0.497	0.570	0.188	0.188	0.631	0.700	0.754	0.349	0.663	0.839	0.195	0.282	0.155
AIC	748.8	705.7	632.0	632.0	321.9	406.1	318.0	67.3	204.6	338.5	60.0	366.4	64.8

Table 2: CCI

	BRS05	BRS07	DARL	DAR3	13TNT	08TNT	TNT	TNT07C	13BND	08BND	BUN05A	Wallabi Island	HAB10A d18O	HAB05B SrCa
L_Browse	−16.577 (0.875)	531.158 (247.970)												
Q_Browse		−31.095 (14.024)												
L_Cocos			−8.096 (0.890)	−8.096 (0.890)										
L_Ningaloo					−435.076 (131.135)	−13.400 (0.815)	−6.812 (0.383)	−15.918 (4.844)	−3.654 (0.682)	−185.807 (49.633)	−19.640 (6.485)			
Q_Ningaloo					23.210 (7.203)					9.946 (2.723)				
L_HAbrol												−36.775 (7.852)	−2.363 (1.115)	−10.912 (4.886)
Q_HAbrol												−4.124 (0.943)		
Num.Obs.	273	273	255	255	98	135	102	23	60	133	20	100	22	24
R2	0.570	0.624	0.247	0.247	0.626	0.671	0.760	0.340	0.331	0.580	0.338	0.349	0.183	0.185
R2 Adj.	0.568	0.622	0.244	0.244	0.618	0.668	0.758	0.308	0.320	0.574	0.301	0.336	0.142	0.148
AIC	693.4	658.5	594.6	594.6	324.8	424.0	294.6	71.5	139.8	253.9	68.1	322.3	69.0	72.7