

# Results manual clustering

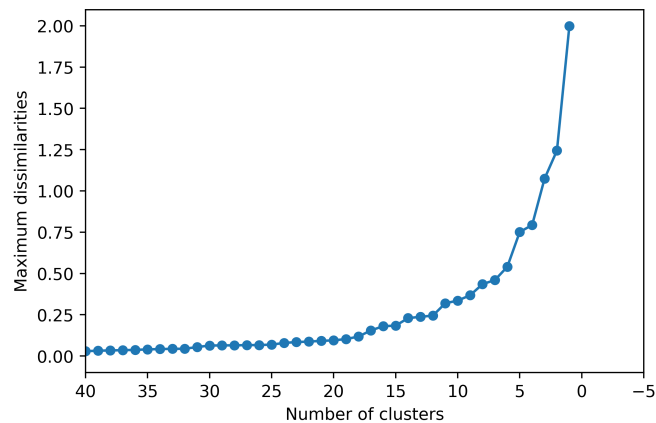
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Data source: BOAT data - British ribs  
Type of Clustering: Conventional clustering  
Chosen hours: from 2 to 7  
Chosen days: from 25/07/2018 to 06/08/2018  
The coordinates chosen are: []  
The date filters chosen are: ['20180729', '20180801']  
Elapsed time to load 1 files: 0.922 s  
Dataset has 117 elements  
Elapsed time to normalize data with time average speed was: 0.001 s  
Elapsed time to normalize data with space average speed was: 0.021 s

## 1 Manual clustering infos

Generation of complete dendrogram:  
The hierarchical clustering algorithm execution time was 5.007 s



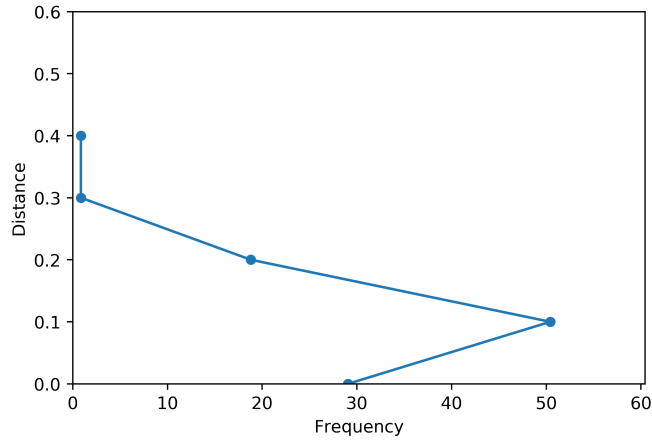
Hierarchical clustering for k values chosen:  
The hierarchical clustering algorithm execution time was 3.813 s

## 2 K-means infos

The chosen k are: [6]

### 3 Manual clustering results, k = 6

#### 3.1 Threshold



The threshold chosen is: 0.40

Execution time of k-means: 0.292 s  
 Number of iterations in k-means: 7  
 Elements that have changed cluster: 40  
 Number of outliers with distance greater than threshold: 1  
 Number of outliers with their own cluster: 0

Number of clusters: 6

Table 1: Averages of meteorological parameters (1)

Cluster	TWS	TWD	Pressure	Temp.	Temp. at ground	Humidity	Precipitation
1	10.81	191.72	1006.17	28.27	29.46	84.30	0.01
2	8.73	202.77	1006.37	28.41	29.68	84.08	0.03
3	10.98	66.79	1008.59	27.34	28.81	68.07	0.11
4	7.24	215.61	1005.85	28.54	29.93	85.37	0.05
5	8.77	83.29	1008.92	27.55	28.92	77.49	0.15
6	6.09	115.15	1008.79	27.89	29.36	84.22	0.17
***7***	3.12	157.13	1003.11	28.35	29.40	89.22	0.00

Table 2: Averages of meteorological parameters (2)

Cluster	Low cloud coverage	Medium cc.	High cc.	Total cc.	Gust	Land cover surface
1	0.04	0.00	2.27	2.28	12.58	0.12
2	0.07	0.00	5.35	5.35	10.26	0.12
3	4.99	0.00	5.86	10.15	11.93	0.12
4	0.27	0.00	13.60	13.71	9.37	0.12
5	2.90	0.00	10.05	11.23	8.50	0.12
6	1.27	0.01	11.97	12.10	7.59	0.12
***7***	0.00	0.00	0.87	0.87	10.68	0.12

Cluster	N° elements	Relative freq	Min temp	Avg temp	Max temp	Min humid.	Avg humid.	Max humid.
1	32	27.35	27.25	28.27	29.36	77.97	84.30	89.22
2	31	26.50	27.18	28.41	29.10	78.74	84.08	88.88
3	25	21.37	26.44	27.34	27.98	60.00	68.07	80.22
4	17	14.53	27.58	28.54	29.04	82.83	85.37	89.43
5	7	5.98	27.11	27.55	27.98	72.44	77.49	82.44
6	4	3.42	27.59	27.89	28.33	83.52	84.22	86.24
***7***	1	0.85	28.35	28.35	28.35	89.22	89.22	89.22

Cluster	Min precipit	Avg precipit	Max Precipit	Min pressure	Avg pressure	Max pressure
1	0.000	0.007	0.203	1003.112	1006.168	1008.879
2	0.000	0.027	0.226	1003.164	1006.368	1008.522
3	0.083	0.108	0.159	1006.808	1008.587	1010.164
4	0.000	0.048	0.220	1003.066	1005.847	1008.513
5	0.128	0.145	0.159	1008.795	1008.924	1009.040
6	0.159	0.174	0.203	1008.621	1008.786	1009.021
***7***	0.000	0.000	0.000	1003.112	1003.112	1003.112

Cluster	Min Gust	Avg Gust	Max Gust	Min HCC	Avg HCC	Max HCC	Min LCC	Avg LCC	Max LCC
1	5.195	12.582	20.865	0.000	2.270	35.545	0.000	0.045	1.075
2	5.195	10.264	20.983	0.000	5.349	72.586	0.000	0.073	1.063
3	4.843	11.928	17.404	0.000	5.862	43.008	0.000	4.992	22.380
4	6.932	9.373	11.824	0.000	13.599	72.586	0.000	0.270	1.063
5	4.843	8.503	12.438	0.000	10.053	27.233	2.010	2.900	3.849
6	5.461	7.588	8.350	0.943	11.973	17.646	1.075	1.268	1.375
***7***	10.683	10.683	10.683	0.873	0.873	0.873	0.000	0.000	0.000

Cluster	Min LCS	Avg LCS	Max LCS	Min MCC	Avg MCC	Max MCC
1	0.120	0.120	0.120	0.000	0.000	0.000
2	0.120	0.120	0.120	0.000	0.000	0.000
3	0.120	0.120	0.120	0.000	0.000	0.000
4	0.120	0.120	0.120	0.000	0.000	0.000
5	0.120	0.120	0.120	0.000	0.000	0.000
6	0.120	0.120	0.120	0.000	0.005	0.020
***7***	0.120	0.120	0.120	0.000	0.000	0.000

Cluster	Min TG	Avg TG	Max TG	Min TCC	Avg TCC	Max TCC
1	28.427	29.459	30.174	0.000	2.282	35.545
2	28.375	29.683	30.311	0.000	5.350	72.586
3	28.253	28.812	29.333	0.000	10.151	43.008
4	28.375	29.935	30.311	0.000	13.713	72.586
5	28.660	28.924	29.295	2.010	11.228	27.233
6	28.546	29.357	30.178	1.434	12.100	17.646
***7***	29.401	29.401	29.401	0.873	0.873	0.873

