10 YEARS CLIMATE REPORT FOR YOUR LOCATION AT 0 degrees North and 0 degrees East

Reporting Period: 01 January 2007 to 01 January 2017

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Prepared for:

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1. INTRODUCTION

1.1 Request

This report has been prepared for Sample Report (Fugro) following a request for wind and wave statistics. The data point of interest was 0 degrees North, 0 degrees East

1.2 Data Source

In order to produce this wave climate report, a ten year time series of data was extracted from a wave hindcast produced using the output of the NOAA WAVEWATCH III® (WW3) model and Global Forecast System (GFS) analysis winds.

WAVEWATCH III® and GFS are wave and atmospheric forecast models used operationally by divisions within the National Oceanic and Atmospheric Administration (NOAA).

The data were from the 30 arc-minute global grid and the following parameters were used in this report:

- Wind - The 10 m wind speeds and direction from GFS (in metres per second)
- Hs - Significant wave height (in metres)
- Tp - Peak period (in seconds)
- Dp - Average direction at the peak period (in degrees)

1.3 Units and Conventions

The following list describes the units and conventions used in this report. Units are expressed using the SI convention.

- Wind speed is expressed in metres per second [m/s]
- Wind direction is expressed in degrees true with winds "coming from".
- Wave height is expressed in metres [m]
- Wave direction is expressed in degrees true "coming from".
- Positions are quoted relative to WGS84

2. WAVES

2.1 Significant Wave Height

2.1.1 Monthly Mean Plot

Each star in the monthly mean plot in Figure 2.1 represents a one year mean significant wave height for each month. The black circular markers represent the ten year mean for each month.

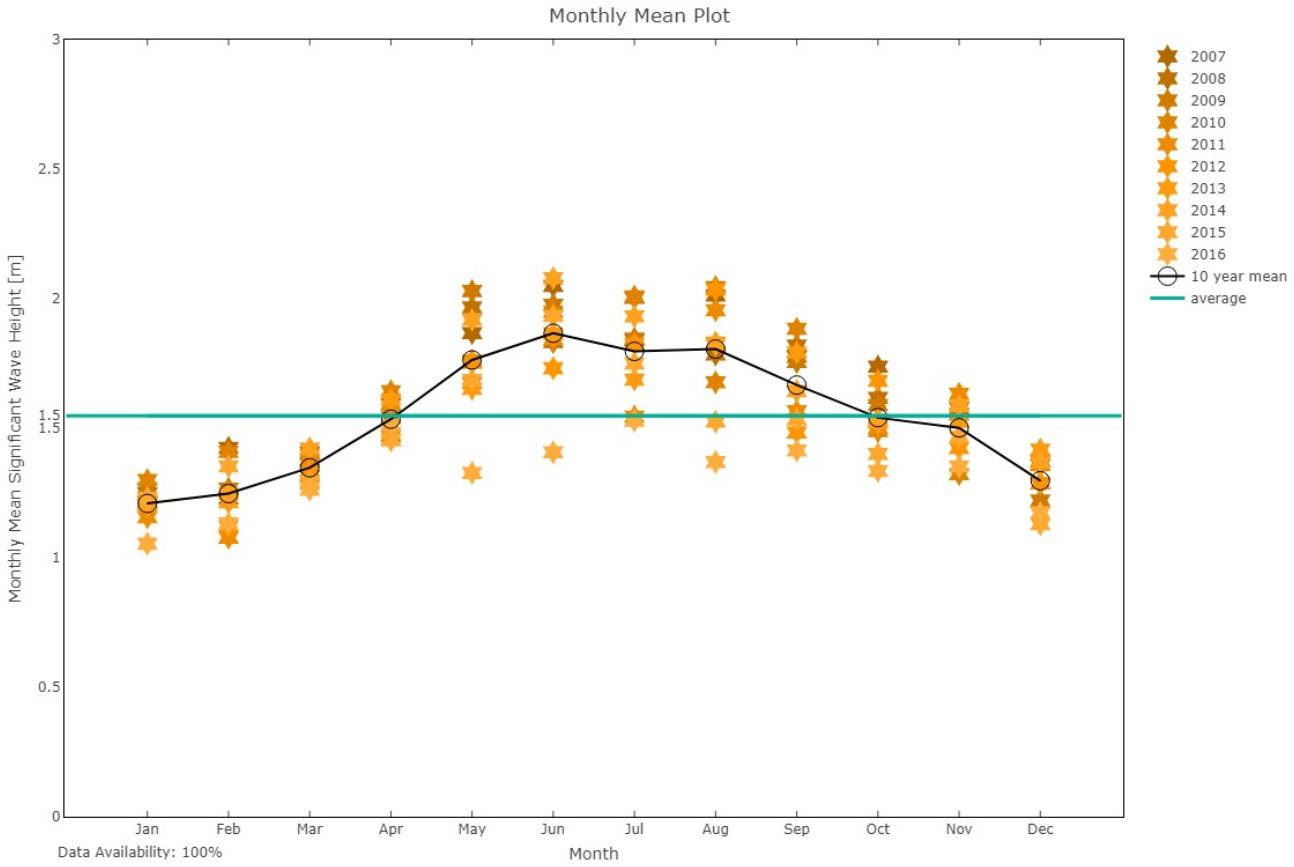


Figure 2.1: Mean monthly significant wave height

2.1.2 Monthly Bivariate Table

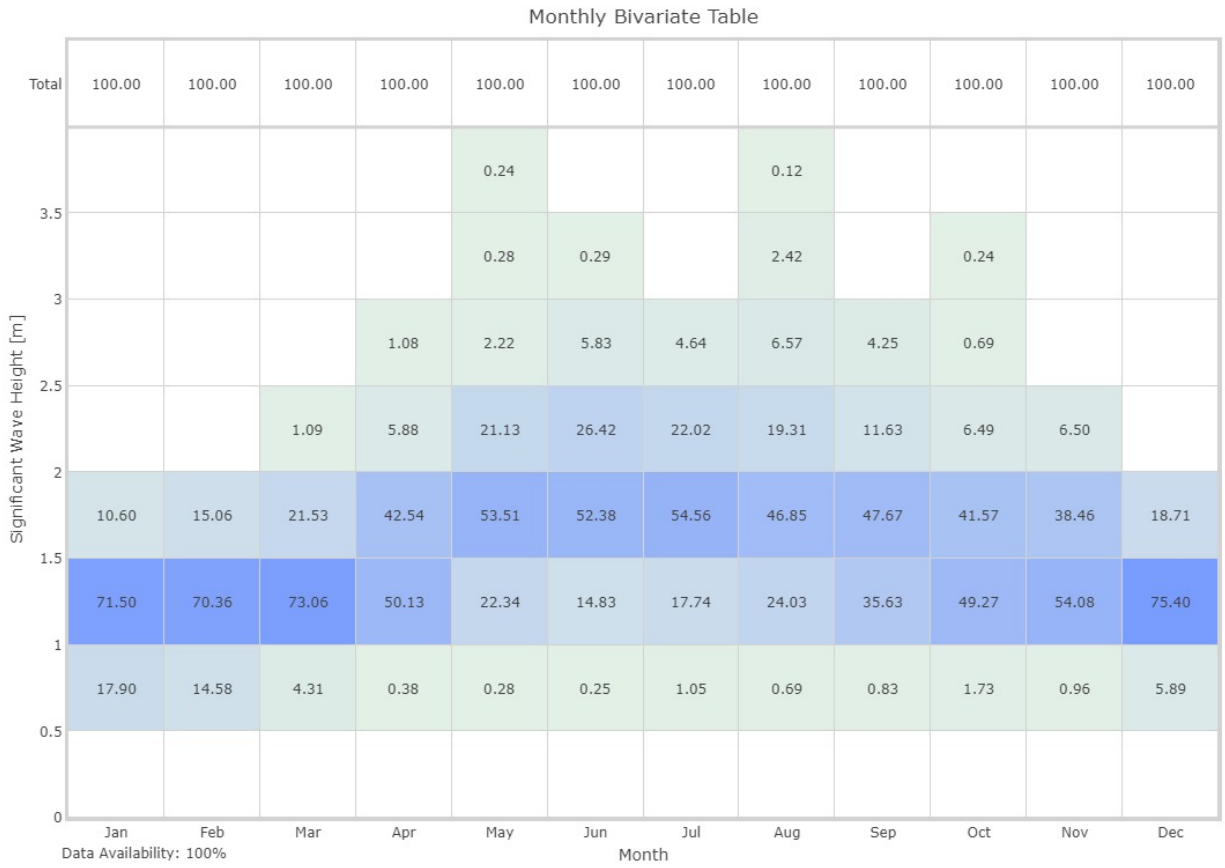


Figure 2.2: Monthly Bivariate table of significant wave height

2.1.3 Histograms

2.1.3.1 All-Year

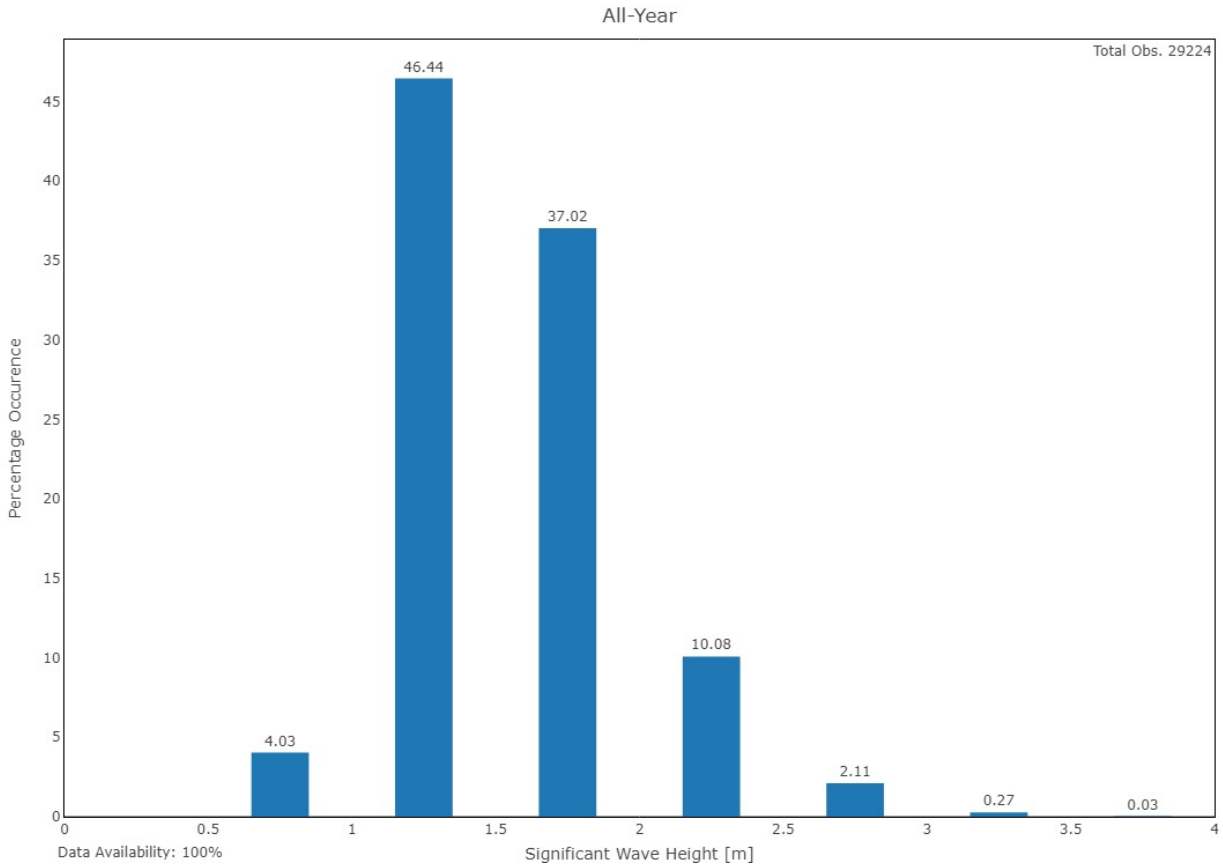


Figure 2.3: Histogram of significant wave height for the entire data set

2.1.3.2 January

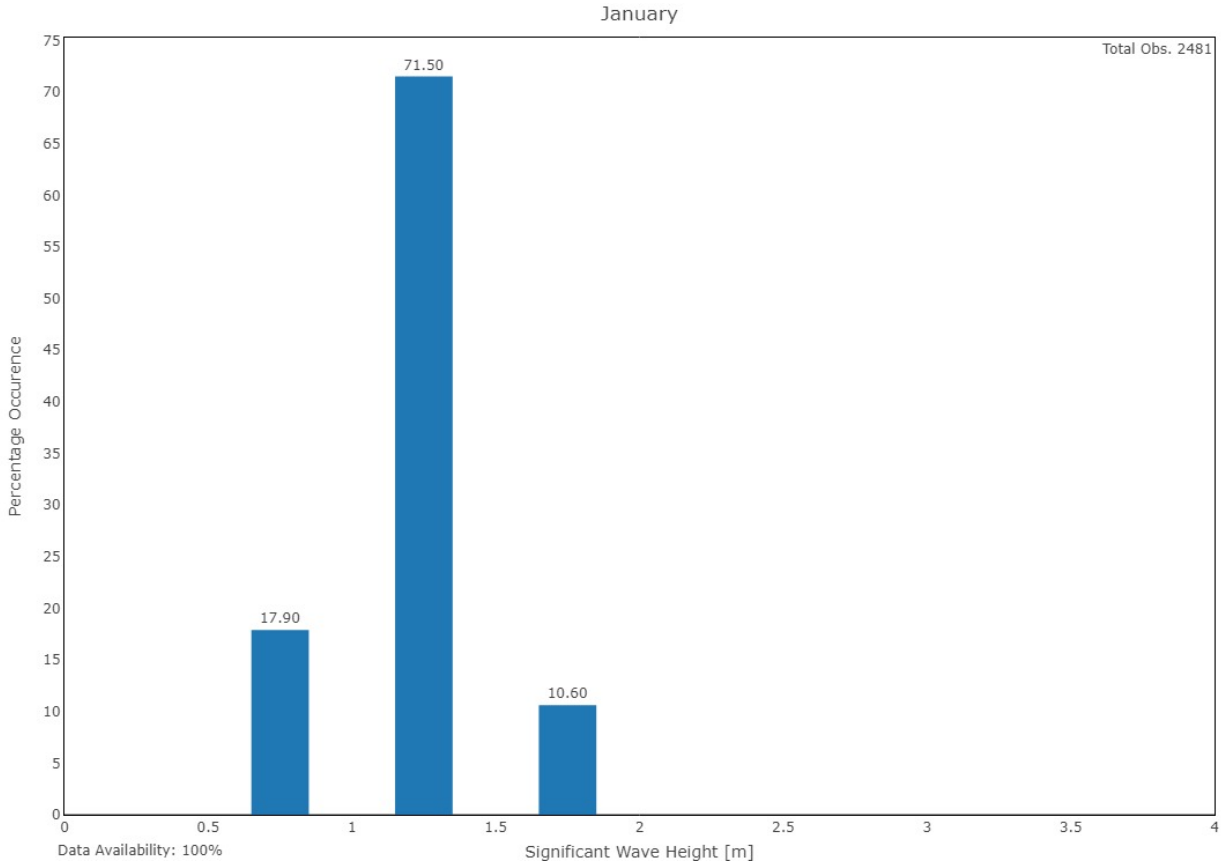


Figure 2.4: Histogram of significant wave height for January

2.1.3.3 February

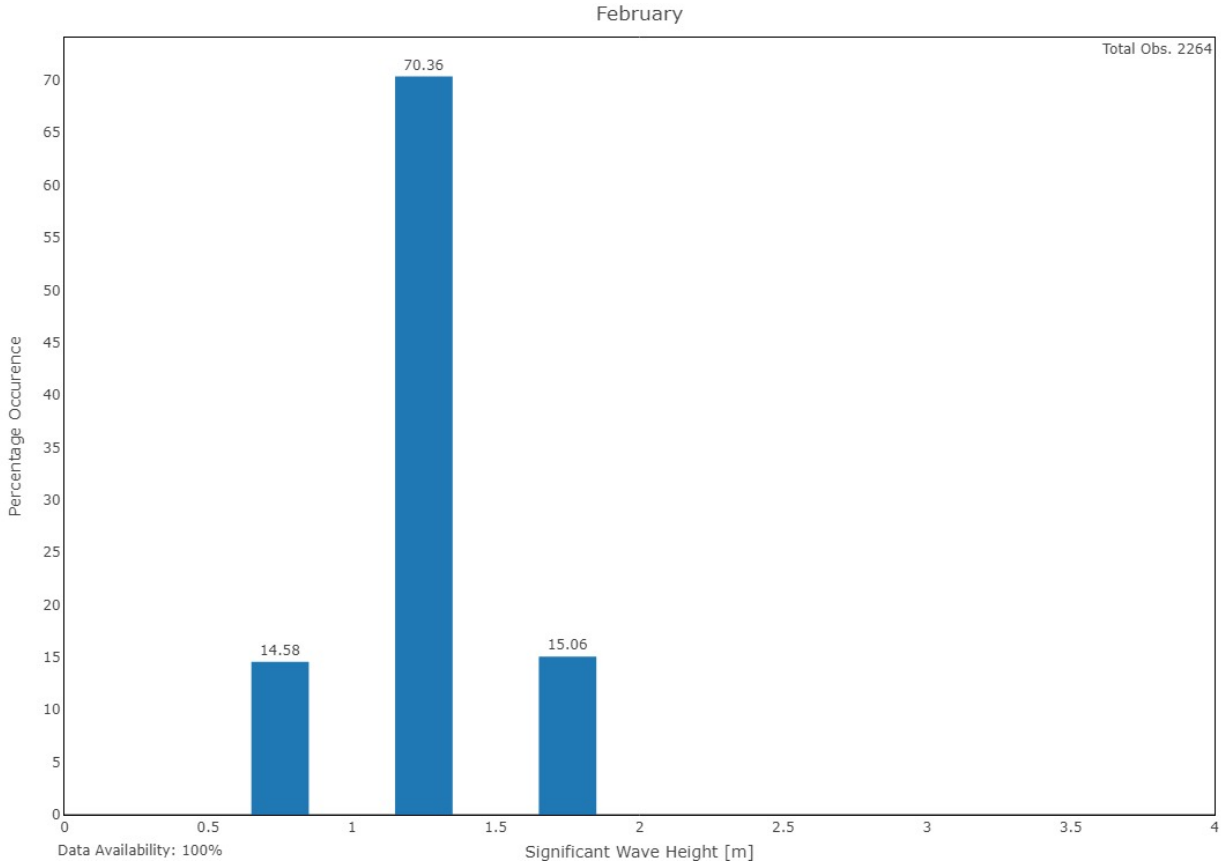


Figure 2.5: Histogram of significant wave height for February

2.1.3.4 March

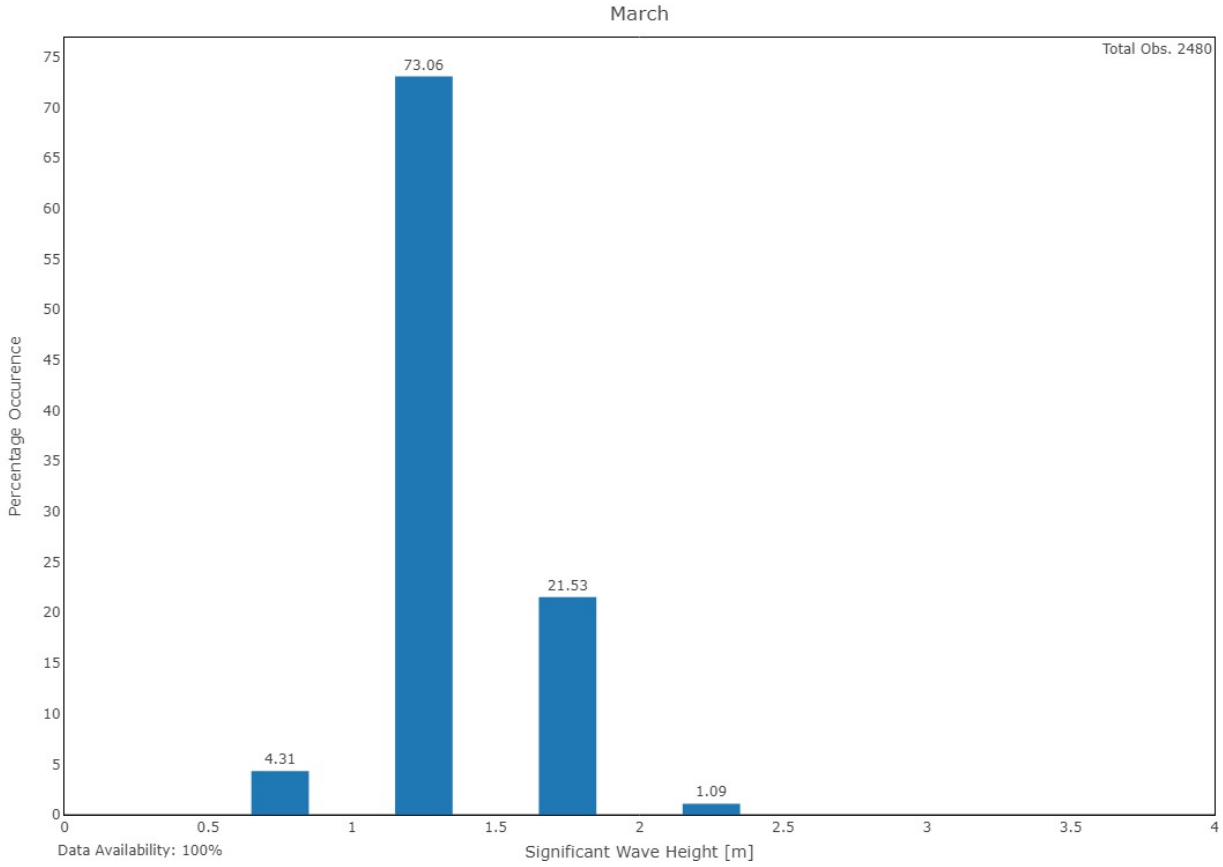


Figure 2.6: Histogram of significant wave height for March

2.1.3.5 April

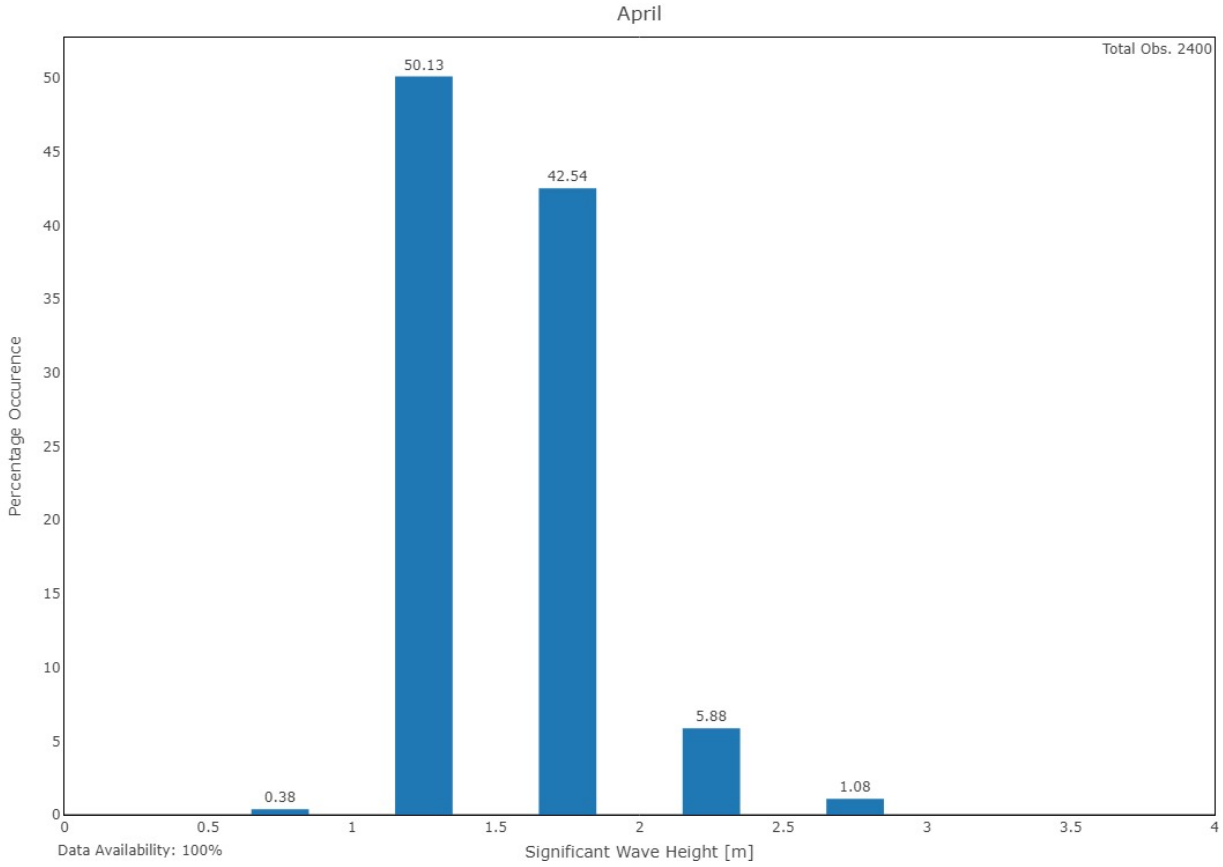


Figure 2.7: Histogram of significant wave height for April

2.1.3.6 May

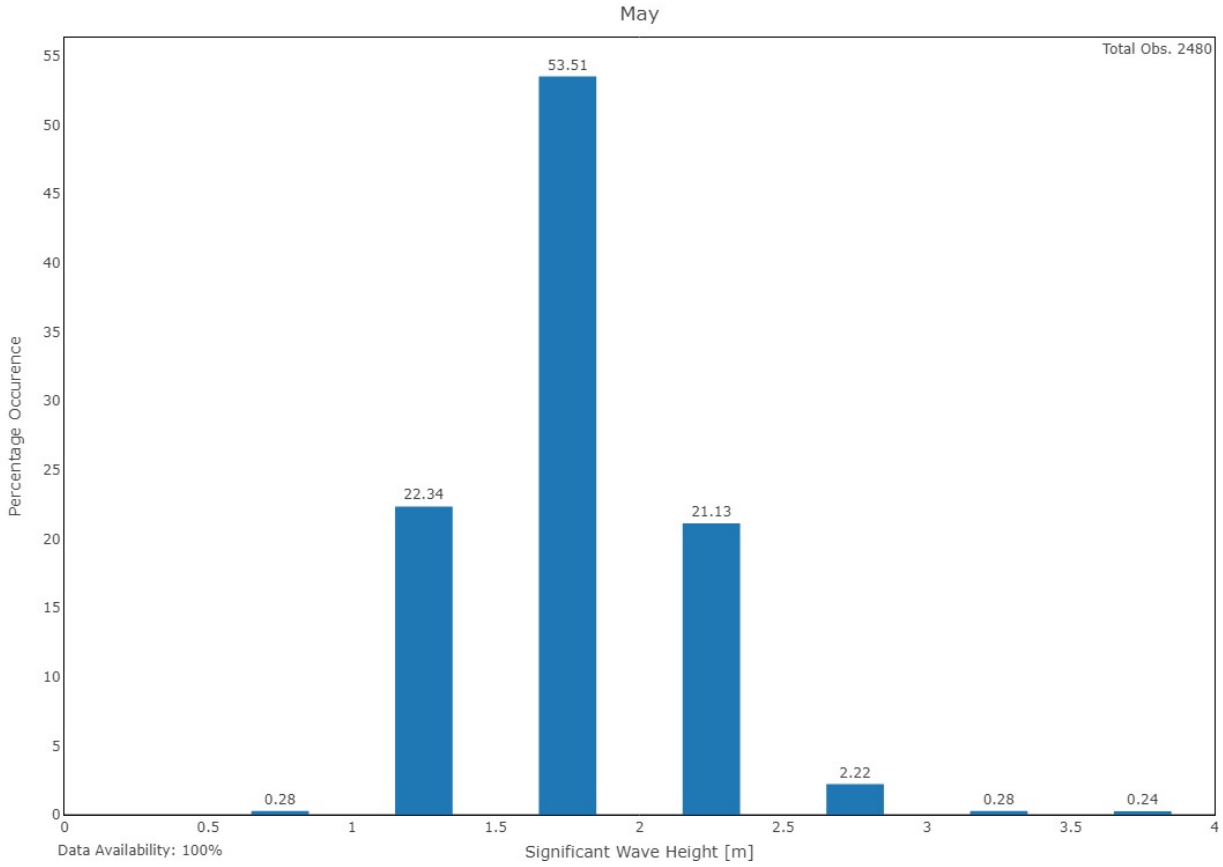


Figure 2.8: Histogram of significant wave height for May

2.1.3.7 June

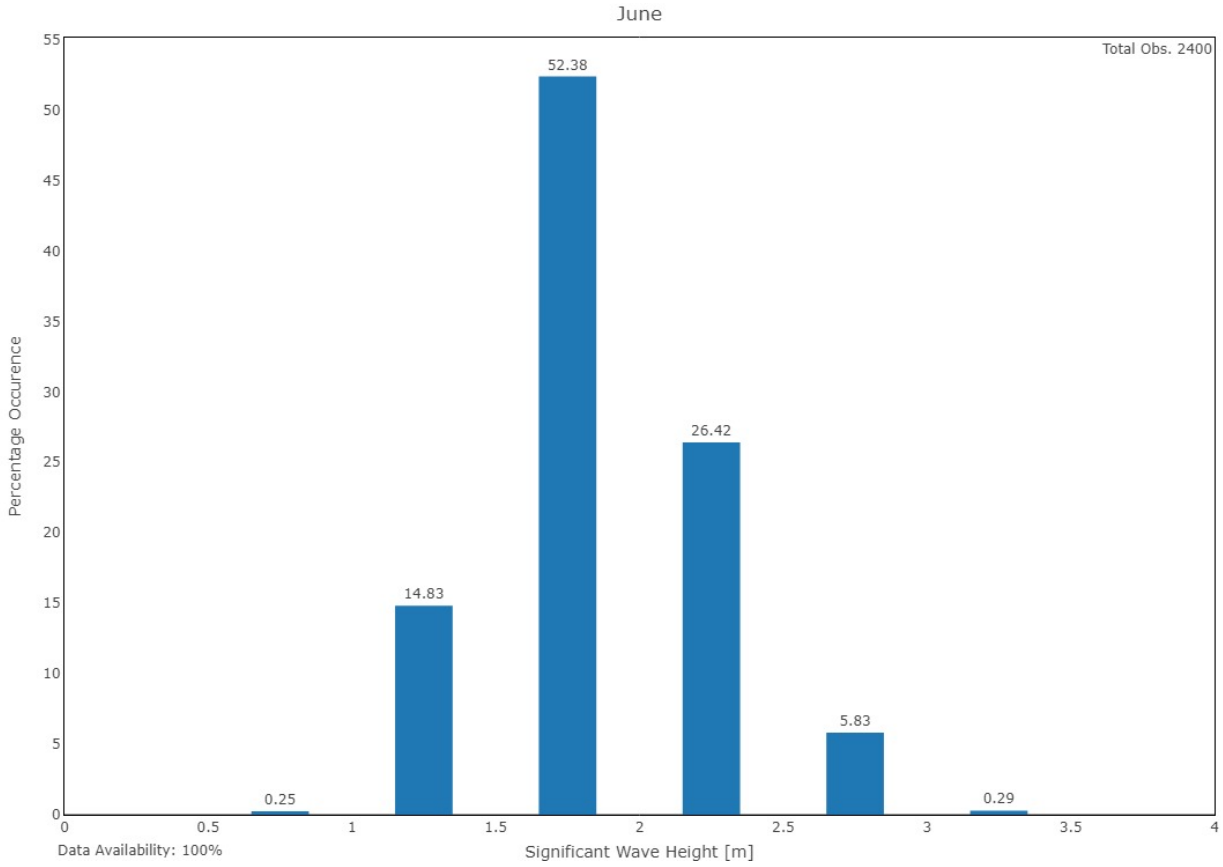


Figure 2.9: Histogram of significant wave height for June

2.1.3.8 July

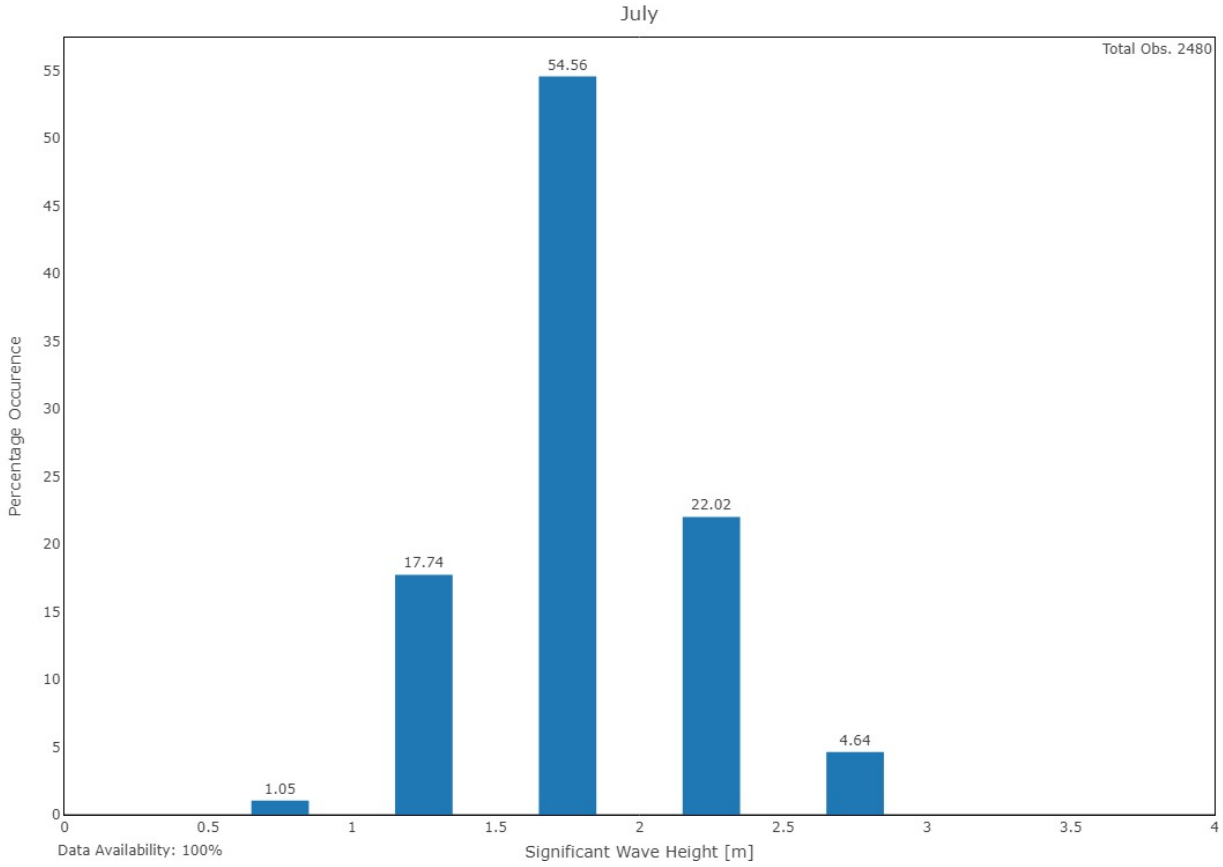


Figure 2.10: Histogram of significant wave height for July

2.1.3.9 August

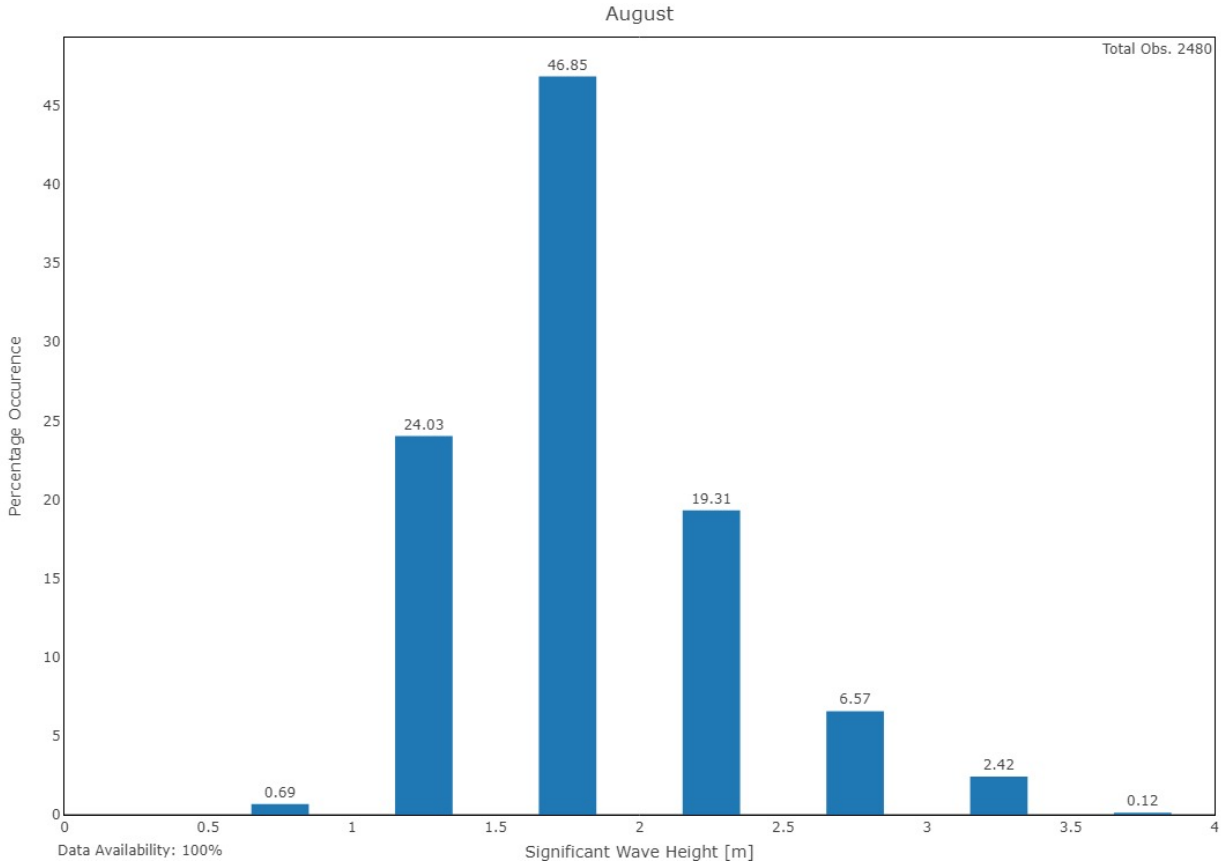


Figure 2.11: Histogram of significant wave height for August

2.1.3.10 September

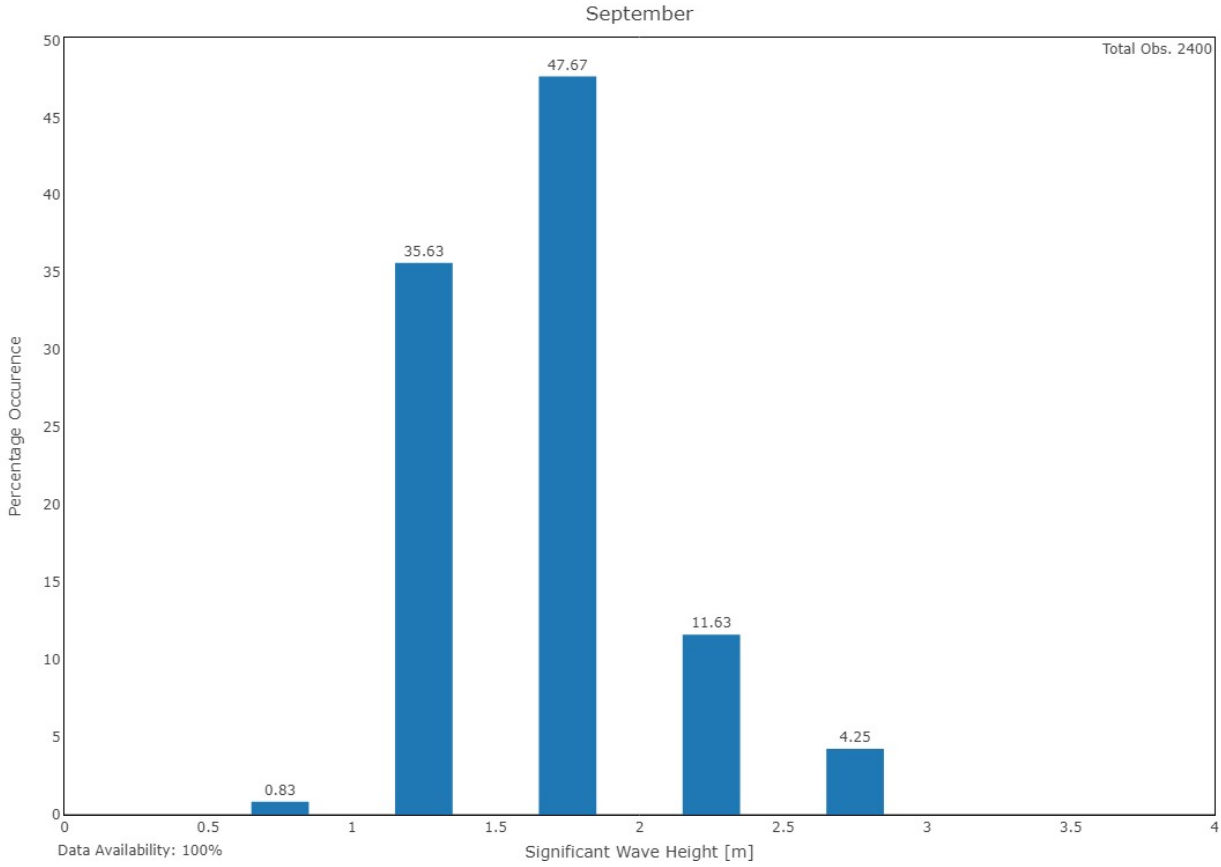


Figure 2.12: Histogram of significant wave height for September

2.1.3.11 October

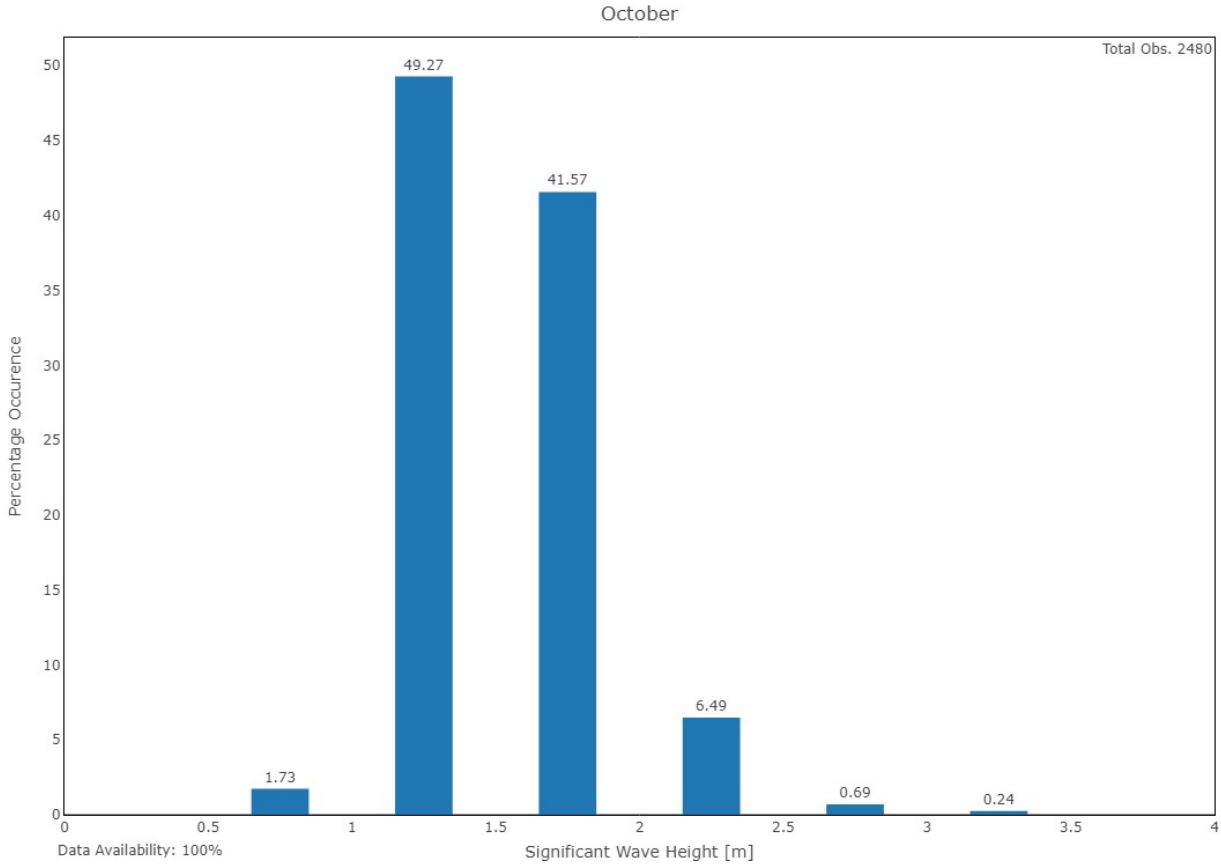


Figure 2.13: Histogram of significant wave height for October

2.1.3.12 November

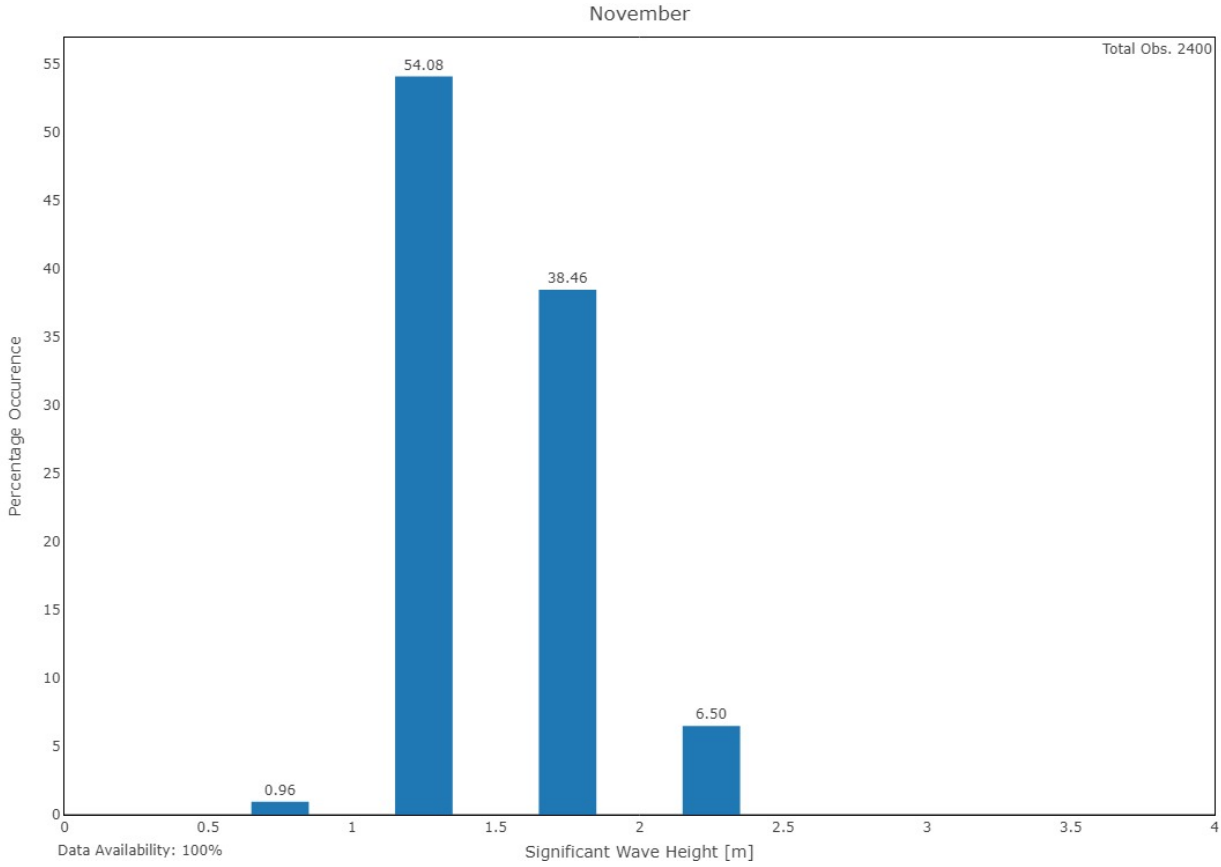


Figure 2.14: Histogram of significant wave height for November

2.1.3.13 December

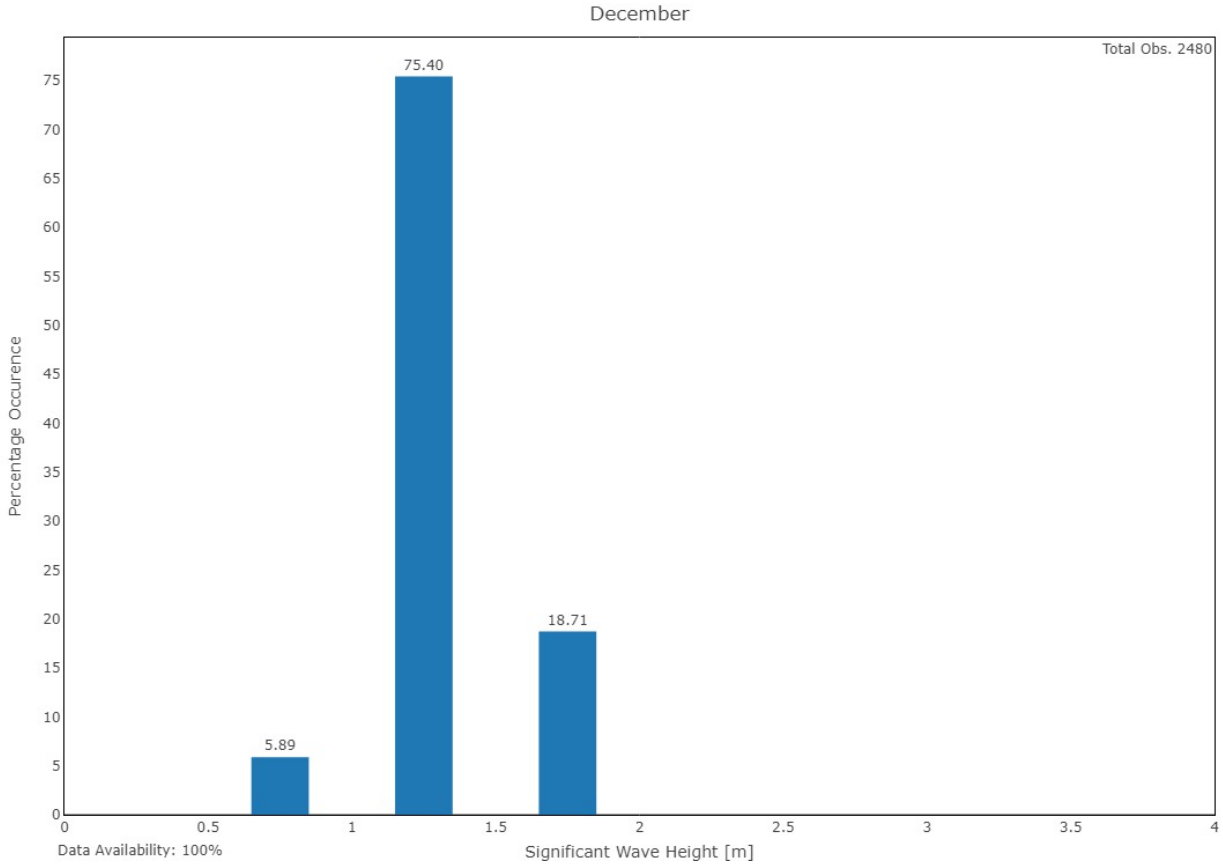
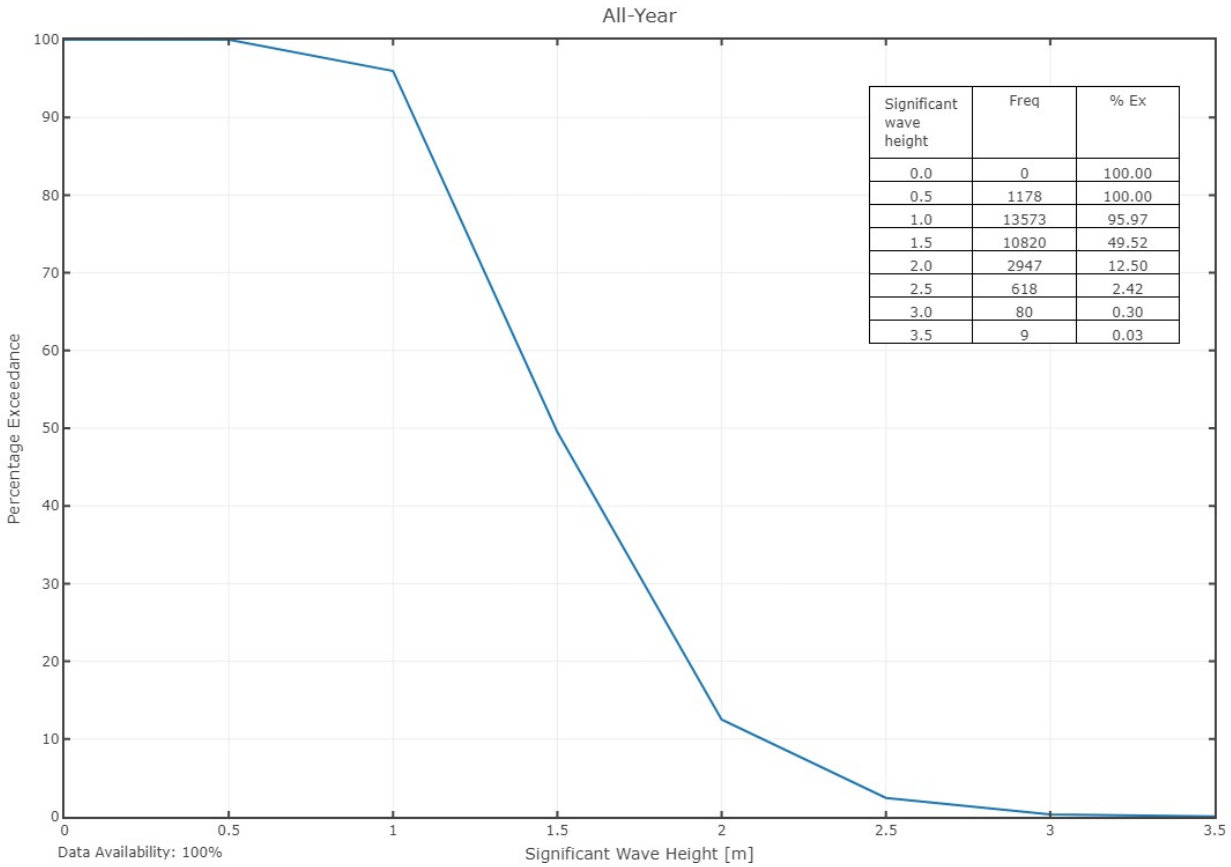


Figure 2.15: Histogram of significant wave height for December

2.1.4 Exceedence Curves

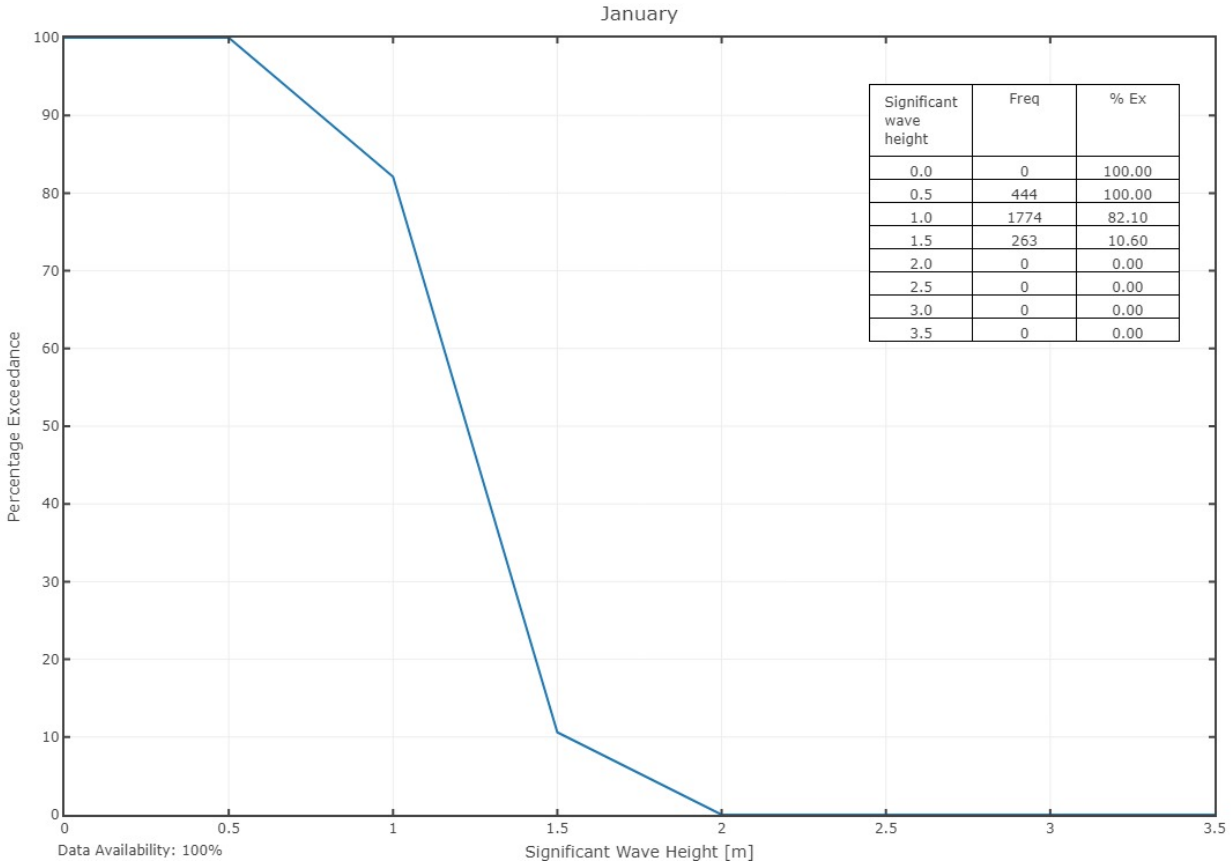
2.1.4.1 All-Year



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	1178	100.00
1.0	13573	95.97
1.5	10820	49.52
2.0	2947	12.50
2.5	618	2.42
3.0	80	0.30
3.5	9	0.03

Figure 2.16: Percentage exceedance of significant wave height for the entire data set

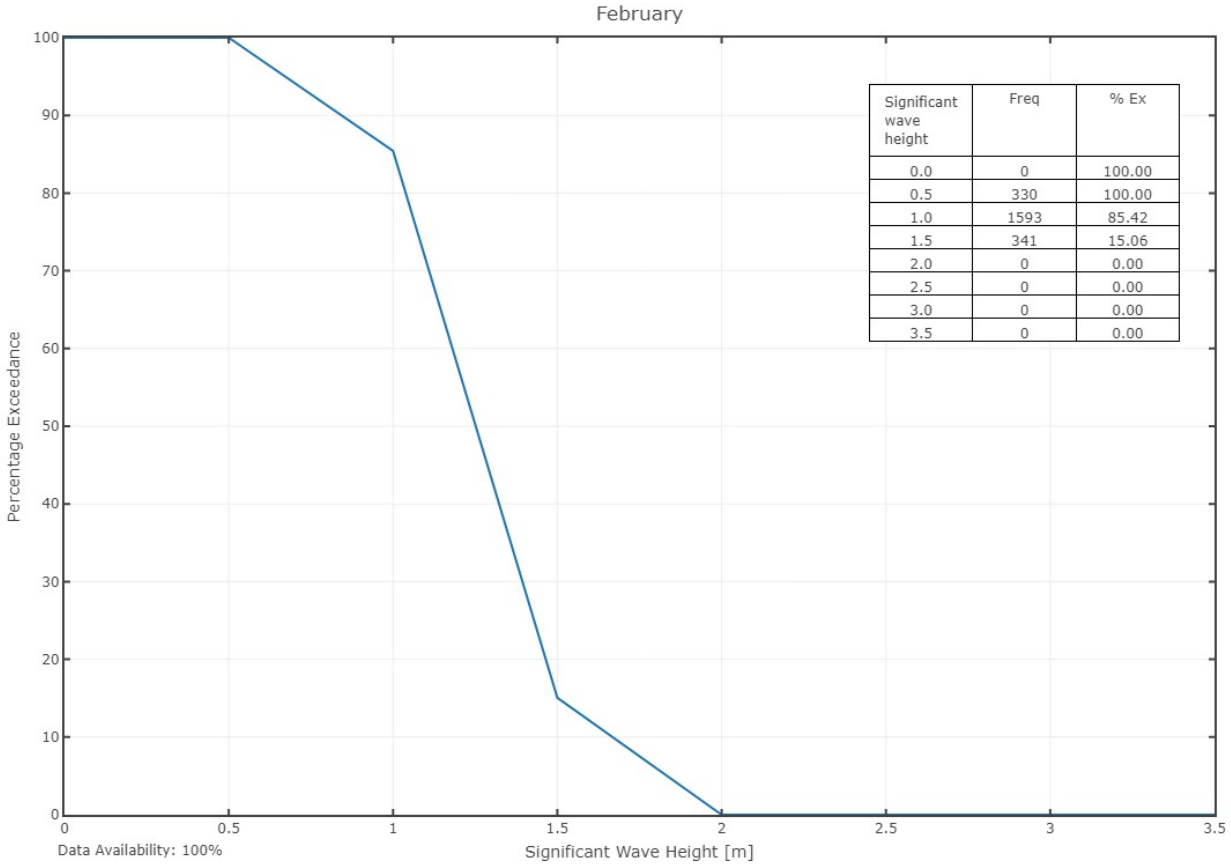
2.1.4.2 January



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	444	100.00
1.0	1774	82.10
1.5	263	10.60
2.0	0	0.00
2.5	0	0.00
3.0	0	0.00
3.5	0	0.00

Figure 2.17: Percentage exceedance of significant wave height for January

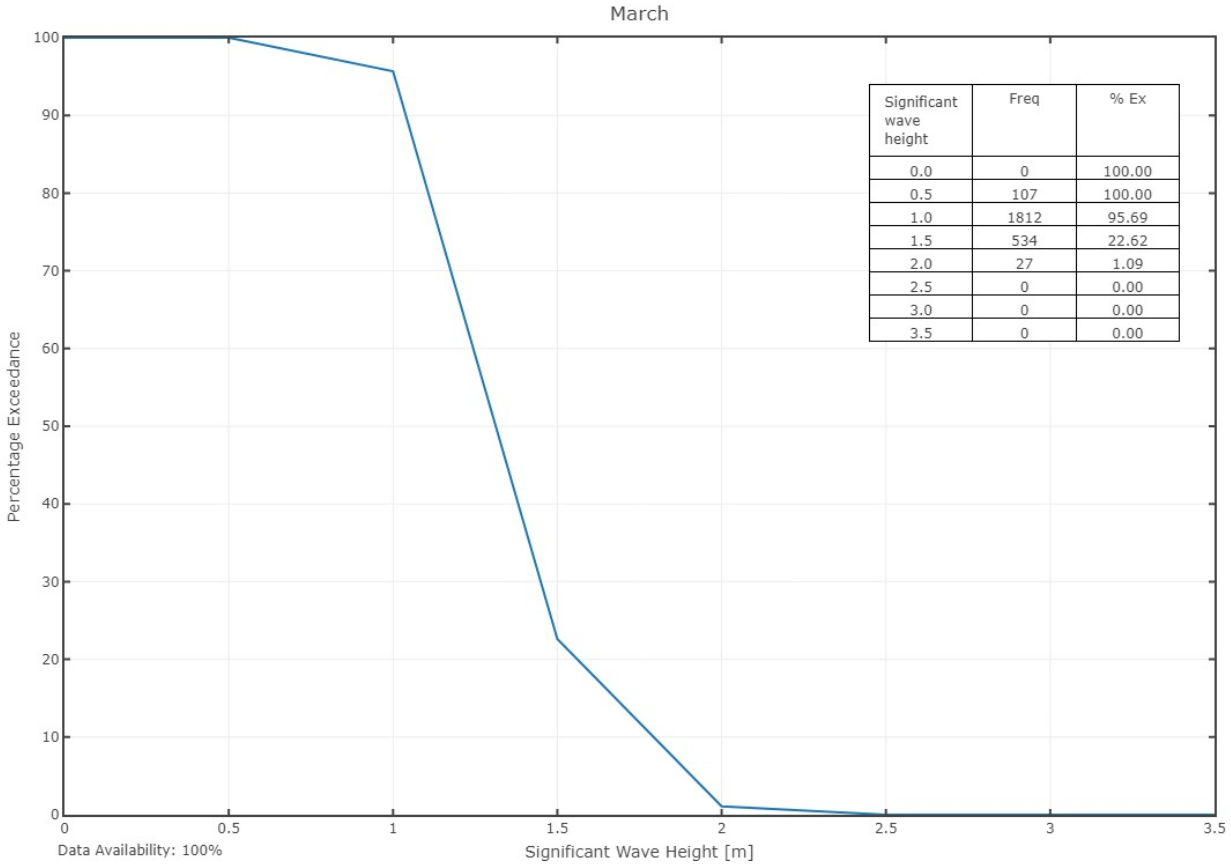
2.1.4.3 February



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	330	100.00
1.0	1593	85.42
1.5	341	15.06
2.0	0	0.00
2.5	0	0.00
3.0	0	0.00
3.5	0	0.00

Figure 2.18: Percentage exceedance of significant wave height for February

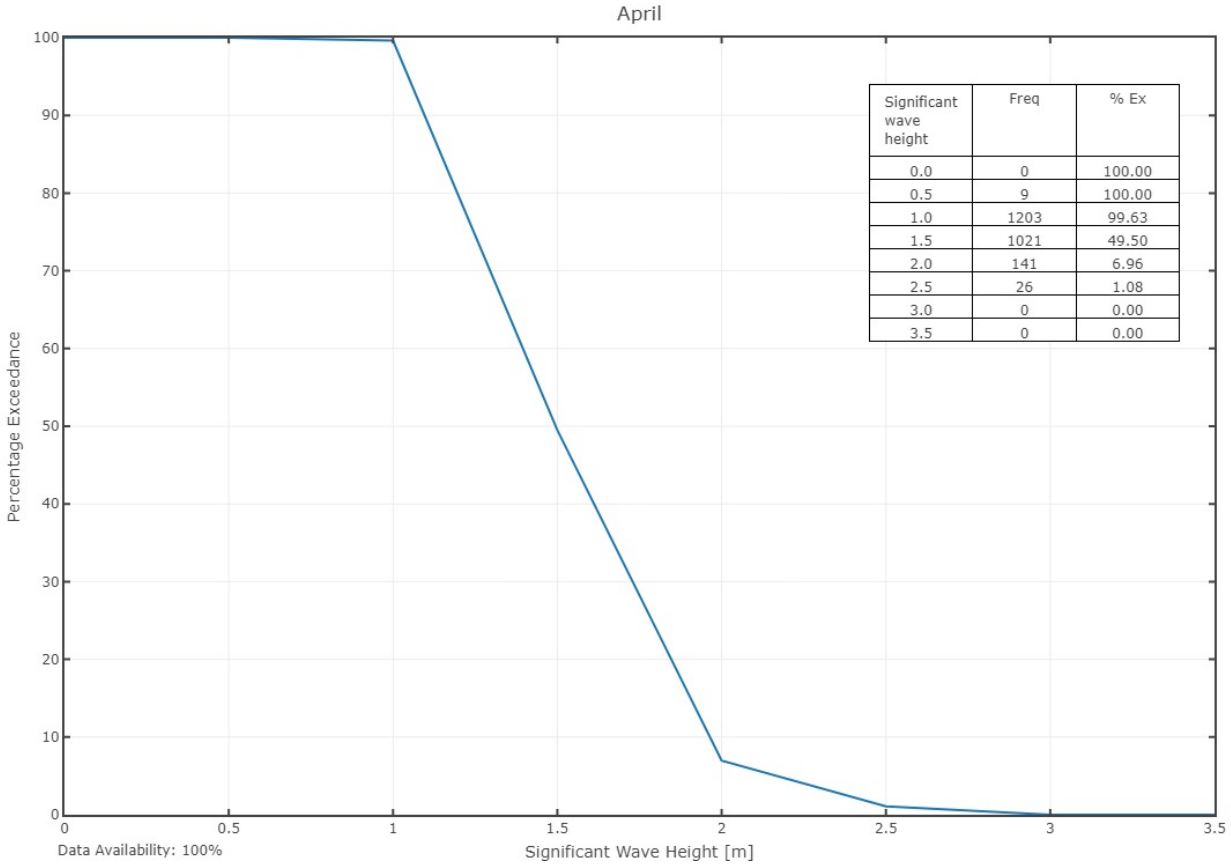
2.1.4.4 March



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	107	100.00
1.0	1812	95.69
1.5	534	22.62
2.0	27	1.09
2.5	0	0.00
3.0	0	0.00
3.5	0	0.00

Figure 2.19: Percentage exceedance of significant wave height for March

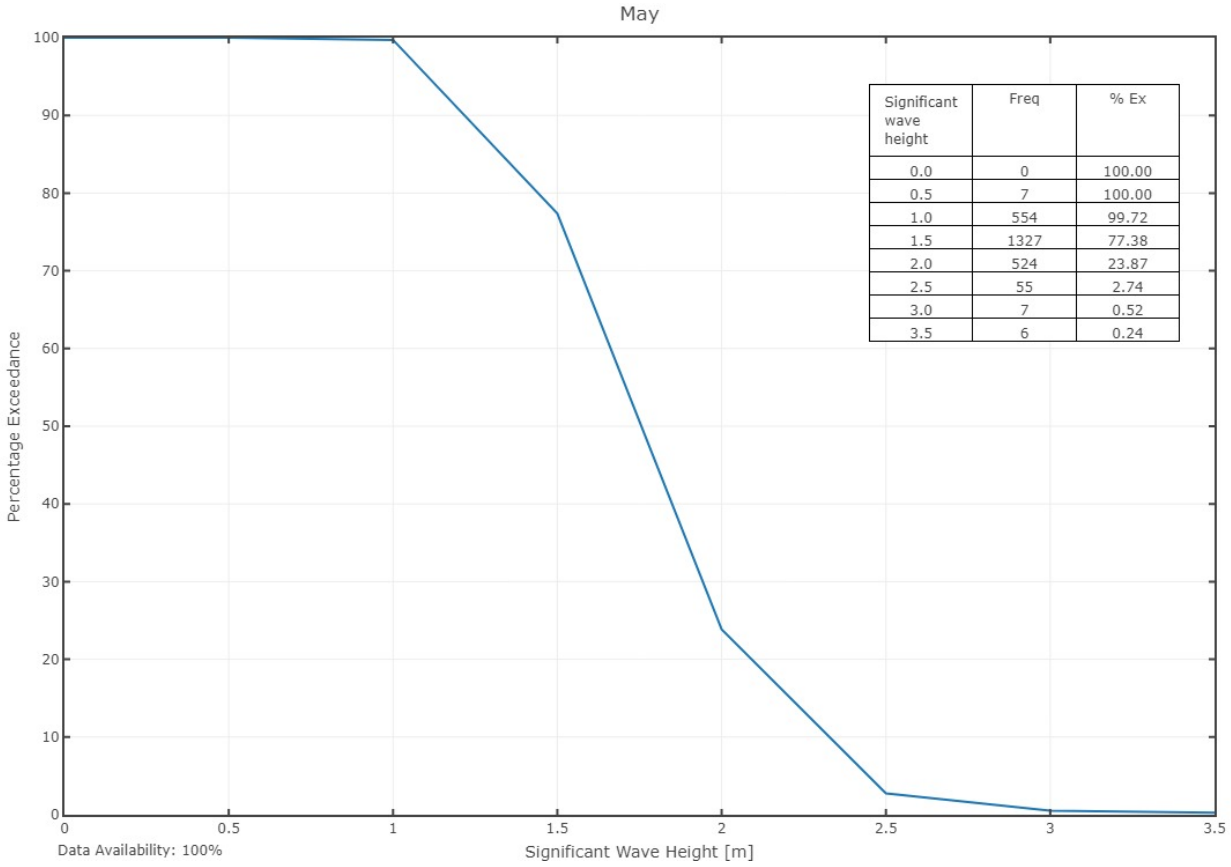
2.1.4.5 April



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	9	100.00
1.0	1203	99.63
1.5	1021	49.50
2.0	141	6.96
2.5	26	1.08
3.0	0	0.00
3.5	0	0.00

Figure 2.20: Percentage exceedance of significant wave height for April

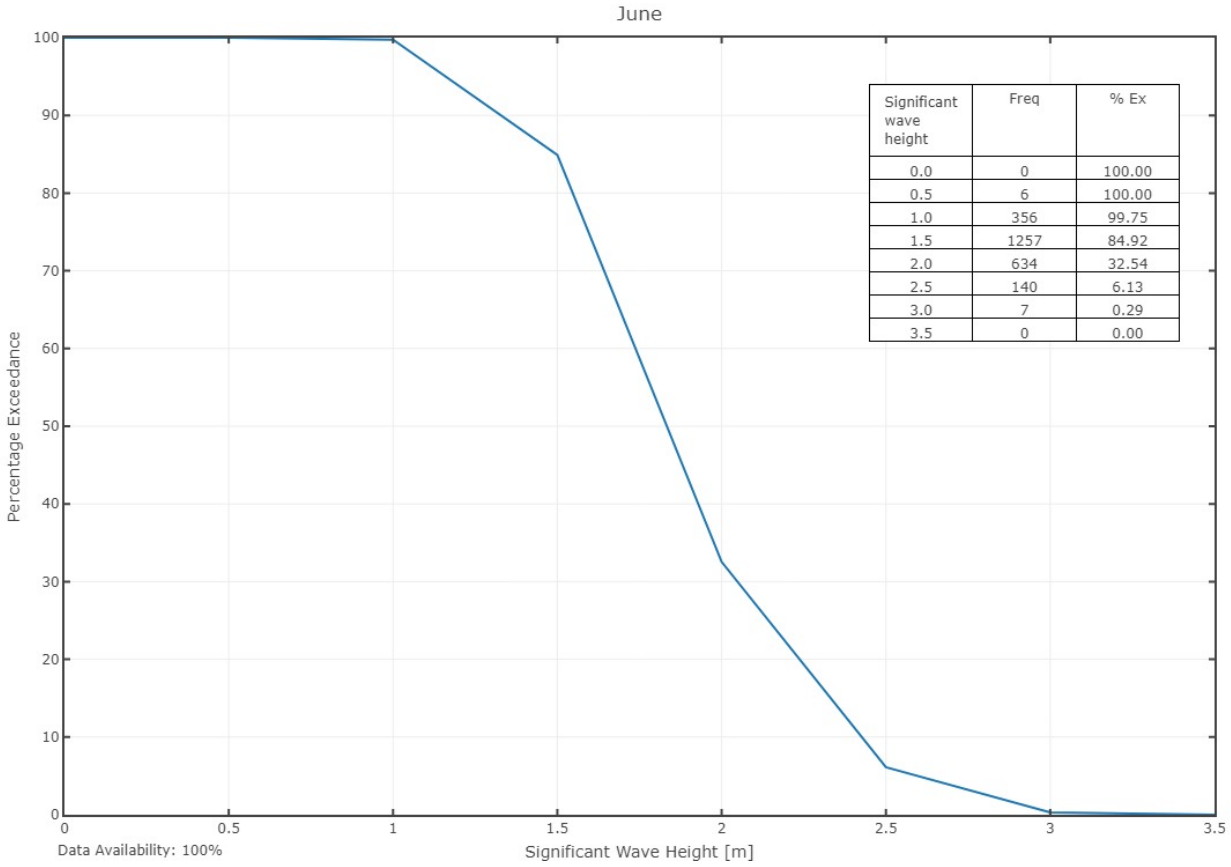
2.1.4.6 May



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	7	100.00
1.0	554	99.72
1.5	1327	77.38
2.0	524	23.87
2.5	55	2.74
3.0	7	0.52
3.5	6	0.24

Figure 2.21: Percentage exceedance of significant wave height for May

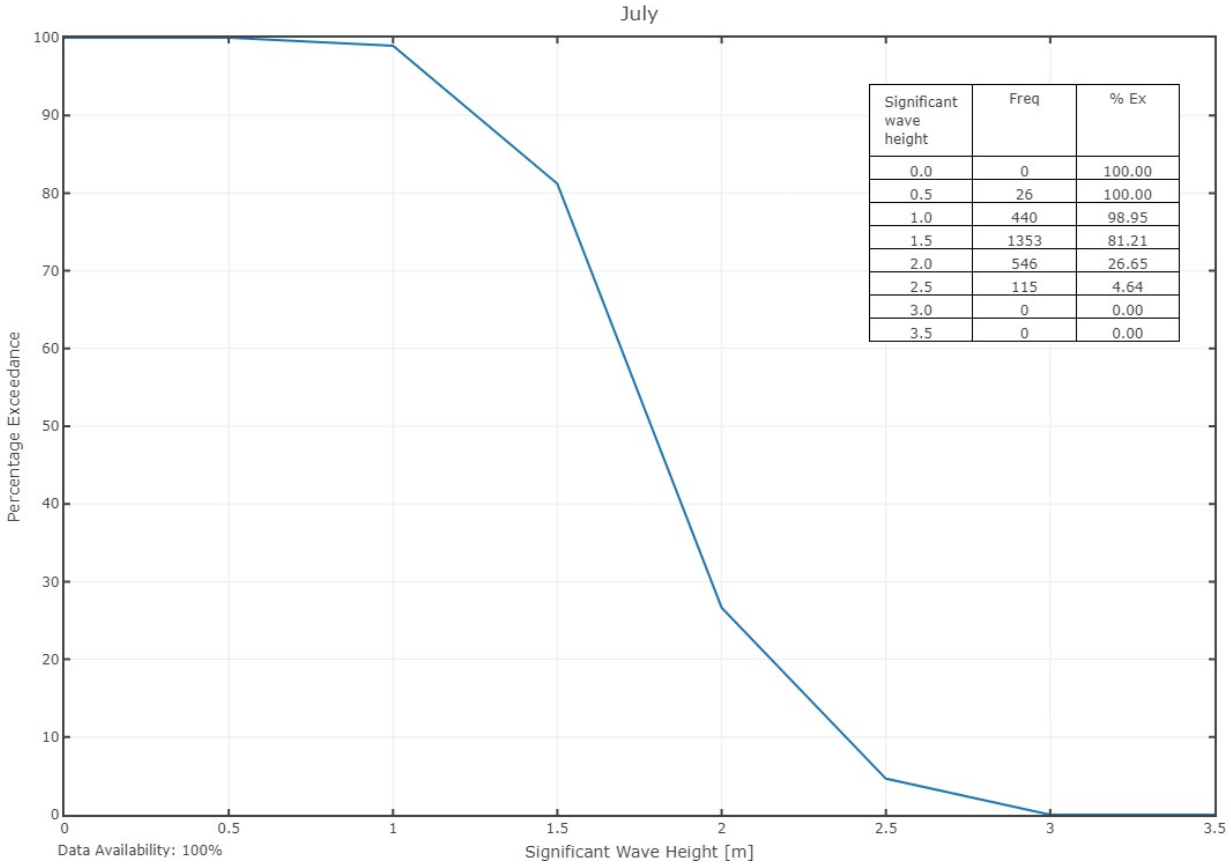
2.1.4.7 June



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	6	100.00
1.0	356	99.75
1.5	1257	84.92
2.0	634	32.54
2.5	140	6.13
3.0	7	0.29
3.5	0	0.00

Figure 2.22: Percentage exceedance of significant wave height for June

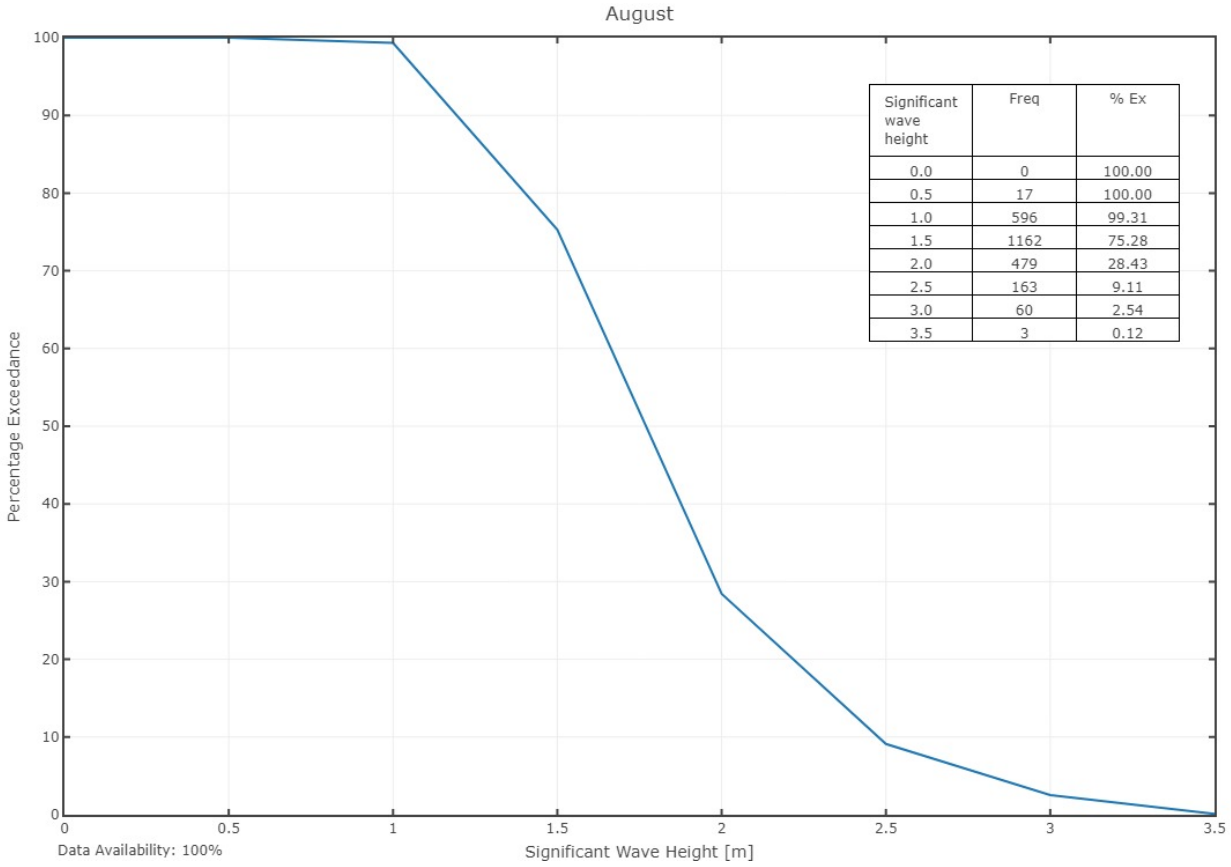
2.1.4.8 July



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	26	100.00
1.0	440	98.95
1.5	1353	81.21
2.0	546	26.65
2.5	115	4.64
3.0	0	0.00
3.5	0	0.00

Figure 2.23: Percentage exceedance of significant wave height for July

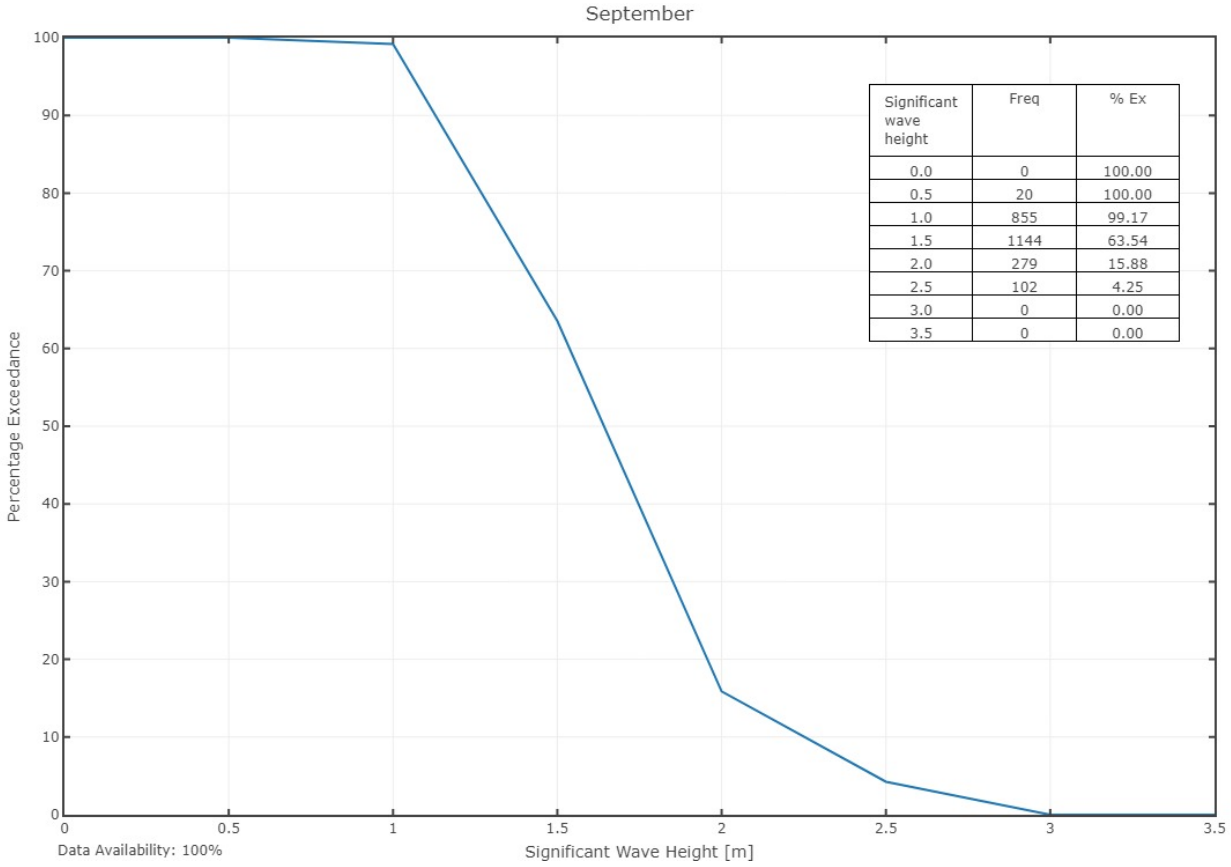
2.1.4.9 August



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	17	100.00
1.0	596	99.31
1.5	1162	75.28
2.0	479	28.43
2.5	163	9.11
3.0	60	2.54
3.5	3	0.12

Figure 2.24: Percentage exceedance of significant wave height for August

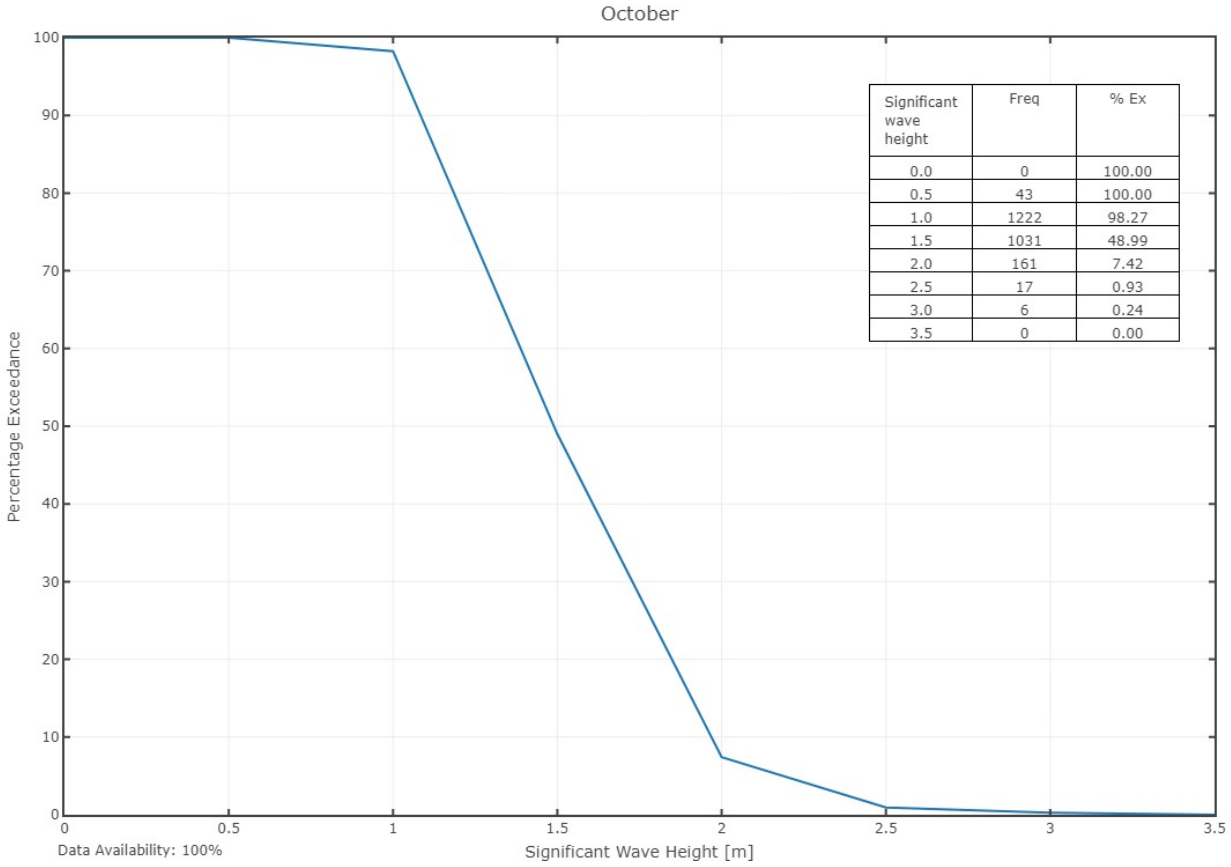
2.1.4.10 September



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	20	100.00
1.0	855	99.17
1.5	1144	63.54
2.0	279	15.88
2.5	102	4.25
3.0	0	0.00
3.5	0	0.00

Figure 2.25: Percentage exceedance of significant wave height for September

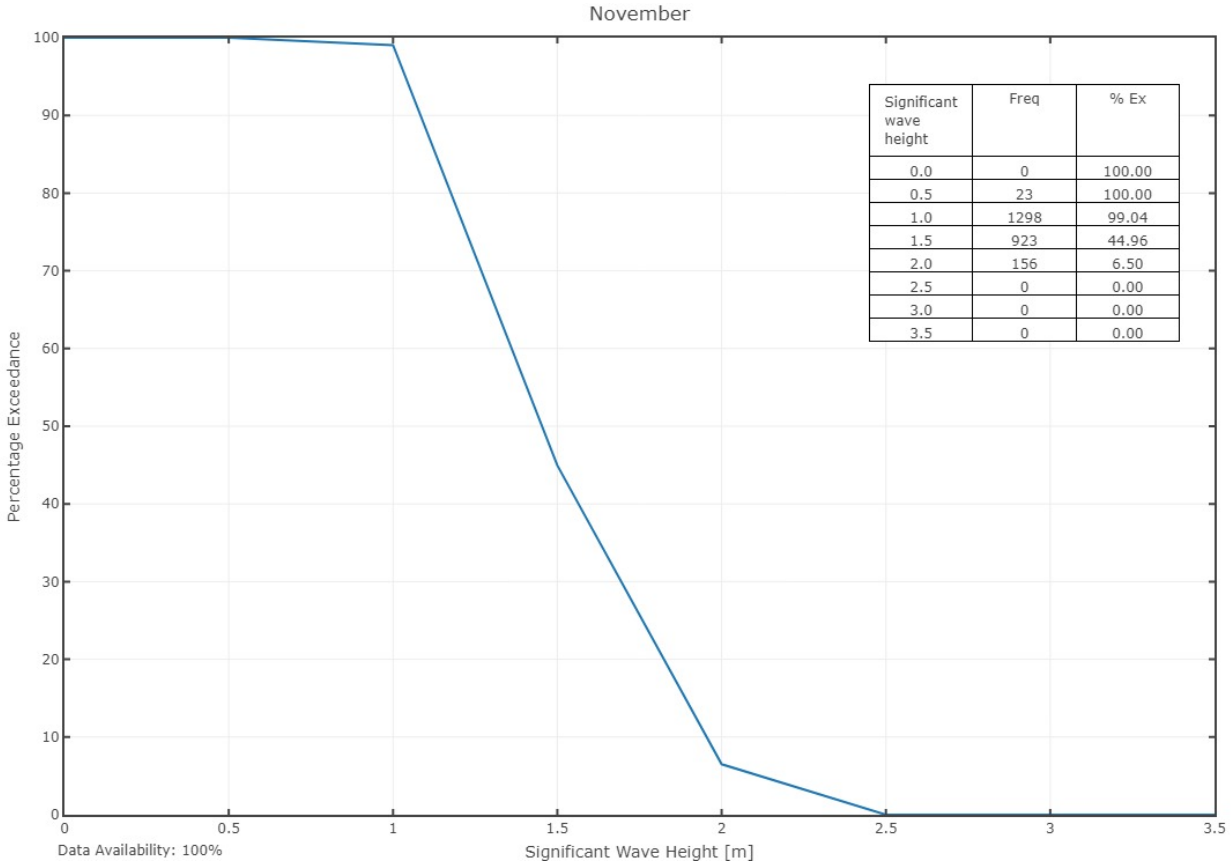
2.1.4.11 October



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	43	100.00
1.0	1222	98.27
1.5	1031	48.99
2.0	161	7.42
2.5	17	0.93
3.0	6	0.24
3.5	0	0.00

Figure 2.26: Percentage exceedance of significant wave height for October

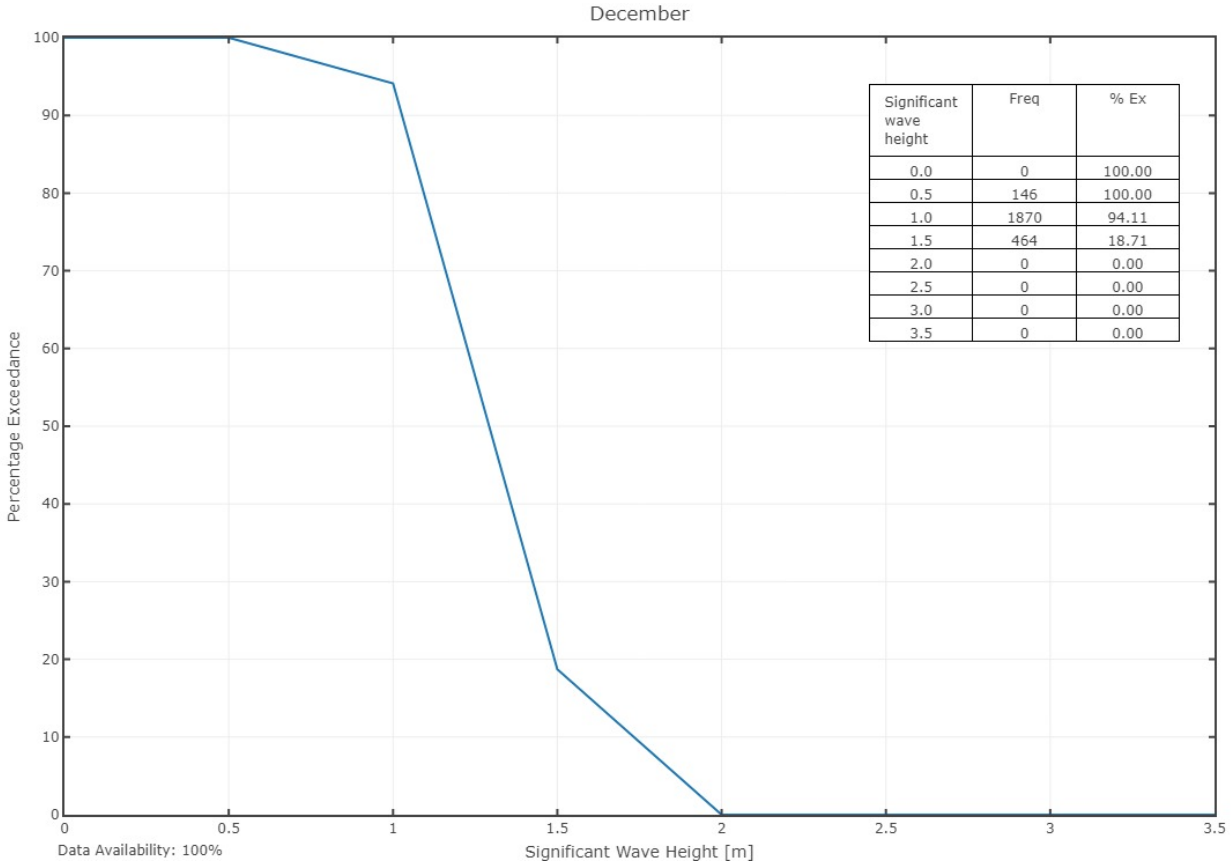
2.1.4.12 November



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	23	100.00
1.0	1298	99.04
1.5	923	44.96
2.0	156	6.50
2.5	0	0.00
3.0	0	0.00
3.5	0	0.00

Figure 2.27: Percentage exceedance of significant wave height for November

2.1.4.13 December



Significant wave height	Freq	% Ex
0.0	0	100.00
0.5	146	100.00
1.0	1870	94.11
1.5	464	18.71
2.0	0	0.00
2.5	0	0.00
3.0	0	0.00
3.5	0	0.00

Figure 2.28: Percentage exceedance of significant wave height for December

2.2 Significant Wave Height & Peak Wave Direction

2.2.1 Bivariate Tables

2.2.1.1 All-Year

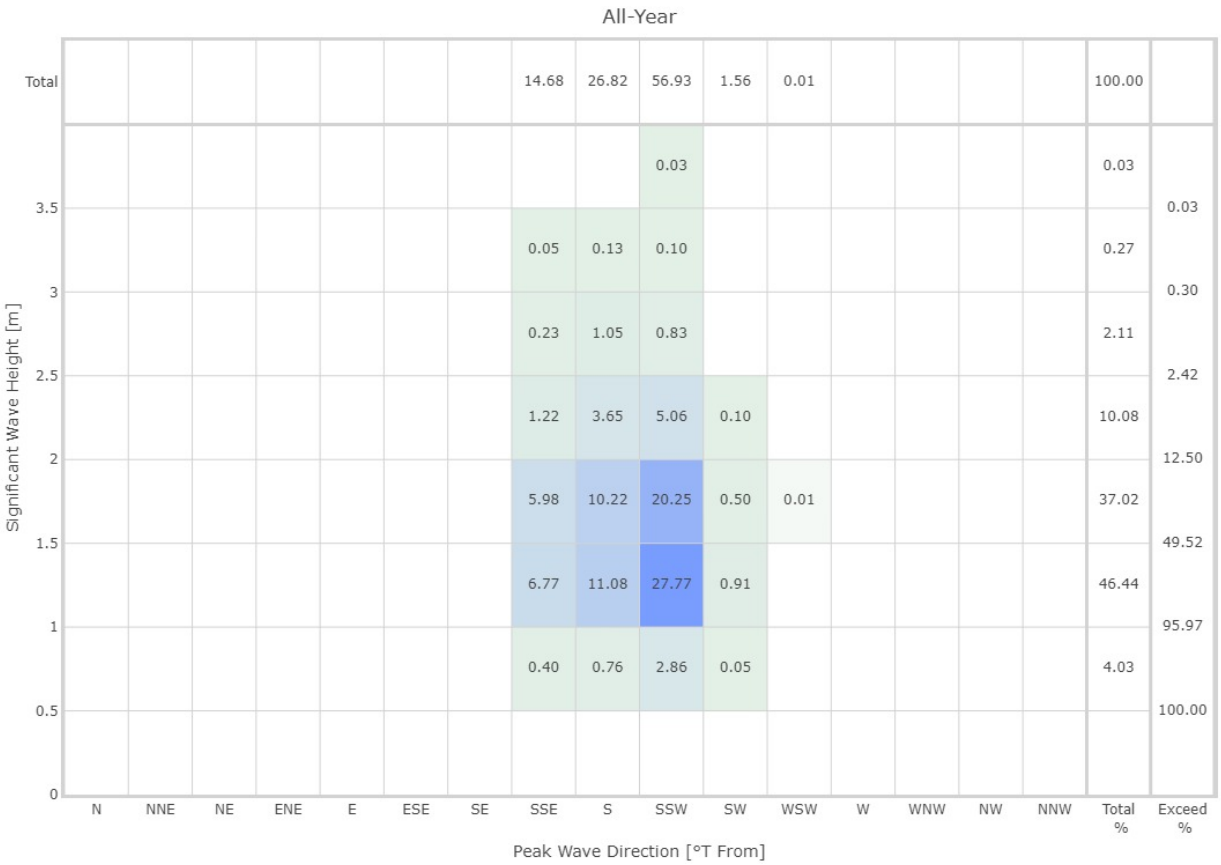


Figure 2.29: Bivariate table of significant wave height against peak wave direction for the entire data set

2.2.1.2 January

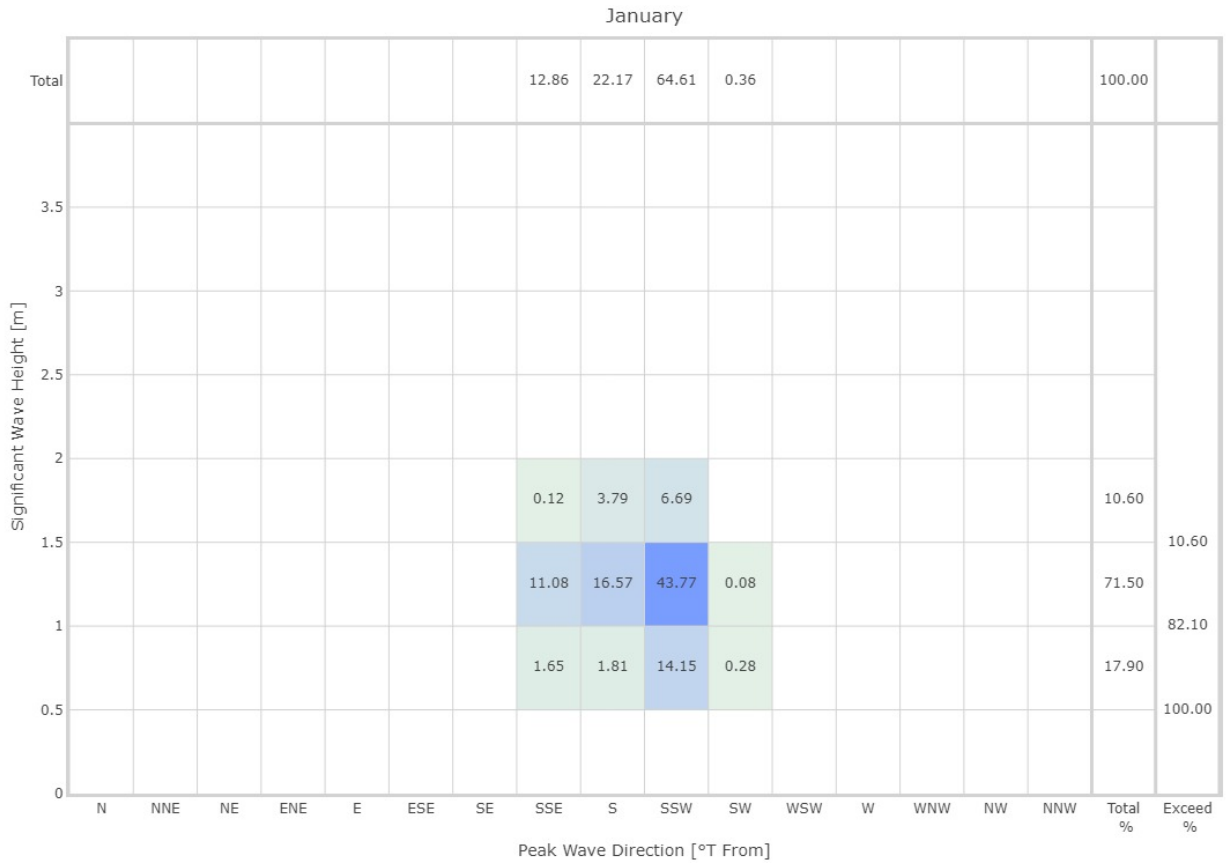


Figure 2.30: Bivariate table of significant wave height against peak wave direction for January

2.2.1.3 February

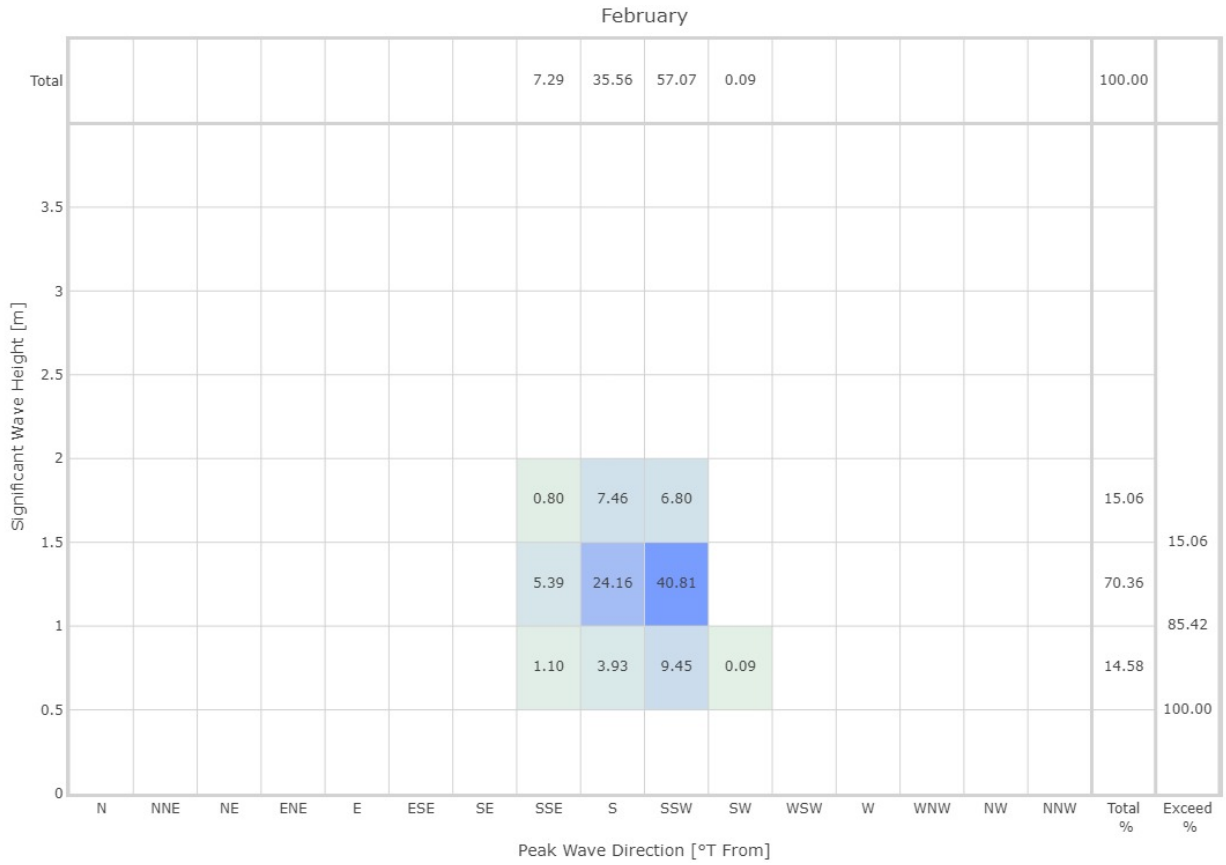


Figure 2.31: Bivariate table of significant wave height against peak wave direction for February

2.2.1.4 March

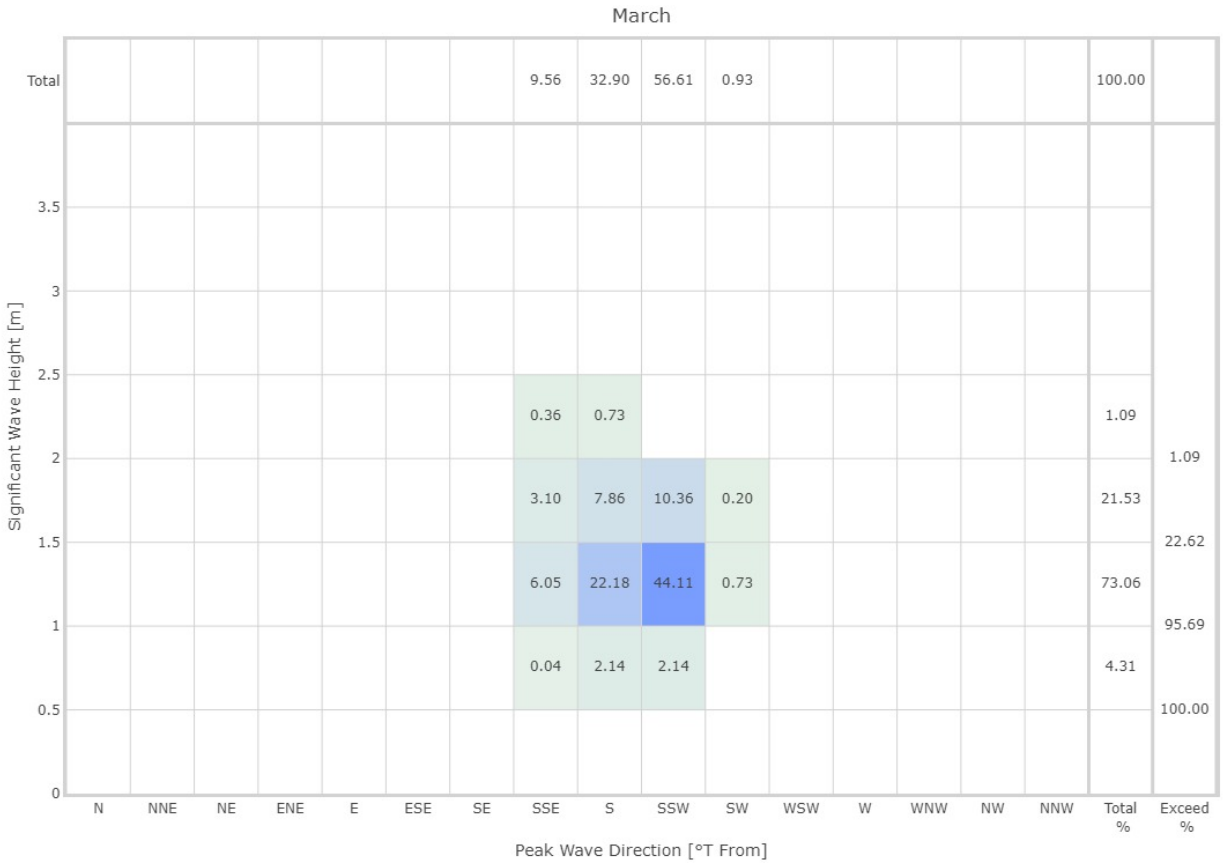


Figure 2.32: Bivariate table of significant wave height against peak wave direction for March

2.2.1.5 April

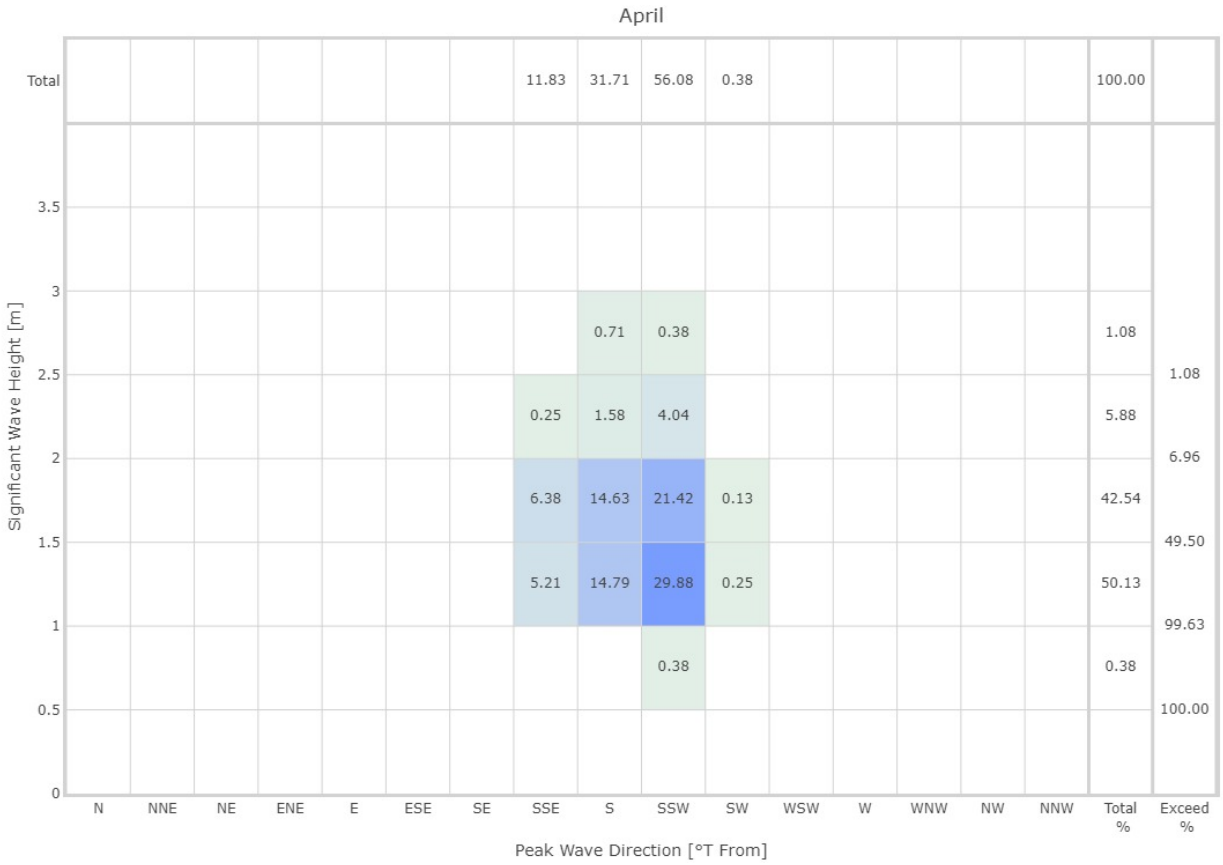


Figure 2.33: Bivariate table of significant wave height against peak wave direction for April

2.2.1.6 May

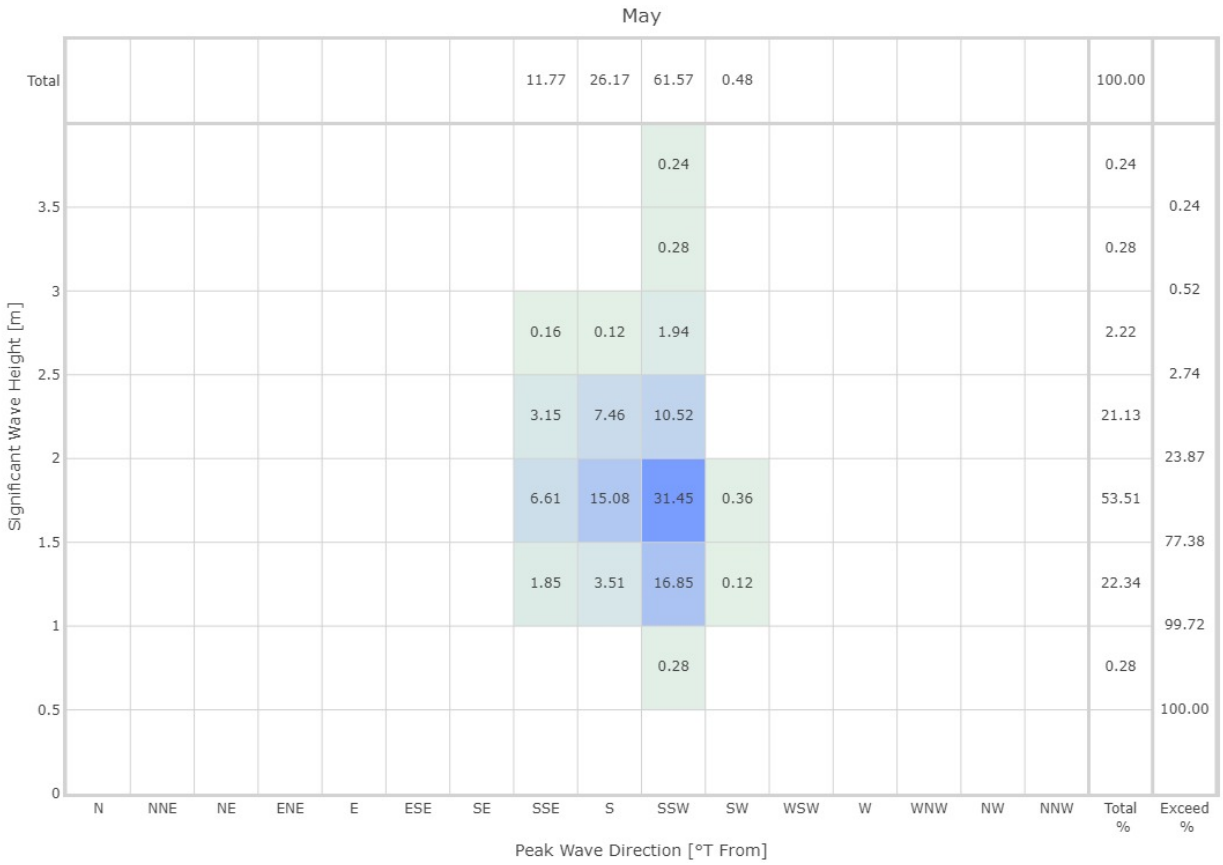


Figure 2.34: Bivariate table of significant wave height against peak wave direction for May

2.2.1.7 June

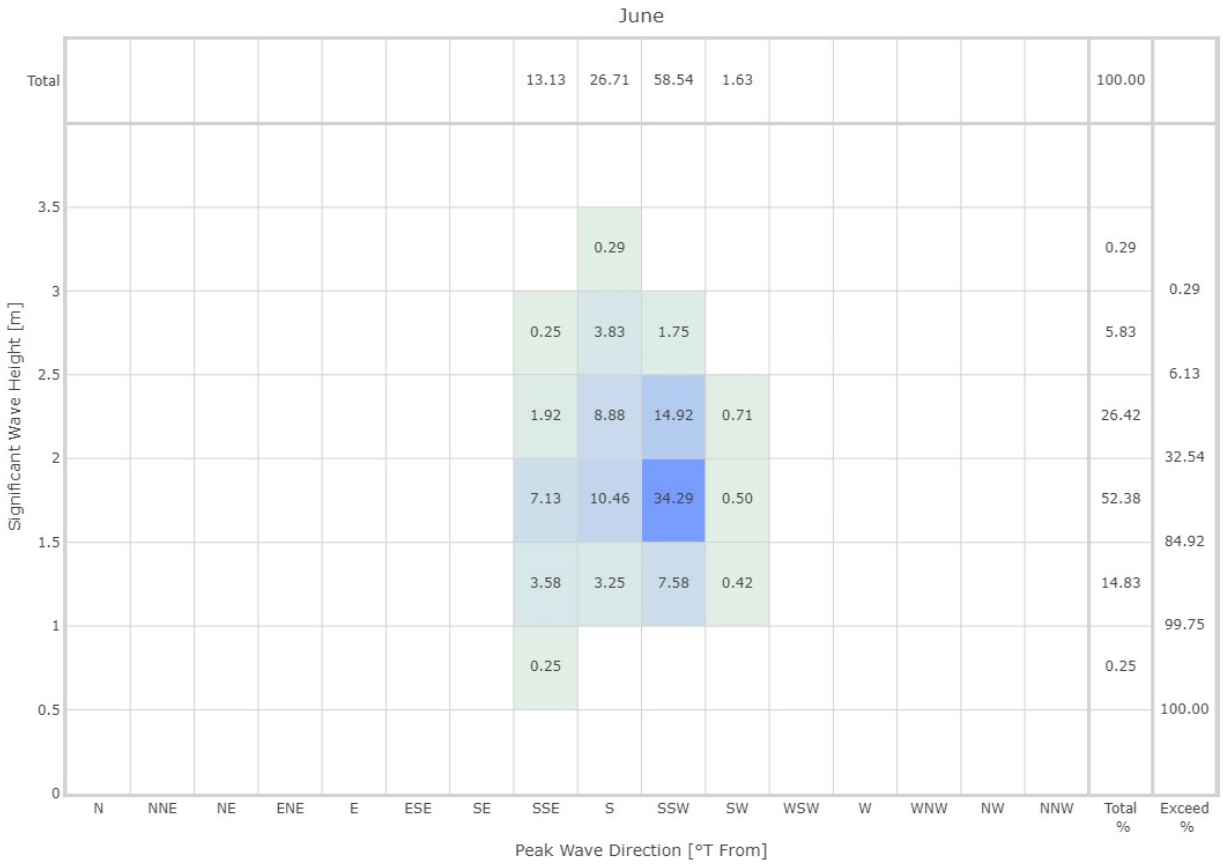


Figure 2.35: Bivariate table of significant wave height against peak wave direction for June

2.2.1.8 July

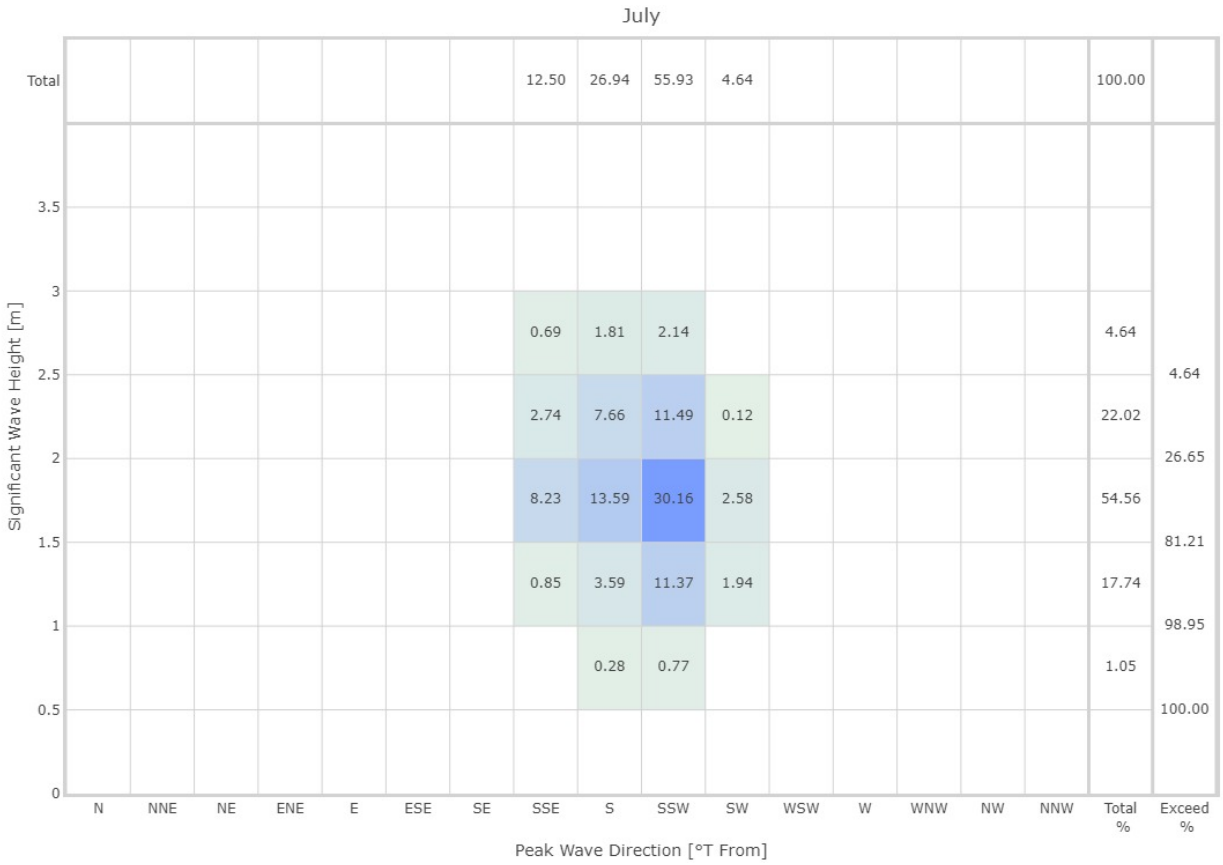


Figure 2.36: Bivariate table of significant wave height against peak wave direction for July

2.2.1.9 August

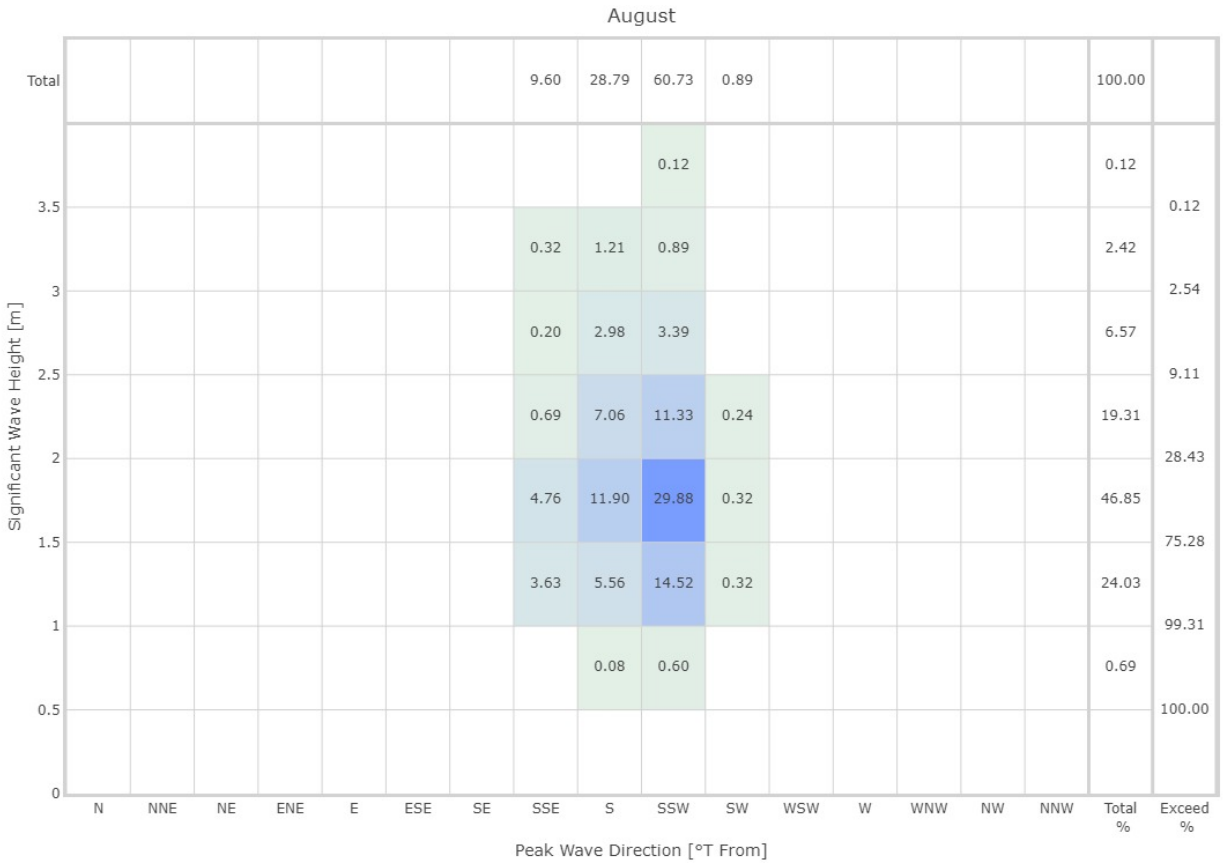


Figure 2.37: Bivariate table of significant wave height against peak wave direction for August

2.2.1.10 September

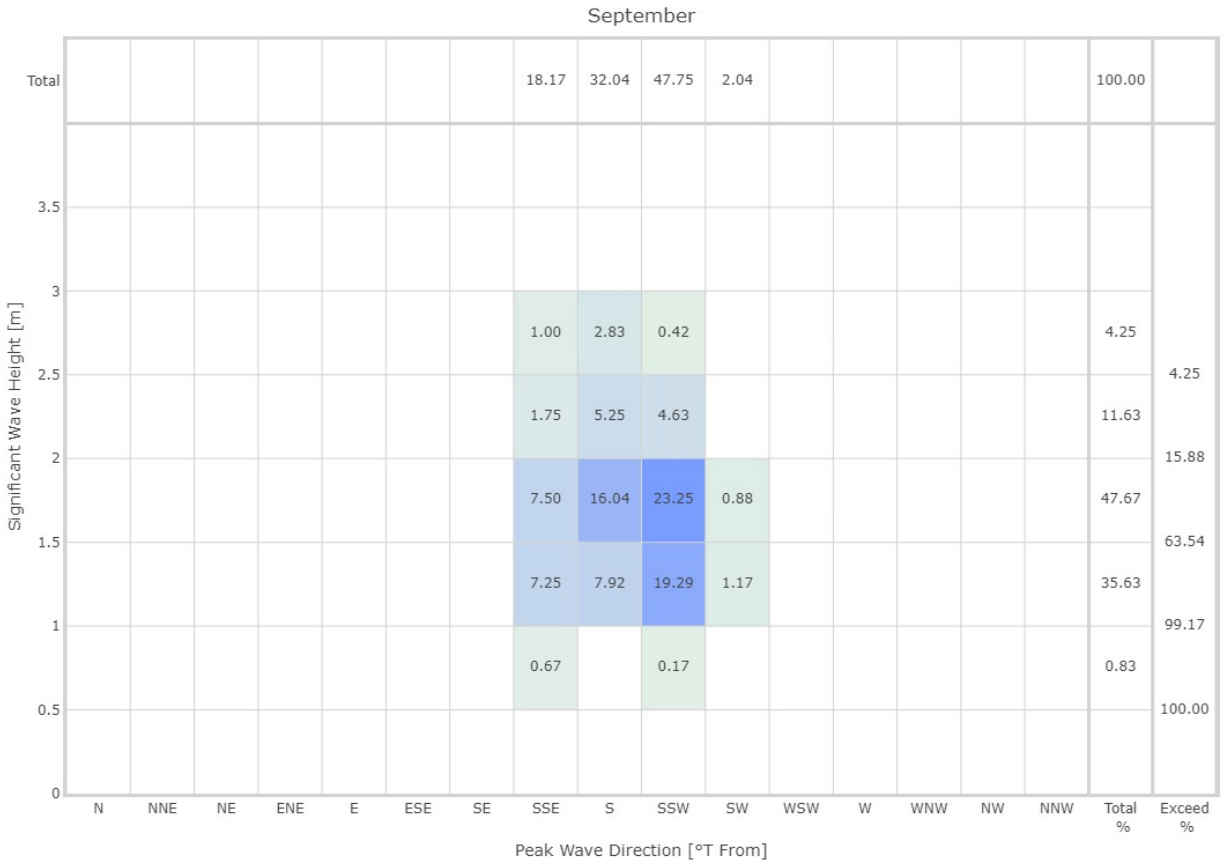


Figure 2.38: Bivariate table of significant wave height against peak wave direction for September

2.2.1.11 October

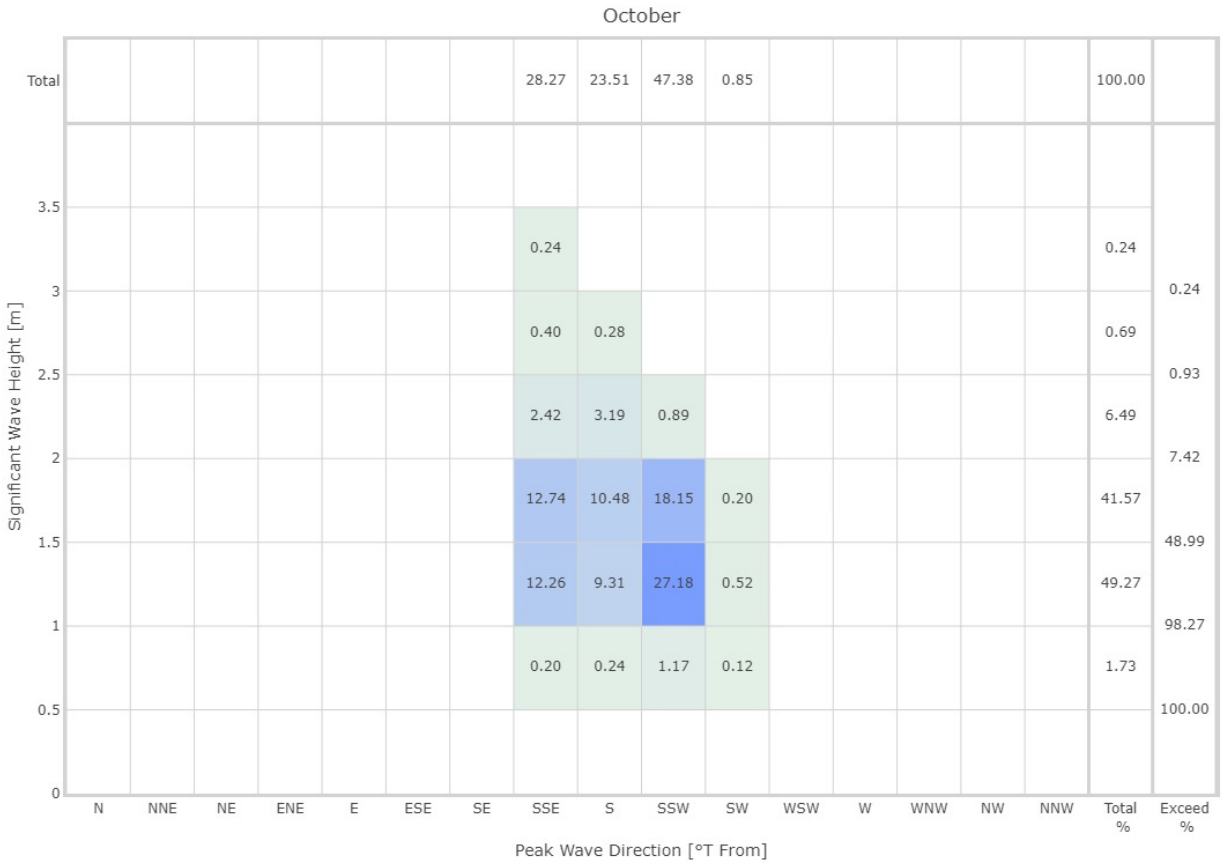


Figure 2.39: Bivariate table of significant wave height against peak wave direction for October

2.2.1.12 November

Figure 2.40: Bivariate table of significant wave height against peak wave direction for November

2.2.1.13 December

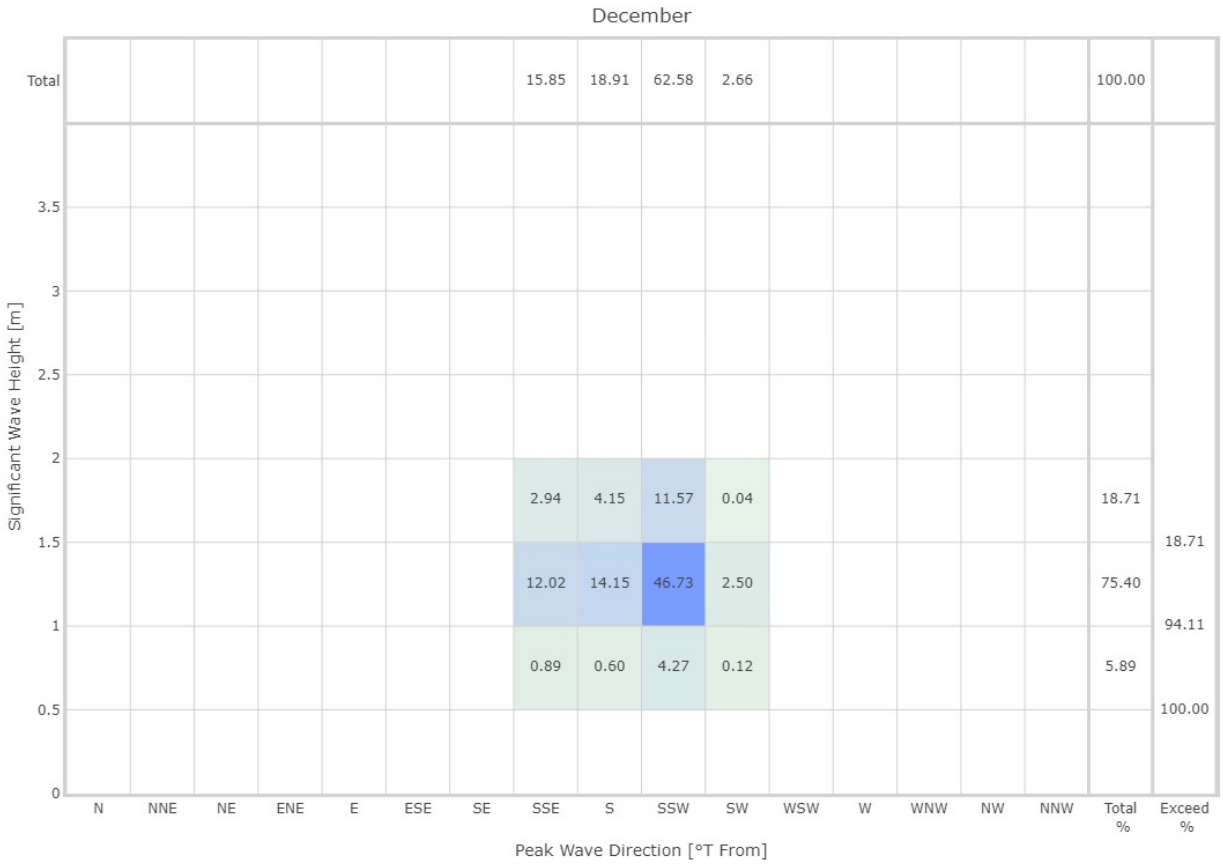


Figure 2.41: Bivariate table of significant wave height against peak wave direction for December

2.2.2 Wave Roses

2.2.2.1 All-Year

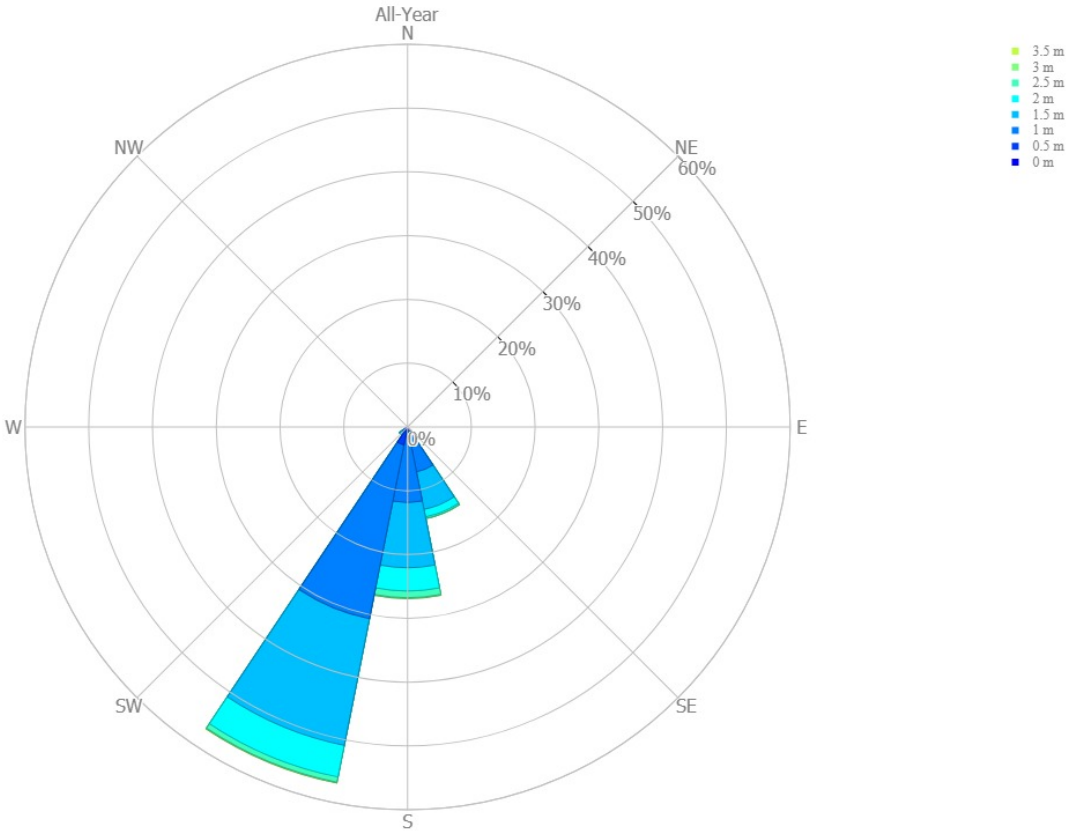


Figure 2.42: Significant wave height rose for the entire data set

2.2.2.2 January

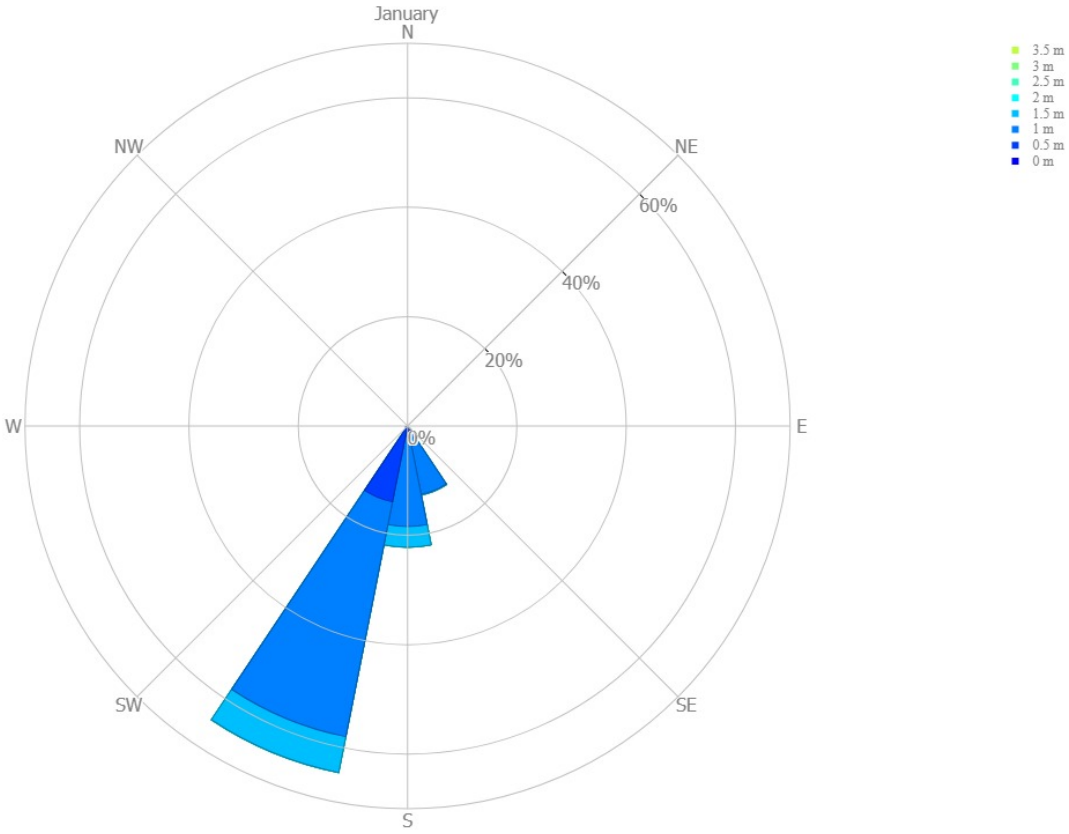


Figure 2.43: Significant wave height rose for January

2.2.2.3 February

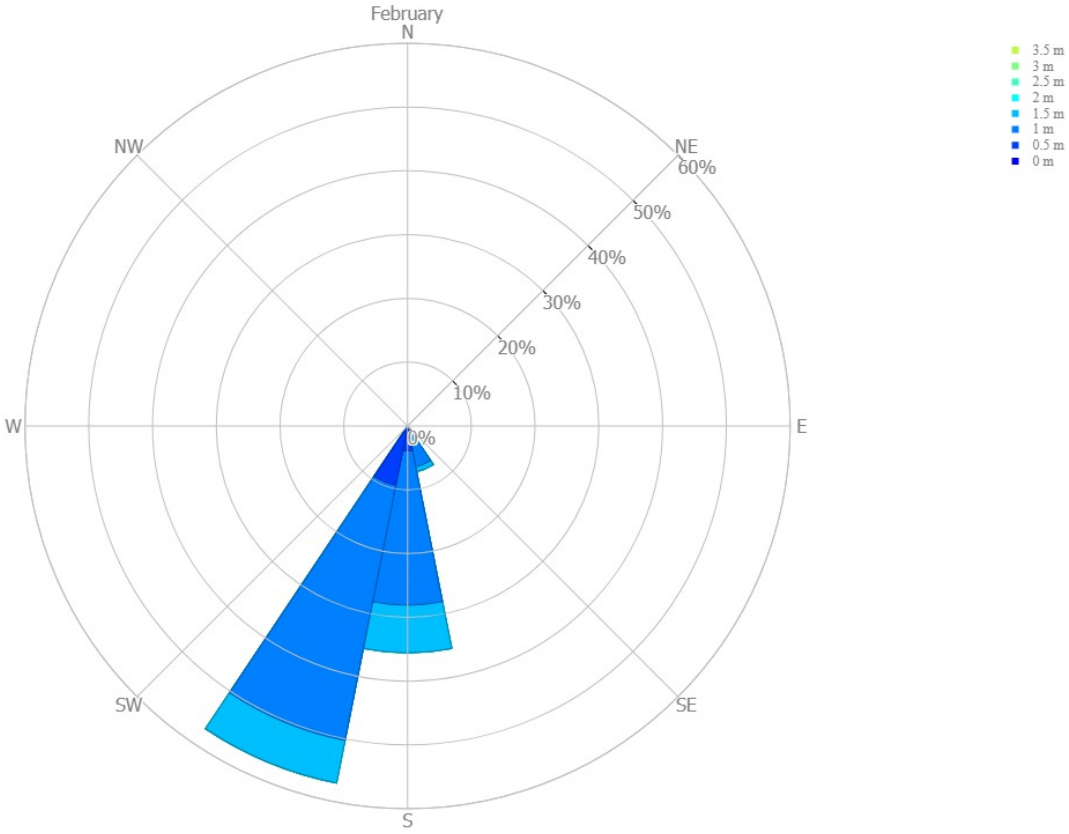


Figure 2.44: Significant wave height rose for February

2.2.2.4 March

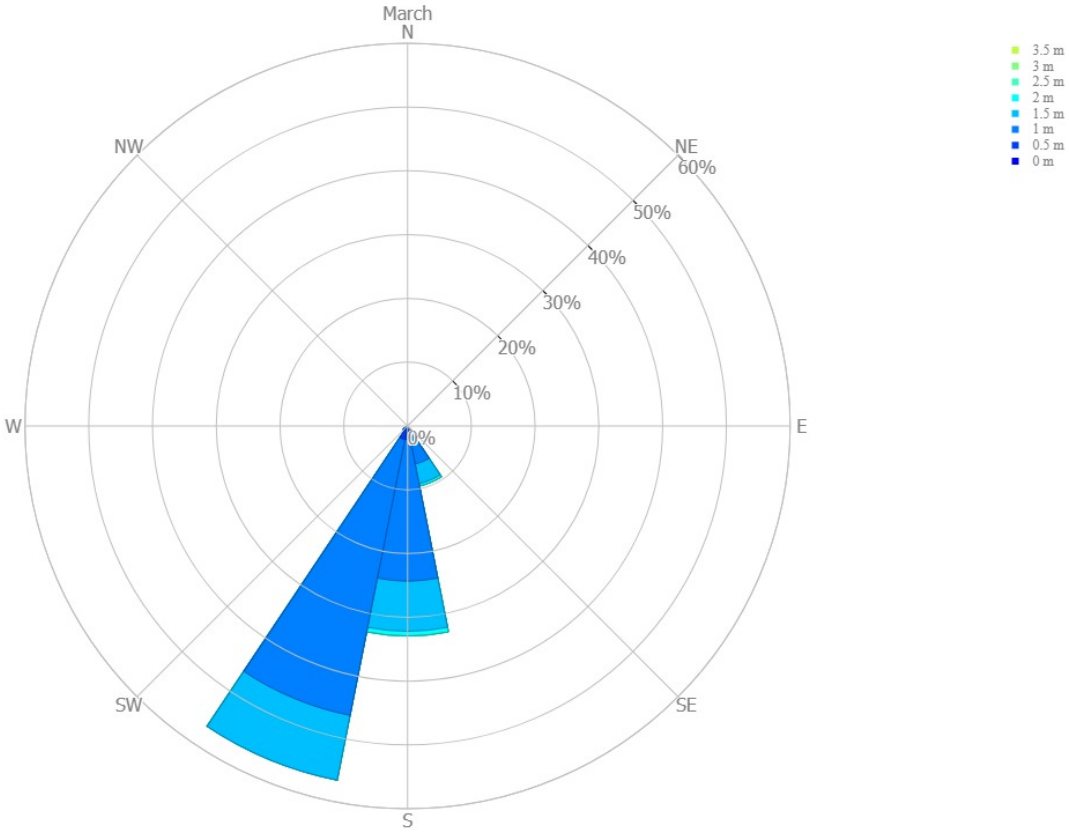


Figure 2.45: Significant wave height rose for March

2.2.2.5 April

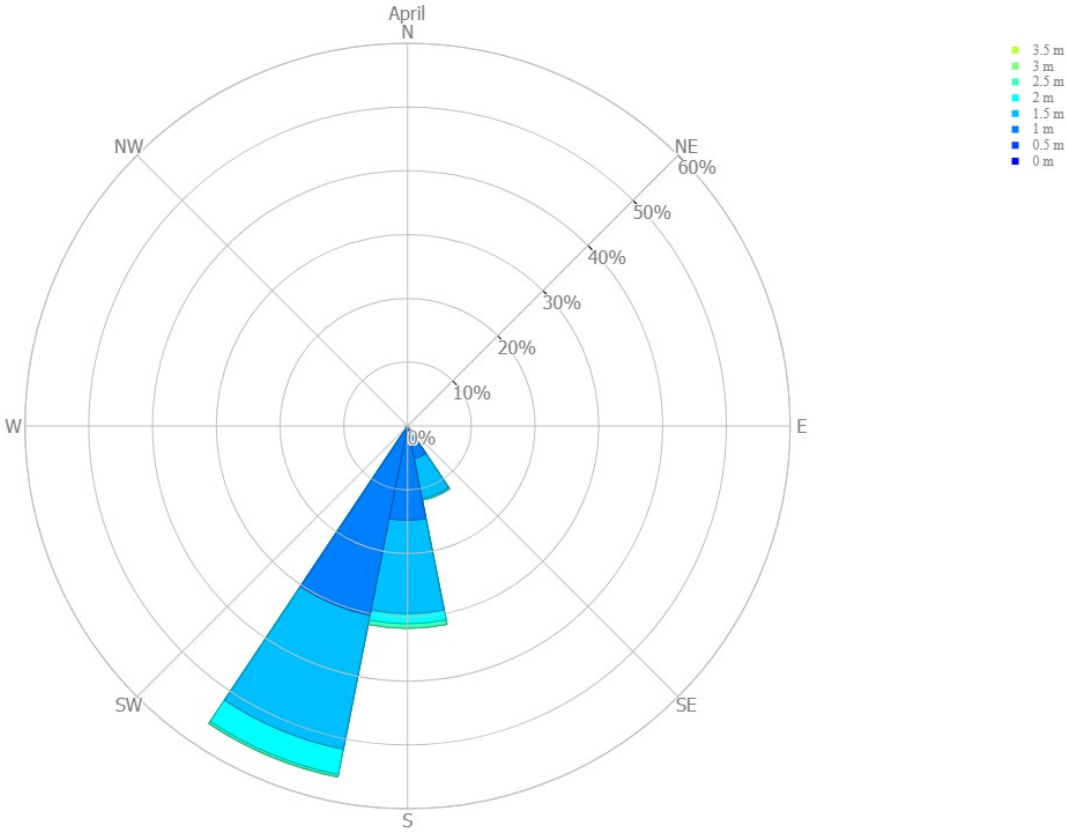


Figure 2.46: Significant wave height rose for April

2.2.2.6 May

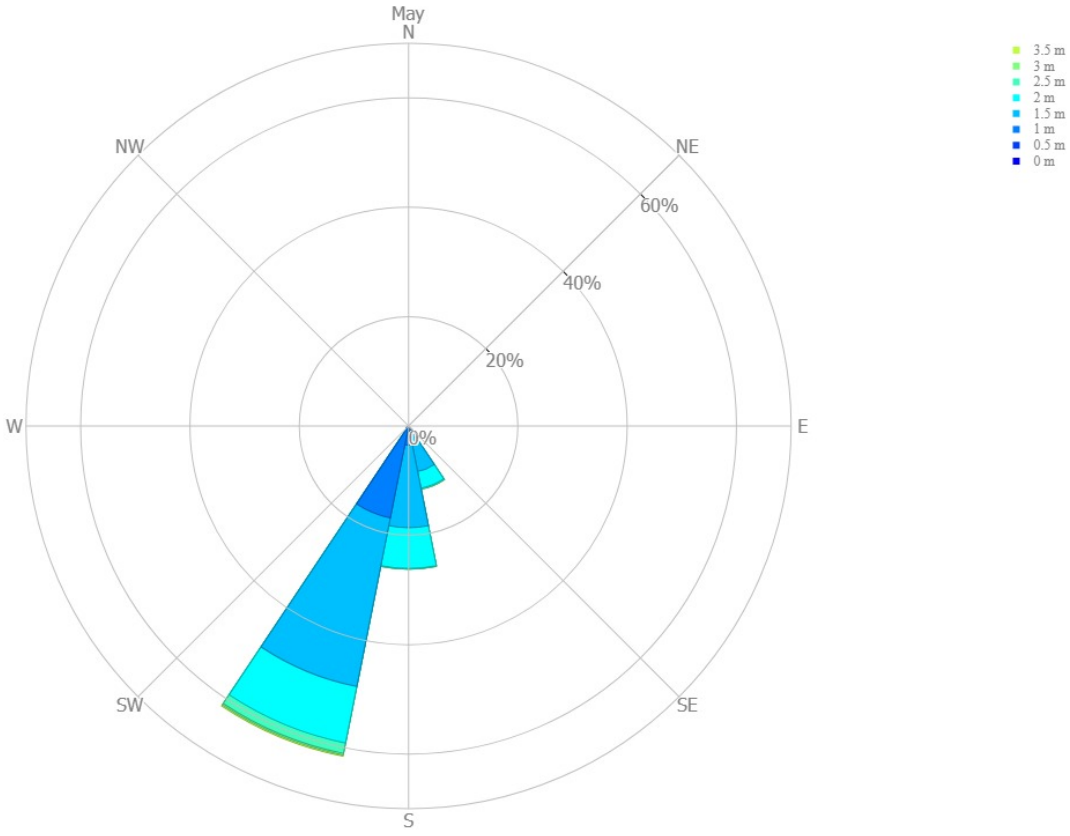


Figure 2.47: Significant wave height rose for May

2.2.2.7 June

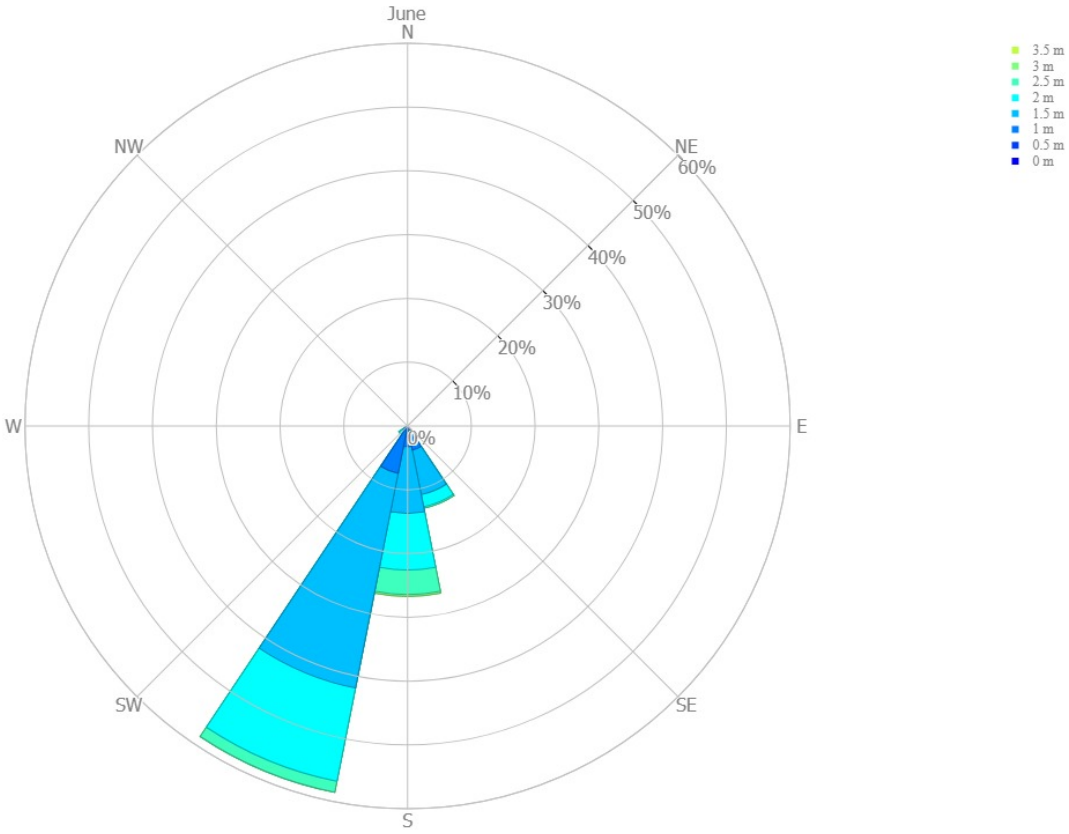


Figure 2.48: Significant wave height rose for June

2.2.2.8 July

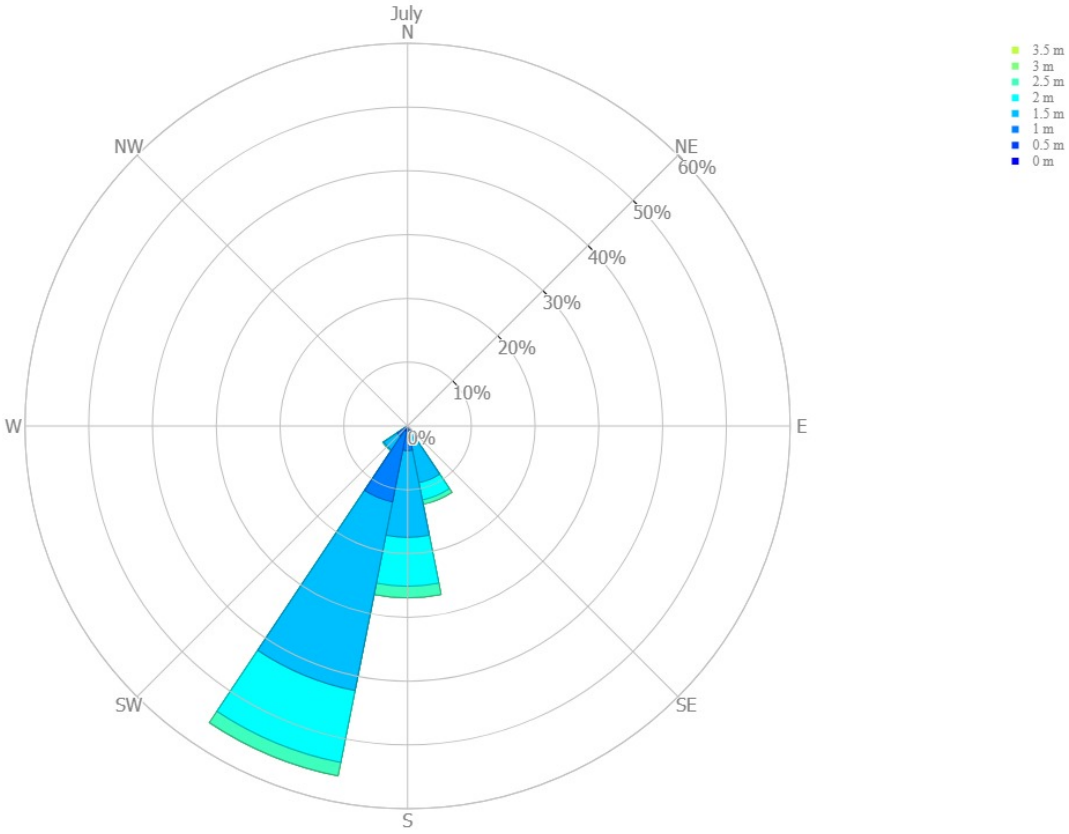


Figure 2.49: Significant wave height rose for July

2.2.2.9 August

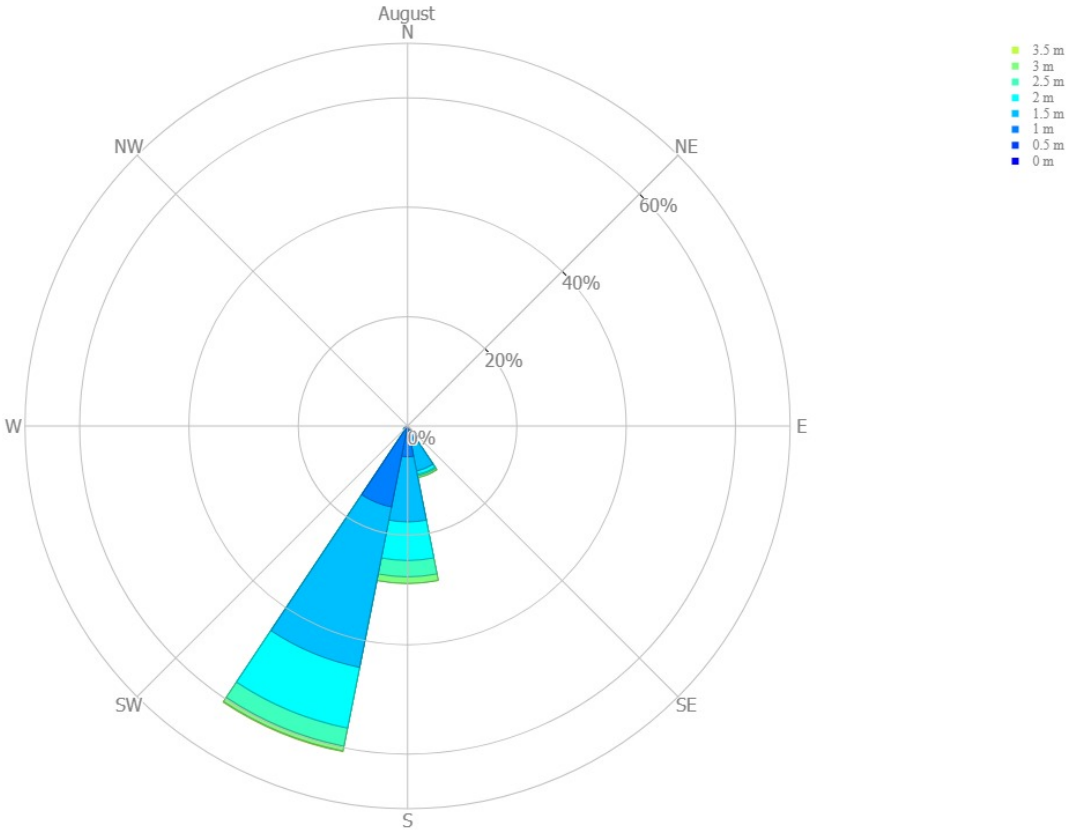


Figure 2.50: Significant wave height rose for August

2.2.2.10 September

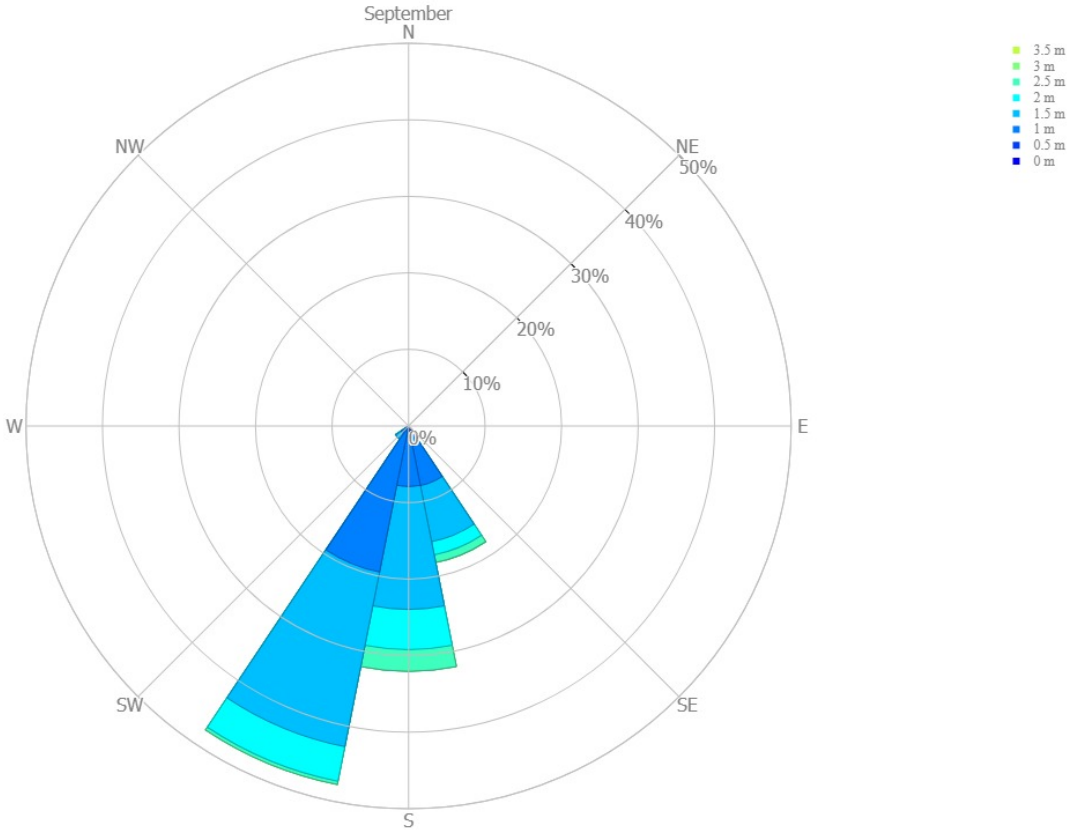


Figure 2.51: Significant wave height rose for September

2.2.2.11 October

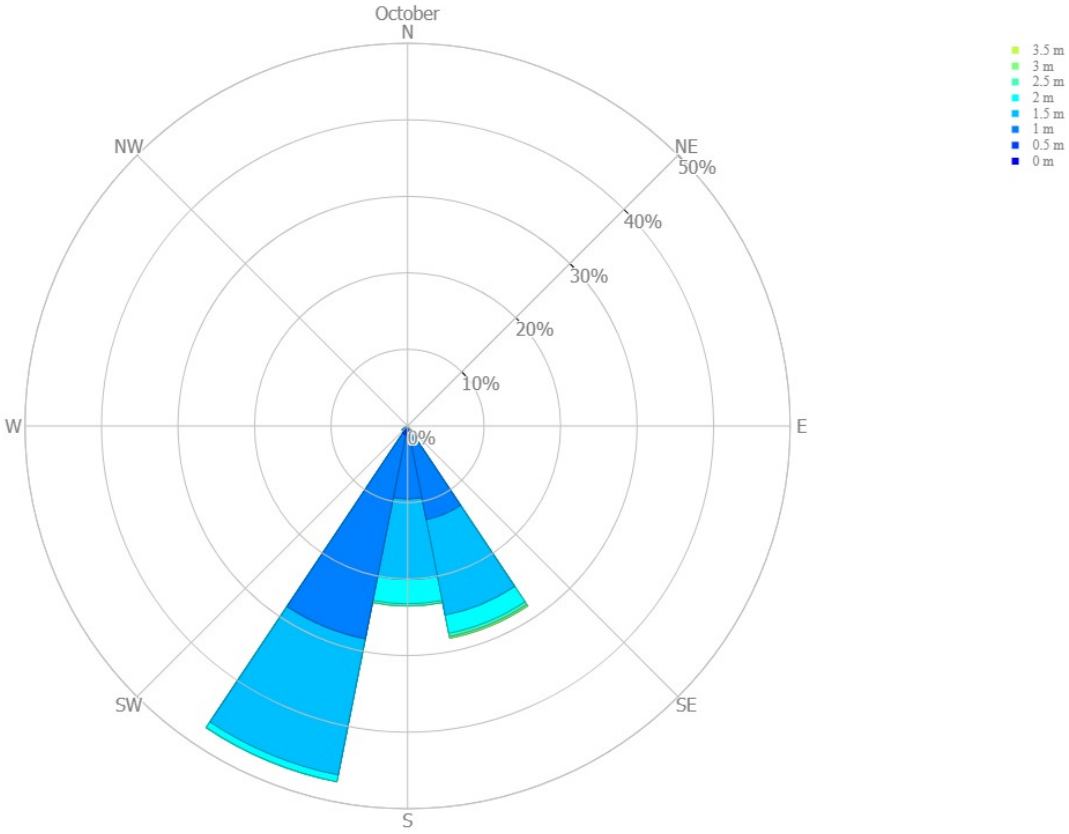


Figure 2.52: Significant wave height rose for October

2.2.2.12 November

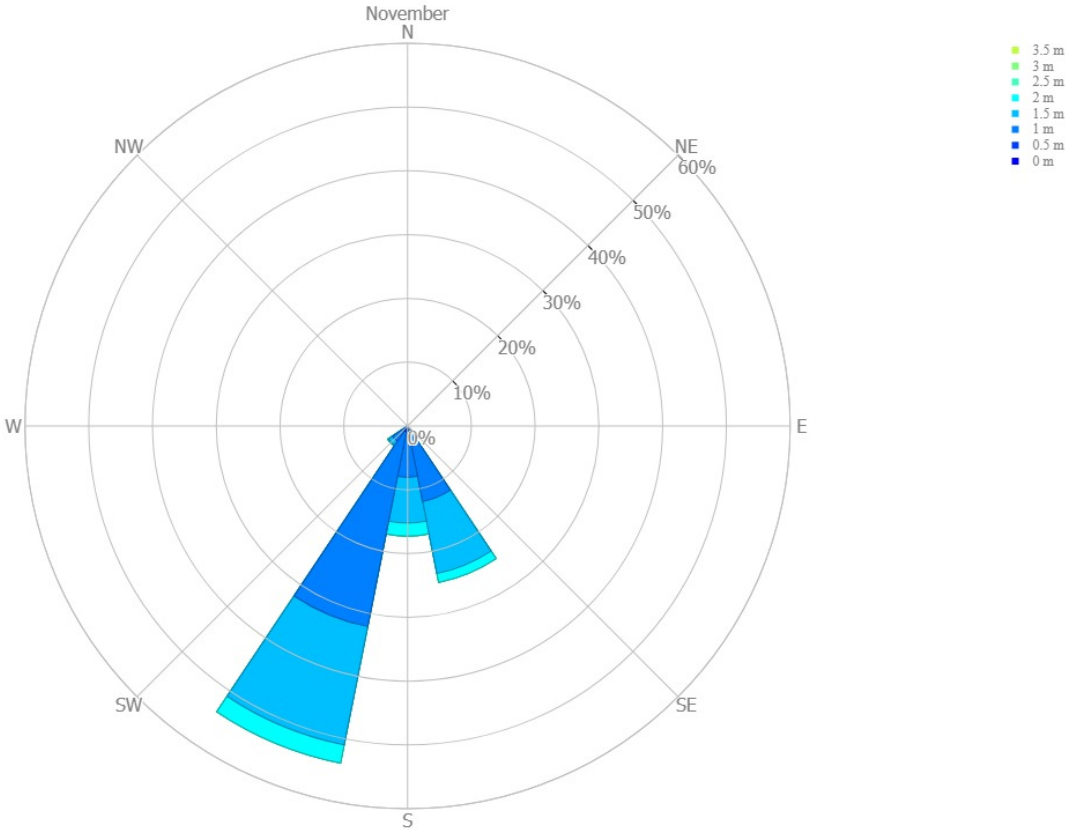


Figure 2.53: Significant wave height rose for November

2.2.2.13 December

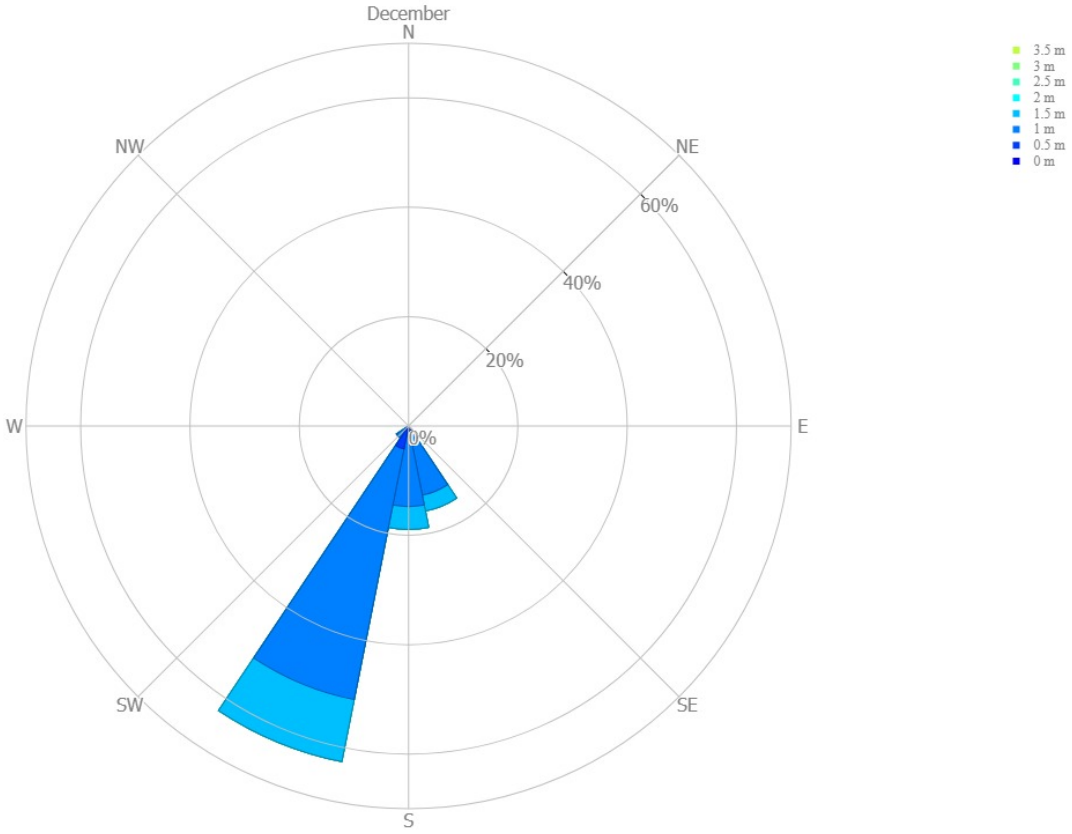


Figure 2.54: Significant wave height rose for December

2.3 Significant Wave Height & Peak Period

2.3.1 Bivariate Tables

2.3.1.1 All-Year

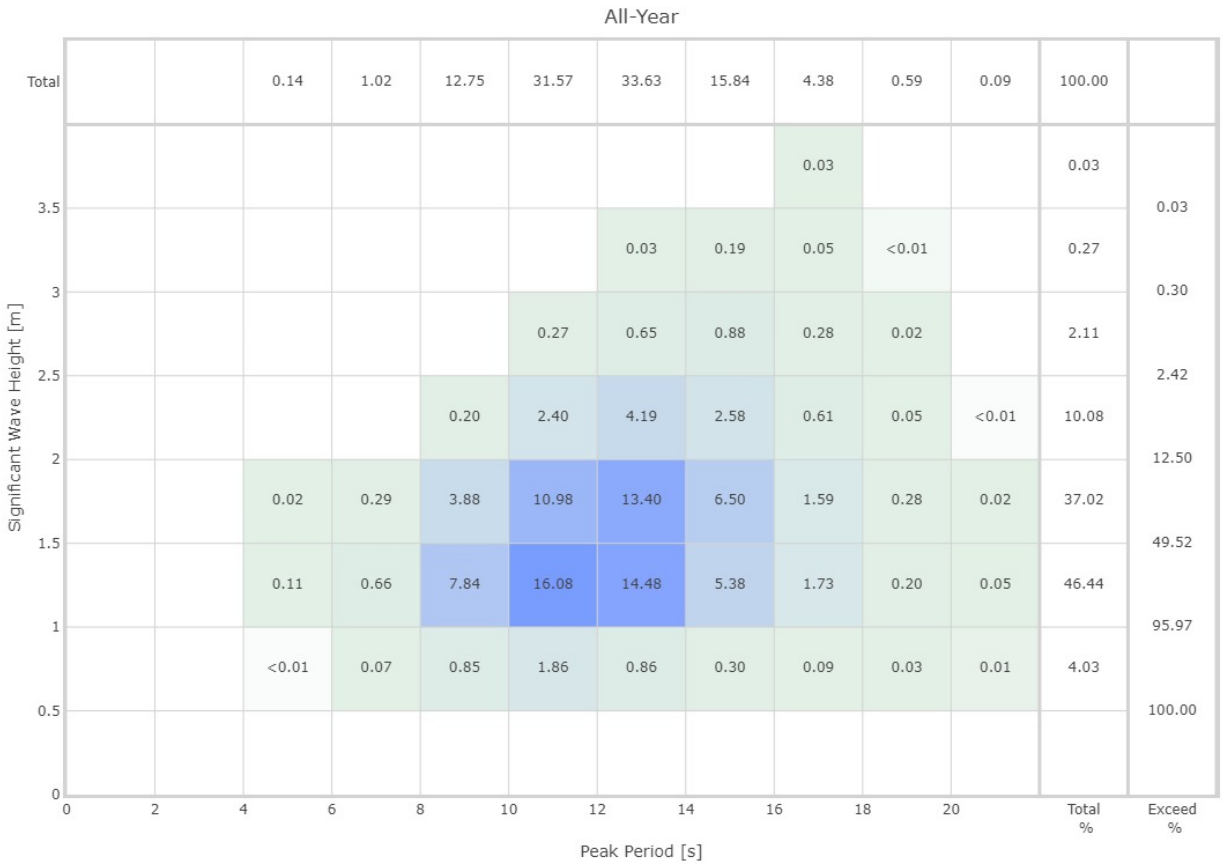


Figure 2.55: Bivariate table of significant wave height against peak period for the entire data set

2.3.1.2 January

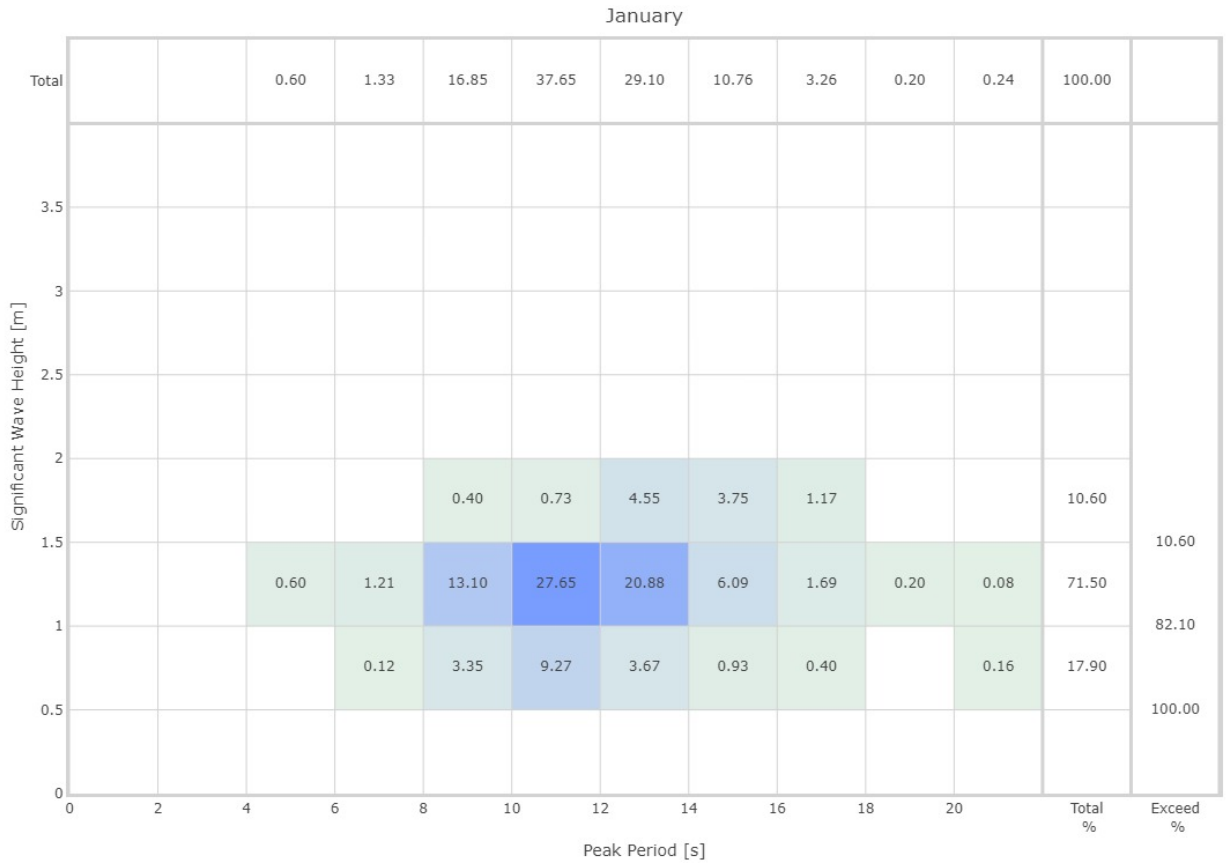


Figure 2.56: Bivariate table of significant wave height against peak period for January

2.3.1.3 February

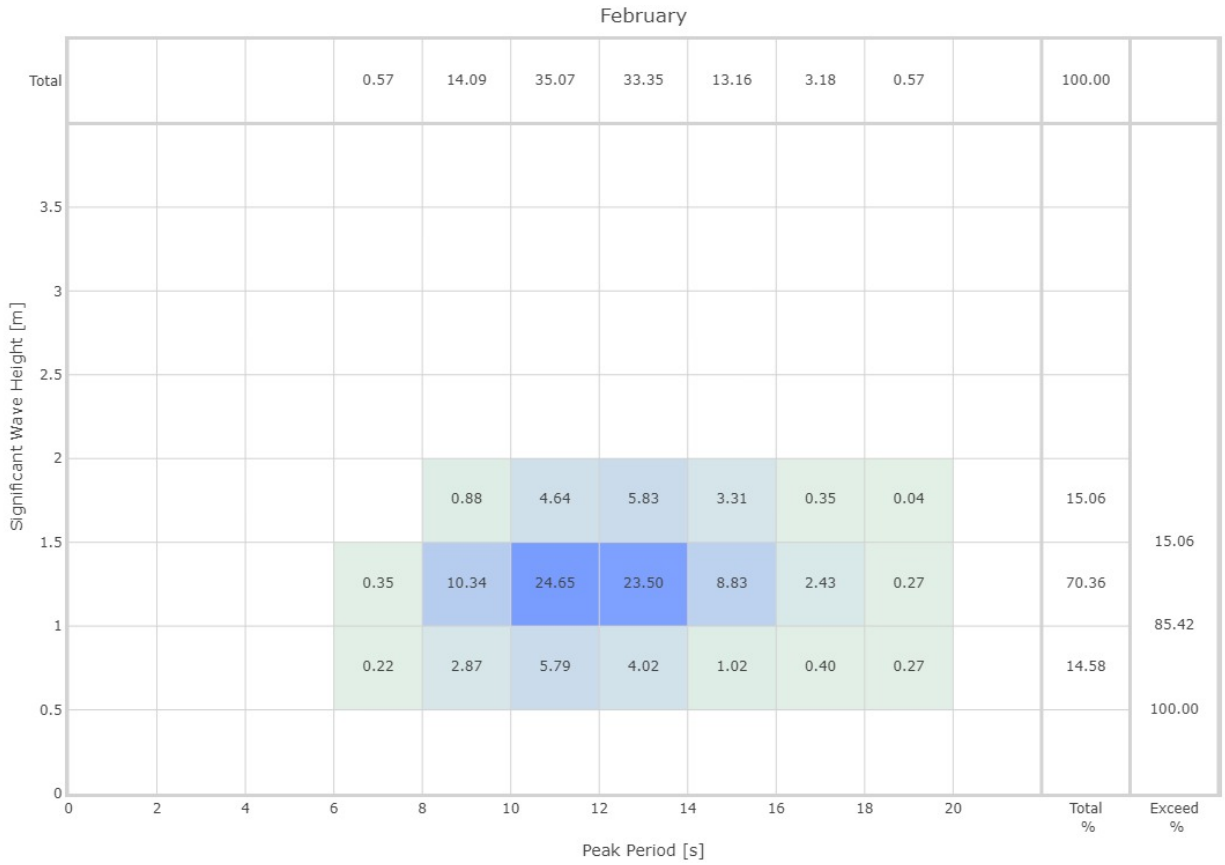


Figure 2.57: Bivariate table of significant wave height against peak period for February

2.3.1.4 March

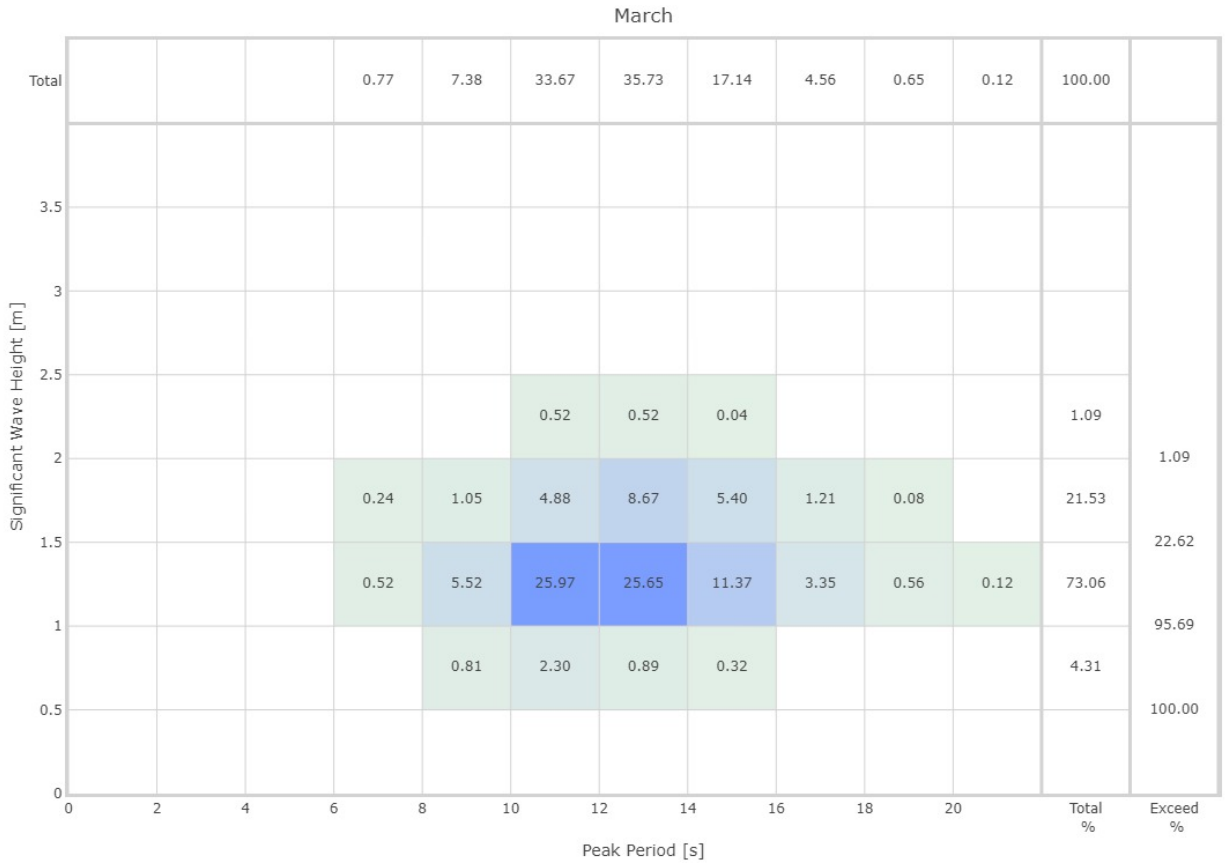


Figure 2.58: Bivariate table of significant wave height against peak period for March

2.3.1.5 April

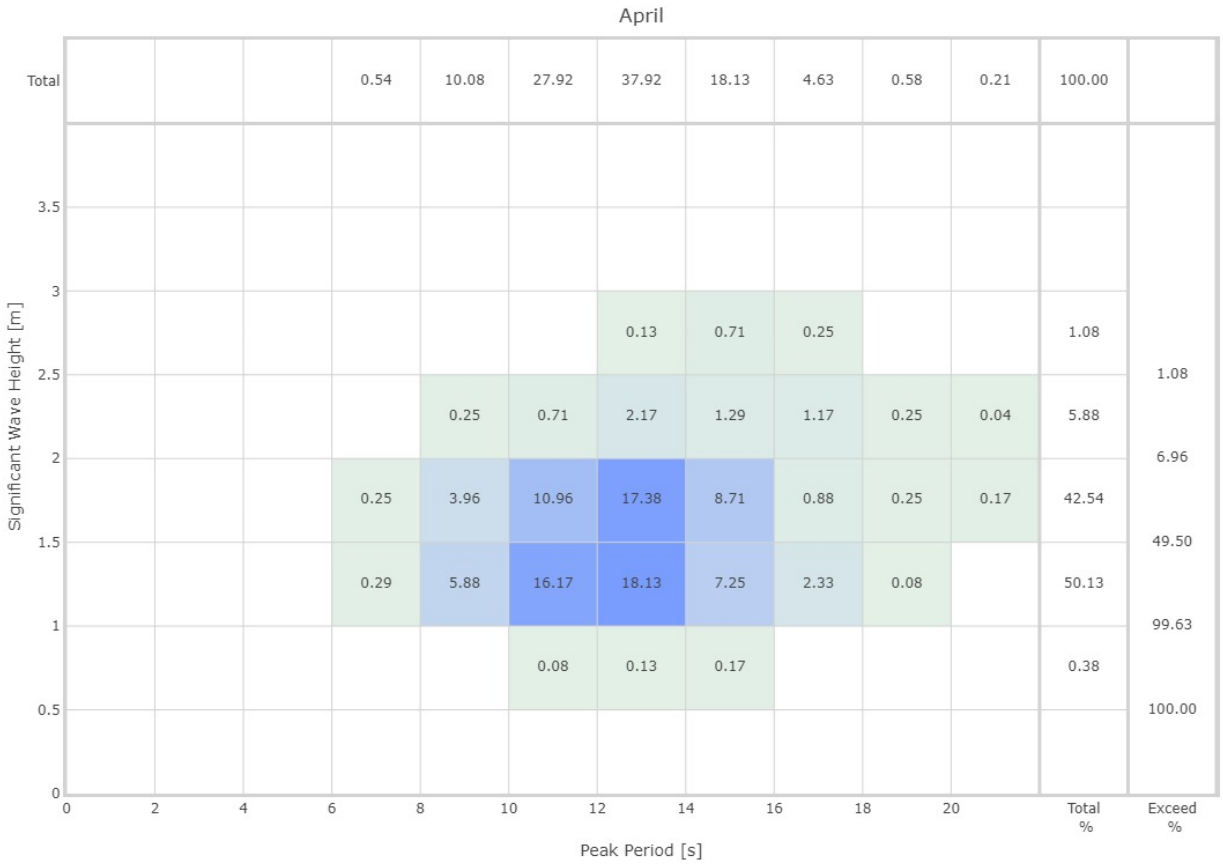


Figure 2.59: Bivariate table of significant wave height against peak period for April

2.3.1.6 May

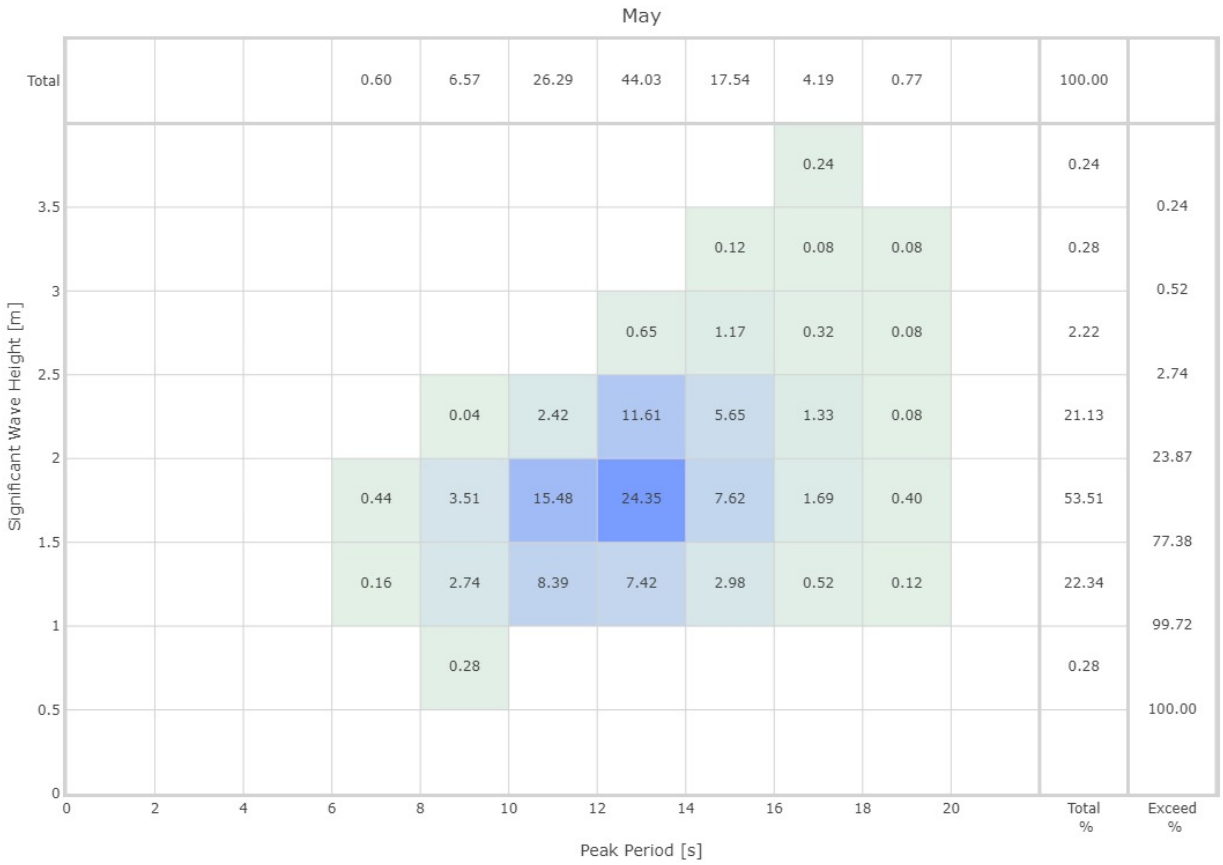


Figure 2.60: Bivariate table of significant wave height against peak period for May

2.3.1.7 June

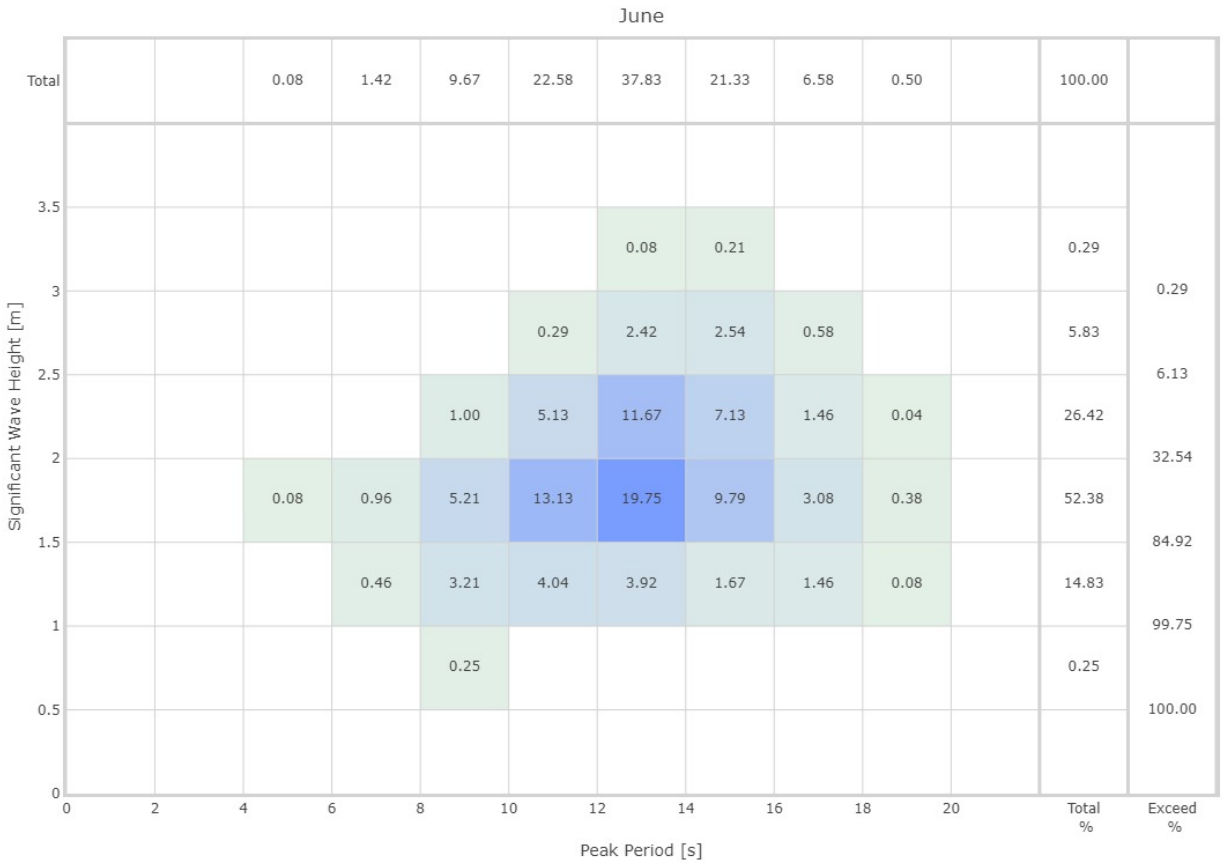


Figure 2.61: Bivariate table of significant wave height against peak period for June

2.3.1.8 July

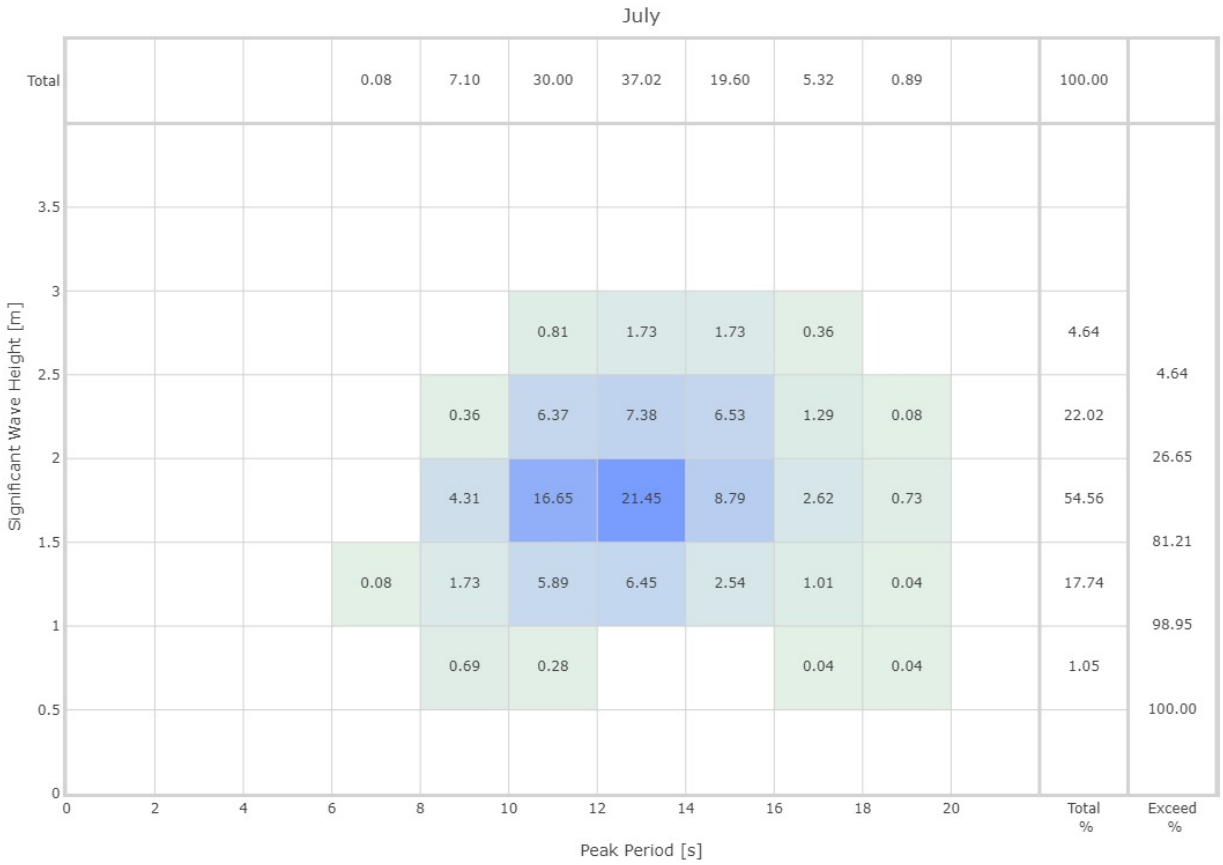


Figure 2.62: Bivariate table of significant wave height against peak period for July

2.3.1.9 August

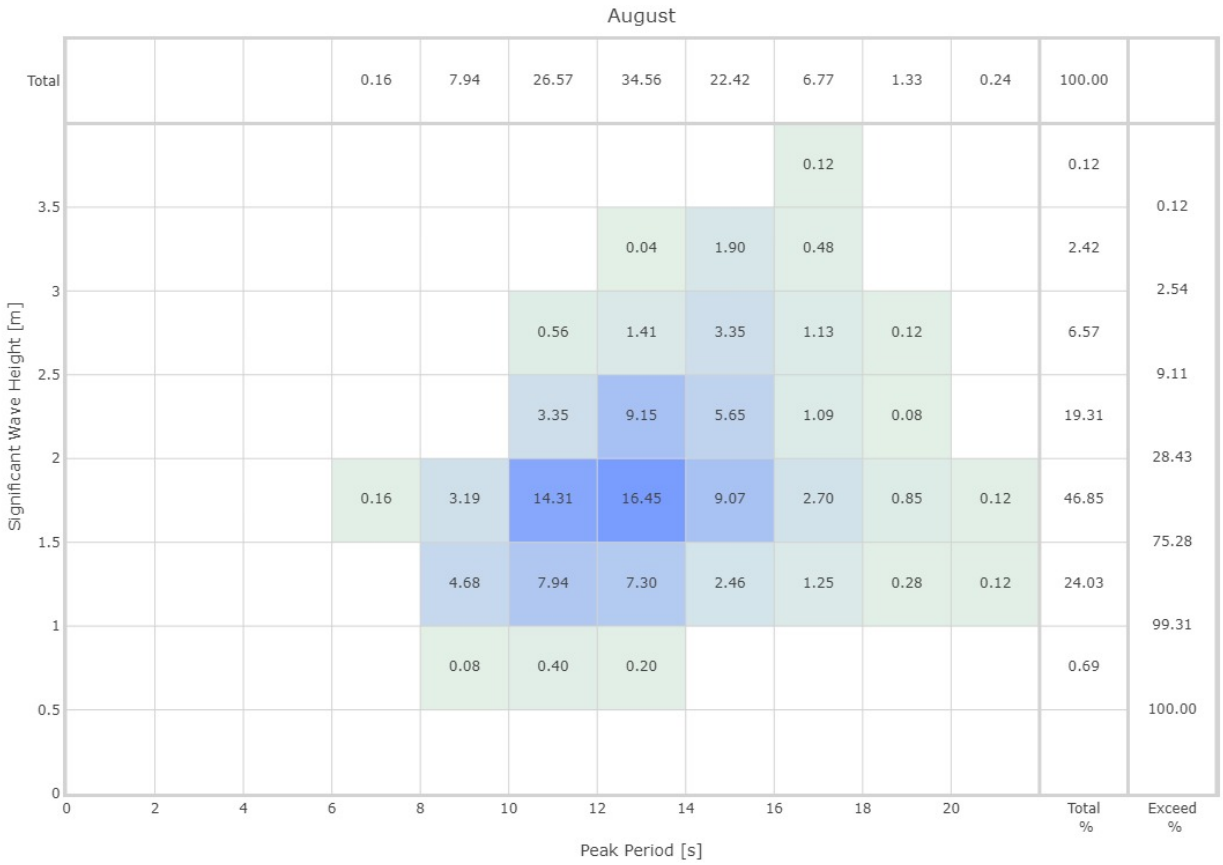


Figure 2.63: Bivariate table of significant wave height against peak period for August

2.3.1.10 September

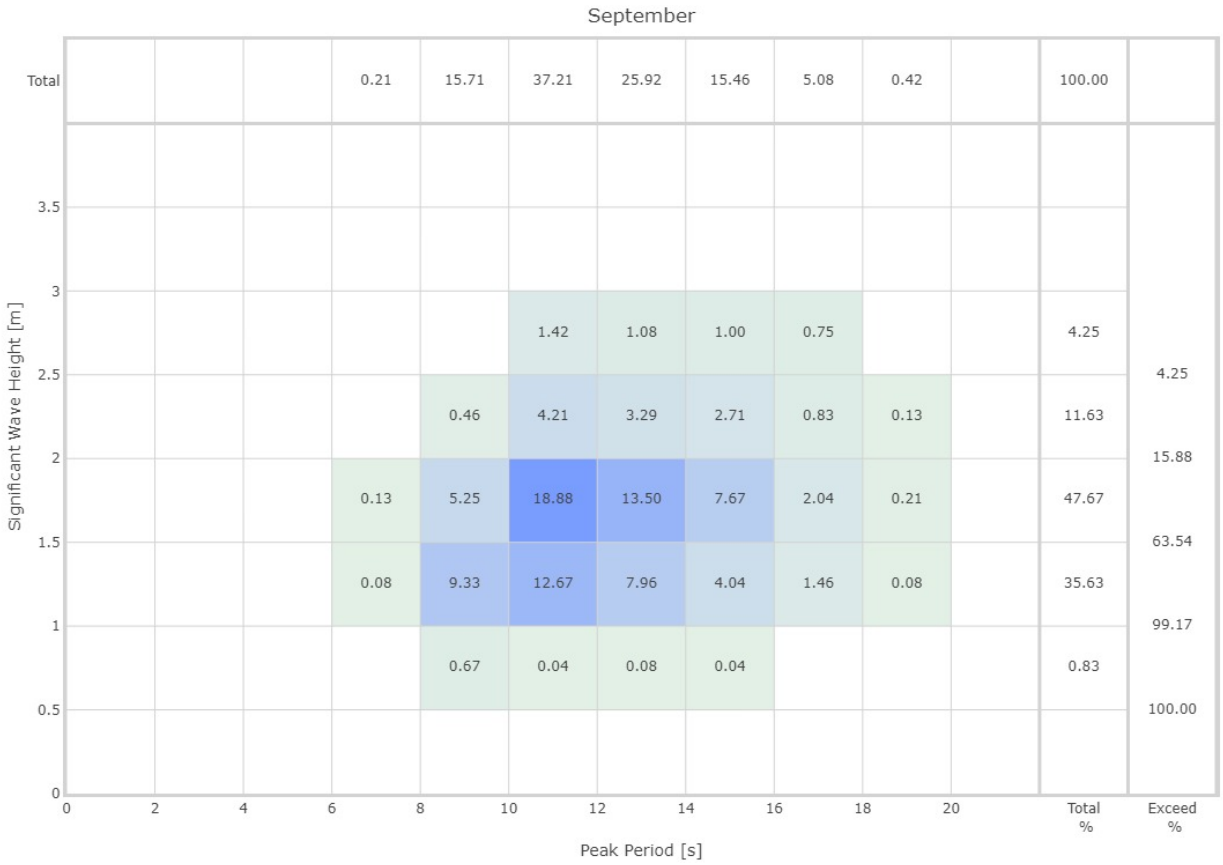


Figure 2.64: Bivariate table of significant wave height against peak period for September

2.3.1.11 October

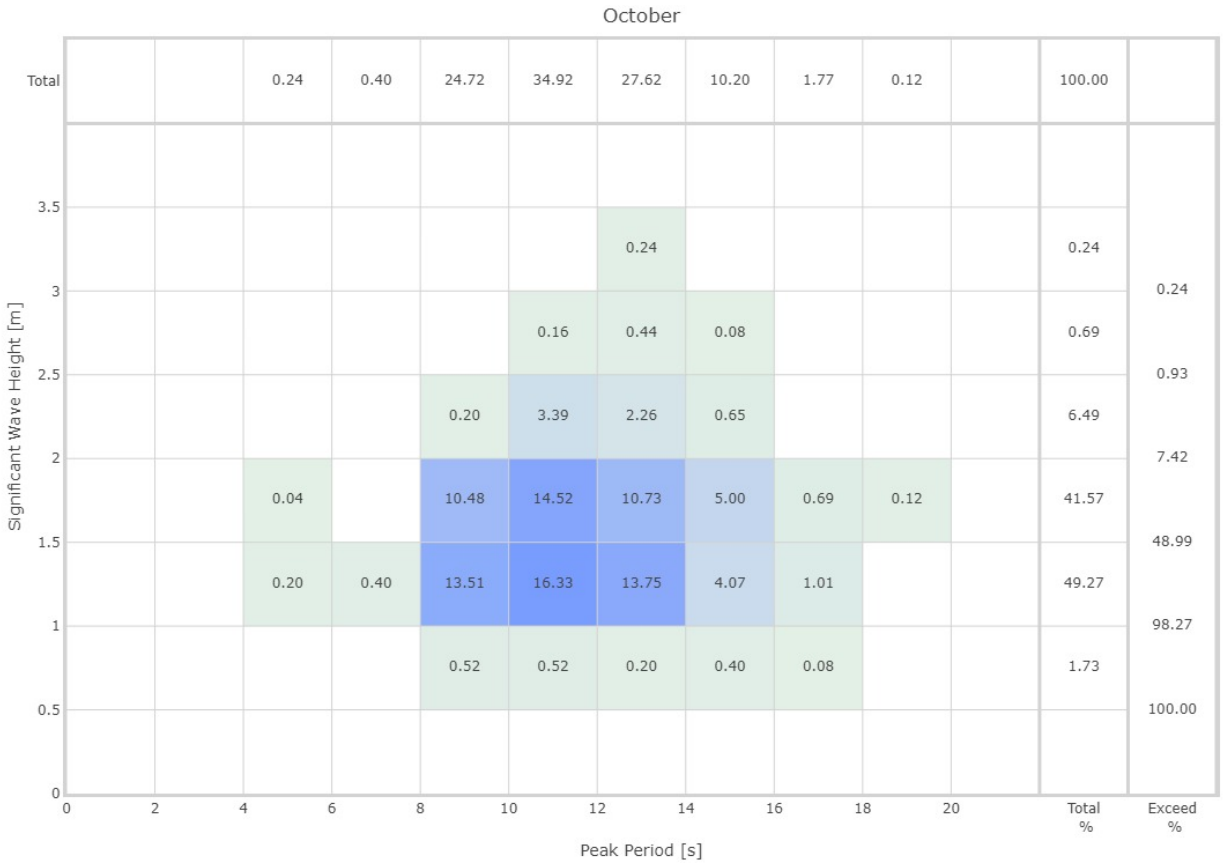


Figure 2.65: Bivariate table of significant wave height against peak period for October

2.3.1.12 November

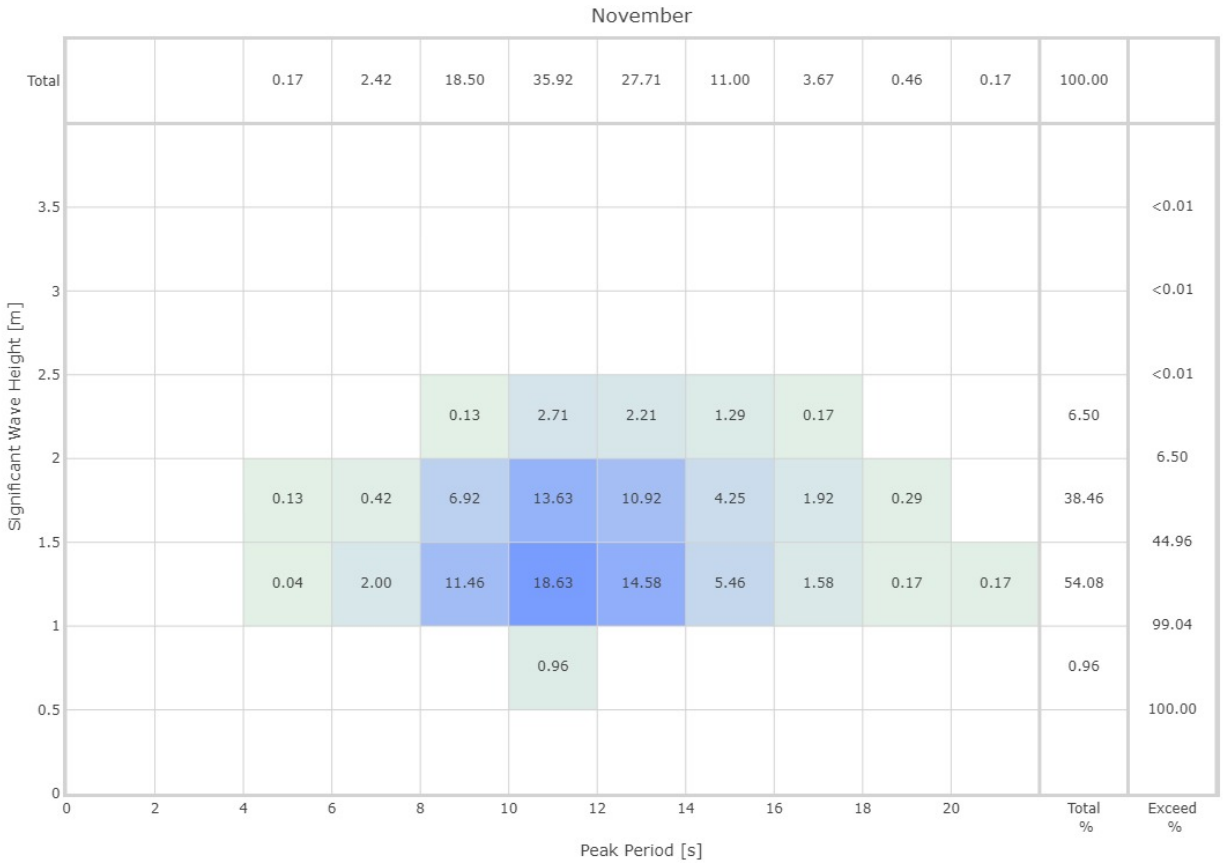


Figure 2.66: Bivariate table of significant wave height against peak period for November

2.3.1.13 December

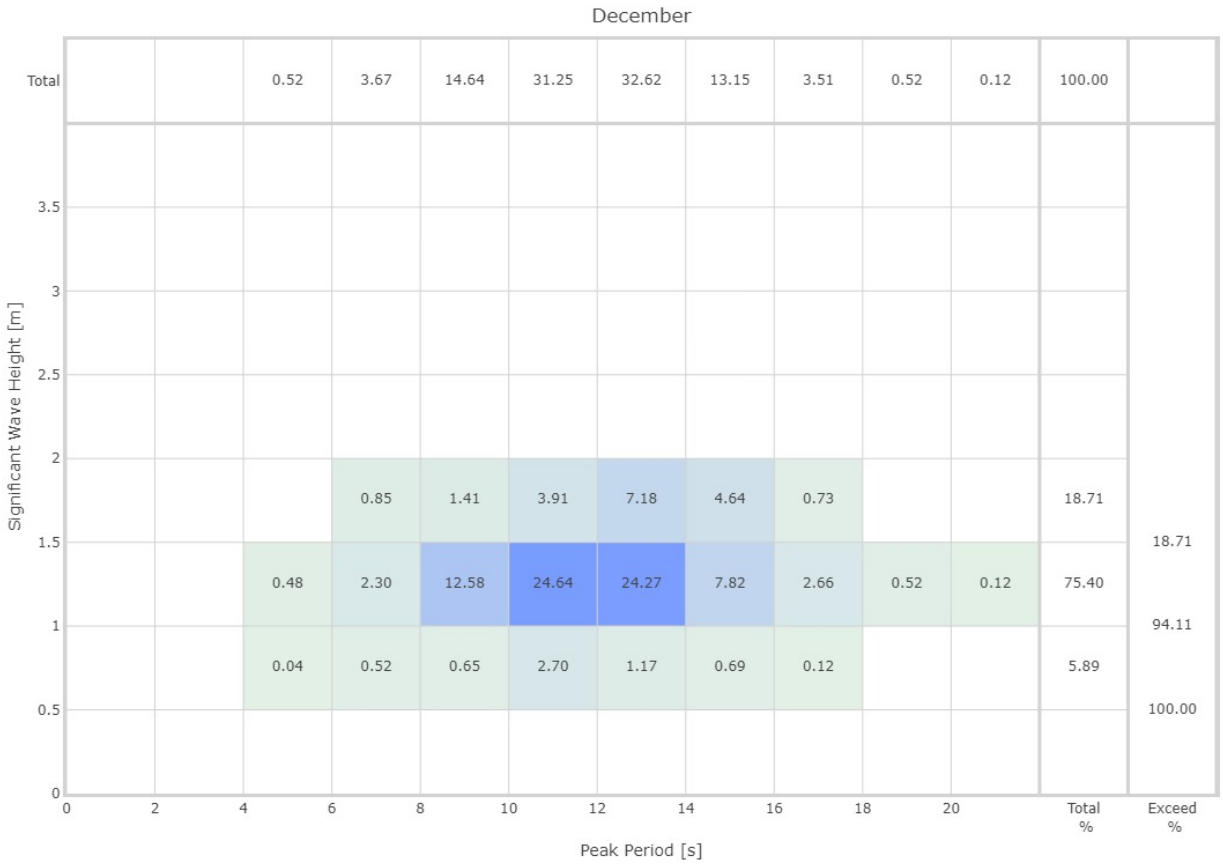


Figure 2.67: Bivariate table of significant wave height against peak period for December

2.4 Peak Period and Peak Direction

2.4.1 Bivariate Tables

2.4.1.1 All-Year

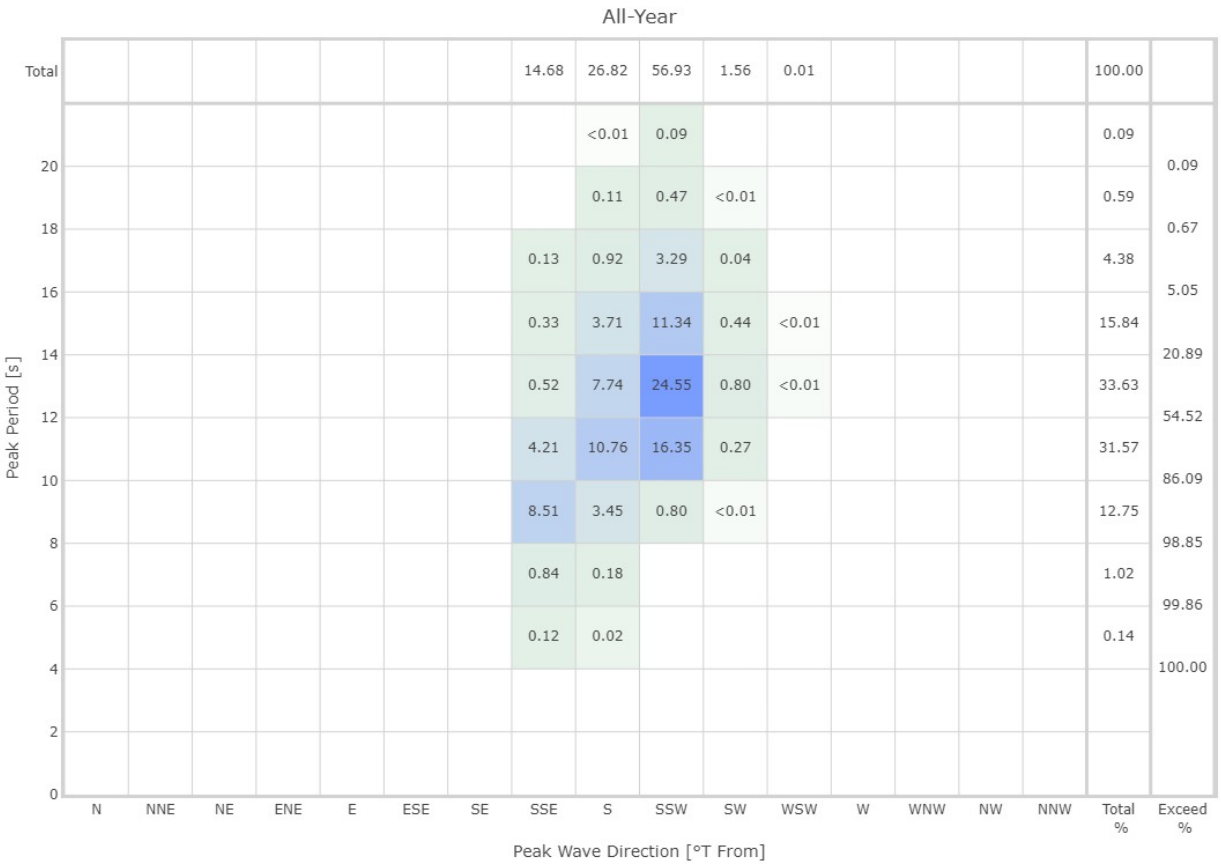


Figure 2.68: Bivariate table of peak period against peak wave direction for the entire data set

2.4.1.2 January

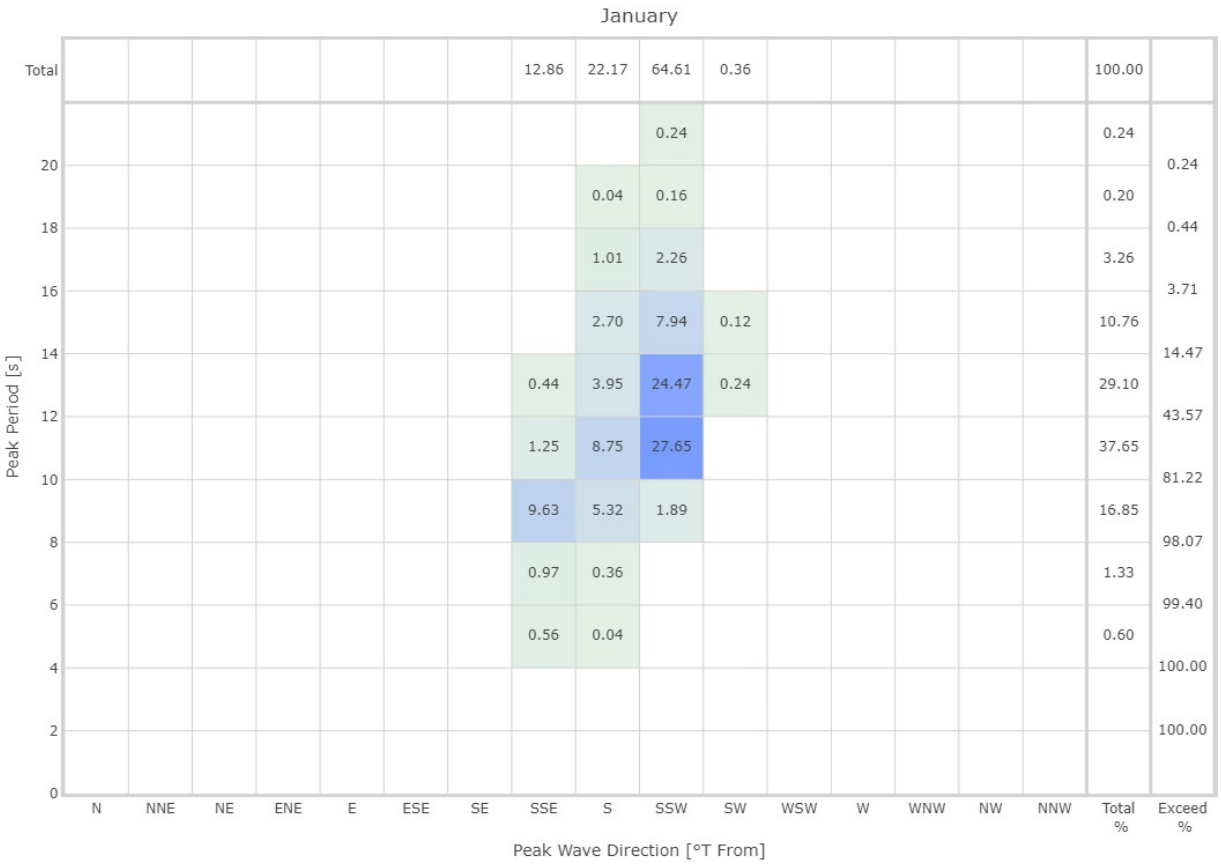


Figure 2.69: Bivariate table of peak period against peak wave direction for January

2.4.1.3 February

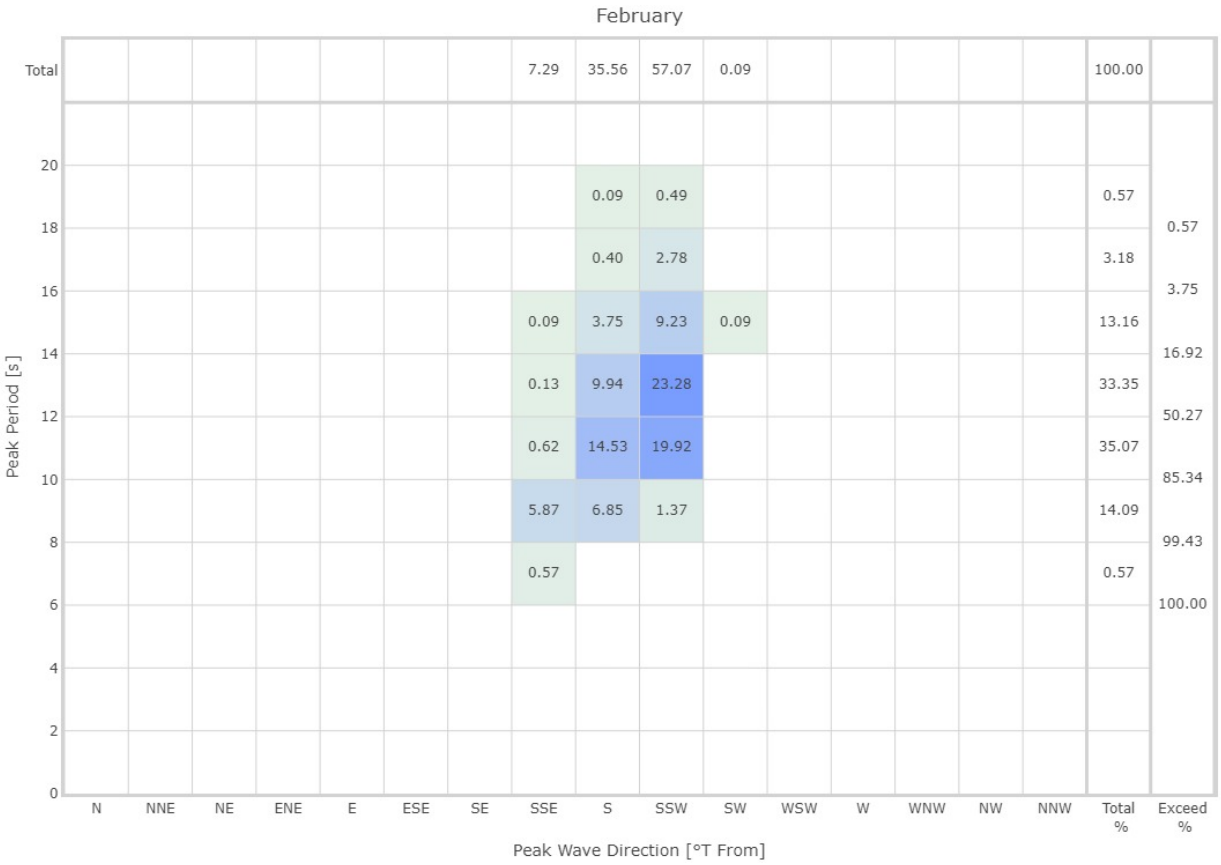


Figure 2.70: Bivariate table of peak period against peak wave direction for February

2.4.1.4 March

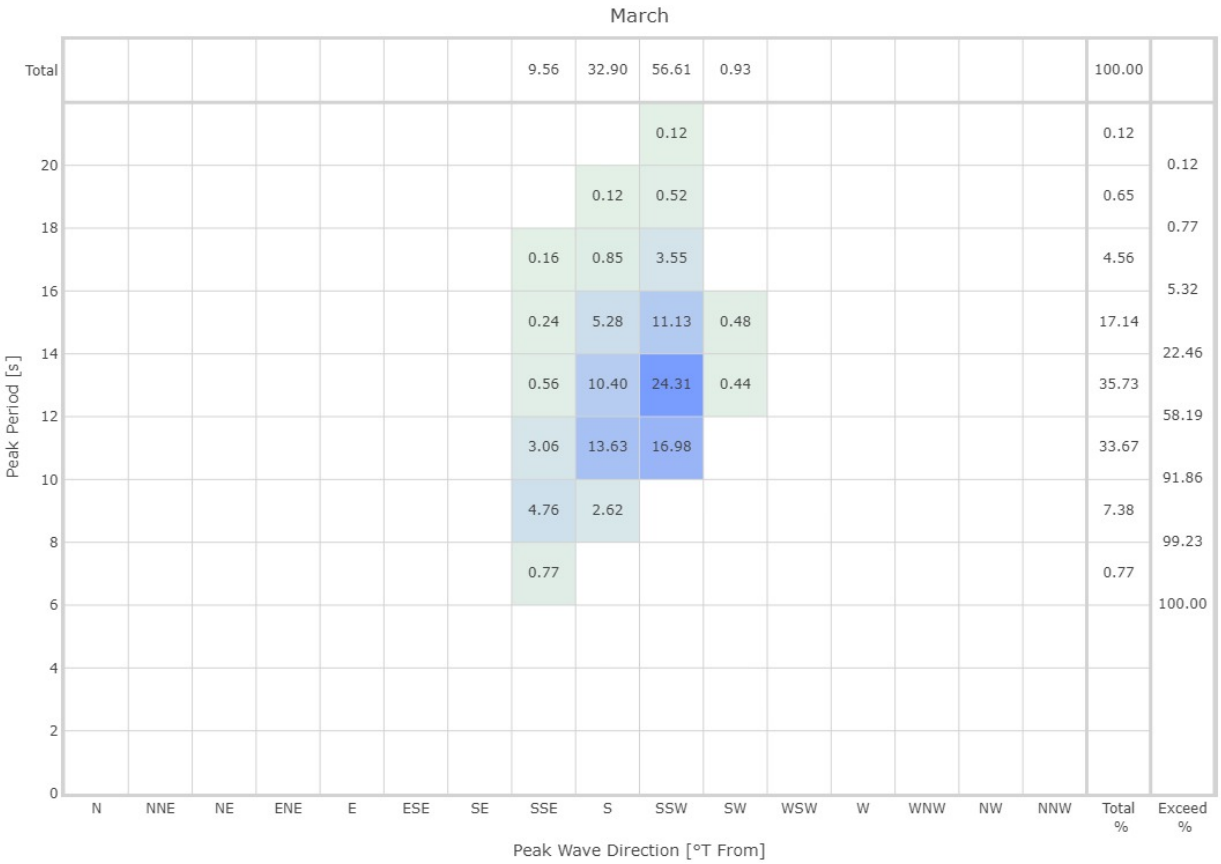


Figure 2.71: Bivariate table of peak period against peak wave direction for March

2.4.1.5 April

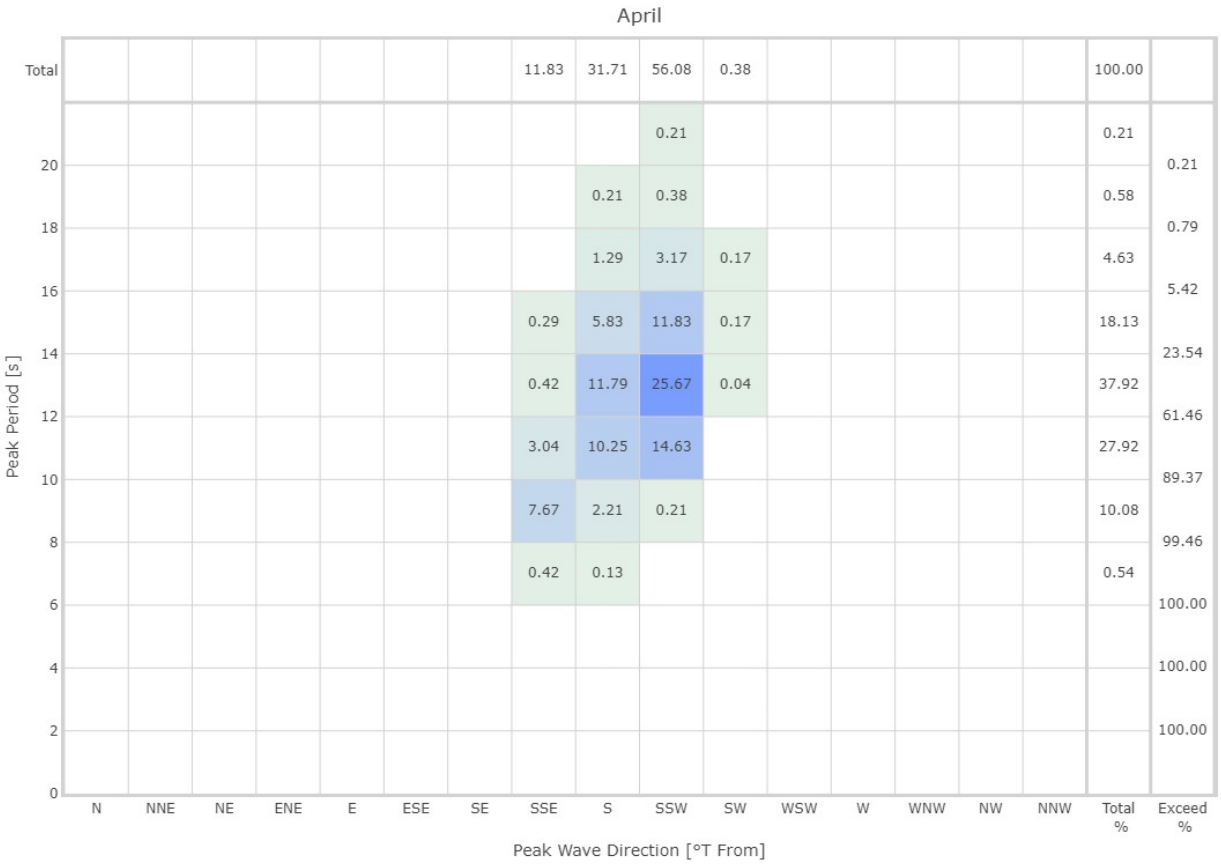


Figure 2.72: Bivariate table of peak period against peak wave direction for April

2.4.1.6 May

Figure 2.73: Bivariate table of peak period against peak wave direction for May

2.4.1.7 June

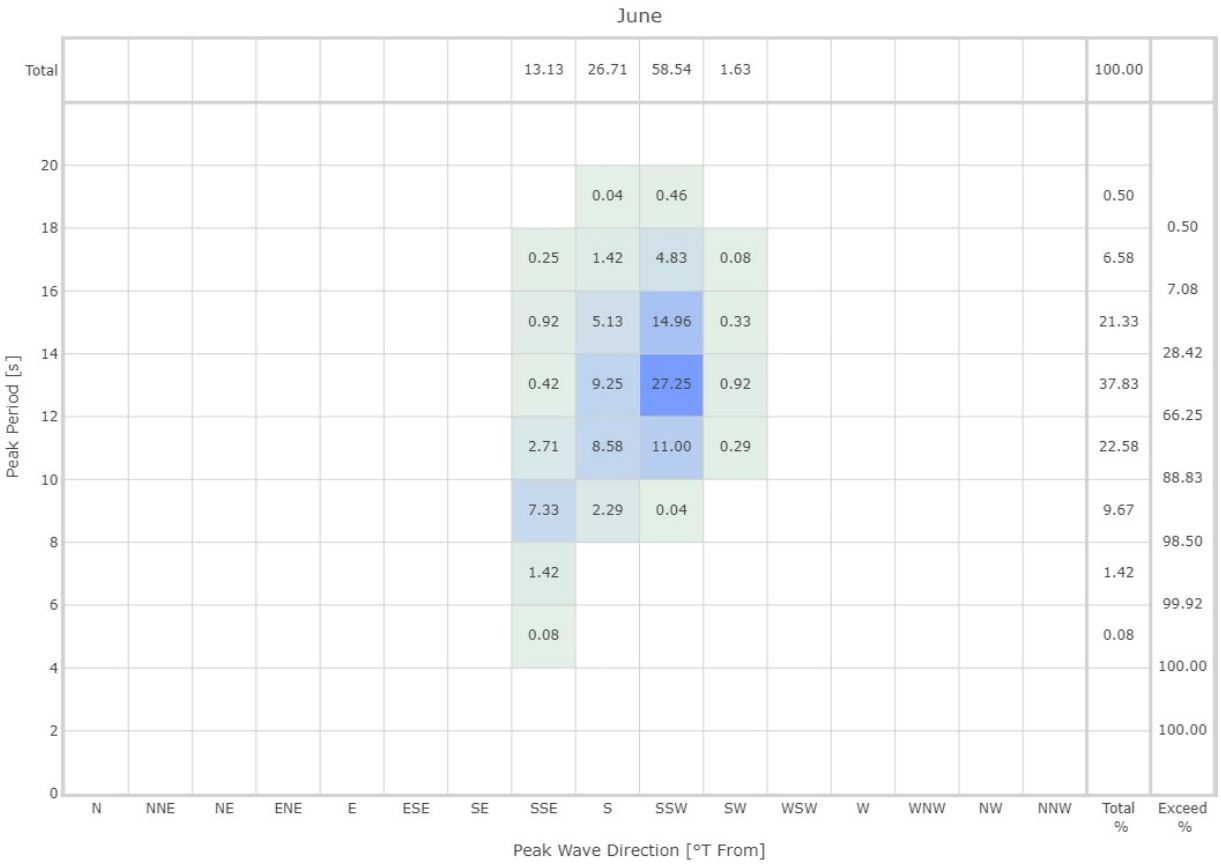


Figure 2.74: Bivariate table of peak period against peak wave direction for June

2.4.1.8 July

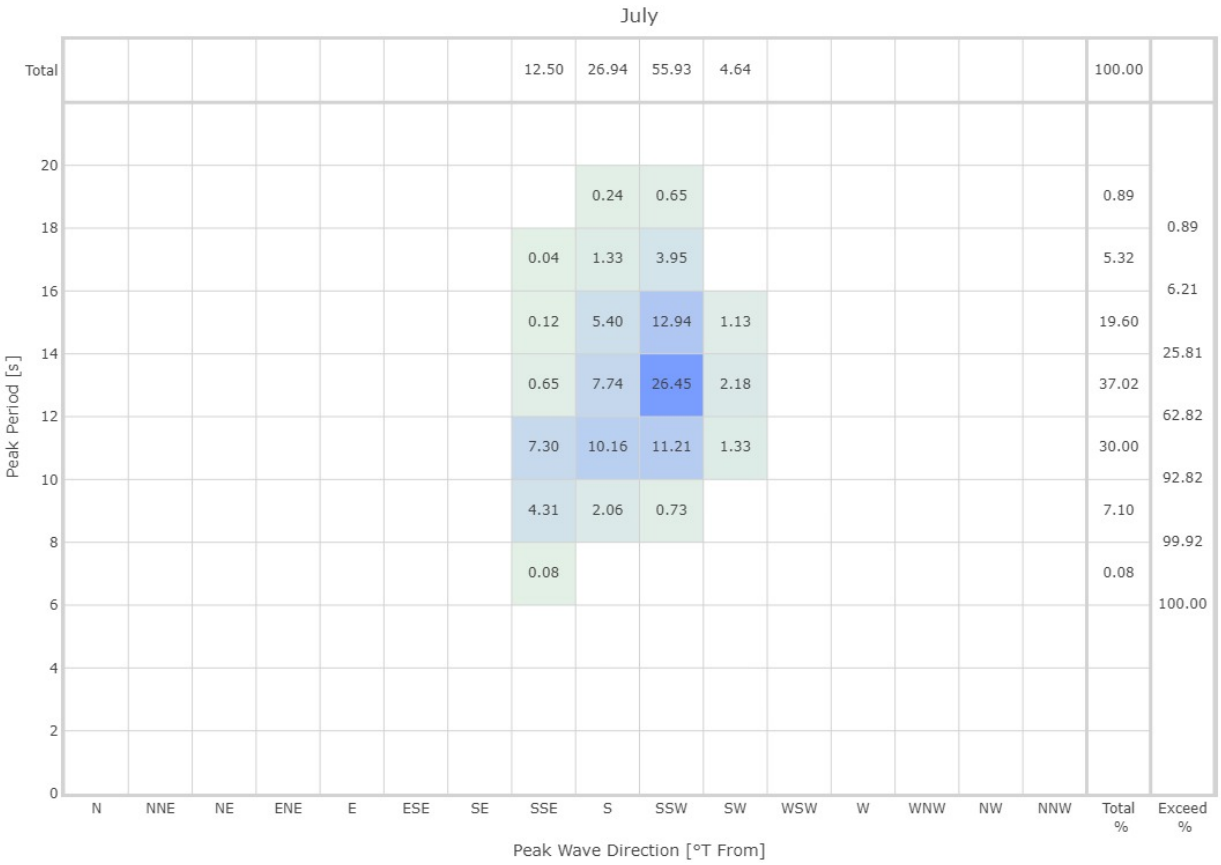


Figure 2.75: Bivariate table of peak period against peak wave direction for July

2.4.1.9 August

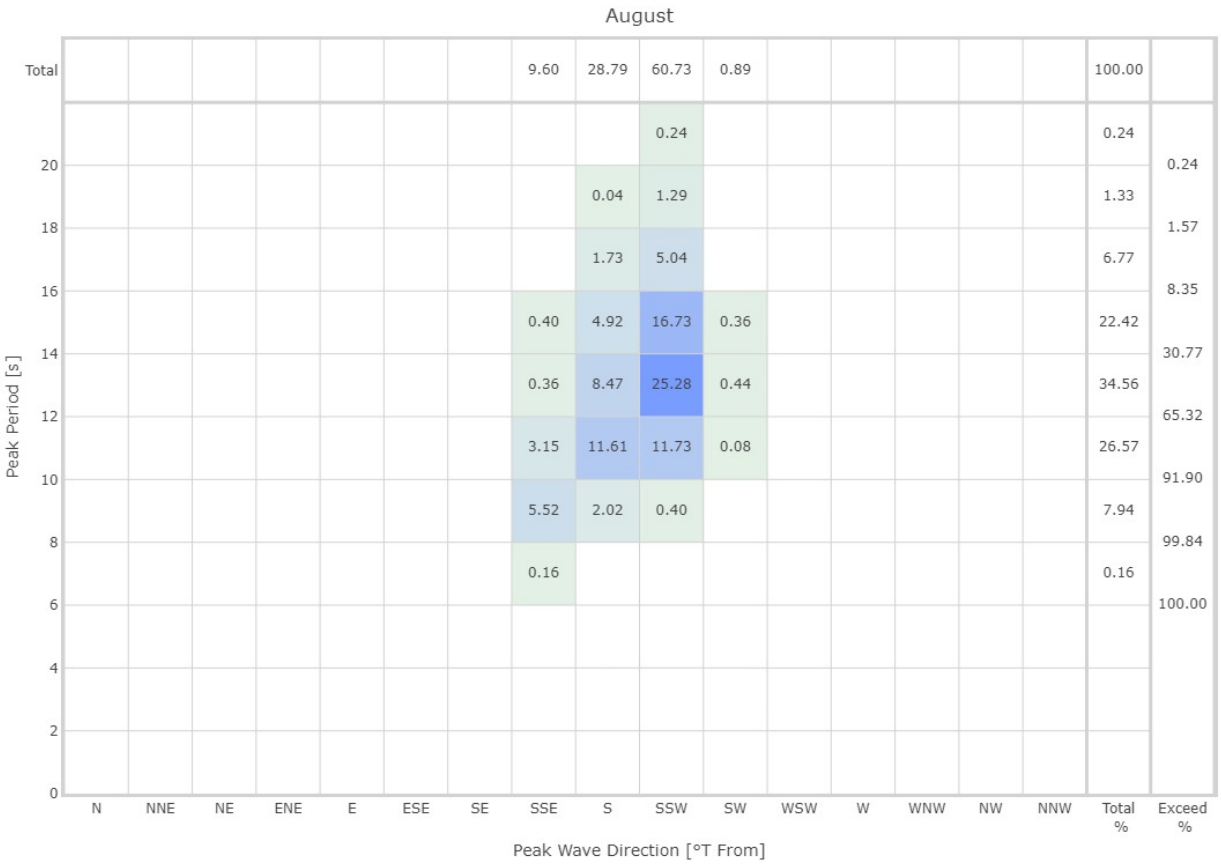


Figure 2.76: Bivariate table of peak period against peak wave direction for August

2.4.1.10 September

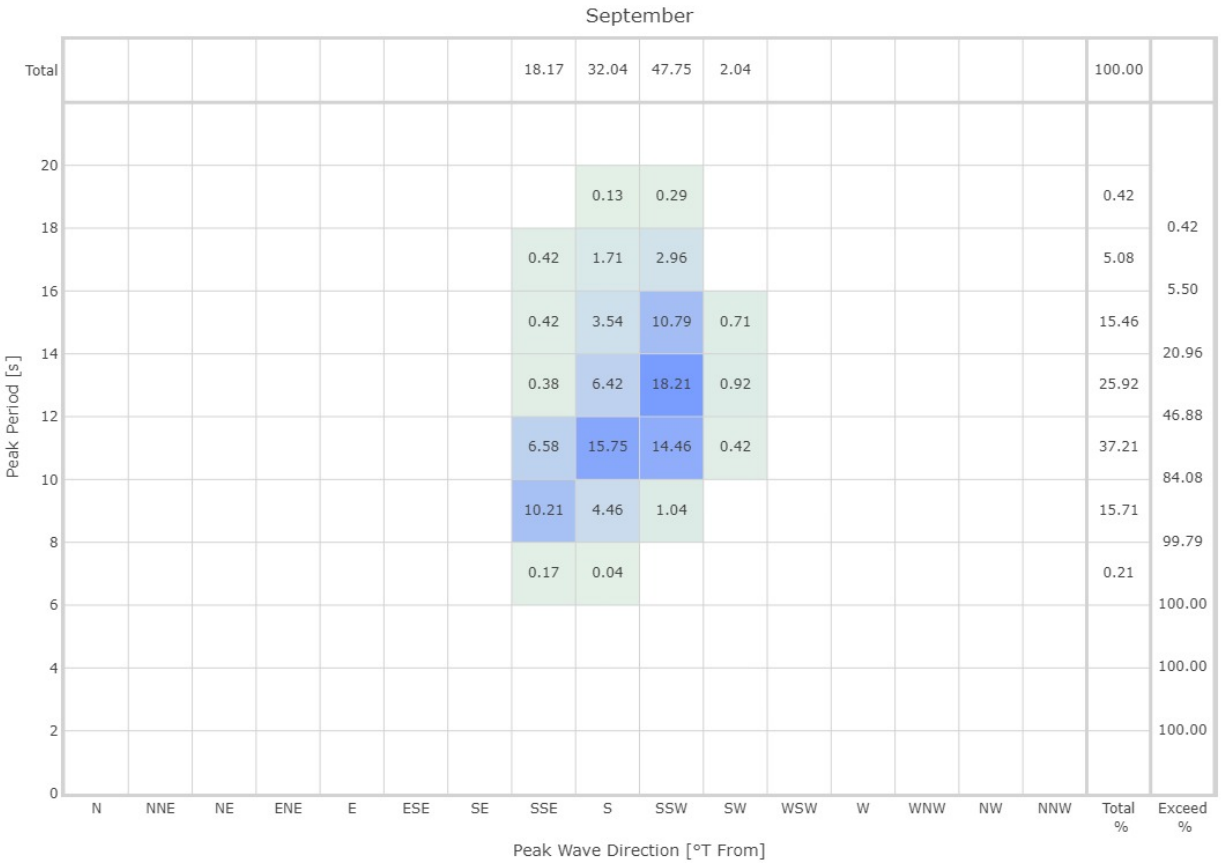


Figure 2.77: Bivariate table of peak period against peak wave direction for September

2.4.1.11 October

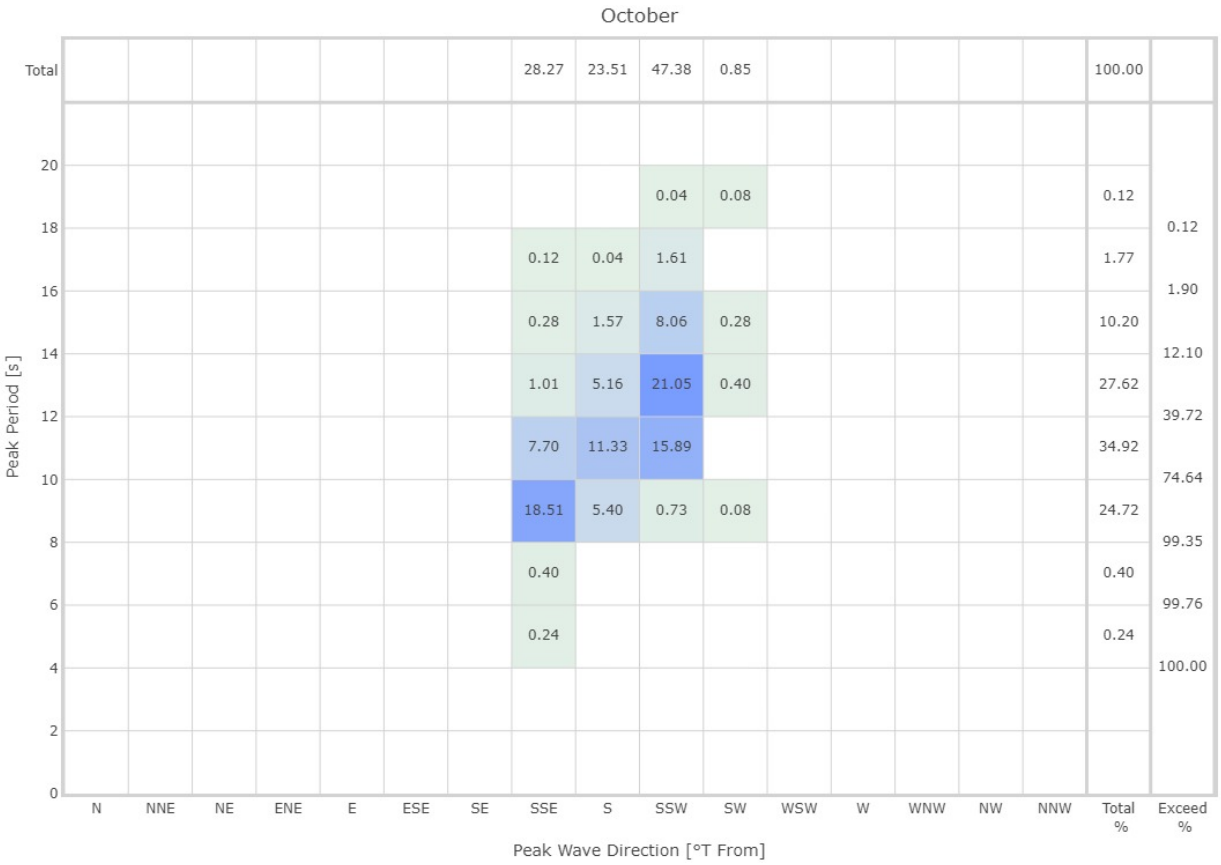


Figure 2.78: Bivariate table of peak period against peak wave direction for October

2.4.1.12 November

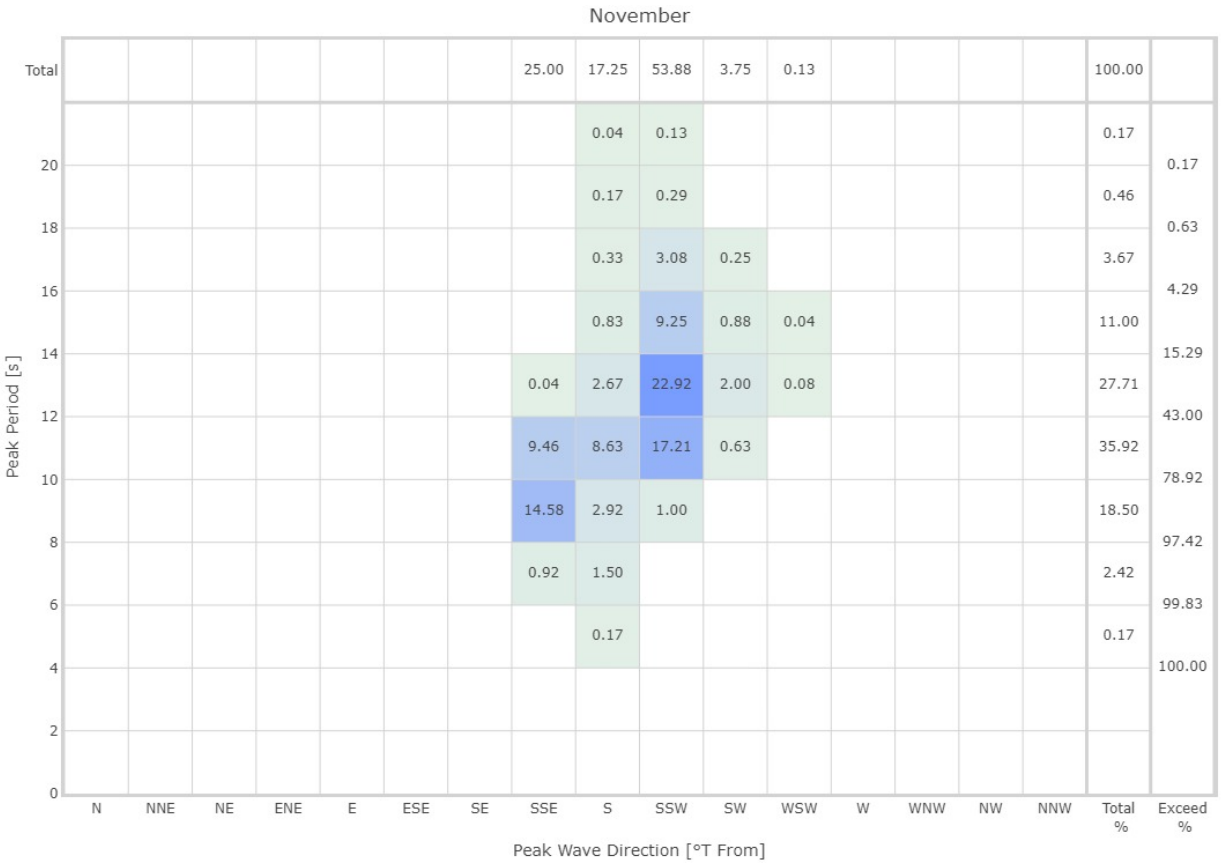


Figure 2.79: Bivariate table of peak period against peak wave direction for November

2.4.1.13 December

Figure 2.80: Bivariate table of peak period against peak wave direction for December

3. WIND

3.1 Wind Speed

3.1.1 Monthly Mean Plot

Each star in the monthly mean plot in Figure 3.1 represents a one year mean significant wind speed for each month. The black circular markers represent the ten year mean for each month.

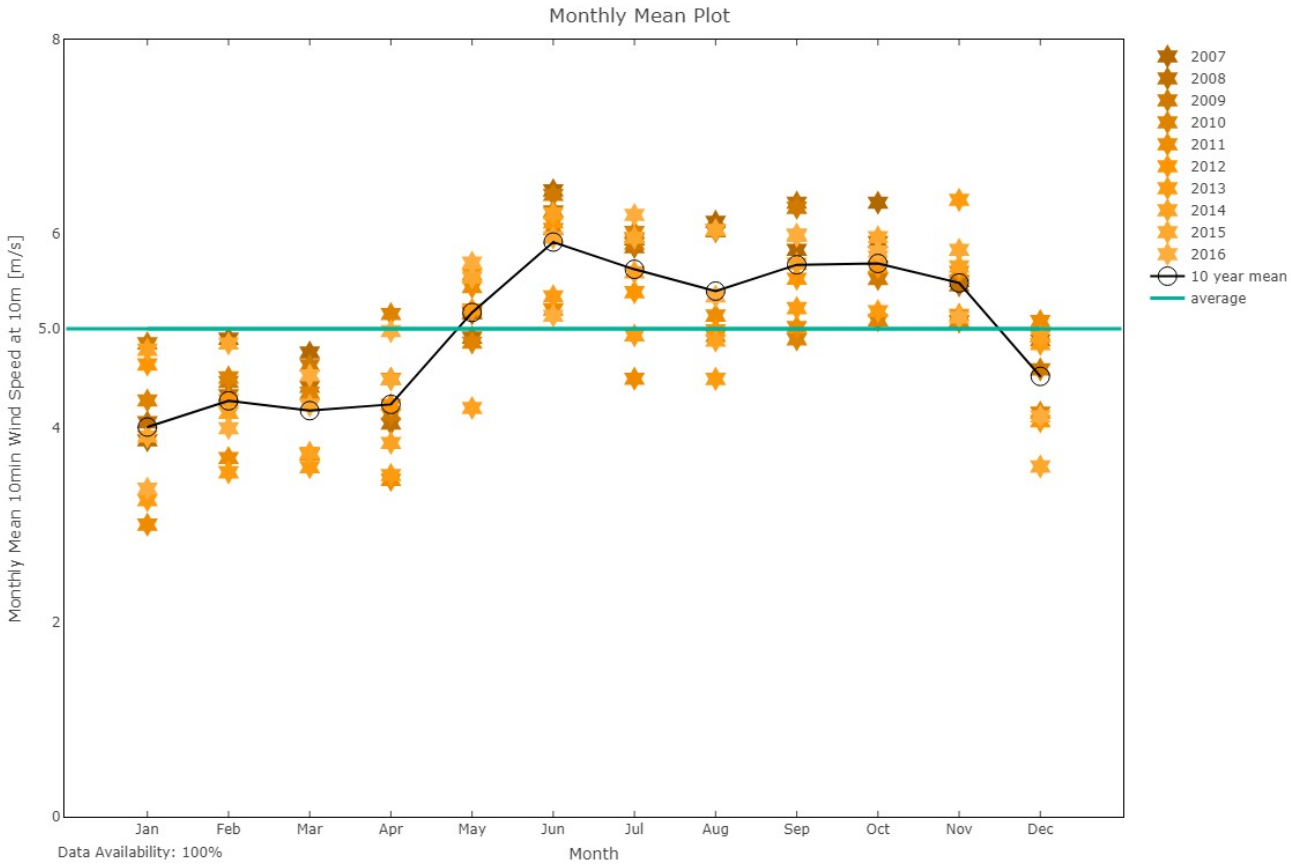


Figure 3.1: Monthly mean wind speed

3.1.2 Monthly Bivariate Table

Figure 3.2: Monthly Bivariate table of wind speed

3.1.3 Histograms

3.1.3.1 All-Year

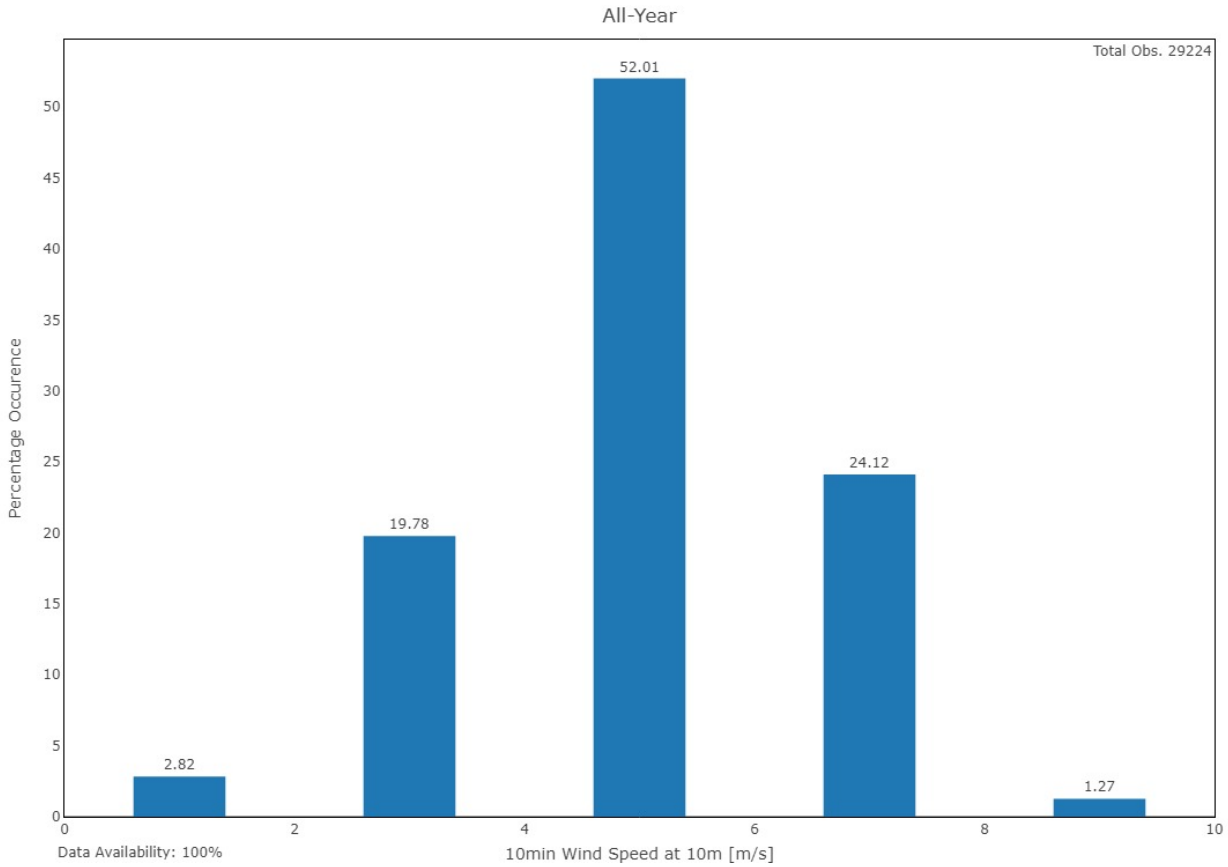


Figure 3.3: Histogram of wind speed for the entire data set

3.1.3.2 January

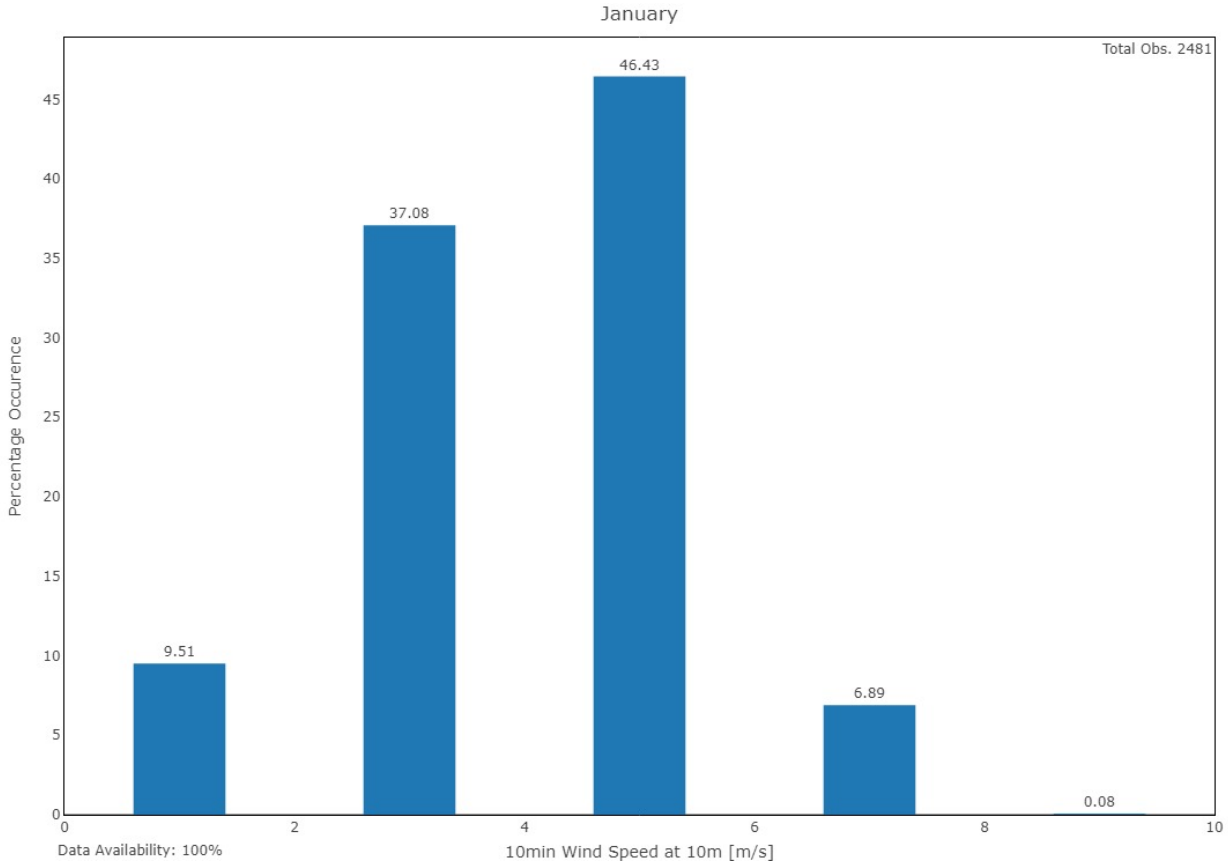


Figure 3.4: Histogram of wind speed for January

3.1.3.3 February

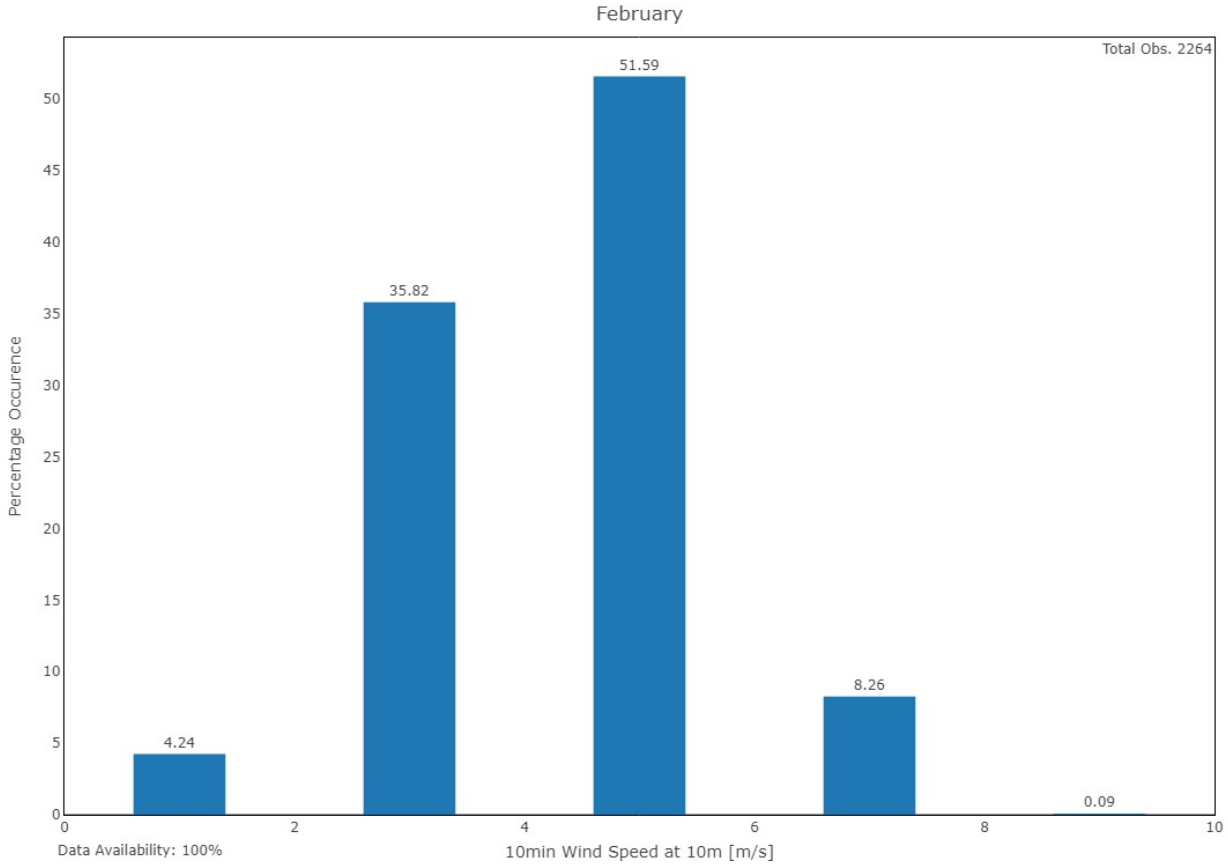


Figure 3.5: Histogram of wind speed for February

3.1.3.4 March

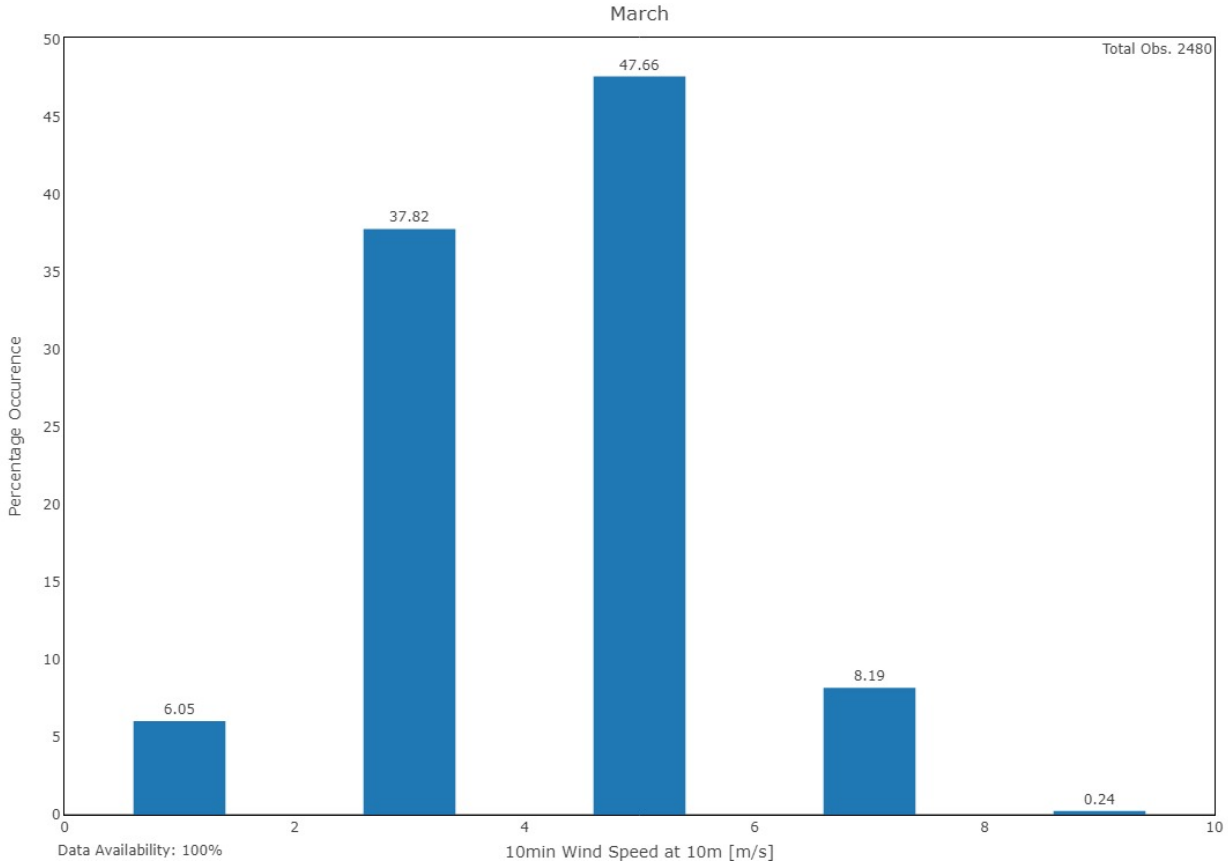


Figure 3.6: Histogram of wind speed for March

3.1.3.5 April

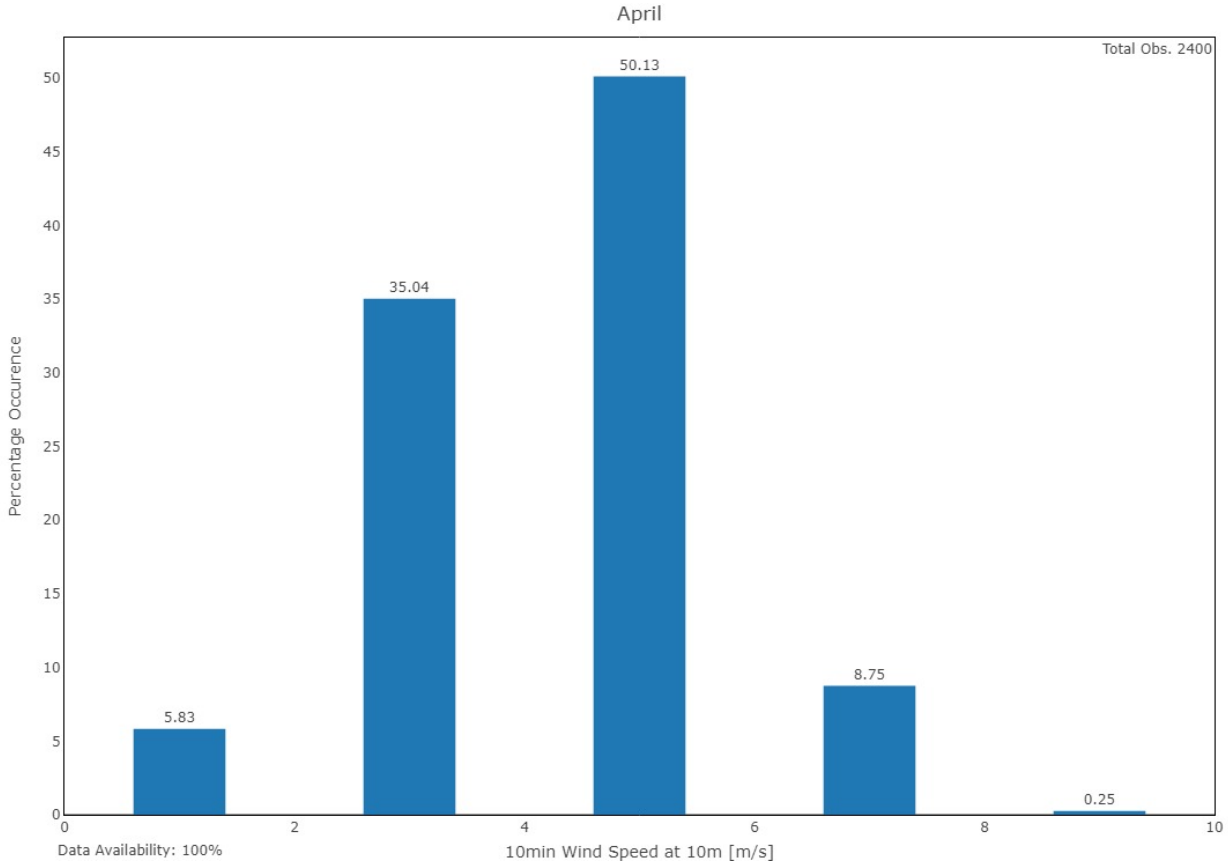


Figure 3.7: Histogram of wind speed for April

3.1.3.6 May

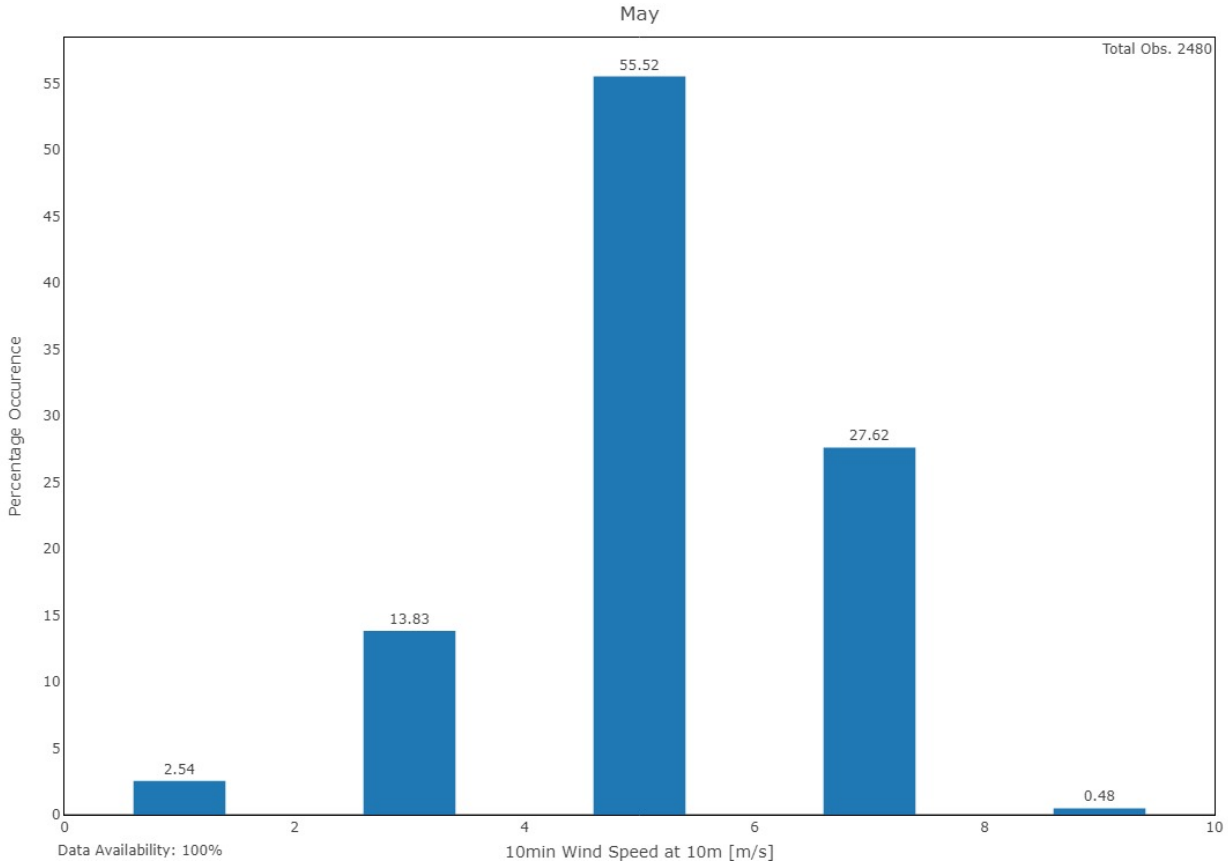


Figure 3.8: Histogram of wind speed for May

3.1.3.7 June

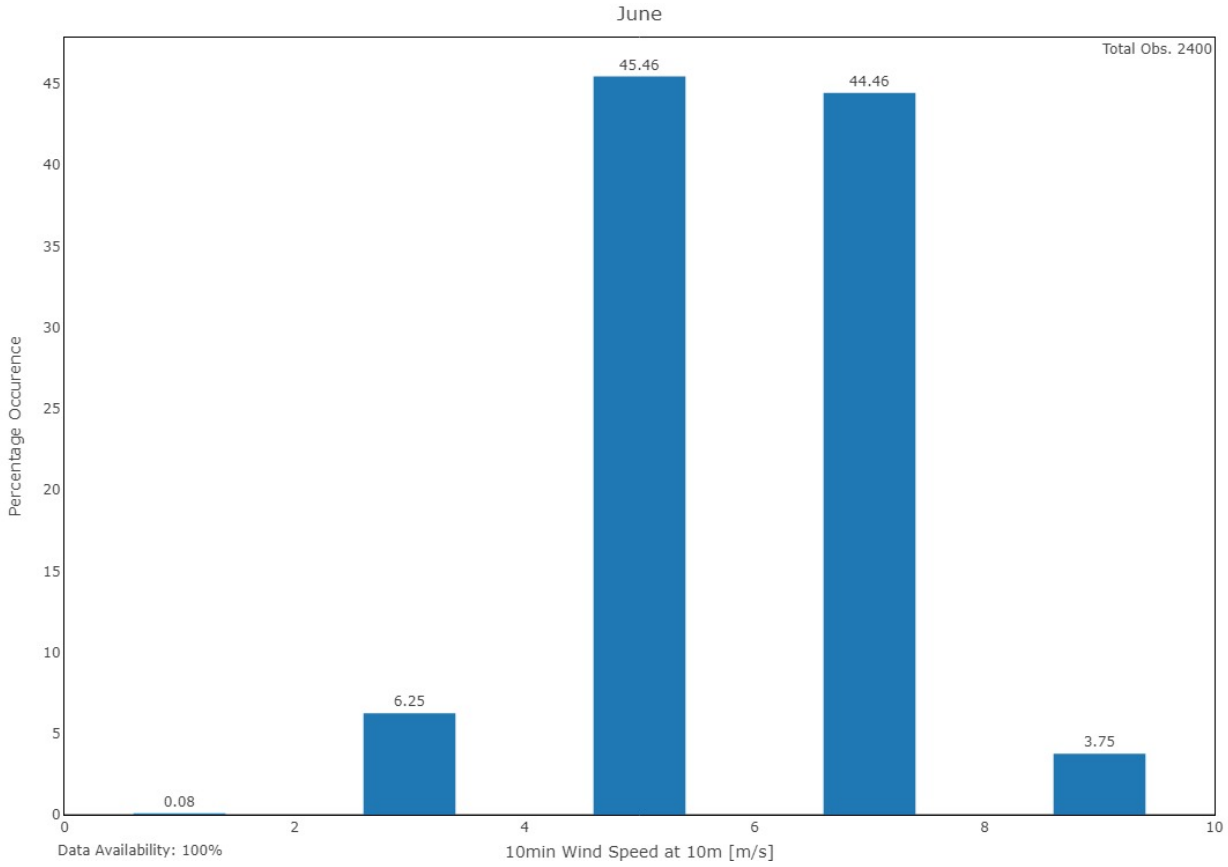


Figure 3.9: Histogram of wind speed for June

3.1.3.8 July

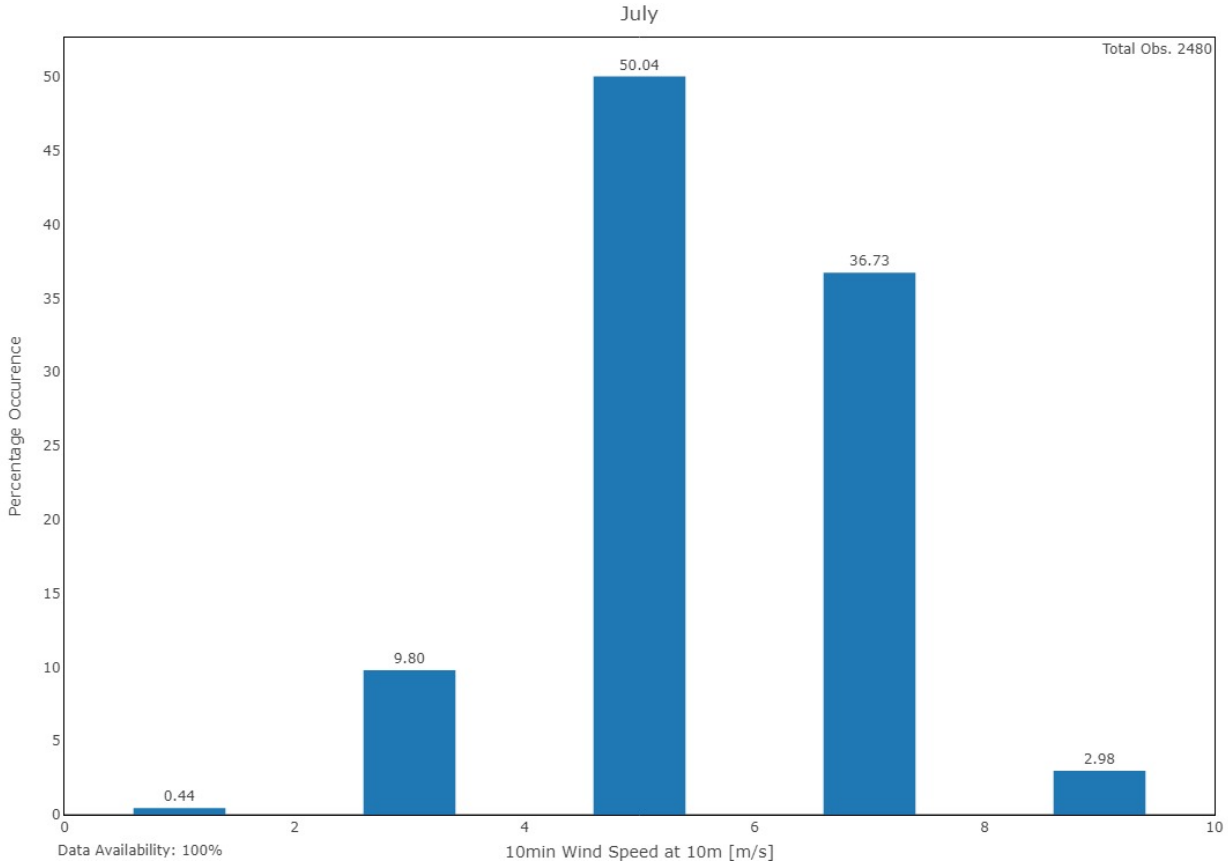


Figure 3.10: Histogram of wind speed for July

3.1.3.9 August

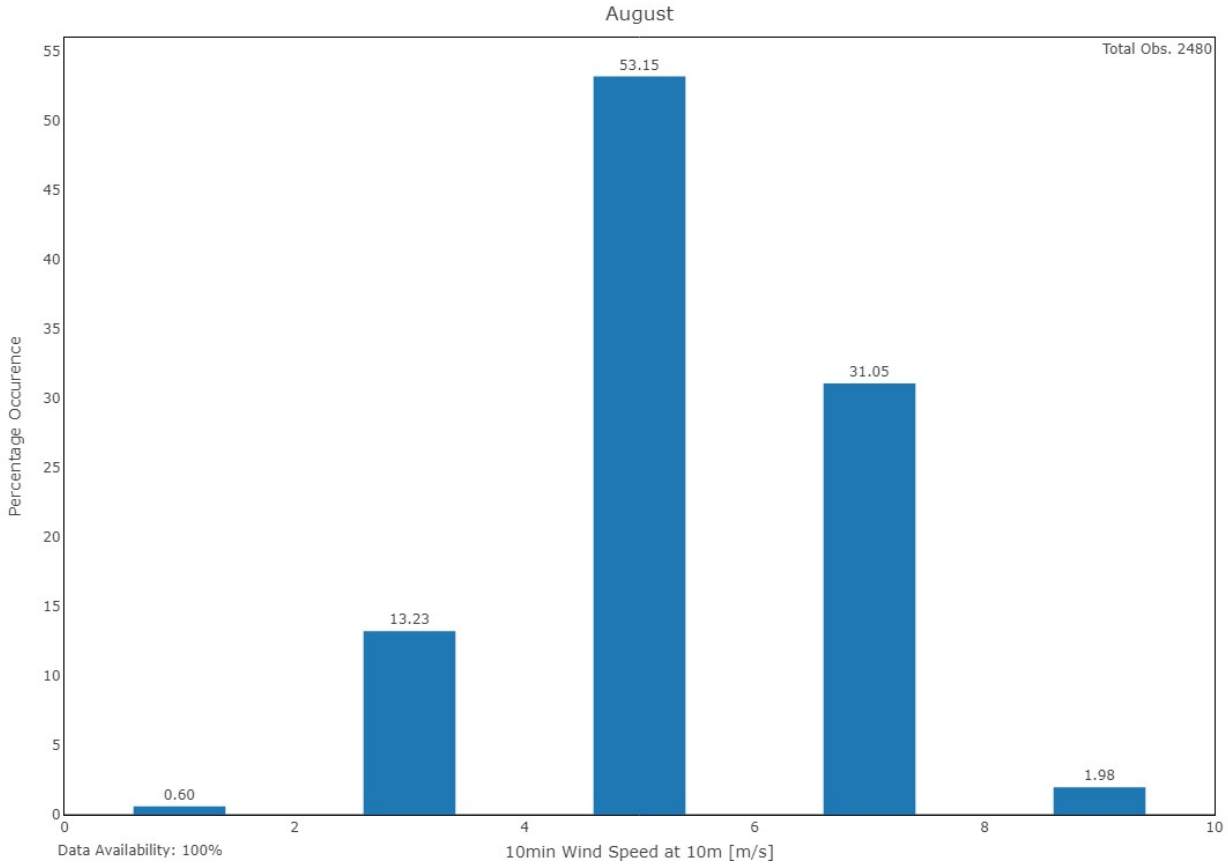


Figure 3.11: Histogram of wind speed for August

3.1.3.10 September

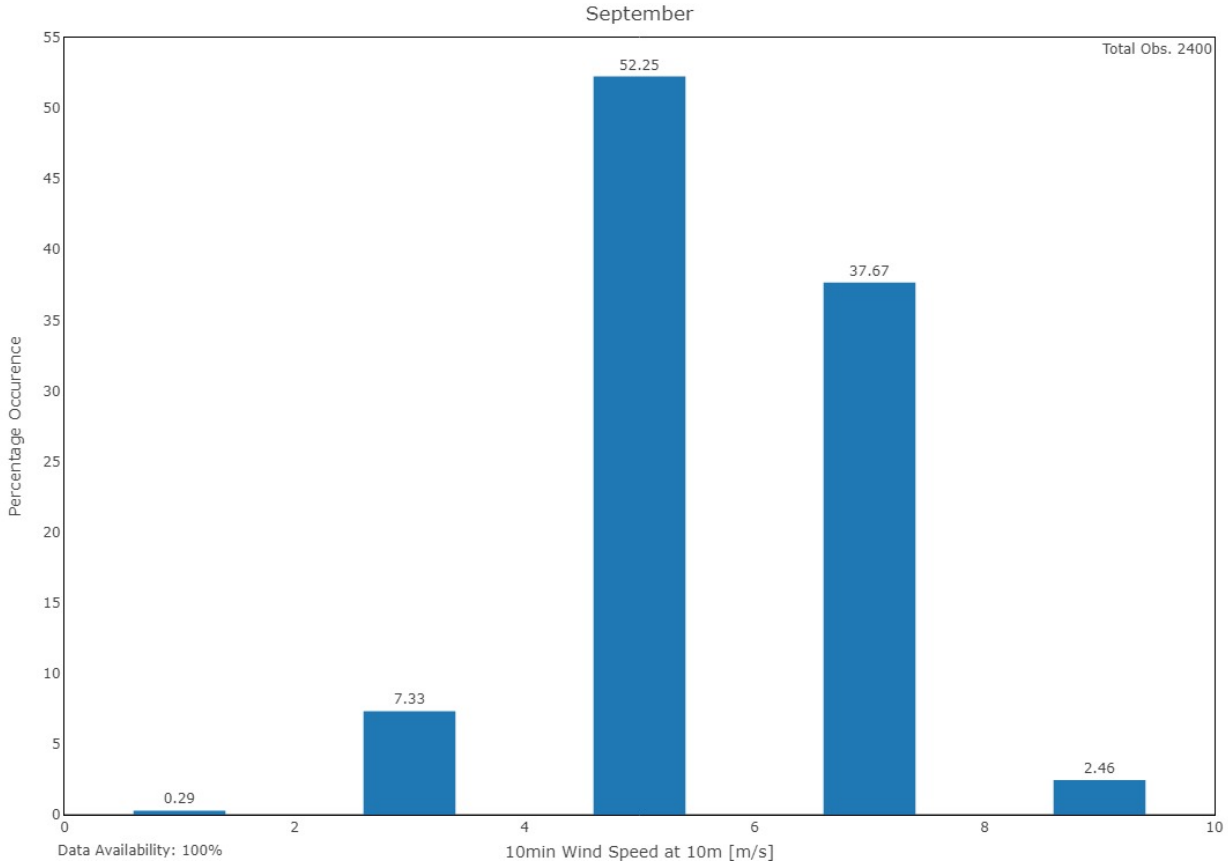


Figure 3.12: Histogram of wind speed for September

3.1.3.11 October

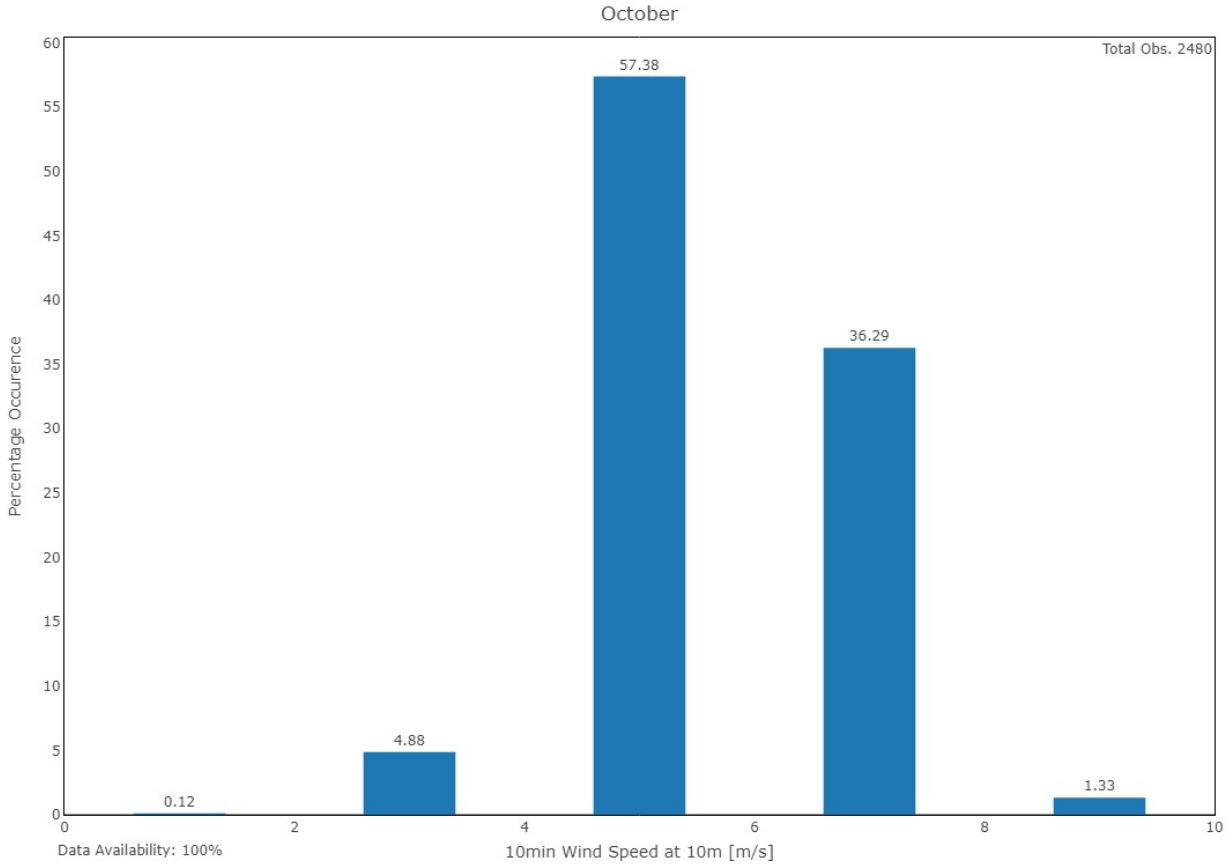


Figure 3.13: Histogram of wind speed for October

3.1.3.12 November

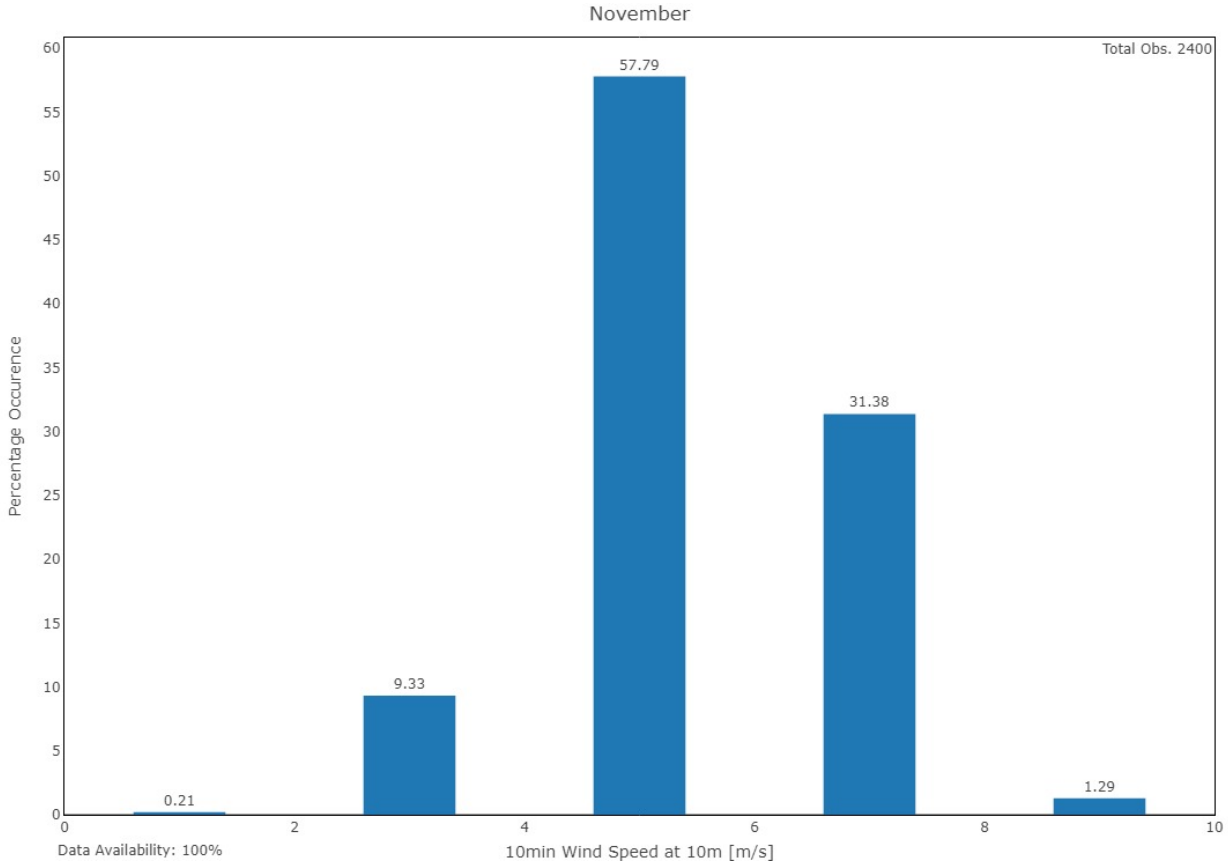


Figure 3.14: Histogram of wind speed for November

3.1.3.13 December

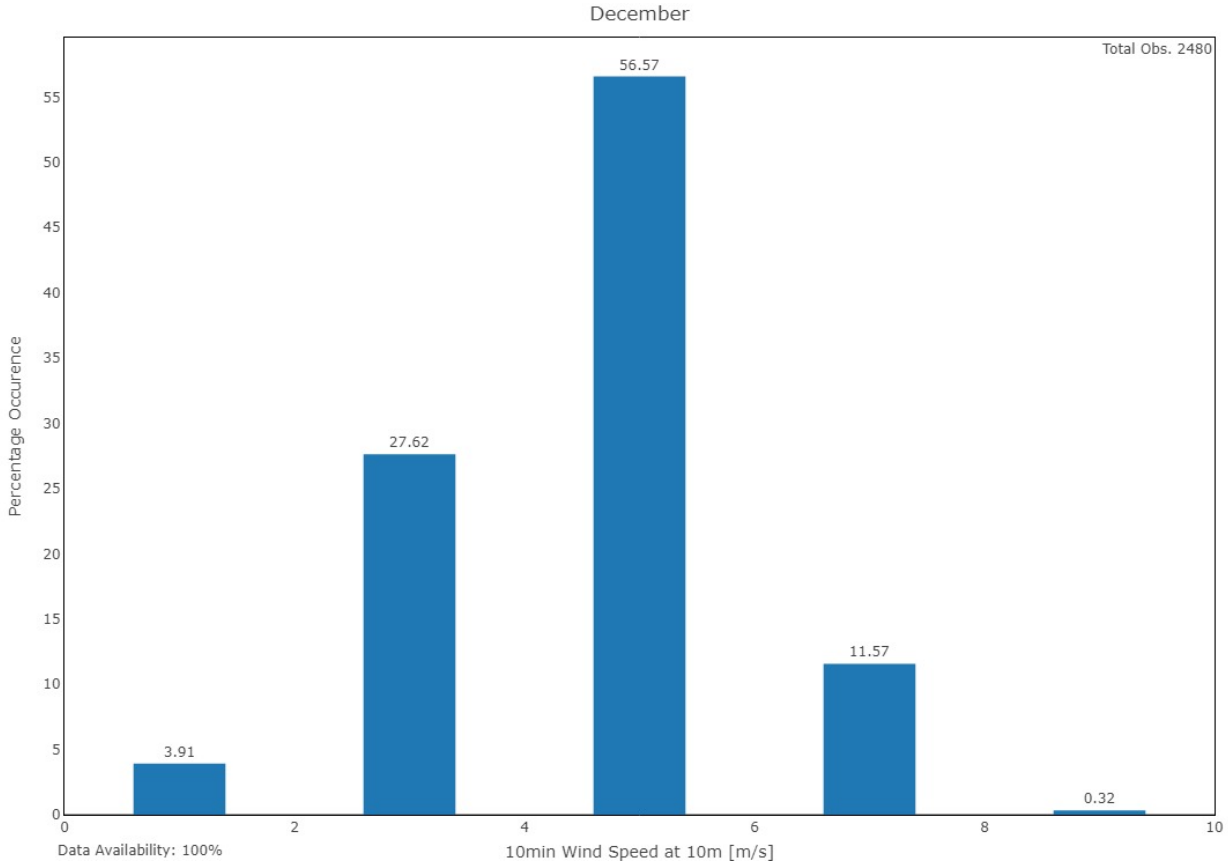
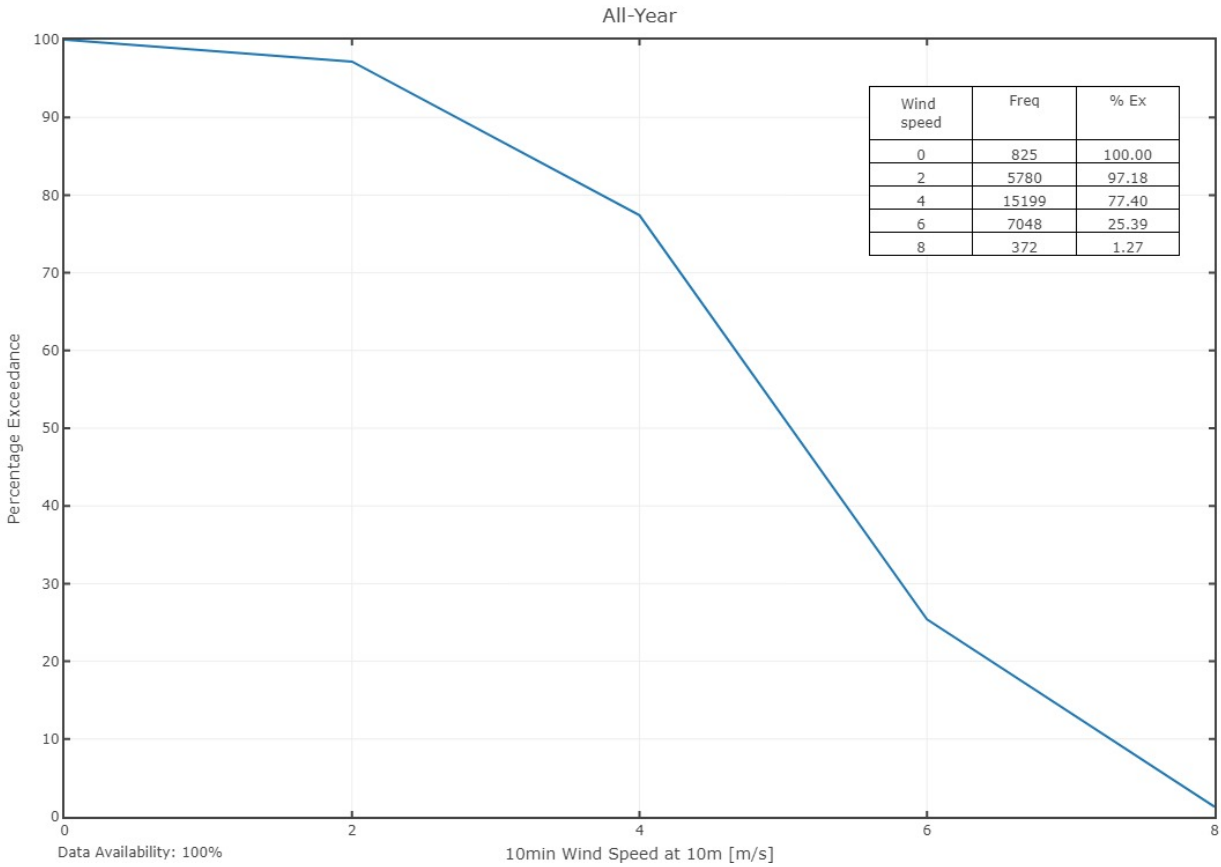


Figure 3.15: Histogram of wind speed for December

3.1.4 Exceedence Curves

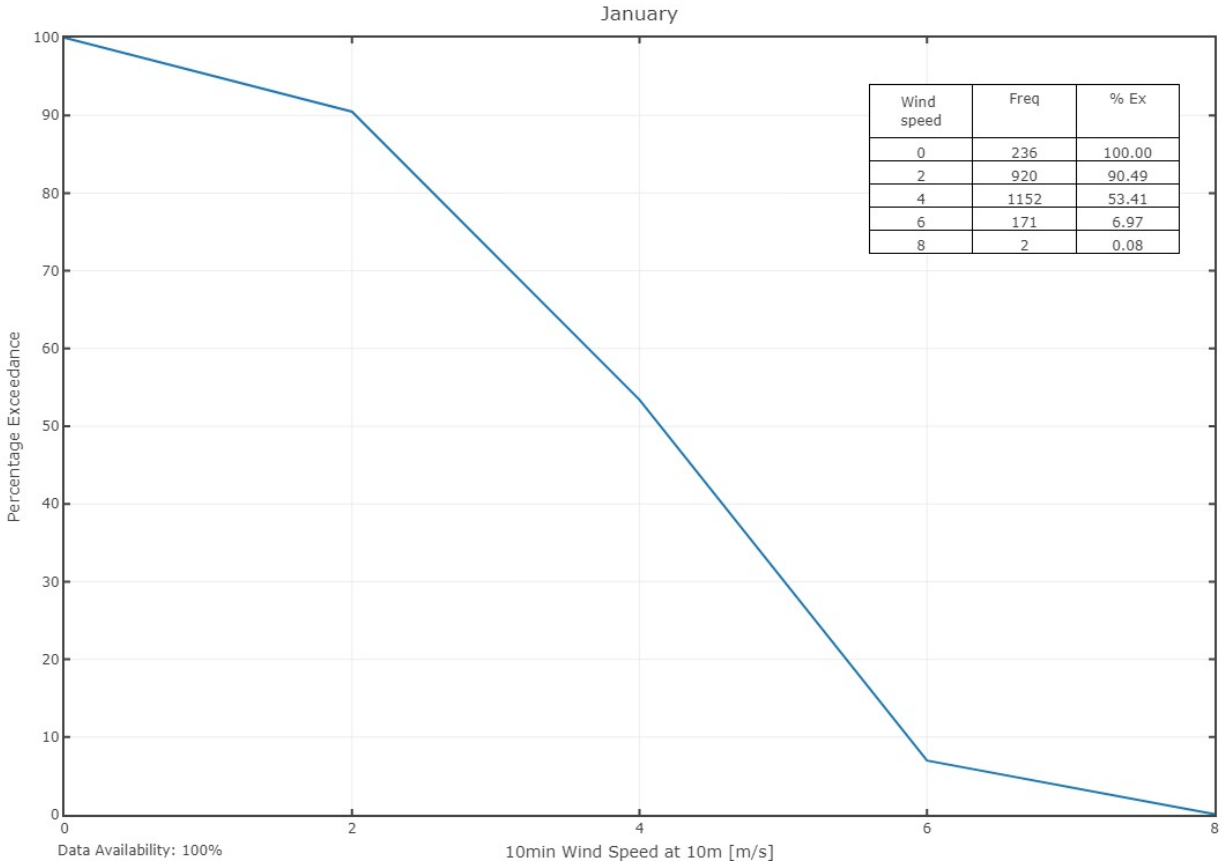
3.1.4.1 All-Year



Wind speed	Freq	% Ex
0	825	100.00
2	5780	97.18
4	15199	77.40
6	7048	25.39
8	372	1.27

Figure 3.16: Percentage exceedance of wind speed for the entire data set

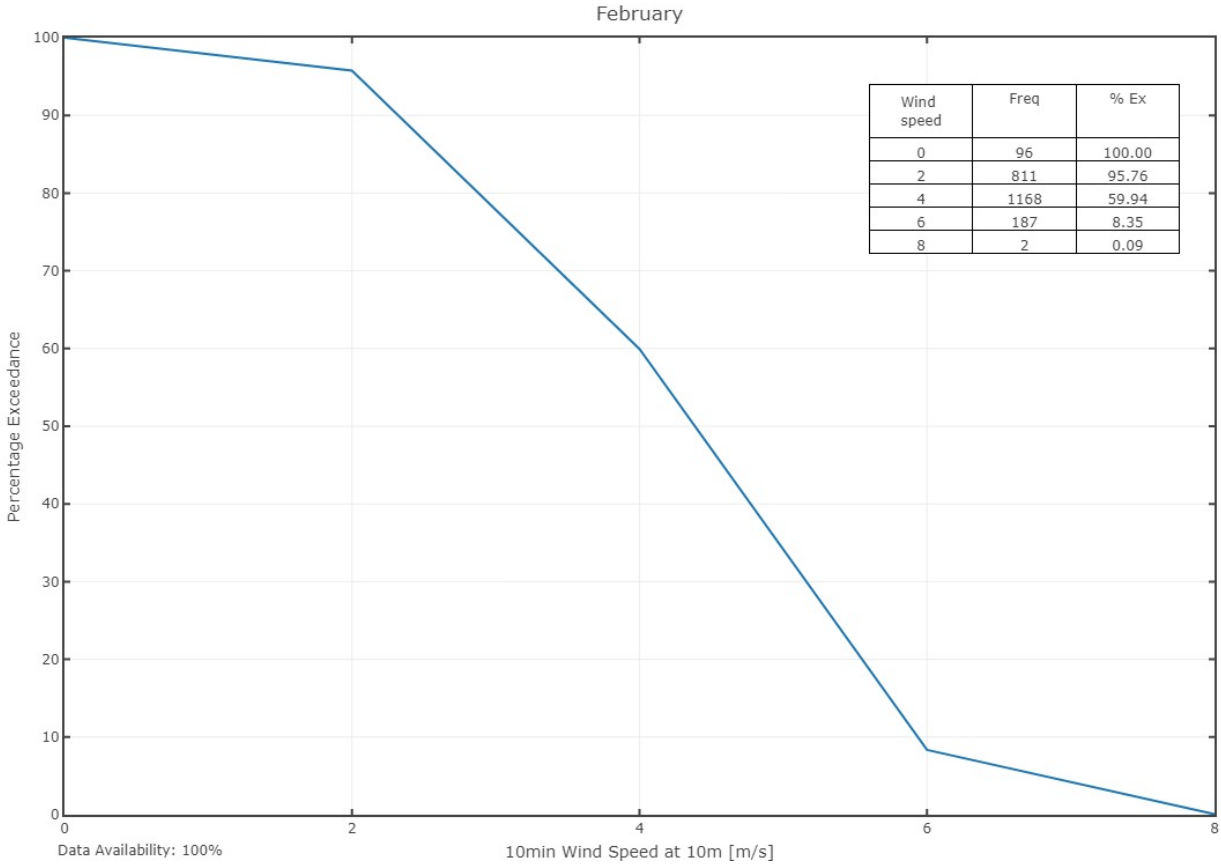
3.1.4.2 January



Wind speed	Freq	% Ex
0	236	100.00
2	920	90.49
4	1152	53.41
6	171	6.97
8	2	0.08

Figure 3.17: Percentage exceedance of wind speed for January

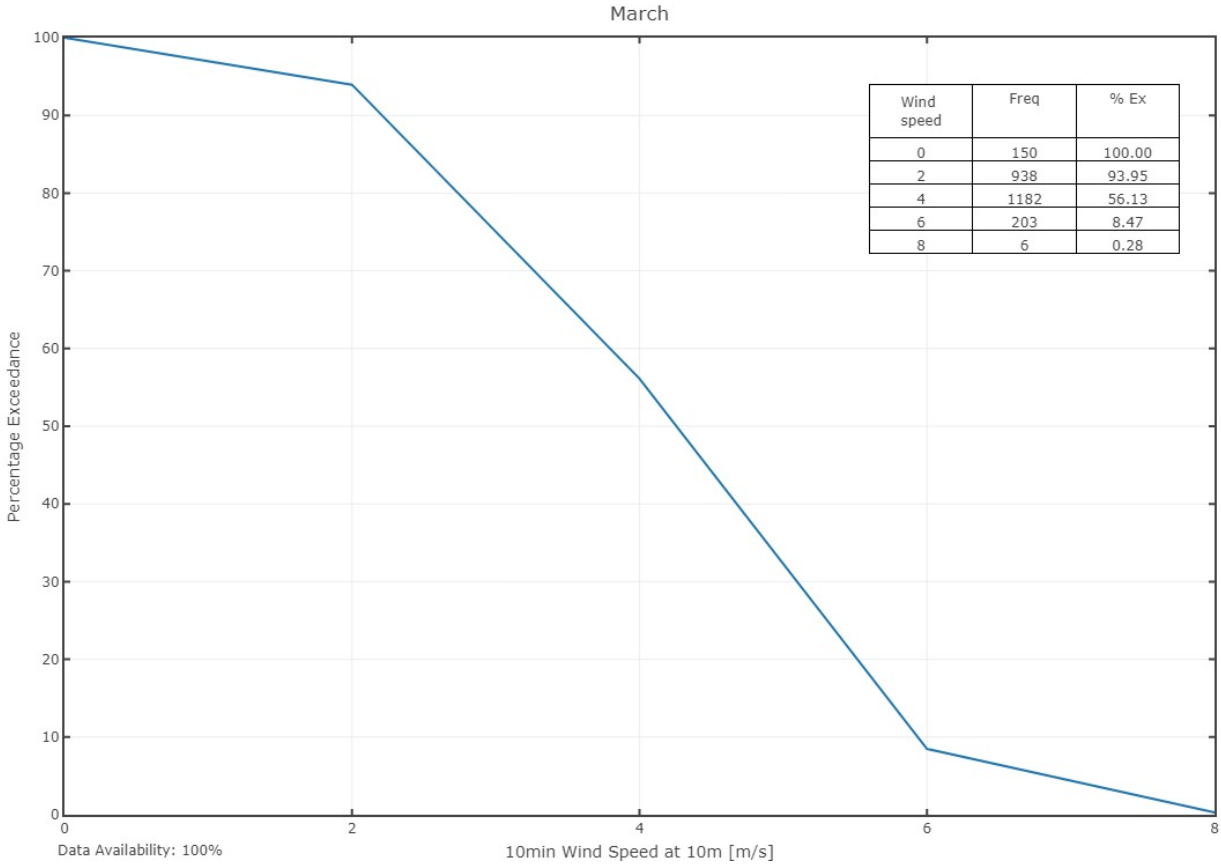
3.1.4.3 February



Wind speed	Freq	% Ex
0	96	100.00
2	811	95.76
4	1168	59.94
6	187	8.35
8	2	0.09

Figure 3.18: Percentage exceedance of wind speed for February

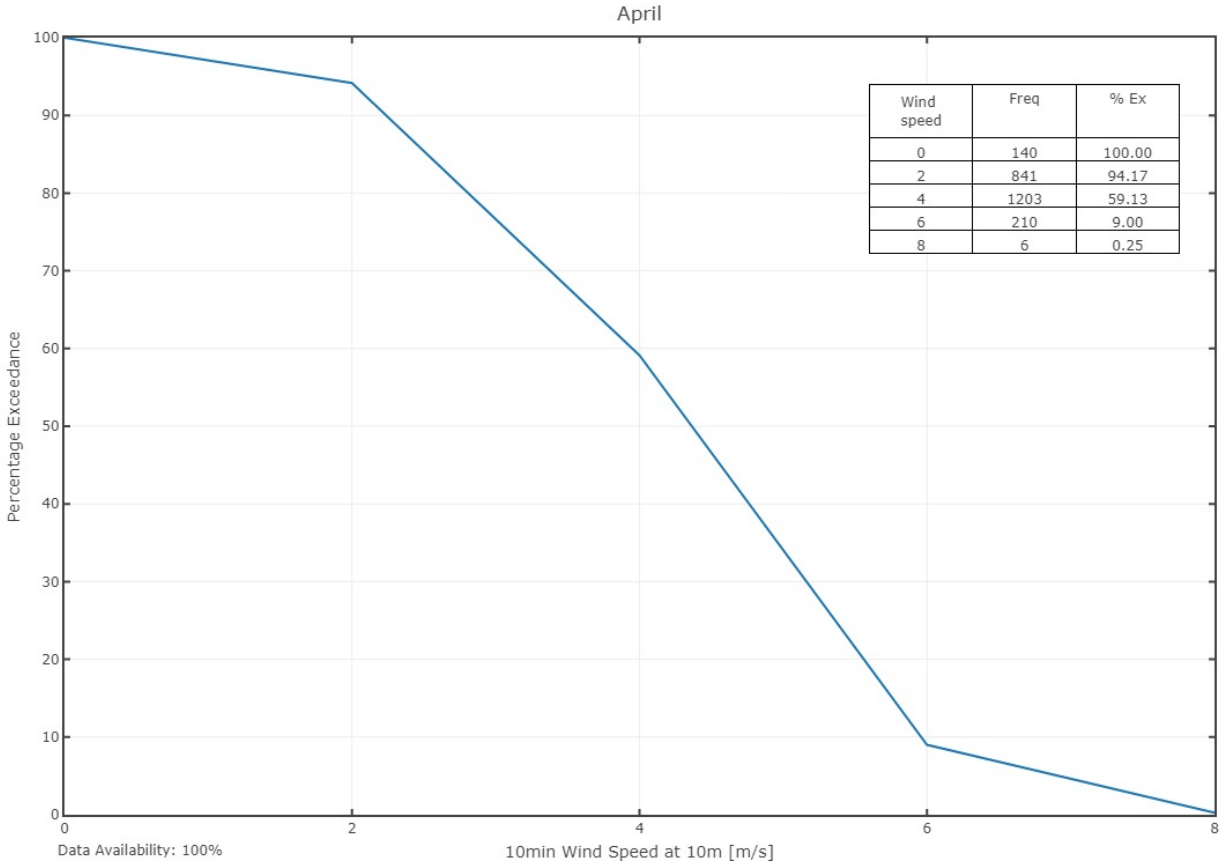
3.1.4.4 March



Wind speed	Freq	% Ex
0	150	100.00
2	938	93.95
4	1182	56.13
6	203	8.47
8	6	0.28

Figure 3.19: Percentage exceedance of wind speed for March

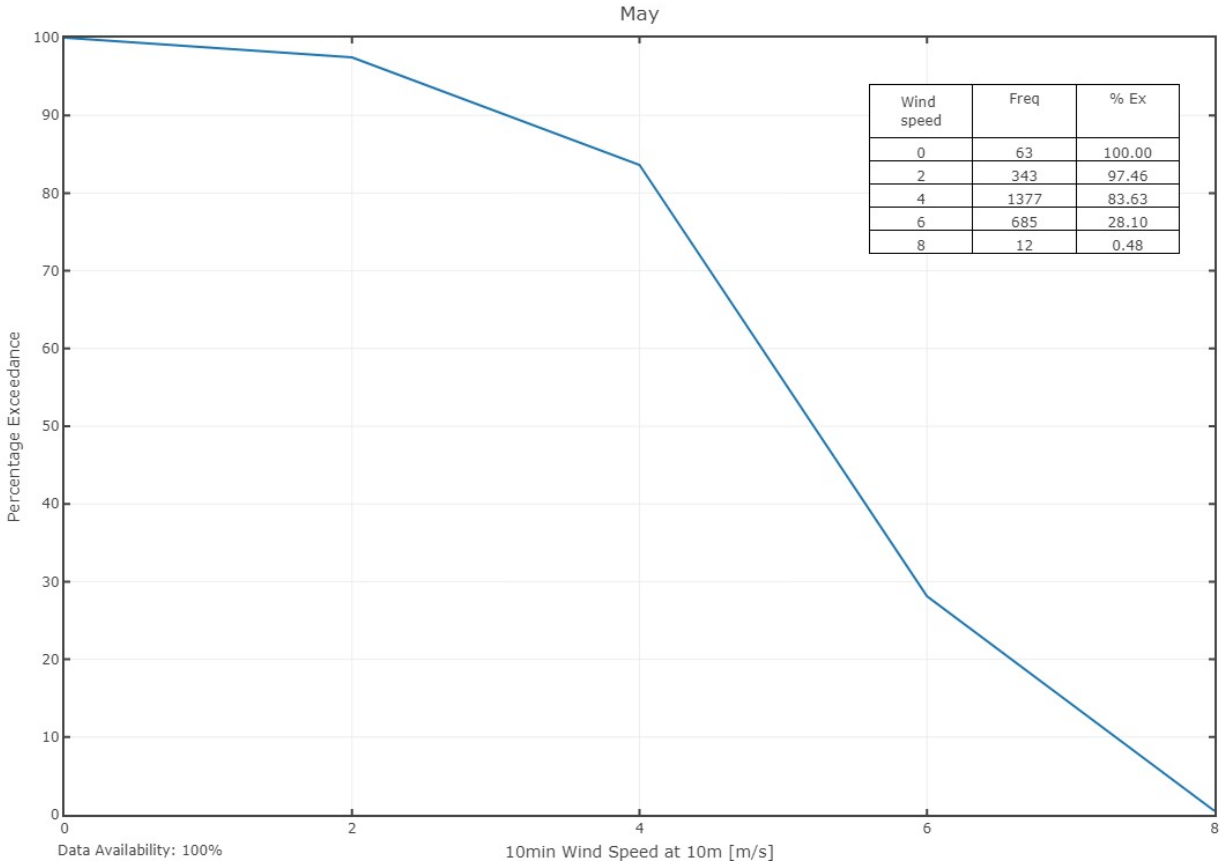
3.1.4.5 April



Wind speed	Freq	% Ex
0	140	100.00
2	841	94.17
4	1203	59.13
6	210	9.00
8	6	0.25

Figure 3.20: Percentage exceedance of wind speed for April

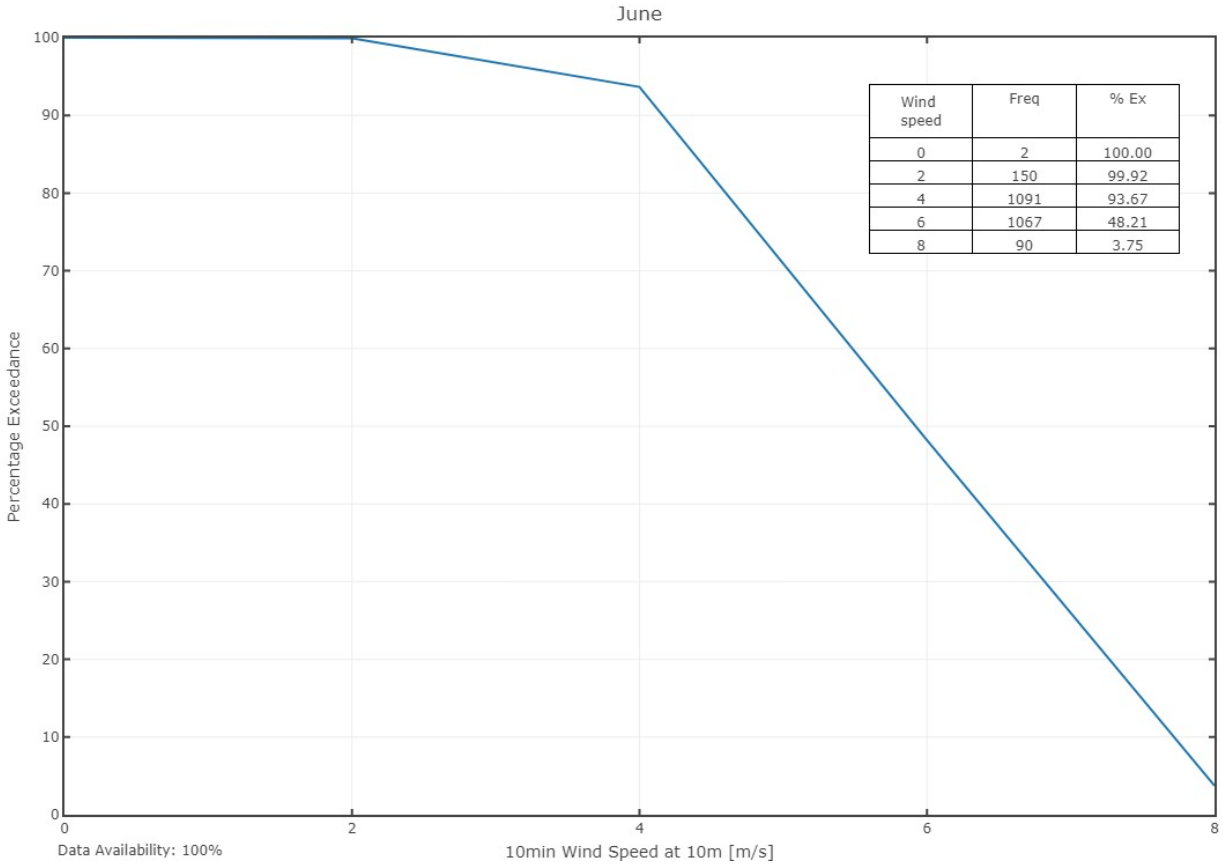
3.1.4.6 May



Wind speed	Freq	% Ex
0	63	100.00
2	343	97.46
4	1377	83.63
6	685	28.10
8	12	0.48

Figure 3.21: Percentage exceedance of wind speed for May

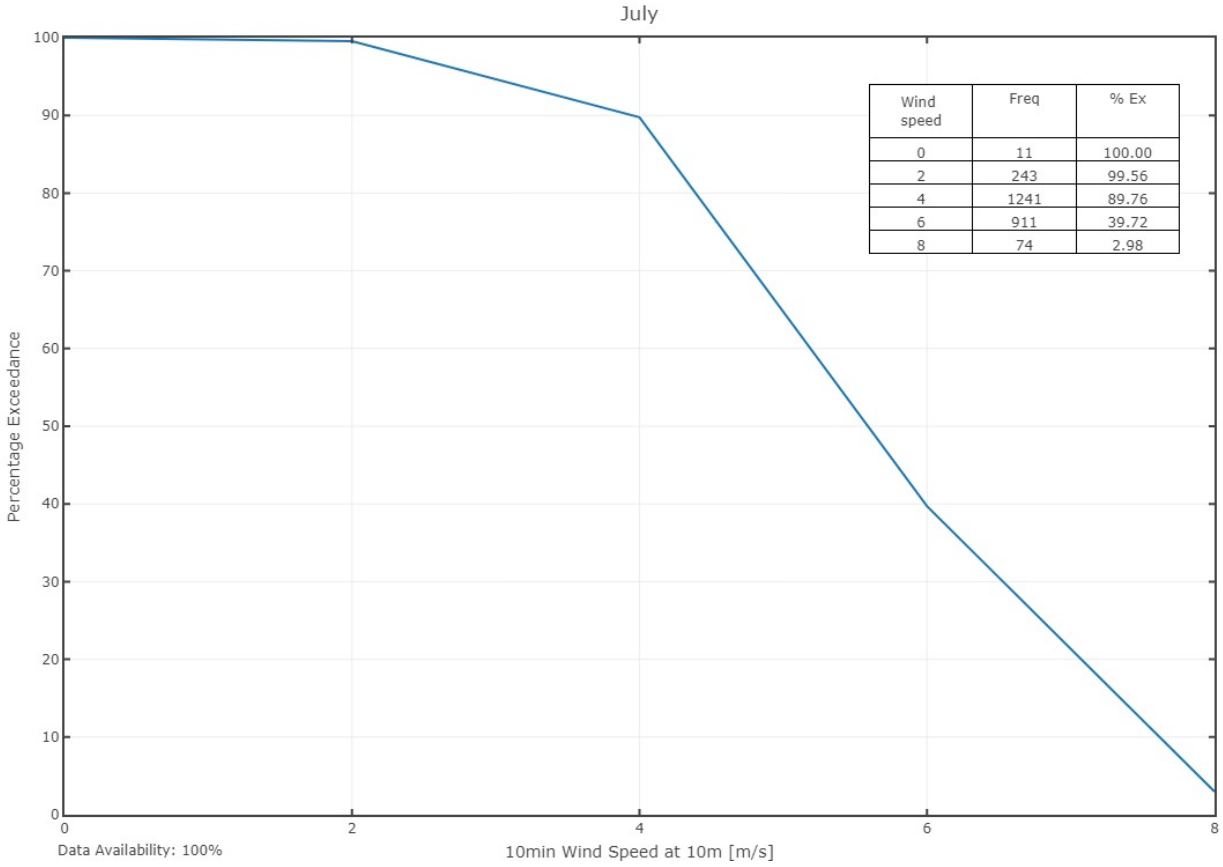
3.1.4.7 June



Wind speed	Freq	% Ex
0	2	100.00
2	150	99.92
4	1091	93.67
6	1067	48.21
8	90	3.75

Figure 3.22: Percentage exceedance of wind speed for June

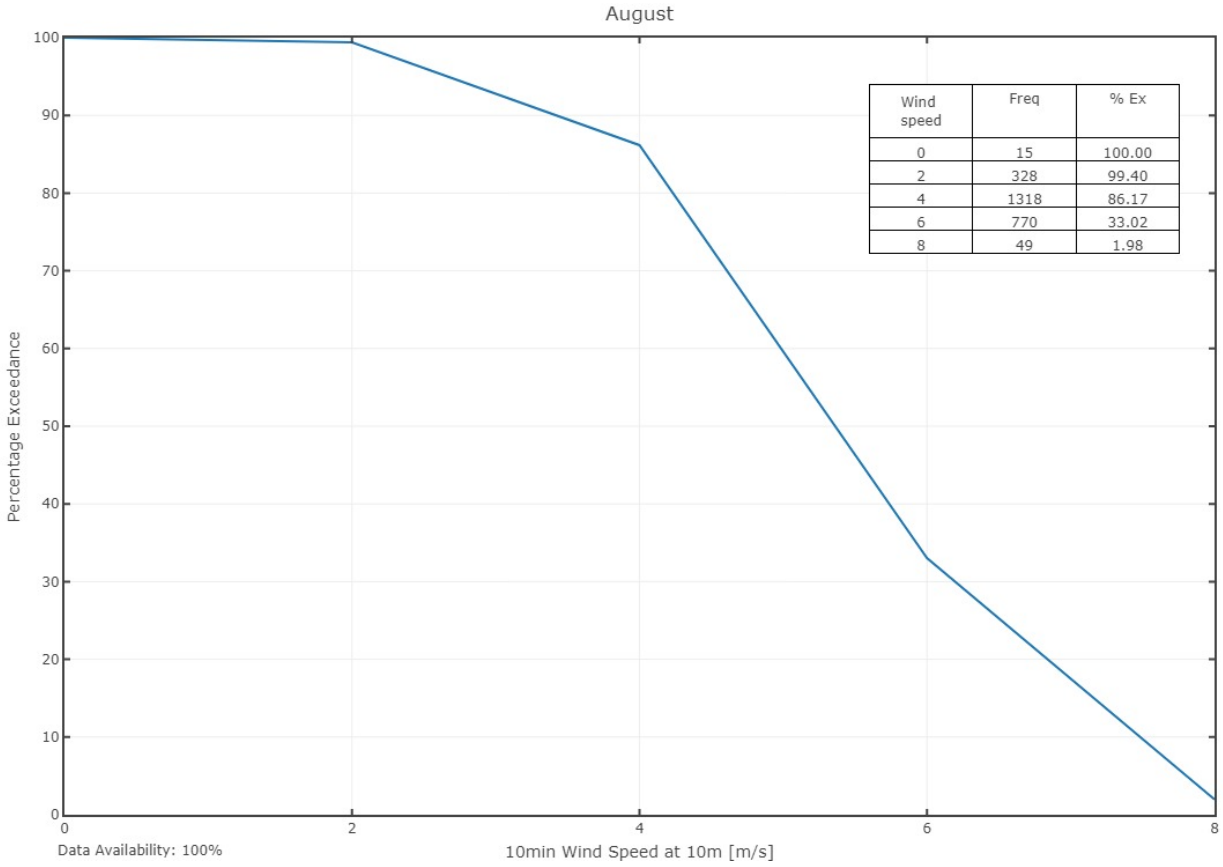
3.1.4.8 July



Wind speed	Freq	% Ex
0	11	100.00
2	243	99.56
4	1241	89.76
6	911	39.72
8	74	2.98

Figure 3.23: Percentage exceedance of wind speed for July

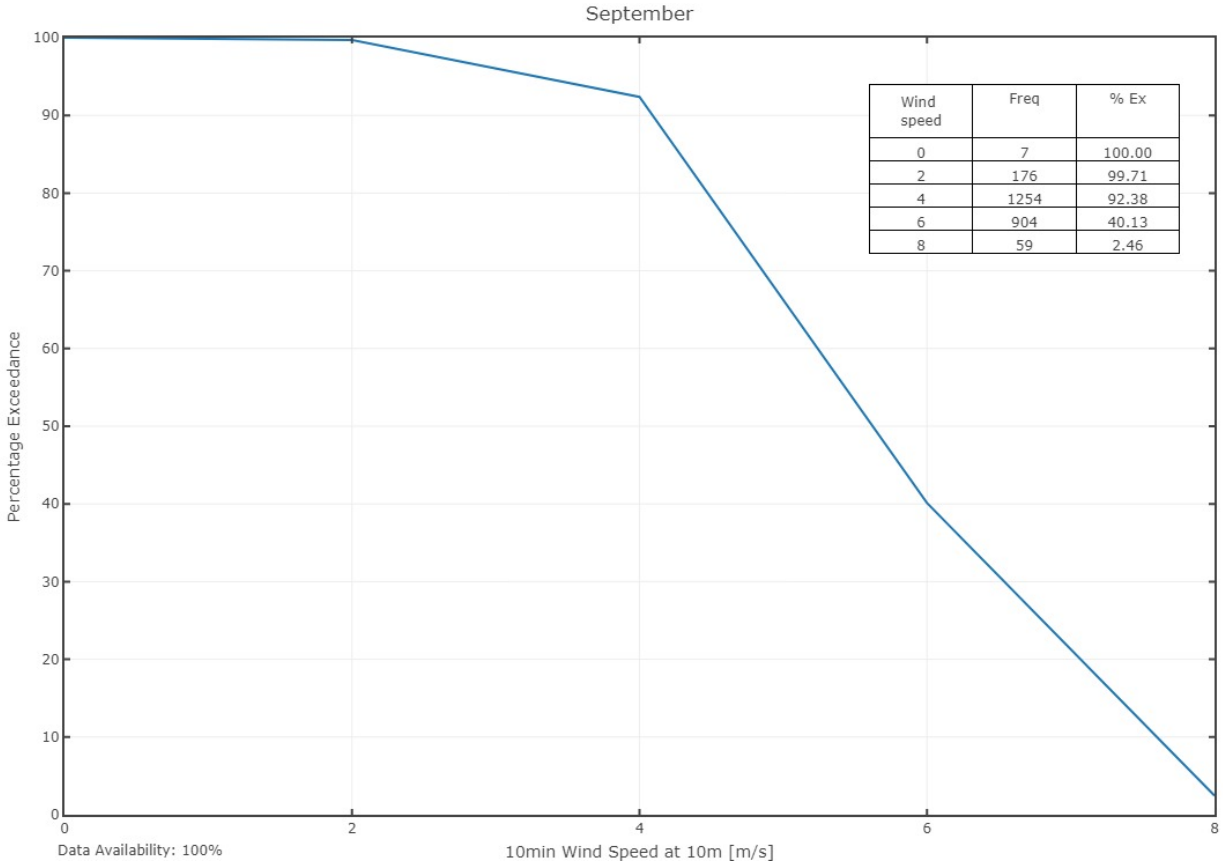
3.1.4.9 August



Wind speed	Freq	% Ex
0	15	100.00
2	328	99.40
4	1318	86.17
6	770	33.02
8	49	1.98

Figure 3.24: Percentage exceedance of wind speed for August

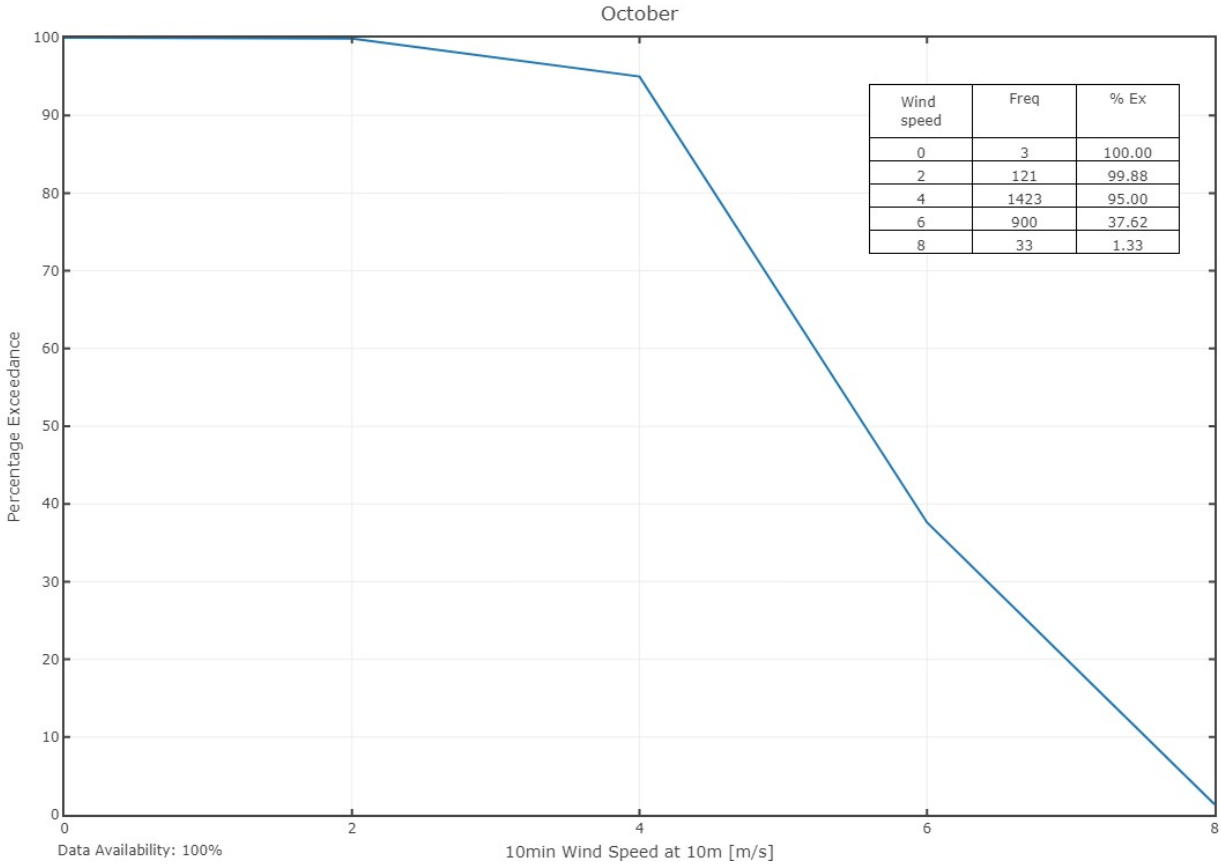
3.1.4.10 September



Wind speed	Freq	% Ex
0	7	100.00
2	176	99.71
4	1254	92.38
6	904	40.13
8	59	2.46

Figure 3.25: Percentage exceedance of wind speed for September

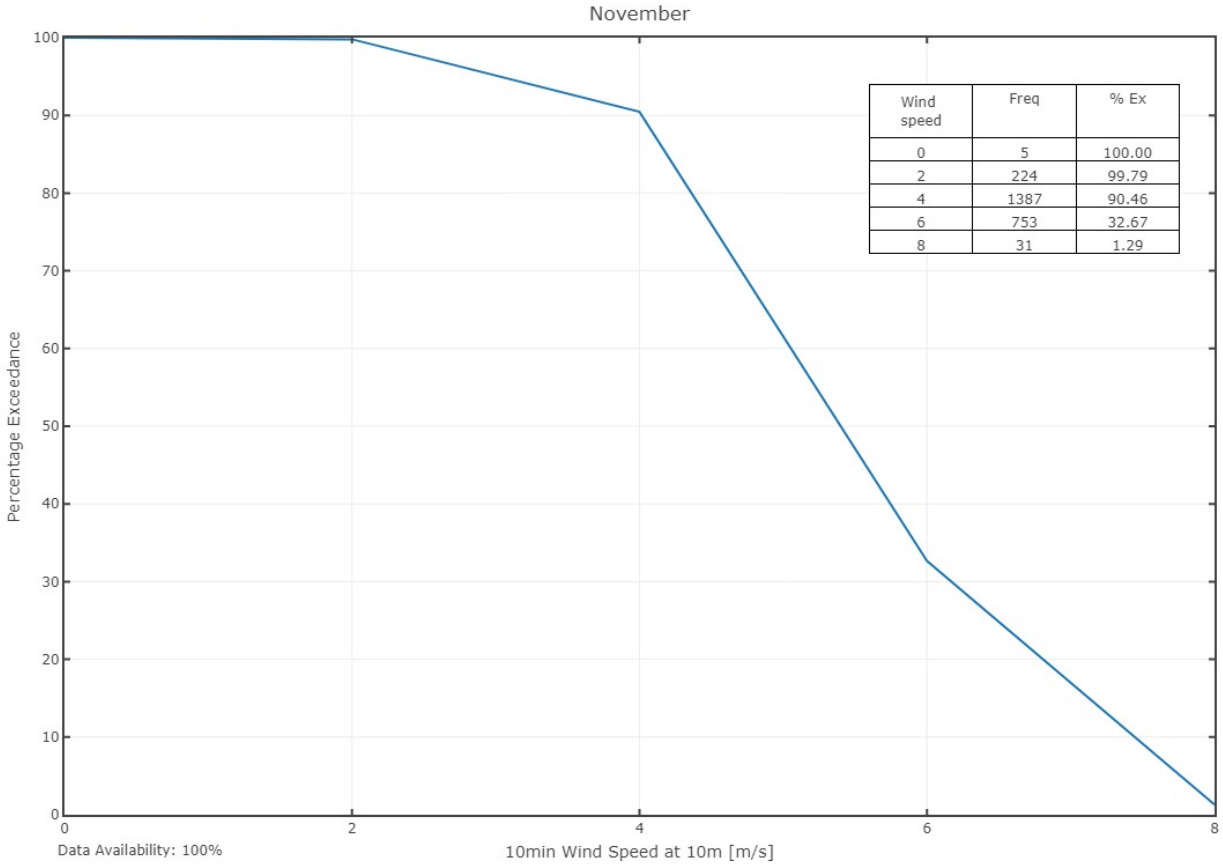
3.1.4.11 October



Wind speed	Freq	% Ex
0	3	100.00
2	121	99.88
4	1423	95.00
6	900	37.62
8	33	1.33

Figure 3.26: Percentage exceedance of wind speed for October

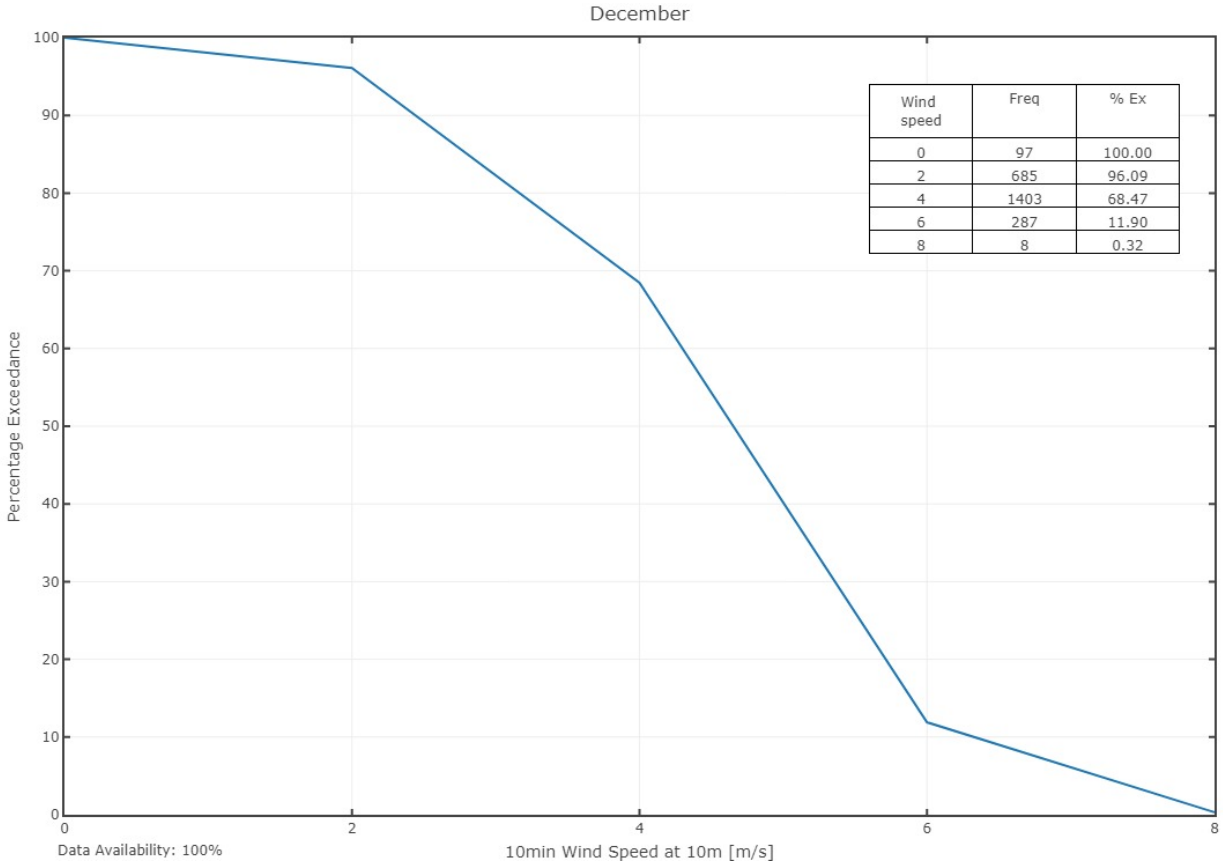
3.1.4.12 November



Wind speed	Freq	% Ex
0	5	100.00
2	224	99.79
4	1387	90.46
6	753	32.67
8	31	1.29

Figure 3.27: Percentage exceedance of wind speed for November

3.1.4.13 December



Wind speed	Freq	% Ex
0	97	100.00
2	685	96.09
4	1403	68.47
6	287	11.90
8	8	0.32

Figure 3.28: Percentage exceedance of wind speed for December

3.1.5 Wind Speed and Direction

3.1.5.1 All-Year

All-Year

10min Wind Speed at 10m [m/s]	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total %	Exceed %
Total	0.07	0.03	0.07	0.16	0.36	1.63	10.34	32.34	37.00	13.42	2.99	0.92	0.36	0.15	0.09	0.07	100.00	
8							0.04	0.54	0.57	0.09	0.02			<0.01			1.27	1.27
6				<0.01	0.02	0.09	1.95	8.87	9.96	2.86	0.24	0.04	0.02	0.01		<0.01	24.12	25.39
4	<0.01	<0.01		0.02	0.04	0.63	5.57	17.15	20.00	6.85	1.27	0.31	0.09	0.04	<0.01	<0.01	52.01	77.40
2	0.03	0.01	0.03	0.08	0.16	0.68	2.42	5.27	5.89	3.33	1.22	0.43	0.16	0.06	0.03	0.03	19.78	97.18
0	0.03	0.02	0.04	0.06	0.14	0.22	0.35	0.49	0.54	0.33	0.25	0.14	0.09	0.05	0.05	0.02	2.82	

10m Wind Direction at 10m [°T From]

Figure 3.29: Bivariate table of wind speed against wind direction for the entire data set

3.1.5.2 January

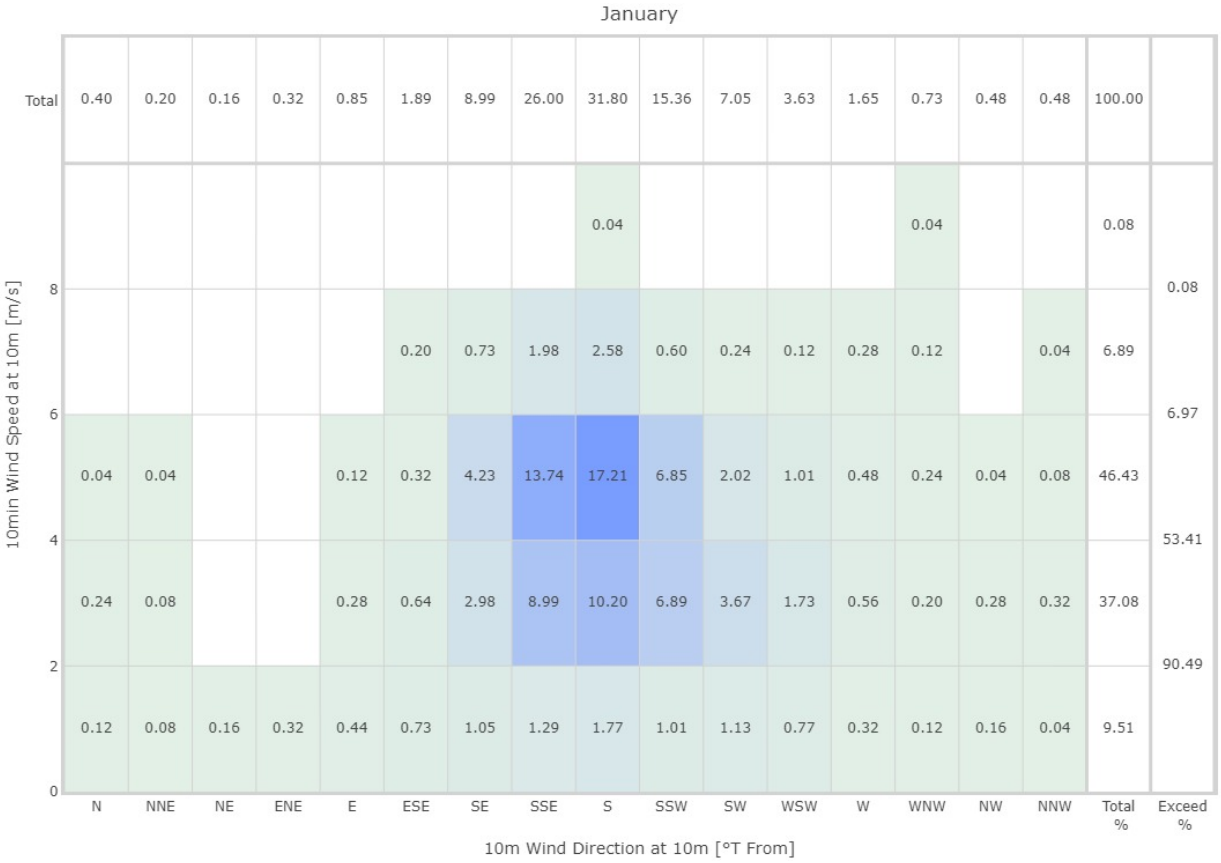


Figure 3.30: Bivariate table of wind speed against wind direction for January

3.1.5.3 February

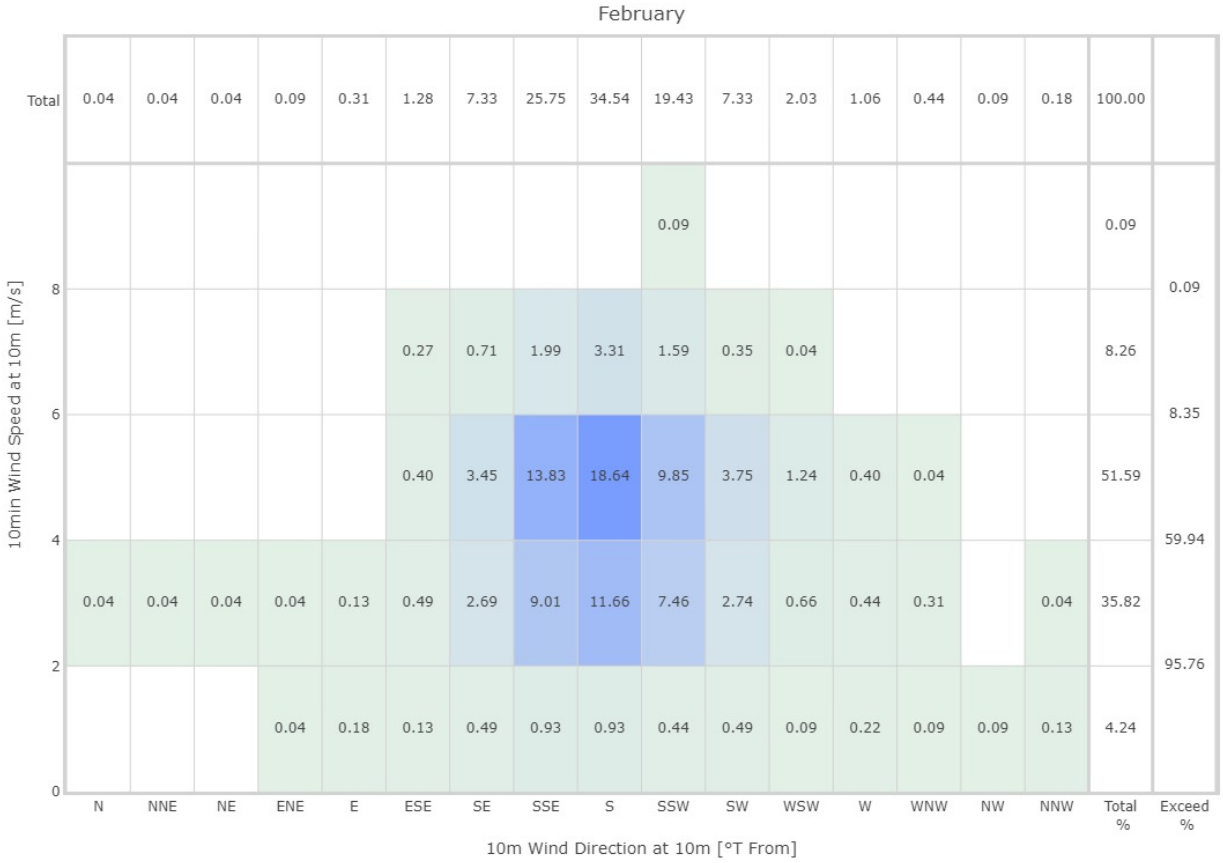


Figure 3.31: Bivariate table of wind speed against wind direction for February

3.1.5.4 March

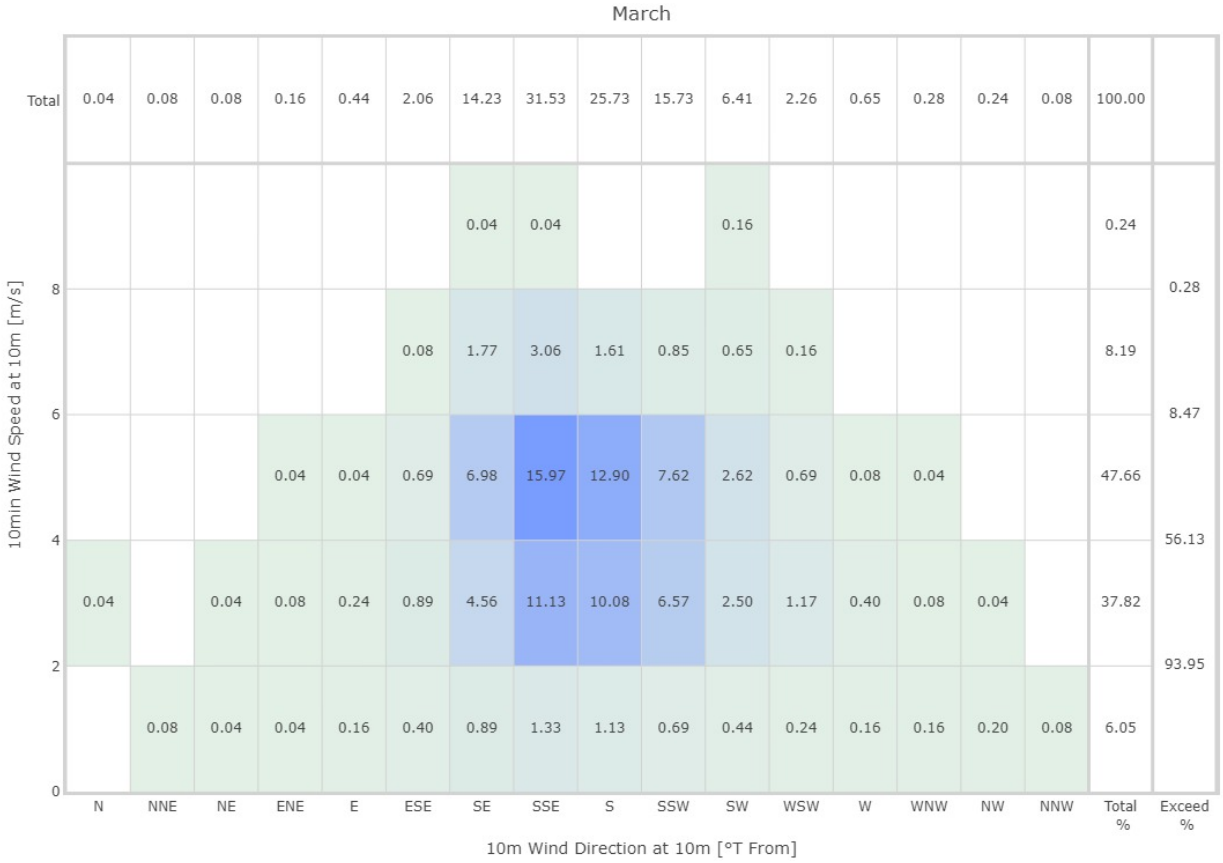


Figure 3.32: Bivariate table of wind speed against wind direction for March

3.1.5.5 April

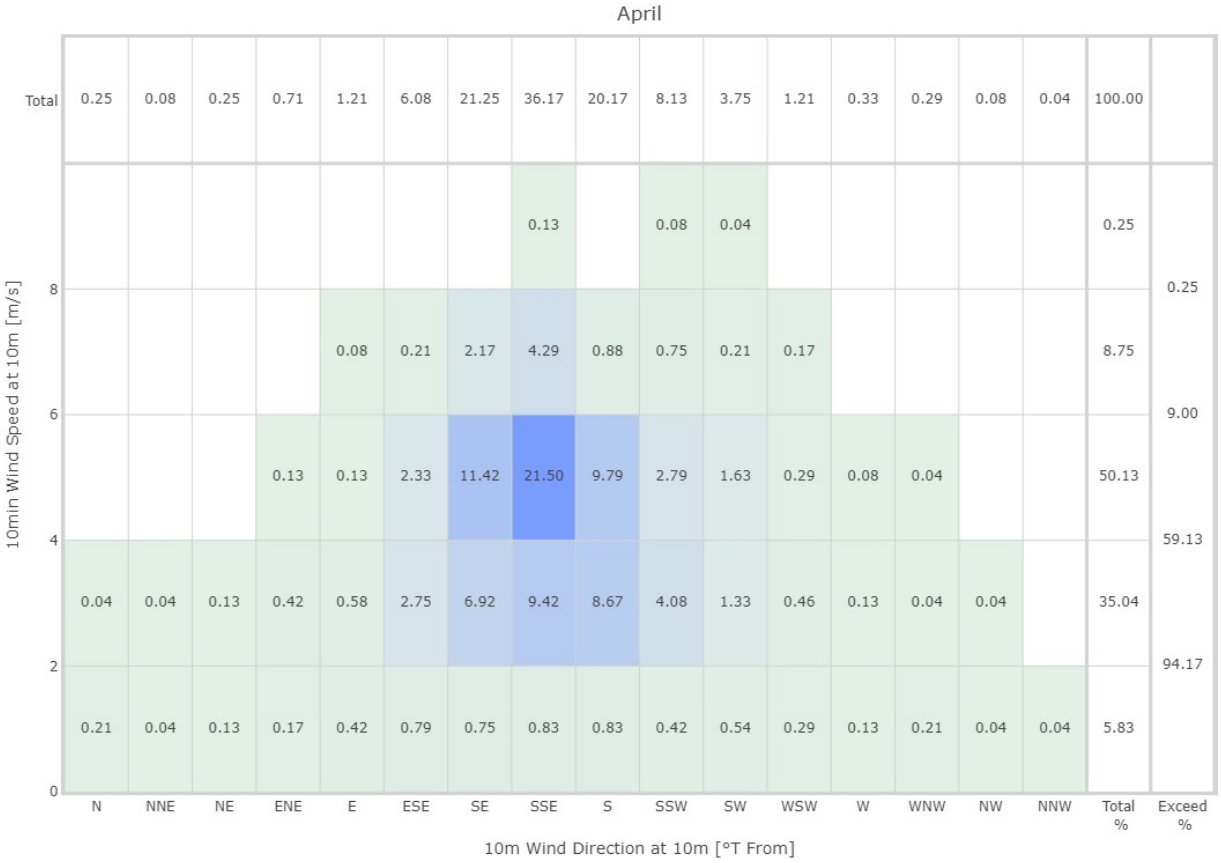


Figure 3.33: Bivariate table of wind speed against wind direction for April

3.1.5.6 May

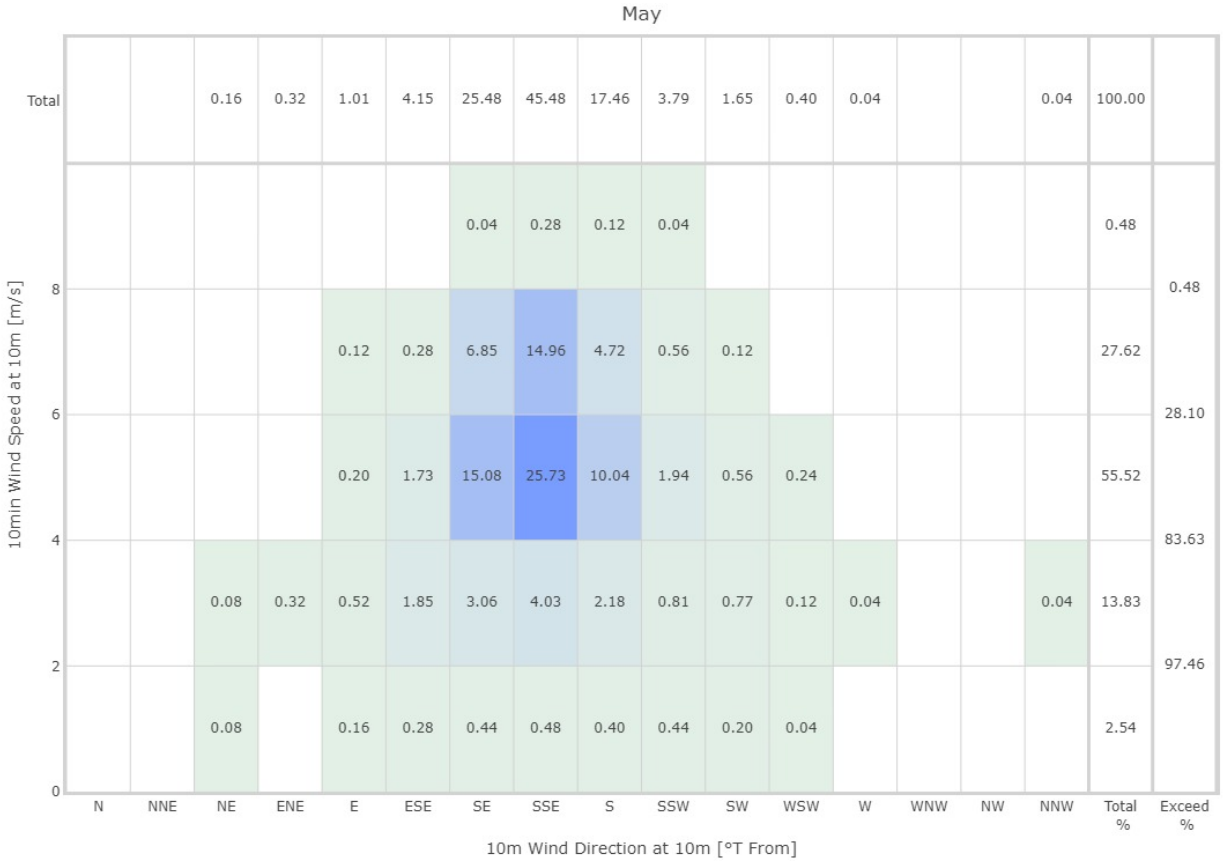


Figure 3.34: Bivariate table of wind speed against wind direction for May

3.1.5.7 June

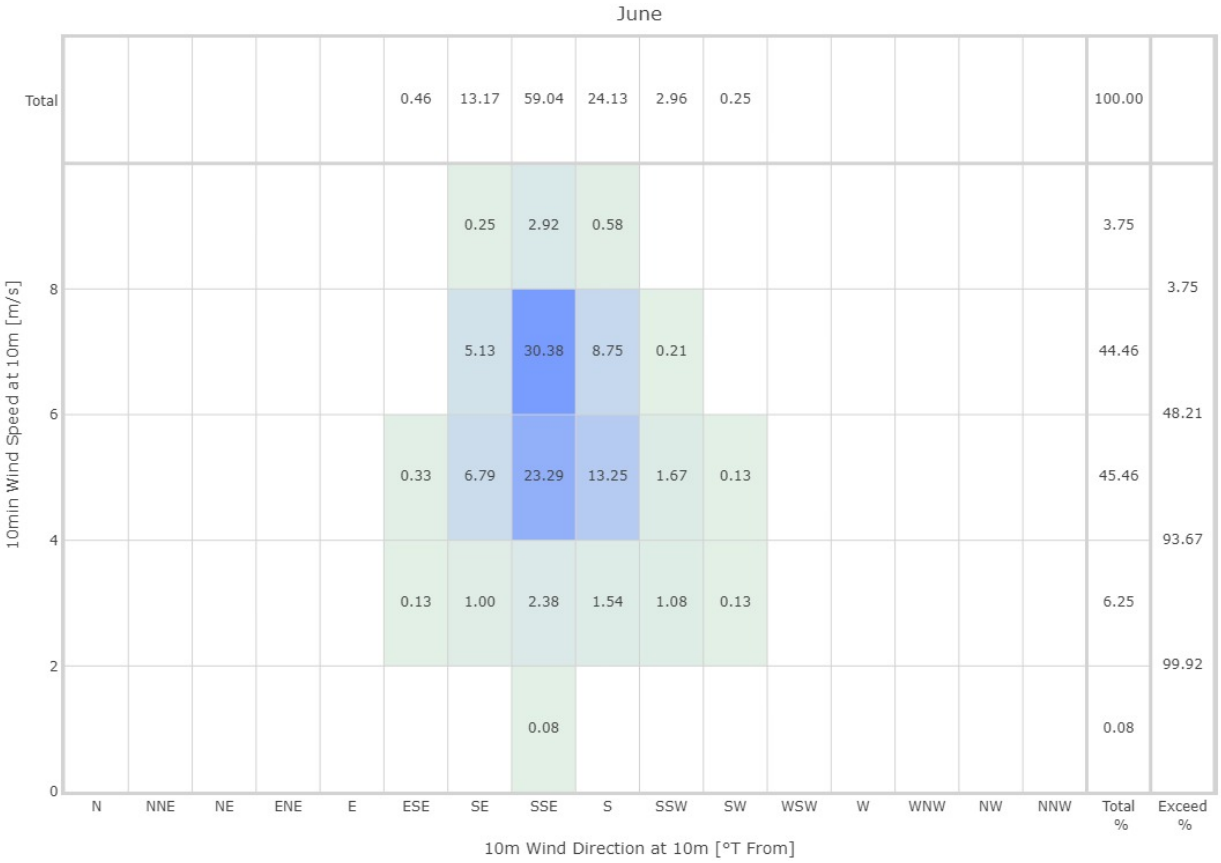


Figure 3.35: Bivariate table of wind speed against wind direction for June

3.1.5.8 July

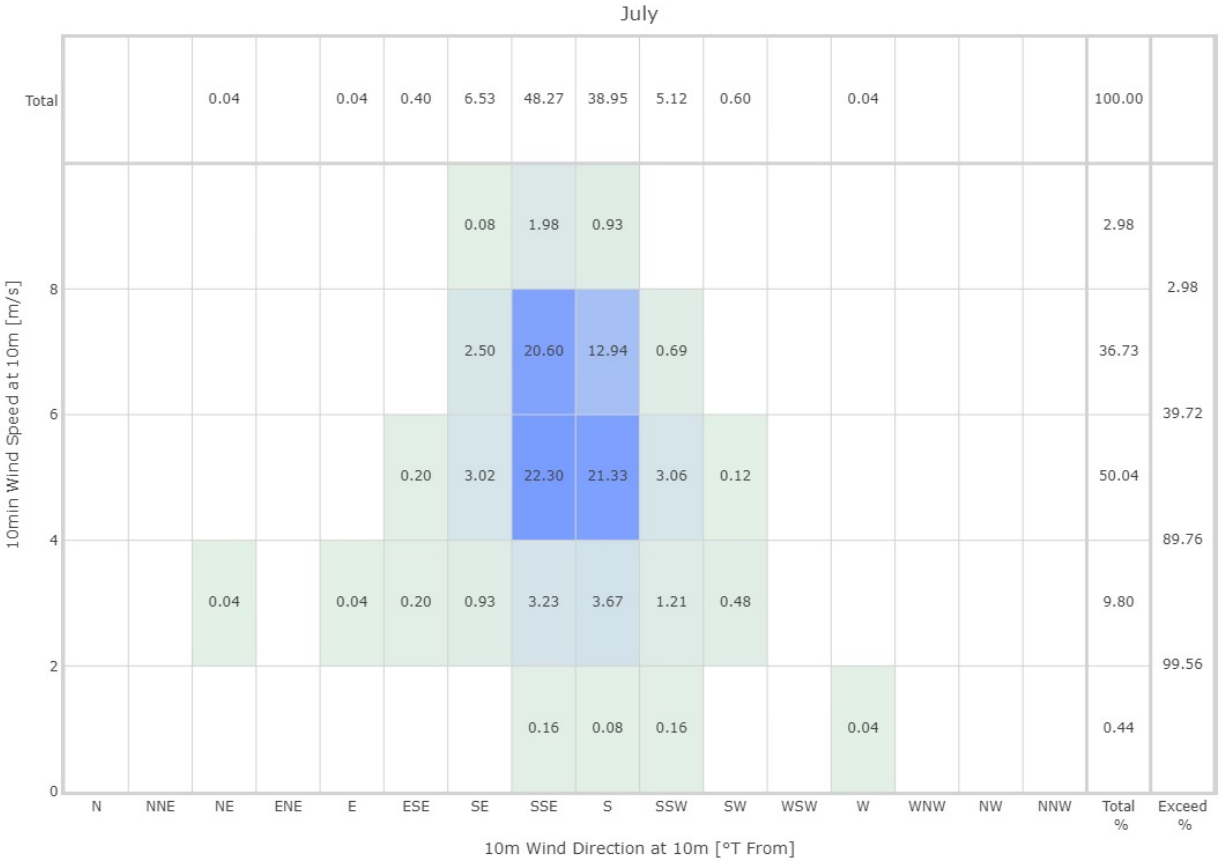


Figure 3.36: Bivariate table of wind speed against wind direction for July

3.1.5.9 August

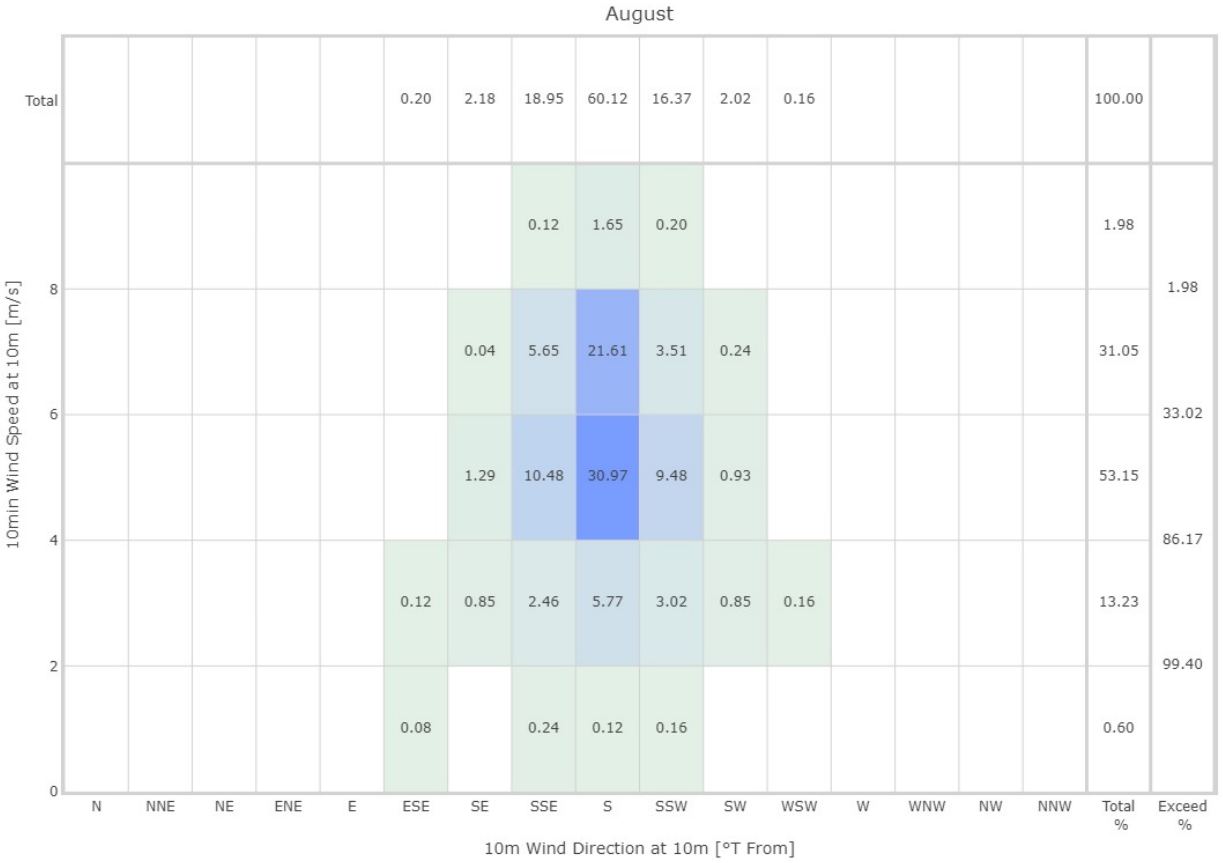


Figure 3.37: Bivariate table of wind speed against wind direction for August

3.1.5.10 September

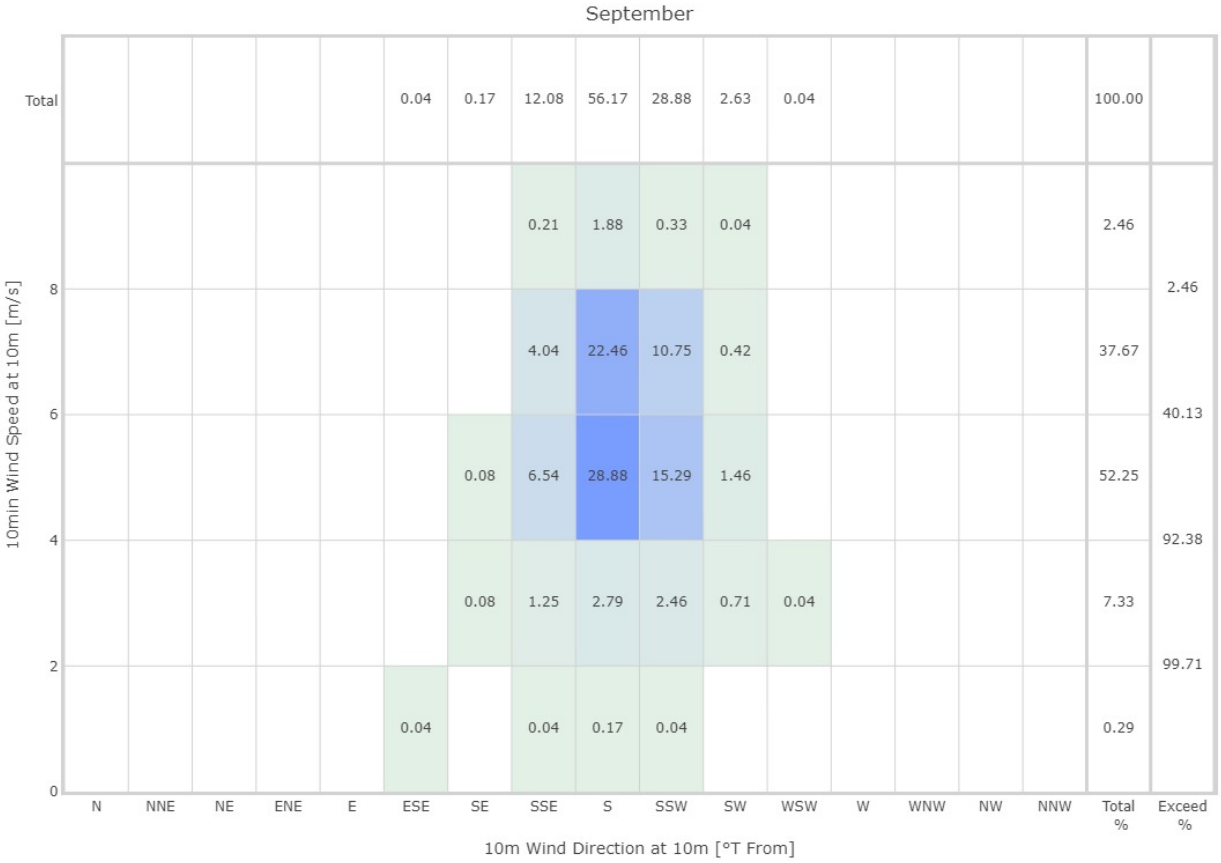


Figure 3.38: Bivariate table of wind speed against wind direction for September

3.1.5.11 October

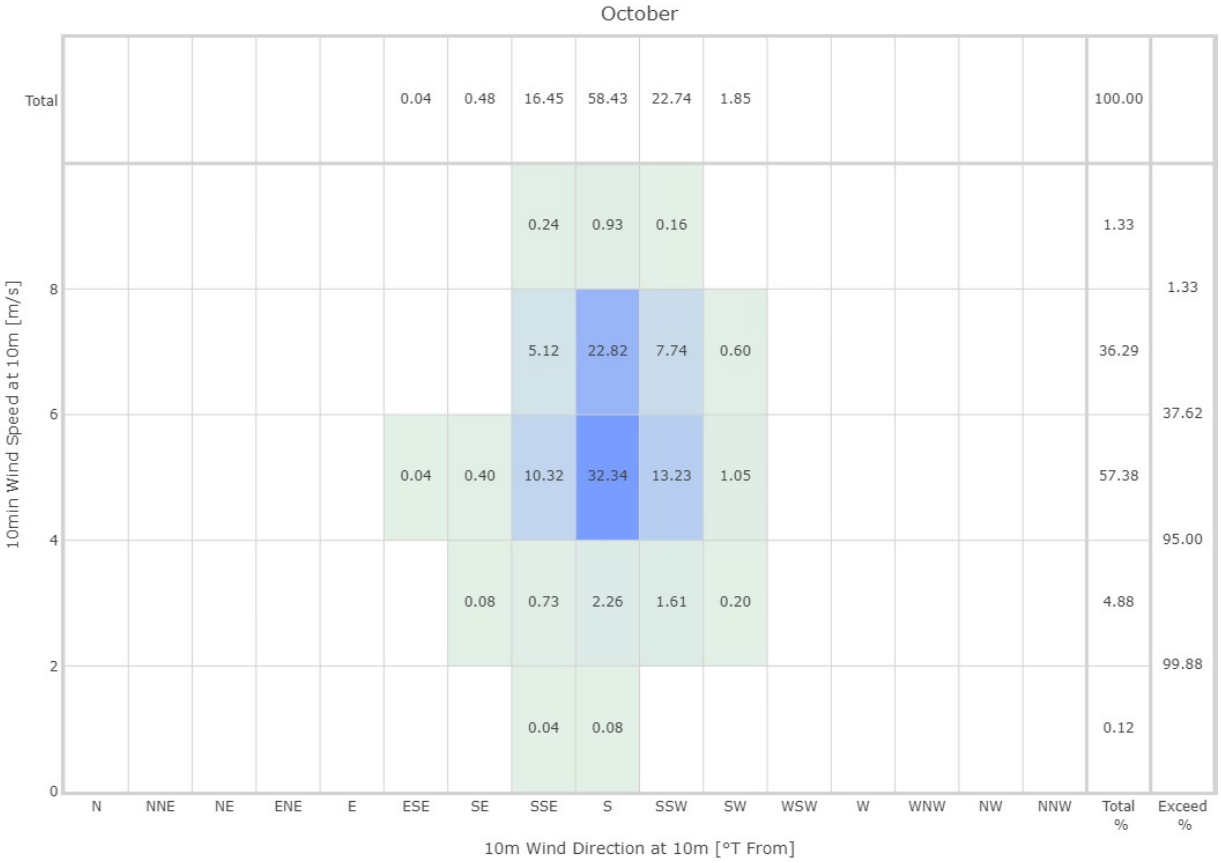


Figure 3.39: Bivariate table of wind speed against wind direction for October

3.1.5.12 November

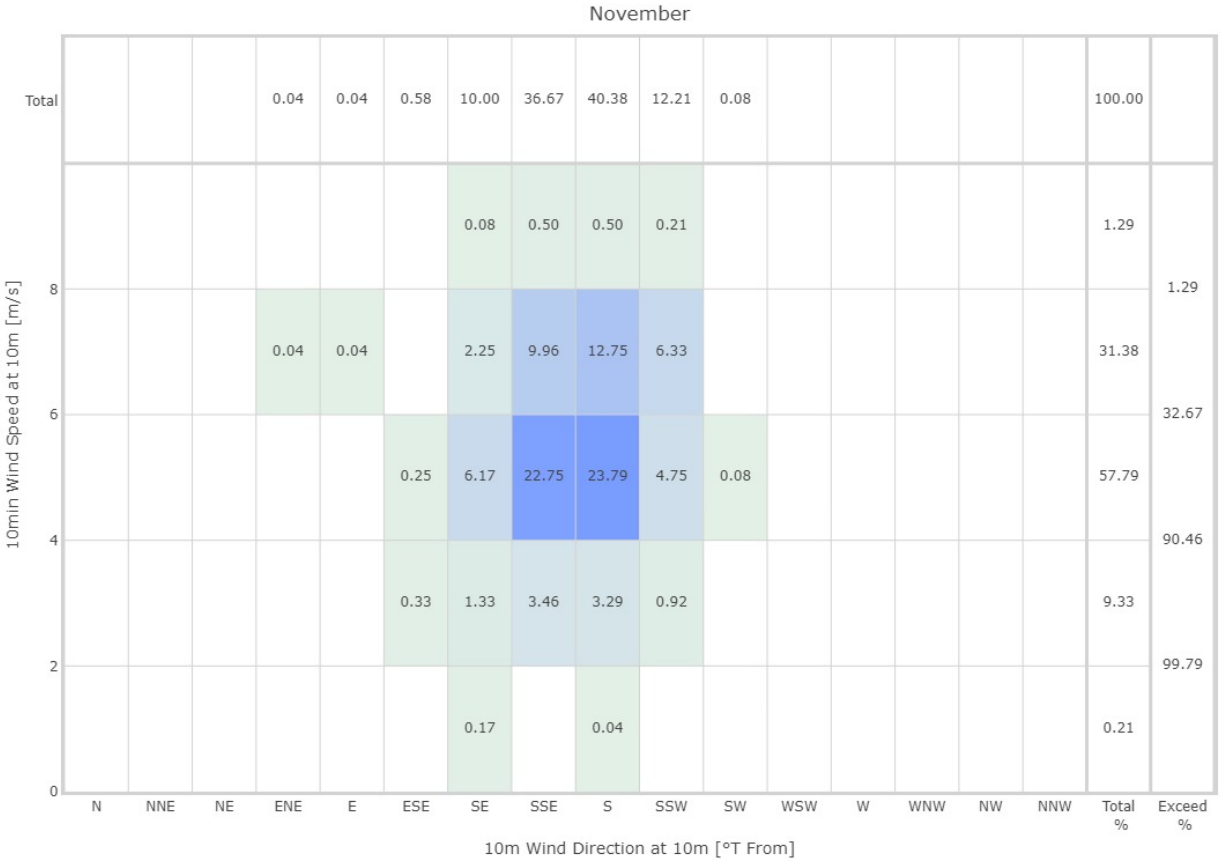


Figure 3.40: Bivariate table of wind speed against wind direction for November

3.1.5.13 December

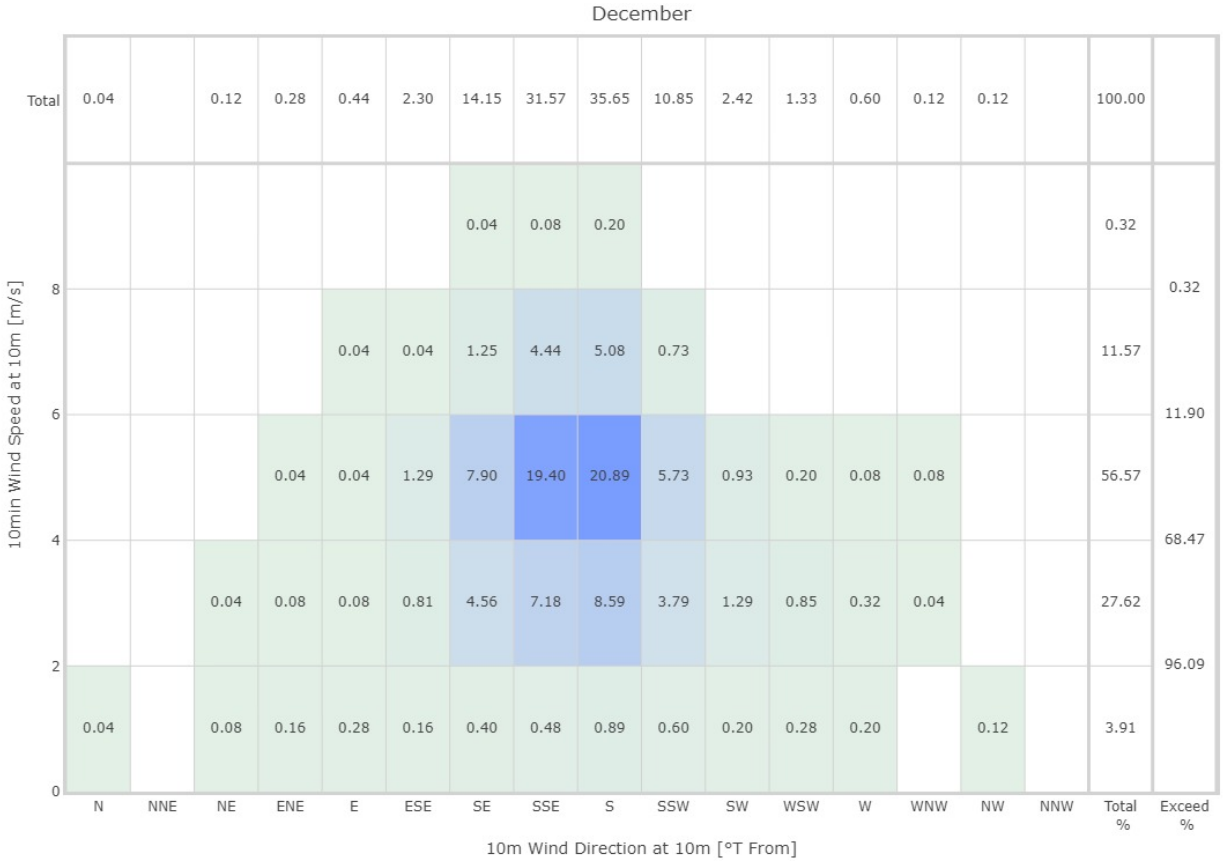


Figure 3.41: Bivariate table of wind speed against wind direction for December

3.1.6 Wind Roses

3.1.6.1 All-Year

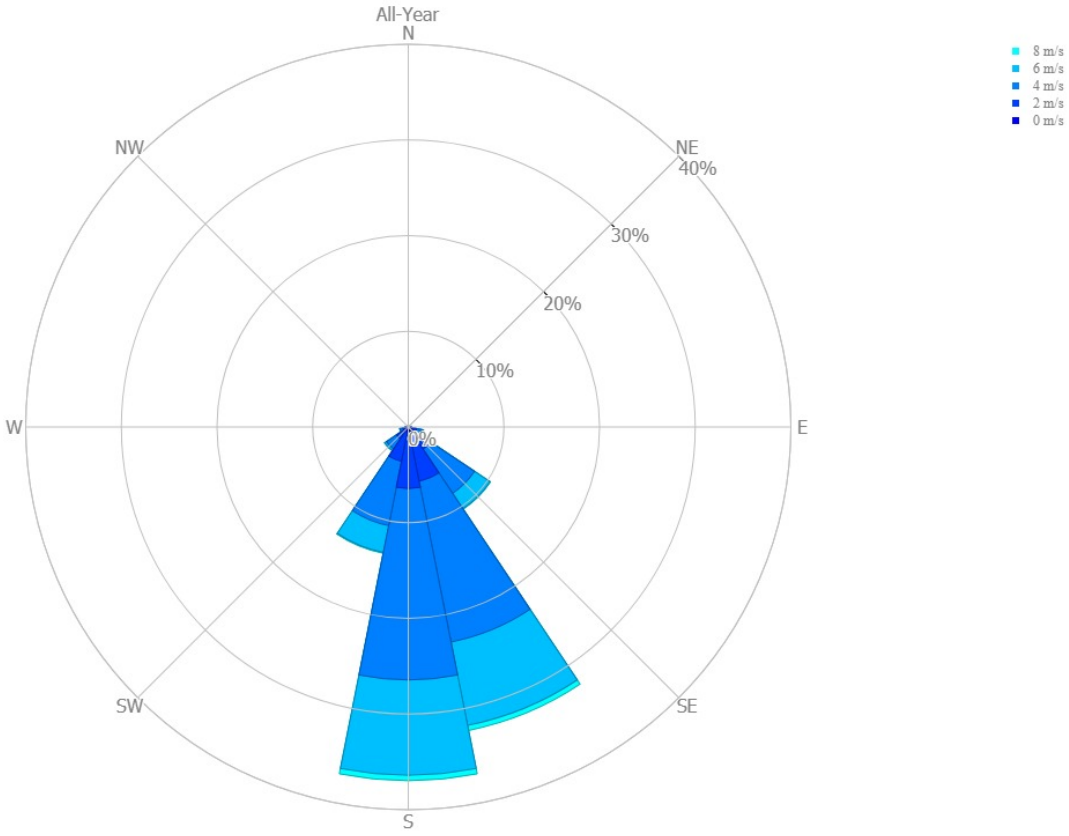


Figure 3.42: Wind rose for the entire data set

3.1.6.2 January

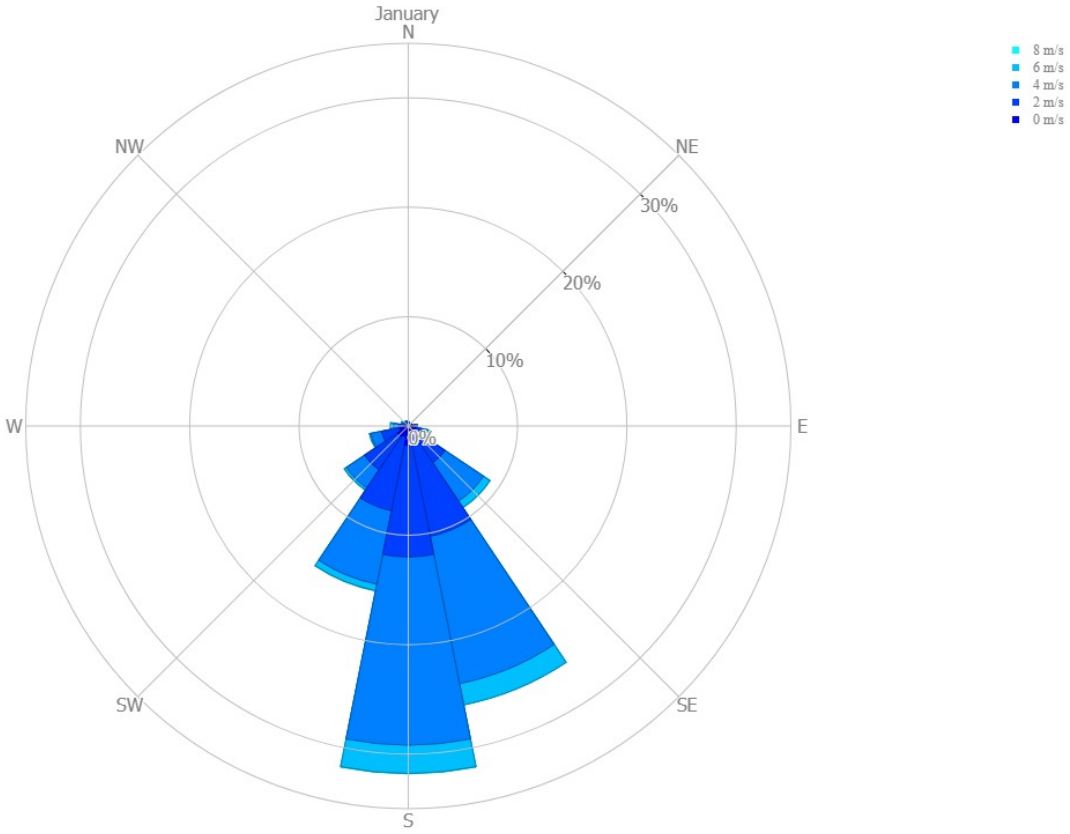


Figure 3.43: Wind rose for January

3.1.6.3 February

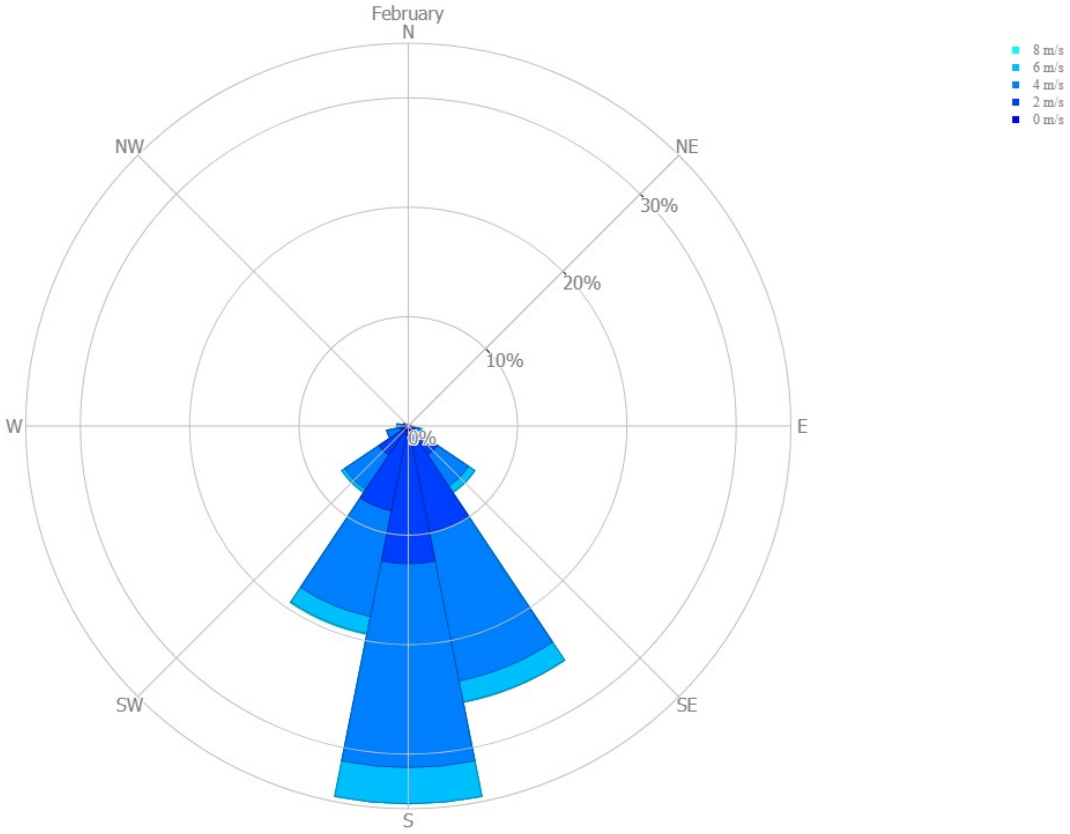


Figure 3.44: Wind rose for February

3.1.6.4 March

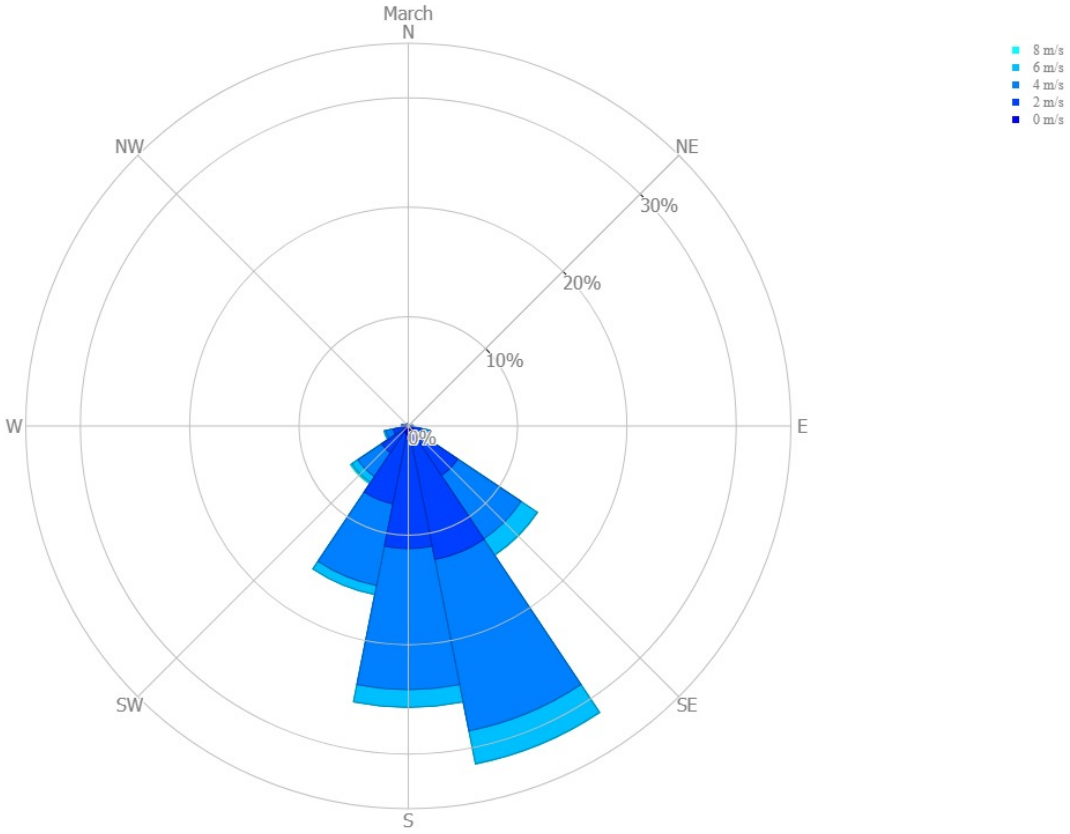


Figure 3.45: Wind rose for March

3.1.6.5 April

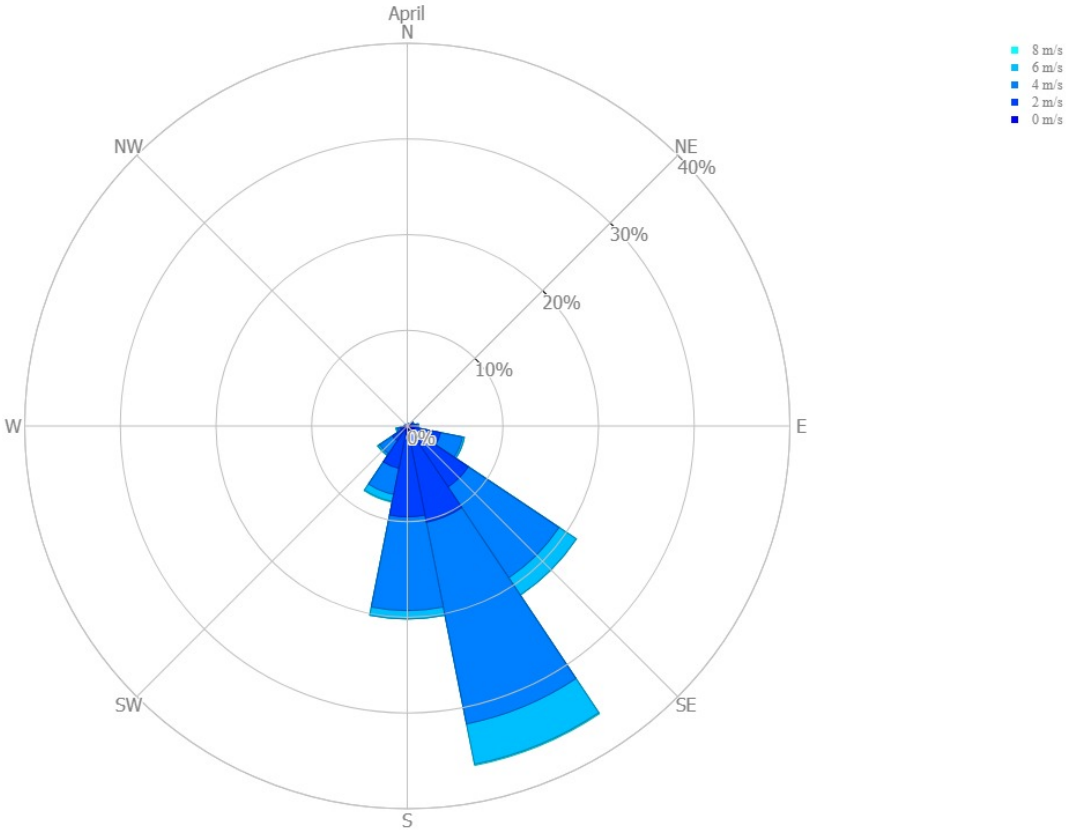


Figure 3.46: Wind rose for April

3.1.6.6 May

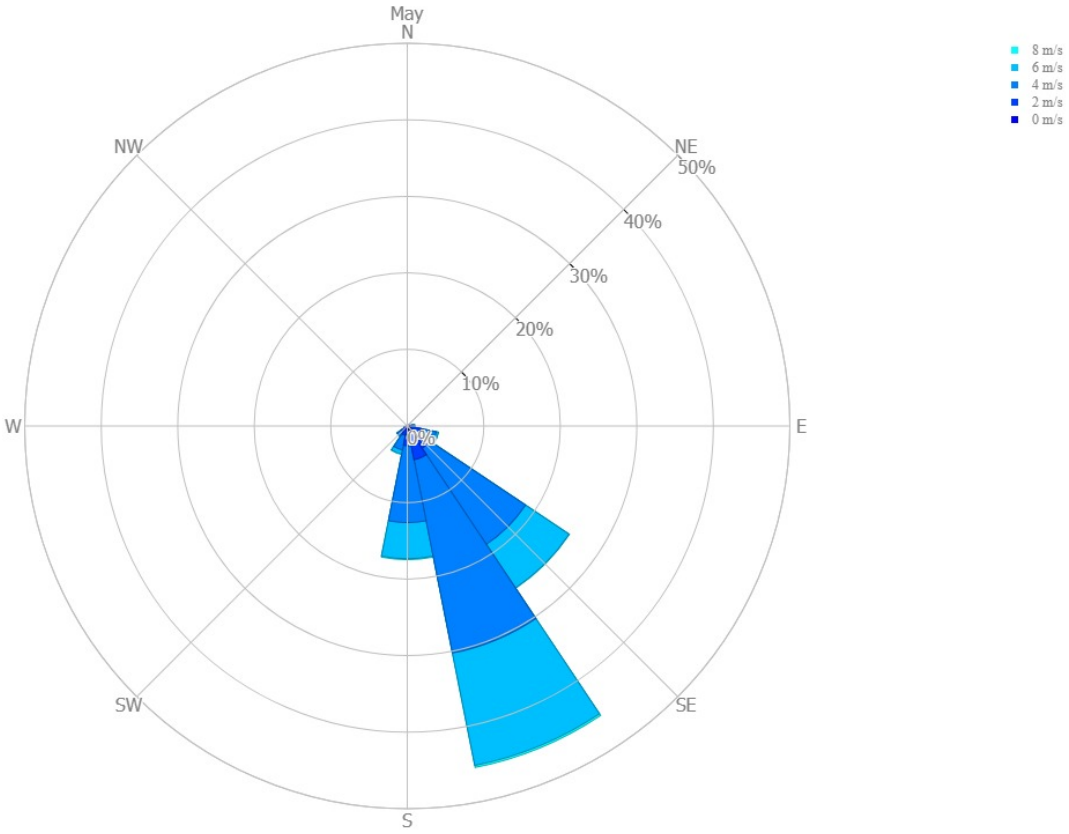


Figure 3.47: Wind rose for May

3.1.6.7 June

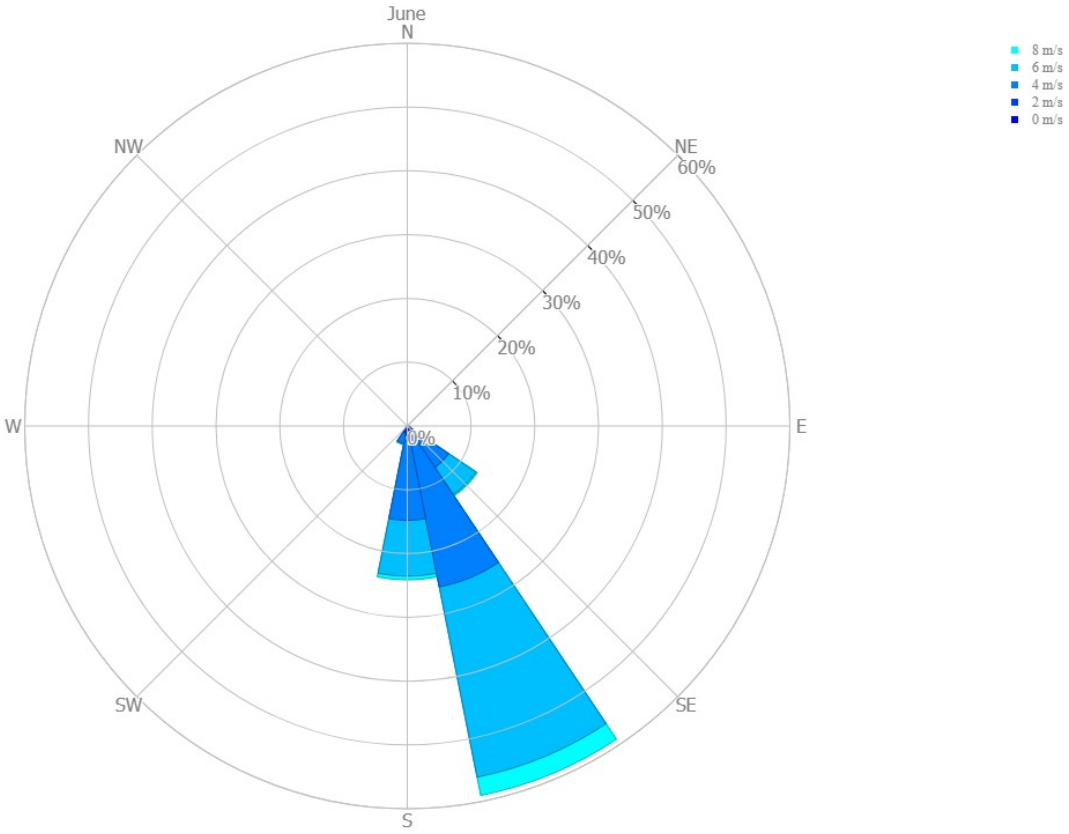


Figure 3.48: Wind rose for June

3.1.6.8 July

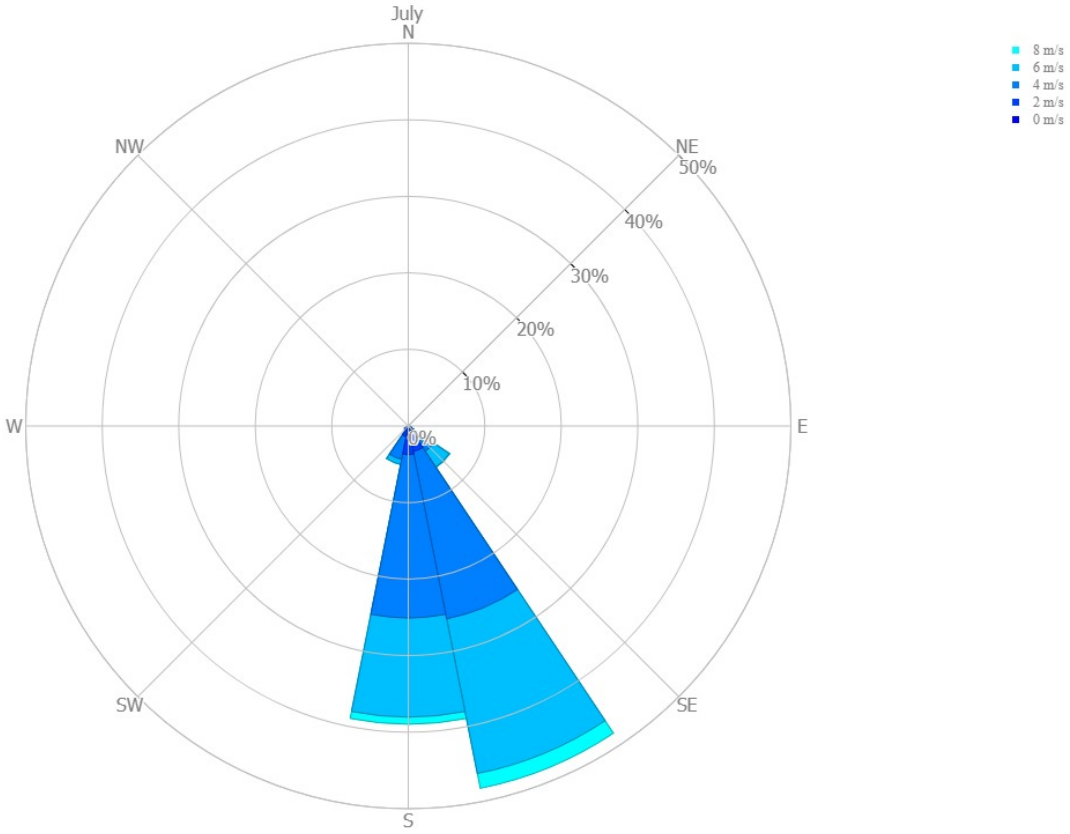


Figure 3.49: Wind rose for July

3.1.6.9 August

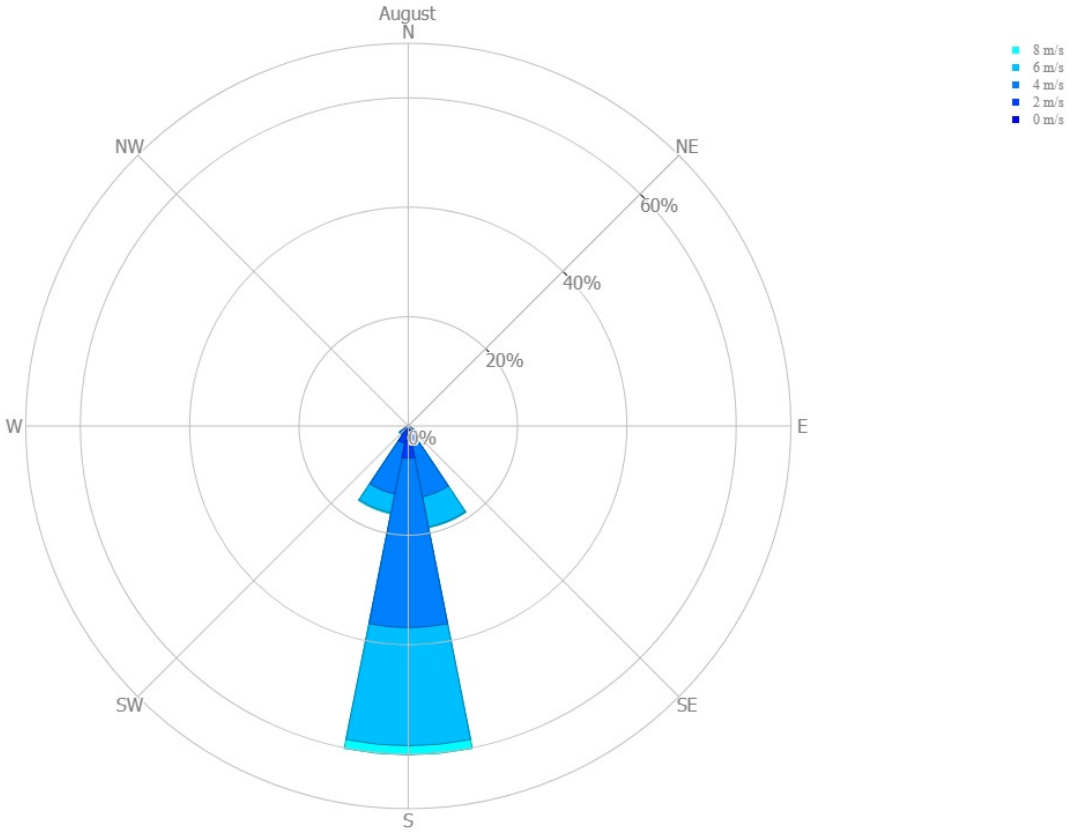


Figure 3.50: Wind rose for August

3.1.6.10 September

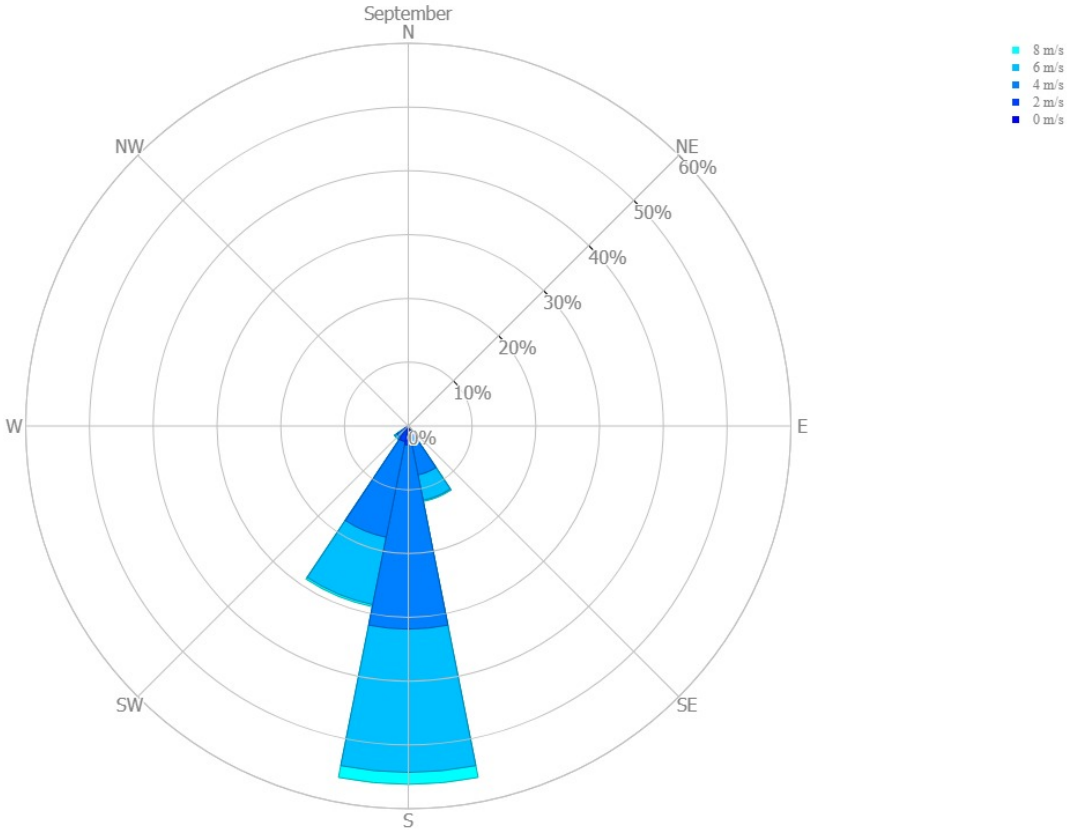


Figure 3.51: Wind rose for September

3.1.6.11 October

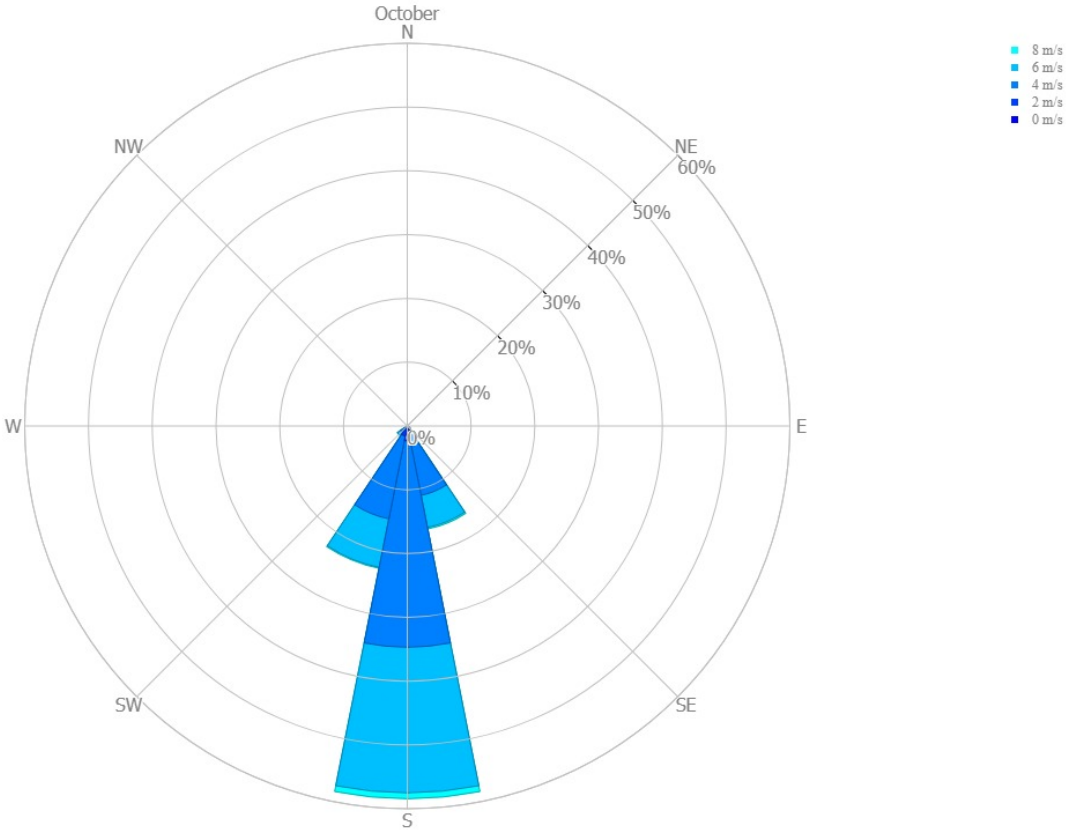


Figure 3.52: Wind rose for October

3.1.6.12 November

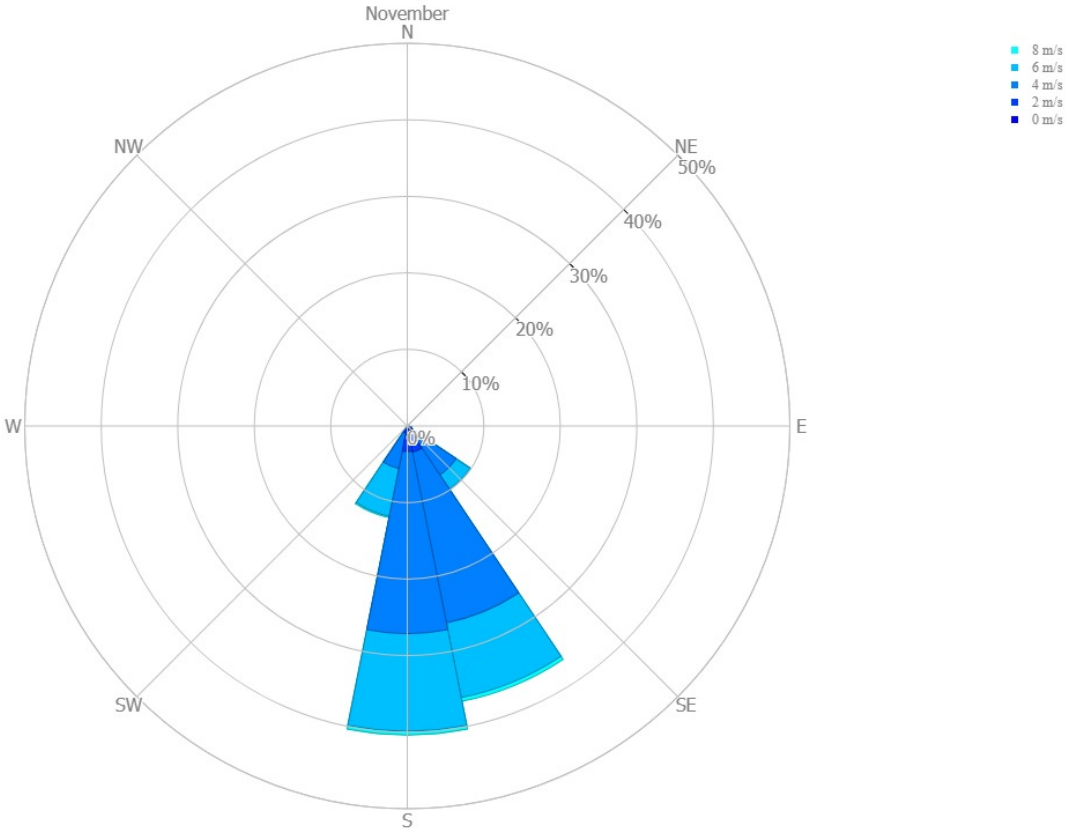


Figure 3.53: Wind rose for November

3.1.6.13 December

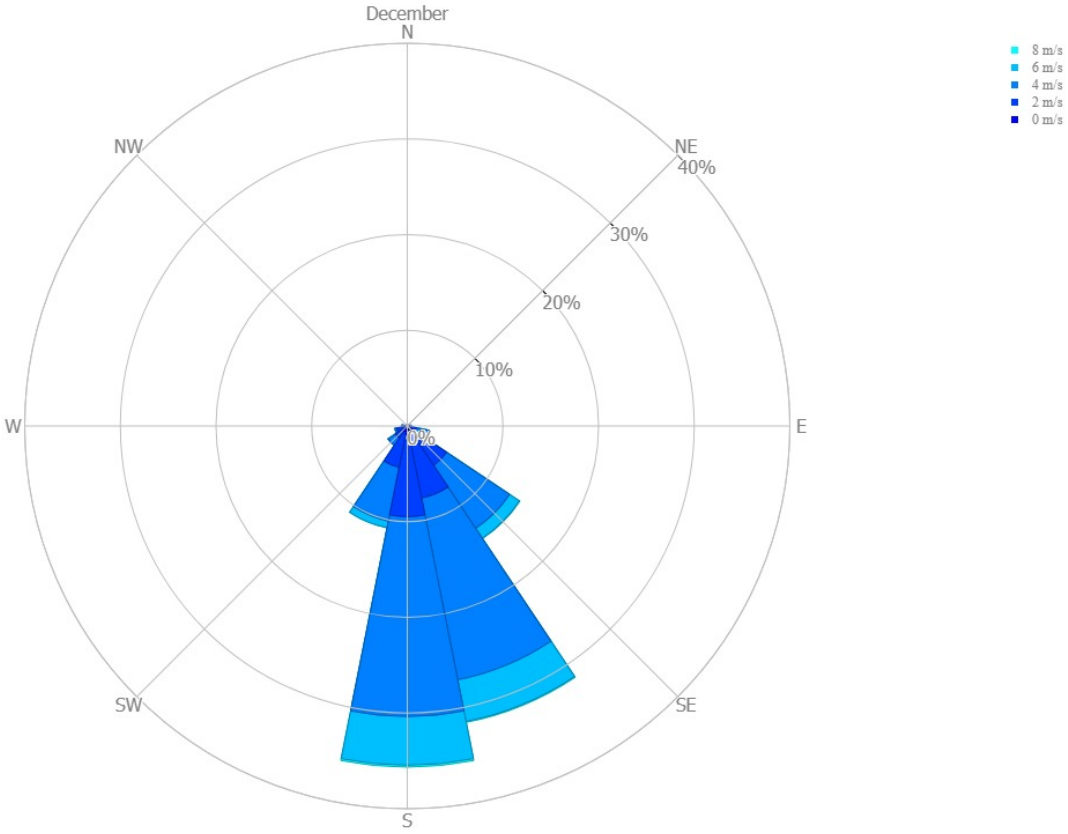


Figure 3.54: Wind rose for December