Frequency_Analysis

Vanessa Hui Fen Neo

r lubridate::today()‘

Comparison of SST time series 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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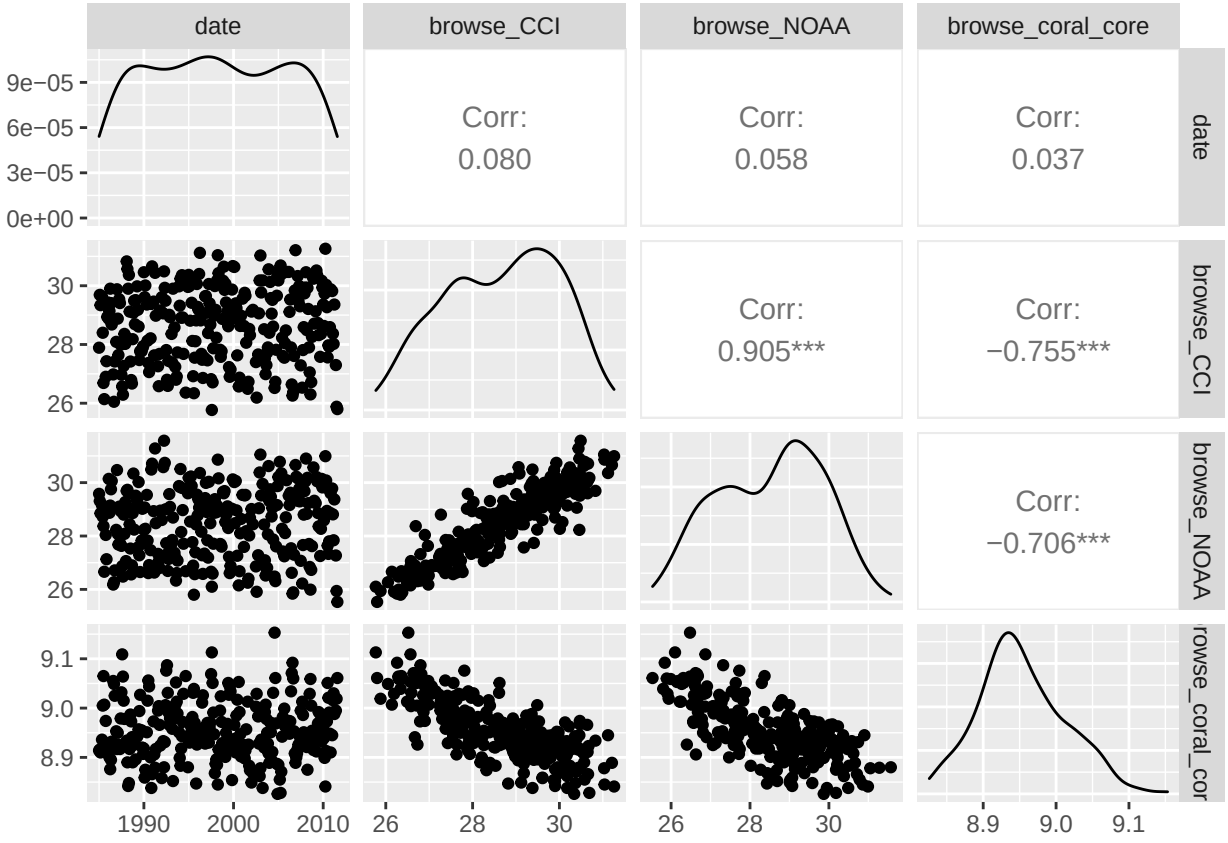
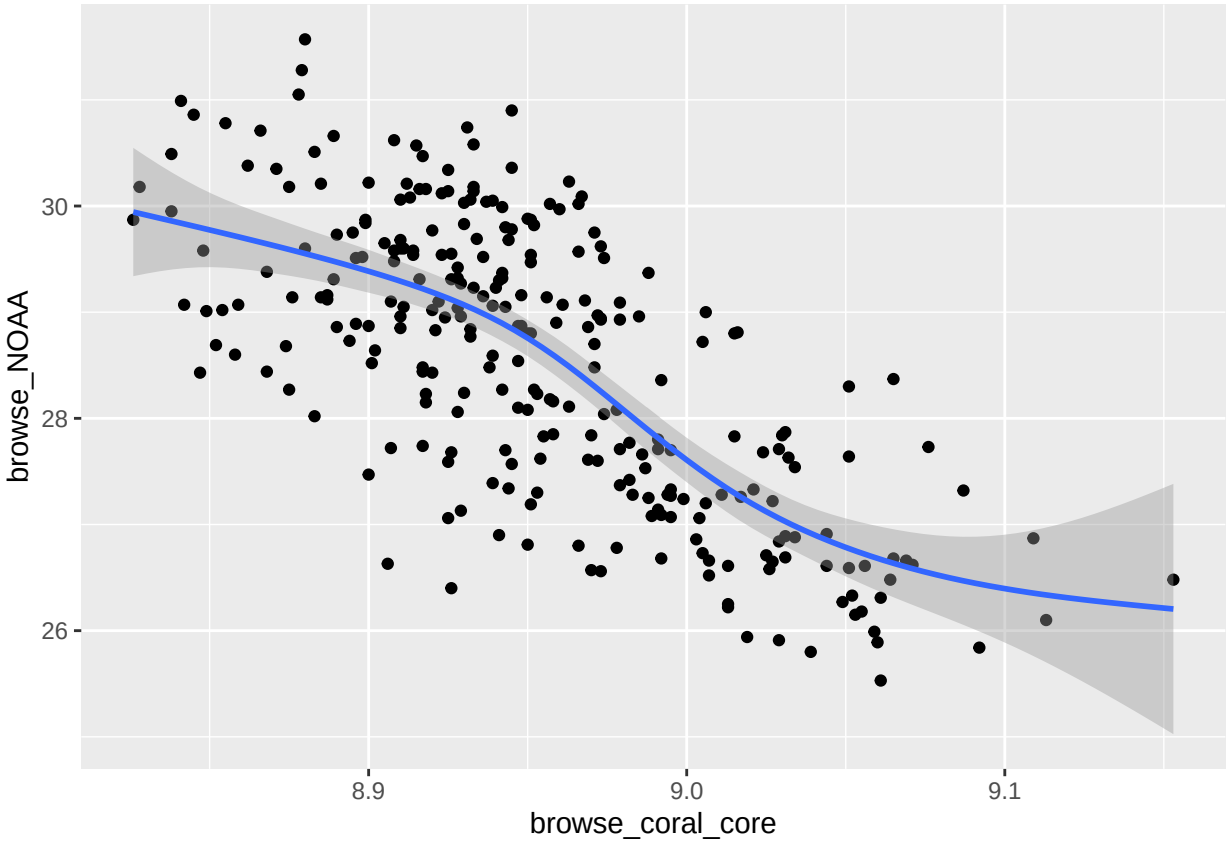
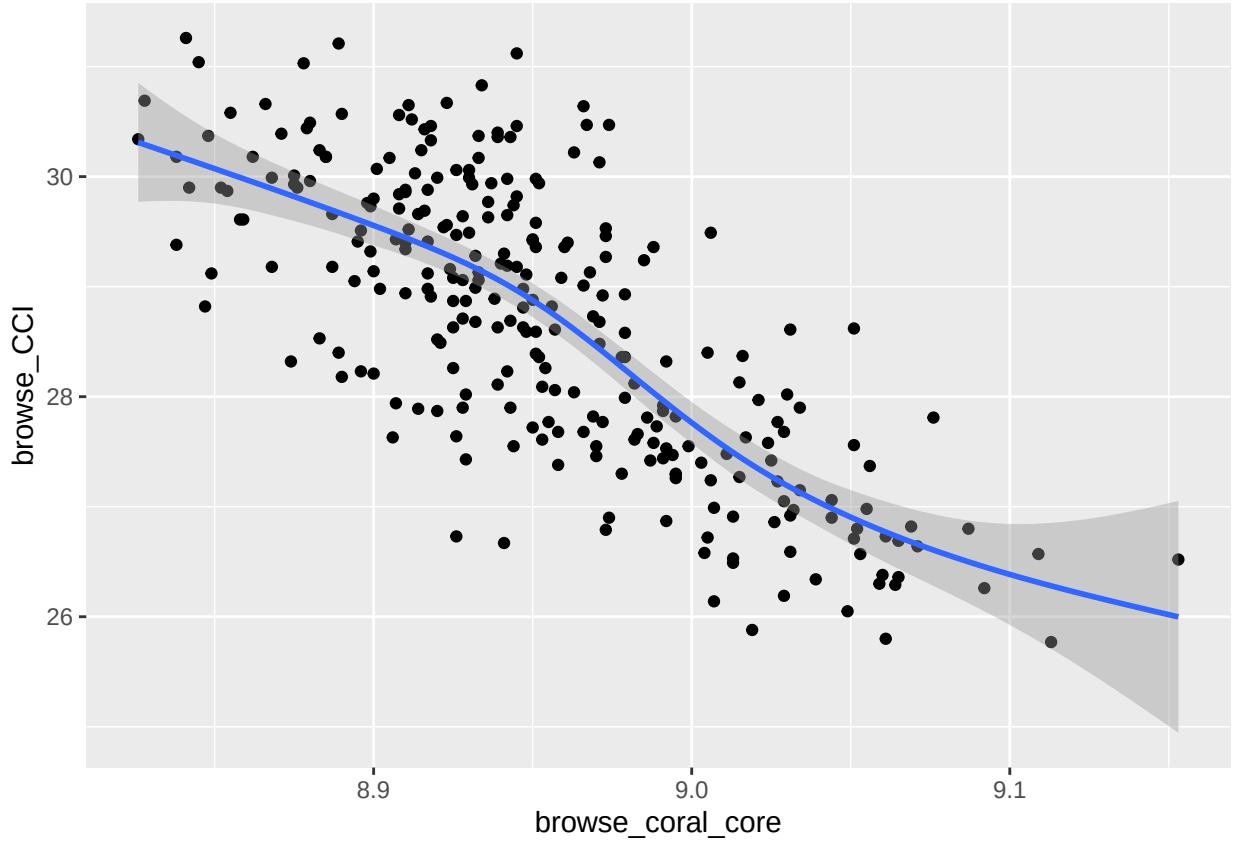
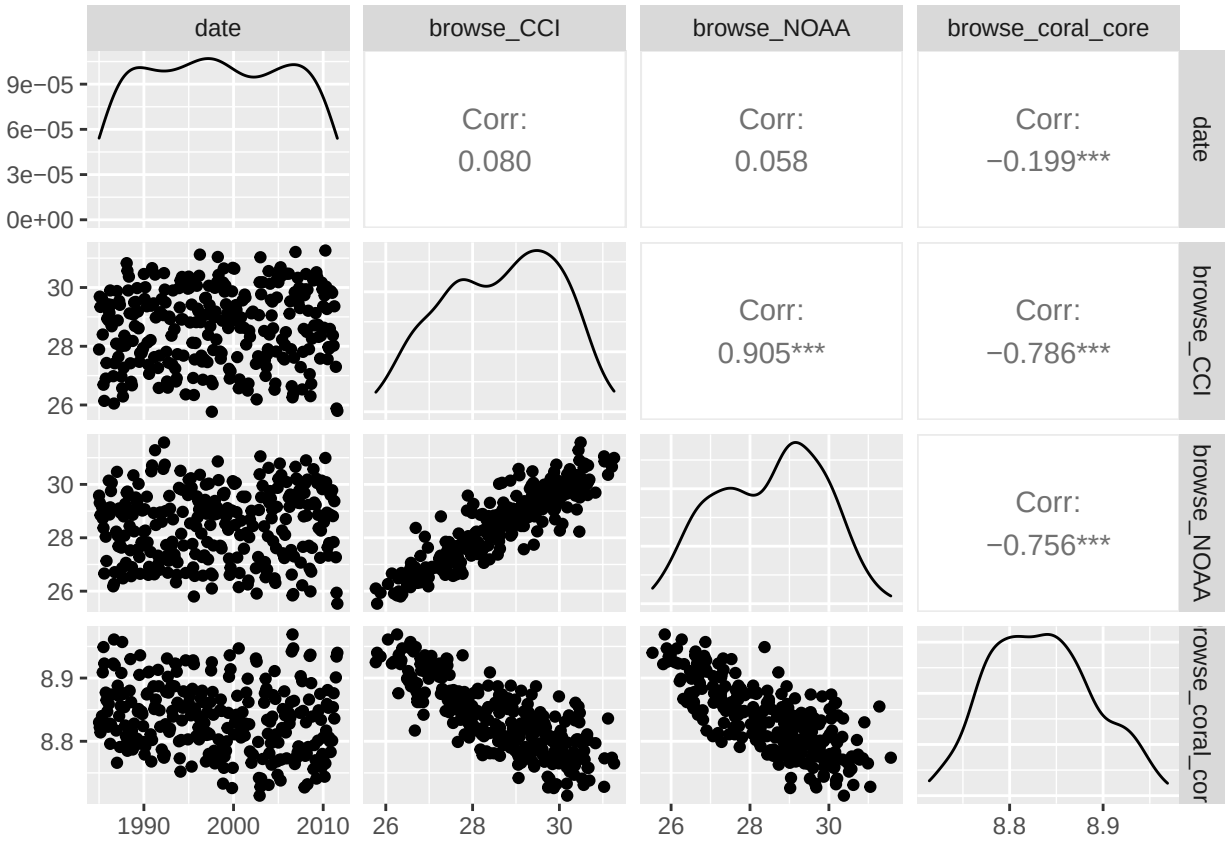


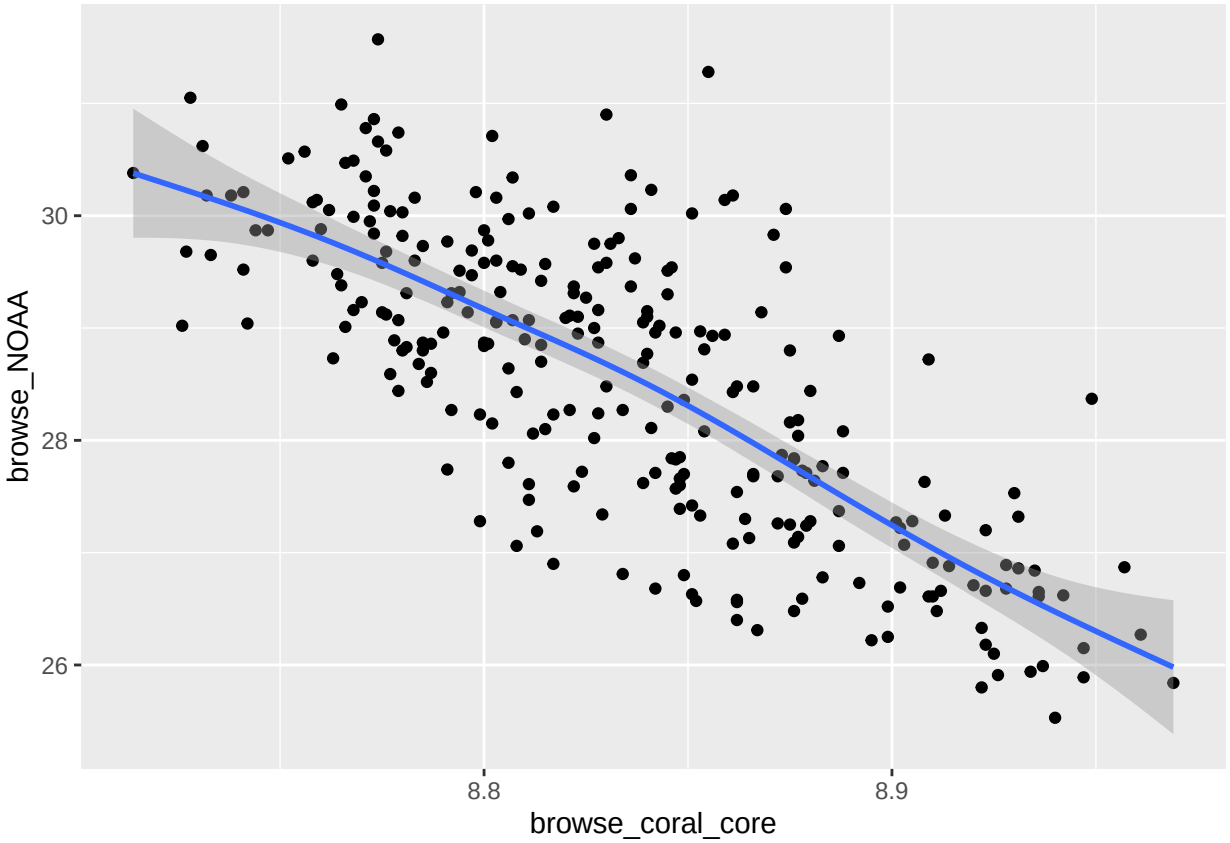

30
28
26
browse_NOAA
8.9
9.0
9.1
browse_coral_core

	Model 1	Model 2
(Intercept)	170.798	177.080
	(8.667)	(7.831)
browse_coral_core	−15.892	−16.577
	(0.968)	(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

