In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [7]:
```
df = pd.read_csv('Weather Data.csv')
```

In [8]:
```
df.head()
```

Out[8]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	1/1/2012 2:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	1/1/2012 3:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	1/1/2012 4:00	-1.5	-3.3	88	7	4.8	101.23	Fog

In [9]:
```
df.shape
```

Out[9]:
```
(8784, 8)
```

In [10]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8784 entries, 0 to 8783
Data columns (total 8 columns):
 #   Column            Non-Null Count  Dtype  
---  ------            --------------  -----  
 0   Date/Time         8784 non-null   object 
 1   Temp_C            8784 non-null   float64
 2   Dew Point Temp_C  8784 non-null   float64
 3   Rel Hum_%         8784 non-null   int64  
 4   Wind Speed_km/h   8784 non-null   int64  
 5   Visibility_km     8784 non-null   float64
 6   Press_kPa         8784 non-null   float64
 7   Weather           8784 non-null   object 
dtypes: float64(4), int64(2), object(2)
memory usage: 549.1+ KB
```

In [11]:
```
df.isnull().sum()
```

Out[11]:
```
Date/Time           0
Temp_C              0
Dew Point Temp_C    0
Rel Hum_%           0
Wind Speed_km/h     0
Visibility_km       0
Press_kPa           0
Weather             0
dtype: int64
```

In [23]:
```
df.duplicated().sum()
```

Out[23]:
```
0
```

In [12]:
```
df.describe()
```

Out[12]:

	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
count	8784.000000	8784.000000	8784.000000	8784.000000	8784.000000	8784.000000
mean	8.798144	2.555294	67.431694	14.945469	27.664447	101.051623
std	11.687883	10.883072	16.918881	8.688696	12.622688	0.844005
min	-23.300000	-28.500000	18.000000	0.000000	0.200000	97.520000
25%	0.100000	-5.900000	56.000000	9.000000	24.100000	100.560000
50%	9.300000	3.300000	68.000000	13.000000	25.000000	101.070000
75%	18.800000	11.800000	81.000000	20.000000	25.000000	101.590000
max	33.000000	24.400000	100.000000	83.000000	48.300000	103.650000

In [15]:
```
df.unique()
```

Out[15]:
```
Date/Time           8784
Temp_C               533
Dew Point Temp_C     489
Rel Hum_%             83
Wind Speed_km/h       34
Visibility_km         24
Press_kPa            518
Weather               50
dtype: int64
```

In [19]:
```
for col in df:
    print(col)
    print(df[col].unique())
    print('\n')
```

```
Date/Time
['1/1/2012 0:00' '1/1/2012 1:00' '1/1/2012 2:00' ... '12/31/2012 21:00'
 '12/31/2012 22:00' '12/31/2012 23:00']


Temp_C
[ -1.8  -1.5  -1.4  -1.3  -1.   -0.5  -0.2   0.2   0.8   1.8   2.6   3.
   3.8   3.1   3.2   4.    4.4   5.3   5.2   4.6   3.9   3.7   2.9   2.3
   2.    1.9   1.5   2.2   1.7   1.1   0.   -0.7  -2.1  -4.1  -4.8  -5.6
  -5.8  -7.   -7.4  -9.   -9.7 -10.5 -11.3 -12.6 -12.9 -13.3 -14.  -14.8
 -15.  -15.3 -14.9 -15.1 -15.8 -16.3 -16.9 -17.3 -17.  -17.1 -17.5 -17.9
 -18.1 -18.5 -18.6 -18.2 -17.8 -16.8 -15.2 -14.2 -13.7 -12.4 -10.2  -9.4
  -8.9  -8.4  -7.8  -7.6  -9.5  -9.6  -8.8  -7.5  -5.4  -5.   -8.2  -7.1
  -6.1  -6.6  -6.   -4.7  -4.4  -5.1  -4.3  -6.7  -9.2  -9.8  -9.9 -10.
 -10.6 -11.8 -12.  -14.4 -12.3 -12.5 -11.7 -11.9 -11.2 -11.5 -11.6  -9.3
  -8.7  -8.5  -8.1  -6.9  -6.4  -5.7  -5.5  -3.7  -3.6  -3.1  -3.2  -3.
   0.4   0.6  -0.6  -1.7  -3.5  -5.9  -6.5  -7.2  -8.   -8.3  -7.7  -6.8
  -2.5  -1.1  -0.3   2.5   1.4   1.6   1.2   0.7  -4.   -4.9  -7.3  -8.6
 -10.7 -12.7 -13.4 -13.9 -14.7 -14.3 -12.2 -11.4 -10.8  -6.2  -5.2  -4.6
  -4.5  -2.9 -18.  -16.7 -17.4 -17.7 -18.3 -19.6 -20.  -19.9 -20.3 -21.2
 -21.1 -21.4 -20.7 -21.  -21.3 -23.2 -22.8 -23.3 -22.2 -20.6 -19.3 -16.
 -15.4 -16.2 -19.2 -18.7 -19.1 -13.6 -10.1 -10.4  -5.3  -3.3  -1.6   2.1
   0.5 -10.9 -11.1 -11.  -10.3 -16.6 -14.6  -4.2  -3.9  -6.3 -15.5 -15.9
 -16.4 -16.1 -12.1 -13.  -17.6 -18.4 -17.2 -19.5 -19.  -14.5 -13.2   2.7
   3.3   3.6   3.5   5.    4.2   3.4   2.8   2.4   1.3   1.   -0.1  -0.4
  -2.8  -7.9  -3.4  -3.8  -0.8   0.3   0.1  -1.2   0.9  -0.9  -2.   -1.9
  -2.2  -2.3 -15.7 -13.5 -13.8  -2.4 -13.1 -12.8  -2.7   5.8   6.1   5.4
   6.5   4.3   6.4   8.9   9.3   9.7  11.4   9.9   5.5   6.    7.6   6.8
   4.8   6.2   7.9  10.1  10.    5.7  10.3   6.7  10.2  12.1  12.7  11.7
  11.5  11.6  11.3  10.5  -2.6   5.9   9.    9.5  10.9  10.7   9.1   7.4
   8.3  10.6  10.8  12.3  12.4  11.8   8.7   9.2   8.4   6.6   7.5   5.1
   4.9   4.1   8.1   9.8   8.8   7.7  10.4  11.9  14.1  17.3  20.   21.7
  22.2  22.7  21.8  18.4  17.1  12.8  13.4  12.6  11.2  13.9  15.6  17.8
  19.8  18.5  17.   16.3  16.6  15.9  12.5   7.2   7.1   8.   14.9  16.5
  21.5  22.5  23.3  22.   19.7  17.5  18.1  16.   14.2  14.3  14.   13.8
  18.2  20.2  22.3  23.8  24.7  25.4  25.5  25.2  20.7  17.2  16.4  18.
  15.5  15.   11.   13.2  13.7  15.4  19.6  20.4  23.   22.8  21.4  16.7
  15.1  14.5  16.2  16.8  14.7   7.3   4.7   6.3   4.5   8.2   7.    6.9
   7.8   5.6   8.5   8.6   9.4  12.2  13.5  16.1  13.6  15.3  14.8  12.
  12.9  13.1  19.4  14.6  15.7  14.4  15.2  19.3  24.9  24.1  24.8  26.6
  27.4  27.8  27.3  26.7  26.4  20.5  19.5  19.   18.9  17.4  11.1  15.8
  18.7   9.6  13.   13.3  16.9  20.1  20.6  20.9  21.   19.9  19.2  17.6
  17.9  18.6  22.4  23.9  23.6  18.8  21.2  21.9  23.2  23.4  23.5  22.9
  18.3  20.3  20.8  17.7  19.1  25.6  25.8  26.   24.3  21.6  26.8  28.6
  29.5  30.9  31.2  30.8  29.2  26.9  25.9  24.   28.   28.4  28.8  28.9
  28.2  27.7  26.5  21.1  24.6  26.1  27.1  27.6  28.1  24.4  23.1  27.2
  26.2  21.3  22.1  22.6  24.2  23.7  25.3  28.7  29.4  30.1  29.6  29.1
  25.   24.5  25.7  27.   27.9  26.3  28.5  29.7  31.7  32.2  32.3  32.4
  30.6  25.1  31.8  31.6  32.6  33.   32.5  32.1  31.1  30.3  27.5  29.
  29.8  30.7  30.2  29.9  28.3  30.5  30.4  31.9  31.4  32.7  32.9  31.5
  29.3  30.   32.   32.8  -9.1]


Dew Point Temp_C
[ -3.9  -3.7  -3.4  -3.2  -3.3  -3.1  -3.6  -2.3  -2.1  -2.   -1.7  -1.1
  -0.4  -0.2   0.    1.    1.3   1.7   1.9   2.    1.5  -0.9  -1.5  -2.6
  -2.9  -4.1  -3.5  -6.2  -6.5  -6.8  -7.   -8.7  -9.5 -11.4 -12.1 -13.4
 -12.8 -14.7 -14.1 -16.  -17.2 -15.8 -18.7 -20.1 -19.1 -19.3 -19.5 -21.3
 -21.9 -22.2 -22.6 -22.4 -22.9 -23.2 -23.8 -24.8 -25.4 -24.6 -24.2 -24.1
 -24.  -22.5 -20.6 -21.1 -21.7 -19.  -16.3 -15.5 -13.2 -12.6 -12.7 -11.6
 -11.7 -10.2  -8.3  -7.7 -10.7  -9.7  -9.1 -10.1 -10.   -9.6 -12.  -14.4
 -15.4 -15.7 -14.8 -16.8 -17.3 -16.5 -16.1 -16.2 -16.7 -15.6 -14.3 -13.6
 -13.  -12.5 -12.2 -11.1 -10.8 -10.5  -9.   -8.   -7.8  -7.2  -6.9  -6.1
  -5.9  -5.4  -5.3  -5.   -3.   -4.6  -9.2 -10.3 -11.9 -12.4 -12.9 -13.3
 -13.8 -13.9 -13.7 -14.  -14.5 -11.   -6.6  -5.8  -5.1  -5.7  -5.6  -6.3
  -5.2  -2.5  -1.2  -0.7  -0.8  -7.9 -10.9 -17.8 -18.9 -19.4 -21.  -21.4
 -20.8 -20.9 -20.4 -20.  -19.9 -19.2 -18.1 -15.2 -15.  -13.1 -11.3  -8.9
  -8.6  -8.5  -7.6  -7.3  -8.1  -7.5  -7.4  -6.   -4.8  -4.5 -11.2 -19.8
 -23.5 -23.6 -23.9 -23.4 -24.3 -24.4 -25.8 -25.9 -26.  -26.2 -26.8 -26.6
 -26.1 -26.5 -28.5 -28.  -27.8 -25.5 -22.8 -22.7 -23.  -23.3 -21.5 -20.7
 -17.7 -16.9 -17.5 -18.3 -17.1 -14.6 -10.4  -9.9  -4.9   0.7  -4.   -8.2
 -16.6 -17.6 -18.  -18.4 -18.8 -18.2 -17.4 -21.6 -19.7 -14.9  -8.4  -9.3
 -20.3 -21.2 -22.1 -23.7 -25.6 -25.1 -24.5 -21.8 -22.  -20.2 -17.   -2.4
  -0.3   1.2   1.4   2.2   2.5   2.3   2.1   3.6  -0.6  -1.8  -1.9  -2.2
```

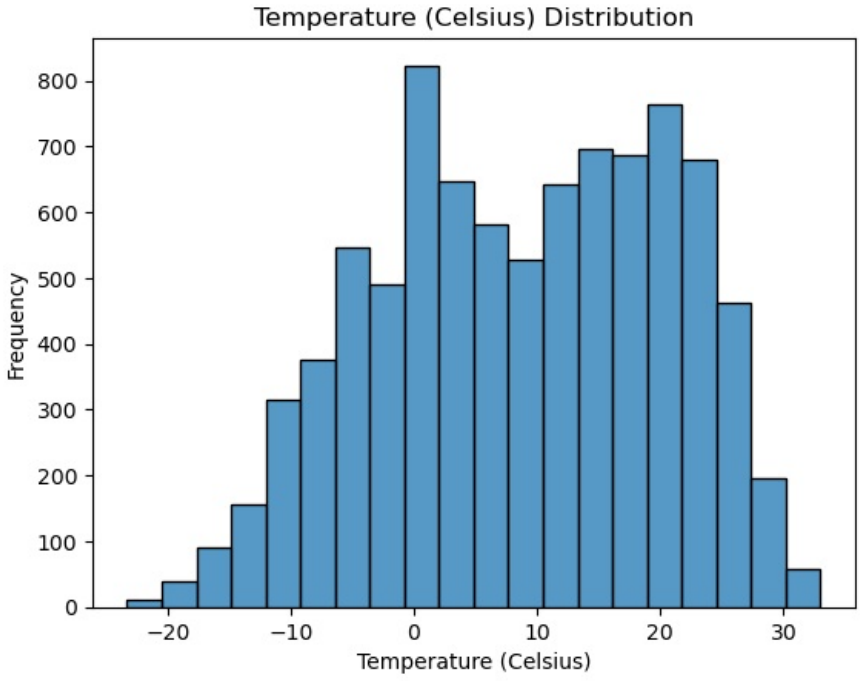
```
  -2.8 -11.8 -11.5 -13.5  -8.8  -4.2  -1.4  -1.   -1.3  -1.6  -2.7  -4.4
  -4.3 -15.1 -14.2 -15.3 -15.9 -12.3  -7.1  -6.7  -6.4 -17.9 -18.6  -4.7
  -3.8 -16.4  -5.5 -23.1 -25.3 -19.6 -10.6   0.1   0.2   0.3  -0.5   1.1
   1.6   0.9  -9.8   0.4  -9.4 -18.5 -22.3 -20.5   0.8   2.9   3.8   4.
   5.2   5.9   6.6   6.4   6.9   7.8   3.2   0.6   1.8   3.    4.5   3.3
   2.8  -0.1   0.5   3.5   3.7   3.4   2.7   2.6   5.3   6.2   4.3   4.4
   4.1   4.7   5.4   5.5   4.9   2.4   5.8   6.7   7.6   8.7   9.9  10.5
  10.4  10.7  11.   10.1   9.8   8.6   9.2   8.9   7.9   8.5   8.3   9.
   8.1   9.4  11.6  12.   10.    9.7   9.1  10.8  11.8  12.3  12.1  11.7
  10.9  10.3   8.8  11.5  12.5  12.6   9.5   7.4   8.4  11.4  11.9  12.8
  12.2   6.8   7.2   7.1   7.5   6.5   6.3   4.6   4.8   5.7   3.1   8.
  10.6  11.2  11.1  13.3  13.5  13.6  12.4  11.3  15.6  15.8  14.7  14.2
   9.6   6.1   3.9   4.2   5.1   5.6   7.    8.2   7.7   7.3  10.2  13.
  12.9   9.3   5.    6.   12.7  13.1  13.8  13.9  14.5  15.   14.3  14.6
  14.4  15.2  15.4  15.3  15.1  14.   13.2  14.1  13.4  16.   16.2  16.4
  16.1  16.5  16.9  16.3  17.3  16.7  15.9  17.   17.7  17.5  15.5  15.7
  16.8  17.2  17.1  18.3  18.5  18.1  14.8  18.7  18.4  19.   17.4  17.6
  17.8  17.9  13.7  18.   16.6  14.9  18.9  19.2  19.4  19.1  19.3  18.8
  18.2  19.8  20.   20.4  19.6  20.3  19.9  21.1  21.   20.2  20.1  18.6
  20.8  20.6  20.7  19.7  20.9  21.2  21.7  21.9  20.5  19.5  21.3  22.3
  23.1  22.   22.2  22.6  23.2  23.   22.9  24.4  21.8]


Rel Hum_%
[ 86  87  89  88  85  91  82  81  84  79  77  72  71  69  70  68  67  66
  56  57  59  55  54  58  65  53  60  61  63  52  50  49  62  51  75  73
  80  83  76  64  74  78  47  90  48  45  46  92  93  42  43  40  39  44
  94  37  41  38  96  98  99  97  95 100  29  28  27  19  20  18  25  26
  30  24  34  33  31  32  35  36  21  22  23]


Wind Speed_km/h
[ 4  7  6  9 15 13 20 22 19 24 30 35 39 32 33 26 44 43 48 37 28 17 11  0
 83 70 57 46 41 52 50 63 54  2]


Visibility_km
[ 8.   4.   4.8  6.4  1.2 12.9 16.1 25.  19.3 24.1  9.7 11.3 48.3  3.2
  2.8  2.4  2.   0.8  0.6  1.   1.6  3.6  0.2  0.4]


Press_kPa
[101.24 101.26 101.27 101.23 101.29 101.2  101.15 100.98 100.79 100.58
 100.31 100.07  99.93  99.81  99.74  99.68  99.5   99.39  99.32  99.31
  99.26  99.3   99.21  99.18  99.14  99.19  99.27  99.33  99.41  99.66
  99.86 100.   100.15 100.26 100.27 100.35 100.43 100.53 100.61 100.68
 100.76 100.85 100.95 101.07 101.33 101.34 101.38 101.44 101.51 101.58
 101.64 101.74 101.82 101.86 101.87 101.88 101.89 101.77 101.75 101.73
 101.68 101.54 101.41 101.25 100.97 100.89 100.69 100.65 100.54 100.5
 100.42 100.32 100.29 100.28 100.24 100.21 100.19 100.39 100.45 100.41
 100.38 100.4  100.46 100.52 100.6  100.71 100.8  100.83 100.81 100.84
 100.7  100.51 100.47 100.36 100.23 100.13 100.06 100.1  100.12 100.16
 100.11 100.08 100.05 100.09 100.33 100.48 100.62 100.72 101.13 101.21
 101.47 101.59 101.7  101.81 101.92 101.9  101.94 101.97 102.04 102.09
 102.17 102.23 102.26 102.28 102.22 102.13 102.15 102.11 102.02 101.93
 101.8  101.4  101.05 100.96 100.9  100.77 100.64 100.02 100.04 100.91
 101.04 101.32 101.43 101.49 101.57 101.66 101.72 101.78 101.63 101.56
 101.61 101.6  101.19 101.17 101.08 101.02 100.93 100.22  99.97  99.9
  99.88  99.83  99.76  99.72  99.64  99.56  99.47  99.4   99.24  99.22
  99.13  99.06  98.94  98.84  98.69  98.56  98.44  98.22  98.07  97.99
  98.1   98.16  98.23  98.32  98.6   98.89  99.09  99.28  99.51  99.67
  99.85 100.01 100.73 101.14 101.16 101.18 101.3  101.36 101.46 101.62
 101.65 101.79 101.99 102.12 102.19 102.37 102.45 102.57 102.66 102.68
 102.67 102.65 102.71 102.79 102.85 102.89 102.94 102.98 103.02 103.07
 103.09 103.05 103.08 103.01 102.96 102.9  102.75 102.62 102.44 101.71
 101.31 101.12 100.94 100.88 100.75 100.59  99.69  99.57  99.38  98.98
  98.71  98.47  98.31  98.36  98.62  99.    99.36  99.7  100.78 100.92
 101.   101.09 101.45 101.67 101.83 101.85 101.84 101.42 101.22 101.03
 100.66 100.63 100.87 101.96 101.98 102.21 102.27 102.33 102.34 102.36
 102.29 102.18 102.08 102.06 102.03 102.01 102.16 102.24 102.47 102.52
 102.54 102.64 102.84 102.91 103.04 102.97 102.86 102.74 102.6  102.38
 102.14 102.1  101.76 101.69 101.01 100.86 100.25 100.37 100.49 100.82
 101.06 101.11 101.37 101.52 102.05 102.07 101.95 101.53 101.28 100.99
  99.98  99.8   99.61  99.34  99.08  98.91  98.76  98.65  98.74  98.97
  99.54  99.75 100.03 100.34 100.74 100.14  99.95  99.87  99.96 100.67
 101.55 100.56 102.31 102.35 102.39 102.4  102.42 102.51 102.59 102.61
 102.46 102.25 102.32 101.91 101.48 100.57 101.39 102.2  101.1  100.55
 100.3  100.44 102.   101.5  100.2   99.77  99.59  99.52  99.29  99.23
  99.17  99.11  99.16  99.2   99.42  99.49  99.53  99.6   99.82  99.91
  99.07  98.88  98.81  98.55  98.39  98.29  98.18  98.06  98.    97.97
  98.03  98.11  98.2   98.33  98.45  98.75  99.05 102.41 102.49 102.55
 102.63 102.72 102.58 102.5  102.69 102.53 102.56 102.3   99.55  99.02
  98.79  98.7   98.86  98.82  98.73  98.68  98.67  98.92  98.96  99.46
  99.63  99.84  99.94 100.18 102.7  103.   103.06 103.1  103.12 102.81
  99.99  99.78 102.73 102.95 102.99 101.35 100.17 102.48 102.43  99.45
  99.48  99.92  99.89  99.71  99.12  99.1   99.43  99.37  99.58  99.15
  98.9   98.8   98.66  98.61  98.54  98.51  98.58  98.64  98.5   98.53
  98.63  98.72  98.78  99.01  99.79  99.65  99.62  99.73  99.44  99.35
  99.25 103.15 103.25 103.29 103.31 103.34 103.2  103.16 103.17 103.18
```

```
 102.93 103.13 103.24 103.28 103.39 103.47 103.51 103.52 103.5  103.43
 103.46 103.49 103.54 103.56 103.58 103.59 103.63 103.61 103.65 103.38
 103.36 103.3  103.27 103.22 103.11 103.03 102.92 102.83 102.78 102.82
 103.14 103.26 103.21 103.19 103.23  97.93  97.76  97.56  97.52  97.58
  97.64  97.75  97.79  97.81  97.84  97.89  97.98  98.19]


Weather
['Fog' 'Freezing Drizzle,Fog' 'Mostly Cloudy' 'Cloudy' 'Rain'
 'Rain Showers' 'Mainly Clear' 'Snow Showers' 'Snow' 'Clear'
 'Freezing Rain,Fog' 'Freezing Rain' 'Freezing Drizzle' 'Rain,Snow'
 'Moderate Snow' 'Freezing Drizzle,Snow' 'Freezing Rain,Snow Grains'
 'Snow,Blowing Snow' 'Freezing Fog' 'Haze' 'Rain,Fog' 'Drizzle,Fog'
 'Drizzle' 'Freezing Drizzle,Haze' 'Freezing Rain,Haze' 'Snow,Haze'
 'Snow,Fog' 'Snow,Ice Pellets' 'Rain,Haze' 'Thunderstorms,Rain'
 'Thunderstorms,Rain Showers' 'Thunderstorms,Heavy Rain Showers'
 'Thunderstorms,Rain Showers,Fog' 'Thunderstorms' 'Thunderstorms,Rain,Fog'
 'Thunderstorms,Moderate Rain Showers,Fog' 'Rain Showers,Fog'
 'Rain Showers,Snow Showers' 'Snow Pellets' 'Rain,Snow,Fog'
 'Moderate Rain,Fog' 'Freezing Rain,Ice Pellets,Fog'
 'Drizzle,Ice Pellets,Fog' 'Drizzle,Snow' 'Rain,Ice Pellets'
 'Drizzle,Snow,Fog' 'Rain,Snow Grains' 'Rain,Snow,Ice Pellets'
 'Snow Showers,Fog' 'Moderate Snow,Blowing Snow']
```

Visualization

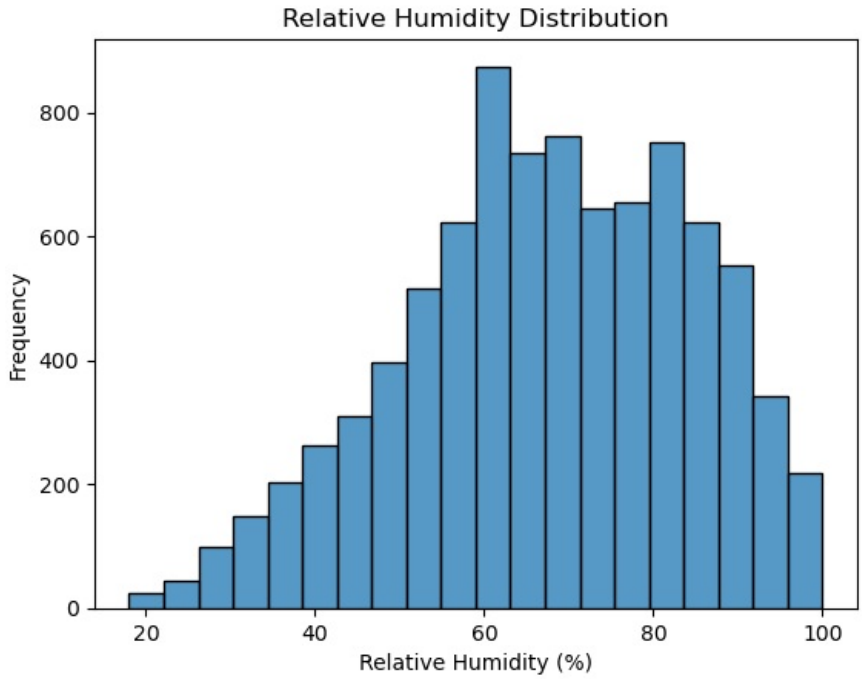
Temperature distribution¶

In [21]:
```
sns.histplot(df['Temp_C'], bins=20)
plt.title('Temperature (Celsius) Distribution')
plt.xlabel('Temperature (Celsius)')
plt.ylabel('Frequency')
plt.show()
```



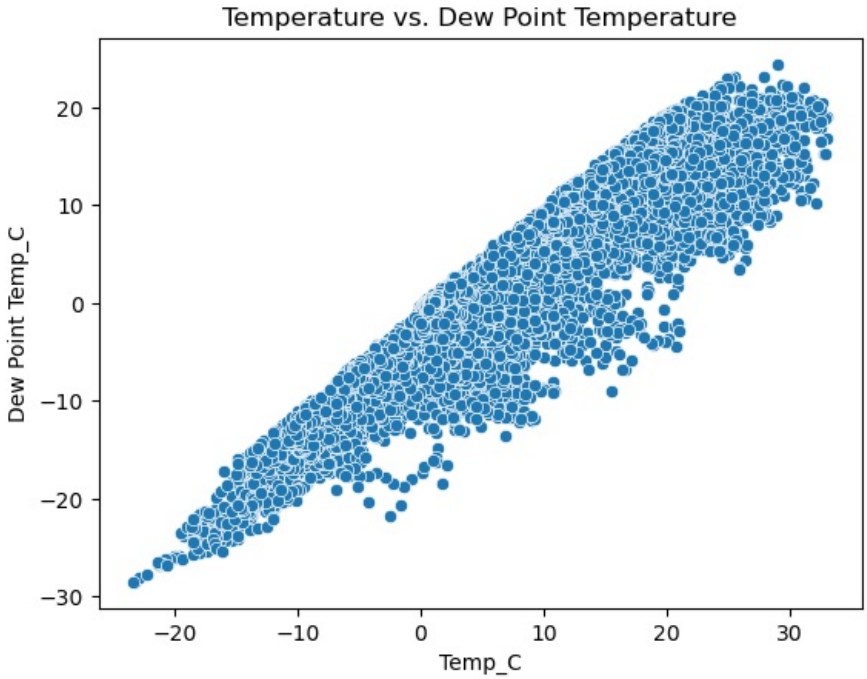
Relative Humidity Distribution

In [25]:
```
sns.histplot(df['Rel Hum_%'], bins=20)
plt.title('Relative Humidity Distribution')
plt.xlabel('Relative Humidity (%)')
plt.ylabel('Frequency')
plt.show()
```



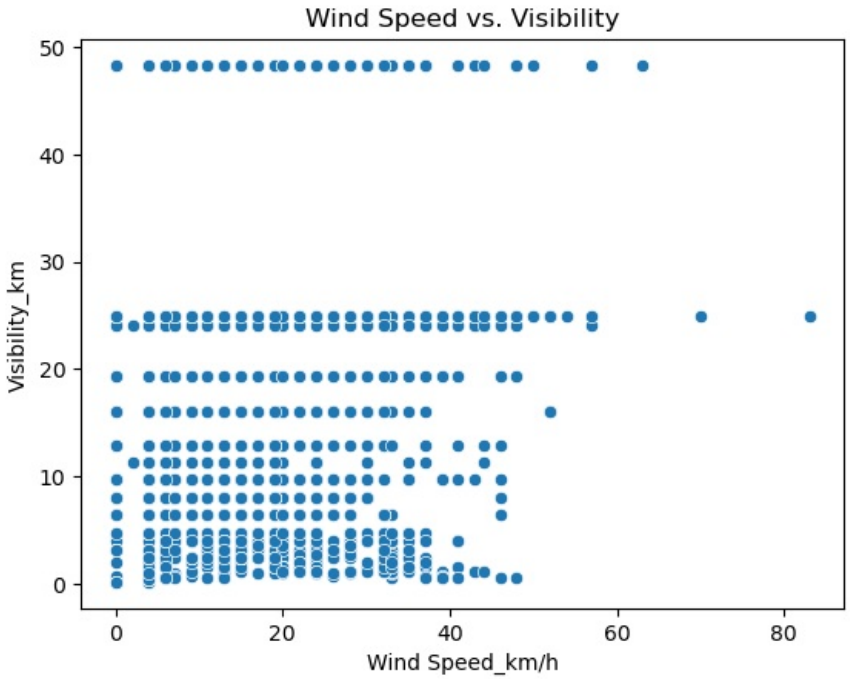
Temperature vs. Dew Point Temperature

In [26]:
```
sns.scatterplot(x='Temp_C', y='Dew Point Temp_C', data=df)
plt.title('Temperature vs. Dew Point Temperature')
plt.show()
```



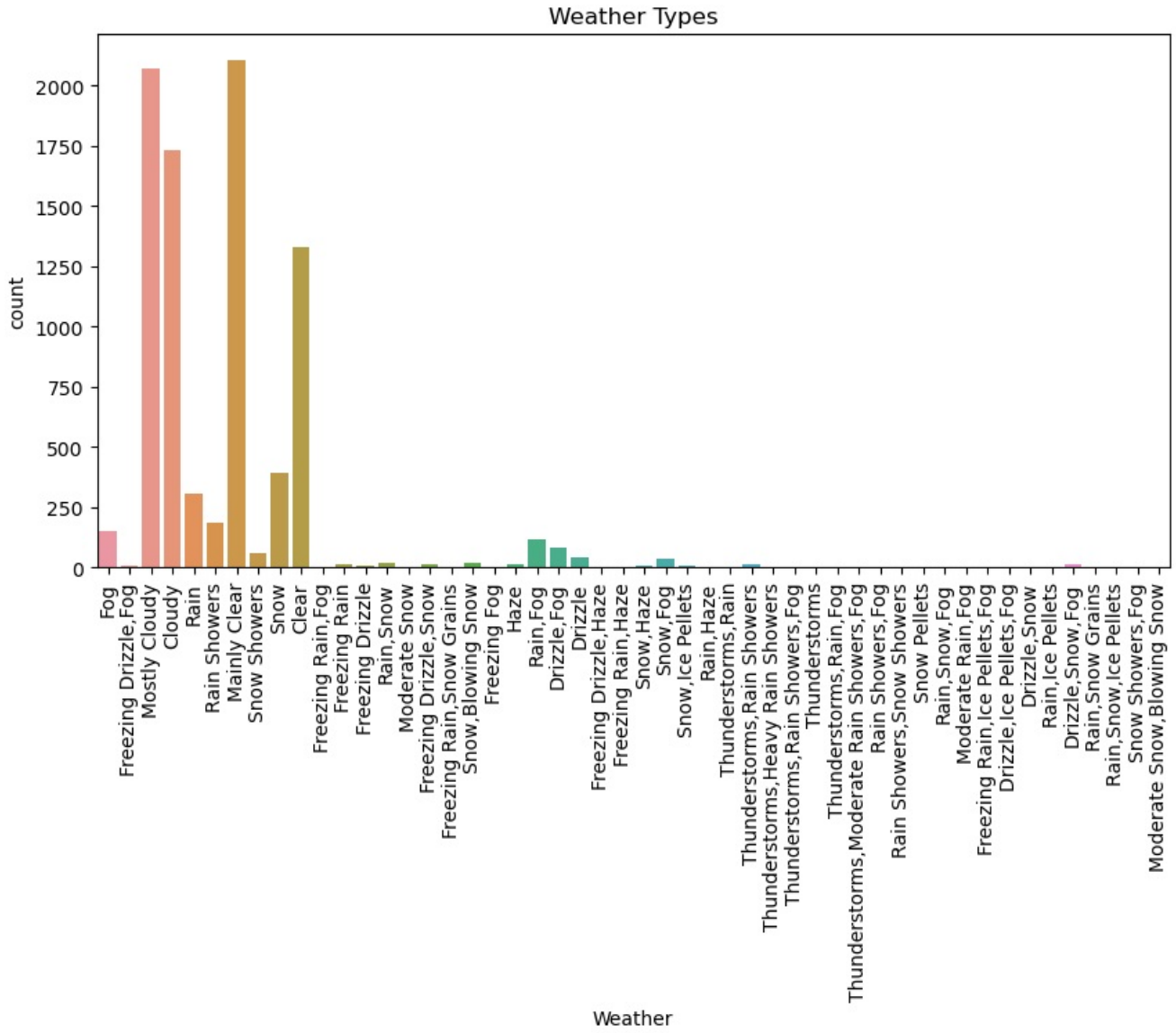
Wind Speed vs. Visibility

In [27]:
```
sns.scatterplot(x='Wind Speed_km/h', y='Visibility_km', data=df)
plt.title('Wind Speed vs. Visibility')
plt.show()
```



Weather Types

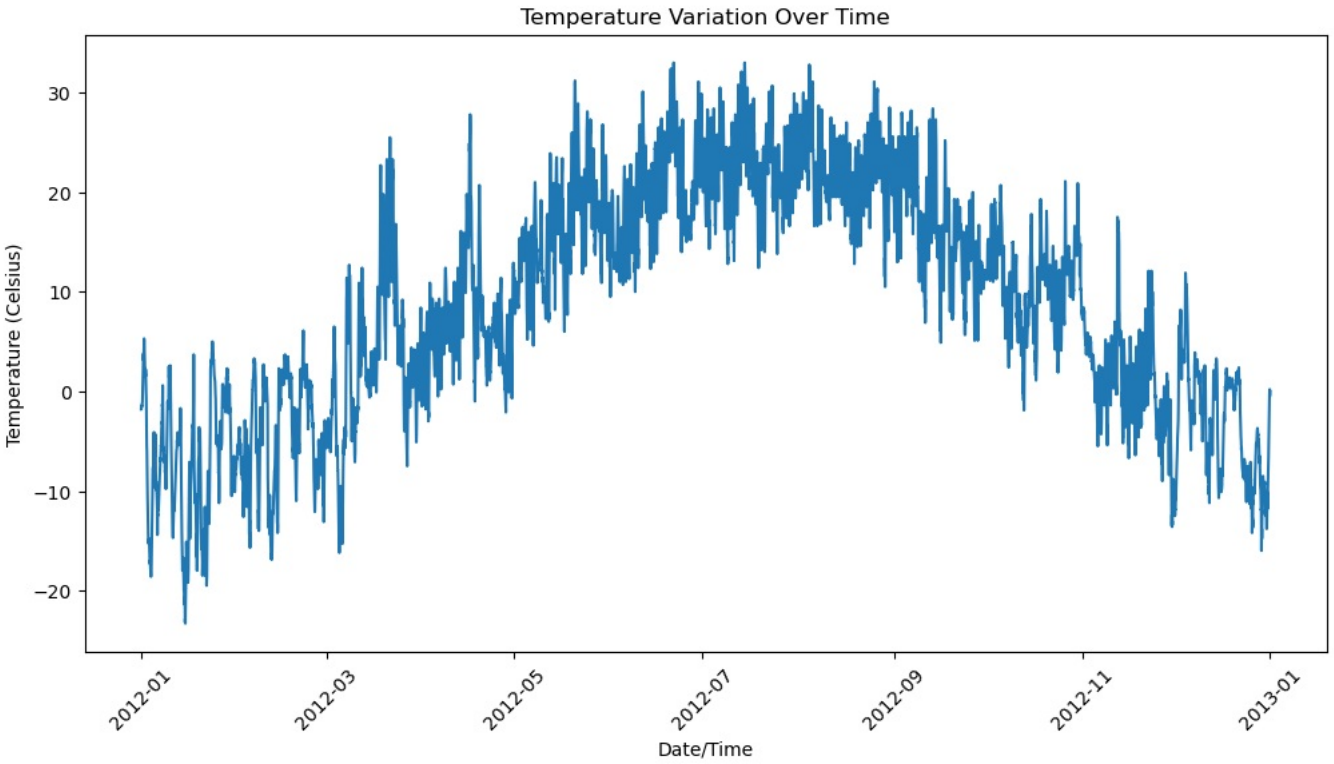
In [29]:
```
plt.figure(figsize=(10, 5))
sns.countplot(x='Weather', data=df)
plt.xticks(rotation=90)
plt.title('Weather Types')
plt.show()
```



Temperature Variation Over Time

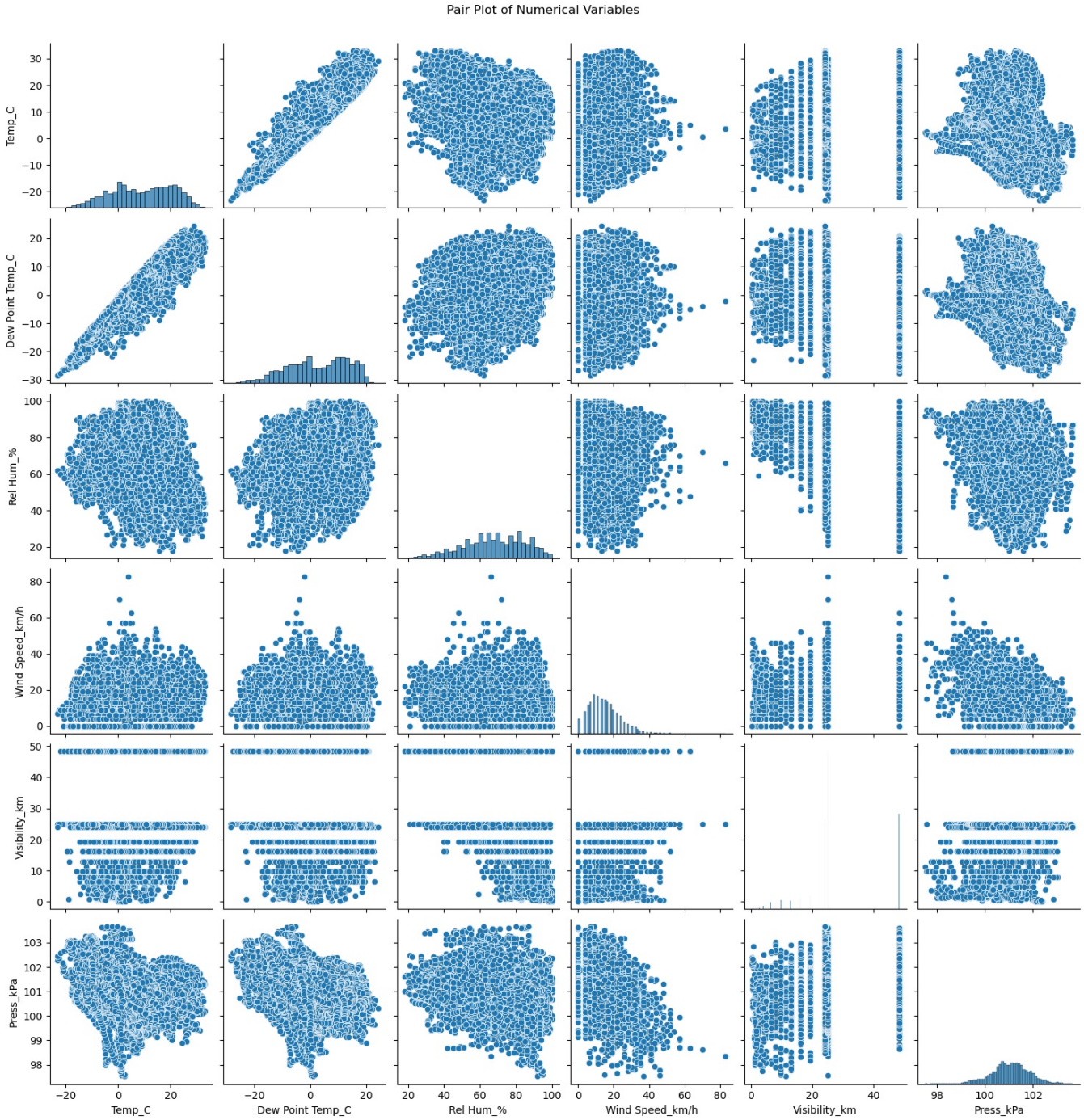
In [30]:
```
df['Date/Time'] = pd.to_datetime(df['Date/Time'])
```

In [30]:
```
df['Date/Time'] = pd.to_datetime(df['Date/Time'])

plt.figure(figsize=(12, 6))
sns.lineplot(x='Date/Time', y='Temp_C', data=df)
plt.title('Temperature Variation Over Time')
plt.xlabel('Date/Time')
plt.ylabel('Temperature (Celsius)')
plt.xticks(rotation=45)
plt.show()
```



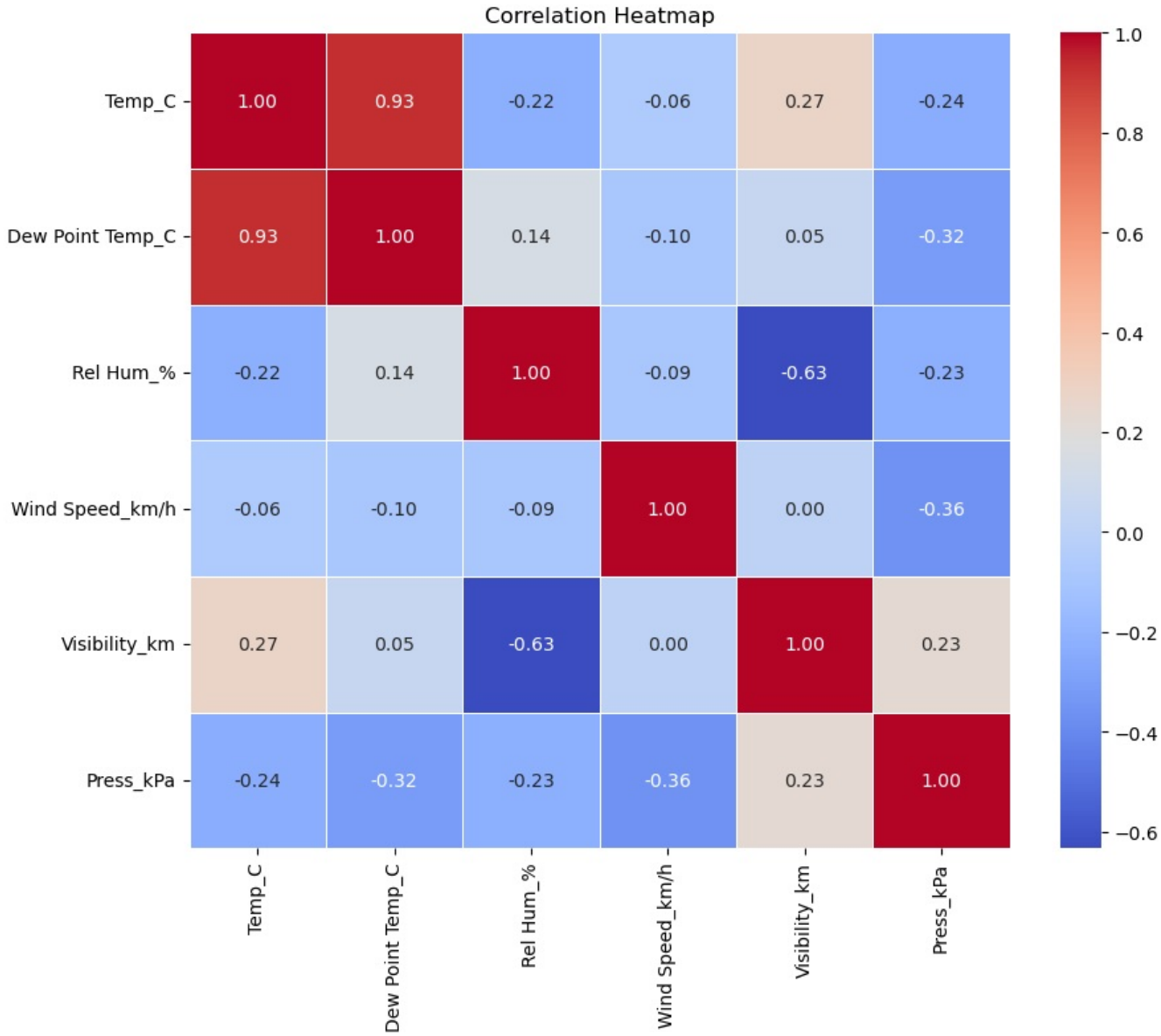
Pair Plot of Numerical Variables

In [33]:
```
numerical_columns = ['Temp_C', 'Dew Point Temp_C', 'Rel Hum_%', 'Wind Speed_km/h', 'Visibility_km', 'Press_kPa'

sns.pairplot(df[numerical_columns])
plt.suptitle('Pair Plot of Numerical Variables', y=1.02)
plt.show()
```



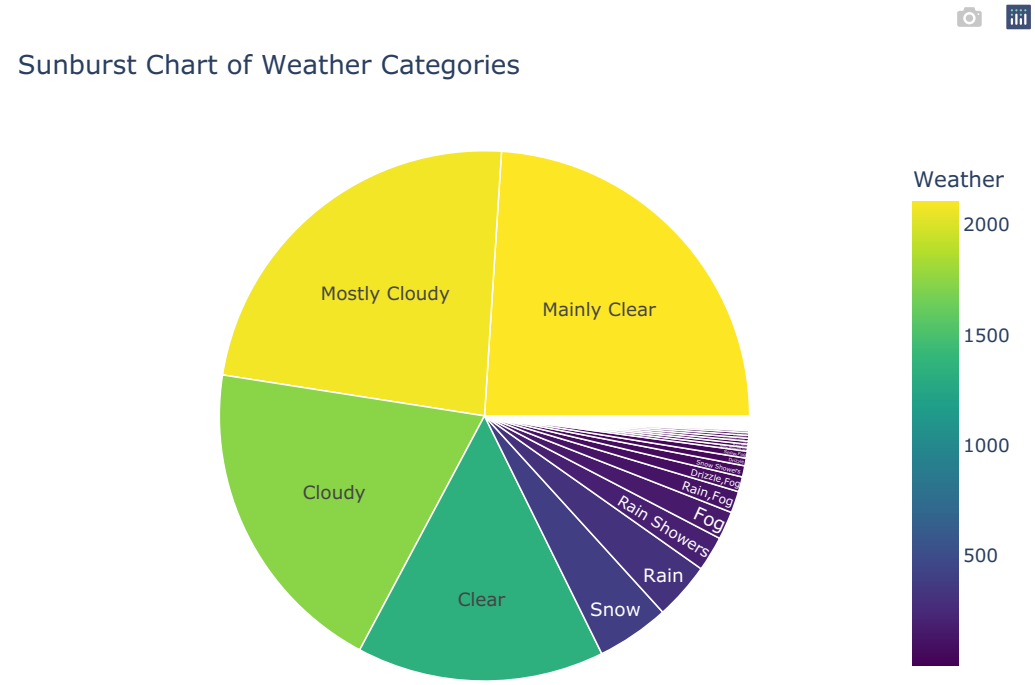
Correlation Heatmap

In [35]:
```
correlation_matrix = df[numerical_columns].corr()

plt.figure(figsize=(10, 8))
sns.heatmap(correlation_matrix, annot=True, cmap='coolwarm', fmt='.2f', linewidths=0.5)
plt.title('Correlation Heatmap')
plt.show()
```



Sunburst Chart of Weather Categories

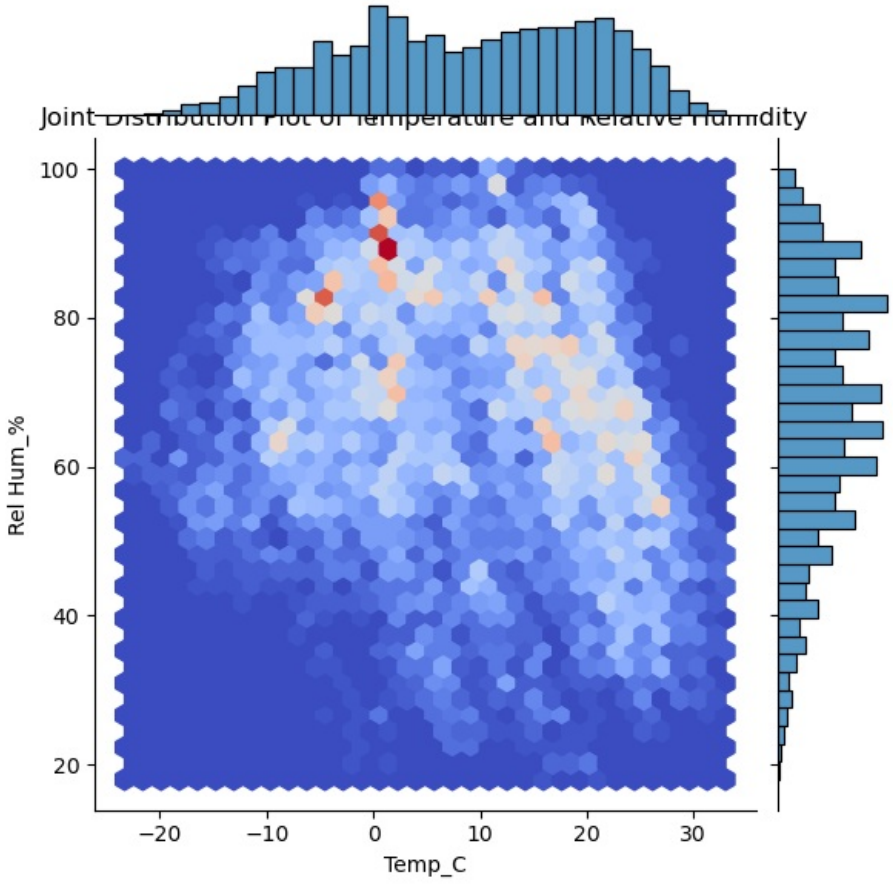
In [37]:
```
import plotly.express as px

weather_counts = df['Weather'].value_counts()

fig = px.sunburst(
    data_frame=weather_counts.reset_index(),
    path=['index'],
    values='Weather',
    color='Weather',
    color_continuous_scale='viridis',
    title='Sunburst Chart of Weather Categories'
)
fig.show()
```



Joint Distribution Plot of Temperature and Relative Humidity

In [38]:
```
plt.figure(figsize=(8, 6))
sns.jointplot(x='Temp_C', y='Rel Hum_%', data=df, kind='hex', cmap='coolwarm')
plt.title('Joint Distribution Plot of Temperature and Relative Humidity')
plt.show()
```

```
<Figure size 800x600 with 0 Axes>
```

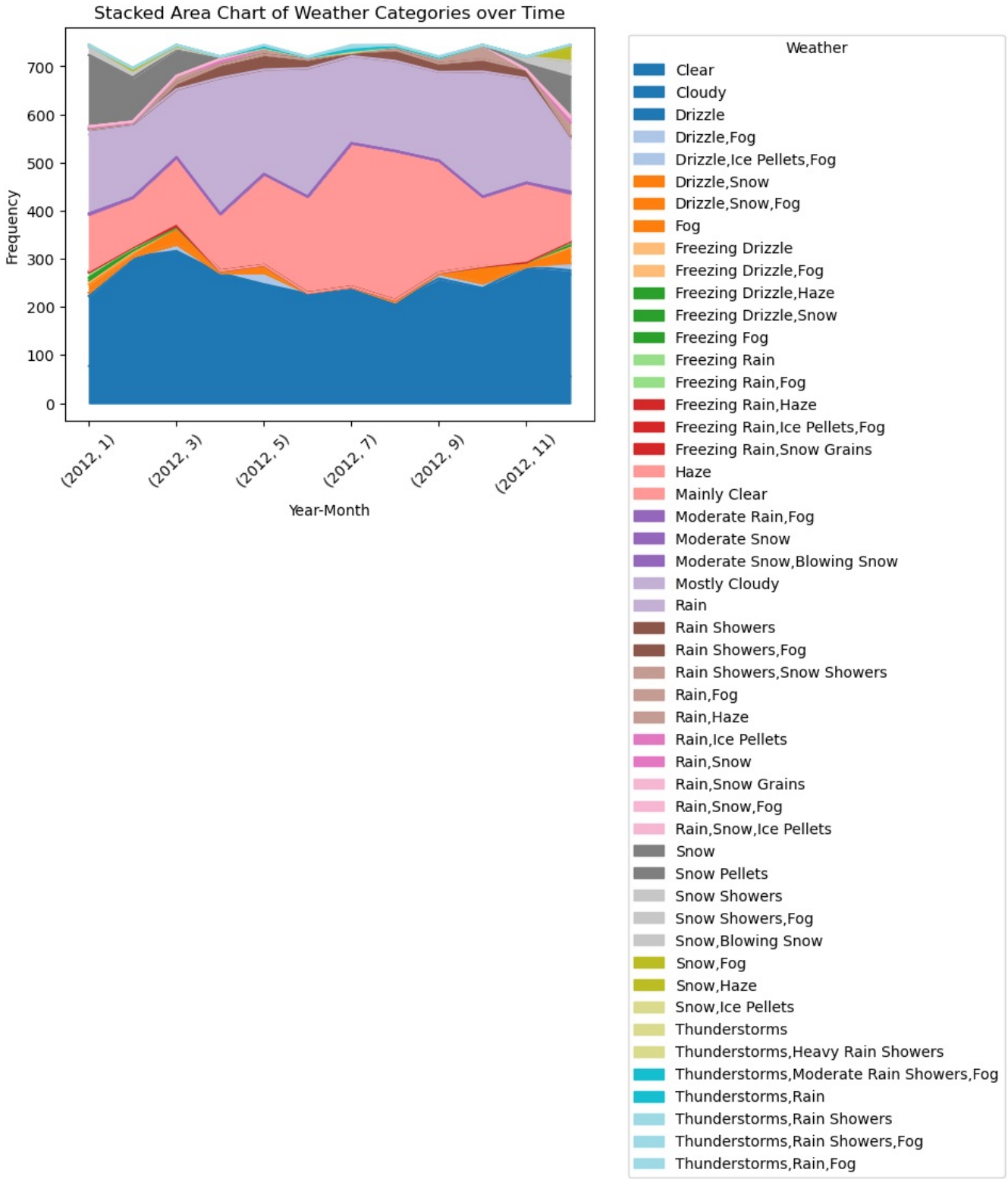


Stacked Area Chart of Weather Categories over Time

In [40]:
```
df['Date/Time'] = pd.to_datetime(df['Date/Time'])

df['Year'] = df['Date/Time'].dt.year
df['Month'] = df['Date/Time'].dt.month

weather_counts_by_month = df.groupby(['Year', 'Month', 'Weather'])['Weather'].count().unstack(fill_value=0)
```

```
plt.figure(figsize=(12, 6))
weather_counts_by_month.plot.area(stacked=True, colormap='tab20')
plt.title('Stacked Area Chart of Weather Categories over Time')
plt.xlabel('Year-Month')
plt.ylabel('Frequency')
plt.legend(title='Weather', bbox_to_anchor=(1.05, 1), loc='upper left')
plt.xticks(rotation=45)
plt.show()
```

```
<Figure size 1200x600 with 0 Axes>
```



In [ ]: