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Lampiran 1. Data Observasi Kejadian Coral Bleaching (titik lokasi Agincourt Reef sebagai perwakilan data untuk semua titik lokasi)

Titik Lokasi	Koordinat		Event	DHW	Waktu Kejadian		Kategori Bleaching
	Latitude	Longitude			Bulan	Tahun	
AGINCORT REEF	-16	146	1	0.80	12	2001	1
			2	2.46	1	2002	1
			3	6.95	2	2002	2
			4	8.58	3	2002	3
			5	5.49	4	2002	2
			6	1.48	5	2002	1
			7	0.98	1	2004	1
			8	3.31	2	2004	1
			9	5.65	3	2004	2
			10	5.16	4	2004	2
			11	2.15	5	2004	1
			12	1.25	3	2010	1
			13	1.35	4	2010	1
			14	1.28	5	2010	1
			15	1.58	2	2016	1
			16	3.65	3	2016	1
			17	3.53	4	2016	1
			18	2.06	5	2016	1
			19	0.50	1	2017	1
			20	0.50	2	2017	1
			21	1.76	3	2017	1
			22	2.95	4	2017	1
			23	2.70	5	2017	1
			24	1.51	6	2017	1



Lampiran 2. Data Sea Surface Temperature (SST)

Sea Surface Temperature (SST)												
SST12	SST11	SST10	SST9	SST8	SST7	SST6	SST5	SST4	SST3	SST2	SST1	SST0
27.934	28.211	28.364	28.663	27.564	26.458	25.356	24.556	23.969	25.181	25.991	27.653	28.471
28.211	28.364	28.663	27.564	26.458	25.356	24.556	23.969	25.181	25.991	27.653	28.471	29.765
28.364	28.663	27.564	26.458	25.356	24.556	23.969	25.181	25.991	27.653	28.471	29.765	29.45
28.663	27.564	26.458	25.356	24.556	23.969	25.181	25.991	27.653	28.471	29.765	29.45	28.825
27.564	26.458	25.356	24.556	23.969	25.181	25.991	27.653	28.471	29.765	29.45	28.825	27.824
26.458	25.356	24.556	23.969	25.181	25.991	27.653	28.471	29.765	29.45	28.825	27.824	26.254
29.034	29.444	29.045	27.951	26.637	25.672	24.544	24.262	25.213	26.342	27.538	28.464	29.646
29.444	29.045	27.951	26.637	25.672	24.544	24.262	25.213	26.342	27.538	28.464	29.646	29.926
29.045	27.951	26.637	25.672	24.544	24.262	25.213	26.342	27.538	28.464	29.646	29.926	29.165
27.951	26.637	25.672	24.544	24.262	25.213	26.342	27.538	28.464	29.646	29.926	29.165	27.683
26.637	25.672	24.544	24.262	25.213	26.342	27.538	28.464	29.646	29.926	29.165	27.683	26.466
28.504	27.536	26.291	25.447	24.822	24.857	25.357	26.279	26.796	28.413	28.761	29.167	28.745
27.536	26.291	25.447	24.822	24.857	25.357	26.279	26.796	28.413	28.761	29.167	28.745	27.868
26.291	25.447	24.822	24.857	25.357	26.279	26.796	28.413	28.761	29.167	28.745	27.868	26.766
29.188	28.673	27.796	26.588	25.406	24.33	24.404	24.873	25.343	27.184	28.212	28.878	30.22
28.673	27.796	26.588	25.406	24.33	24.404	24.873	25.343	27.184	28.212	28.878	30.22	29.744
27.796	26.588	25.406	24.33	24.404	24.873	25.343	27.184	28.212	28.878	30.22	29.744	28.359
25.406	24.33	24.404	24.873	25.343	27.184	28.212	28.878	30.22	29.744	28.359	27.064	
30.22	29.744	28.359	27.064	26.711	25.621	25.013	25.852	26.624	27.813	28.112	29.579	
29.744	28.359	27.064	26.711	25.621	25.013	25.852	26.624	27.813	28.112	29.579	29.507	
28.359	27.064	26.711	25.621	25.013	25.852	26.624	27.813	28.112	29.579	29.507	29.721	