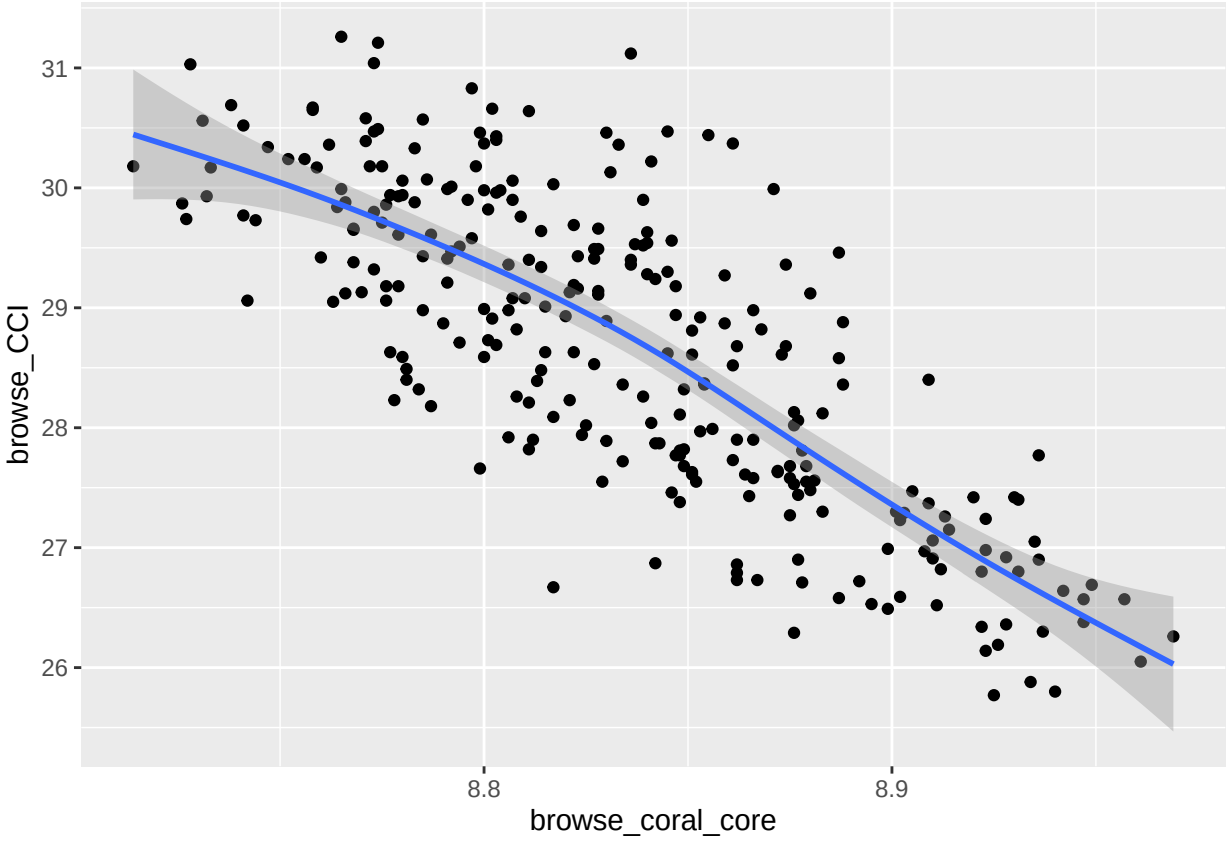



```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```


date
browse_CCI
browse_NOAA
browse_coral_core
Corr:
0.080
Corr:
0.058
Corr:
−0.199***
Corr:
0.905***
Corr:
−0.786***
Corr:
−0.756***
9e−05
6e−05
3e−05
0e+00
30
28
26
30
28
26
8.9
8.8
1990
2000
2010
26
28
30
26
28
30
8.8
8.9


30
28
26
browse_NOAA
8.8
8.9
browse_coral_core

	Model 1	Model 2
(Intercept)	191.013	−2236.820
	(8.542)	(1096.089)
browse_coral_core	−18.394	531.158
	(0.967)	(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 SST time series in Cocos (Keeling) Island sites

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

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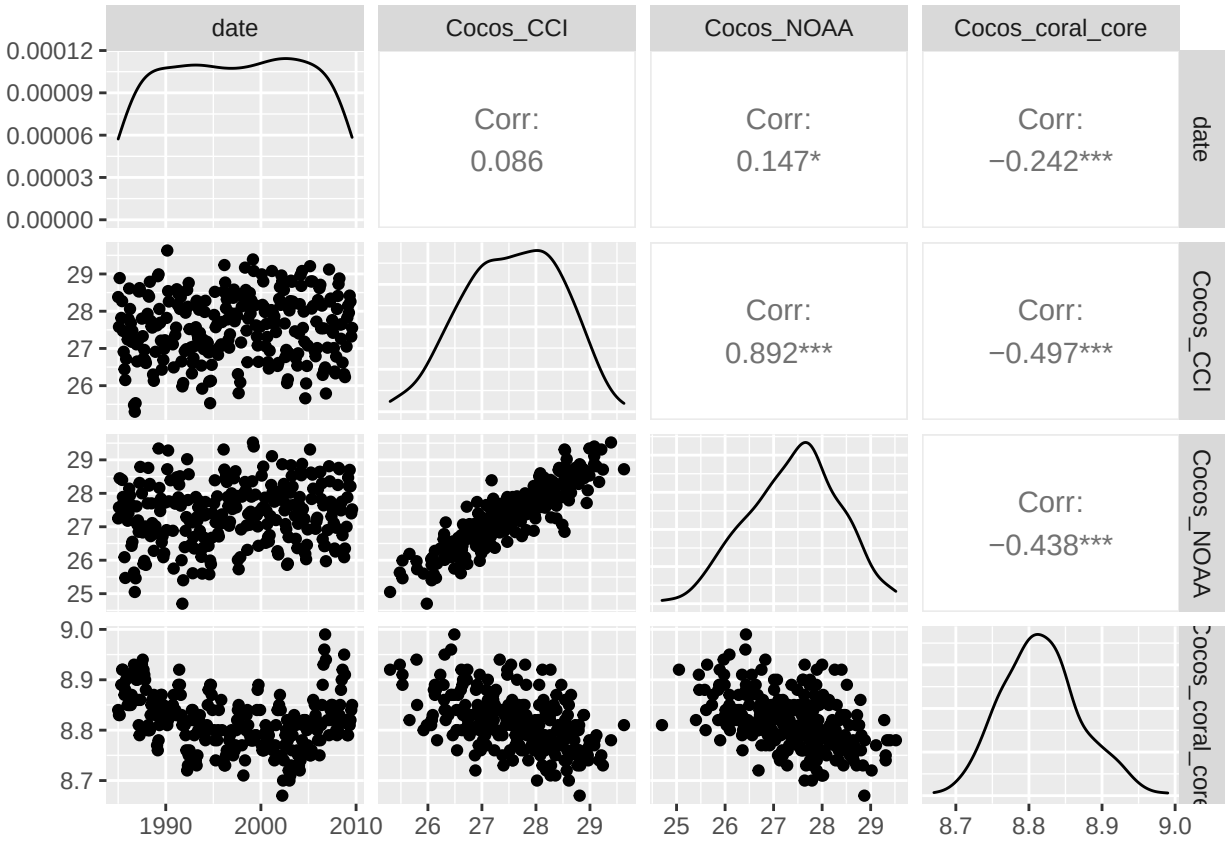
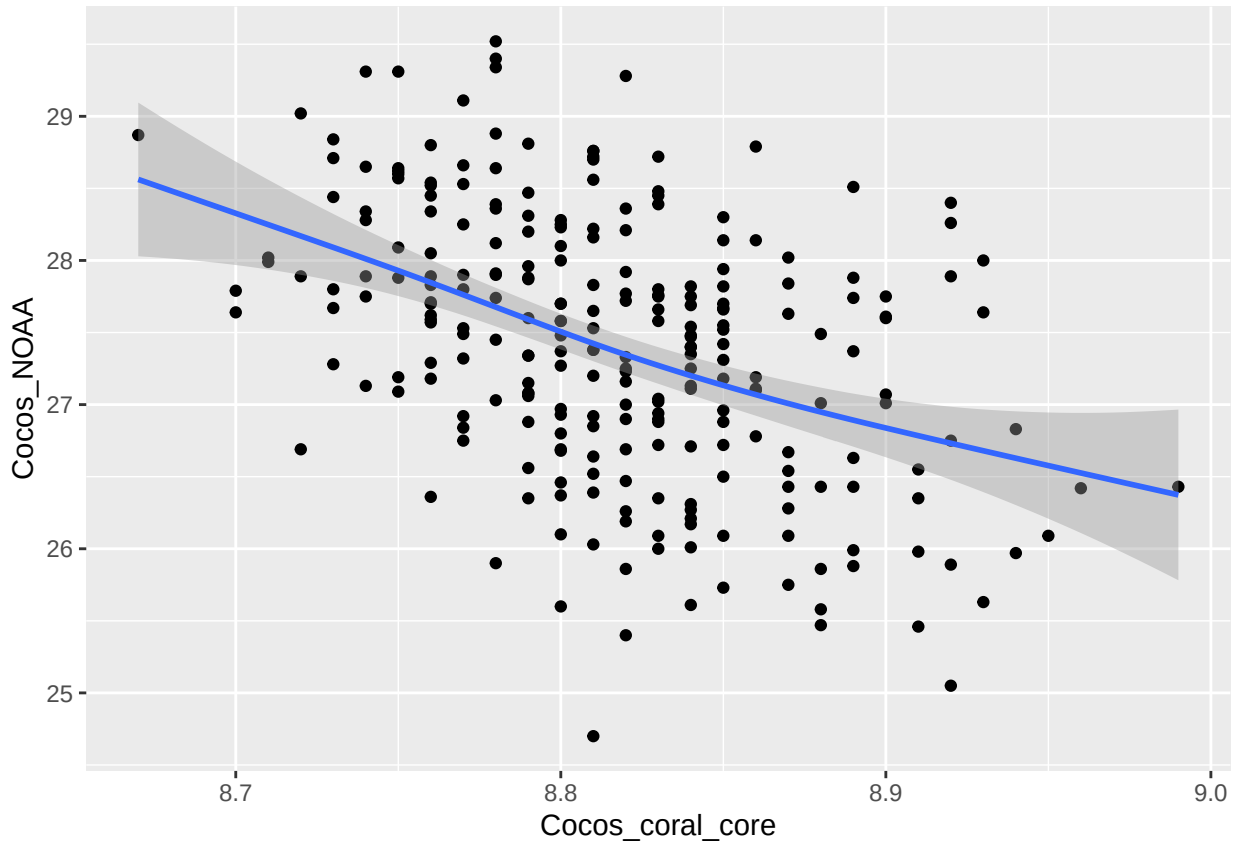
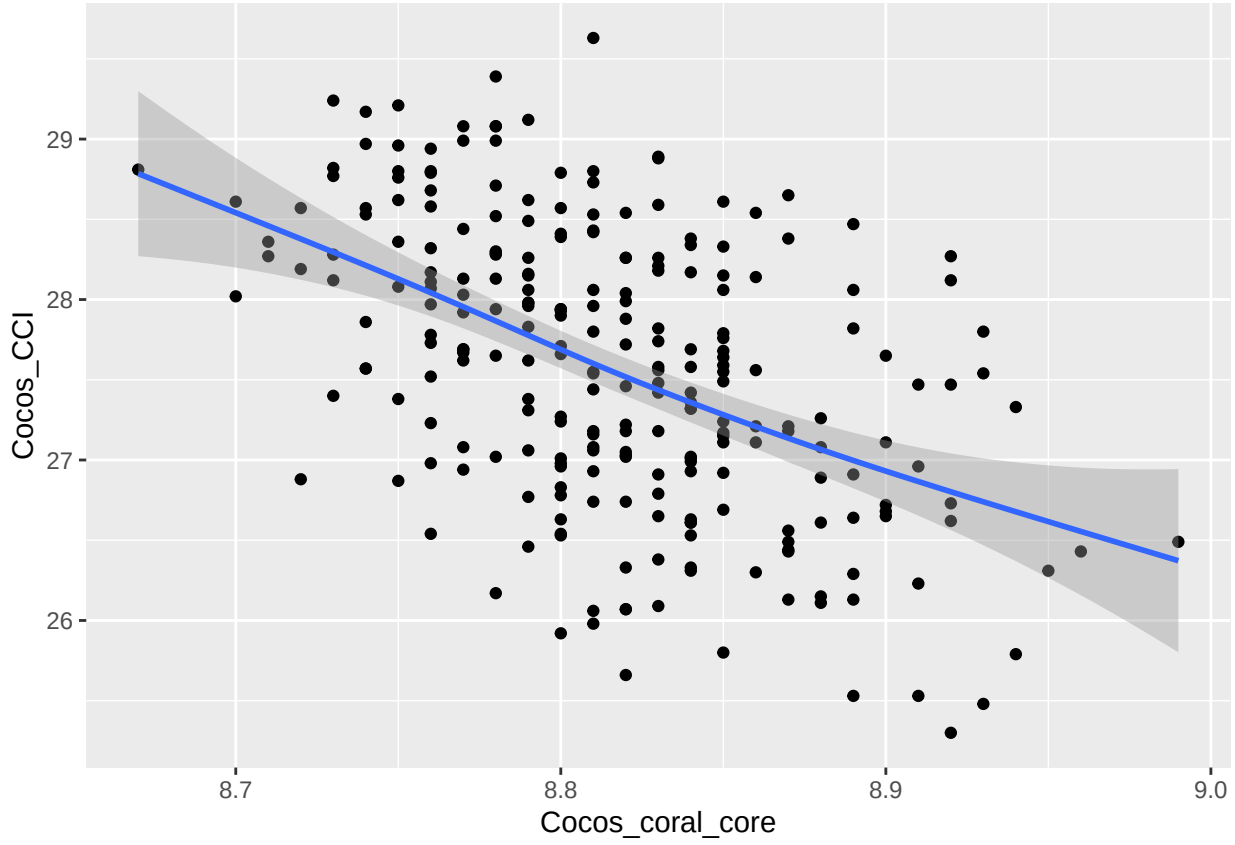
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```


date
Cocos_CCI
Cocos_NOAA
Cocos_coral_core
Corr:
0.086
Corr:
0.147*
Corr:
−0.242***
Corr:
0.892***
Corr:
−0.497***
Corr:
−0.438***
0.00012
0.00009
0.00006
0.00003
0.00000
29
28
27
26
25
9.0
8.9
8.8
8.7
1990
2000
2010
26
27
28
29
25
26
27
28
29
8.7
8.8
8.9
9.0


Cocos_NOAA
29
28
27
26
25
8.7
8.8
8.9
9.0
Cocos_coral_core

	Model 1	Model 2
(Intercept)	92.767	98.952
	(8.442)	(7.846)
Cocos_coral_core	−7.413	−8.096
	(0.957)	(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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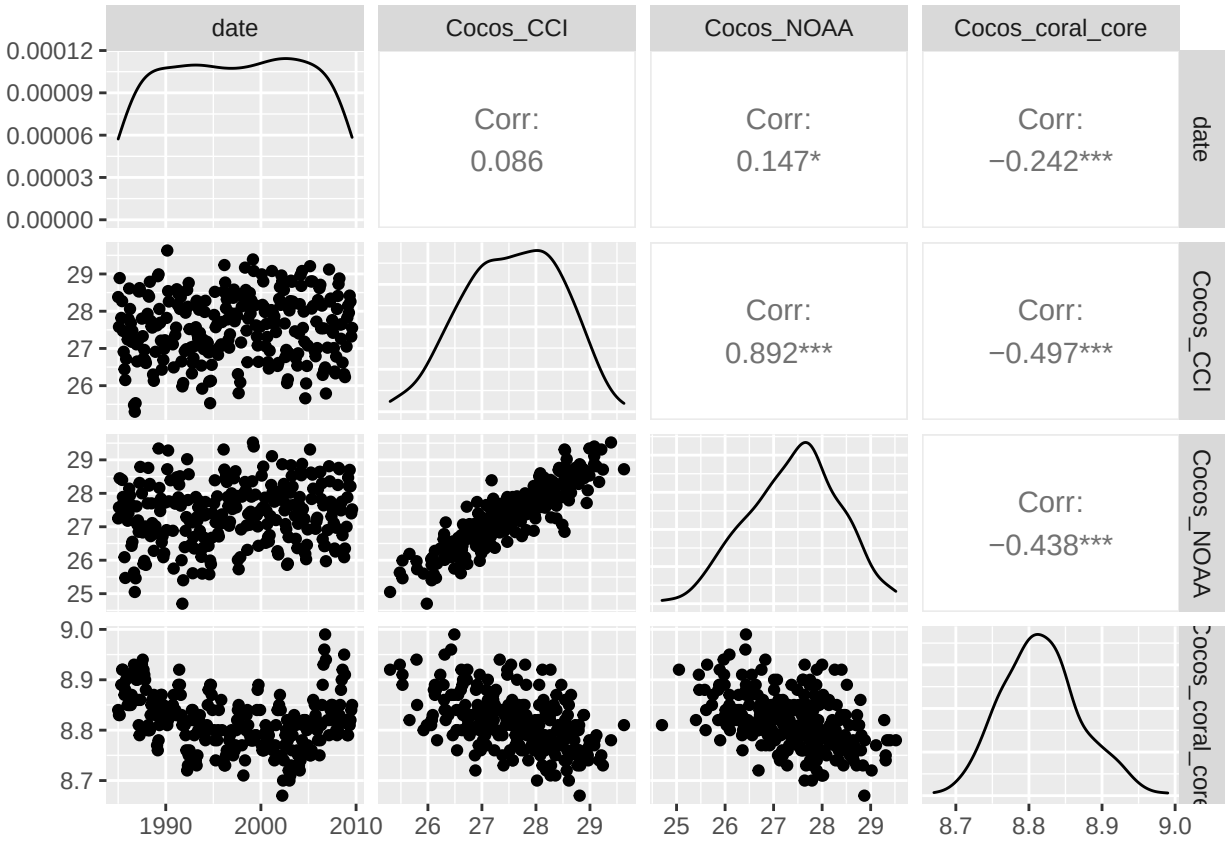
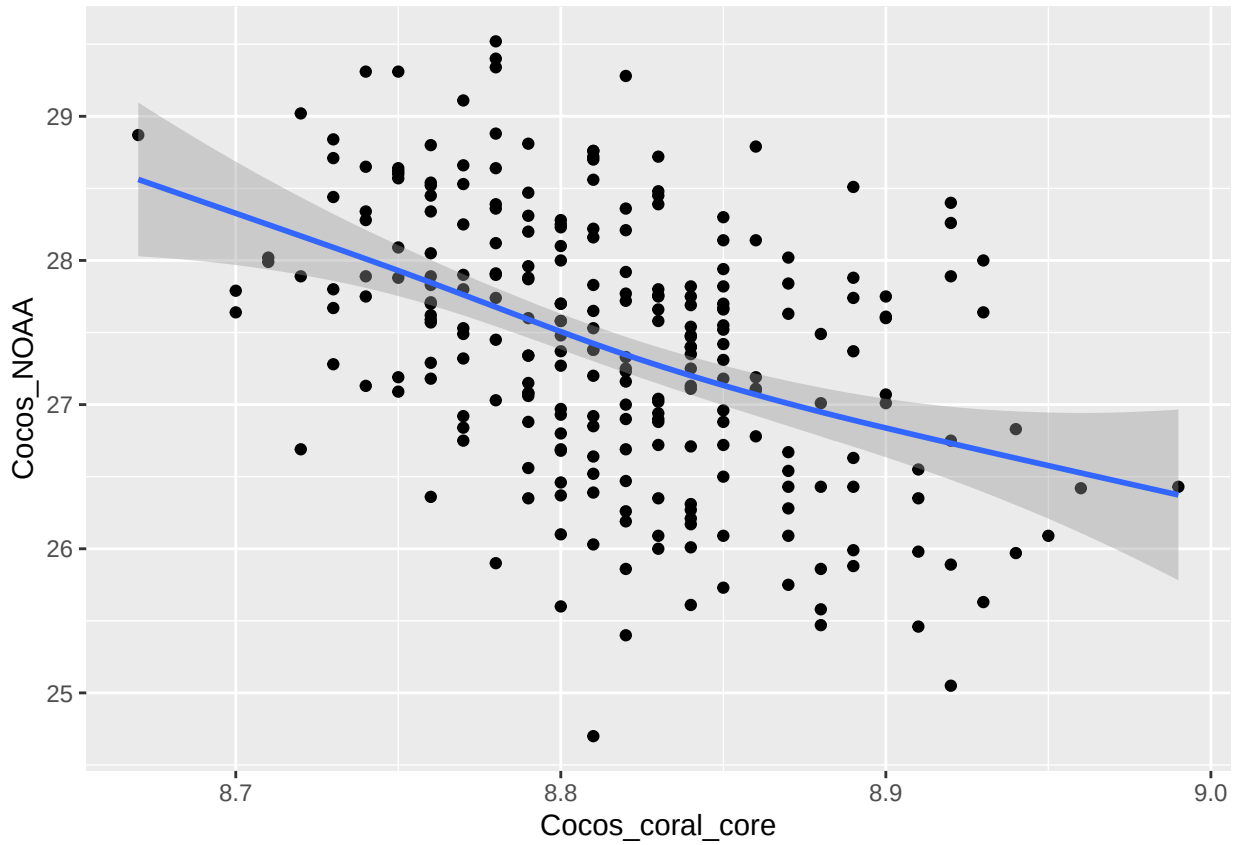
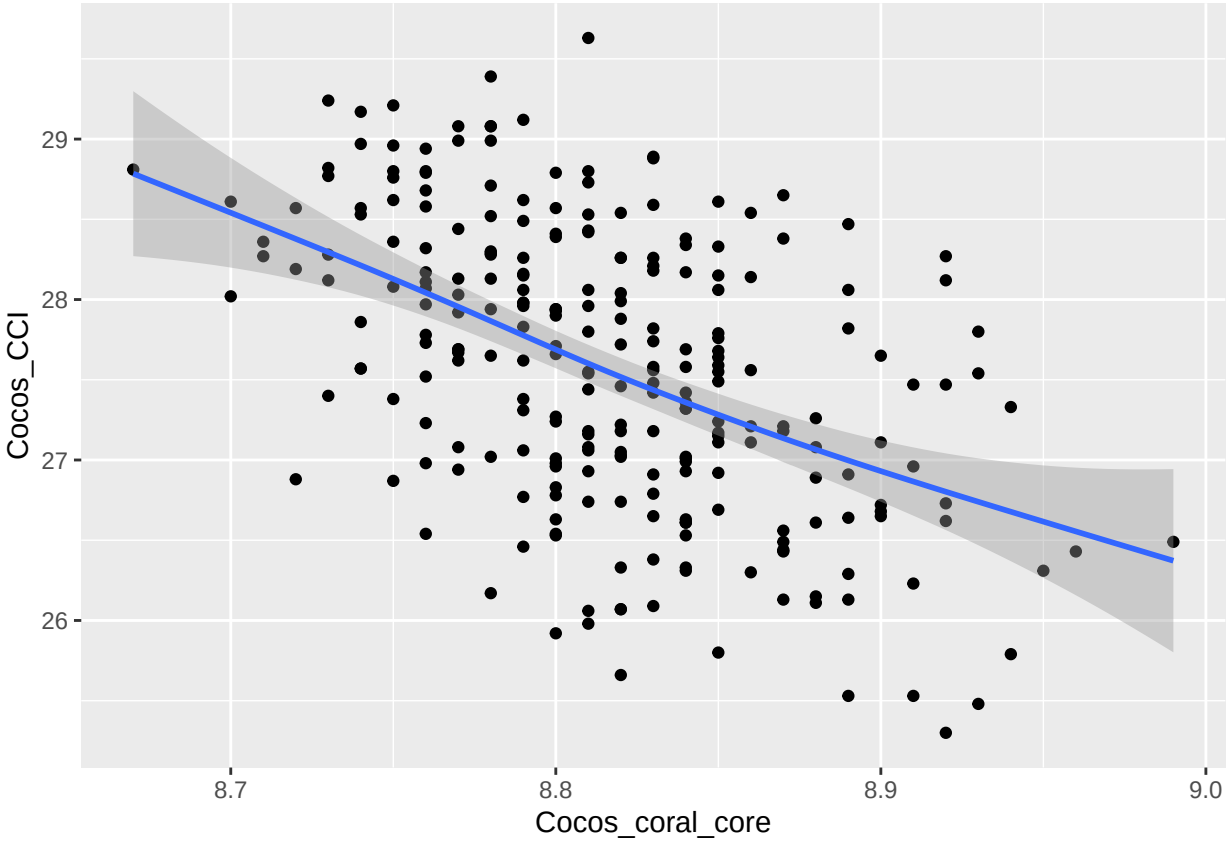

date
Cocos_CCI
Cocos_NOAA
Cocos_coral_core
Corr:
0.086
Corr:
0.147*
