

Feedback on the Proposed Focus Area for the Regional Assessment of Offshore Wind Development in Newfoundland and Labrador

Icebergs and Sea Ice

It is our understanding that the iceberg parameter for determining the focus area is:

- Absence of medium to very large icebergs from 2002-2021
 - Areas with at least one iceberg classified as medium to very large (as outlined in Canadian Ice Service Manual, 2005) in the last 20 years were excluded from the Study Area.
 - Icebergs were considered present if at least one iceberg was recorded over the last 20 years.
 - Some sections around the southeast boundaries of the proposed focus area were not excluded despite recorded iceberg presence. A low number of icebergs were recorded in these areas, and iceberg density here is expected to decrease further. (Data Source: International Ice Patrol (IIP) Iceberg Sightings Database, Version 1)

1. Agree or Disagree with the proposed focus area:

We disagree with the north-west boundary of the proposed focus area based on the presence of large and very large icebergs (Figure 1) off the west coast of Newfoundland. Figure 1 shows the presence of large and very large icebergs in the focus area. Data is from the IIP Iceberg Sightings Database and most of the sightings in the focus area are from a 2017 surveillance flight.

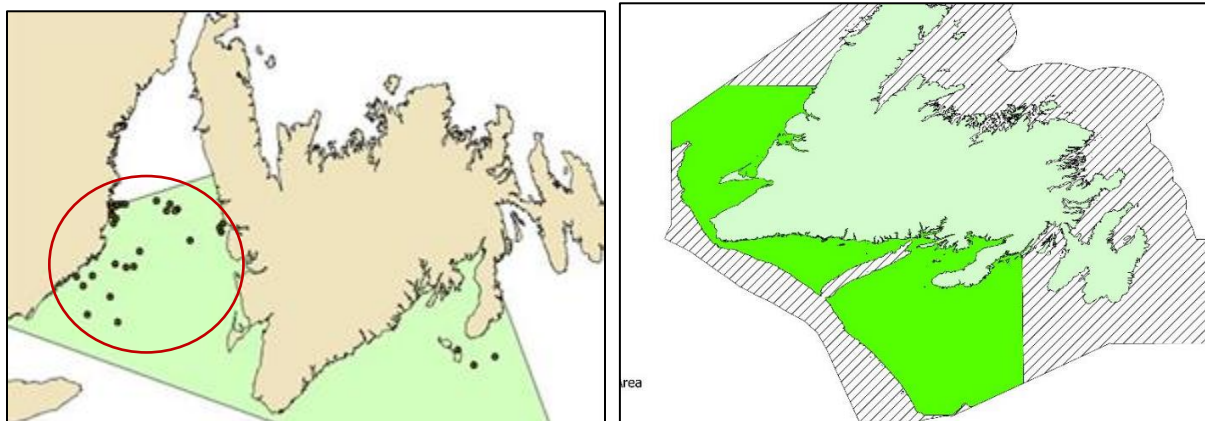


Figure 1 (left): Location of large and very large icebergs from the IIP Iceberg Sightings Database, Version 1. Most of the sightings west of Newfoundland are from a 2017 surveillance flight. The green shaded area is an estimate of the focus area boundary. **Figure 1 (right)** proposed focus area.

2. Provide feedback on the constraints and parameters used to select the focus area:

- Absence of medium to very large icebergs from 2002-2021 in the International Ice Patrol (IIP) Iceberg Sightings Database, Version 1 ([International Ice Patrol \(IIP\) Iceberg Sightings Database, Version 1 | National Snow and Ice Data Center \(nsidc.org\)](https://www.nsidc.org/IIP/Iceberg-Sightings-Database-2002-2021))

If the absence of icebergs is a criterion for development, we recommend:

Include the National Research Council (NRC) of Canada's Iceberg Sighting Database (contact NRC for access - Philippe.Lamontagne@nrc-cnrc.gc.ca) in the analysis. NRC received funding from the NRCan Program for Energy Research Development (PERD) for years to compile and maintain a database of iceberg sightings for the offshore industry.

- 1) The NRC database includes IIP sightings as well as sightings from other sources (e.g., Government of Canada, offshore oil and gas industry)
 - 2) Increase the 20-year period used for the analysis to a 50-year period. There is supporting evidence to consider a longer time-period as we do not see a notable decrease in the number of icebergs crossing 48N (Figure 2), and long-term changes in the spatial distribution of icebergs is not well documented.
- Ice pack was not considered at this time

We encourage the consideration of pack ice in the next iteration of the focus area. During winter, wind turbines off the northwest coast of Newfoundland will encounter high concentrations of sea ice (Figure 1). The sea ice is very dynamic in the region with active ridging. Figure 4 shows the locations of ship besetting events compiled by the National Research Council of Canada, evidence of high pressure in the pack ice.

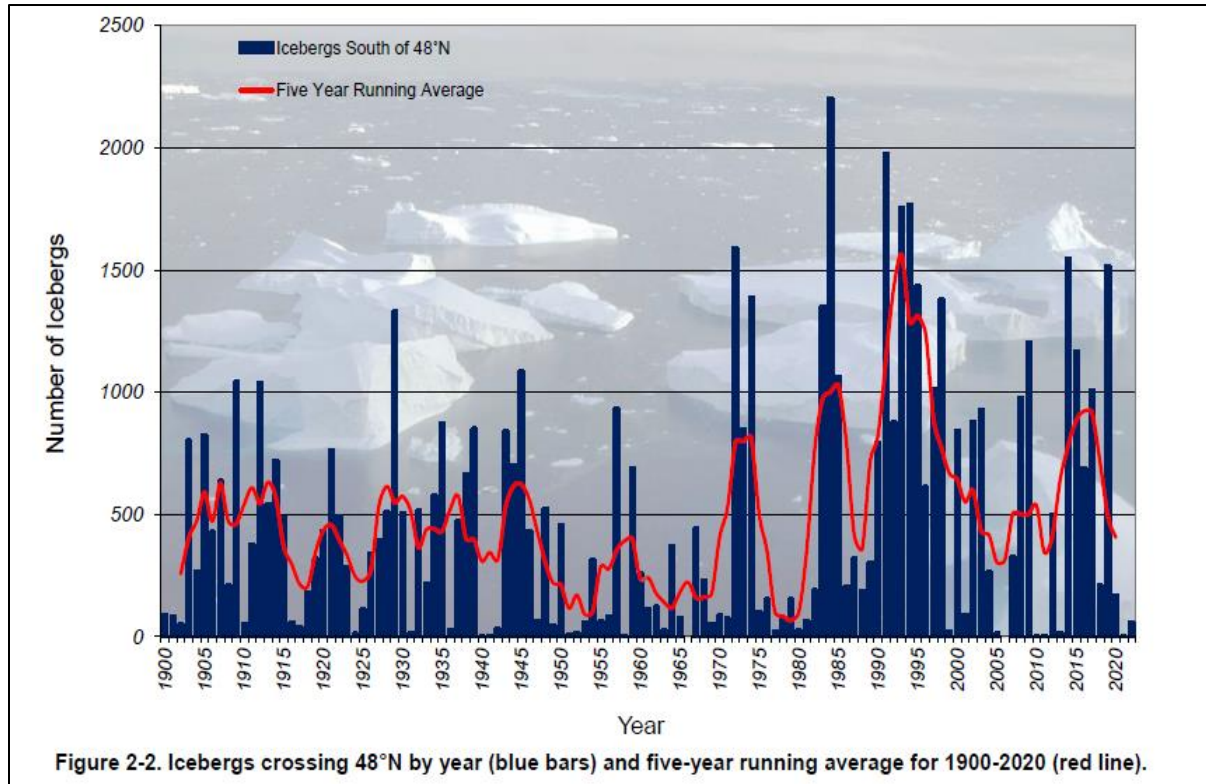


Figure 2. Icebergs crossing 48N (blue bars) and five-year running average for 1900-2020.

Source: Figure 2-2, Report of the International Ice Patrol in the North Atlantic, 2022 Season, Bulletin 108.

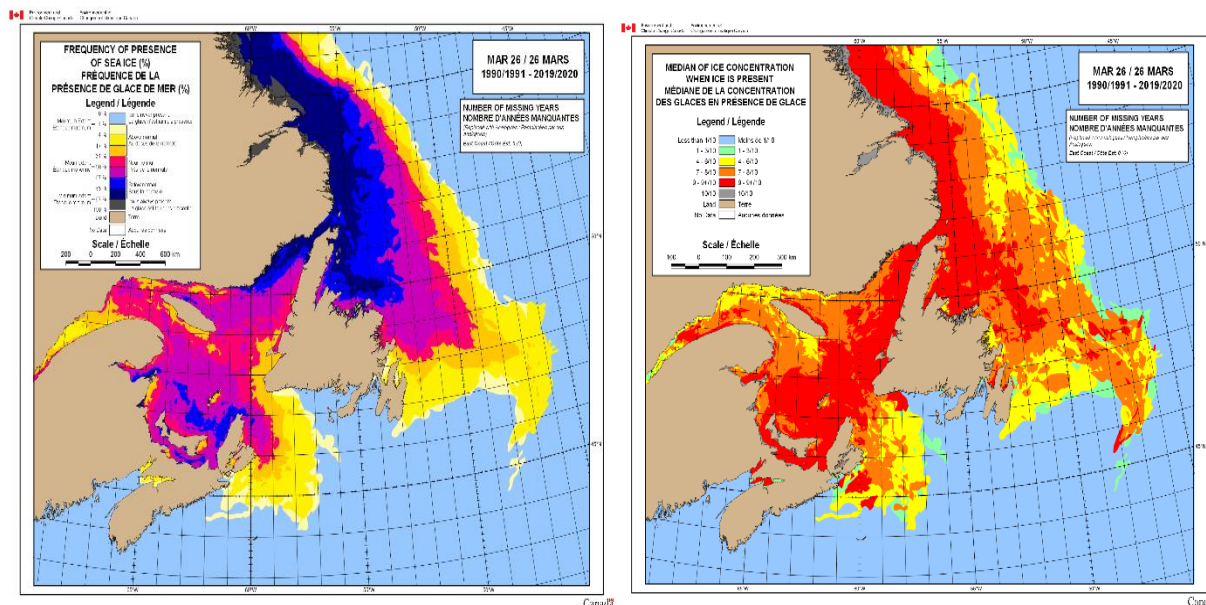


Figure 3. Frequency of presence of sea ice mid-winter (left) and the median ice concentration if ice is present (right).



Figure 4. Location of reported incidents of ship besetting and damage due to ice pressure.

Source: Poster presentation: Overview of NRC Sea Ice and Iceberg Forecasting and Engineering Tools, Denise Sudom.

Feedback on the Proposed Focus Area for the Regional Assessment of Offshore Wind Development in Newfoundland and Labrador

Wave Heights

It is our understanding that the wave height parameter for determining the focus area is:

- Wave height does not exceed 2 m 80% of days per year (where wave height refers specifically to the significant wave height)

Agree or Disagree with the proposed focus area:

We disagree with the entire focus area domain proposed, when considering the wave criteria. The exception is in places with more limited exposure to open water.

Results from MSC50 wave hindcast dataset

Here is the list of the grid points for which there are sample results:

10764 – S of Burin Pen
 12161 – N of Burin Pen*
 11952 – N of St. Pierre and Miquelon
 12147 – SE of Ramea
 13680 – SE of DeGrau, Port aux Port Pen (monthly results + all months)
 14950 – N of Port aux Port Pen (monthly results + all months)

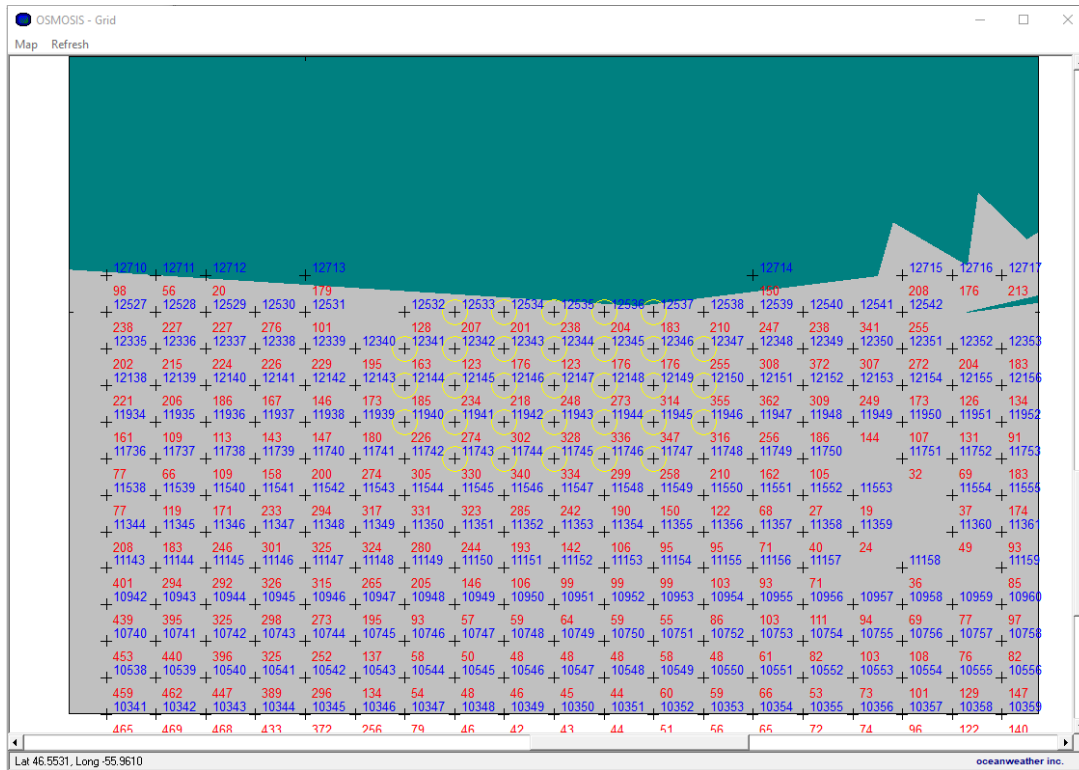
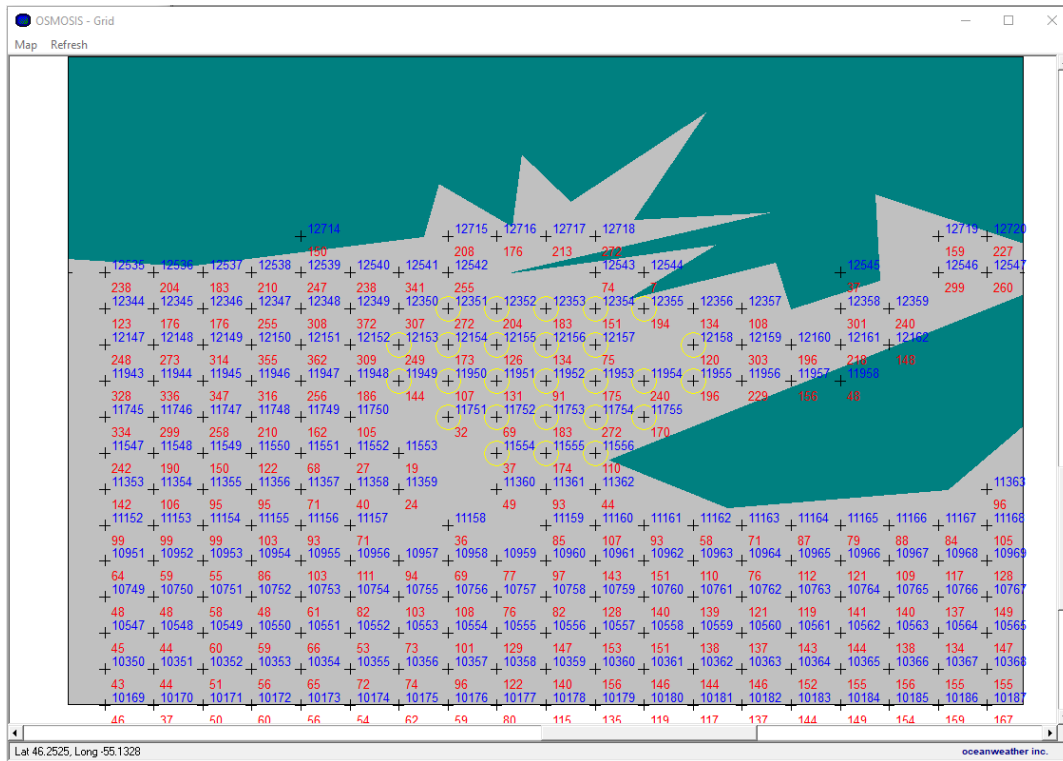
*The only one with significant wave heights < 2 m more than 80% of the time (where ice is not a factor).

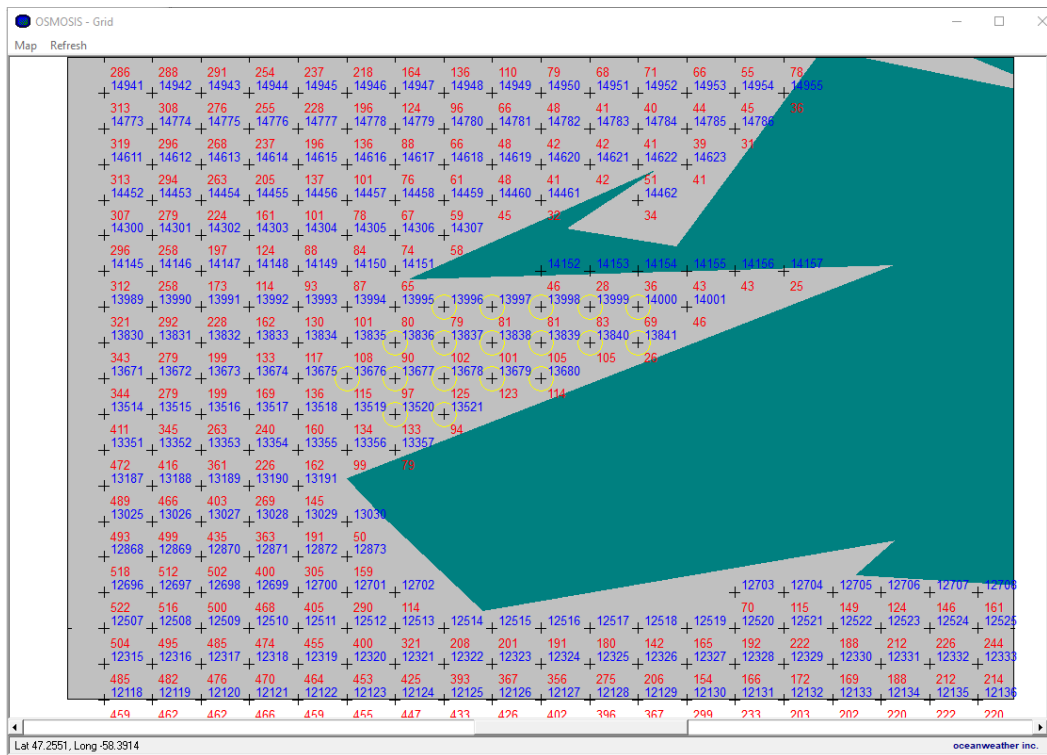
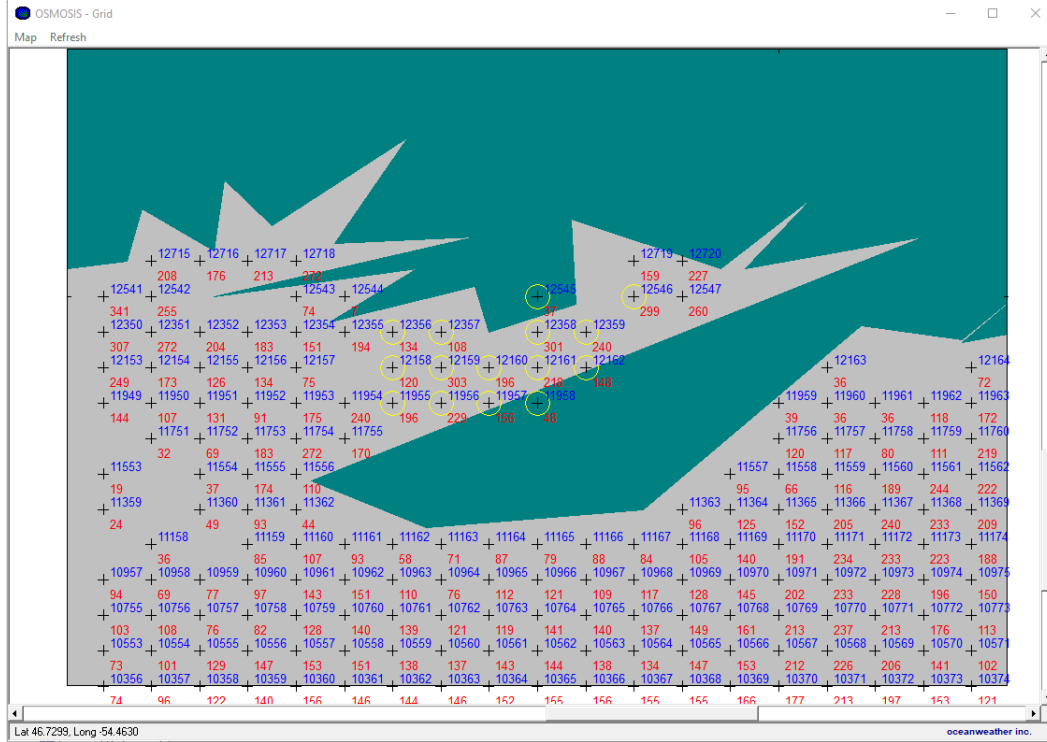
Notes about the data:

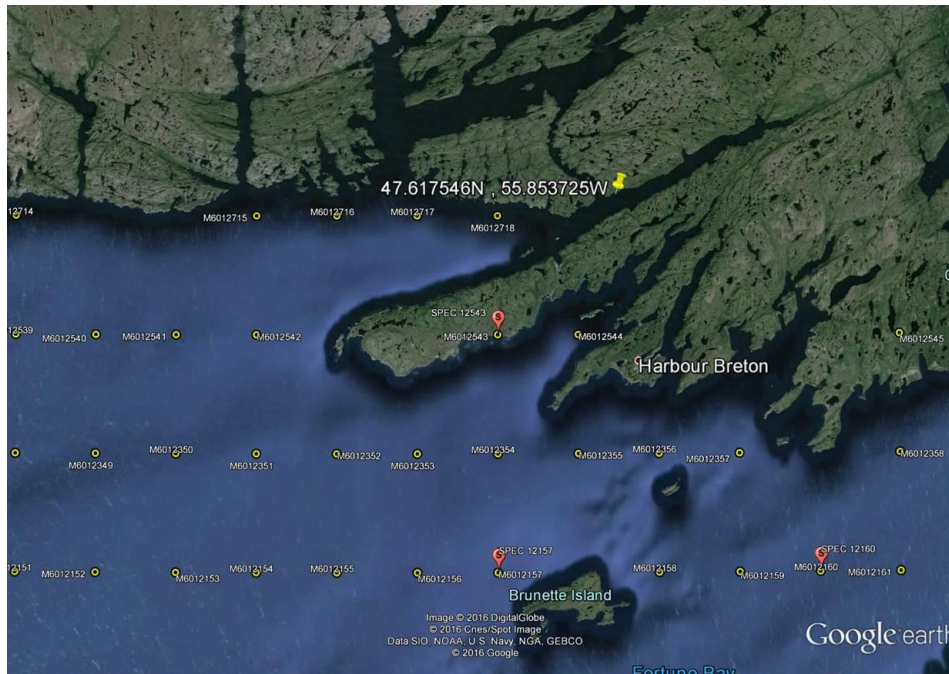
- Results are based on the last 25 years of the MSC50 analysis (1994-2018), but the same results can be compiled for the entire period (1954-2018), the last 20 years, the last 10 years, or individual years.
- Please note that in the maps showing grid points, the grid points are actual but the map mask overlay is coarse.
- Additional references:

[DFO MEDS MSC50 Meteorological Service of Canada \(MSC\) 50 North Atlantic Wave Hindcast - Open Government Portal](#) (<https://open.canada.ca/data/en/dataset/f3f0312d-d28b-400c-b14a-28f51ff7f08a>)

Maps showing grid point locations:





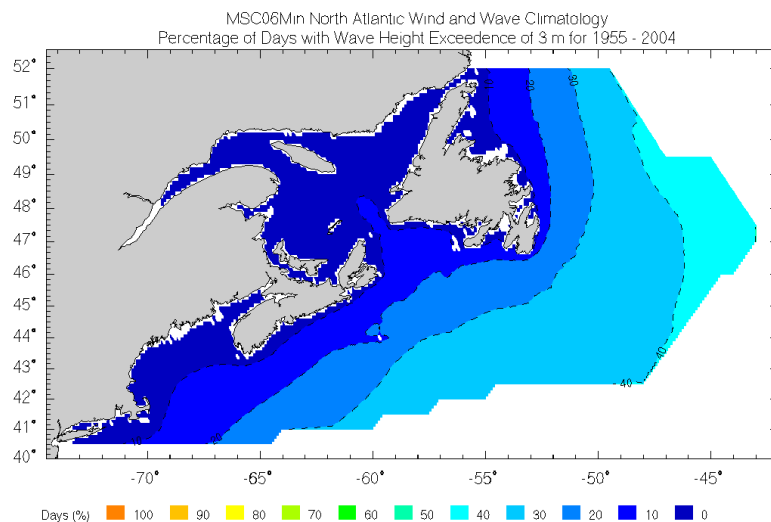


Tabular frequency of occurrence results for grid points:

- Shared as txt files.

Other:

To illustrate how the criteria may be met more near-shore, here is the 3 m exceedance map from the [MSC50 Wave Climate website](#) (note for a different time period, ending 2004). The results show that within the proposed NL focus area, there are sections near-shore where the waves exceed 3 m <10% of the time.



Frequency of Occurrence

M6 Gpt 10764, Lat 46.6n, Long 55.5w, Depth 141.2762m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total  0.0000 359.9000 26.4222    N/A    N/A    N/A    N/A
Sig Wave Ht (m)       0.3600 11.1210 2.1615  1.1634  1.8850  3.6840  6.1750
```

Counts for All Months & Years:

Grid Point 10764, Lat 46.6000, Long -55.5000, VMD (deg to) - total

	Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	38744	13390	5496	3920	3831	8147	16624	29521	119673	
2.000 - 3.9999	21742	19361	4340	1419	1900	6880	10505	17007	83154	
4.000 - 5.9999	3638	4207	179	45	96	775	1724	3090	13754	
6.000 - 7.9999	756	718	3	1	0	80	212	383	2153	
8.000 - 9.9999	181	95	0	0	0	0	40	67	383	
10.000 - 11.9999	18	0	0	0	0	0	2	7	27	
Total	65079	37771	10018	5385	5827	15882	29107	50075	219144	

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.9000 26.4222 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.3600 11.1210 2.1615 1.1634 1.8850 3.6840 6.1750

Frequency of Occurrence for All Months & Years:

Grid Point 10764, Lat 46.6000, Long -55.5000, VMD (deg to) - total

	Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1768	.0611	.0251	.0179	.0175	.0372	.0759	.1347	.5461	
2.000 - 3.9999	.0992	.0883	.0198	.0065	.0087	.0314	.0479	.0776	.3794	
4.000 - 5.9999	.0166	.0192	.0008	.0002	.0004	.0035	.0079	.0141	.0628	
6.000 - 7.9999	.0034	.0033	.0000	.0000	.0000	.0004	.0010	.0017	.0098	
8.000 - 9.9999	.0008	.0004	.0000	.0000	.0000	.0000	.0002	.0003	.0017	
10.000 - 11.9999	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001	
Total	.2970	.1724	.0457	.0246	.0266	.0725	.1328	.2285	1.000	

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Frequency of Occurrence

M6 Gpt 11952, Lat 47.2n, Long 56.1w, Depth 91.2706m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	62.0819	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0960	8.3950	1.5189	0.9643	1.2880	2.8130	4.8050

Counts for All Months & Years:

Grid Point 11952, Lat 47.2000, Long -56.1000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	44987	35117	18867	9502	6279	5870	14233	32315	167170
2.000 - 3.9999	6278	16006	12033	1440	1047	2136	2991	4627	46558
4.000 - 5.9999	468	3506	509	2	0	68	52	314	4919
6.000 - 7.9999	35	438	7	0	0	0	0	5	485
8.000 - 9.9999	0	12	0	0	0	0	0	0	12
Total	51768	55079	31416	10944	7326	8074	17276	37261	219144

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.9000 62.0819 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0960 8.3950 1.5189 0.9643 1.2880 2.8130 4.8050

Frequency of Occurrence for All Months & Years:

Grid Point 11952, Lat 47.2000, Long -56.1000, VMD (deg to) - total

	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.2053	.1602	.0861	.0434	.0287	.0268	.0649	.1475	.7628
2.000 - 3.9999	.0286	.0730	.0549	.0066	.0048	.0097	.0136	.0211	.2125
4.000 - 5.9999	.0021	.0160	.0023	.0000	.0000	.0003	.0002	.0014	.0224
6.000 - 7.9999	.0002	.0020	.0000	.0000	.0000	.0000	.0000	.0000	.0022
8.000 - 9.9999	.0000	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0001
Total	.2362	.2513	.1434	.0499	.0334	.0368	.0788	.1700	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Frequency of Occurrence

M6 Gpt 12147, Lat 47.3n, Long 57.0w, Depth 248.4339m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	38.5835	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0910	10.3640	1.8626	1.0643	1.6140	3.2640	5.5256

Counts for All Months & Years:

Grid Point 12147, Lat 47.3000, Long -57.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	51966	18285	8675	5597	4272	7053	12733	34810	143391
2.000 - 3.9999	17481	20399	4200	931	1190	4270	5935	11066	65472
4.000 - 5.9999	2489	4268	82	2	13	220	515	1352	8941
6.000 - 7.9999	444	599	0	0	0	5	17	161	1226
8.000 - 9.9999	73	36	0	0	0	0	0	3	112
10.000 - 11.9999	1	0	0	0	0	0	0	1	2
Total	72454	43587	12957	6530	5475	11548	19200	47393	219144

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.9000 38.5835 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0910 10.3640 1.8626 1.0643 1.6140 3.2640 5.5256

Frequency of Occurrence for All Months & Years:

Grid Point 12147, Lat 47.3000, Long -57.0000, VMD (deg to) - total

	Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.2371	.0834	.0396	.0255	.0195	.0322	.0581	.1588	.6543	
2.000 - 3.9999	.0798	.0931	.0192	.0042	.0054	.0195	.0271	.0505	.2988	
4.000 - 5.9999	.0114	.0195	.0004	.0000	.0001	.0010	.0024	.0062	.0408	
6.000 - 7.9999	.0020	.0027	.0000	.0000	.0000	.0000	.0001	.0007	.0056	
8.000 - 9.9999	.0003	.0002	.0000	.0000	.0000	.0000	.0000	.0000	.0005	
10.000 - 11.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	
Total	.3306	.1989	.0591	.0298	.0250	.0527	.0876	.2163	1.000	

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Frequency of Occurrence

M6 Gpt 12161, Lat 47.3n, Long 55.5w, Depth 217.6424m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (:): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	86.6189	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0070	5.2640	0.8997	0.6270	0.8030	1.7170	2.9276

Counts for All Months & Years:

Grid Point 12161, Lat 47.3000, Long -55.5000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	40161	76402	23447	22187	8766	13669	9456	12572	206660
2.000 - 3.9999	1404	7884	2154	370	221	70	39	86	12228
4.000 - 5.9999	7	242	7	0	0	0	0	0	256
Total	41572	84528	25608	22557	8987	13739	9495	12658	219144

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (:): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	86.6189	N/A	N/A	N/A	N/A

Sig Wave Ht (m) 0.0070 5.2640 0.8997 0.6270 0.8030 1.7170 2.9276

Frequency of Occurrence for All Months & Years:

Grid Point 12161, Lat 47.3000, Long -55.5000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1833	.3486	.1070	.1012	.0400	.0624	.0431	.0574	.9430
2.000 - 3.9999	.0064	.0360	.0098	.0017	.0010	.0003	.0002	.0004	.0558
4.000 - 5.9999	.0000	.0011	.0000	.0000	.0000	.0000	.0000	.0000	.0012
Total	.1897	.3857	.1169	.1029	.0410	.0627	.0433	.0578	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Frequency of Occurrence

M6 Gpt 12161, Lat 47.3n, Long 55.5w, Depth 217.6424m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	86.6189	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0070	5.2640	0.8997	0.6270	0.8030	1.7170	2.9276

Counts for All Months & Years:

Grid Point 12161, Lat 47.3000, Long -55.5000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 0.9999	27120	55020	10220	15300	4634	11233	6027	9570	139124
1.000 - 1.9999	13041	21382	13227	6887	4132	2436	3429	3002	67536
2.000 - 2.9999	1304	6403	2050	370	221	70	39	86	10543
3.000 - 3.9999	100	1481	104	0	0	0	0	0	1685
4.000 - 4.9999	7	232	7	0	0	0	0	0	246
5.000 - 5.9999	0	10	0	0	0	0	0	0	10
Total	41572	84528	25608	22557	8987	13739	9495	12658	219144

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 219144 from 219144

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

VMD (deg to) - total	0.0000	359.9000	86.6189	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0070	5.2640	0.8997	0.6270	0.8030	1.7170	2.9276

Frequency of Occurrence for All Months & Years:

Grid Point 12161, Lat 47.3000, Long -55.5000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 0.9999	.1238	.2511	.0466	.0698	.0211	.0513	.0275	.0437	.6349
1.000 - 1.9999	.0595	.0976	.0604	.0314	.0189	.0111	.0156	.0137	.3082
2.000 - 2.9999	.0060	.0292	.0094	.0017	.0010	.0003	.0002	.0004	.0481
3.000 - 3.9999	.0005	.0068	.0005	.0000	.0000	.0000	.0000	.0000	.0077
4.000 - 4.9999	.0000	.0011	.0000	.0000	.0000	.0000	.0000	.0000	.0011
5.000 - 5.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.1897	.3857	.1169	.1029	.0410	.0627	.0433	.0578	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Frequency of Occurrence

M6 Gpt 13680, Lat 48.2n, Long 59.0w, Depth 114.2379m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for All Months & Years: 212928 from 212928

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	110.6754	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0000	8.8980	1.1402	0.9602	0.8670	2.3700	4.6687

Counts for All Months & Years:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	24511	63477	40693	20040	11103	12022	4481	5461	181788
2.000 - 3.9999	519	11326	13403	1566	186	0	0	0	27000
4.000 - 5.9999	3	2023	1609	11	0	0	0	0	3646
6.000 - 7.9999	0	331	133	0	0	0	0	0	464
8.000 - 9.9999	0	18	12	0	0	0	0	0	30
Total	25033	77175	55850	21617	11289	12022	4481	5461	212928

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 212928 from 212928

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.9000 110.6754 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0000 8.8980 1.1402 0.9602 0.8670 2.3700 4.6687

Frequency of Occurrence for All Months & Years:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1151	.2981	.1911	.0941	.0521	.0565	.0210	.0256	.8538
2.000 - 3.9999	.0024	.0532	.0629	.0074	.0009	.0000	.0000	.0000	.1268
4.000 - 5.9999	.0000	.0095	.0076	.0001	.0000	.0000	.0000	.0000	.0171
6.000 - 7.9999	.0000	.0016	.0006	.0000	.0000	.0000	.0000	.0000	.0022
8.000 - 9.9999	.0000	.0001	.0001	.0000	.0000	.0000	.0000	.0000	.0001
Total	.1176	.3624	.2623	.1015	.0530	.0565	.0210	.0256	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Frequency of Occurrence

M6 Gpt 13680, Lat 48.2n, Long 59.0w, Depth 114.2379m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for January : 18528 from 18528

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	120.4460	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.1170	7.5940	1.8487	1.1646	1.5670	3.4873	5.3857

Counts for January:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	1100	2935	3732	1768	993	619	295	392	11834
2.000 - 3.9999	136	2588	2701	200	6	0	0	0	5631
4.000 - 5.9999	0	538	420	2	0	0	0	0	960
6.000 - 7.9999	0	82	21	0	0	0	0	0	103
8.000 - 9.9999	0	0	0	0	0	0	0	0	0
Total	1236	6143	6874	1970	999	619	295	392	18528

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for January : 18528 from 18528

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.9000 120.4460 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.1170 7.5940 1.8487 1.1646 1.5670 3.4873 5.3857

Frequency of Occurrence for January:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total
 Sig Wave Ht (m) 45.0 90.0 135.0 180.0 225.0 270.0 315.0 360.0 Total
 0.000 - 1.9999 .0594 .1584 .2014 .0954 .0536 .0334 .0159 .0212 .6387
 2.000 - 3.9999 .0073 .1397 .1458 .0108 .0003 .0000 .0000 .0000 .3039
 4.000 - 5.9999 .0000 .0290 .0227 .0001 .0000 .0000 .0000 .0000 .0518
 6.000 - 7.9999 .0000 .0044 .0011 .0000 .0000 .0000 .0000 .0000 .0056
 8.000 - 9.9999 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
 Total .0667 .3316 .3710 .1063 .0539 .0334 .0159 .0212 1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for February : 15384 from 15384

Directional Sector (:): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.5000 125.6182 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0050 6.6690 1.4097 1.0036 1.1400 2.8170 4.7840

Counts for February:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total
 Sig Wave Ht (m) 45.00 90.00 135.00 180.00 225.00 270.00 315.00 360.00 Total
 0.000 - 1.9999 1057 2988 3123 2227 772 990 325 475 11957
 2.000 - 3.9999 45 1045 1773 177 22 0 0 0 3062
 4.000 - 5.9999 0 202 145 0 0 0 0 0 347
 6.000 - 7.9999 0 18 0 0 0 0 0 0 18
 8.000 - 9.9999 0 0 0 0 0 0 0 0 0
 Total 1102 4253 5041 2404 794 990 325 475 15384

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for February : 15384 from 15384

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.5000 125.6182 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0050 6.6690 1.4097 1.0036 1.1400 2.8170 4.7840
```

Frequency of Occurrence for February:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.0687	.1942	.2030	.1448	.0502	.0644	.0211	.0309	.7772
2.000 - 3.9999	.0029	.0679	.1152	.0115	.0014	.0000	.0000	.0000	.1990
4.000 - 5.9999	.0000	.0131	.0094	.0000	.0000	.0000	.0000	.0000	.0226
6.000 - 7.9999	.0000	.0012	.0000	.0000	.0000	.0000	.0000	.0000	.0012
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.0716	.2765	.3277	.1563	.0516	.0644	.0211	.0309	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for March : 15120 from 15120

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.7000 134.3592 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0020 6.1180 1.1277 0.7910 0.9435 2.1841 3.7410
```

Counts for March:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	1326	3069	2856	2509	1450	1174	310	544	13238
2.000 - 3.9999	7	545	935	273	24	0	0	0	1784
4.000 - 5.9999	0	45	45	0	0	0	0	0	90

6.000 - 7.9999	0	8	0	0	0	0	0	0	0	8
8.000 - 9.9999	0	0	0	0	0	0	0	0	0	0

Total 1333 3667 3836 2782 1474 1174 310 544 15120

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for March : 15120 from 15120

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.7000	134.3592	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0020	6.1180	1.1277	0.7910	0.9435	2.1841	3.7410

Frequency of Occurrence for March:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.0877	.2030	.1889	.1659	.0959	.0776	.0205	.0360	.8755
2.000 - 3.9999	.0005	.0360	.0618	.0181	.0016	.0000	.0000	.0000	.1180
4.000 - 5.9999	.0000	.0030	.0030	.0000	.0000	.0000	.0000	.0000	.0060
6.000 - 7.9999	.0000	.0005	.0000	.0000	.0000	.0000	.0000	.0000	.0005
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.0882	.2425	.2537	.1840	.0975	.0776	.0205	.0360	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for April : 16896 from 16896

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	124.4363	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0000	5.5340	0.9240	0.7262	0.7370	1.9035	3.5153

Counts for April:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	1745	3753	3620	2121	1521	1434	507	746	15447
2.000 - 3.9999	18	597	642	91	22	0	0	0	1370
4.000 - 5.9999	0	41	38	0	0	0	0	0	79
6.000 - 7.9999	0	0	0	0	0	0	0	0	0
8.000 - 9.9999	0	0	0	0	0	0	0	0	0
Total	1763	4391	4300	2212	1543	1434	507	746	16896

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for April : 16896 from 16896

Directional Sector (): All Directions

Statistics for var:	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	124.4363		N/A	N/A	N/A
Sig Wave Ht (m)	0.0000	5.5340	0.9240	0.7262	0.7370	1.9035	3.5153

Frequency of Occurrence for April:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1033	.2221	.2143	.1255	.0900	.0849	.0300	.0442	.9142
2.000 - 3.9999	.0011	.0353	.0380	.0054	.0013	.0000	.0000	.0000	.0811
4.000 - 5.9999	.0000	.0024	.0022	.0000	.0000	.0000	.0000	.0000	.0047
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.1043	.2599	.2545	.1309	.0913	.0849	.0300	.0442	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for May : 18600 from 18600

Directional Sector (): All Directions

Statistics for var:	Min	Max	Mean	Std Dev.	Median	90%	99%
---------------------	-----	-----	------	----------	--------	-----	-----

VMD (deg to) - total 0.0000 359.8000 107.8959 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0040 4.7410 0.6586 0.5434 0.5350 1.3440 2.4340

Counts for May:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	2955	5903	3643	1932	1159	1667	436	410	18105
2.000 - 3.9999	13	142	267	35	0	0	0	0	457
4.000 - 5.9999	0	21	17	0	0	0	0	0	38
6.000 - 7.9999	0	0	0	0	0	0	0	0	0
8.000 - 9.9999	0	0	0	0	0	0	0	0	0
Total	2968	6066	3927	1967	1159	1667	436	410	18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for May : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

VMD (deg to) - total 0.0000 359.8000 107.8959 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0040 4.7410 0.6586 0.5434 0.5350 1.3440 2.4340

Frequency of Occurrence for May:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1589	.3174	.1959	.1039	.0623	.0896	.0234	.0220	.9734
2.000 - 3.9999	.0007	.0076	.0144	.0019	.0000	.0000	.0000	.0000	.0246
4.000 - 5.9999	.0000	.0011	.0009	.0000	.0000	.0000	.0000	.0000	.0020
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.1596	.3261	.2111	.1058	.0623	.0896	.0234	.0220	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for June : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.9000 96.3333 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0090 4.9800 0.5840 0.4549 0.4920 1.1740 2.0240
```

Counts for June:

```
Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total
  Sig Wave Ht (m) 45.00 90.00 135.00 180.00 225.00 270.00 315.00 360.00 Total
0.000 - 1.9999 3398 7354 3099 1566 558 998 488 335 17796
2.000 - 3.9999 2 51 126 12 0 0 0 0 191
4.000 - 5.9999 0 0 13 0 0 0 0 0 13
6.000 - 7.9999 0 0 0 0 0 0 0 0 0
8.000 - 9.9999 0 0 0 0 0 0 0 0 0
      Total 3400 7405 3238 1578 558 998 488 335 18000
```

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for June : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.9000 96.3333 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0090 4.9800 0.5840 0.4549 0.4920 1.1740 2.0240
```

Frequency of Occurrence for June:

```
Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total
  Sig Wave Ht (m) 45.0 90.0 135.0 180.0 225.0 270.0 315.0 360.0 Total
0.000 - 1.9999 .1888 .4086 .1722 .0870 .0310 .0554 .0271 .0186 .9887
2.000 - 3.9999 .0001 .0028 .0070 .0007 .0000 .0000 .0000 .0000 .0106
4.000 - 5.9999 .0000 .0000 .0007 .0000 .0000 .0000 .0000 .0000 .0007
6.000 - 7.9999 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
```


0.000 - 1.9999	.2030	.5681	.1320	.0255	.0103	.0242	.0092	.0211	.9934
2.000 - 3.9999	.0003	.0020	.0036	.0003	.0000	.0000	.0000	.0000	.0062
4.000 - 5.9999	.0001	.0003	.0000	.0000	.0000	.0000	.0000	.0000	.0004
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.2034	.5704	.1356	.0258	.0103	.0242	.0092	.0211	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for August : 18600 from 18600

Directional Sector (): All Directions

Statistics for var:	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.5000	359.9000	95.8665	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0220	4.0500	0.7347	0.5151	0.6290	1.3780	2.4951

Counts for August:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

	Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999		2866	9117	3262	1021	385	975	207	253	18086
2.000 - 3.9999		7	315	147	32	0	0	0	0	501
4.000 - 5.9999		0	8	5	0	0	0	0	0	13
6.000 - 7.9999		0	0	0	0	0	0	0	0	0
8.000 - 9.9999		0	0	0	0	0	0	0	0	0
Total		2873	9440	3414	1053	385	975	207	253	18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for August : 18600 from 18600

Directional Sector (): All Directions

Statistics for var:	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.5000	359.9000	95.8665	N/A	N/A	N/A	N/A

Sig Wave Ht (m) 0.0220 4.0500 0.7347 0.5151 0.6290 1.3780 2.4951

Frequency of Occurrence for August:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1541	.4902	.1754	.0549	.0207	.0524	.0111	.0136	.9724
2.000 - 3.9999	.0004	.0169	.0079	.0017	.0000	.0000	.0000	.0000	.0269
4.000 - 5.9999	.0000	.0004	.0003	.0000	.0000	.0000	.0000	.0000	.0007
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.1545	.5075	.1835	.0566	.0207	.0524	.0111	.0136	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for September : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.5000	359.9000	106.2584	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0150	5.9990	1.0865	0.7333	0.9010	2.0560	3.6290

Counts for September:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	2133	6427	4145	1467	536	659	304	388	16059
2.000 - 3.9999	37	862	821	105	0	0	0	0	1825
4.000 - 5.9999	0	71	40	5	0	0	0	0	116
6.000 - 7.9999	0	0	0	0	0	0	0	0	0
8.000 - 9.9999	0	0	0	0	0	0	0	0	0
Total	2170	7360	5006	1577	536	659	304	388	18000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for September : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total  0.5000 359.9000 106.2584   N/A   N/A   N/A   N/A
Sig Wave Ht (m)       0.0150  5.9990  1.0865  0.7333  0.9010  2.0560  3.6290
```

Frequency of Occurrence for September:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

```
  Sig Wave Ht (m) 45.0 90.0 135.0 180.0 225.0 270.0 315.0 360.0 Total
0.000 - 1.9999  .1185 .3571 .2303 .0815 .0298 .0366 .0169 .0216 .8922
2.000 - 3.9999  .0021 .0479 .0456 .0058 .0000 .0000 .0000 .0000 .1014
4.000 - 5.9999  .0000 .0039 .0022 .0003 .0000 .0000 .0000 .0000 .0064
6.000 - 7.9999  .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
8.000 - 9.9999  .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
      Total   .1206 .4089 .2781 .0876 .0298 .0366 .0169 .0216 1.000
```

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for October : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total  0.0000 359.7000 115.1278   N/A   N/A   N/A   N/A
Sig Wave Ht (m)       0.0500  8.0210  1.3433  0.9427  1.0985  2.5910  4.5871
```

Counts for October:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

```
  Sig Wave Ht (m) 45.00 90.00 135.00 180.00 225.00 270.00 315.00 360.00 Total
0.000 - 1.9999  1541 4833 3773 1500 1054 1166 566 528 14961
2.000 - 3.9999   73 1468 1526 192  19  0  0  0  0 3278
4.000 - 5.9999    0  170  160  4  0  0  0  0  0 334
6.000 - 7.9999    0  24  2  0  0  0  0  0  0 26
8.000 - 9.9999    0  1  0  0  0  0  0  0  0 1
```

Total 1614 6496 5461 1696 1073 1166 566 528 18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for October : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.7000 115.1278 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0500 8.0210 1.3433 0.9427 1.0985 2.5910 4.5871

Frequency of Occurrence for October:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

	Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.0828	.2598	.2028	.0806	.0567	.0627	.0304	.0284	.8044	
2.000 - 3.9999	.0039	.0789	.0820	.0103	.0010	.0000	.0000	.0000	.1762	
4.000 - 5.9999	.0000	.0091	.0086	.0002	.0000	.0000	.0000	.0000	.0180	
6.000 - 7.9999	.0000	.0013	.0001	.0000	.0000	.0000	.0000	.0000	.0014	
8.000 - 9.9999	.0000	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0001	
Total	.0868	.3492	.2936	.0912	.0577	.0627	.0304	.0284	1.000	

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for November : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.8000 116.4505 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0510 8.8980 1.5470 1.1104 1.2470 2.9401 5.5951

Counts for November:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

	Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	1520	3468	3713	1597	1286	908	481	554	13527	

2.000 - 3.9999	96	1957	1522	154	13	0	0	0	3742
4.000 - 5.9999	0	339	262	0	0	0	0	0	601
6.000 - 7.9999	0	51	67	0	0	0	0	0	118
8.000 - 9.9999	0	4	8	0	0	0	0	0	12

Total 1616 5819 5572 1751 1299 908 481 554 18000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for November : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.8000	116.4505	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0510	8.8980	1.5470	1.1104	1.2470	2.9401	5.5951

Frequency of Occurrence for November:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.0844	.1927	.2063	.0887	.0714	.0504	.0267	.0308	.7515
2.000 - 3.9999	.0053	.1087	.0846	.0086	.0007	.0000	.0000	.0000	.2079
4.000 - 5.9999	.0000	.0188	.0146	.0000	.0000	.0000	.0000	.0000	.0334
6.000 - 7.9999	.0000	.0028	.0037	.0000	.0000	.0000	.0000	.0000	.0066
8.000 - 9.9999	.0000	.0002	.0004	.0000	.0000	.0000	.0000	.0000	.0007
Total	.0898	.3233	.3096	.0973	.0722	.0504	.0267	.0308	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for December : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	124.3709	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0620	8.5130	1.8201	1.2672	1.4470	3.5741	6.0740

Counts for December:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	1094	3064	3272	1857	1198	982	390	444	12301
2.000 - 3.9999	79	1718	2876	290	80	0	0	0	5043
4.000 - 5.9999	1	583	464	0	0	0	0	0	1048
6.000 - 7.9999	0	148	43	0	0	0	0	0	191
8.000 - 9.9999	0	13	4	0	0	0	0	0	17
Total	1174	5526	6659	2147	1278	982	390	444	18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for December : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	124.3709	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0620	8.5130	1.8201	1.2672	1.4470	3.5741	6.0740

Frequency of Occurrence for December:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.0588	.1647	.1759	.0998	.0644	.0528	.0210	.0239	.6613
2.000 - 3.9999	.0042	.0924	.1546	.0156	.0043	.0000	.0000	.0000	.2711
4.000 - 5.9999	.0001	.0313	.0249	.0000	.0000	.0000	.0000	.0000	.0563
6.000 - 7.9999	.0000	.0080	.0023	.0000	.0000	.0000	.0000	.0000	.0103
8.000 - 9.9999	.0000	.0007	.0002	.0000	.0000	.0000	.0000	.0000	.0009
Total	.0631	.2971	.3580	.1154	.0687	.0528	.0210	.0239	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 212928 from 212928

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

VMD (deg to) - total 0.0000 359.9000 110.6754 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0000 8.8980 1.1402 0.9602 0.8670 2.3700 4.6687

Counts for All Months & Years:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	24511	63477	40693	20040	11103	12022	4481	5461	181788
2.000 - 3.9999	519	11326	13403	1566	186	0	0	0	27000
4.000 - 5.9999	3	2023	1609	11	0	0	0	0	3646
6.000 - 7.9999	0	331	133	0	0	0	0	0	464
8.000 - 9.9999	0	18	12	0	0	0	0	0	30
Total	25033	77175	55850	21617	11289	12022	4481	5461	212928

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 212928 from 212928

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

VMD (deg to) - total 0.0000 359.9000 110.6754 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0000 8.8980 1.1402 0.9602 0.8670 2.3700 4.6687

Frequency of Occurrence for All Months & Years:

Grid Point 13680, Lat 48.2000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1151	.2981	.1911	.0941	.0521	.0565	.0210	.0256	.8538
2.000 - 3.9999	.0024	.0532	.0629	.0074	.0009	.0000	.0000	.0000	.1268
4.000 - 5.9999	.0000	.0095	.0076	.0001	.0000	.0000	.0000	.0000	.0171
6.000 - 7.9999	.0000	.0016	.0006	.0000	.0000	.0000	.0000	.0000	.0022
8.000 - 9.9999	.0000	.0001	.0001	.0000	.0000	.0000	.0000	.0000	.0001
Total	.1176	.3624	.2623	.1015	.0530	.0565	.0210	.0256	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Frequency of Occurrence

M6 Gpt 14950, Lat 49.0n, Long 59.0w, Depth 48.3495m

Defined Period: Last 25 years

Date Ranges: 1/1/1994 00:00 to 12/31/2018 23:00

Horizontal variable: Vector Mean Direction of Total Spectrum (deg to which)

Vertical variable: Significant Wave Height (m)

Directional variable: All Directions

Number of Observations for January : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.2000	359.9000	106.9225	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.2670	7.4590	2.1543	1.1527	1.9350	3.7240	5.5911

Counts for January:

Grid Point	14950, Lat	49.0000, Long	-59.0000, VMD (deg to) - total								
	Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total	
0.000 - 1.9999	1668	2380	1717	1667	924	427	370	544	9697		
2.000 - 3.9999	1369	2829	1647	795	424	89	153	279	7585		
4.000 - 5.9999	120	682	267	131	20	0	0	9	1229		
6.000 - 7.9999	4	75	10	0	0	0	0	0	89		
8.000 - 9.9999	0	0	0	0	0	0	0	0	0		
Total	3161	5966	3641	2593	1368	516	523	832	18600		

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for January : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.2000 359.9000 106.9225 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.2670 7.4590 2.1543 1.1527 1.9350 3.7240 5.5911

Frequency of Occurrence for January:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total
 Sig Wave Ht (m) 45.0 90.0 135.0 180.0 225.0 270.0 315.0 360.0 Total
 0.000 - 1.9999 .0897 .1280 .0923 .0896 .0497 .0230 .0199 .0292 .5213
 2.000 - 3.9999 .0736 .1521 .0885 .0427 .0228 .0048 .0082 .0150 .4078
 4.000 - 5.9999 .0065 .0367 .0144 .0070 .0011 .0000 .0000 .0005 .0661
 6.000 - 7.9999 .0002 .0040 .0005 .0000 .0000 .0000 .0000 .0000 .0048
 8.000 - 9.9999 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
 Total .1699 .3208 .1958 .1394 .0735 .0277 .0281 .0447 1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for February : 14904 from 14904

Directional Sector (:): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

 VMD (deg to) - total 0.0000 359.9000 106.6366 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0020 7.3710 1.6646 1.0608 1.4590 3.1327 4.7569

Counts for February:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total
 Sig Wave Ht (m) 45.00 90.00 135.00 180.00 225.00 270.00 315.00 360.00 Total
 0.000 - 1.9999 2181 2608 1285 1647 907 666 432 560 10286
 2.000 - 3.9999 663 1423 747 686 339 99 34 103 4094
 4.000 - 5.9999 63 261 69 63 21 0 0 0 477
 6.000 - 7.9999 4 43 0 0 0 0 0 0 47
 8.000 - 9.9999 0 0 0 0 0 0 0 0 0
 Total 2911 4335 2101 2396 1267 765 466 663 14904

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for February : 14904 from 14904

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.9000 106.6366 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0020 7.3710 1.6646 1.0608 1.4590 3.1327 4.7569
```

Frequency of Occurrence for February:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1463	.1750	.0862	.1105	.0609	.0447	.0290	.0376	.6902
2.000 - 3.9999	.0445	.0955	.0501	.0460	.0227	.0066	.0023	.0069	.2747
4.000 - 5.9999	.0042	.0175	.0046	.0042	.0014	.0000	.0000	.0000	.0320
6.000 - 7.9999	.0003	.0029	.0000	.0000	.0000	.0000	.0000	.0000	.0032
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.1953	.2909	.1410	.1608	.0850	.0513	.0313	.0445	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for March : 12888 from 12888

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.9000 129.5221 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0000 6.6990 1.4946 0.9410 1.3150 2.8150 4.2178
```

Counts for March:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	2007	1603	1213	1696	1245	717	332	809	9622
2.000 - 3.9999	392	529	540	630	694	151	54	89	3079
4.000 - 5.9999	2	60	9	80	21	0	0	0	172

6.000 - 7.9999	0	15	0	0	0	0	0	0	0	15
8.000 - 9.9999	0	0	0	0	0	0	0	0	0	0

Total 2401 2207 1762 2406 1960 868 386 898 12888

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for March : 12888 from 12888

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	129.5221	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0000	6.6990	1.4946	0.9410	1.3150	2.8150	4.2178

Frequency of Occurrence for March:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1557	.1244	.0941	.1316	.0966	.0556	.0258	.0628	.7466
2.000 - 3.9999	.0304	.0410	.0419	.0489	.0538	.0117	.0042	.0069	.2389
4.000 - 5.9999	.0002	.0047	.0007	.0062	.0016	.0000	.0000	.0000	.0133
6.000 - 7.9999	.0000	.0012	.0000	.0000	.0000	.0000	.0000	.0000	.0012
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.1863	.1712	.1367	.1867	.1521	.0673	.0300	.0697	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for April : 16174 from 16174

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	109.0904	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0020	5.6570	1.2649	0.8681	1.0730	2.4687	4.0351

Counts for April:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	2890	2286	1515	1782	1709	1150	724	1082	13138
2.000 - 3.9999	488	675	420	438	632	53	26	138	2870
4.000 - 5.9999	2	82	20	13	49	0	0	0	166
6.000 - 7.9999	0	0	0	0	0	0	0	0	0
8.000 - 9.9999	0	0	0	0	0	0	0	0	0
Total	3380	3043	1955	2233	2390	1203	750	1220	16174

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for April : 16174 from 16174

Directional Sector (:): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	109.0904		N/A	N/A	N/A
Sig Wave Ht (m)	0.0020	5.6570	1.2649	0.8681	1.0730	2.4687	4.0351

Frequency of Occurrence for April:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1787	.1413	.0937	.1102	.1057	.0711	.0448	.0669	.8123
2.000 - 3.9999	.0302	.0417	.0260	.0271	.0391	.0033	.0016	.0085	.1774
4.000 - 5.9999	.0001	.0051	.0012	.0008	.0030	.0000	.0000	.0000	.0103
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.2090	.1881	.1209	.1381	.1478	.0744	.0464	.0754	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for May : 18600 from 18600

Directional Sector (:): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	109.0904		N/A	N/A	N/A

VMD (deg to) - total 0.0000 359.9000 82.3742 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0160 5.2230 0.9373 0.7030 0.7890 1.8571 3.1850

Counts for May:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	5923	2310	1454	2286	2181	1149	624	1201	17128
2.000 - 3.9999	336	203	210	294	281	36	9	28	1397
4.000 - 5.9999	0	24	6	36	9	0	0	0	75
6.000 - 7.9999	0	0	0	0	0	0	0	0	0
8.000 - 9.9999	0	0	0	0	0	0	0	0	0
Total	6259	2537	1670	2616	2471	1185	633	1229	18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for May : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

VMD (deg to) - total 0.0000 359.9000 82.3742 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0160 5.2230 0.9373 0.7030 0.7890 1.8571 3.1850

Frequency of Occurrence for May:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.3184	.1242	.0782	.1229	.1173	.0618	.0335	.0646	.9209
2.000 - 3.9999	.0181	.0109	.0113	.0158	.0151	.0019	.0005	.0015	.0751
4.000 - 5.9999	.0000	.0013	.0003	.0019	.0005	.0000	.0000	.0000	.0040
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.3365	.1364	.0898	.1406	.1328	.0637	.0340	.0661	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for June : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.9000 63.2363 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0210 5.4630 0.8248 0.5954 0.7180 1.6271 2.6370
```

Counts for June:

```
Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total
  Sig Wave Ht (m) 45.00 90.00 135.00 180.00 225.00 270.00 315.00 360.00 Total
0.000 - 1.9999 8302 2079 850 2114 1505 699 612 946 17107
2.000 - 3.9999 263 149 103 260 73 3 8 17 876
4.000 - 5.9999 0 0 17 0 0 0 0 0 17
6.000 - 7.9999 0 0 0 0 0 0 0 0 0
8.000 - 9.9999 0 0 0 0 0 0 0 0 0
      Total 8565 2228 970 2374 1578 702 620 963 18000
```

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for June : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.9000 63.2363 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0210 5.4630 0.8248 0.5954 0.7180 1.6271 2.6370
```

Frequency of Occurrence for June:

```
Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total
  Sig Wave Ht (m) 45.0 90.0 135.0 180.0 225.0 270.0 315.0 360.0 Total
0.000 - 1.9999 .4612 .1155 .0472 .1174 .0836 .0388 .0340 .0526 .9504
2.000 - 3.9999 .0146 .0083 .0057 .0144 .0041 .0002 .0004 .0009 .0487
4.000 - 5.9999 .0000 .0000 .0009 .0000 .0000 .0000 .0000 .0000 .0009
6.000 - 7.9999 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
```


0.000 - 1.9999	.5814	.1837	.0369	.0387	.0310	.0147	.0216	.0569	.9649
2.000 - 3.9999	.0163	.0086	.0014	.0047	.0014	.0000	.0004	.0017	.0345
4.000 - 5.9999	.0005	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0005
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.5982	.1924	.0383	.0434	.0324	.0147	.0220	.0586	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for August : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.1000	359.8000	64.1610	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0290	4.5900	0.9618	0.6323	0.8480	1.7731	3.1920

Counts for August:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	8469	4182	847	1095	878	700	436	822	17429
2.000 - 3.9999	464	343	80	144	89	3	0	8	1131
4.000 - 5.9999	10	16	7	7	0	0	0	0	40
6.000 - 7.9999	0	0	0	0	0	0	0	0	0
8.000 - 9.9999	0	0	0	0	0	0	0	0	0
Total	8943	4541	934	1246	967	703	436	830	18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for August : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.1000	359.8000	64.1610	N/A	N/A	N/A	N/A

Sig Wave Ht (m) 0.0290 4.5900 0.9618 0.6323 0.8480 1.7731 3.1920

Frequency of Occurrence for August:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.4553	.2248	.0455	.0589	.0472	.0376	.0234	.0442	.9370
2.000 - 3.9999	.0249	.0184	.0043	.0077	.0048	.0002	.0000	.0004	.0608
4.000 - 5.9999	.0005	.0009	.0004	.0004	.0000	.0000	.0000	.0000	.0022
6.000 - 7.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total	.4808	.2441	.0502	.0670	.0520	.0378	.0234	.0446	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for September : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	81.4971	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.0310	6.4090	1.3889	0.8370	1.2020	2.5051	4.1653

Counts for September:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	4781	3809	1627	1375	898	555	414	953	14412
2.000 - 3.9999	1144	1081	499	391	133	6	37	82	3373
4.000 - 5.9999	20	101	25	56	4	0	0	0	206
6.000 - 7.9999	0	9	0	0	0	0	0	9	
8.000 - 9.9999	0	0	0	0	0	0	0	0	
Total	5945	5000	2151	1822	1035	561	451	1035	18000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for September : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```

-----
VMD (deg to) - total  0.0000  359.9000  81.4971   N/A   N/A   N/A   N/A
Sig Wave Ht (m)      0.0310   6.4090   1.3889   0.8370  1.2020  2.5051  4.1653
    
```

Frequency of Occurrence for September:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

```

    Sig Wave Ht (m)  45.0  90.0 135.0 180.0 225.0 270.0 315.0 360.0 Total
0.000 - 1.9999  .2656 .2116 .0904 .0764 .0499 .0308 .0230 .0529 .8007
2.000 - 3.9999  .0636 .0601 .0277 .0217 .0074 .0003 .0021 .0046 .1874
4.000 - 5.9999  .0011 .0056 .0014 .0031 .0002 .0000 .0000 .0000 .0114
6.000 - 7.9999  .0000 .0005 .0000 .0000 .0000 .0000 .0000 .0000 .0005
8.000 - 9.9999  .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
    Total  .3303 .2778 .1195 .1012 .0575 .0312 .0251 .0575 1.000
    
```

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for October : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```

-----
VMD (deg to) - total  0.1000  359.9000  93.2942   N/A   N/A   N/A   N/A
Sig Wave Ht (m)      0.0710   7.8460   1.6937   1.0285  1.4760  3.0690  4.9940
    
```

Counts for October:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

```

    Sig Wave Ht (m)  45.00  90.00 135.00 180.00 225.00 270.00 315.00 360.00 Total
0.000 - 1.9999  3142  3181  1589  1476  1117  689  694  956 12844
2.000 - 3.9999  1160  1759  819  653  464  109  62  143  5169
4.000 - 5.9999   62  239  108  82  30  0  0  0  521
6.000 - 7.9999   0  38  0  28  0  0  0  0  66
8.000 - 9.9999   0  0  0  0  0  0  0  0  0
    
```

Total 4364 5217 2516 2239 1611 798 756 1099 18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for October : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.1000 359.9000 93.2942 N/A N/A N/A N/A
Sig Wave Ht (m) 0.0710 7.8460 1.6937 1.0285 1.4760 3.0690 4.9940
```

Frequency of Occurrence for October:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

	Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1689	.1710	.0854	.0794	.0601	.0370	.0373	.0514	.6905	
2.000 - 3.9999	.0624	.0946	.0440	.0351	.0249	.0059	.0033	.0077	.2779	
4.000 - 5.9999	.0033	.0128	.0058	.0044	.0016	.0000	.0000	.0000	.0280	
6.000 - 7.9999	.0000	.0020	.0000	.0015	.0000	.0000	.0000	.0000	.0035	
8.000 - 9.9999	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	
Total	.2346	.2805	.1353	.1204	.0866	.0429	.0406	.0591	1.000	

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for November : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

```
-----
VMD (deg to) - total 0.0000 359.9000 98.6975 N/A N/A N/A N/A
Sig Wave Ht (m) 0.1710 8.0660 1.9203 1.1134 1.6780 3.4110 5.6940
```

Counts for November:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

	Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	2406	2372	1808	1500	1208	566	618	692	11170	

2.000 - 3.9999	1396	1959	974	531	460	68	169	306	5863
4.000 - 5.9999	118	450	152	103	16	0	0	5	844
6.000 - 7.9999	6	58	45	12	0	0	0	0	121
8.000 - 9.9999	0	0	2	0	0	0	0	0	2
Total	3926	4839	2981	2146	1684	634	787	1003	18000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for November : 18000 from 18000

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	98.6975	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.1710	8.0660	1.9203	1.1134	1.6780	3.4110	5.6940

Frequency of Occurrence for November:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.1337	.1318	.1004	.0833	.0671	.0314	.0343	.0384	.6206
2.000 - 3.9999	.0776	.1088	.0541	.0295	.0256	.0038	.0094	.0170	.3257
4.000 - 5.9999	.0066	.0250	.0084	.0057	.0009	.0000	.0000	.0003	.0469
6.000 - 7.9999	.0003	.0032	.0025	.0007	.0000	.0000	.0000	.0000	.0067
8.000 - 9.9999	.0000	.0000	.0001	.0000	.0000	.0000	.0000	.0000	.0001
Total	.2181	.2688	.1656	.1192	.0936	.0352	.0437	.0557	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for December : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	114.2206	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.1010	8.8780	2.1910	1.2527	1.9530	3.8371	6.2271

Counts for December:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.00	90.00	135.00	180.00	225.00	270.00	315.00	360.00	Total
0.000 - 1.9999	1789	2071	1753	1520	922	578	455	512	9600
2.000 - 3.9999	1045	2167	1811	1044	674	225	151	276	7393
4.000 - 5.9999	111	717	288	177	84	0	0	1	1378
6.000 - 7.9999	4	195	15	0	0	0	0	0	214
8.000 - 9.9999	3	12	0	0	0	0	0	0	15
Total	2952	5162	3867	2741	1680	803	606	789	18600

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for December : 18600 from 18600

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

	Min	Max	Mean	Std Dev.	Median	90%	99%
VMD (deg to) - total	0.0000	359.9000	114.2206	N/A	N/A	N/A	N/A
Sig Wave Ht (m)	0.1010	8.8780	2.1910	1.2527	1.9530	3.8371	6.2271

Frequency of Occurrence for December:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

Sig Wave Ht (m)	45.0	90.0	135.0	180.0	225.0	270.0	315.0	360.0	Total
0.000 - 1.9999	.0962	.1113	.0942	.0817	.0496	.0311	.0245	.0275	.5161
2.000 - 3.9999	.0562	.1165	.0974	.0561	.0362	.0121	.0081	.0148	.3975
4.000 - 5.9999	.0060	.0385	.0155	.0095	.0045	.0000	.0000	.0001	.0741
6.000 - 7.9999	.0002	.0105	.0008	.0000	.0000	.0000	.0000	.0000	.0115
8.000 - 9.9999	.0002	.0006	.0000	.0000	.0000	.0000	.0000	.0000	.0008
Total	.1587	.2775	.2079	.1474	.0903	.0432	.0326	.0424	1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 209566 from 209566

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

VMD (deg to) - total 0.0000 359.9000 86.8592 N/A N/A N/A N/A
 Sig Wave Ht (m) 0.0000 8.8780 1.4403 1.0404 1.1880 2.8480 4.9000

Counts for All Months & Years:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

 Sig Wave Ht (m) 45.00 90.00 135.00 180.00 225.00 270.00 315.00 360.00 Total

0.000 - 1.9999 54372 32298 16345 18878 14071 8169 6112 10136 160381

2.000 - 3.9999 9023 13277 7876 5954 4289 842 711 1500 43472

4.000 - 5.9999 517 2633 968 748 254 0 0 15 5135

6.000 - 7.9999 18 433 70 40 0 0 0 0 561

8.000 - 9.9999 3 12 2 0 0 0 0 0 17

 Total 63933 48653 25261 25620 18614 9011 6823 11651 209566

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers

Number of Observations for All Months & Years: 209566 from 209566

Directional Sector (): All Directions

Statistics for var: Min Max Mean Std Dev. Median 90% 99%

VMD (deg to) - total 0.0000 359.9000 86.8592 N/A N/A N/A N/A

Sig Wave Ht (m) 0.0000 8.8780 1.4403 1.0404 1.1880 2.8480 4.9000

Frequency of Occurrence for All Months & Years:

Grid Point 14950, Lat 49.0000, Long -59.0000, VMD (deg to) - total

 Sig Wave Ht (m) 45.0 90.0 135.0 180.0 225.0 270.0 315.0 360.0 Total

0.000 - 1.9999 .2595 .1541 .0780 .0901 .0671 .0390 .0292 .0484 .7653

2.000 - 3.9999 .0431 .0634 .0376 .0284 .0205 .0040 .0034 .0072 .2074

4.000 - 5.9999 .0025 .0126 .0046 .0036 .0012 .0000 .0000 .0001 .0245

6.000 - 7.9999 .0001 .0021 .0003 .0002 .0000 .0000 .0000 .0000 .0027

8.000 - 9.9999 .0000 .0001 .0000 .0000 .0000 .0000 .0000 .0000 .0001

 Total .3051 .2322 .1205 .1223 .0888 .0430 .0326 .0556 1.000

VMD (deg to) - total Bins are 45.00 wide, and are centered on column headers