```
In [1]: import pandas as pd
```

IMPORT AND PRINT DATA SET

```
In [2]: data = pd.read_csv("bottle.csv")
```

```
C:\ProgramData\Anaconda3\lib\site-packages\IPython\core\interactiveshell.py:3
165: DtypeWarning: Columns (47,73) have mixed types.Specify dtype option on i
mport or set low_memory=False.
  has_raised = await self.run_ast_nodes(code_ast.body, cell_name,
```

Out[2]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2n
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.500	33.4400	
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.460	33.4400	
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.460	33.4370	
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.450	33.4200	
4	1	5	054.0	19-4903CR-	20	10.450	33.4210	

SHAPE

```
In [3]:
```

Out[3]: (864863, 74)

SIZE

```
In [4]:
```

Out[4]: 63999862

PRINT FIRST 10 VALUES

In [5]:

Out[5]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	S
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	NaN	2
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	NaN	2
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN	2
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN	2
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN	2
5	1	6	054.0 056.0	19-4903CR-HY-060-0930-05400560-0030A-7	30	10.45	33.431	NaN	2
6	1	7	054.0 056.0	19-4903CR-HY-060-0930-05400560-0039A-3	39	10.45	33.440	NaN	2
7	1	8	054.0 056.0	19-4903CR-HY-060-0930-05400560-0050A-7	50	10.24	33.424	NaN	2
8	1	9	054.0 056.0	19-4903CR-HY-060-0930-05400560-0058A-3	58	10.06	33.420	NaN	2
9	1	10	054.0 056.0	19-4903CR-HY-060-0930-05400560-0075A-7	75	9.86	33.494	NaN	2

10 rows × 74 columns

PRINT LAST 7 VALUES

In [6]:

Out[6]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2m
864858	34404	864859	093.4 026.4	20-1611SR-MX-310-2239-09340264-0000A-7	0	18.744	33.4083	5
864859	34404	864860	093.4 026.4	20-1611SR-MX-310-2239-09340264-0002A-3	2	18.744	33.4083	5
864860	34404	864861	093.4 026.4	20-1611SR-MX-310-2239-09340264-0005A-3	5	18.692	33.4150	5
864861	34404	864862	093.4 026.4	20-1611SR-MX-310-2239-09340264-0010A-3	10	18.161	33.4062	5
864862	34404	864863	093.4 026.4	20-1611SR-MX-310-2239-09340264-0015A-3	15	17.533	33.3880	5

5 rows × 74 columns

DESCRIPTION OF TABLE

In [7]:

Out[7]:

	Cst_Cnt	Btl_Cnt	Depthm	T_degC	Salnty	O2ml_
count	864863.000000	864863.000000	864863.000000	853900.000000	817509.000000	696201.00000
mean	17138.790958	432432.000000	226.831951	10.799677	33.840350	3.39246
std	10240.949817	249664.587267	316.050259	4.243825	0.461843	2.07325
min	1.000000	1.000000	0.000000	1.440000	28.431000	-0.01000
25%	8269.000000	216216.500000	46.000000	7.680000	33.488000	1.36000
50%	16848.000000	432432.000000	125.000000	10.060000	33.863000	3.44000
75%	26557.000000	648647.500000	300.000000	13.880000	34.196900	5.50000
max	34404.000000	864863.000000	5351.000000	31.140000	37.034000	11.13000

8 rows × 70 columns

FIND NULL VALUES

In [8]:

Out[8]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat
0	False	False	False	False	False	False	False	True	False	True
1	False	False	False	False	False	False	False	True	False	True
2	False	False	False	False	False	False	False	True	False	True
3	False	False	False	False	False	False	False	True	False	True
4	False	False	False	False	False	False	False	True	False	True
...	...	...	...	...	...	...	...	...	...	...
864858	False	False	False	False	False	False	False	False	False	False
864859	False	False	False	False	False	False	False	False	False	False
864860	False	False	False	False	False	False	False	False	False	False
864861	False	False	False	False	False	False	False	False	False	False
864862	False	False	False	False	False	False	False	False	False	False

864863 rows × 74 columns

FILL NULL VALUES

In [9]:

Out[9]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2m
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.500	33.4400	1
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.460	33.4400	1
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.460	33.4370	1
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.450	33.4200	1
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.450	33.4210	1
...	...	...	...	...	...	...	...	
864858	34404	864859	093.4 026.4	20-1611SR-MX-310-2239-09340264-0000A-7	0	18.744	33.4083	5
864859	34404	864860	093.4 026.4	20-1611SR-MX-310-2239-09340264-0002A-3	2	18.744	33.4083	5
864860	34404	864861	093.4 026.4	20-1611SR-MX-310-2239-09340264-0005A-3	5	18.692	33.4150	5
864861	34404	864862	093.4 026.4	20-1611SR-MX-310-2239-09340264-0010A-3	10	18.161	33.4062	5
864862	34404	864863	093.4 026.4	20-1611SR-MX-310-2239-09340264-0015A-3	15	17.533	33.3880	5