Cluster	Min speed	Avg speed	Max speed	Min direction	Avg direction	Max direction
1	3.267	10.812	16.867	167.498	191.716	204.000
2	4.450	8.733	17.567	183.810	202.771	218.666
3	6.417	10.978	15.900	46.167	66.792	89.500
4	4.733	7.235	9.767	196.663	215.614	238.322
5	7.317	8.767	10.700	58.000	83.294	114.633
6	3.350	6.088	8.500	79.837	115.154	191.337
***7***	2.600	3.122	3.700	124.411	157.131	192.000

Table 3: Ranges of TEMPERATURE (in °C):

Cluster	[26.441, 27.026)	[27.026, 27.610)	[27.610, 28.194)	[28.194, 28.778)	[28.778, 29.362]
1	0.00%	25.00%	3.12%	59.38%	12.50%
2	0.00%	16.13%	3.23%	54.84%	25.81%
3	24.00%	44.00%	32.00%	0.00%	0.00%
4	0.00%	5.88%	5.88%	64.71%	23.53%
5	0.00%	42.86%	57.14%	0.00%	0.00%
6	0.00%	50.00%	25.00%	25.00%	0.00%
***7***	0.00%	0.00%	0.00%	100.00%	0.00%

Table 4: Ranges of HUMIDITY (in %):

Cluster	[60.000, 65.885)	[65.885, 71.770)	[71.770, 77.655)	[77.655, 83.540)	[83.540, 89.425]
1	0.00%	0.00%	0.00%	53.12%	46.88%
2	0.00%	0.00%	0.00%	48.39%	51.61%
3	48.00%	16.00%	20.00%	16.00%	0.00%
4	0.00%	0.00%	0.00%	23.53%	76.47%
5	0.00%	0.00%	42.86%	57.14%	0.00%
6	0.00%	0.00%	0.00%	50.00%	50.00%
***7***	0.00%	0.00%	0.00%	0.00%	100.00%

Table 5: Ranges of PRECIPITATION (in mm/h):

Cluster	[0.000, 0.045)	[0.045, 0.090)	[0.090, 0.135)	[0.135, 0.180)	[0.180, 0.226]
1	96.88%	0.00%	0.00%	0.00%	3.12%
2	87.10%	0.00%	0.00%	3.23%	9.68%
3	0.00%	48.00%	36.00%	16.00%	0.00%
4	76.47%	0.00%	0.00%	5.88%	17.65%
5	0.00%	0.00%	42.86%	57.14%	0.00%
6	0.00%	0.00%	0.00%	75.00%	25.00%
***7***	100.00%	0.00%	0.00%	0.00%	0.00%

Table 6: Ranges of PRESSURE (in hPa):

Cluster	[1003, 1004)	[1004, 1006)	[1006, 1007)	[1007, 1009)	[1009, 1010]
1	6.25%	34.38%	34.38%	21.88%	3.12%
2	12.90%	25.81%	25.81%	35.48%	0.00%
3	0.00%	0.00%	24.00%	24.00%	52.00%
4	29.41%	17.65%	29.41%	23.53%	0.00%
5	0.00%	0.00%	0.00%	0.00%	100.00%
6	0.00%	0.00%	0.00%	50.00%	50.00%
***7***	100.00%	0.00%	0.00%	0.00%	0.00%

Table 7: Ranges of GUST (in knots):

Cluster	[4.843, 8.071)	[8.071, 11.299)	[11.299, 14.527)	[14.527, 17.755)	[17.755, 20.983]
1	9.38%	43.75%	18.75%	9.38%	18.75%
2	29.03%	35.48%	25.81%	3.23%	6.45%
3	16.00%	32.00%	4.00%	48.00%	0.00%
4	35.29%	52.94%	11.76%	0.00%	0.00%
5	57.14%	28.57%	14.29%	0.00%	0.00%
6	25.00%	75.00%	0.00%	0.00%	0.00%
***7***	0.00%	100.00%	0.00%	0.00%	0.00%

Table 8: Ranges of HIGH CLOUD COVERAGE (in %):

Cluster	[0.000, 14.517)	[14.517, 29.034)	[29.034, 43.552)	[43.552, 58.069)	[58.069, 72.586]
1	96.88%	0.00%	3.12%	0.00%	0.00%
2	87.10%	6.45%	3.23%	0.00%	3.23%
3	84.00%	8.00%	8.00%	0.00%	0.00%
4	82.35%	0.00%	0.00%	0.00%	17.65%
5	71.43%	28.57%	0.00%	0.00%	0.00%
6	50.00%	50.00%	0.00%	0.00%	0.00%
***7***	100.00%	0.00%	0.00%	0.00%	0.00%

Table 9: Ranges of LOW CLOUD COVERAGE (in %):

Cluster	[0.000, 4.476)	[4.476, 8.952)	[8.952, 13.428)	[13.428, 17.904)	[17.904, 22.380]
1	100.00%	0.00%	0.00%	0.00%	0.00%
2	100.00%	0.00%	0.00%	0.00%	0.00%
3	60.00%	24.00%	8.00%	0.00%	8.00%
4	100.00%	0.00%	0.00%	0.00%	0.00%
5	100.00%	0.00%	0.00%	0.00%	0.00%
6	100.00%	0.00%	0.00%	0.00%	0.00%
***7***	100.00%	0.00%	0.00%	0.00%	0.00%

Table 10: Ranges of LAND COVER SURFACE (in m<sup>2</sup>):

Cluster	[0.120, 0.120)	[0.120, 0.120)	[0.120, 0.120)	[0.120, 0.120)	[0.120, 0.120]
1	0.00%	0.00%	0.00%	0.00%	100.00%
2	0.00%	0.00%	0.00%	0.00%	100.00%
3	0.00%	0.00%	0.00%	0.00%	100.00%
4	0.00%	0.00%	0.00%	0.00%	100.00%
5	0.00%	0.00%	0.00%	0.00%	100.00%
6	0.00%	0.00%	0.00%	0.00%	100.00%
***7***	0.00%	0.00%	0.00%	0.00%	100.00%

Table 11: Ranges of MEDIUM CLOUD COVERAGE (in %):

Cluster	[0.000, 0.004)	[0.004, 0.008)	[0.008, 0.012)	[0.012, 0.016)	[0.016, 0.020]
1	100.00%	0.00%	0.00%	0.00%	0.00%
2	100.00%	0.00%	0.00%	0.00%	0.00%
3	100.00%	0.00%	0.00%	0.00%	0.00%
4	100.00%	0.00%	0.00%	0.00%	0.00%
5	100.00%	0.00%	0.00%	0.00%	0.00%
6	75.00%	0.00%	0.00%	0.00%	25.00%
***7***	100.00%	0.00%	0.00%	0.00%	0.00%

Table 12: Ranges of TEMPERATURE AT GROUND (in °C):

Cluster	[28.253, 28.664)	[28.664, 29.076)	[29.076, 29.488)	[29.488, 29.899)	[29.899, 30.311]
1	6.25%	18.75%	25.00%	25.00%	25.00%
2	3.23%	19.35%	9.68%	12.90%	54.84%
3	32.00%	44.00%	24.00%	0.00%	0.00%
4	5.88%	0.00%	0.00%	35.29%	58.82%
5	28.57%	42.86%	28.57%	0.00%	0.00%
6	50.00%	0.00%	0.00%	0.00%	50.00%
***7***	0.00%	0.00%	100.00%	0.00%	0.00%

Table 13: Ranges of TOTAL CLOUD COVERAGE (in %):

Cluster	[0.000, 14.517)	[14.517, 29.034)	[29.034, 43.552)	[43.552, 58.069)	[58.069, 72.586]
1	96.88%	0.00%	3.12%	0.00%	0.00%
2	87.10%	6.45%	3.23%	0.00%	3.23%
3	76.00%	16.00%	8.00%	0.00%	0.00%
4	82.35%	0.00%	0.00%	0.00%	17.65%
5	71.43%	28.57%	0.00%	0.00%	0.00%
6	50.00%	50.00%	0.00%	0.00%	0.00%
***7***	100.00%	0.00%	0.00%	0.00%	0.00%

Table 14: Wind speed ranges (in knots)

Cluster	[0, 5)	[5, 10)	[10, 15)	[15, 17.57]
1	6.25%	40.62%	31.25%	21.88%
2	5.38%	69.89%	18.28%	6.45%
3	0.00%	48.00%	45.33%	6.67%
4	3.92%	96.08%	0.00%	0.00%
5	0.00%	80.95%	19.05%	0.00%
6	16.67%	83.33%	0.00%	0.00%
***7***	100.00%	0.00%	0.00%	0.00%

Table 15: Wind direction ranges

Cluster	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360)
1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.17%	94.79%	1.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	54.84%	45.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	0.00%	0.00%	56.00%	44.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.96%	88.24%	9.80%	0.00%	0.00%	0.00%	0.00%	0.00%
5	0.00%	0.00%	14.29%	61.90%	14.29%	9.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6	0.00%	0.00%	0.00%	33.33%	8.33%	41.67%	0.00%	8.33%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
***7***	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	33.33%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 16: Transition matrix

Cluster	1	2	3	4	5	6
1	70.83	29.17	0.00	0.00	0.00	0.00
2	43.48	34.78	0.00	21.74	0.00	0.00
3	0.00	0.00	77.27	0.00	22.73	0.00
4	0.00	50.00	0.00	50.00	0.00	0.00
5	0.00	0.00	33.33	0.00	33.33	33.33
6	33.33	33.33	0.00	33.33	0.00	0.00

Table 17: Ranges of DIFF. TEMPERATURE (in °C):

Transition	[-0.328, -0.162)	[-0.162, 0.003)	[0.003, 0.168)	[0.168, 0.333)	[0.333, 0.498]
1-1	5.88%	58.82%	35.29%	0.00%	0.00%
1-2	14.29%	57.14%	28.57%	0.00%	0.00%
2-1	0.00%	50.00%	50.00%	0.00%	0.00%
2-2	0.00%	37.50%	62.50%	0.00%	0.00%
2-4	0.00%	60.00%	40.00%	0.00%	0.00%
3-3	11.76%	11.76%	29.41%	23.53%	23.53%
3-5	20.00%	60.00%	20.00%	0.00%	0.00%
4-2	0.00%	50.00%	50.00%	0.00%	0.00%
4-4	0.00%	50.00%	50.00%	0.00%	0.00%
5-3	0.00%	100.00%	0.00%	0.00%	0.00%
5-5	50.00%	50.00%	0.00%	0.00%	0.00%
5-6	0.00%	100.00%	0.00%	0.00%	0.00%
6-1	100.00%	0.00%	0.00%	0.00%	0.00%
6-2	0.00%	100.00%	0.00%	0.00%	0.00%
6-4	0.00%	100.00%	0.00%	0.00%	0.00%

Table 18: Ranges of DIFF. HUMIDITY (in %):

Transition	[-1.572, -0.728)	[-0.728, 0.117)	[0.117, 0.961)	[0.961, 1.805)	[1.805, 2.649]
1-1	5.88%	35.29%	52.94%	0.00%	5.88%
1-2	0.00%	28.57%	14.29%	28.57%	28.57%
2-1	10.00%	20.00%	20.00%	30.00%	20.00%
2-2	0.00%	25.00%	50.00%	12.50%	12.50%
2-4	20.00%	0.00%	60.00%	20.00%	0.00%
3-3	11.76%	47.06%	29.41%	0.00%	11.76%
3-5	0.00%	40.00%	40.00%	0.00%	20.00%
4-2	25.00%	12.50%	62.50%	0.00%	0.00%
4-4	12.50%	37.50%	37.50%	12.50%	0.00%
5-3	0.00%	50.00%	50.00%	0.00%	0.00%
5-5	0.00%	50.00%	0.00%	0.00%	50.00%
5-6	0.00%	0.00%	0.00%	100.00%	0.00%
6-1	0.00%	0.00%	0.00%	0.00%	100.00%
6-2	0.00%	0.00%	100.00%	0.00%	0.00%
6-4	0.00%	0.00%	100.00%	0.00%	0.00%

Table 19: Ranges of DIFF. PRECIPITATION (in mm/h):

Transition	[-0.000, 0.006)	[0.006, 0.012)	[0.012, 0.018)	[0.018, 0.024)	[0.024, 0.030]
1-1	100.00%	0.00%	0.00%	0.00%	0.00%
1-2	100.00%	0.00%	0.00%	0.00%	0.00%
2-1	100.00%	0.00%	0.00%	0.00%	0.00%
2-2	100.00%	0.00%	0.00%	0.00%	0.00%
2-4	100.00%	0.00%	0.00%	0.00%	0.00%
3-3	88.24%	0.00%	0.00%	0.00%	11.76%
3-5	100.00%	0.00%	0.00%	0.00%	0.00%
4-2	100.00%	0.00%	0.00%	0.00%	0.00%
4-4	100.00%	0.00%	0.00%	0.00%	0.00%
5-3	100.00%	0.00%	0.00%	0.00%	0.00%
5-5	100.00%	0.00%	0.00%	0.00%	0.00%
5-6	100.00%	0.00%	0.00%	0.00%	0.00%
6-1	0.00%	0.00%	0.00%	0.00%	100.00%
6-2	100.00%	0.00%	0.00%	0.00%	0.00%
6-4	100.00%	0.00%	0.00%	0.00%	0.00%



Table 20: Ranges of DIFF. PRESSURE (in hPa):

Transition	[-0, -0)	[-0, -0)	[-0, -0)	[-0, -0)	[-0, 0]
1-1	17.65%	35.29%	29.41%	17.65%	0.00%
1-2	0.00%	0.00%	85.71%	14.29%	0.00%
2-1	30.00%	0.00%	50.00%	10.00%	10.00%
2-2	25.00%	0.00%	37.50%	12.50%	25.00%
2-4	0.00%	0.00%	60.00%	40.00%	0.00%
3-3	47.06%	29.41%	23.53%	0.00%	0.00%
3-5	0.00%	20.00%	40.00%	40.00%	0.00%
4-2	0.00%	0.00%	50.00%	0.00%	50.00%
4-4	0.00%	0.00%	75.00%	12.50%	12.50%
5-3	0.00%	0.00%	0.00%	100.00%	0.00%
5-5	0.00%	0.00%	0.00%	100.00%	0.00%
5-6	0.00%	0.00%	100.00%	0.00%	0.00%
6-1	0.00%	0.00%	100.00%	0.00%	0.00%
6-2	0.00%	100.00%	0.00%	0.00%	0.00%
6-4	0.00%	100.00%	0.00%	0.00%	0.00%

Table 21: Ranges of DIFF. GUST (in knots):

Transition	[-1.432, -0.568)	[-0.568, 0.296)	[0.296, 1.161)	[1.161, 2.025)	[2.025, 2.889]
1-1	0.00%	11.76%	52.94%	35.29%	0.00%
1-2	0.00%	28.57%	0.00%	42.86%	28.57%
2-1	0.00%	0.00%	30.00%	50.00%	20.00%
2-2	0.00%	0.00%	12.50%	87.50%	0.00%
2-4	0.00%	20.00%	20.00%	40.00%	20.00%
3-3	5.88%	35.29%	47.06%	11.76%	0.00%
3-5	20.00%	0.00%	20.00%	60.00%	0.00%
4-2	0.00%	12.50%	75.00%	12.50%	0.00%
4-4	0.00%	25.00%	37.50%	25.00%	12.50%
5-3	0.00%	0.00%	50.00%	50.00%	0.00%
5-5	0.00%	0.00%	0.00%	100.00%	0.00%
5-6	0.00%	0.00%	100.00%	0.00%	0.00%
6-1	0.00%	0.00%	0.00%	0.00%	100.00%
6-2	0.00%	0.00%	100.00%	0.00%	0.00%
6-4	0.00%	0.00%	100.00%	0.00%	0.00%

Table 22: Ranges of DIFF. HIGH CLOUD COVERAGE (in %):

Transition	[-65.145, -43.523)	[-43.523, -21.901)	[-21.901, -0.279)	[-0.279, 21.343)	[21.343, 42.965]
1-1	0.00%	5.88%	23.53%	70.59%	0.00%
1-2	0.00%	0.00%	0.00%	100.00%	0.00%
2-1	0.00%	10.00%	10.00%	80.00%	0.00%
2-2	0.00%	0.00%	0.00%	100.00%	0.00%
2-4	0.00%	0.00%	20.00%	80.00%	0.00%
3-3	0.00%	0.00%	5.88%	82.35%	11.76%
3-5	0.00%	0.00%	20.00%	80.00%	0.00%
4-2	25.00%	0.00%	0.00%	75.00%	0.00%
4-4	0.00%	0.00%	12.50%	87.50%	0.00%
5-3	0.00%	0.00%	0.00%	100.00%	0.00%
5-5	0.00%	0.00%	0.00%	100.00%	0.00%
5-6	0.00%	0.00%	100.00%	0.00%	0.00%
6-1	0.00%	0.00%	0.00%	100.00%	0.00%
6-2	0.00%	0.00%	100.00%	0.00%	0.00%
6-4	0.00%	0.00%	100.00%	0.00%	0.00%

Table 23: Ranges of DIFF. LOW CLOUD COVERAGE (in %):

Transition	[-9.213, -7.353)	[-7.353, -5.492)	[-5.492, -3.632)	[-3.632, -1.771)	[-1.771, 0.089]
1-1	0.00%	0.00%	0.00%	0.00%	100.00%
1-2	0.00%	0.00%	0.00%	0.00%	100.00%
2-1	0.00%	0.00%	0.00%	0.00%	100.00%
2-2	0.00%	0.00%	0.00%	0.00%	100.00%
2-4	0.00%	0.00%	0.00%	0.00%	100.00%
3-3	11.76%	11.76%	0.00%	17.65%	58.82%
3-5	0.00%	0.00%	0.00%	60.00%	40.00%
4-2	0.00%	0.00%	0.00%	0.00%	100.00%
4-4	0.00%	0.00%	0.00%	0.00%	100.00%
5-3	0.00%	0.00%	0.00%	0.00%	100.00%
5-5	0.00%	0.00%	0.00%	0.00%	100.00%
5-6	0.00%	0.00%	0.00%	0.00%	100.00%
6-1	0.00%	0.00%	0.00%	0.00%	100.00%
6-2	0.00%	0.00%	0.00%	0.00%	100.00%
6-4	0.00%	0.00%	0.00%	0.00%	100.00%

Table 24: Ranges of DIFF. MEDIUM CLOUD COVERAGE (in %):

Transition	[-0.020, -0.016)	[-0.016, -0.012)	[-0.012, -0.008)	[-0.008, -0.004)	[-0.004, -0.000]
1-1	0.00%	0.00%	0.00%	0.00%	100.00%
1-2	0.00%	0.00%	0.00%	0.00%	100.00%
2-1	0.00%	0.00%	0.00%	0.00%	100.00%
2-2	0.00%	0.00%	0.00%	0.00%	100.00%
2-4	0.00%	0.00%	0.00%	0.00%	100.00%
3-3	0.00%	0.00%	0.00%	0.00%	100.00%
3-5	0.00%	0.00%	0.00%	0.00%	100.00%
4-2	0.00%	0.00%	0.00%	0.00%	100.00%
4-4	0.00%	0.00%	0.00%	0.00%	100.00%
5-3	0.00%	0.00%	0.00%	0.00%	100.00%
5-5	0.00%	0.00%	0.00%	0.00%	100.00%
5-6	0.00%	0.00%	0.00%	0.00%	100.00%
6-1	100.00%	0.00%	0.00%	0.00%	0.00%
6-2	0.00%	0.00%	0.00%	0.00%	100.00%
6-4	0.00%	0.00%	0.00%	0.00%	100.00%

Table 25: Ranges of DIFF. TEMPERATURE AT GROUND (in °C):

Transition	[-0.326, -0.164)	[-0.164, -0.001)	[-0.001, 0.162)	[0.162, 0.324)	[0.324, 0.487]
1-1	52.94%	23.53%	17.65%	5.88%	0.00%
1-2	28.57%	28.57%	28.57%	14.29%	0.00%
2-1	40.00%	30.00%	30.00%	0.00%	0.00%
2-2	25.00%	37.50%	37.50%	0.00%	0.00%
2-4	40.00%	40.00%	20.00%	0.00%	0.00%
3-3	23.53%	11.76%	47.06%	5.88%	11.76%
3-5	20.00%	40.00%	20.00%	20.00%	0.00%
4-2	75.00%	12.50%	12.50%	0.00%	0.00%
4-4	25.00%	37.50%	37.50%	0.00%	0.00%
5-3	50.00%	0.00%	50.00%	0.00%	0.00%
5-5	100.00%	0.00%	0.00%	0.00%	0.00%
5-6	0.00%	100.00%	0.00%	0.00%	0.00%
6-1	0.00%	100.00%	0.00%	0.00%	0.00%
6-2	100.00%	0.00%	0.00%	0.00%	0.00%
6-4	100.00%	0.00%	0.00%	0.00%	0.00%

Table 26: Ranges of DIFF. TOTAL CLOUD COVERAGE (in %):

Transition	[-65.272, -43.625)	[-43.625, -21.977)	[-21.977, -0.330)	[-0.330, 21.317)	[21.317, 42.965]
1-1	0.00%	5.88%	23.53%	70.59%	0.00%
1-2	0.00%	0.00%	0.00%	100.00%	0.00%
2-1	0.00%	10.00%	10.00%	80.00%	0.00%
2-2	0.00%	0.00%	0.00%	100.00%	0.00%
2-4	0.00%	0.00%	20.00%	80.00%	0.00%
3-3	0.00%	0.00%	64.71%	23.53%	11.76%
3-5	0.00%	0.00%	60.00%	40.00%	0.00%
4-2	25.00%	0.00%	0.00%	75.00%	0.00%
4-4	0.00%	0.00%	37.50%	62.50%	0.00%
5-3	0.00%	0.00%	50.00%	50.00%	0.00%
5-5	0.00%	0.00%	50.00%	50.00%	0.00%
5-6	0.00%	0.00%	100.00%	0.00%	0.00%
6-1	0.00%	0.00%	0.00%	100.00%	0.00%
6-2	0.00%	0.00%	100.00%	0.00%	0.00%
6-4	0.00%	0.00%	100.00%	0.00%	0.00%

Table 27: Ranges of DIFF. TWS (in knots):

Transition	[-2.283, -1.001)	[-1.001, 0.281)	[0.281, 1.563)	[1.563, 2.846)	[2.846, 4.128]
1-1	0.00%	47.06%	47.06%	5.88%	0.00%
1-2	0.00%	0.00%	85.71%	14.29%	0.00%
2-1	0.00%	40.00%	60.00%	0.00%	0.00%
2-2	12.50%	50.00%	12.50%	25.00%	0.00%
2-4	60.00%	40.00%	0.00%	0.00%	0.00%
3-3	41.18%	23.53%	23.53%	11.76%	0.00%
3-5	0.00%	20.00%	60.00%	20.00%	0.00%
4-2	12.50%	50.00%	37.50%	0.00%	0.00%
4-4	37.50%	25.00%	37.50%	0.00%	0.00%
5-3	50.00%	0.00%	50.00%	0.00%	0.00%
5-5	0.00%	100.00%	0.00%	0.00%	0.00%
5-6	50.00%	50.00%	0.00%	0.00%	0.00%
6-1	0.00%	0.00%	0.00%	0.00%	100.00%
6-2	100.00%	0.00%	0.00%	0.00%	0.00%
6-4	100.00%	0.00%	0.00%	0.00%	0.00%

Table 28: Ranges of DIFF. TWD (in degrees):

Transition	[-21.164, 3.724)	[3.724, 28.612)	[28.612, 53.499)	[53.499, 78.387)	[78.387, 103.274]
1-1	94.12%	5.88%	0.00%	0.00%	0.00%
1-2	14.29%	85.71%	0.00%	0.00%	0.00%
2-1	100.00%	0.00%	0.00%	0.00%	0.00%
2-2	75.00%	25.00%	0.00%	0.00%	0.00%
2-4	0.00%	100.00%	0.00%	0.00%	0.00%
3-3	70.59%	29.41%	0.00%	0.00%	0.00%
3-5	20.00%	80.00%	0.00%	0.00%	0.00%
4-2	100.00%	0.00%	0.00%	0.00%	0.00%
4-4	75.00%	25.00%	0.00%	0.00%	0.00%
5-3	100.00%	0.00%	0.00%	0.00%	0.00%
5-5	50.00%	50.00%	0.00%	0.00%	0.00%
5-6	0.00%	50.00%	50.00%	0.00%	0.00%
6-1	0.00%	0.00%	0.00%	100.00%	0.00%
6-2	0.00%	0.00%	0.00%	0.00%	100.00%
6-4	0.00%	0.00%	0.00%	0.00%	100.00%

Transition's meteorological parameters' average values:

Table 29: Transition 1-1: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (17)	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 1-1 ([180-202.5) - [180-202.5)): Range level average differences

diff\_temp: -0.024297810834097957

diff\_humidity: 0.33287632697610964

diff\_precipitation: 0.0

diff\_pressure: -0.25167283002068574  
 diff\_gust: 0.911320431698071  
 diff\_high\_cloud\_coverage: -2.727352941176472  
 diff\_low\_cloud\_coverage: -0.01049764705882353  
 diff\_medium\_cloud\_coverage: 0.0  
 diff\_temperature\_at\_ground: -0.1266017647058842  
 diff\_total\_cloud\_coverage: -2.7378505882352955  
 diff\_tws: 0.4712418300653596  
 diff\_twd: -0.048677182196269424

Transition 1-1: Overall level average differences

diff\_temp: -0.024297810834097957  
 diff\_humidity: 0.33287632697610964  
 diff\_precipitation: 0.0  
 diff\_pressure: -0.25167283002068574  
 diff\_gust: 0.911320431698071  
 diff\_high\_cloud\_coverage: -2.727352941176472  
 diff\_low\_cloud\_coverage: -0.01049764705882353  
 diff\_medium\_cloud\_coverage: 0.0  
 diff\_temperature\_at\_ground: -0.1266017647058842  
 diff\_total\_cloud\_coverage: -2.7378505882352955  
 diff\_tws: 0.4712418300653596  
 diff\_twd: -0.048478380322896045

Table 30: Transition 1-2: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	71.43% (5)	28.57% (2)	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 1-2 ([180-202.5] - [180-202.5]): Range level average differences

diff\_temp: -0.08506534531250125  
diff\_humidity: 1.2287999999999955  
diff\_precipitation: 0.0  
diff\_pressure: -0.14651782226562773  
diff\_gust: 1.1201272778320315  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: 0.0  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.06344599999999331  
diff\_total\_cloud\_coverage: 0.0  
diff\_tws: 1.3280000000000003  
diff\_twd: 6.7137370781737955

Transition 1-2 ([180-202.5] - [202.5-225]): Range level average differences

diff\_temp: -0.031434420410162645  
diff\_humidity: 1.0305999999999855  
diff\_precipitation: 0.0  
diff\_pressure: -0.18360473632816365  
diff\_gust: 2.0686545030593866  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: 0.0  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.06566499999999742  
diff\_total\_cloud\_coverage: 0.0  
diff\_tws: 0.6249999999999994  
diff\_twd: 13.334088607062029

Transition 1-2: Overall level average differences

diff\_temp: -0.06974222391183307  
diff\_humidity: 1.172171428571421  
diff\_precipitation: 0.0  
diff\_pressure: -0.15711408342635227  
diff\_gust: 1.3911350564684188  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: 0.0  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.02655714285713882  
diff\_total\_cloud\_coverage: 0.0  
diff\_tws: 1.1271428571428572

diff\_twd: 8.60455057817339

Table 31: Transition 2-1: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (4)	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (6)	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 2-1 ([180-202.5) - [180-202.5)): Range level average differences

diff\_temp: 0.02062850000000349

diff\_humidity: 0.70945000000000075

diff\_precipitation: 0.0

diff\_pressure: -0.3063477325439692

diff\_gust: 1.6567650628089912

diff\_high\_cloud\_coverage: -6.1812500000000003

diff\_low\_cloud\_coverage: 0.0223075

diff\_medium\_cloud\_coverage: 0.0

diff\_temperature\_at\_ground: -0.015040000000000616

diff\_total\_cloud\_coverage: -6.1589425000000003

diff\_tws: 0.6298611111111111

diff\_twd: -7.999292114593096

Transition 2-1 ([202.5-225) - [180-202.5)): Range level average differences

diff\_temp: -0.04317952766926562

diff\_humidity: 0.75348333333333566

diff\_precipitation: 0.0

diff\_pressure: -0.16203725179034714

diff\_gust: 1.4965213862737023

diff\_high\_cloud\_coverage: 0.1454333333333334



diff\_low\_cloud\_coverage: 0.014871666666666667  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.161683333333333343  
diff\_total\_cloud\_coverage: 0.160305000000000006  
diff\_tws: 0.08583333333333333  
diff\_twd: -13.609813364251053

Transition 2-1: Overall level average differences  
diff\_temp: -0.017656316601557975  
diff\_humidity: 0.7358700000000169  
diff\_precipitation: 0.0  
diff\_pressure: -0.21976144409179596  
diff\_gust: 1.5606188568878179  
diff\_high\_cloud\_coverage: -2.3852400000000014  
diff\_low\_cloud\_coverage: 0.017846  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.10302600000000303  
diff\_total\_cloud\_coverage: -2.3673940000000013  
diff\_tws: 0.30344444444444424  
diff\_twd: -11.366700436417155

Table 32: Transition 2-2: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	60.00% (3)	40.00% (2)	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	33.33% (1)	66.67% (2)	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 2-2 ([180-202.5) - [180-202.5]): Range level average differences  
diff\_temp: -0.040442328776039226

diff\_humidity: 1.0619674804687615  
diff\_precipitation: 0.0  
diff\_pressure: -0.14929738362627631  
diff\_gust: 1.21714047648112  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: 0.0  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.12294333333332357  
diff\_total\_cloud\_coverage: 0.0  
diff\_tws: 0.26685185185185173  
diff\_twd: -0.8611678477593045

Transition 2-2 ([180-202.5] - [202.5-225]): Range level average differences

diff\_temp: -0.027570190429687003  
diff\_humidity: 0.2301487792968686  
diff\_precipitation: 0.0  
diff\_pressure: -0.054825592041026994  
diff\_gust: 1.2921838958740226  
diff\_high\_cloud\_coverage: 1.1175999999999997  
diff\_low\_cloud\_coverage: 0.0  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.19664500000000373  
diff\_total\_cloud\_coverage: 1.1175999999999997  
diff\_tws: -0.8955555555555561  
diff\_twd: 5.195532310502827

Transition 2-2 ([202.5-225] - [180-202.5]): Range level average differences

diff\_temp: 0.07660399999999967  
diff\_humidity: 0.2429000000000059  
diff\_precipitation: 0.0  
diff\_pressure: -0.4454785156250409  
diff\_gust: 1.8049704616546647  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: 0.0  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.12217000000000766  
diff\_total\_cloud\_coverage: 0.0  
diff\_tws: 1.916666666666667  
diff\_twd: -5.777842506905586

Transition 2-2 ([202.5-225) - [202.5-225)): Range level average differences

diff\_temp: 0.042845762207029736  
diff\_humidity: 0.1806499999997156  
diff\_precipitation: 0.0  
diff\_pressure: -0.20749008178711392  
diff\_gust: 1.5477351881027257  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: -0.010768000000000002  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.011665000000007808  
diff\_total\_cloud\_coverage: -0.010768000000000002  
diff\_tws: 0.1375000000000003  
diff\_twd: 3.807863609164997

Transition 2-2: Overall level average differences

diff\_temp: -0.0017714803466790663  
diff\_humidity: 0.531299999999963  
diff\_precipitation: 0.0  
diff\_pressure: -0.17725025177001896  
diff\_gust: 1.39202875738144  
diff\_high\_cloud\_coverage: 0.2793999999999999  
diff\_low\_cloud\_coverage: -0.002692000000000004  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.07707749999999436  
diff\_total\_cloud\_coverage: 0.2767079999999999  
diff\_tws: 0.1501388888888877  
diff\_twd: 1.2140584309255327

Table 33: Transition 2-4: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (2)	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (3)	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 2-4 ([180-202.5) - [202.5-225)): Range level average differences

diff\_temp: -0.03105926513671875  
diff\_humidity: 0.45824877929686636  
diff\_precipitation: 0.0  
diff\_pressure: -0.16773925781251364  
diff\_gust: 1.5700812486648568  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: 0.0  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.0021899999999899222  
diff\_total\_cloud\_coverage: 0.0  
diff\_tws: -0.4916666666666677  
diff\_twd: 11.5827167876365

Transition 2-4 ([202.5-225) - [202.5-225)): Range level average differences

diff\_temp: -0.047035830729167095  
diff\_humidity: 0.20913414713538714  
diff\_precipitation: 6.666666666667782e-05  
diff\_pressure: -0.1334060668945085  
diff\_gust: 0.9116009887695306  
diff\_high\_cloud\_coverage: 1.9383333333333235  
diff\_low\_cloud\_coverage: -0.030116666666666608  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.1554066666666678

diff\_total\_cloud\_coverage: 1.9964166666666598  
diff\_tws: -1.3774074074074072  
diff\_twd: 7.124587396404138

Transition 2-4: Overall level average differences  
diff\_temp: -0.04064520449218776  
diff\_humidity: 0.30877999999997885  
diff\_precipitation: 4.00000000000067e-05  
diff\_pressure: -0.14713934326171058  
diff\_gust: 1.174993092727661  
diff\_high\_cloud\_coverage: 1.162999999999994  
diff\_low\_cloud\_coverage: -0.01806999999999965  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.09236800000000471  
diff\_total\_cloud\_coverage: 1.1978499999999959  
diff\_tws: -1.023111111111113  
diff\_twd: 8.900936688659844

Table 34: Transition 3-3: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360)
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	44.44% (4)	55.56% (5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	62.50% (5)	37.50% (3)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 3-3 ([45-67.5) - [45-67.5)): Range level average differences  
diff\_temp: -0.007666499999992027  
diff\_humidity: 0.5414000000000083  
diff\_precipitation: 2.500000000025002e-06  
diff\_pressure: -0.2961797332763467

diff\_gust: 0.6994330322265583  
diff\_high\_cloud\_coverage: 21.4931325  
diff\_low\_cloud\_coverage: -0.0563500000000012  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.16631750000000967  
diff\_total\_cloud\_coverage: 21.4367825  
diff\_tws: -1.726388888888899  
diff\_twd: -4.667669262850206

Transition 3-3 ([45-67.5] - [67.5-90]): Range level average differences

diff\_temp: 0.2330770000000008  
diff\_humidity: -0.05773951171874643  
diff\_precipitation: 0.00685599999999992  
diff\_pressure: -0.3582406005859184  
diff\_gust: 0.44529849487304674  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: -3.916559999999996  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.1486619999999995  
diff\_total\_cloud\_coverage: -3.916559999999996  
diff\_tws: 0.278888888888895  
diff\_twd: 6.2056370530701175

Transition 3-3 ([67.5-90] - [45-67.5]): Range level average differences

diff\_temp: 0.131807400000001  
diff\_humidity: 0.05771951171875287  
diff\_precipitation: 0.00685399999999999  
diff\_pressure: -0.31360412597653065  
diff\_gust: 0.5471252331542964  
diff\_high\_cloud\_coverage: 0.00869399999999999  
diff\_low\_cloud\_coverage: -3.58102  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.061736000000003344  
diff\_total\_cloud\_coverage: -3.5723260000000003  
diff\_tws: 0.2288888888888922  
diff\_twd: -5.841992421645901

Transition 3-3 ([67.5-90] - [67.5-90]): Range level average differences

diff\_temp: 0.26216799999999196

diff\_humidity: -0.0738666666667452  
diff\_precipitation: 0.000833333333333248  
diff\_pressure: -0.4029314168294225  
diff\_gust: -0.3520173278808576  
diff\_high\_cloud\_coverage: -5.46866666666671  
diff\_low\_cloud\_coverage: -1.44946666666666  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.086023333333369  
diff\_total\_cloud\_coverage: -5.97350000000002  
diff\_tws: -0.36481481481481554  
diff\_twd: 1.341719032017778

Transition 3-3: Overall level average differences

diff\_temp: 0.151780000000001  
diff\_humidity: 0.11434705882353188  
diff\_precipitation: 0.004179999999999945  
diff\_pressure: -0.3383962833179941  
diff\_gust: 0.3943411050235515  
diff\_high\_cloud\_coverage: 4.09470588235294  
diff\_low\_cloud\_coverage: -2.4742176470588233  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.03792882352941095  
diff\_total\_cloud\_coverage: 1.7871882352941175  
diff\_tws: -0.32124183006535956  
diff\_twd: -0.7586502219649698

Table 35: Transition 3-5: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360)
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	100.00% (1)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	75.00% (3)	25.00% (1)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 3-5 ([45-67.5) - [67.5-90)): Range level average differences

diff\_temp: -0.011341999999988417

diff\_humidity: -0.20940000000003067

diff\_precipitation: 0.0

diff\_pressure: -0.15483062744146991

diff\_gust: 1.6324456604003945

diff\_high\_cloud\_coverage: 0.0

diff\_low\_cloud\_coverage: -2.2920999999999999

diff\_medium\_cloud\_coverage: 0.0

diff\_temperature\_at\_ground: -0.037910000000007216

diff\_total\_cloud\_coverage: -2.2920999999999999

diff\_tws: 0.6944444444444444

diff\_twd: 11.007475814791093

Transition 3-5 ([67.5-90) - [67.5-90)): Range level average differences

diff\_temp: 0.007785704101563577

diff\_humidity: 0.16793333333332328

diff\_precipitation: 0.00093333333333323

diff\_pressure: -0.18043863932291515

diff\_gust: 0.2713877502441413

diff\_high\_cloud\_coverage: -4.07433333333337

diff\_low\_cloud\_coverage: -1.614033333333328

diff\_medium\_cloud\_coverage: 0.0

diff\_temperature\_at\_ground: 0.11611333333332989



diff\_total\_cloud\_coverage: -4.905366666666668  
diff\_tws: 0.8296296296296292  
diff\_twd: 8.660725252011423

Transition 3-5 ([67.5-90) - [90-112.5)): Range level average differences

diff\_temp: -0.24835111230468243  
diff\_humidity: 2.2188000000000017  
diff\_precipitation: 0.0  
diff\_pressure: -0.05531829833989832  
diff\_gust: 1.6644216064453143  
diff\_high\_cloud\_coverage: 17.189999999999998  
diff\_low\_cloud\_coverage: -0.3885999999999983  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.178059999999995  
diff\_total\_cloud\_coverage: 17.200999999999997  
diff\_tws: 0.516666666666668  
diff\_twd: 21.256115963078727

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Transition 3-5: Overall level average differences

diff\_temp: -0.047267199999996026  
diff\_humidity: 0.50263999999999882  
diff\_precipitation: 0.000559999999999994  
diff\_pressure: -0.15029296875002274  
diff\_gust: 0.8222061035156265  
diff\_high\_cloud\_coverage: 0.9933999999999973  
diff\_low\_cloud\_coverage: -1.5045599999999997  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: 0.02647399999999749  
diff\_total\_cloud\_coverage: 0.03855999999999824  
diff\_tws: 0.74  
diff\_twd: 11.629716815839908

Table 36: Transition 4-2: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	25.00% (2)	75.00% (6)	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 4-2 ([202.5-225) - [180-202.5)): Range level average differences

diff\_temp: -0.0401611328125  
diff\_humidity: 0.30479999999998597  
diff\_precipitation: 0.0  
diff\_pressure: -0.10483612060545511  
diff\_gust: 1.0768219787597677  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: -0.024822999999999998  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.15013499999999988  
diff\_total\_cloud\_coverage: -0.024822999999999998  
diff\_tws: -1.2422222222222223  
diff\_twd: -17.209414997126018

Transition 4-2 ([202.5-225) - [202.5-225)): Range level average differences

diff\_temp: 0.020967739908859546  
diff\_humidity: -0.34144999999999994  
diff\_precipitation: 0.001699999999999886  
diff\_pressure: -0.05881678263349007  
diff\_gust: 0.606507011922195  
diff\_high\_cloud\_coverage: -17.191666666666666  
diff\_low\_cloud\_coverage: -0.13749233333333336  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.223846666666666972

diff\_total\_cloud\_coverage: -17.258659000000005  
diff\_tws: -0.04092592592592586  
diff\_twd: -7.783324431436479

Transition 4-2: Overall level average differences  
diff\_temp: 0.00568552172851966  
diff\_humidity: -0.17988750000000031  
diff\_precipitation: 0.0012749999999999914  
diff\_pressure: -0.07032161712648133  
diff\_gust: 0.7240857536315882  
diff\_high\_cloud\_coverage: -12.89375  
diff\_low\_cloud\_coverage: -0.10932500000000003  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.20541875000000198  
diff\_total\_cloud\_coverage: -12.950200000000002  
diff\_tws: -0.34124999999999994  
diff\_twd: -10.151764918916783

Table 37: Transition 4-4: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (8)	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 4-4 ([202.5-225) - [202.5-225)): Range level average differences  
diff\_temp: -0.013630639282226742  
diff\_humidity: 0.09041280517578265  
diff\_precipitation: 2.5000000000004186e-05  
diff\_pressure: -0.12839984893797407



Transition 5-3 ([67.5-90) - [67.5-90)): Range level average differences

diff\_temp: -0.09902294384766819  
diff\_humidity: 0.1296499999998383  
diff\_precipitation: 0.0001500000000001124  
diff\_pressure: -0.07283981323240596  
diff\_gust: 0.8920845916748035  
diff\_high\_cloud\_coverage: 2.091500000000001  
diff\_low\_cloud\_coverage: -0.5643000000000007  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.05453500000000311  
diff\_total\_cloud\_coverage: 1.2847500000000005  
diff\_tws: -0.4305555555555614  
diff\_twd: -4.132006255536822

Transition 5-3: Overall level average differences

diff\_temp: -0.09902294384766819  
diff\_humidity: 0.1296499999998383  
diff\_precipitation: 0.0001500000000001124  
diff\_pressure: -0.07283981323240596  
diff\_gust: 0.8920845916748035  
diff\_high\_cloud\_coverage: 2.091500000000001  
diff\_low\_cloud\_coverage: -0.5643000000000007  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.05453500000000311  
diff\_total\_cloud\_coverage: 1.2847500000000005  
diff\_tws: -0.4305555555555614  
diff\_twd: -4.1168059192991135

Table 39: Transition 5-5: Changes of TWD

TWD Range	[0-22.5]	[22.5-45]	[45-67.5]	[67.5-90]	[90-112.5]	[112.5-135]	[135-157.5]	[157.5-180]	[180-202.5]	[202.5-225]	[225-247.5]	[247.5-270]	[270-292.5]	[292.5-315]	[315-337.5]	[337.5-360]
[0-22.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90]	0%	0%	0%	50.00% (1)	50.00% (1)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 5-5 ([67.5-90] - [67.5-90]): Range level average differences

diff\_temp: -0.1413770000001985  
diff\_humidity: 0.01179999999993815  
diff\_precipitation: 0.0  
diff\_pressure: -0.04370849609369998  
diff\_gust: 1.1699539062499973  
diff\_high\_cloud\_coverage: 0.0  
diff\_low\_cloud\_coverage: -0.6065  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.2608499999999425  
diff\_total\_cloud\_coverage: -0.6065  
diff\_tws: -0.3111111111111117  
diff\_twd: -1.1071902521397305

Transition 5-5 ([67.5-90] - [90-112.5]): Range level average differences

diff\_temp: -0.24835111230468243  
diff\_humidity: 2.2188000000000017  
diff\_precipitation: 0.0  
diff\_pressure: -0.05531829833989832  
diff\_gust: 1.6644216064453143  
diff\_high\_cloud\_coverage: 17.189999999999998  
diff\_low\_cloud\_coverage: -0.3885999999999983  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.178059999999995

diff\_total\_cloud\_coverage: 17.20099999999997  
diff\_tws: 0.13333333333333433  
diff\_twd: 10.855214480301697

Transition 5-5: Overall level average differences  
diff\_temp: -0.19486405615235114  
diff\_humidity: 1.1152999999999977  
diff\_precipitation: 0.0  
diff\_pressure: -0.04951339721679915  
diff\_gust: 1.4171877563476558  
diff\_high\_cloud\_coverage: 8.594999999999999  
diff\_low\_cloud\_coverage: -0.4975499999999994  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.21945499999999463  
diff\_total\_cloud\_coverage: 8.297249999999998  
diff\_tws: -0.0888888888888842  
diff\_twd: 4.938072279145755

Table 40: Transition 5-6: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	50.00% (1)	50.00% (1)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 5-6 ([90-112.5) - [90-112.5)): Range level average differences  
diff\_temp: -0.09318600000001354  
diff\_humidity: 1.0789000000000044  
diff\_precipitation: 0.000500000000000004  
diff\_pressure: -0.17413269042970114

diff\_gust: 1.1491015930175772  
diff\_high\_cloud\_coverage: -9.586999999999996  
diff\_low\_cloud\_coverage: -1.5635000000000001  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.11428000000000438  
diff\_total\_cloud\_coverage: -9.586999999999996  
diff\_tws: 0.0  
diff\_twd: 14.391956481228675

Transition 5-6 ([90-112.5] - [112.5-135]): Range level average differences

diff\_temp: -0.09318600000001354  
diff\_humidity: 1.0789000000000044  
diff\_precipitation: 0.00050000000000004  
diff\_pressure: -0.17413269042970114  
diff\_gust: 1.1491015930175772  
diff\_high\_cloud\_coverage: -9.586999999999996  
diff\_low\_cloud\_coverage: -1.5635000000000001  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.11428000000000438  
diff\_total\_cloud\_coverage: -9.586999999999996  
diff\_tws: -1.1166666666666665  
diff\_twd: 36.328778415927985

Transition 5-6: Overall level average differences

diff\_temp: -0.09318600000001354  
diff\_humidity: 1.0789000000000044  
diff\_precipitation: 0.00050000000000004  
diff\_pressure: -0.17413269042970114  
diff\_gust: 1.1491015930175772  
diff\_high\_cloud\_coverage: -9.586999999999996  
diff\_low\_cloud\_coverage: -1.5635000000000001  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.11428000000000438  
diff\_total\_cloud\_coverage: -9.586999999999996  
diff\_tws: -0.5583333333333332  
diff\_twd: 27.452537533720864



Table 41: Transition 6-1: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	100.00% (1)	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 6-1 ([90-112.5) - [157.5-180)): Range level average differences

diff\_temp: -0.26905001660156813  
 diff\_humidity: 2.6492999999999114  
 diff\_precipitation: 0.0286999999999992  
 diff\_pressure: -0.14175476074228754  
 diff\_gust: 2.8893623962402355  
 diff\_high\_cloud\_coverage: 10.713699999999998  
 diff\_low\_cloud\_coverage: -0.17380000000000062  
 diff\_medium\_cloud\_coverage: -0.02026000000000004  
 diff\_temperature\_at\_ground: -0.0219999999999807  
 diff\_total\_cloud\_coverage: 10.240700000000002  
 diff\_tws: 4.127777777777778  
 diff\_twd: 64.28271944800979

Transition 6-1: Overall level average differences

diff\_temp: -0.26905001660156813  
 diff\_humidity: 2.6492999999999114  
 diff\_precipitation: 0.0286999999999992  
 diff\_pressure: -0.14175476074228754  
 diff\_gust: 2.8893623962402355  
 diff\_high\_cloud\_coverage: 10.713699999999998  
 diff\_low\_cloud\_coverage: -0.17380000000000062  
 diff\_medium\_cloud\_coverage: -0.02026000000000004  
 diff\_temperature\_at\_ground: -0.0219999999999807

diff\_total\_cloud\_coverage: 10.240700000000002  
diff\_tws: 4.127777777777778  
diff\_twd: 64.4220304345965

Table 42: Transition 6-2: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (1)	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 6-2 ([90-112.5) - [180-202.5)): Range level average differences

diff\_temp: -0.009460999999998165  
diff\_humidity: 0.8173000000000003  
diff\_precipitation: 0.0  
diff\_pressure: -0.30962768554684317  
diff\_gust: 0.8834240295410147  
diff\_high\_cloud\_coverage: -15.8485  
diff\_low\_cloud\_coverage: -1.3749  
diff\_medium\_cloud\_coverage: 0.0  
diff\_temperature\_at\_ground: -0.170839999999998767  
diff\_total\_cloud\_coverage: -15.8485  
diff\_tws: -1.7111111111111121  
diff\_twd: 92.24725371797479

Transition 6-2: Overall level average differences

diff\_temp: -0.009460999999998165  
diff\_humidity: 0.8173000000000003  
diff\_precipitation: 0.0  
diff\_pressure: -0.30962768554684317

diff\_gust: 0.8834240295410147  
 diff\_high\_cloud\_coverage: -15.8485  
 diff\_low\_cloud\_coverage: -1.3749  
 diff\_medium\_cloud\_coverage: 0.0  
 diff\_temperature\_at\_ground: -0.17083999999998767  
 diff\_total\_cloud\_coverage: -15.8485  
 diff\_tws: -1.711111111111121  
 diff\_twd: 89.50664377888799

Table 43: Transition 6-4: Changes of TWD

TWD Range	[0-22.5)	[22.5-45)	[45-67.5)	[67.5-90)	[90-112.5)	[112.5-135)	[135-157.5)	[157.5-180)	[180-202.5)	[202.5-225)	[225-247.5)	[247.5-270)	[270-292.5)	[292.5-315)	[315-337.5)	[337.5-360]
[0-22.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[22.5-45)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[45-67.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[67.5-90)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[90-112.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[112.5-135)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100.00% (1)	0%	0%	0%	0%	0%
[135-157.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[157.5-180)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[180-202.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[202.5-225)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[225-247.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[247.5-270)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[270-292.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[292.5-315)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[315-337.5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
[337.5-360]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition 6-4 ([112.5-135) - [225-247.5)): Range level average differences

diff\_temp: -0.009460999999998165  
 diff\_humidity: 0.817300000000003  
 diff\_precipitation: 0.0  
 diff\_pressure: -0.30962768554684317  
 diff\_gust: 0.8834240295410147  
 diff\_high\_cloud\_coverage: -15.8485  
 diff\_low\_cloud\_coverage: -1.3749  
 diff\_medium\_cloud\_coverage: 0.0  
 diff\_temperature\_at\_ground: -0.17083999999998767  
 diff\_total\_cloud\_coverage: -15.8485  
 diff\_tws: -1.366666666666667  
 diff\_twd: 104.76581570831402

Transition 6-4: Overall level average differences

diff\_temp: -0.00946099999998165

diff\_humidity: 0.817300000000003

diff\_precipitation: 0.0

diff\_pressure: -0.30962768554684317

diff\_gust: 0.8834240295410147

diff\_high\_cloud\_coverage: -15.8485

diff\_low\_cloud\_coverage: -1.3749

diff\_medium\_cloud\_coverage: 0.0

diff\_temperature\_at\_ground: -0.17083999999998767

diff\_total\_cloud\_coverage: -15.8485

diff\_tws: -1.366666666666667

diff\_twd: 103.27449428677824