28.359	27.064	26.711	25.621	25.013	25.852	26.624	27.813	28.112	29.579	29.507	29.721	28.032
27.064	26.711	25.621	25.013	25.852	26.624	27.813	28.112	29.579	29.507	29.721	28.032	26.566
26.711	25.621	25.013	25.852	26.624	27.813	28.112	29.579	29.507	29.721	28.032	26.566	25.054

Lampiran 3. Data Sea Surface Temperature Anomaly (SSTA)

Sea Surface Temperature Anomaly (SSTA)												
SSTA12	SSTA11	SSTA10	SSTA9	SSTA8	SSTA7	SSTA6	SSTA5	SSTA4	SSTA3	SSTA2	SSTA1	SSTA0
-1.1444	-0.4875	-0.5375	0.3778	-0.4333	-0.0667	0.1889	-0.1500	-0.3125	-0.1667	0.2286	0.3250	0.9750
-0.4875	-0.5375	0.3778	-0.4333	-0.0667	0.1889	-0.1500	-0.3125	-0.1667	0.2286	0.3250	0.9750	1.2778
-0.5375	0.3778	-0.4333	-0.0667	0.1889	-0.1500	-0.3125	-0.1667	0.2286	0.3250	0.9750	1.2778	1.6167
0.3778	-0.4333	-0.0667	0.1889	-0.1500	-0.3125	-0.1667	0.2286	0.3250	0.9750	1.2778	1.6167	0.0800
-0.4333	-0.0667	0.1889	-0.1500	-0.3125	-0.1667	0.2286	0.3250	0.9750	1.2778	1.6167	0.0800	-0.0833
-0.0667	0.1889	-0.1500	-0.3125	-0.1667	0.2286	0.3250	0.9750	1.2778	1.6167	0.0800	-0.0833	-0.3000
-0.1750	0.5375	-0.1333	-0.0375	-0.3143	-0.0375	0.1500	-0.1625	-0.2600	-0.0750	-0.8000	0.1444	0.9778
0.5375	-0.1333	-0.0375	-0.3143	-0.0375	0.1500	-0.1625	-0.2600	-0.0750	-0.8000	0.1444	0.9778	1.1375
-0.1333	-0.0375	-0.3143	-0.0375	0.1500	-0.1625	-0.2600	-0.0750	-0.8000	0.1444	0.9778	1.1375	0.8875
-0.0375	-0.3143	-0.0375	0.1500	-0.1625	-0.2600	-0.0750	-0.8000	0.1444	0.9778	1.1375	0.8875	-0.7625
-0.3143	-0.0375	0.1500	-0.1625	-0.2600	-0.0750	-0.8000	0.1444	0.9778	1.1375	0.8875	-0.7625	-0.5333
-0.0711	0.0689	-0.0563	-0.0356	0.6567	0.4644	0.5222	0.4211	-0.5100	0.1378	0.1625	0.2111	0.5567
-0.0563	-0.0356	0.6567	0.4644	0.5222	0.4211	-0.5100	0.1378	0.1625	0.2111	0.5567	0.0075	0.0075
-0.0356	0.6567	0.4644	0.5222	0.4211	-0.5100	0.1378	0.1625	0.2111	0.5567	0.0075	0.0075	0.4289
0.1178	-0.0600	-0.3563	-0.2133	-0.0488	0.0978	-0.0475	-0.7122	-0.1211	0.1489	0.4525	1.1911	1.1911
-0.0600	-0.3563	-0.2133	-0.0488	0.0978	-0.0475	-0.7122	-0.1211	0.1489	0.4525	1.1911	1.1911	1.2522
-0.3563	-0.2133	-0.0488	0.0978	-0.0475	-0.7122	-0.1211	0.1489	0.4525	1.1911	1.2522	0.8750	0.8750



-0.3563	-0.2133	-0.0488	0.0978	-0.0475	-0.7122	-0.1211	0.1489	0.4525	1.1911	1.2522	0.8750	1.3100
0.4525	1.1911	1.2522	0.8750	1.3100	1.4078	1.3488	0.7589	1.0422	0.7256	0.3663	-0.0256	0.7144
1.1911	1.2522	0.8750	1.3100	1.4078	1.3488	0.7589	1.0422	0.7256	0.3663	-0.0256	0.7144	0.6725
1.2522	0.8750	1.3100	1.4078	1.3488	0.7589	1.0422	0.7256	0.3663	-0.0256	0.7144	0.6725	1.5411
0.8750	1.3100	1.4078	1.3488	0.7589	1.0422	0.7256	0.3663	-0.0256	0.7144	0.6725	1.5411	0.6313
1.3100	1.4078	1.3488	0.7589	1.0422	0.7256	0.3663	-0.0256	0.7144	0.6725	1.5411	0.6313	0.2463
1.4078	1.3488	0.7589	1.0422	0.7256	0.3663	-0.0256	0.7144	0.6725	1.5411	0.6313	0.2463	-0.3078

Lampiran 4. Data Salinitas

Salinitas (SALT)												
SALT12	SALT11	SALT10	SALT9	SALT8	SALT7	SALT6	SALT5	SALT4	SALT3	SALT2	SALT1	SALT0
0.03516	0.03502	0.03461	0.03413	0.03451	0.03483	0.03503	0.03518	0.03526	0.03530	0.03535	0.03542	0.03541
0.03502	0.03461	0.03413	0.03451	0.03483	0.03503	0.03518	0.03526	0.03530	0.03535	0.03542	0.03541	0.03529
0.03461	0.03413	0.03451	0.03483	0.03503	0.03518	0.03526	0.03530	0.03535	0.03542	0.03541	0.03529	0.03503
0.03413	0.03451	0.03483	0.03503	0.03518	0.03526	0.03530	0.03535	0.03542	0.03541	0.03529	0.03503	0.03507
0.03451	0.03483	0.03503	0.03518	0.03526	0.03530	0.03535	0.03542	0.03541	0.03529	0.03503	0.03507	0.03528
0.03483	0.03503	0.03518	0.03526	0.03530	0.03535	0.03542	0.03541	0.03529	0.03503	0.03507	0.03528	0.03533
0.03513	0.03499	0.03490	0.03497	0.03512	0.03520	0.03524	0.03533	0.03539	0.03543	0.03547	0.03547	0.03533
0.03499	0.03490	0.03497	0.03512	0.03520	0.03524	0.03533	0.03539	0.03543	0.03547	0.03547	0.03533	0.03510
	0.03497	0.03512	0.03520	0.03524	0.03533	0.03539	0.03543	0.03547	0.03547	0.03533	0.03510	0.03485
	0.03512	0.03520	0.03524	0.03533	0.03539	0.03543	0.03547	0.03547	0.03533	0.03510	0.03485	0.03497
	0.03520	0.03524	0.03533	0.03539	0.03543	0.03547	0.03547	0.03533	0.03510	0.03485	0.03497	0.03503
	0.03475	0.03492	0.03504	0.03513	0.03527	0.03534	0.03533	0.03533	0.03517	0.03491	0.03480	0.03490



0.03475	0.03492	0.03504	0.03513	0.03527	0.03534	0.03533	0.03533	0.03517	0.03491	0.03480	0.03490	0.03484
0.03492	0.03504	0.03513	0.03527	0.03534	0.03533	0.03533	0.03517	0.03491	0.03480	0.03490	0.03484	0.03506
0.03490	0.03495	0.03524	0.03536	0.03545	0.03548	0.03549	0.03551	0.03552	0.03544	0.03538	0.03533	0.03524
0.03495	0.03524	0.03536	0.03545	0.03548	0.03549	0.03551	0.03552	0.03544	0.03538	0.03533	0.03524	0.03501
0.03524	0.03536	0.03545	0.03548	0.03549	0.03551	0.03552	0.03544	0.03538	0.03533	0.03524	0.03501	0.03517
0.03536	0.03545	0.03548	0.03549	0.03551	0.03552	0.03544	0.03538	0.03533	0.03524	0.03501	0.03517	0.03522
0.03533	0.03524	0.03501	0.03517	0.03522	0.03525	0.03528	0.03534	0.03536	0.03536	0.03541	0.03546	0.03520
0.03524	0.03501	0.03517	0.03522	0.03525	0.03528	0.03534	0.03536	0.03536	0.03541	0.03546	0.03520	0.03512
0.03501	0.03517	0.03522	0.03525	0.03528	0.03534	0.03536	0.03536	0.03541	0.03546	0.03520	0.03512	0.03466
0.03517	0.03522	0.03525	0.03528	0.03534	0.03536	0.03536	0.03541	0.03546	0.03520	0.03512	0.03466	0.03493
0.03522	0.03525	0.03528	0.03534	0.03536	0.03536	0.03541	0.03546	0.03520	0.03512	0.03466	0.03493	0.03525
0.03525	0.03528	0.03534	0.03536	0.03536	0.03541	0.03546	0.03520	0.03512	0.03466	0.03493	0.03525	0.03531

Lampiran 5. Data *Pacific Decadal Oscillation (PDO)*

<i>Pacific Decadal Oscillation (PDO)</i>												
PDO12	PDO11	PDO10	PDO9	PDO8	PDO7	PDO6	PDO5	PDO4	PDO3	PDO2	PDO1	PDO0
0.06	0.64	0.05	-0.30	-1.23	-1.10	-1.28	-2.31	-1.86	-2.13	-1.87	-1.17	-0.99
0.64	0.05	-0.30	-1.23	-1.10	-1.28	-2.31	-1.86	-2.13	-1.87	-1.17	-0.99	-0.34
0.05	-0.30	-1.23	-1.10	-1.28	-2.31	-1.86	-2.13	-1.87	-1.17	-0.99	-0.34	-1.29
	-1.23	-1.10	-1.28	-2.31	-1.86	-2.13	-1.87	-1.17	-0.99	-0.34	-1.29	-1.13
	-1.10	-1.28	-2.31	-1.86	-2.13	-1.87	-1.17	-0.99	-0.34	-1.29	-1.13	-1.23
	-1.28	-2.31	-1.86	-2.13	-1.87	-1.17	-0.99	-0.34	-1.29	-1.13	-1.23	-1.57
	1.32	1.08	0.32	0.06	-0.51	0.11	0.40	-0.46	0.54	-0.19	-0.41	-0.42



1.32	1.08	0.32	0.06	-0.51	0.11	0.40	-0.46	0.54	-0.19	-0.41	-0.42	-0.11
1.08	0.32	0.06	-0.51	0.11	0.40	-0.46	0.54	-0.19	-0.41	-0.42	-0.11	-0.13
0.32	0.06	-0.51	0.11	0.40	-0.46	0.54	-0.19	-0.41	-0.42	-0.11	-0.13	-0.20
0.06	-0.51	0.11	0.40	-0.46	0.54	-0.19	-0.41	-0.42	-0.11	-0.13	-0.20	0.23
-2.03	-2.28	-1.45	-0.85	-0.88	-0.50	0.19	-0.23	-1.01	-0.52	0.06	0.16	-0.21
-2.28	-1.45	-0.85	-0.88	-0.50	0.19	-0.23	-1.01	-0.52	0.06	0.16	-0.21	-0.27
-1.45	-0.85	-0.88	-0.50	0.19	-0.23	-1.01	-0.52	0.06	0.16	-0.21	-0.27	-0.35
1.76	1.52	0.94	0.31	0.70	1.25	0.71	0.85	0.77	0.16	0.53	0.82	1.26
1.52	0.94	0.31	0.70	1.25	0.71	0.85	0.77	0.16	0.53	0.82	1.26	1.57
0.94	0.31	0.70	1.25	0.71	0.85	0.77	0.16	0.53	0.82	1.26	1.57	1.65
0.31	0.70	1.25	0.71	0.85	0.77	0.16	0.53	0.82	1.26	1.57	1.65	1.47
0.82	1.26	1.57	1.65	1.47	0.81	0.18	-0.87	-1.05	-0.66	0.85	0.55	0.14
1.26	1.57	1.65	1.47	0.81	0.18	-0.87	-1.05	-0.66	0.85	0.55	0.14	0.07
1.57	1.65	1.47	0.81	0.18	-0.87	-1.05	-0.66	0.85	0.55	0.14	0.07	0.14
1.65	1.47	0.81	0.18	-0.87	-1.05	-0.66	0.85	0.55	0.14	0.07	0.14	0.55
1.47	0.81	0.18	-0.87	-1.05	-0.66	0.85	0.55	0.14	0.07	0.14	0.55	0.28
0.81	0.18	-0.87	-1.05	-0.66	0.85	0.55	0.14	0.07	0.14	0.55	0.28	0.19



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Lampiran 6. Data Sunspot Serial Number (SSN)

Sunspot Serial Number (SSN)												
SSN12	SSN11	SSN10	SSN9	SSN8	SSN7	SSN6	SSN5	SSN4	SSN3	SSN2	SSN1	SSN0
143.3	142.6	121.5	165.8	161.7	142.1	202.9	123.0	161.5	238.2	194.1	176.6	213.4
142.6	121.5	165.8	161.7	142.1	202.9	123.0	161.5	238.2	194.1	176.6	213.4	184.6
121.5	165.8	161.7	142.1	202.9	123.0	161.5	238.2	194.1	176.6	213.4	184.6	170.2
165.8	161.7	142.1	202.9	123.0	161.5	238.2	194.1	176.6	213.4	184.6	170.2	147.1
161.7	142.1	202.9	123.0	161.5	238.2	194.1	176.6	213.4	184.6	170.2	147.1	186.9
142.1	202.9	123.0	161.5	238.2	194.1	176.6	213.4	184.6	170.2	147.1	186.9	187.5
133.5	75.7	100.7	97.9	86.8	118.7	128.3	115.4	78.5	97.8	82.9	72.2	60.6
75.7	100.7	97.9	86.8	118.7	128.3	115.4	78.5	97.8	82.9	72.2	60.6	74.6
100.7	97.9	86.8	118.7	128.3	115.4	78.5	97.8	82.9	72.2	60.6	74.6	74.8
97.9	86.8	118.7	128.3	115.4	78.5	97.8	82.9	72.2	60.6	74.6	74.8	59.2
86.8	118.7	128.3	115.4	78.5	97.8	82.9	72.2	60.6	74.6	74.8	59.2	72.8
0.6	1.2	2.9	6.3	5.5	0.0	7.1	7.7	6.9	16.3	19.5	28.5	24.0
1.2	2.9	6.3	5.5	0.0	7.1	7.7	6.9	16.3	19.5	28.5	24.0	10.4
2.9	6.3	5.5	0.0	7.1	7.7	6.9	16.3	19.5	28.5	24.0	10.4	13.9
66.7	54.5	75.3	88.8	66.5	65.8	64.4	78.6	63.6	62.2	58.0	57.0	56.4
54.5	75.3	88.8	66.5	65.8	64.4	78.6	63.6	62.2	58.0	57.0	56.4	54.1
75.3	88.8	66.5	65.8	64.4	78.6	63.6	62.2	58.0	57.0	56.4	54.1	37.9
	66.5	65.8	64.4	78.6	63.6	62.2	58.0	57.0	56.4	54.1	37.9	51.5
	56.4	54.1	37.9	51.5	20.5	32.4	50.2	44.6	33.4	21.4	18.5	26.1
	54.1	37.9	51.5	20.5	32.4	50.2	44.6	33.4	21.4	18.5	26.1	26.4
	37.9	51.5	20.5	32.4	50.2	44.6	33.4	21.4	18.5	26.1	26.4	17.7



37.9	51.5	20.5	32.4	50.2	44.6	33.4	21.4	18.5	26.1	26.4	17.7	32.3
51.5	20.5	32.4	50.2	44.6	33.4	21.4	18.5	26.1	26.4	17.7	32.3	18.9
20.5	32.4	50.2	44.6	33.4	21.4	18.5	26.1	26.4	17.7	32.3	18.9	19.2

Lampiran 7. Data *El Nino Southern Oscillation (ENSO) (Nino 3.4)*

<i>El Nino Southern Oscillation (ENSO)</i>												
ENSO 12	ENSO 11	ENSO 10	ENSO 9	ENSO 8	ENSO 7	ENSO 6	ENSO 5	ENSO 4	ENSO 3	ENSO 2	ENSO 1	ENSO 0
-0.98	-0.83	-0.61	-0.38	-0.26	-0.25	0.03	0.10	0.05	-0.17	-0.10	-0.20	-0.40
-0.83	-0.61	-0.38	-0.26	-0.25	0.03	0.10	0.05	-0.17	-0.10	-0.20	-0.40	-0.07
-0.61	-0.38	-0.26	-0.25	0.03	0.10	0.05	-0.17	-0.10	-0.20	-0.40	-0.07	0.23
-0.38	-0.26	-0.25	0.03	0.10	0.05	-0.17	-0.10	-0.20	-0.40	-0.07	0.23	0.10
-0.26	-0.25	0.03	0.10	0.05	-0.17	-0.10	-0.20	-0.40	-0.07	0.23	0.10	0.16
-0.25	0.03	0.10	0.05	-0.17	-0.10	-0.20	-0.40	-0.07	0.23	0.10	0.16	0.30
1.19	0.77	0.59	0.03	-0.48	-0.17	0.21	0.03	0.24	0.50	0.40	0.32	0.17
0.77	0.59	0.03	-0.48	-0.17	0.21	0.03	0.24	0.50	0.40	0.32	0.17	0.14
0.59	0.03	-0.48	-0.17	0.21	0.03	0.24	0.50	0.40	0.32	0.17	0.14	-0.12
0.03	-0.48	-0.17	0.21	0.03	0.24	0.50	0.40	0.32	0.17	0.14	-0.12	0.06
-0.48	-0.17	0.21	0.03	0.24	0.50	0.40	0.32	0.17	0.14	-0.12	0.06	0.21
0.55	0.27	0.18	0.47	0.72	0.71	0.75	0.94	1.54	1.72	1.50	1.22	1.08
0.18	0.47	0.72	0.71	0.75	0.94	1.54	1.72	1.50	1.22	1.08	0.59	0.59
0.47	0.72	0.71	0.75	0.94	1.54	1.72	1.50	1.22	1.08	0.59	-0.17	-0.17
0.58	0.78	1.03	1.32	1.60	2.07	2.28	2.46	2.95	2.82	2.60	2.40	2.40
0.78	1.03	1.32	1.60	2.07	2.28	2.46	2.95	2.82	2.60	2.40	1.68	1.68



0.78	1.03	1.32	1.60	2.07	2.28	2.46	2.95	2.82	2.60	2.40	1.68	1.09
1.03	1.32	1.60	2.07	2.28	2.46	2.95	2.82	2.60	2.40	1.68	1.09	0.30
2.60	2.40	1.68	1.09	0.30	-0.12	-0.49	-0.54	-0.61	-0.73	-0.55	-0.41	-0.32
2.40	1.68	1.09	0.30	-0.12	-0.49	-0.54	-0.61	-0.73	-0.55	-0.41	-0.32	0.14
1.68	1.09	0.30	-0.12	-0.49	-0.54	-0.61	-0.73	-0.55	-0.41	-0.32	0.14	0.13
1.09	0.30	-0.12	-0.49	-0.54	-0.61	-0.73	-0.55	-0.41	-0.32	0.14	0.13	0.32
0.30	-0.12	-0.49	-0.54	-0.61	-0.73	-0.55	-0.41	-0.32	0.14	0.13	0.32	0.46
-0.12	-0.49	-0.54	-0.61	-0.73	-0.55	-0.41	-0.32	0.14	0.13	0.32	0.46	0.55



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Lampiran 8. Jumlah Kejadian Coral Bleaching Tahunan

Tahun	Kategori Bleaching		
	1	2	3
2000	0	0	0
2001	4	0	0
2002	36	11	2
2003	16	0	0
2004	46	5	0
2005	21	0	0
2006	17	0	0
2007	0	0	0
2008	5	0	0
2009	20	3	0
2010	42	0	0
2011	8	2	0
2012	19	0	0
2013	19	0	0
2014	0	0	0
2015	23	0	0
2016	38	14	3
2017	54	14	1
2018	18	0	0
2019	14	4	0

Lampiran 9. Jumlah Kejadian Coral Bleaching Bulanan

Bulan	Jumlah
Januari	59
Februari	93
Maret	107
April	92
Mei	68
Juni	21
Juli	0
Agustus	0
September	0
Oktober	0
November	0
Desember	19