Corr:
−0.242***
Corr:
0.892***
Corr:
−0.497***
Corr:
−0.438***
0.00012
0.00009
0.00006
0.00003
0.00000
29
28
27
26
25
9.0
8.9
8.8
8.7
1990
2000
2010
26
27
28
29
25
26
27
28
29
8.7
8.8
8.9
9.0


Cocos_NOAA
29
28
27
26
25
8.7
8.8
8.9
9.0
Cocos_coral_core

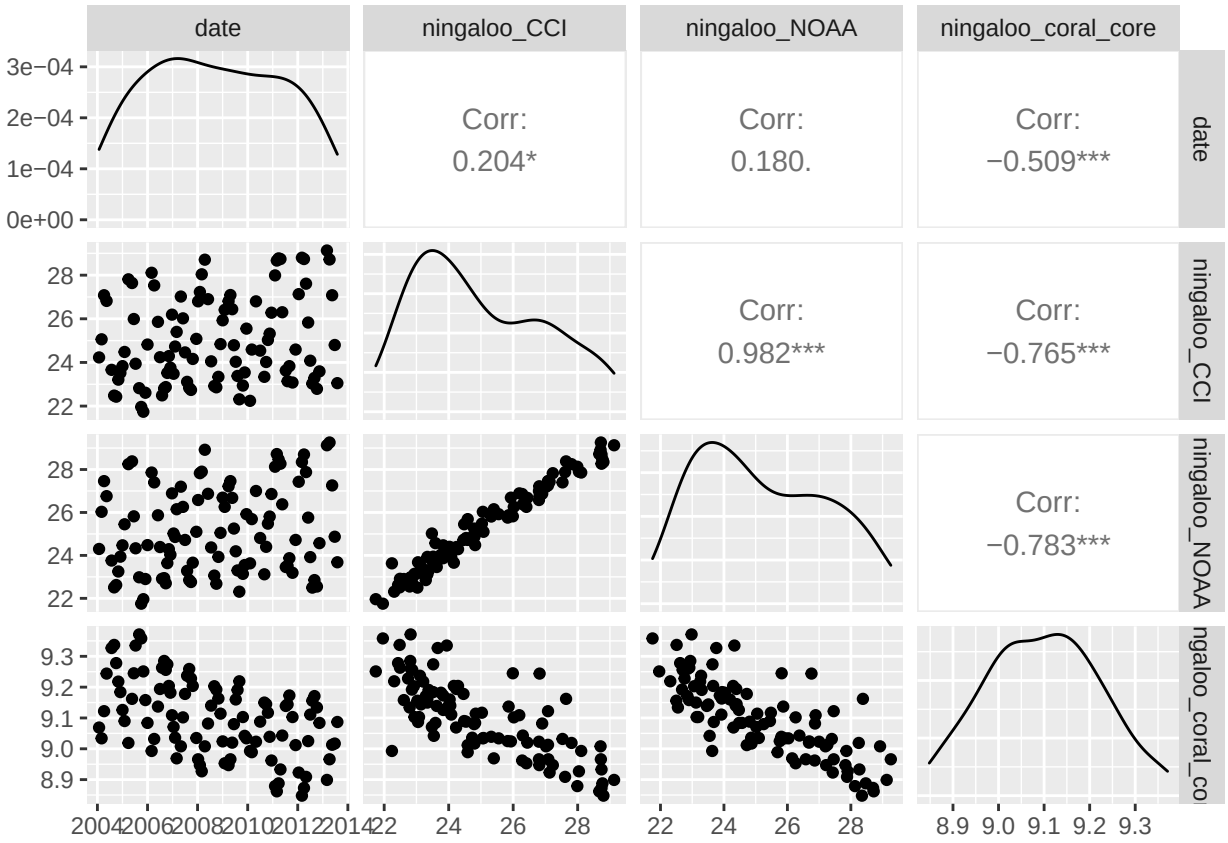
	Model 1	Model 2
(Intercept)	92.767	98.952
	(8.442)	(7.846)
Cocos_coral_core	−7.413	−8.096
	(0.957)	(0.890)
Num.Obs.	255	255
R2	0.192	0.247
R2 Adj.	0.188	0.244
AIC	632.0	594.6
BIC	642.6	605.3
Log.Lik.	−312.987	−294.314
F	59.943	82.776

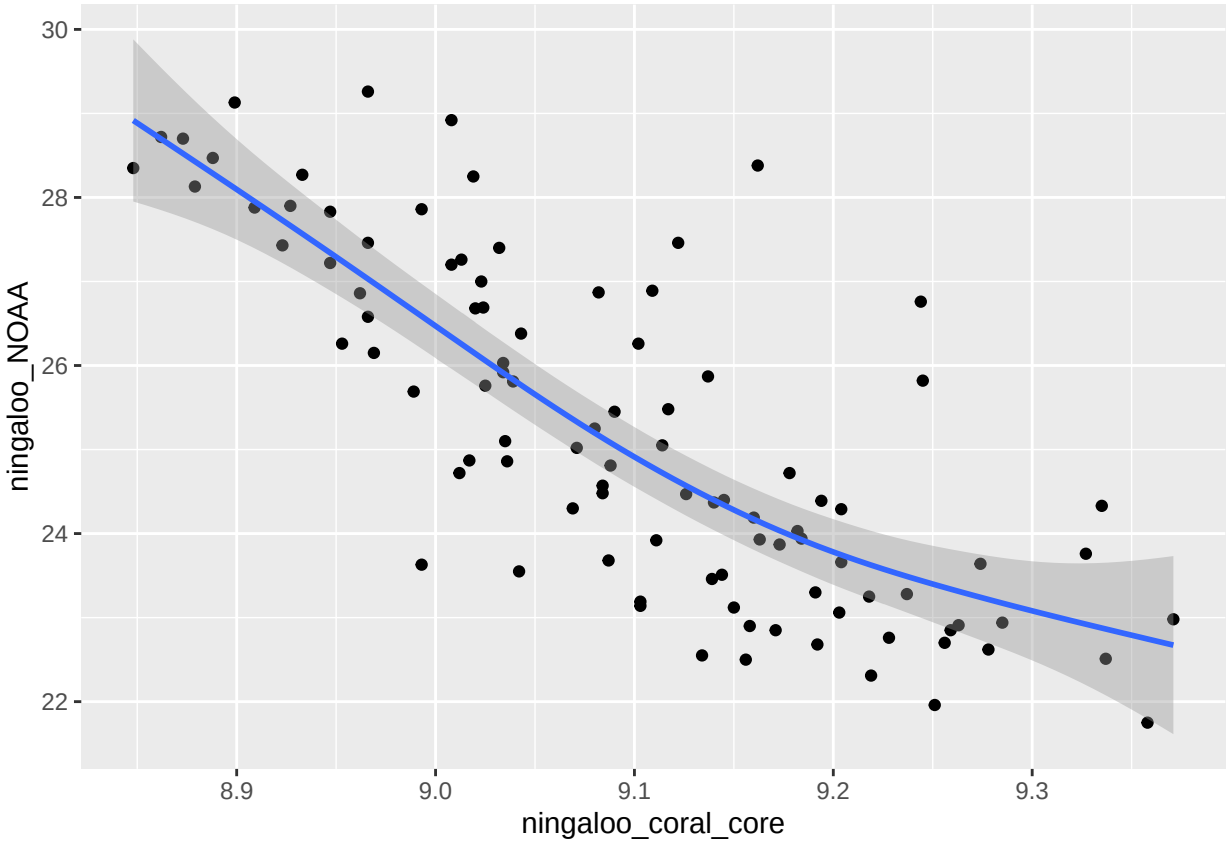


Comparison of SST time series in Ningaloo Reef sites

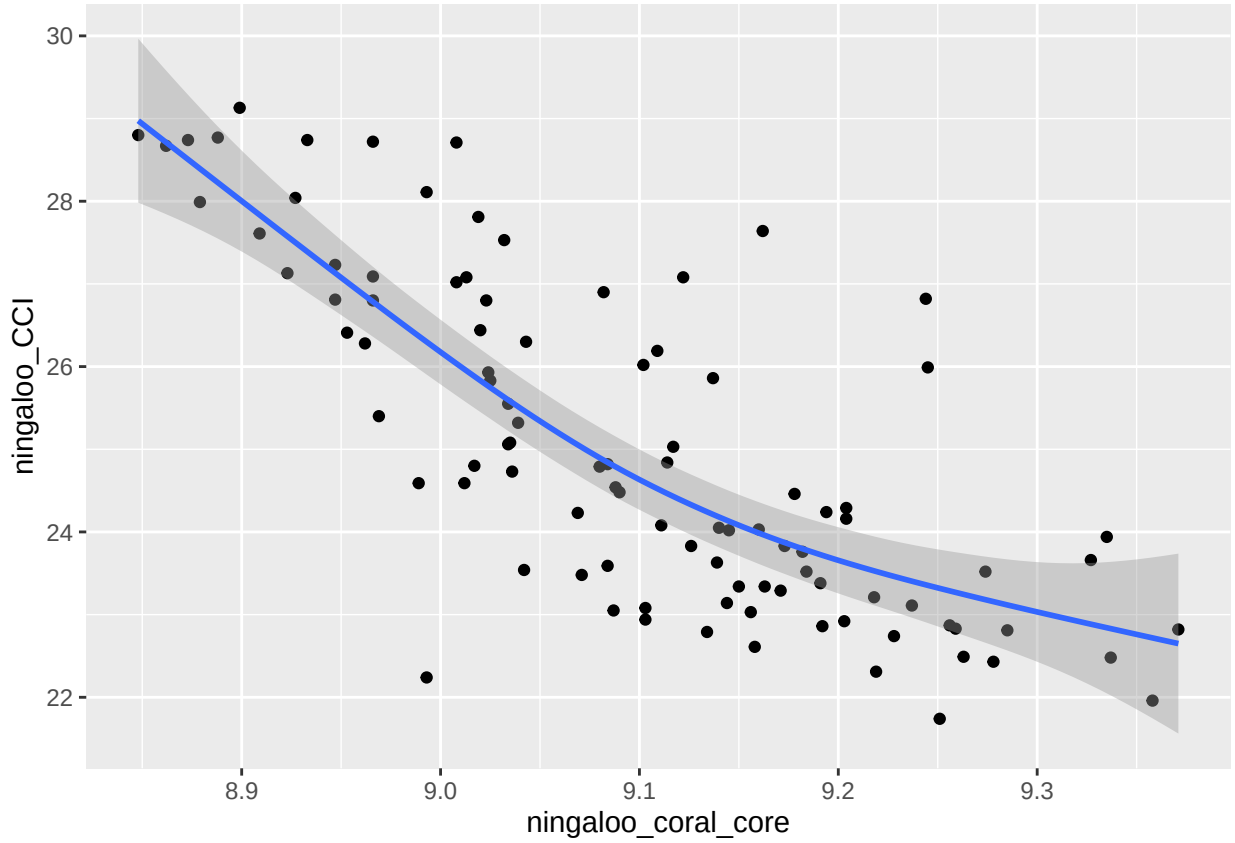
- Tantabiddi (13TNT) and Tantabiddi (08TNT) (-21.91, 113.97)
- TNT (-21.9, 113.97)
- TNT07C (-21.893, 113.963)
- Bundegi (13BND) and Bundegi (08BND) (-21.87, 114.156)
- BUN05A (-21.836, 114.178)

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

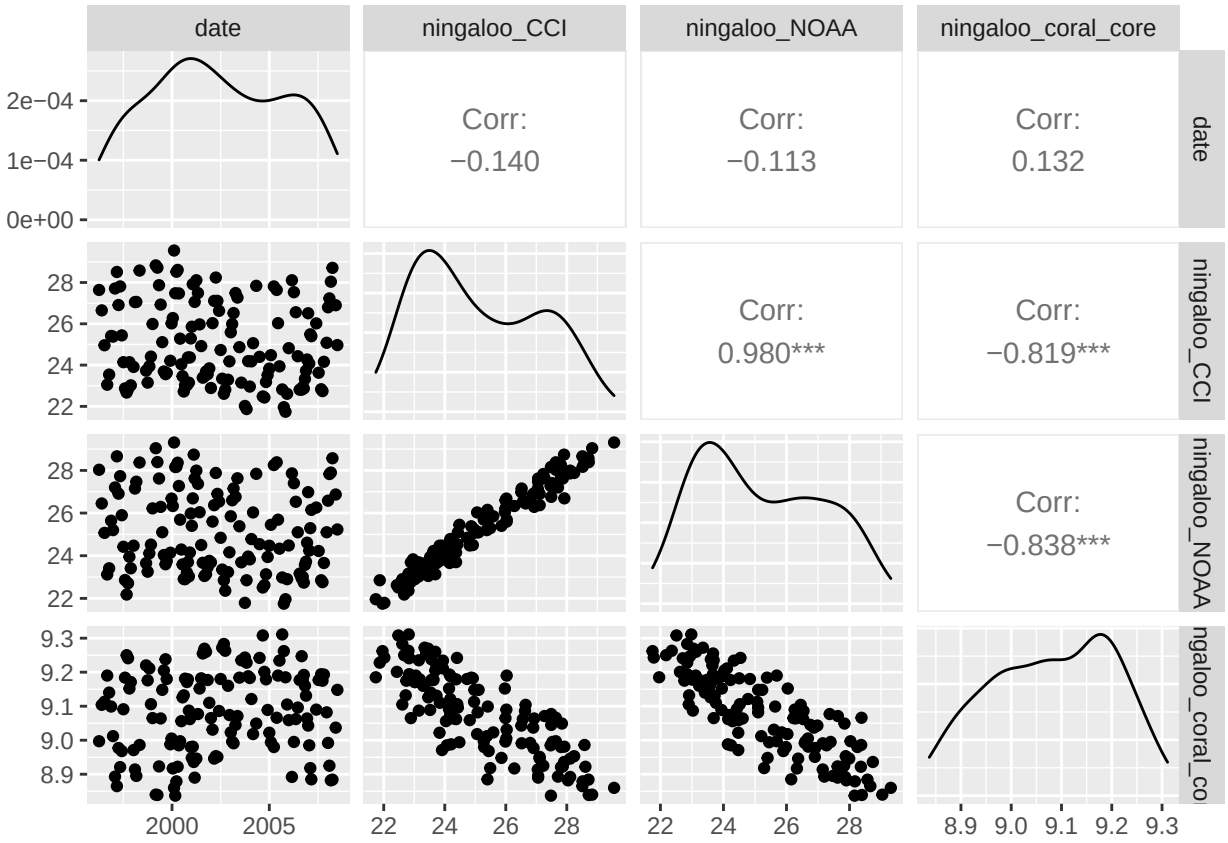

date
ningaloo_CCI
ningaloo_NOAA
ningaloo_coral_core
Corr:
0.204*
Corr:
0.180.
Corr:
−0.509***
Corr:
0.982***
Corr:
−0.765***
Corr:
−0.783***
3e−04
2e−04
1e−04
0e+00
28
26
24
22
9.3
9.2
9.1
9.0
8.9
2004
2006
2008
2010
2012
2014
22
24
26
28
8.9
9.0
9.1
9.2
9.3

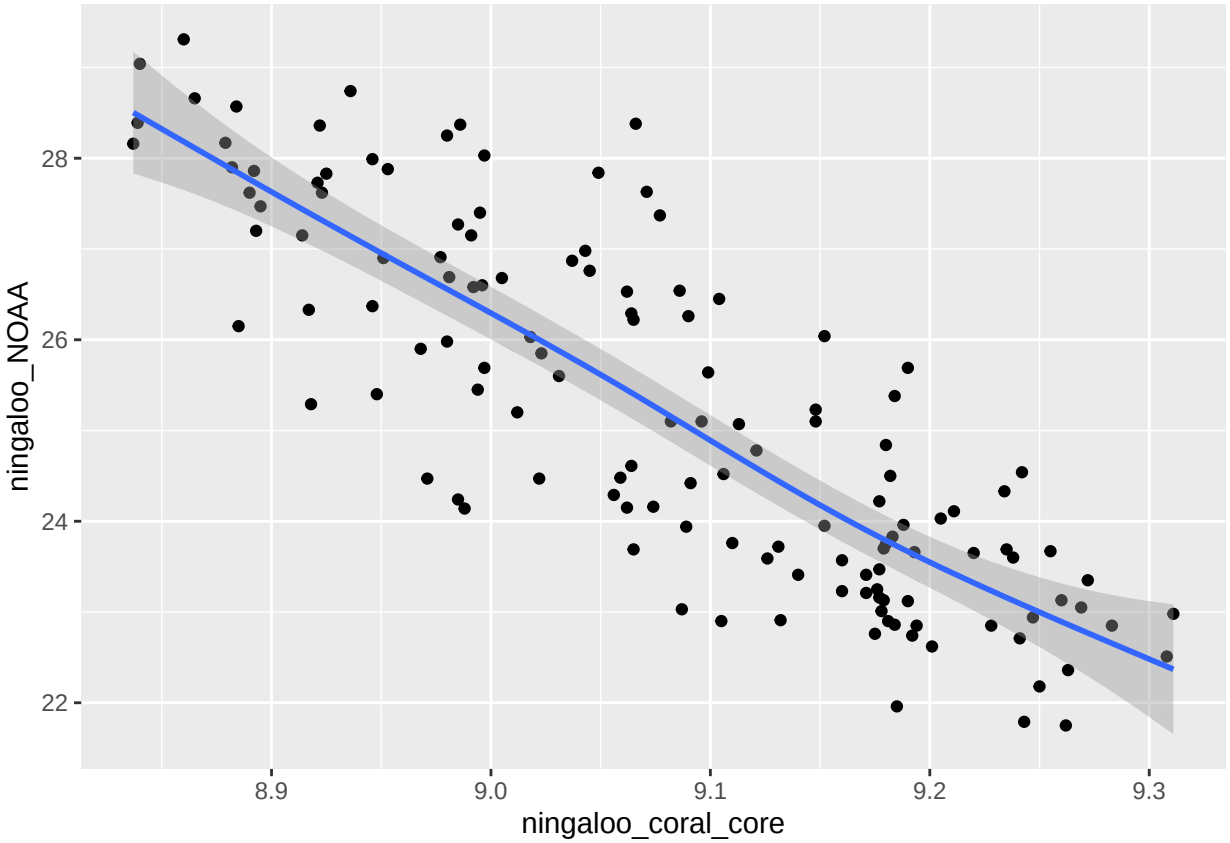

30
28
26
24
22
ningaloo_NOAA
8.9
9.0
9.1
9.2
9.3
ningaloo_coral_core

	Model 1	Model 2
(Intercept)	1649.093	2061.773
	(587.966)	(596.788)
ningaloo_coral_core	−344.021	−435.076
	(129.197)	(131.135)
I(ningaloo_coral_core^2)	18.191	23.210
	(7.096)	(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

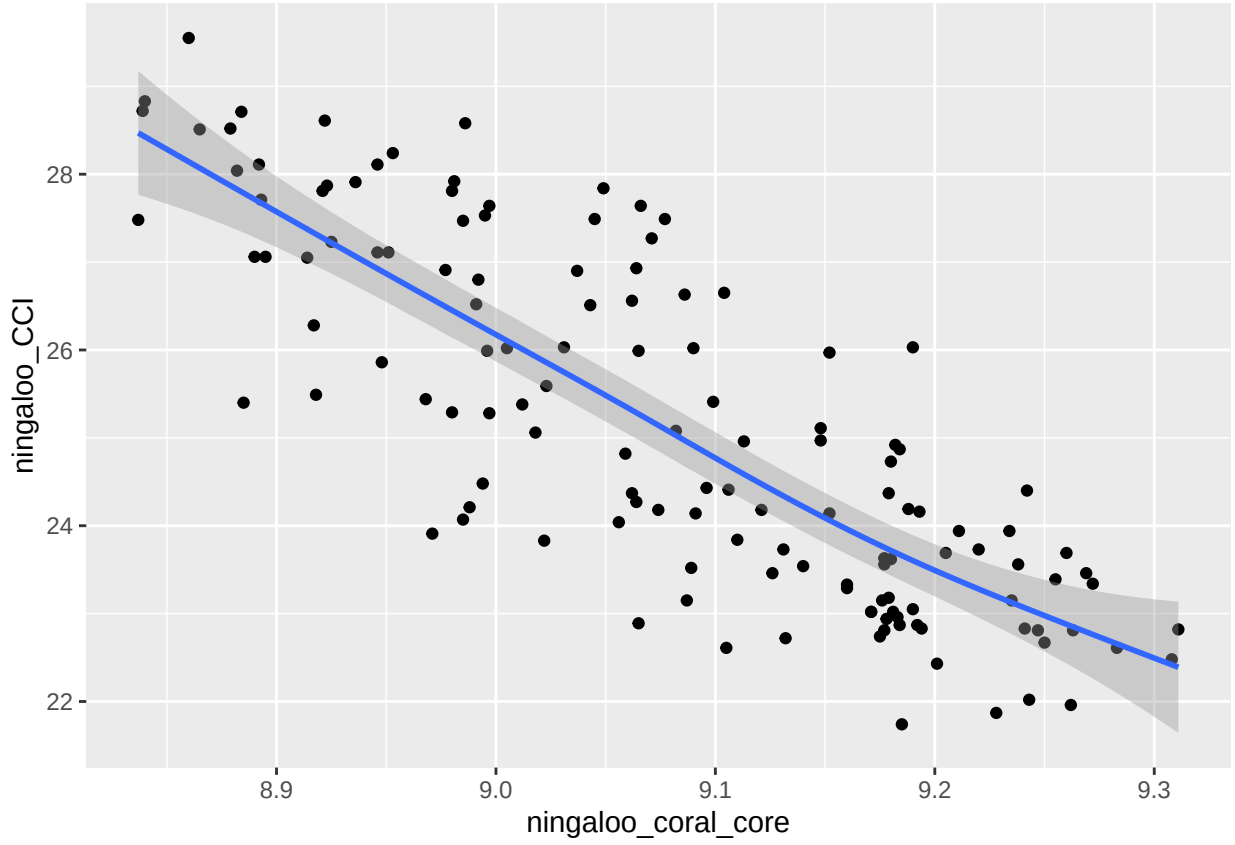



```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```

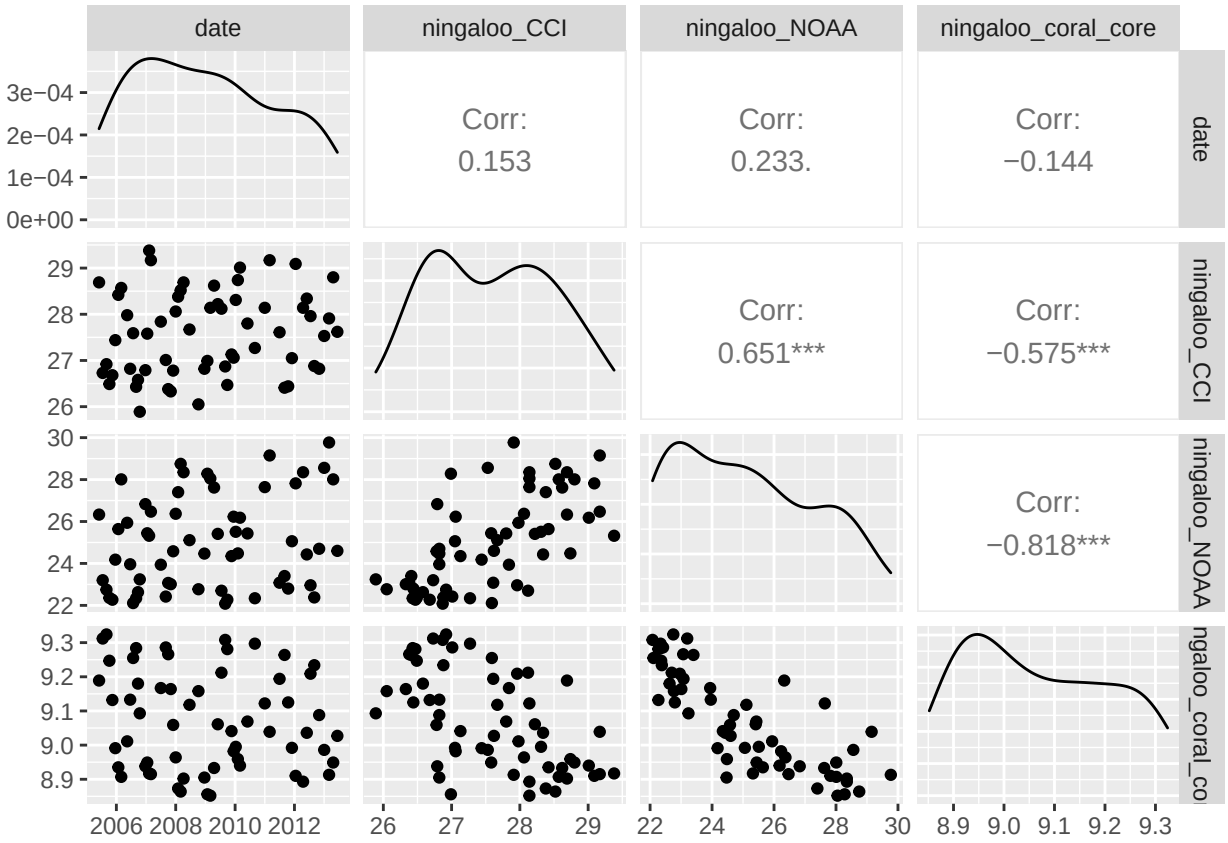

date
ningaloo_CCI
ningaloo_NOAA
ningaloo_coral_core
Corr:
−0.140
Corr:
−0.113
Corr:
0.132
Corr:
0.980***
Corr:
−0.819***
Corr:
−0.838***
2e−04
1e−04
0e+00
28
26
24
22
9.3
9.2
9.1
9.0
8.9
2000
2005
22
24
26
28
8.9
9.0
9.1
9.2
9.3

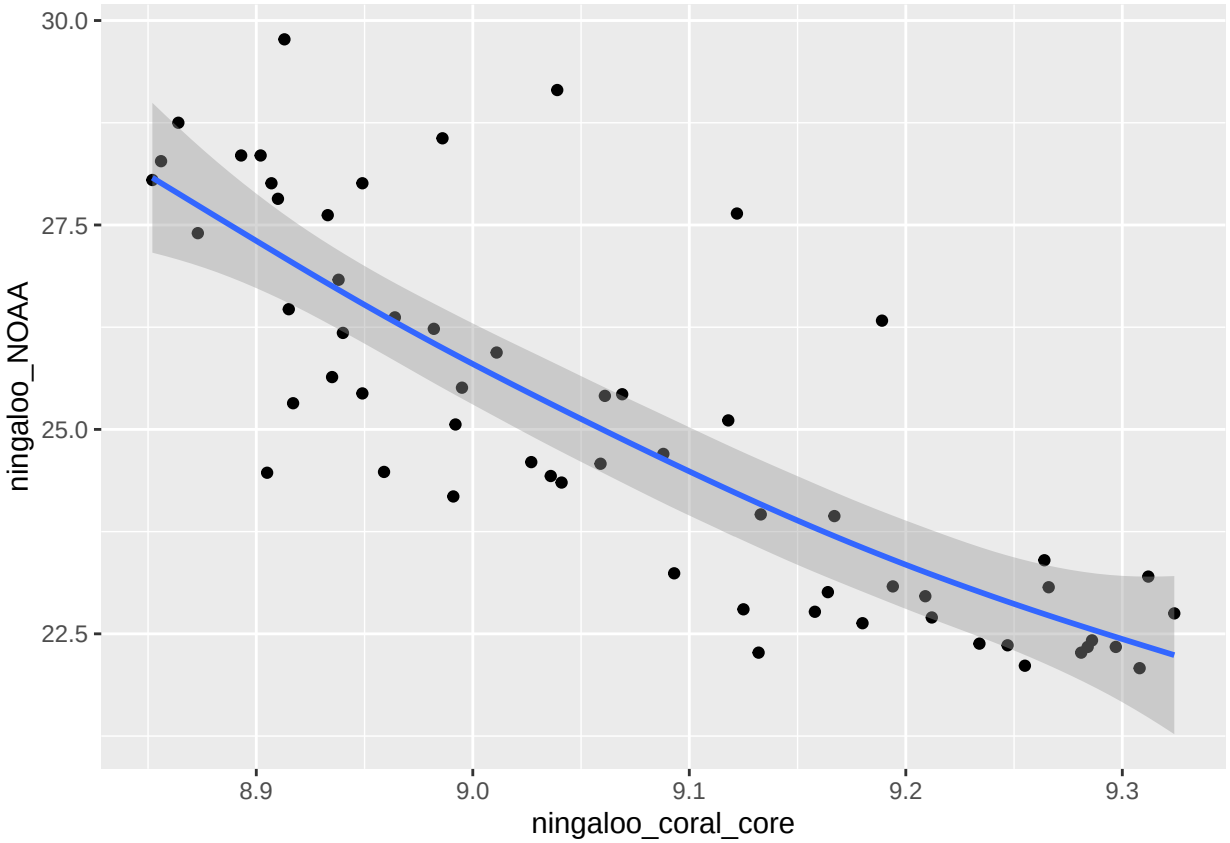

ningaloo_NOAA
28
26
24
22
8.9
9.0
9.1
9.2
9.3
ningaloo_coral_core

	Model 1	Model 2
(Intercept)	147.763	146.786
	(6.924)	(7.397)
ningaloo_coral_core	−13.498	−13.400
	(0.762)	(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

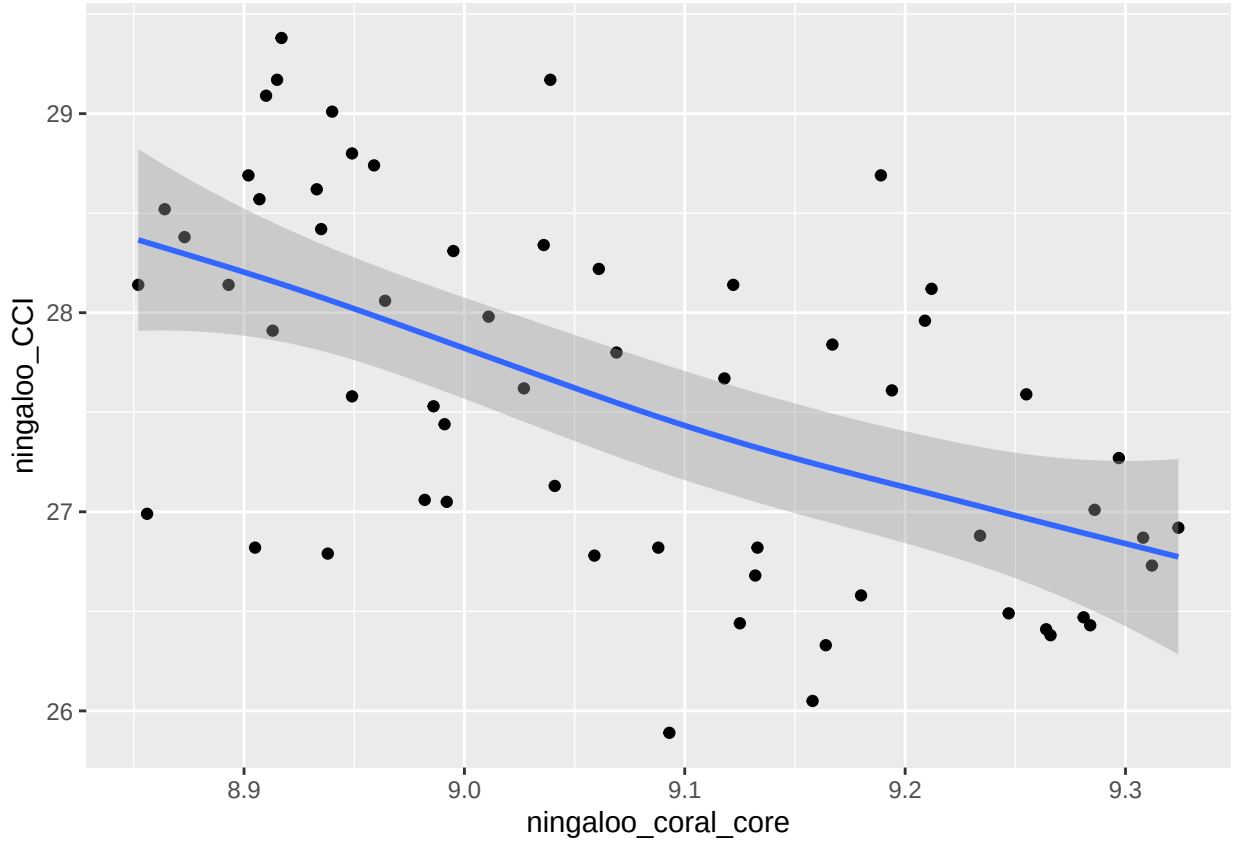



```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```


date
ningaloo_CCI
ningaloo_NOAA
ningaloo_coral_core
Corr:
0.153
Corr:
0.233.
Corr:
−0.144
Corr:
0.651***
Corr:
−0.575***
Corr:
−0.818***
3e−04
2e−04
1e−04
0e+00
29
28
27
26
30
28
26
24
22
9.3
9.2
9.1
9.0
8.9
2006 2008 2010 2012
26 27 28 29
22 24 26 28 30
8.9 9.0 9.1 9.2 9.3


30.0
27.5
25.0
22.5
ningaloo_NOAA
8.9
9.0
9.1
9.2
9.3
ningaloo_coral_core

	Model 1	Model 2
(Intercept)	139.828	60.731
	(10.616)	(6.185)
ningaloo_coral_core	−12.655	−3.654
	(1.170)	(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




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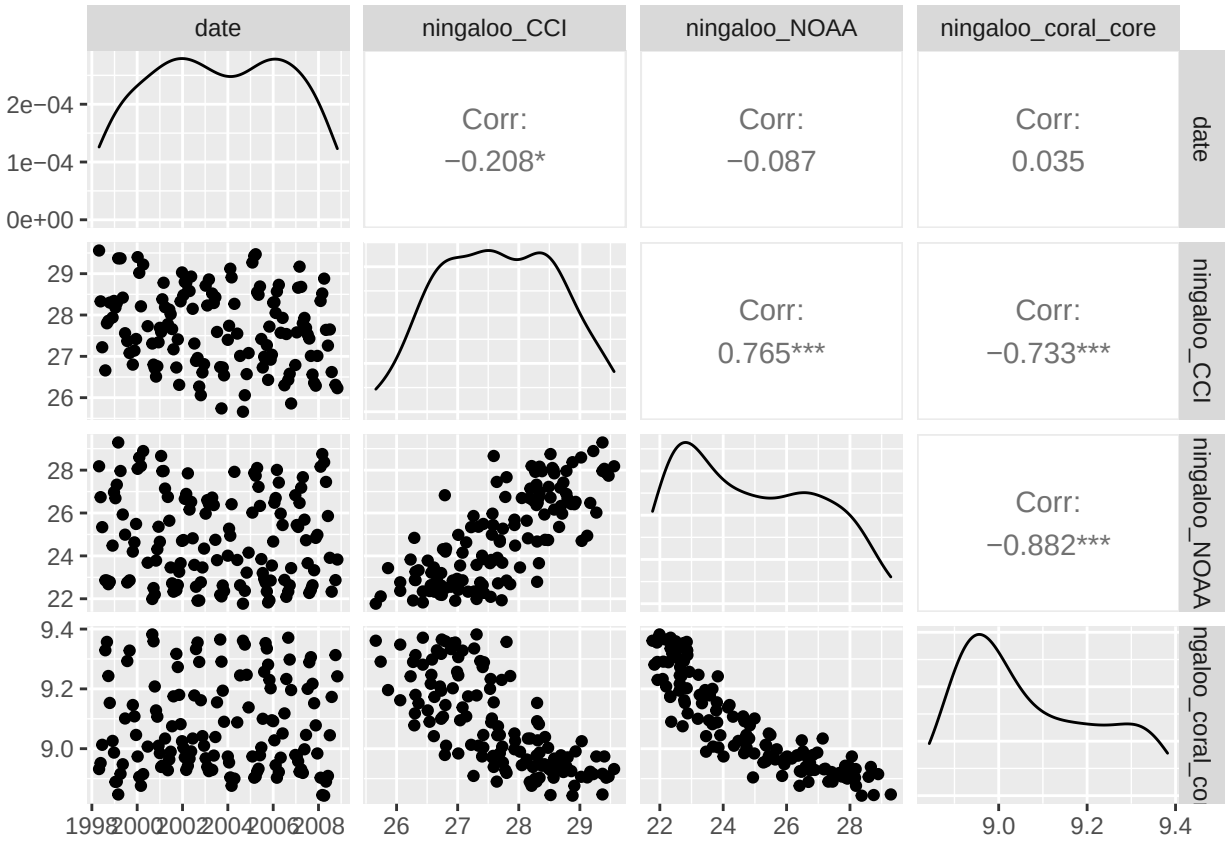
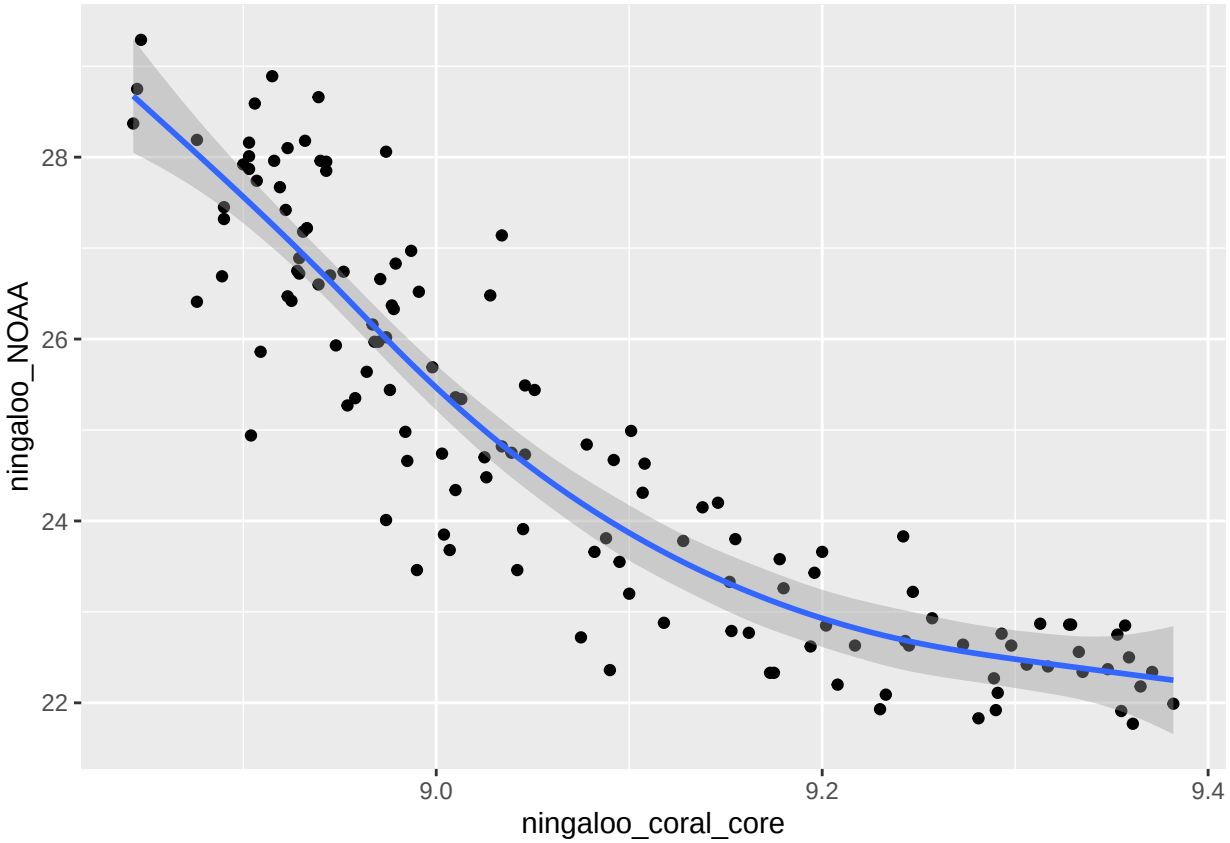
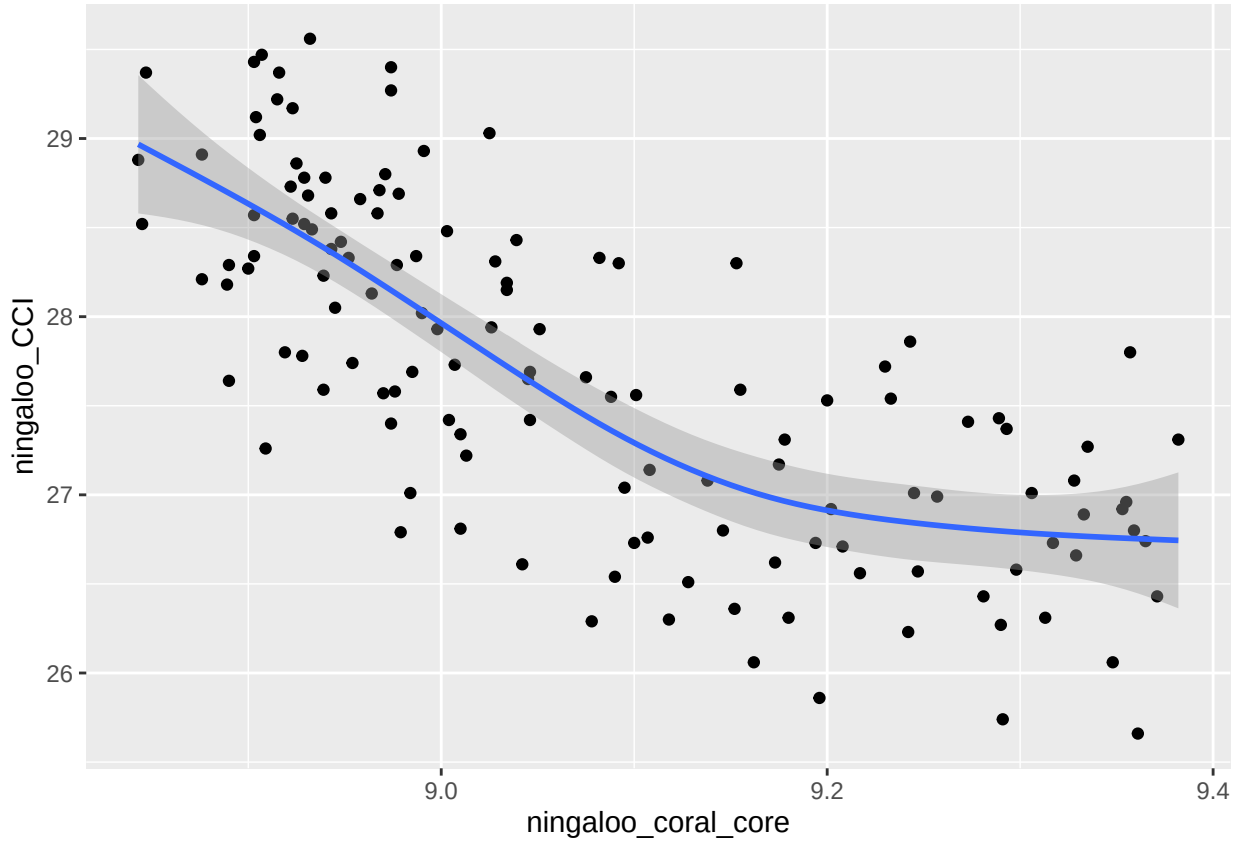

date
ningaloo_CCI
ningaloo_NOAA
ningaloo_coral_core
Corr:
−0.208*
Corr:
−0.087
Corr:
0.035
Corr:
0.765***
Corr:
−0.733***
Corr:
−0.882***
2e−04
1e−04
0e+00
29
28
27
26
28
26
24
22
9.4
9.2
9.0
1998
2000
2002
2004
2006
2008
26
27
28
29
22
24
26
28
9.0
9.2
9.4


ningaloo_NOAA
28
26
24
22
9.0
9.2
9.4
ningaloo_coral_core

	Model 1	Model 2
(Intercept)	2368.444	894.520
	(310.709)	(226.123)
ningaloo_coral_core	−502.398	−185.807
	(68.200)	(49.633)
I(ningaloo_coral_core^2)	26.896	9.946
	(3.741)	(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




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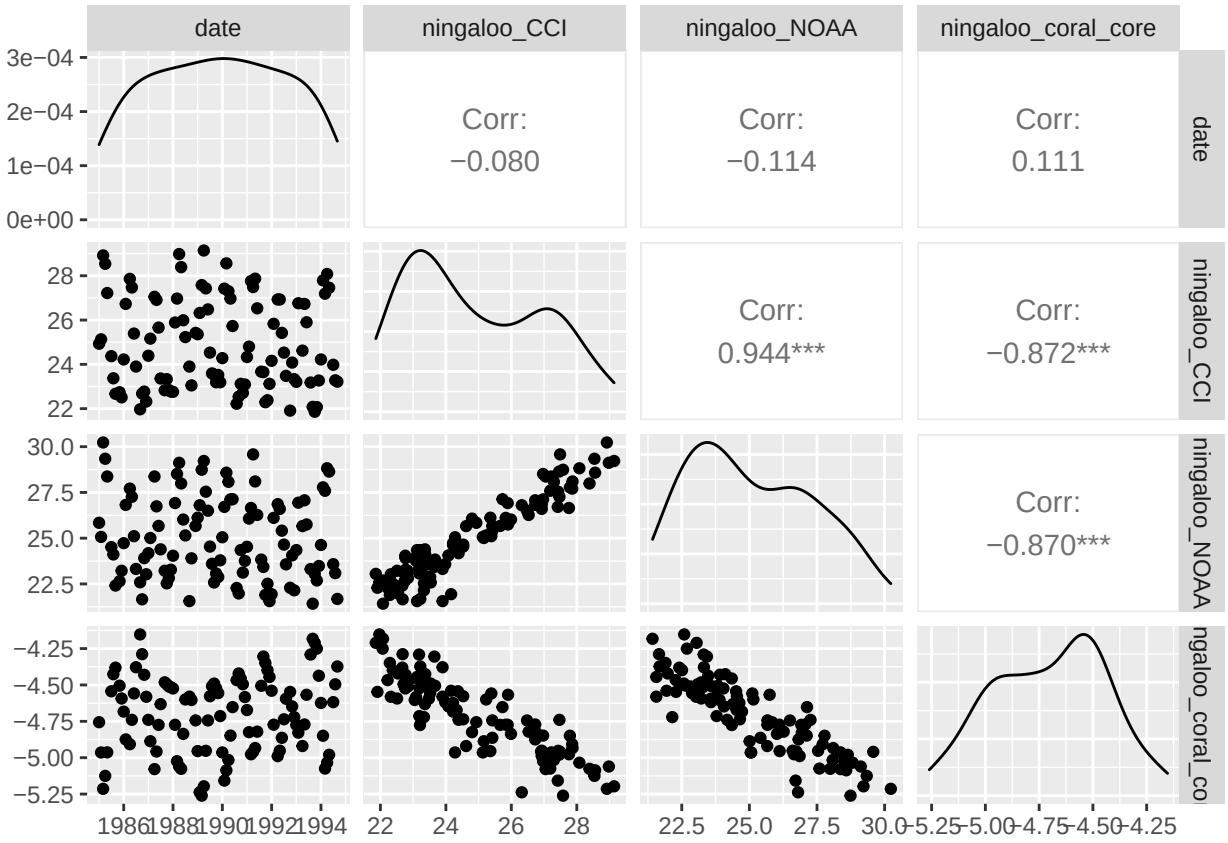
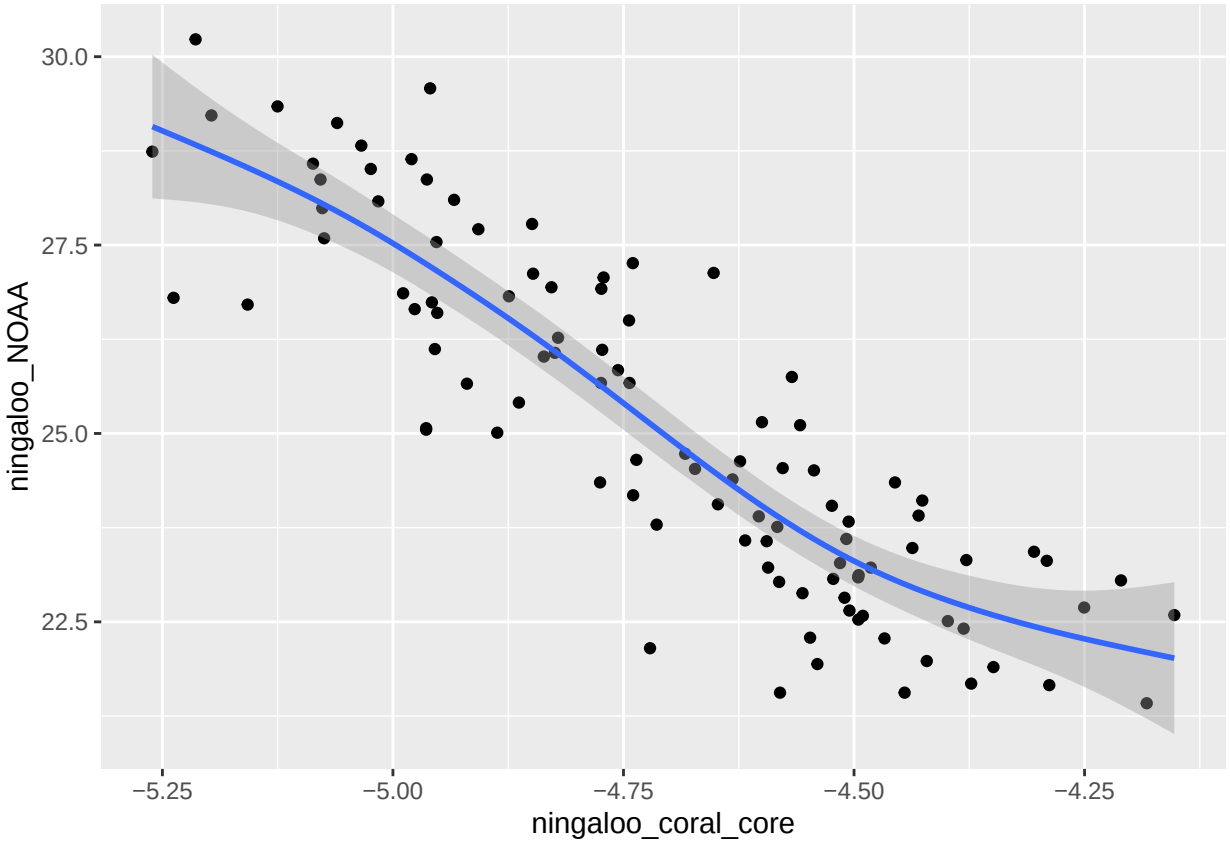
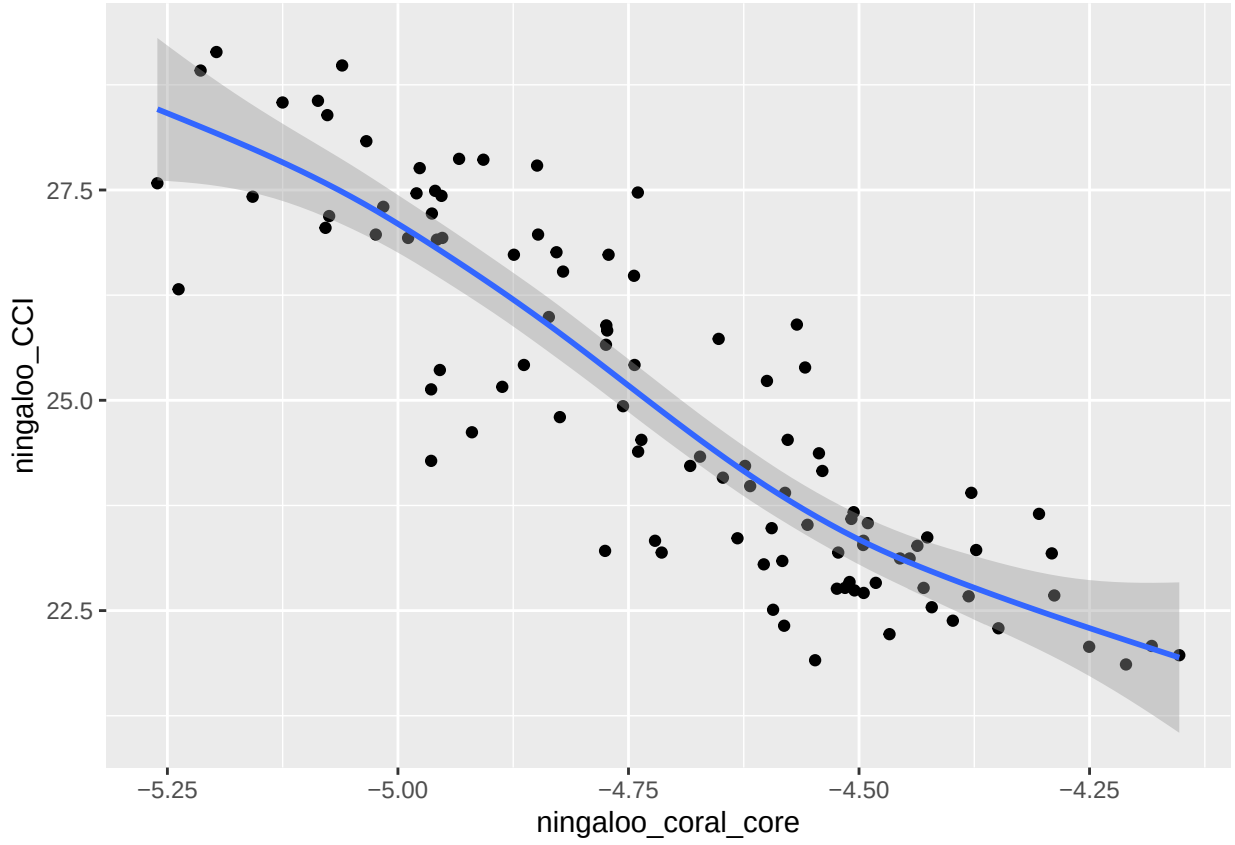
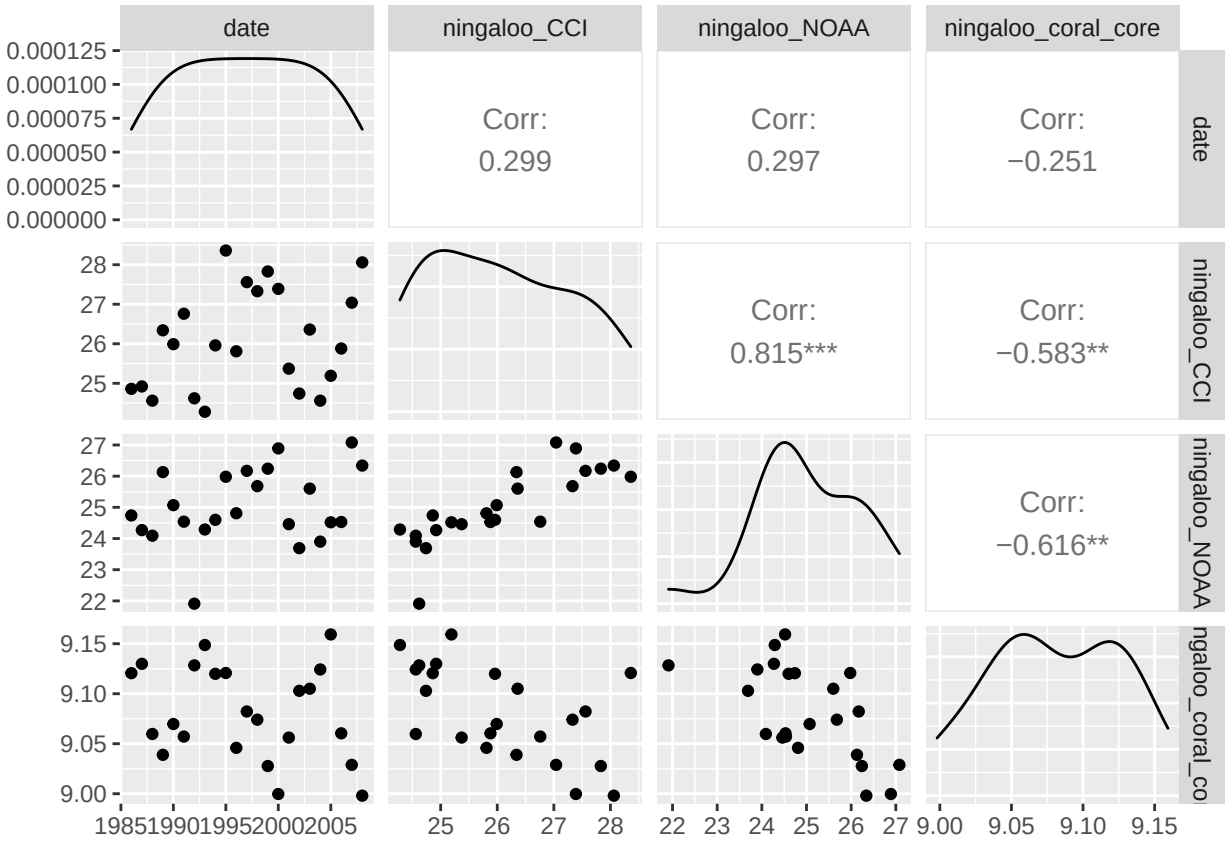

date
ningaloo_CCI
ningaloo_NOAA
ningaloo_coral_core
Corr:
−0.080
Corr:
−0.114
Corr:
0.111
Corr:
0.944***
Corr:
−0.872***
Corr:
−0.870***
3e−04
2e−04
1e−04
0e+00
28
26
24
22
30.0
27.5
25.0
22.5
−4.25
−4.50
−4.75
−5.00
−5.25
1986
1988
1990
1992
1994
22
24
26
28
22.5
25.0
27.5
30.0
−5.25
−5.00
−4.75
−4.50
−4.25

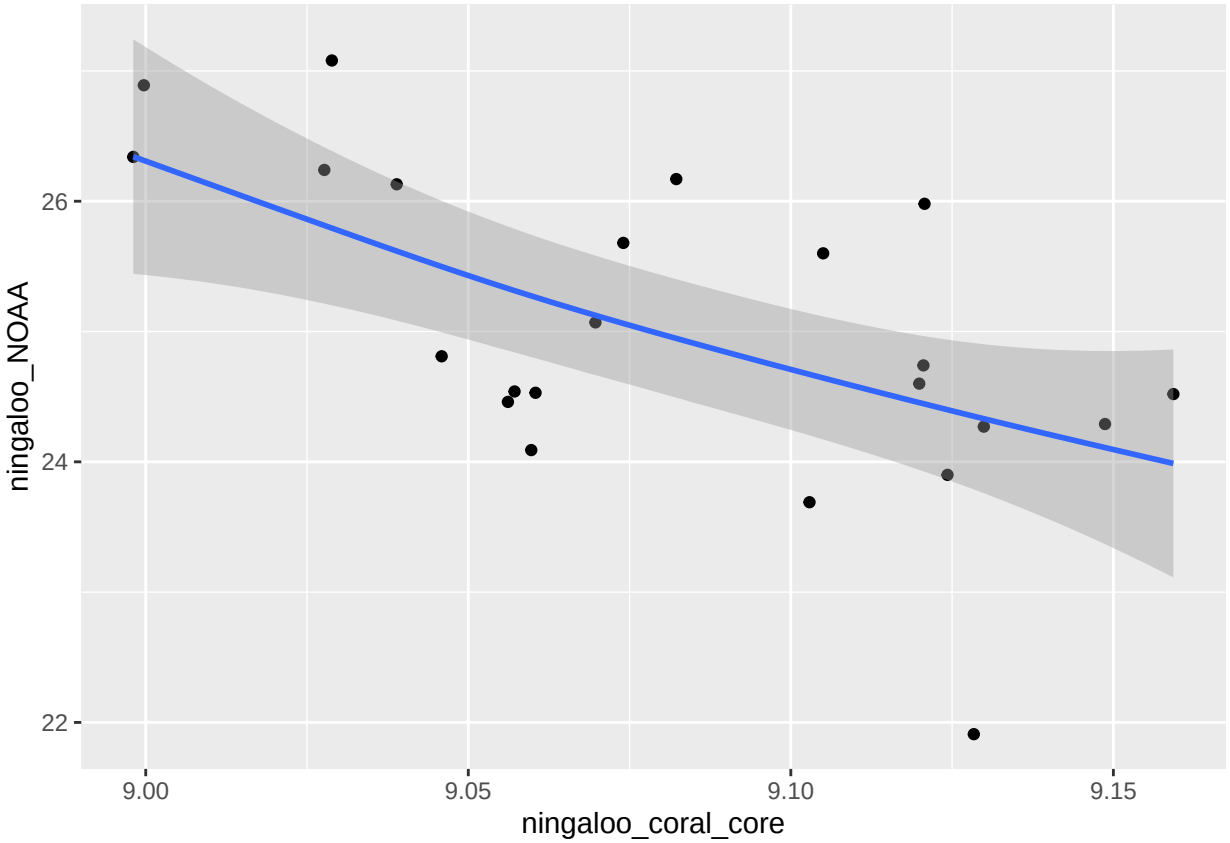

30.0
27.5
25.0
22.5
ningaloo_NOAA
−5.25
−5.00
−4.75
−4.50
−4.25
ningaloo_coral_core

	Model 1	Model 2
(Intercept)	−10.513	−7.134
	(2.022)	(1.802)
ningaloo_coral_core	−7.569	−6.812
	(0.429)	(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

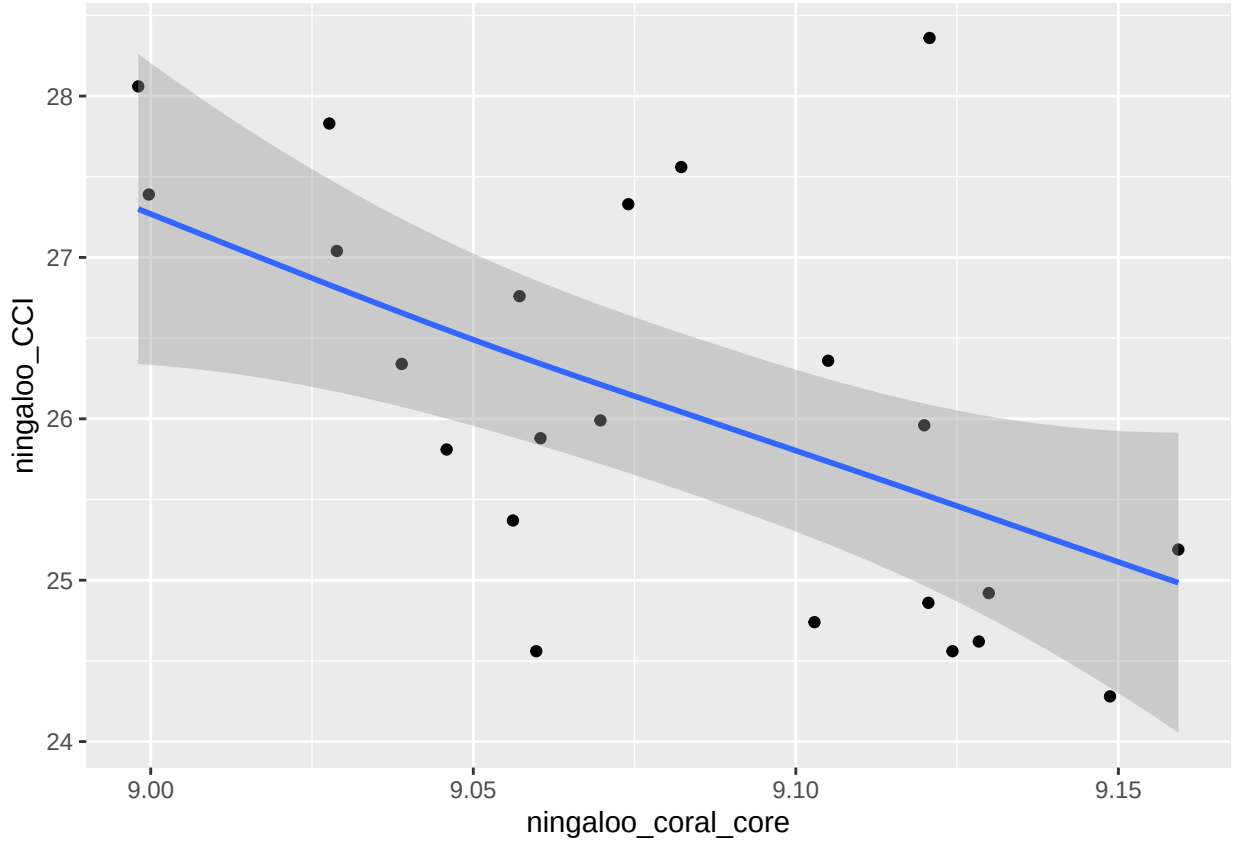



```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```

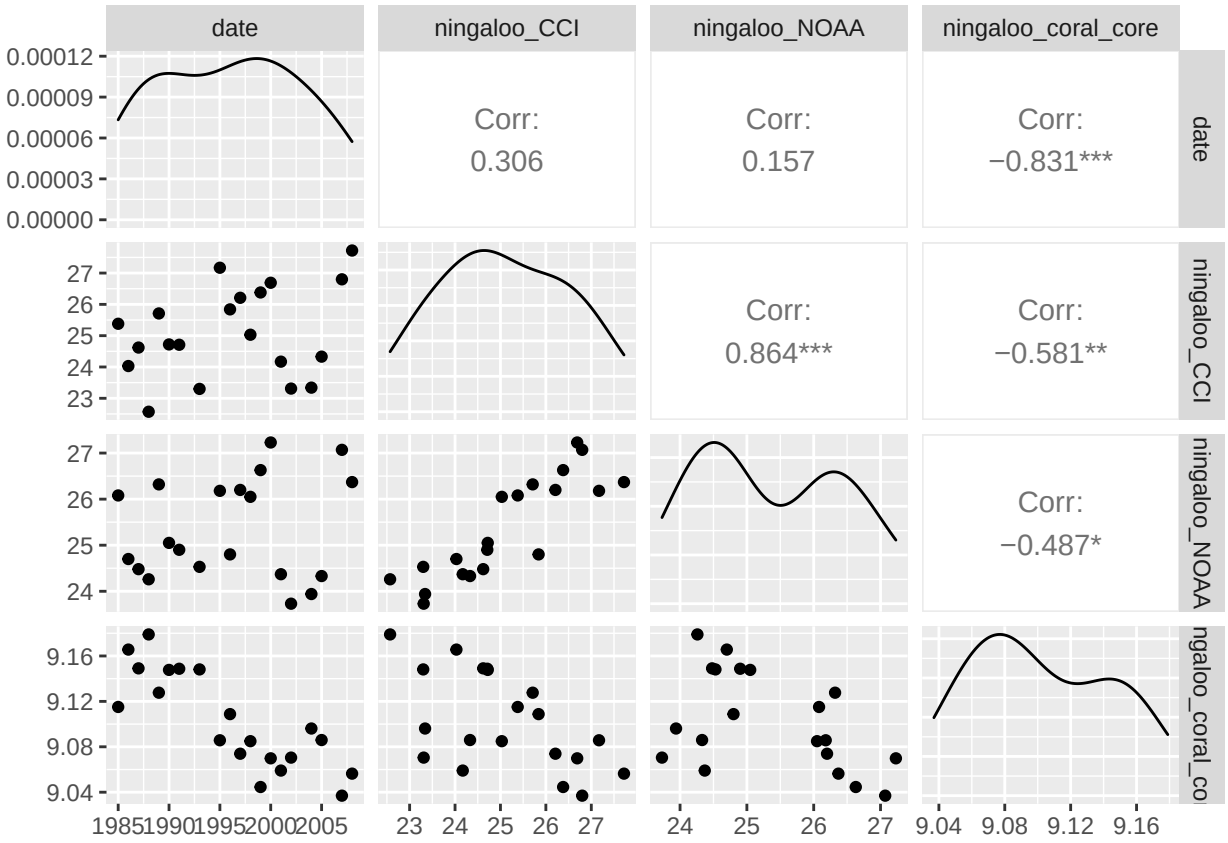

date
ningaloo_CCI
ningaloo_NOAA
ningaloo_coral_core
Corr:
0.299
Corr:
0.297
Corr:
−0.251
Corr:
0.815***
Corr:
−0.583**
Corr:
−0.616**
0.000125
0.000100
0.000075
0.000050
0.000025
0.000000
28
27
26
25
27
26
25
24
23
22
9.15
9.10
9.05
9.00
1985
1990
1995
2000
2005
25
26
27
28
22
23
24
25
26
27
9.00
9.05
9.10
9.15

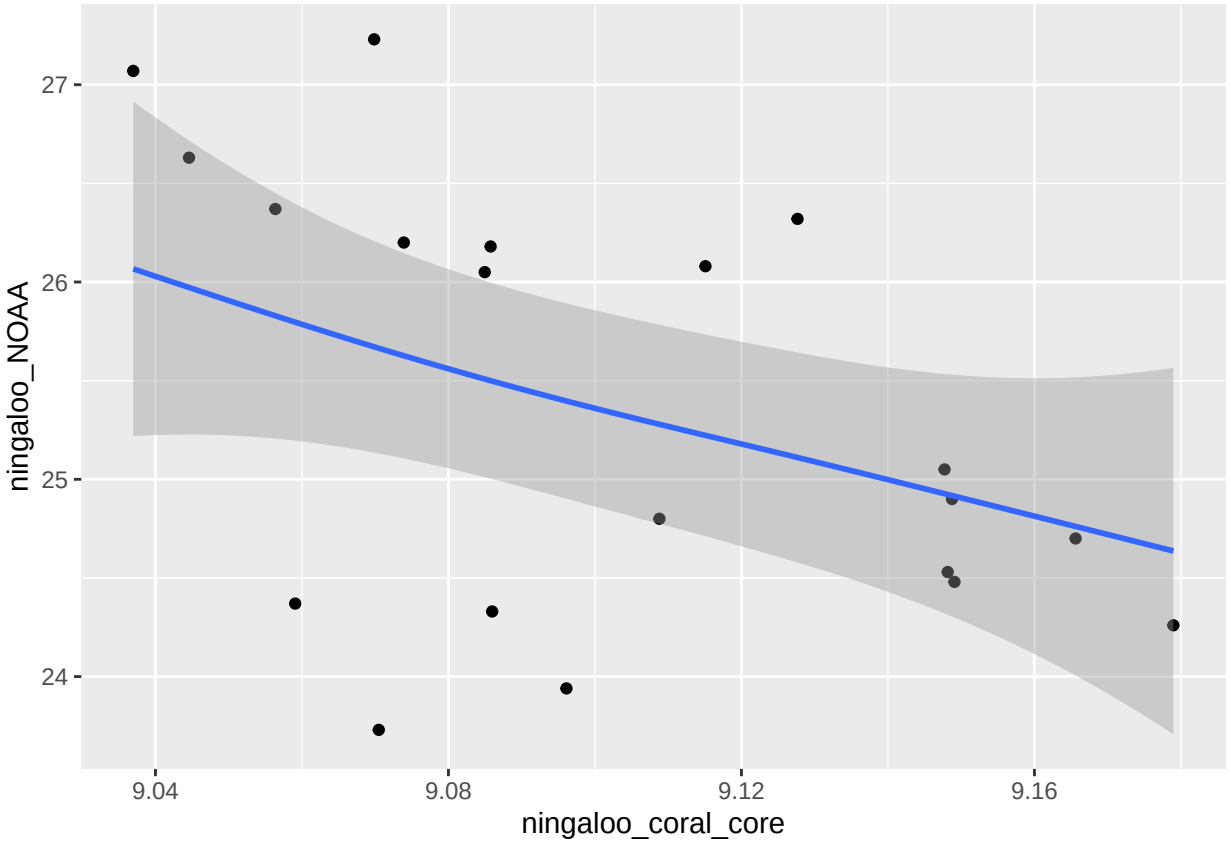

ningaloo_NOAA
26
24
22
9.00
9.05
9.10
9.15
ningaloo_coral_core

	Model 1	Model 2
(Intercept)	168.726	170.627
	(40.147)	(43.985)
ningaloo_coral_core	−15.825	−15.918
	(4.421)	(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

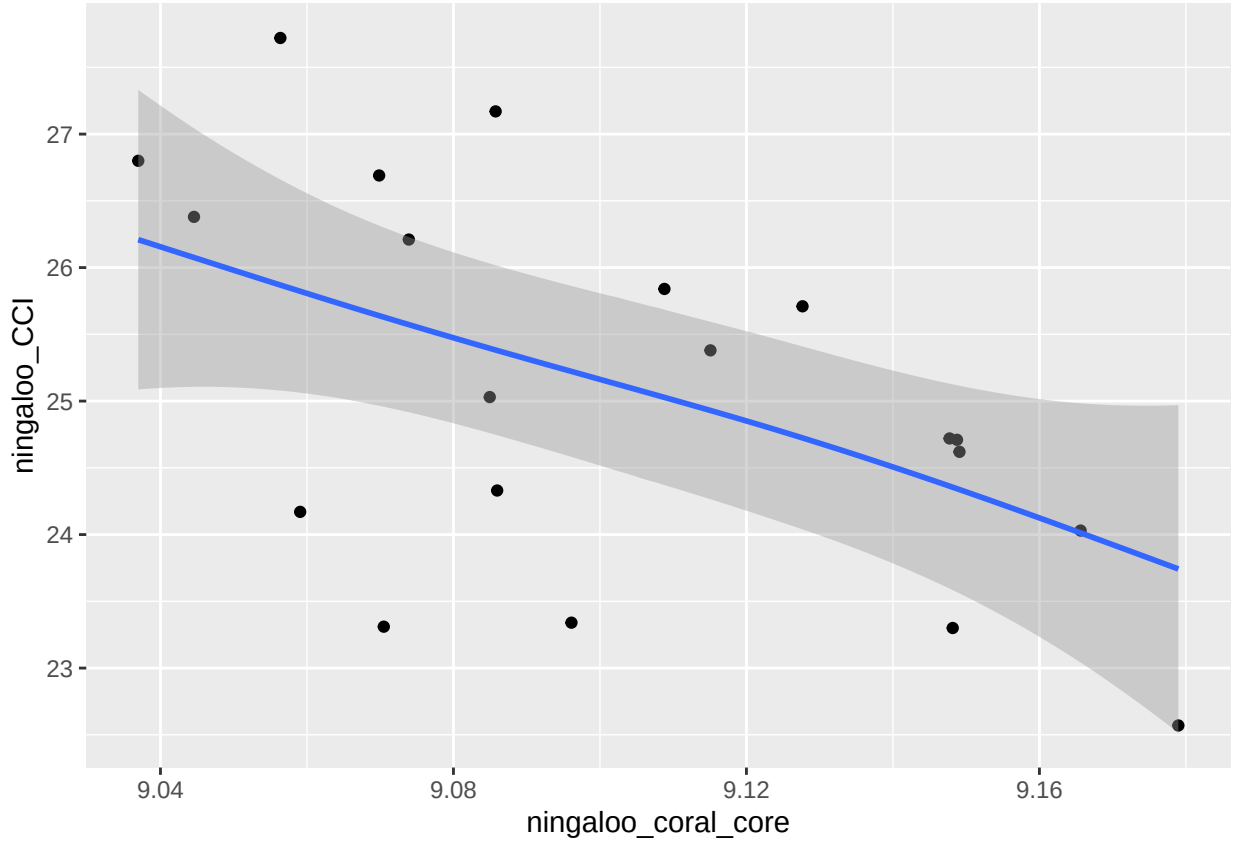



```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```


date
ningaloo_CCI
ningaloo_NOAA
ningaloo_coral_core
Corr:
0.306
Corr:
0.157
Corr:
−0.831***
Corr:
0.864***
Corr:
−0.581**
Corr:
−0.487*
0.00012
0.00009
0.00006
0.00003
0.00000
27
26
25
24
23
9.16
9.12
9.08
9.04
1985
1990
1995
2000
2005
23
24
25
26
27
24
25
26
27
9.04
9.08
9.12
9.16


ningaloo_NOAA
27
26
25
24
9.04
9.08
9.12
9.16
ningaloo_coral_core

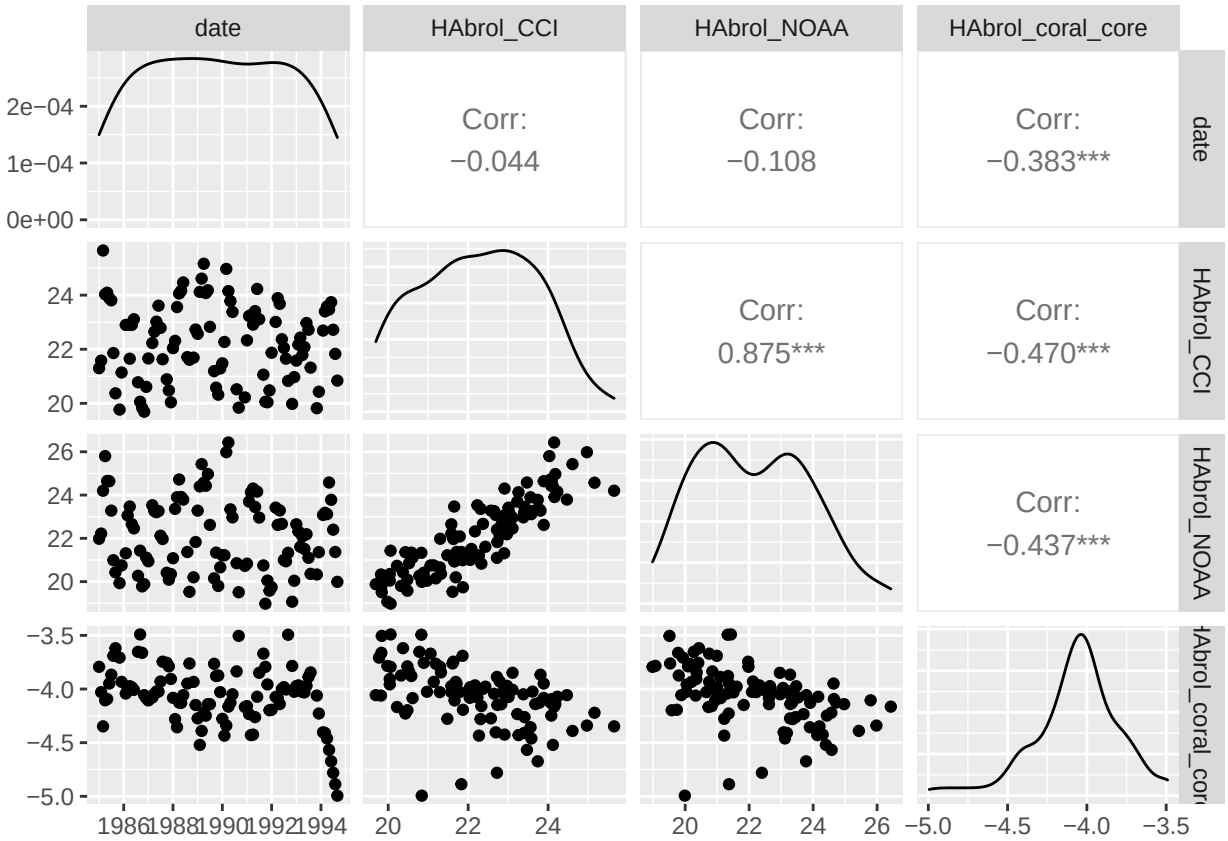
	Model 1	Model 2
(Intercept)	139.124	203.879
	(48.119)	(59.033)
ningaloo_coral_core	−12.498	−19.640
	(5.286)	(6.485)
Num.Obs.	20	20
R2	0.237	0.338
R2 Adj.	0.195	0.301
AIC	60.0	68.1
BIC	63.0	71.1
Log.Lik.	−26.981	−31.070
F	5.590	9.172

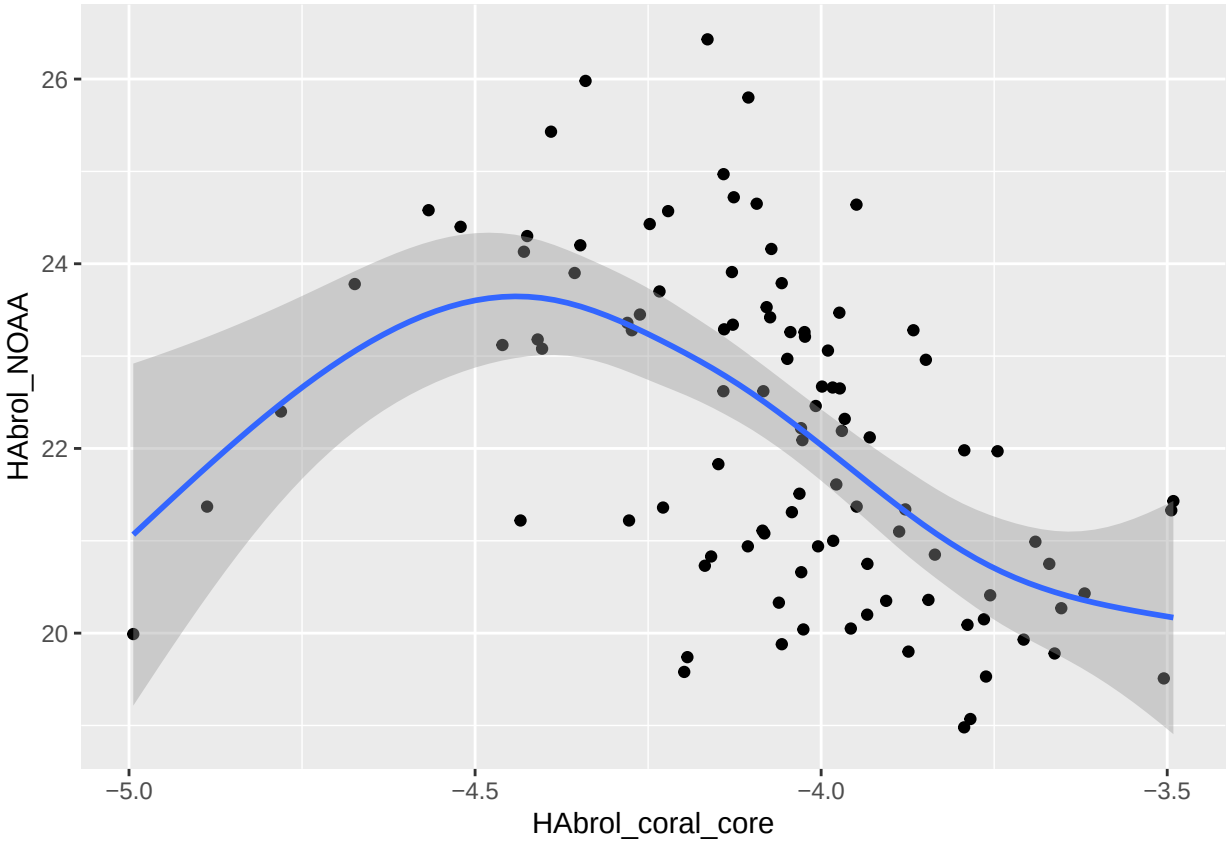


Comparison of SST time series in Houtman Abrolhos Island sites

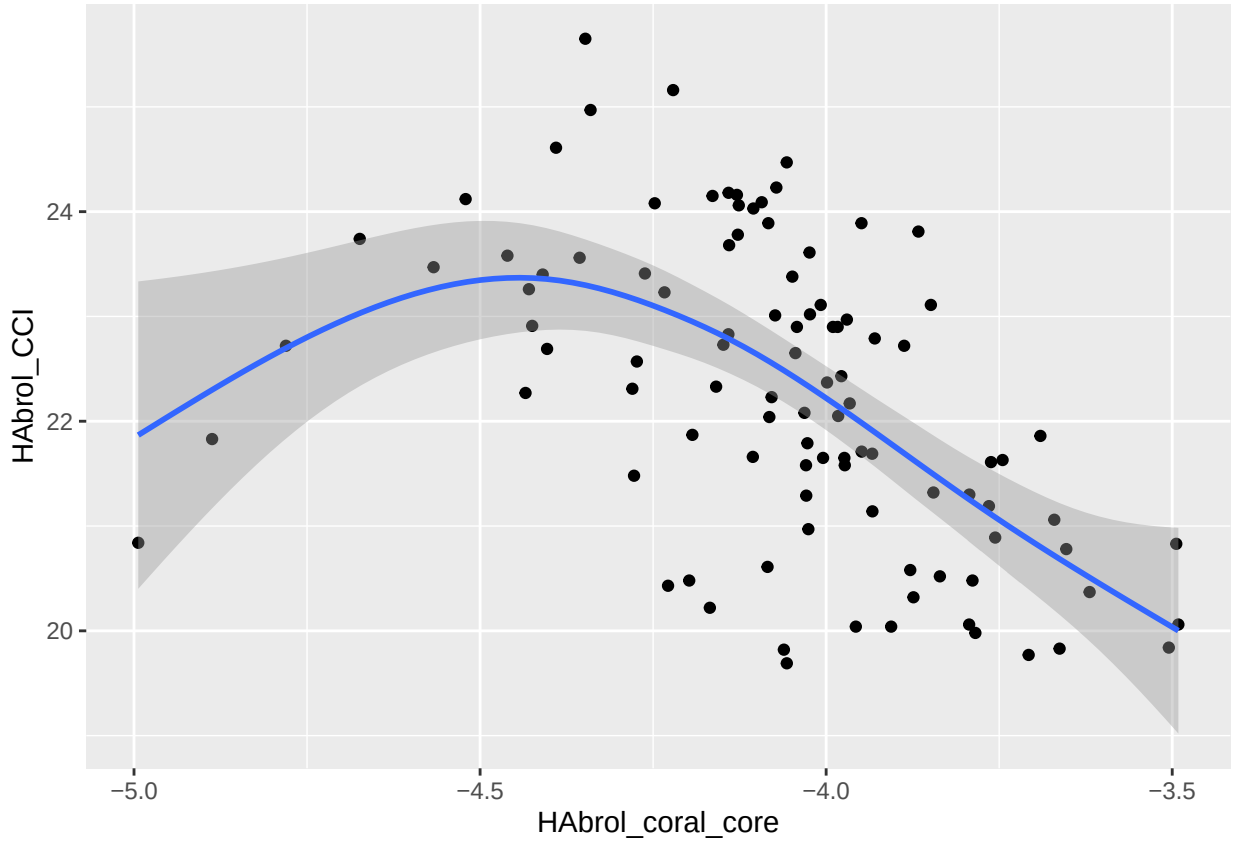
- Wallabi Island (-28.28, 113.46)
- HAB10A (-28.4589, 113.749)
- HAB05B (-28.4609, 113.772)

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

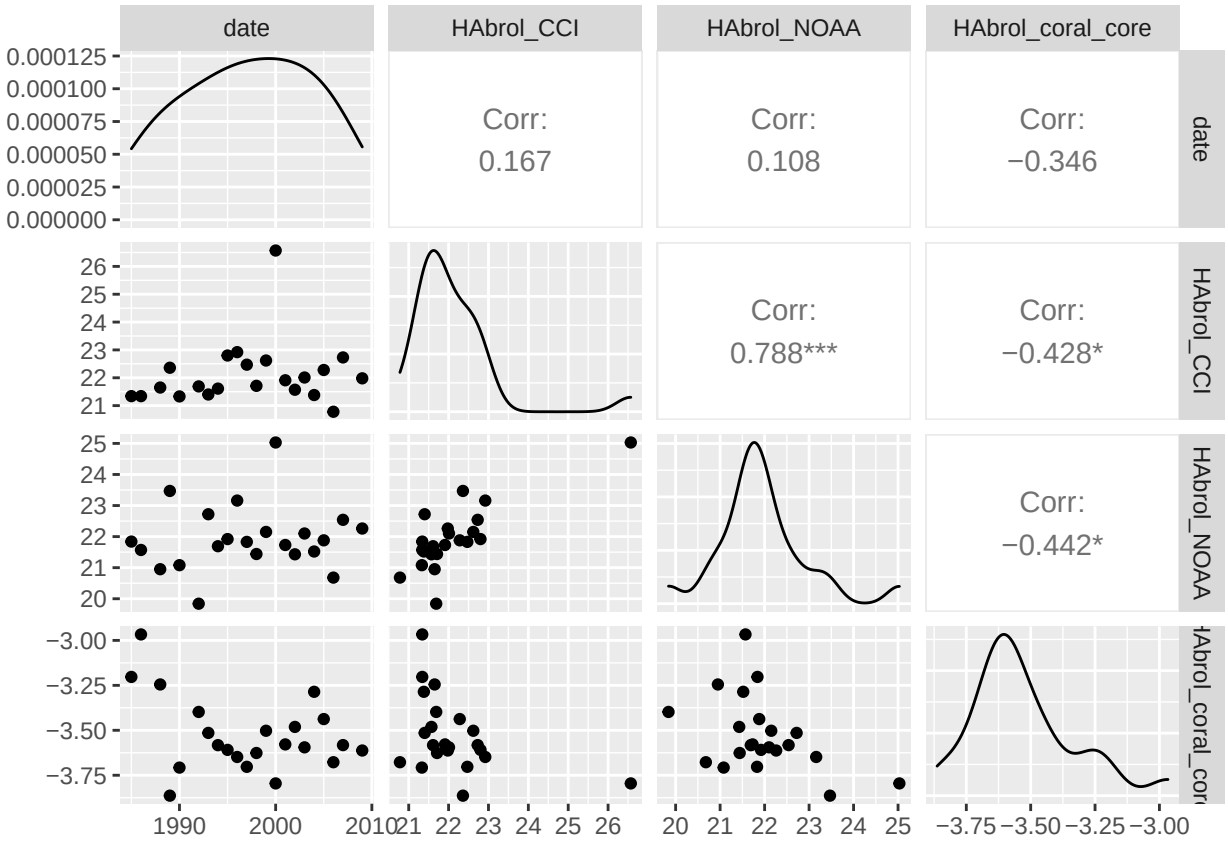

date
HAbrol_CCI
HAbrol_NOAA
HAbrol_coral_core
Corr:
−0.044
Corr:
−0.108
Corr:
−0.383***
Corr:
0.875***
Corr:
−0.470***
Corr:
−0.437***
2e−04
1e−04
0e+00
24
22
20
26
24
22
20
−3.5
−4.0
−4.5
−5.0
1986
1988
1990
1992
1994
20
22
24
20
22
24
26
−5.0
−4.5
−4.0
−3.5

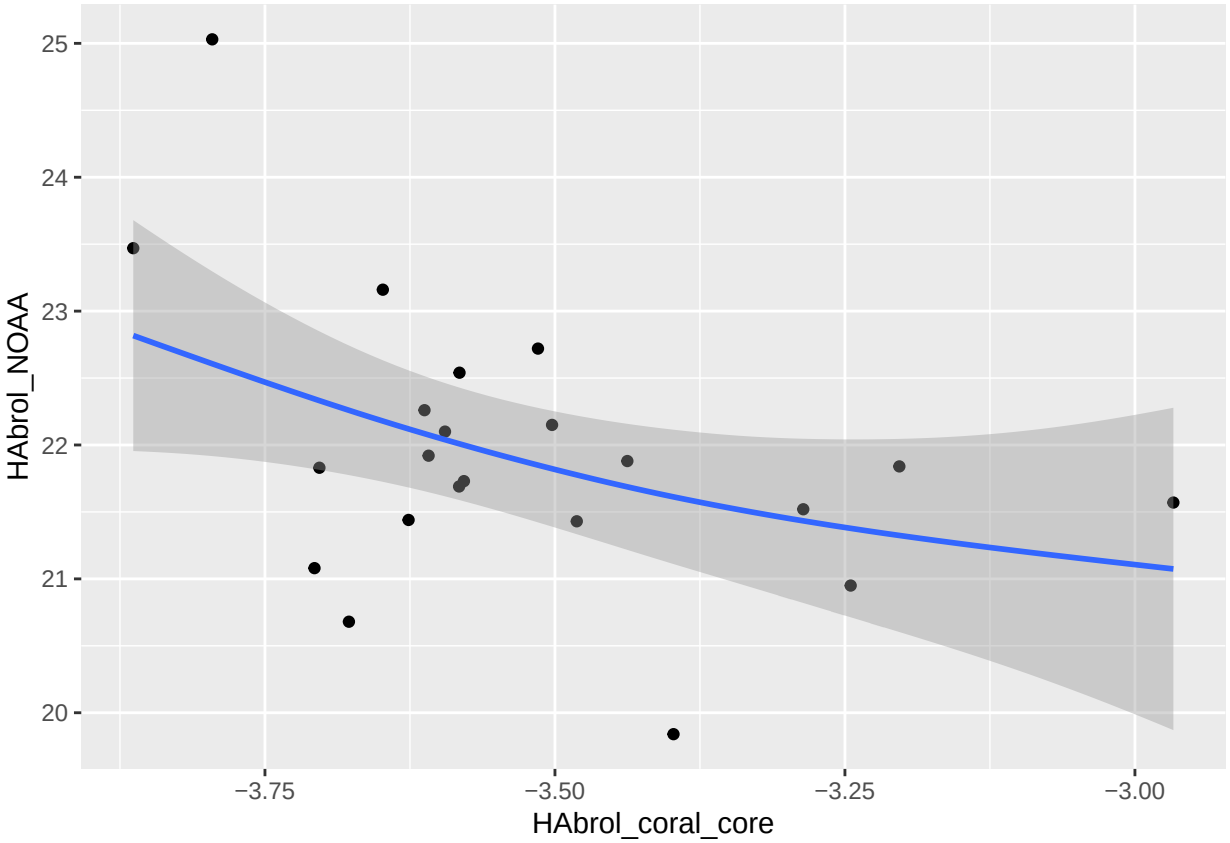

26
24
22
20
HAbrol_NOAA
−5.0
−4.5
−4.0
−3.5
HAbrol_coral_core

	Model 1	Model 2
(Intercept)	−66.247	−58.788
	(20.347)	(16.317)
HAbrol_coral_core	−40.056	−36.775
	(9.792)	(7.852)
I(HAbrol_coral_core^2)	−4.484	−4.124
	(1.176)	(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

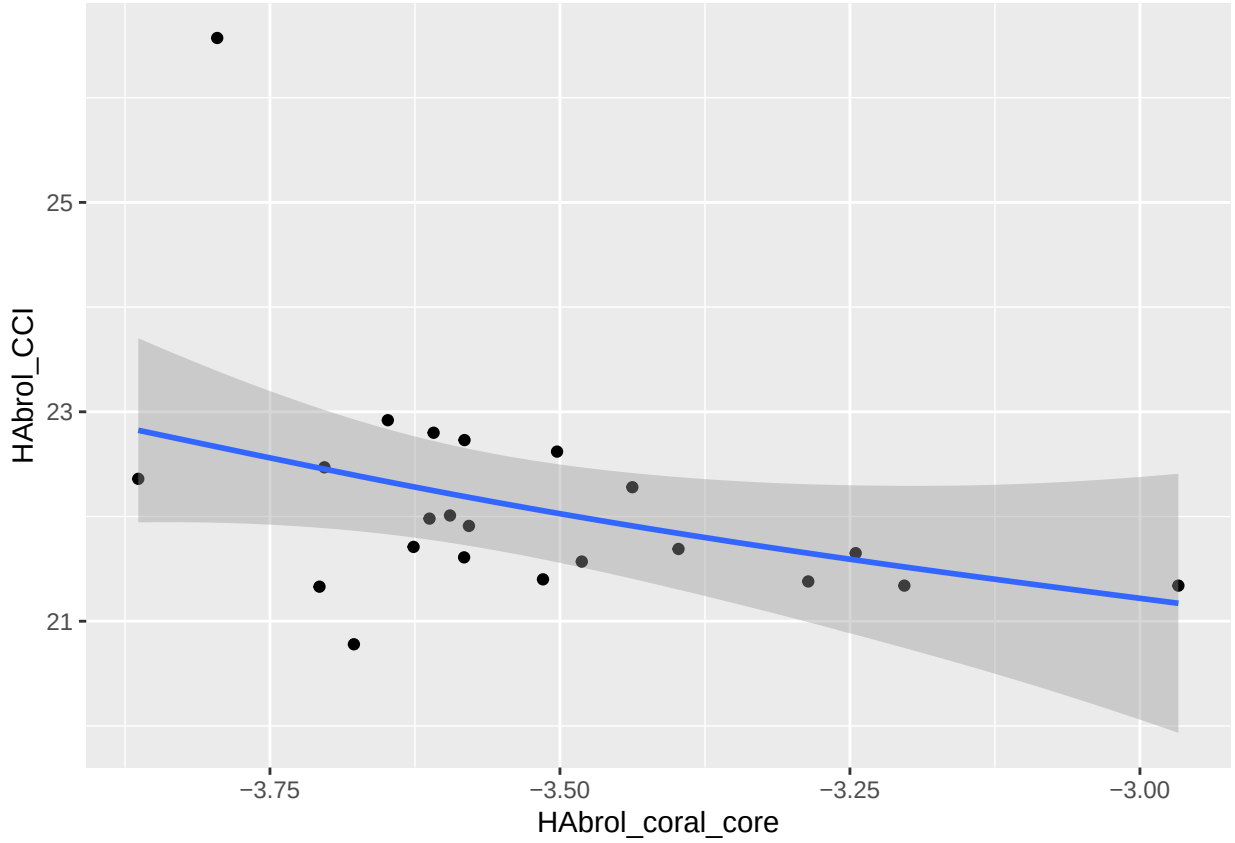



```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
```


date
HAbrol_CCI
HAbrol_NOAA
HAbrol_coral_core
Corr:
0.167
Corr:
0.108
Corr:
−0.346
Corr:
0.788***
Corr:
−0.428*
Corr:
−0.442*
0.000125
0.000100
0.000075
0.000050
0.000025
0.000000
1990
2000
2010
−3.00
−3.25
−3.50
−3.75


25
24
23
22
21
20
HAbrol_NOAA
−3.75
−3.50
−3.25
−3.00
HAbrol_coral_core

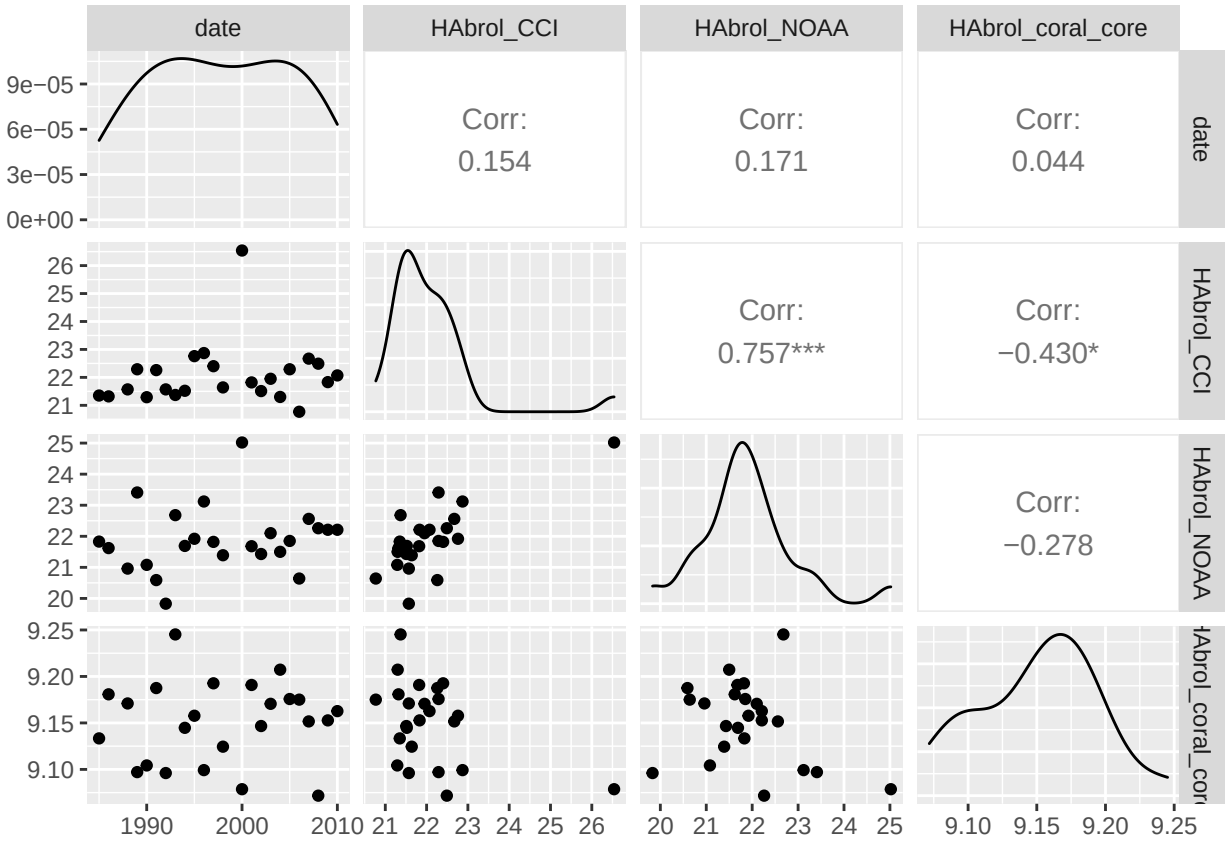
	Model 1	Model 2
(Intercept)	14.058	13.776
	(3.583)	(3.942)
HAbrol_coral_core	−2.236	−2.363
	(1.014)	(1.115)
Num.Obs.	22	22
R2	0.196	0.183
R2 Adj.	0.155	0.142
AIC	64.8	69.0
BIC	68.1	72.3
Log.Lik.	−29.402	−31.503
F	4.864	4.487

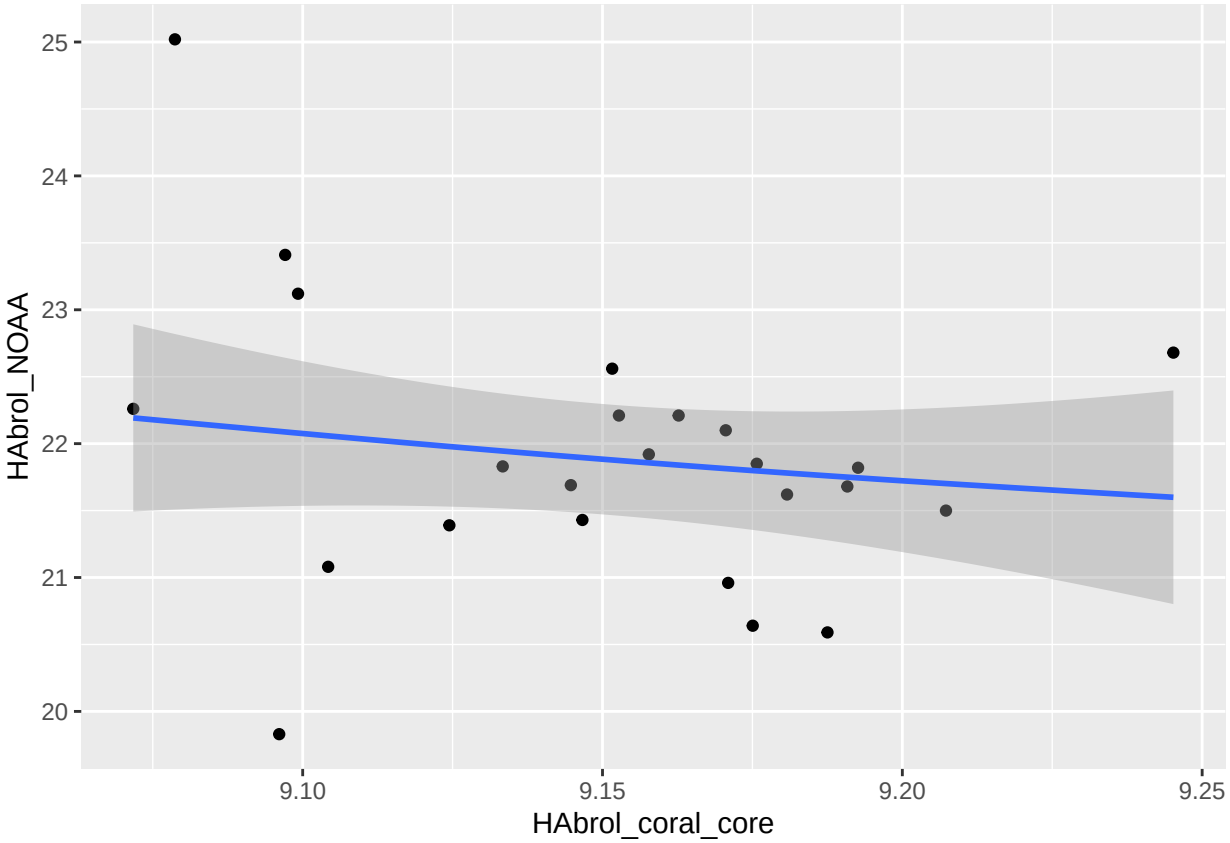



```
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion

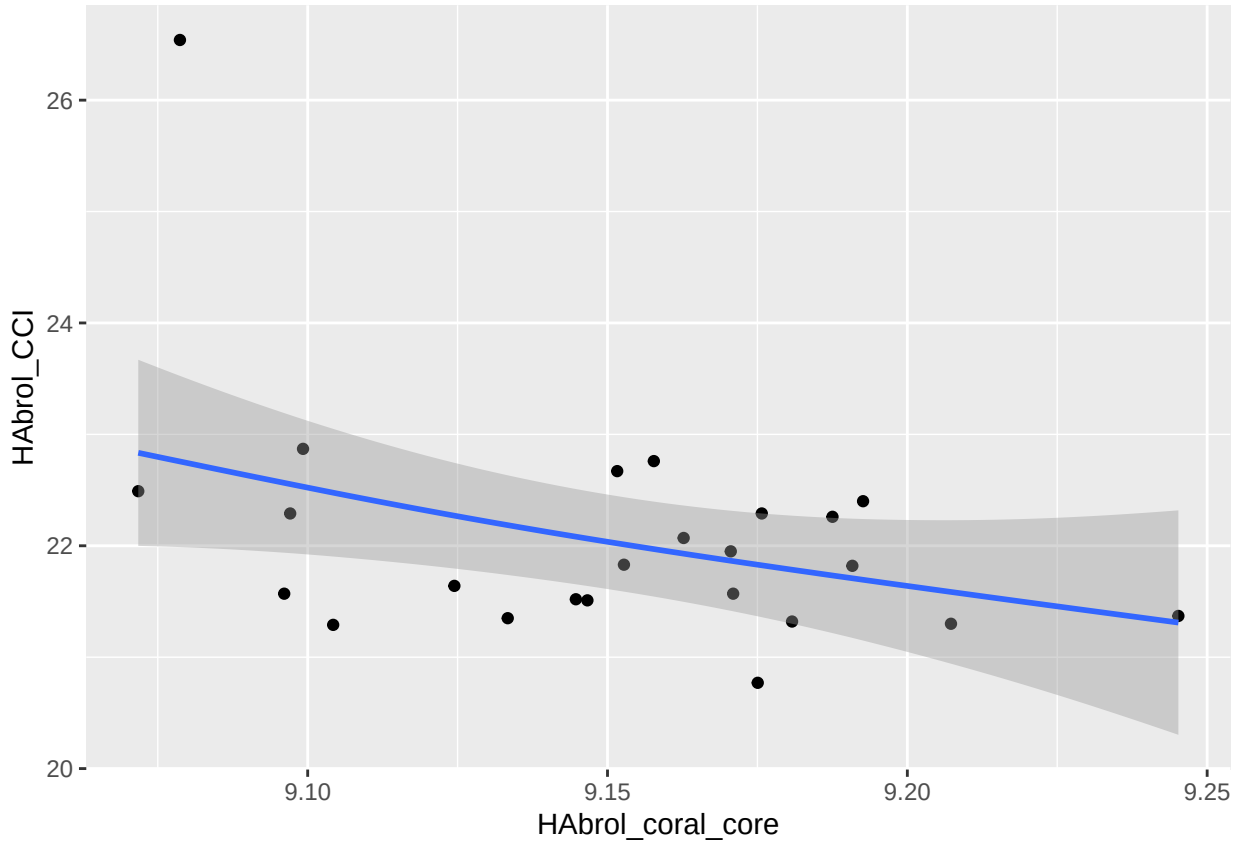
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion

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


date
HAbrol_CCI
HAbrol_NOAA
HAbrol_coral_core
Corr:
0.154
Corr:
0.171
Corr:
0.044
Corr:
0.757***
Corr:
−0.430*
Corr:
−0.278
9e−05
6e−05
3e−05
0e+00
1990
2000
2010
9.10
9.15
9.20
9.25


25
24
23
22
21
20
HAbrol_NOAA
9.10
9.15
9.20
9.25
HAbrol_coral_core

	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