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**Lampiran 1. Data Observasi Kejadian *Coral Bleaching***

Kejadian	Lokasi	Waktu Kejadian	Latiude	Longitude	Severity Code
1	Titik 1	15/01/2006	24.512	-81.56	1
2		15/03/2006	24.512	-81.56	1
3	Titik 2	15/02/2006	24.452	-81.883	1
4		15/09/2005	24.452	-81.883	2
5	Titik 3	15/05/2003	24.9861	-80.4151	1
6		15/05/2003	24.9861	-80.4151	1
7	Titik 4	15/08/2005	24.836	-80.728	1
8		15/08/2005	24.836	-80.728	1
9		15/09/2005	24.836	-80.728	3
10		15/09/2005	24.836	-80.728	3
11		15/12/2005	24.836	-80.728	2
12		15/12/2005	24.836	-80.728	2
13	Titik 5	15/08/2005	24.897	-80.616	1
14		15/08/2005	24.897	-80.616	1
15		15/09/2005	24.897	-80.616	3
16		15/09/2005	24.897	-80.616	3
17		15/11/2005	24.897	-80.616	2
18		15/11/2005	24.897	-80.616	2
19	Titik 6	15/08/2001	24.6324	-81.1111	1
20		15/08/1998	24.6324	-81.1111	3
21	Titik 7	15/09/2005	24.623	-81.4	2
22		15/09/2005	24.623	-81.4	2
23	Titik 8	15/09/2005	24.445	-81.923	2
24		15/09/2005	24.445	-81.923	2
25	Titik 9	15/05/1999	25.1247	-80.308	2
26		15/09/1998	25.1247	-80.308	1
27	Titik 10	15/08/2005	25.119	-80.3	1
28		15/08/2005	25.119	-80.3	1
29		15/09/2005	25.119	-80.3	2
30		15/09/2005	25.119	-80.3	1
31		15/11/2005	25.119	-80.3	1
32	Titik 11	15/08/2005	25.041	-80.364	1
33		15/08/2005	25.041	-80.364	3
34	Titik 12	15/08/2005	25.7	-80.097	2
35		15/08/2005	25.7	-80.097	3
36	Titik 13	15/08/2005	25.034	-80.35	1
37		15/08/2005	25.034	-80.35	2

38		15/09/2005	25.034	-80.35	3
39		15/09/2005	25.034	-80.35	2
40		15/11/2005	25.034	-80.35	1
41		15/11/2005	25.034	-80.35	2
42	Titik 14	15/09/2006	25.32	-80.207	1
43		15/09/2006	25.32	-80.207	1
44	Titik 15	15/09/2005	25.007	-80.373	1
45		15/09/2005	25.007	-80.373	2
46	Titik 16	15/09/2005	25.005	-80.387	2
47		15/09/2005	25.005	-80.387	3
48	Titik 17	15/09/2005	25.495	-80.122	3
49		15/09/2005	25.495	-80.122	3
50	Titik 18	15/09/2005	25.497	-80.147	3
51		15/09/2005	25.497	-80.147	3
52		15/09/2005	25.497	-80.147	3
53	Titik 19	15/09/2005	25.398	-80.161	2
54		15/09/2005	25.398	-80.161	3
55	Titik 20	15/09/2005	25.587	-80.096	3
56		15/09/2005	25.587	-80.096	3
57		15/09/2005	25.587	-80.096	3
58	Titik 21	15/09/2005	25.468	-80.142	3
59		15/09/2005	25.468	-80.142	3
60	Titik 22	15/09/2005	25.497	-80.195	3
61		15/09/2005	25.497	-80.195	3
62	Titik 23	15/09/2005	25.447	-80.16	2
63		15/09/2005	25.447	-80.16	3
64		15/09/2005	25.447	-80.16	3
65	Titik 24	15/09/2005	25.486	-80.149	3
66		15/09/2005	25.486	-80.149	3



## Lampiran 2. Data Prediktor Lingkungan

*Distance to Shore, Exposure, Turbidity, Cyclone Frequency*

Kejadian	<i>Distance to Shore (m)</i>	<i>Exposure</i>	<i>Turbidity</i>	<i>Cyclone Frequency</i>
1	9284.61	2.0	0.0816	58.420547
2	9284.61	2.0	0.0816	58.420547
3	9184.33	2.0	0.0571	56.583448
4	9184.33	2.0	0.0571	56.583448
5	7877.72	2.0	0.0627	62.53734
6	7877.72	2.0	0.0627	62.53734
7	1490.84	1.0	0.18362467	60.12194
8	1490.84	1.0	0.18362467	60.12195
9	1490.84	1.0	0.18362467	60.12196
10	1490.84	1.0	0.18362467	60.12197
11	1490.84	1.0	0.18362467	60.12198
12	1490.84	1.0	0.18362467	60.12199
13	2573.48	1.0	0.110970385	60.12200
14	2573.48	1.0	0.110970385	60.12201
15	2573.48	1.0	0.110970385	60.12202
16	2573.48	1.0	0.110970385	60.12203
17	2573.48	1.0	0.110970385	60.12204
18	2573.48	1.0	0.110970385	60.12205
19	6164.48	2.0	0.138702258	62.593865
20	6164.48	2.0	0.138702258	62.593865
21	78.28	0.0	0.170544371	62.254993
22	78.28	0.0	0.170544371	62.254993
23	8967.57	2.0	0.0586	56.583448
24	8967.57	2.0	0.0586	56.583448
25	5972.86	2.0	0.124419399	57.046063
26	5972.86	2.0	0.124419399	57.046063
27	6999.8	2.0	0.124419399	57.046063
28	6999.8	2.0	0.124419399	57.046063
29	6999.8	2.0	0.124419399	57.046063
30	6999.8	2.0	0.124419399	57.046063
31	6999.8	2.0	0.124419399	57.046063
32	8417.66	1.0	0.0527	60.506878
33	8417.66	1.0	0.0527	60.506878
34	5590.73	2.0	0.106592126	52.578117

35	5590.73	2.0	0.106592126	52.578117
36	9953.16	2.0	0.0527	60.506878
37	9953.16	2.0	0.0527	60.506878
38	9953.16	2.0	0.0527	60.506878
39	9953.16	2.0	0.0527	60.506878
40	9953.16	2.0	0.0527	60.506878
41	9953.16	2.0	0.0527	60.506878
42	5067.12	2.0	0.109328382	55.992905
43	5067.12	2.0	0.109328382	55.992905
44	8908.58	2.0	0.0527	60.506878
45	8908.58	2.0	0.0527	60.506878
46	7920.23	2.0	0.100509211	60.506878
47	7920.23	2.0	0.100509211	60.506878
48	5743.49	2.0	0.0547	58.006904
49	5743.49	2.0	0.0547	58.006904
50	3236.25	1.0	0.149085149	58.006904
51	3236.25	1.0	0.149085149	58.006904
52	3236.25	1.0	0.149085149	58.006904
53	4678.1	1.0	0.0608	57.283209
54	4678.1	1.0	0.0608	57.283209
55	8860.29	2.0	0.0999	57.134161
56	8860.29	2.0	0.0999	57.134161
57	8860.29	2.0	0.0999	57.134161
58	4028.12	1.0	0.149085149	58.006904
59	4028.12	1.0	0.149085149	58.006904
60	569.36	0.0	0.14408958	48.898631
61	569.36	0.0	0.14408958	48.898631
62	3084.52	1.0	0.163577482	58.006904
63	3084.52	1.0	0.163577482	58.006904
64	3084.52	1.0	0.163577482	58.006904
65	2801.97	1.0	0.149085149	58.006904
66	2801.97	1.0	0.149085149	58.006904

*Depth, Climatological SST, Temperature Mean, Temperature Minimum*

Kejadian	Depth (m)	Clim SST	Temperature Mean	Temperature Minimum
1	10.7	296.66	299.87	293.13
2	10.3	298.73	299.87	293.13
3	9.5	297.98	299.84	293.35
4	10.2	300.97	299.84	293.35
5	2.7	301.56	299.85	293.73
6	3.7	301.56	299.85	293.73
7	3.2	302.57	299.78	292.48
8	3.2	302.57	299.78	292.48
9	3.2	300.55	299.78	292.48
10	3.2	300.55	299.78	292.48
11	3.5	296.27	299.78	292.48
12	3.2	296.27	299.78	292.48
13	2.8	302.53	299.79	291.73
14	2.8	302.53	299.79	291.73
15	2.8	300.68	299.79	291.73
16	2.8	300.68	299.79	291.73
17	2.8	297.61	299.79	291.73
18	2.8	297.61	299.79	291.73
19	3.0	302.59	299.87	292.95
20	3.0	302.82	299.87	292.95
21	15.0	300.65	299.7	291.22
22	15.0	300.65	299.7	291.22
23	6.5	300.93	299.82	293.35
24	8.8	300.93	299.82	293.35
25	8.5	301.11	299.82	293.95
26	8.5	301.59	299.82	293.95
27	3.2	302.49	299.84	293.86
28	3.2	302.49	299.84	293.86
29	3.2	300.95	299.84	293.86
30	3.2	300.95	299.84	293.86
31	3.2	298.09	299.84	293.86
32	3.0	302.51	299.88	293.8
33	3.0	302.51	299.88	293.8
34	8.5	302.32	299.81	294.45
35	8.5	302.32	299.81	294.45

36	6.8	302.5	299.9	293.78
37	6.8	302.5	299.9	293.78
38	6.8	301.0	299.9	293.78
39	6.8	301.0	299.9	293.78
40	6.1	298.21	299.9	293.78
41	6.8	298.21	299.9	293.78
42	2.6	300.62	299.7	294.39
43	3.9	300.62	299.7	294.39
44	10.0	300.95	299.84	293.77
45	10.0	300.95	299.84	293.77
46	12.0	300.95	299.84	293.77
47	10.6	300.95	299.84	293.77
48	3.0	300.82	299.83	294.39
49	3.0	300.82	299.83	294.39
50	3.0	300.82	299.83	294.39
51	3.0	300.82	299.83	294.39
52	3.0	300.82	299.83	294.39
53	3.0	300.71	299.76	294.33
54	3.0	300.71	299.76	294.33
55	3.0	300.85	299.85	294.51
56	3.0	300.85	299.85	294.51
57	3.0	300.85	299.85	294.51
58	3.0	300.72	299.83	294.48
59	3.0	300.72	299.83	294.48
60	5.0	300.41	299.68	294.35
61	5.0	300.41	299.68	294.35
62	3.0	300.56	299.73	294.44
63	3.0	300.56	299.73	294.44
64	3.0	300.56	299.73	294.44
65	3.0	300.72	299.83	294.48
66	3.0	300.72	299.83	294.48

*Temperature Maximum, Windspeed, SSTA, SSTA Standard Devination*

Kejadian	<i>Temperature Maximum</i>	<i>Windspeed</i>	SSTA	<i>SSTA Standard Deviation</i>
1	305.0	8.0	-1.08	1.0
2	305.0	4.0	0.81	1.0
3	305.47	4.0	-0.4	1.0
4	305.47	8.0	-0.12	1.0
5	305.16	4.0	1.17	1.0
6	305.16	4.0	1.17	1.0
7	306.85	4.0	0.58	1.0
8	306.85	4.0	0.58	1.0
9	306.85	7.0	0.58	1.0
10	306.85	7.0	0.58	1.0
11	306.85	5.0	-0.15	1.0
12	306.85	5.0	-0.15	1.0
13	306.82	4.0	0.76	1.0
14	306.82	4.0	0.76	1.0
15	306.82	7.0	0.69	1.0
16	306.82	7.0	0.69	1.0
17	306.82	6.0	-0.81	1.0
18	306.82	6.0	-0.81	1.0
19	305.44	3.0	-0.83	1.0
20	305.44	5.0	1.7	1.0
21	307.14	8.0	1.05	1.0
22	307.14	8.0	1.05	1.0
23	305.54	8.0	-0.56	1.0
24	305.54	8.0	-0.56	1.0
25	304.83	2.0	0.64	1.0
26	304.83	6.0	0.95	1.0
27	305.11	4.0	0.21	1.0
28	305.11	4.0	0.21	1.0
29	305.11	7.0	0.36	1.0
30	305.11	7.0	0.36	1.0
31	305.11	6.0	-0.27	1.0
32	304.94	4.0	0.2	1.0
33	304.94	4.0	0.2	1.0
34	305.07	3.0	1.17	1.0
35	305.07	3.0	1.17	1.0
36	305.52	4.0	0.11	1.0

37	305.52	4.0	0.11	1.0
38	305.52	7.0	0.25	1.0
39	305.52	7.0	0.25	1.0
40	305.52	6.0	-0.78	1.0
41	305.52	6.0	-0.78	1.0
42	305.13	4.0	0.36	1.0
43	305.13	4.0	0.36	1.0
44	305.26	7.0	-0.05	1.0
45	305.26	7.0	-0.05	1.0
46	305.26	7.0	-0.05	1.0
47	305.26	7.0	-0.05	1.0
48	305.02	8.0	-0.01	1.0
49	305.02	8.0	-0.01	1.0
50	305.02	8.0	-0.01	1.0
51	305.02	8.0	-0.01	1.0
52	305.02	8.0	-0.01	1.0
53	304.95	8.0	0.19	1.0
54	304.95	8.0	0.19	1.0
55	305.52	8.0	0.07	1.0
56	305.52	8.0	0.07	1.0
57	305.52	8.0	0.07	1.0
58	305.07	8.0	0.18	1.0
59	305.07	8.0	0.18	1.0
60	306.11	7.0	1.26	1.0
61	306.11	7.0	1.26	1.0
62	305.55	8.0	0.35	1.0
63	305.55	8.0	0.35	1.0
64	305.55	8.0	0.35	1.0
65	305.07	8.0	0.18	1.0
66	305.07	8.0	0.18	1.0

SSTA Mean, SSTA Minimum, SSTA Maximum, SSTA Frequency

Kejadian	SSTA Mean	SSTA Minimum	SSTA Maximum	SSTA Frequency
1	0.0	-4.387777777777778	2.65	1.0
2	0.0	-4.387777777777778	2.65	2.0
3	0.0	-4.268888888888889	3.46	1.0
4	0.0	-4.268888888888889	3.46	1.0
5	0.0	-3.757777777777778	4.02	8.0
6	0.0	-3.757777777777778	4.02	8.0
7	0.0	-4.985555555555556	4.33	4.0
8	0.0	-4.985555555555556	4.33	4.0
9	0.0	-4.985555555555556	4.33	4.0
10	0.0	-4.985555555555556	4.33	4.0
11	0.0	-4.985555555555556	4.33	5.0
12	0.0	-4.985555555555556	4.33	5.0
13	0.0	-4.732222222222222	4.3	2.0
14	0.0	-4.732222222222222	4.3	2.0
15	0.0	-4.732222222222222	4.3	2.0
16	0.0	-4.732222222222222	4.3	2.0
17	0.0	-4.732222222222222	4.3	2.0
18	0.0	-4.732222222222222	4.3	2.0
19	0.0	-4.323333333333333	3.86	3.0
20	0.0	-4.323333333333333	3.86	5.0
21	0.0	-5.17857142857143	4.85	6.0
22	0.0	-5.17857142857143	4.85	6.0
23	0.0	-3.911111111111111	3.64	1.0
24	0.0	-3.911111111111111	3.64	1.0
25	0.0	-3.615	3.75	7.0
26	0.0	-3.615	3.75	6.0
27	0.0	-3.607777777777778	4.06	2.0
28	0.0	-3.607777777777778	4.06	2.0
29	0.0	-3.607777777777778	4.06	3.0
30	0.0	-3.607777777777778	4.06	3.0
31	0.0	-3.607777777777778	4.06	3.0
32	0.0	-3.903333333333333	2.66	1.0
33	0.0	-3.903333333333333	2.66	1.0
34	0.0	-3.903333333333333	2.71	2.0
35	0.0	-3.903333333333333	2.71	2.0
36	0.0	-3.572222222222222	2.94	2.0

37	0.0	-3.572222222222222	2.94	2.0
38	0.0	-3.572222222222222	2.94	2.0
39	0.0	-3.572222222222222	2.94	2.0
40	0.0	-3.572222222222222	2.94	2.0
41	0.0	-3.572222222222222	2.94	2.0
42	0.0	-3.732222222222222	3.02	1.0
43	0.0	-3.732222222222222	3.02	1.0
44	0.0	-3.655555555555556	4.19	1.0
45	0.0	-3.655555555555556	4.19	1.0
46	0.0	-3.655555555555556	4.19	1.0
47	0.0	-3.655555555555556	4.19	1.0
48	0.0	-4.193333333333333	2.68	3.0
49	0.0	-4.193333333333333	2.68	3.0
50	0.0	-4.193333333333333	2.68	3.0
51	0.0	-4.193333333333333	2.68	3.0
52	0.0	-4.193333333333333	2.68	3.0
53	0.0	-4.296666666666667	3.26	2.0
54	0.0	-4.296666666666667	3.26	2.0
55	0.0	-3.771111111111111	2.56	3.0
56	0.0	-3.771111111111111	2.56	3.0
57	0.0	-3.771111111111111	2.56	3.0
58	0.0	-4.335555555555556	3.09	3.0
59	0.0	-4.335555555555556	3.09	3.0
60	0.0	-4.183333333333333	3.54	4.0
61	0.0	-4.183333333333333	3.54	4.0
62	0.0	-4.471111111111111	3.18	3.0
63	0.0	-4.471111111111111	3.18	3.0
64	0.0	-4.471111111111111	3.18	3.0
65	0.0	-4.335555555555556	3.09	3.0
66	0.0	-4.335555555555556	3.09	3.0



*SSTA Frequency Standard Deviation, SSTA Frequency Max, SSTA Frequency Mean, SSTA DHW*

Kejadian	<i>SSTA Frequency Standard Deviation</i>	<i>SSTA Frequency Max</i>	<i>SSTA Frequency Mean</i>	<i>SSTA DHW</i>
1	4.75	25.0	6.0	0.0
2	4.75	25.0	6.0	1.56
3	4.08	23.0	5.0	0.0
4	4.08	23.0	5.0	0.0
5	4.66	22.0	6.0	10.02
6	4.66	22.0	6.0	10.02
7	3.73	24.0	9.0	5.45
8	3.73	24.0	9.0	5.45
9	3.73	24.0	9.0	4.91
10	3.73	24.0	9.0	4.91
11	3.73	24.0	9.0	1.06
12	3.73	24.0	9.0	1.06
13	4.29	24.0	8.0	1.27
14	4.29	24.0	8.0	1.27
15	4.29	24.0	8.0	1.03
16	4.29	24.0	8.0	1.03
17	4.29	24.0	8.0	1.03
18	4.29	24.0	8.0	1.03
19	4.2	20.0	6.0	0.0
20	4.2	20.0	6.0	2.98
21	3.71	18.0	8.0	5.19
22	3.71	18.0	8.0	5.19
23	4.51	23.0	6.0	1.18
24	4.51	23.0	6.0	1.18
25	4.56	23.0	5.0	1.33
26	4.56	23.0	5.0	4.82
27	4.4	23.0	5.0	2.54
28	4.4	23.0	5.0	2.54
29	4.4	23.0	5.0	1.03
30	4.4	23.0	5.0	1.03
31	4.4	23.0	5.0	1.03
32	4.68	24.0	5.0	1.97

33	4.68	24.0	5.0	1.97
34	3.87	19.0	5.0	1.05
35	3.87	19.0	5.0	1.05
36	4.84	25.0	5.0	2.76
37	4.84	25.0	5.0	2.76
38	4.84	25.0	5.0	1.56
39	4.84	25.0	5.0	1.56
40	4.84	25.0	5.0	0.0
41	4.84	25.0	5.0	0.0
42	3.64	20.0	5.0	0.0
43	3.64	20.0	5.0	0.0
44	4.56	24.0	5.0	0.0
45	4.56	24.0	5.0	0.0
46	4.56	24.0	5.0	0.0
47	4.56	24.0	5.0	0.0
48	4.4	21.0	6.0	1.27
49	4.4	21.0	6.0	1.27
50	4.4	21.0	6.0	1.27
51	4.4	21.0	6.0	1.27
52	4.4	21.0	6.0	1.27
53	3.84	20.0	5.0	1.24
54	3.84	20.0	5.0	1.24
55	4.13	20.0	5.0	1.0
56	4.13	20.0	5.0	1.0
57	4.13	20.0	5.0	1.0
58	3.85	20.0	6.0	1.17
59	3.85	20.0	6.0	1.17
60	4.27	24.0	7.0	5.25
61	4.27	24.0	7.0	5.25
62	3.79	19.0	6.0	1.53
63	3.79	19.0	6.0	1.53
64	3.79	19.0	6.0	1.53
65	3.85	20.0	6.0	1.17
66	3.85	20.0	6.0	1.17

SSTA DHW *Standard Deviation*, SSTA DHW *Max*, SSTA DHW *Mean*, TSA

Kejadian	SSTA DHW <i>Standard Deviation</i>	SSTA DHW <i>Max</i>	SSTA DHW <i>Mean</i>	TSA
1	2.78	14.13	2.29	-747
2	2.78	14.13	2.29	-5.15
3	2.54	14.48	2.03	-6.97
4	2.54	14.48	2.03	-0.85
5	2.64	13.35	2.13	-1.75
6	2.64	13.35	2.13	-1.75
7	3.16	21.09	3.4	0.53
8	3.16	21.09	3.4	0.53
9	3.16	21.09	3.4	-0.52
10	3.16	21.09	3.4	-0.52
11	3.16	21.09	3.4	-6.59
12	3.16	21.09	3.4	-6.59
13	2.93	19.53	2.9	0.76
14	2.93	19.53	2.9	0.76
15	2.93	19.53	2.9	-0.22
16	2.93	19.53	2.9	-0.22
17	2.93	19.53	2.9	-4.9
18	2.93	19.53	2.9	-4.9
19	2.67	14.2	2.33	-0.88
20	2.67	14.2	2.33	1.68
21	3.38	20.8	3.47	0.07
22	3.38	20.8	3.47	0.07
23	2.75	17.1	2.14	-1.32
24	2.75	17.1	2.14	-1.32
25	2.38	12.59	1.93	-2.61
26	2.38	12.59	1.93	0.42
27	2.4	15.85	1.95	0.22
28	2.4	15.85	1.95	0.22
29	2.4	15.85	1.95	-0.28
30	2.4	15.85	1.95	-0.28
31	2.4	15.85	1.95	-3.66
32	2.49	14.14	1.87	0.21
33	2.49	14.14	1.87	0.21
34	2.31	10.26	1.81	1.18
35	2.31	10.26	1.81	1.18

36	2.56	14.62	1.89	0.11
37	2.56	14.62	1.89	0.11
38	2.56	14.62	1.89	-0.37
39	2.56	14.62	1.89	-0.37
40	2.56	14.62	1.89	-4.08
41	2.56	14.62	1.89	-4.08
42	2.52	16.65	1.91	-0.4
43	2.52	16.65	1.91	-0.4
44	2.61	14.56	1.99	-0.7
45	2.61	14.56	1.99	-0.7
46	2.61	14.56	1.99	-0.7
47	2.61	14.56	1.99	-0.7
48	2.46	11.18	2.02	-0.76
49	2.46	11.18	2.02	-0.76
50	2.46	11.18	2.02	-0.76
51	2.46	11.18	2.02	-0.76
52	2.46	11.18	2.02	-0.76
53	2.59	18.43	1.98	-0.61
54	2.59	18.43	1.98	-0.61
55	2.42	10.8	1.9	-0.64
56	2.42	10.8	1.9	-0.64
57	2.42	10.8	1.9	-0.64
58	2.57	16.73	2.04	-0.66
59	2.57	16.73	2.04	-0.66
60	3.08	19.08	2.6	0.22
61	3.08	19.08	2.6	0.22
62	2.76	19.09	2.31	-0.57
63	2.76	19.09	2.31	-0.57
64	2.76	19.09	2.31	-0.57
65	2.57	16.73	2.04	-0.66
66	2.57	16.73	2.04	-0.66

TSA Standard Deviation, TSA Minimum, TSA Maximum, TSA Mean

Kejadian	TSA Standard Deviation	TSA Minimum	TSA Maximum	TSA Mean
1	2.52	-10.13	1.74	-3.38
2	2.52	-10.13	1.74	-3.38
3	2.5	-9.88	2.24	-3.38
4	2.5	-9.88	2.24	-3.38
5	2.37	-9.28	2.13	-3.15
6	2.37	-9.28	2.13	-3.15
7	2.83	-11.05	3.3	-3.75
8	2.83	-11.05	3.3	-3.75
9	2.83	-11.05	3.3	-3.75
10	2.83	-11.05	3.3	-3.75
11	2.83	-11.05	3.3	-3.75
12	2.83	-11.05	3.3	-3.75
13	2.62	-11.59	3.5	-3.52
14	2.62	-11.59	3.5	-3.52
15	2.62	-11.59	3.5	-3.52
16	2.62	-11.59	3.5	-3.52
17	2.62	-11.59	3.5	-3.52
18	2.62	-11.59	3.5	-3.52
19	2.53	-10.31	2.16	-3.39
20	2.53	-10.31	2.16	-3.39
21	2.87	-12.19	3.72	-3.71
22	2.87	-12.19	3.72	-3.71
23	2.51	-9.88	2.3	-3.4
24	2.51	-9.88	2.3	-3.4
25	2.35	-9.11	1.75	-3.24
26	2.35	-9.11	1.75	-3.24
27	2.36	-9.17	2.06	-3.19
28	2.36	-9.17	2.06	-3.19
29	2.36	-9.17	2.06	-3.19
30	2.36	-9.17	2.06	-3.19
31	2.36	-9.17	2.06	-3.19
32	2.31	-9.25	1.88	-3.16
33	2.31	-9.25	1.88	-3.16
34	2.25	-8.43	2.18	-3.07
35	2.25	-8.43	2.18	-3.07
36	2.3	-9.25	2.49	-3.12

37	2.3	-9.25	2.49	-3.12
38	2.3	-9.25	2.49	-3.12
39	2.3	-9.25	2.49	-3.12
40	2.3	-9.25	2.49	-3.12
41	2.3	-9.25	2.49	-3.12
42	2.38	-8.64	2.08	-3.33
43	2.38	-8.64	2.08	-3.33
44	2.37	-9.27	2.21	-3.2
45	2.37	-9.27	2.21	-3.2
46	2.37	-9.27	2.21	-3.2
47	2.37	-9.27	2.21	-3.2
48	2.36	-8.65	1.96	-3.21
49	2.36	-8.65	1.96	-3.21
50	2.36	-8.65	1.96	-3.21
51	2.36	-8.65	1.96	-3.21
52	2.36	-8.65	1.96	-3.21
53	2.39	-8.75	1.87	-3.31
54	2.39	-8.75	1.87	-3.31
55	2.29	-8.48	2.51	-3.14
56	2.29	-8.48	2.51	-3.14
57	2.29	-8.48	2.51	-3.14
58	2.38	-8.63	1.94	-3.28
59	2.38	-8.63	1.94	-3.28
60	2.56	-8.92	2.83	-3.58
61	2.56	-8.92	2.83	-3.58
62	2.47	-8.75	2.35	-3.45
63	2.47	-8.75	2.35	-3.45
64	2.47	-8.75	2.35	-3.45
65	2.38	-8.63	1.94	-3.28
66	2.38	-8.63	1.94	-3.28

*TSA Frequency, TSA Frequency Standard Deviation, TSA Frequency Max, TSA Frequency Max*

Kejadian	TSA Frequency	TSA Frequency Standard Deviation	TSA Frequency Max	TSA Frequency Mean
1	1.0	1.02	5.0	0.0
2	1.0	1.02	5.0	0.0
3	0.0	1.12	5.0	0.0
4	0.0	1.12	5.0	0.0
5	1.0	1.22	5.0	0.0
6	1.0	1.22	5.0	0.0
7	3.0	1.22	5.0	1.0
8	3.0	1.22	5.0	1.0
9	2.0	1.22	5.0	1.0
10	2.0	1.22	5.0	1.0
11	2.0	1.22	5.0	1.0
12	2.0	1.22	5.0	1.0
13	1.0	1.25	6.0	1.0
14	1.0	1.25	6.0	1.0
15	0.0	1.25	6.0	1.0
16	0.0	1.25	6.0	1.0
17	0.0	1.25	6.0	1.0
18	0.0	1.25	6.0	1.0
19	0.0	0.96	5.0	0.0
20	1.0	0.96	5.0	0.0
21	3.0	1.21	5.0	1.0
22	3.0	1.21	5.0	1.0
23	1.0	1.02	4.0	0.0
24	1.0	1.02	4.0	0.0
25	2.0	0.92	4.0	0.0
26	2.0	0.92	4.0	0.0
27	0.0	1.04	4.0	0.0
28	0.0	1.04	4.0	0.0
29	0.0	1.04	4.0	0.0
30	0.0	1.04	4.0	0.0
31	0.0	1.04	4.0	0.0
32	1.0	1.2	6.0	0.0
33	1.0	1.2	6.0	0.0

34	0.0	0.71	3.0	0.0
35	0.0	0.71	3.0	0.0
36	1.0	1.32	8.0	0.0
37	1.0	1.32	8.0	0.0
38	1.0	1.32	8.0	0.0
39	1.0	1.32	8.0	0.0
40	1.0	1.32	8.0	0.0
41	1.0	1.32	8.0	0.0
42	0.0	0.67	2.0	0.0
43	0.0	0.67	2.0	0.0
44	0.0	1.32	7.0	0.0
45	0.0	1.32	7.0	0.0
46	0.0	1.32	7.0	0.0
47	0.0	1.32	7.0	0.0
48	1.0	1.05	5.0	0.0
49	1.0	1.05	5.0	0.0
50	1.0	1.05	5.0	0.0
51	1.0	1.05	5.0	0.0
52	1.0	1.05	5.0	0.0
53	0.0	0.94	4.0	0.0
54	0.0	0.94	4.0	0.0
55	1.0	0.98	4.0	0.0
56	1.0	0.98	4.0	0.0
57	1.0	0.98	4.0	0.0
58	0.0	0.91	3.0	0.0
59	0.0	0.91	3.0	0.0
60	2.0	0.96	4.0	0.0
61	2.0	0.96	4.0	0.0
62	0.0	0.89	4.0	0.0
63	0.0	0.89	4.0	0.0
64	0.0	0.89	4.0	0.0
65	0.0	0.91	3.0	0.0
66	0.0	0.91	3.0	0.0



TSA DHW, TSA DHW *Standard Deviation*, TSA DHW *Max*, TSA DHW *Mean*

Kejadian	TSA DHW	TSA DHW <i>Standard Deviation</i>	TSA DHW <i>Max</i>	TSA DHW <i>Mean</i>
1	0.0	0.68	6.76	0.22
2	0.0	0.68	6.76	0.22
3	0.0	0.81	7.03	0.23
4	0.0	0.81	7.03	0.23
5	0.0	0.77	5.73	0.22
6	0.0	0.77	5.73	0.22
7	3.16	1.02	7.81	0.37
8	3.16	1.02	7.81	0.37
9	3.16	1.02	7.81	0.37
10	3.16	1.02	7.81	0.37
11	0.0	1.02	7.81	0.37
12	0.0	1.02	7.81	0.37
13	0.0	1.02	8.04	0.36
14	0.0	1.02	8.04	0.36
15	0.0	1.02	8.04	0.36
16	0.0	1.02	8.04	0.36
17	0.0	1.02	8.04	0.36
18	0.0	1.02	8.04	0.36
19	0.0	0.7	4.76	0.25
20	0.0	0.7	4.76	0.25
21	4.46	1.07	8.73	0.46
22	4.46	1.07	8.73	0.46
23	1.18	0.74	5.96	0.23
24	1.18	0.74	5.96	0.23
25	0.0	0.67	5.08	0.2
26	2.63	0.67	5.08	0.2
27	0.0	0.73	4.46	0.23
28	0.0	0.73	4.46	0.23
29	0.0	0.73	4.46	0.23
30	0.0	0.73	4.46	0.23
31	0.0	0.73	4.46	0.23
32	1.89	0.75	6.53	0.19
33	1.89	0.75	6.53	0.19
34	0.0	0.56	3.59	0.14
35	0.0	0.56	3.59	0.14
36	1.47	0.89	9.73	0.21

37	1.47	0.89	9.73	0.21
38	1.47	0.89	9.73	0.21
39	1.47	0.89	9.73	0.21
40	0.0	0.89	9.73	0.21
41	0.0	0.89	9.73	0.21
42	0.0	0.52	3.58	0.16
43	0.0	0.52	3.58	0.16
44	0.0	0.88	9.88	0.21
45	0.0	0.88	9.88	0.21
46	0.0	0.88	9.88	0.21
47	0.0	0.88	9.88	0.21
48	1.27	0.75	5.97	0.2
49	1.27	0.75	5.97	0.2
50	1.27	0.75	5.97	0.2
51	1.27	0.75	5.97	0.2
52	1.27	0.75	5.97	0.2
53	0.0	0.65	4.61	0.22
54	0.0	0.65	4.61	0.22
55	1.0	0.65	4.57	0.19
56	1.0	0.65	4.57	0.19
57	1.0	0.65	4.57	0.19
58	0.0	0.65	4.42	0.17
59	0.0	0.65	4.42	0.17
60	3.86	0.78	4.84	0.23
61	3.86	0.78	4.84	0.23
62	0.0	0.61	5.15	0.18
63	0.0	0.61	5.15	0.18
64	0.0	0.61	5.15	0.18
65	0.0	0.65	4.42	0.17
66	0.0	0.65	4.42	0.17

#### Lampiran 4. Perbandingan Data Observasi dan Data Prediksi Tingkat

##### Keparahan *Coral Bleaching*

Kejadian	Observasi ( $Y$ )	Prediksi ( $\hat{Y}$ )
1	1	1
2	1	1
3	1	1
4	2	2
5	1	1
6	1	1
7	1	2
8	1	2
9	3	3
10	3	3
11	2	2
12	2	2
13	1	1
14	1	1
15	3	2
16	3	2
17	2	2
18	2	2
19	1	1
20	3	2
21	2	2
22	2	2
23	2	2
24	2	2
25	2	1
26	1	2
27	1	1
28	1	1
29	2	2
30	1	2
31	1	1
32	1	2
33	3	2

34	2	2
35	3	2
36	1	2
37	2	2
38	3	2
39	2	2
40	1	1
41	2	1
42	1	2
43	1	2
44	1	2
45	2	2
46	2	2
47	3	2
48	3	3
49	3	3
50	3	3
51	3	3
52	3	3
53	2	2
54	3	2
55	3	3
56	3	3
57	3	3
58	3	3
59	3	3
60	3	3
61	3	3
62	2	3
63	3	3
64	3	3
65	3	3
66	3	3

### Lampiran 3. *Script* pengolahan data pada *Software Matlab*

```
%calculate persentasi kebenaran model stepwise bleaching GBR dan
komponen PCA
%halmar halide, hydrometeorologygeophysics dept. fmipa unhas
%data skripsi Mhuji
clear
clc
load floridakeys.txt % severity code, lag-predictors (DtS,
Exposure, Turbidity, Cyclone_Freq, Depth, Clim_SST, Temp_Mean,
Temp_Min, Temp_Max, Winspeed, SSTA, SSTA_STD, SSTA_Mean, SSTA_Min,
SSTA_Max, SSTA_Freq, SSTA_Freq_STD, SSTA_Freq_Max, SSTA_Freq_Mean,
SSTA_DHW, SSTA_DHW_STD, SSTA_DHW_Max, SSTA_DHW_Mean, TSA, TSA_STD,
TSA_Min, TSA_Max, TSA_Mean, TSA_Freq, TSA_Freq_STD, TSA_Freq_Max,
TSA_Freq_Mean, TSA_DHW, TSA_DHW_STD, TSA_DHW_Max, TSA_DHW_Mean), 1
output (bleaching category: 1-3)
factors=floridakeys(:,2:37); %
bleach=floridakeys(:,1); %dibuat pada kolom pertama
mdl = stepwiselm(factors,bleach,'PEnter',0.05); %
%exitt
% output
% Linear regression model:
%      y ~ 1 + x10 + x19 + x24 + x6*x15
%
% Estimated Coefficients:
%
%           Estimate      SE      tStat      pValue
%           _____  _____  _____  _____
% (Intercept)    -213.18    103.87    -2.0523    0.044589
% x6(clim SST)    0.71359    0.34436    2.0722    0.042623
% x10(winspeed)   0.23991    0.055361   4.3335    5.7918e-05
% x15(SSTA Max)   70.152     21.459    3.2691    0.0018027
% x19(SSTA FM)    0.21598    0.069761   3.096     0.0029995
% x24(TSA)        0.25034    0.11278    2.2197    0.030295
% x6:x15         -0.23508    0.071343   -3.295    0.0016682
%
%
% Number of observations: 66, Error degrees of freedom: 59
% Root Mean Squared Error: 0.582
% R-squared: 0.635, Adjusted R-Squared: 0.598
% F-statistic vs. constant model: 17.1, p-value = 2.43e-11
tetapan=-213.18;
k_x6=0.71359;
k_x10=0.23991;
k_x15=70.152;
k_x19=0.21598;
k_x24=0.25034;
k_x6x15=-0.23508;
```

```

sevcod=[1;1;1;2;1;1;1;1;3;3;2;2;1;1;3;3;2;2;1;3;2;2;2;2;2;1;1;1;2;1;
1;1;3;2;3;1;2;3;2;1;2;1;1;1;2;2;3;3;3;3;3;3;2;3;3;3;3;3;2;3;3;
3;3]
x6=floridakeys(:,7);
x10=floridakeys(:,11);
x15=floridakeys(:,16);
x19=floridakeys(:,20);
x24=floridakeys(:,25);
x6x15=x6.*x15;

x6z=x6-mean(x6)./std(x6);
x10z=x10-mean(x10)./std(x10);
x15z=x15-mean(x15)./std(x15);
x19z=x19-mean(x19)./std(x19);
x24z=x24-mean(x24)./std(x24);
x6x15z=x6x15-mean(x6x15)./std(x6x15);
sevcod1=(sevcod-mean(sevcod))./std(sevcod)
X_std=[ones(length(x6),1) x6, x10, x15, x19, x24];

bleach_obs=bleach;
bleach_mod=round(tetapan+k_x10.*x10+k_x19.*x19+k_x24.*x24+k_x6.*x6+k
_x15.*x15+k_x6x15.*x6x15);
[m,n]=size(bleach_mod);

%utk menyesuaikan nilai prediksi bleaching yg >3 atau <1
for i=1:m
    if bleach_mod(i)>=3x6z
        bleach_mod(i)=3;
    else if bleach_mod(i)<=1
        bleach_mod(i)=1;
    else
        bleach_mod(i)=bleach_mod(i);
    end
end
end

%exitt

%contingency tabel or confusion matrix
C = confusionmat(bleach_obs,bleach_mod,'Order',[1 2 3]); %low=21
med=19 high=26 florida keys
%    12    9    0
%    2    16   1
%    0    8   18
confusionmat=[12,9,0;2,16,1;0,8,18]
numCategories = size(confusionmat, 1);
totalCorrect = sum(diag(confusionmat));
totalIncorrect = sum(confusionmat(:)) - totalCorrect;

```

```

expectedCorrect = sum(sum(confusionmat, 2) .* sum(confusionmat, 1))
/ sum(confusionmat(:));
HeidkeSS = (totalCorrect - expectedCorrect) / (sum(confusionmat(:))
- expectedCorrect);
disp(HeidkeSS);%Heidke SS 0.5512
%exitt

diagonal=sum(diag(C));
PC=100.*(diagonal./m); % 69.6970 percent-correct utk kasus Florida
hasil_regression=[bleach_obs,bleach_mod];
pearmse1(bleach_mod,bleach_obs)
%exitt

%standardized variabels
Y=sevcod1;X=X_std;
[B,BINT] = regress(Y,X);
%exitt
%standardized coeffs B, strength:
%A standardized beta coefficient compares the strength of the effect
of each individual independent
%variable to the dependent variable. The higher the absolute value
of the beta coefficient, the stronger the effect.

% 0.0039      climSST      5
% 0.2421      windspeed    2
% -0.5184     SSTAmix      1
% 0.2211     SSTAfm      3
% 0.1046     TSA          4

load diagramtebardata.txt
obs=diagramtebardata(:,1);
preb=diagramtebardata(:,2);

satu=ones(size(obs));

[m,n]=size(obs);
time=1:m;

%exitt

t=1:m;

```

```

data=obs;
tetha=45;
R=[cosd(tetha) sind(tetha);-sind(tetha) cosd(tetha)];

p1s=preb;
dp1s=[obs(t) p1s(t)];
nip1s=(R*dp1s');
jp1s=nip1s(:,2);
jrk_p1s=norm(jp1s);
sjp1s=std(jp1s);
RMSE_preb = sqrt(mean((p1s(t)-obs(t)).^2));
korr_preb=xcorr(p1s(t),obs(t),'coeff');
k_preb=korr_preb(m);
%exitt

axis('square')
xa=min(obs):max(obs);
ya=min(obs):max(obs);

figure (1);
axis('square');
plot(data,preb,'o','LineWidth',2.5),hold on
plot(xa,ya,'r:','LineWidth',2),hold off
xlabel('Data Observasi Coral Bleaching')
ylabel('Data Prediksi Coral Bleaching')
titleObj = title('Diagram Tebar Data Observasi dan Data Prediksi')
text(1.2,2.4,'Prediksi')
text(1.2,2.2,'r =0.7596 ')
axis([min(obs) max(obs) min(obs) max(obs)])
yticks(1:1:3)
xticks(1:1:3)
print -dtiff korelasi1.tif

load diagramtebardata.txt
obs=diagramtebardata(:,1);
preb=diagramtebardata(:,2);

satu=ones(size(obs));

[m,n]=size(obs);

%exitt

```



```

axis('square')
figure (2);
axis('square');
plot(preb,'o'),hold on
plot(obs,'*'),hold on
xlabel('Kejadian Coral Bleaching')
ylabel('Kategori Coral Bleaching')
title('Kesesuaian Data Observasi dan Data Prediksi Coral Bleaching')
text(1.2,3.8,'Prediktor SSTAmx, windspeed, SSTAm, TSA, climSST')
text(1.2,3.6,'r =0.7596 ')
legend('observasi','prediksi')
axis([0,70,0,4])
yticks (1:1:3)
xticks (1:1:66)
xtickangle(90);% Mengatur sudut kemiringan teks pada xticks menjadi
90 derajat (tegak)
print -dtiff klascb.tif

```