864863 rows × 74 columns

In [10]:
```python
data.columns
a=data.head(50)
```

Out[10]:

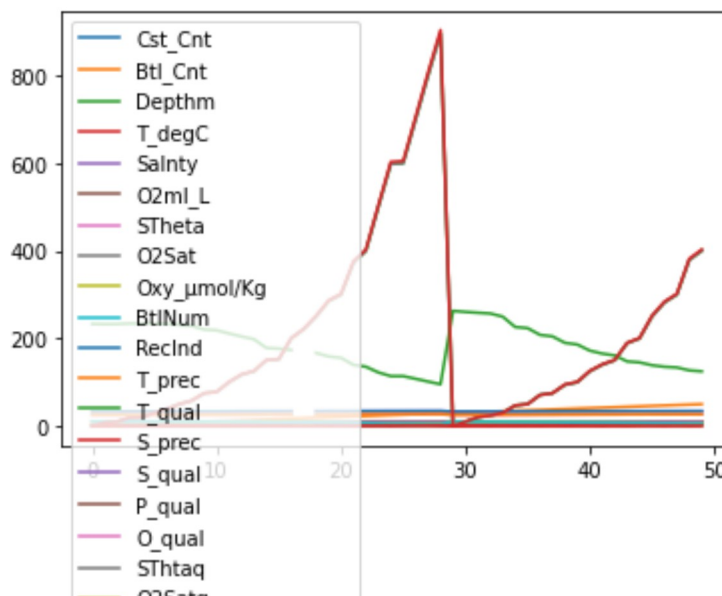|	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	NaN
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	NaN
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN
5	1	6	054.0 056.0	19-4903CR-HY-060-0930-05400560-0030A-7	30	10.45	33.431	NaN
6	1	7	054.0 056.0	19-4903CR-HY-060-0930-05400560-0039A-3	39	10.45	33.440	NaN

In [11]:

Out[11]: RangeIndex(start=0, stop=864863, step=1)
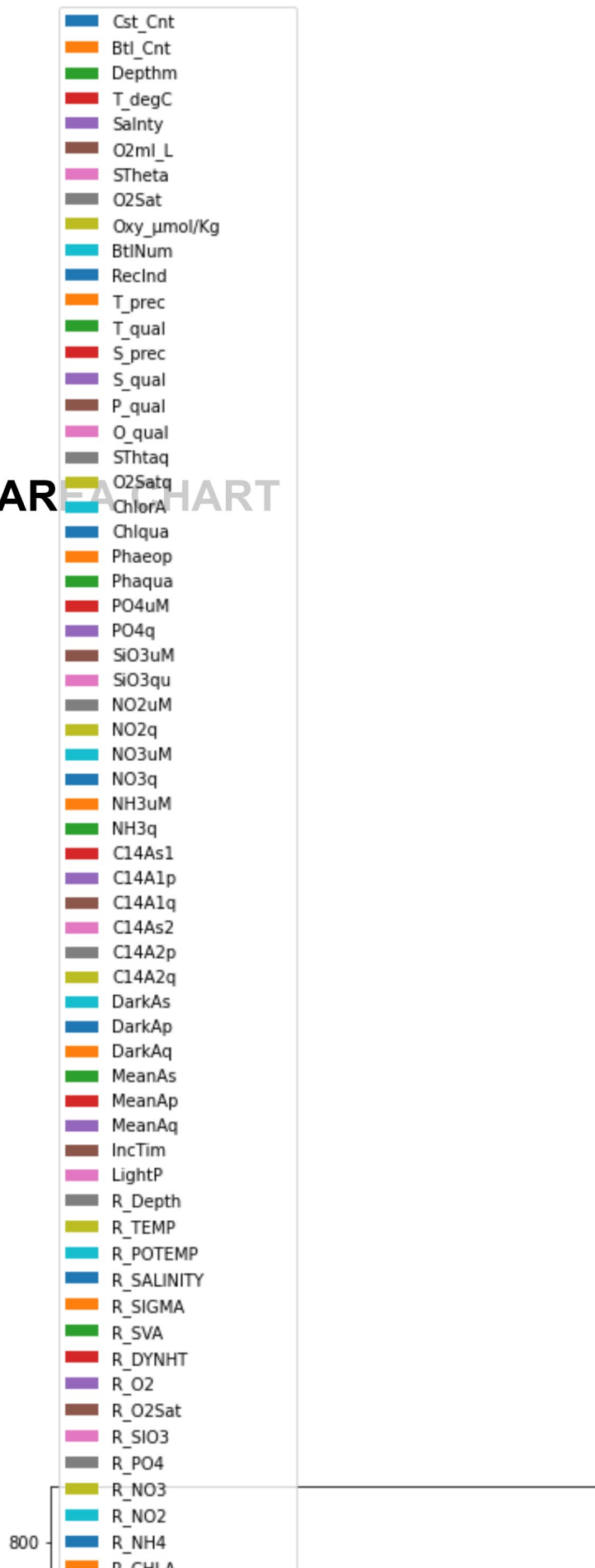
LINE PLOT

In [12]:

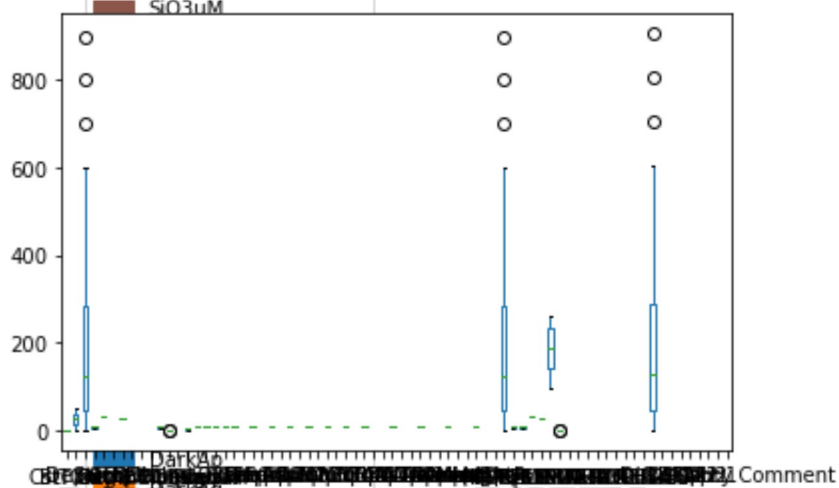Out[12]: <AxesSubplot:>

BAR CHART

In [13]:
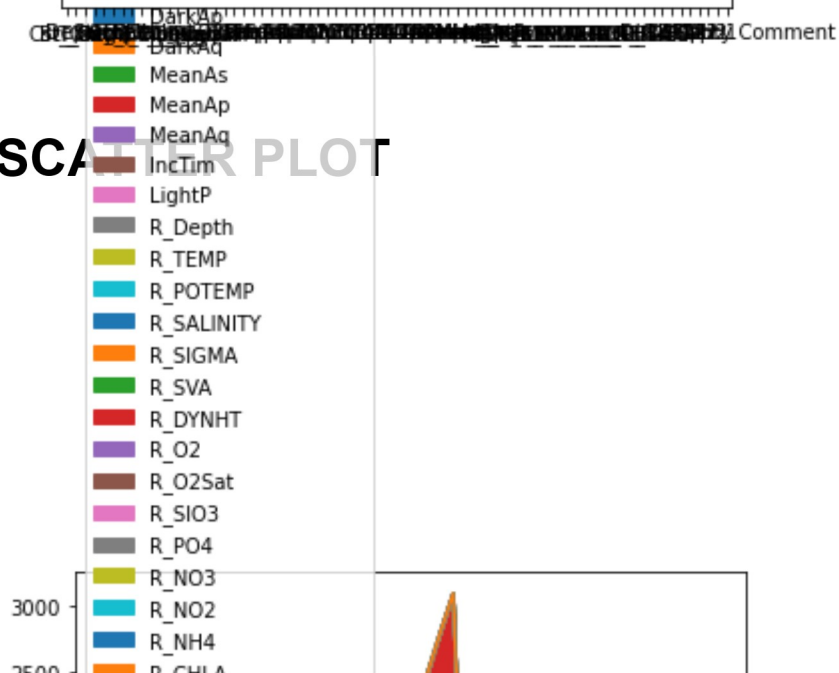
Out[13]: <AxesSubplot:>

In [14]:

Out[14]: <AxesSubplot:>

BOX PLOT

Legend entries:
- Cst_Cnt
- Btl_Cnt
- Depthm
- T_degC
- Salnty
- O2ml_L
- STheta
- O2Sat
- Oxy_µmol/Kg
- BtlNum
- RecInd
- T_prec
- T_qual
- S_prec
- S_qual
- P_qual
- O_qual
- SThtaq
- O2Satq
- ChlorA
- Chlqua
- Phaeop
- Phaqua
- PO4uM
- PO4q
- SiO3uM

In [15]:

Out[15]: <AxesSubplot:>

Legend entries (continued):
- DarkAs
- DarkAq
- MeanAs
- MeanAp
- MeanAq
- IncTim
- LightP
- R_Depth
- R_TEMP
- R_POTEMP
- R_SALINITY
- R_SIGMA
- R_SVA
- R_DYNHT
- R_O2
- R_O2Sat
- R_SIO3
- R_PO4
- R_NO3
- R_NO2
- R_NH4
- R_CHLA

SCATTER PLOT

In [16]:

Out[16]: <AxesSubplot:xlabel='Btl_Cnt', ylabel='Salnty'>

PIE CHART

In [17]:

Out[17]: <AxesSubplot:ylabel='R_PRES'>

In [ ]: