24/07/2023

In [14]:
```
import numpy as np
import pandas as pd
```

In [13]:
```
x=pd.read_csv(r"C:\Users\user\Downloads\9_bottle.csv")
x
```

864860	34404	864861	093.4 026.4	20-1611SR-MX-310-2239-09340264-0005A-3	5	18.692	33.4150	5.796	23.88911	1(
864861	34404	864862	093.4 026.4	20-1611SR-MX-310-2239-09340264-0010A-3	10	18.161	33.4062	5.816	24.01426	1(
864862	34404	864863	093.4 026.4	20-1611SR-MX-310-2239-09340264-0015A-3	15	17.533	33.3880	5.774	24.15297	1(

864863 rows × 74 columns

In [15]:
```
x=x.head(500)
```

In [16]:
```
x.dtypes
```

Out[16]:
```
Cst_Cnt                 int64
Btl_Cnt                 int64
Sta_ID                 object
Depth_ID               object
Depthm                  int64
                        ...
TA1                   float64
TA2                   float64
pH2                   float64
pH1                   float64
DIC Quality Comment    object
Length: 74, dtype: object
```

In [17]:
```
x.head()
```

2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN	25.654	NaN	...
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN	25.643	NaN	...
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN	25.643	NaN	...

5 rows × 74 columns

In [18]:
```
x.tail()
```

497	16	498	063.3 058.0	19-4903CR-HY-065-1030-06330580-0800A-7	800	4.48	34.311	NaN	27.194	NaN
498	16	499	063.3 058.0	19-4903CR-HY-065-1030-06330580-0900A-7	900	4.21	34.319	NaN	27.230	NaN
499	16	500	063.3 058.0	19-4903CR-HY-065-1030-06330580-1000A-7	1000	3.95	34.329	NaN	27.265	NaN

5 rows × 74 columns

In [19]:
```
x.columns
```

Out[19]:
```
Index(['Cst_Cnt', 'Btl_Cnt', 'Sta_ID', 'Depth_ID', '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', 'SiO3qu', 'NO2uM', 'NO2q', 'NO3uM', 'NO3q', 'NH3uM',
       'NH3q', 'C14As1', 'C14A1p', 'C14A1q', 'C14As2', 'C14A2p', 'C14A2q',
       'DarkAs', 'DarkAp', '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', 'R_PHAEO', 'R_PRES', 'R_SAMP', 'DIC1',
       'DIC2', 'TA1', 'TA2', 'pH2', 'pH1', 'DIC Quality Comment'],
      dtype='object')
```

In [20]:
```
x.index
```

Out[20]:
```
RangeIndex(start=0, stop=500, step=1)
```

In [21]:
```
x.describe()
```

Out[21]:

	Cst_Cnt	Btl_Cnt	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat
count	500.000000	500.000000	500.000000	499.000000	494.000000	0.0	493.000000	0.0
mean	8.548000	250.500000	341.490000	7.850421	33.628842	NaN	26.183400	NaN
std	4.570062	144.481833	355.166886	2.911584	0.560411	NaN	0.846325	NaN
min	1.000000	1.000000	0.000000	2.780000	32.630000	NaN	24.870000	NaN
25%	5.000000	125.750000	55.000000	5.030000	33.071000	NaN	25.259000	NaN
50%	9.000000	250.500000	200.000000	8.180000	33.799500	NaN	26.339000	NaN
75%	12.250000	375.250000	598.500000	10.450000	34.130000	NaN	26.983000	NaN
max	16.000000	500.000000	1352.000000	12.660000	34.450000	NaN	27.450000	NaN

8 rows × 70 columns

In [23]:
```
x["Salnty"]
```

Out[23]:
```
0      33.440
1      33.440
2      33.437
3      33.420
4      33.421
        ...
495    34.269
496    34.310
497    34.311
498    34.319
499    34.329
Name: Salnty, Length: 500, dtype: float64
```

In [25]:
```
x[0:2]
```

Out[25]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	R
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.44	NaN	25.649	NaN	...	
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.44	NaN	25.656	NaN	...	

2 rows × 74 columns

In [26]:
```
x.iloc[0:2]
```

Out[26]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	R
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.44	NaN	25.649	NaN	...	
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.44	NaN	25.656	NaN	...	

2 rows × 74 columns

In [24]:
```
x.loc[0:80]
```

Out[24]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	NaN	25.649	NaN	...
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	NaN	25.656	NaN	...
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN	25.654	NaN	...
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN	25.643	NaN	...
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN	25.643	NaN	...
...	...	...	...	...	...	...	...	...	...	...	...
76	3	77	051.0 085.0	19-4903CR-HY-061-0354-05100850-0191A-3	191	7.71	33.820	NaN	26.392	NaN	...
77	3	78	051.0 085.0	19-4903CR-HY-061-0354-05100850-0200A-7	200	7.58	33.844	NaN	26.430	NaN	...
78	3	79	051.0 085.0	19-4903CR-HY-061-0354-05100850-0250A-7	250	6.93	33.926	NaN	26.586	NaN	...
79	3	80	051.0 085.0	19-4903CR-HY-061-0354-05100850-0290A-3	290	6.47	33.930	NaN	26.651	NaN	...

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
80	3	81	051.0 085.0	19-4903CR-HY-061-0354-05100850-0300A-7	300	6.37	33.941	NaN	26.672	NaN	...

81 rows × 74 columns

In [27]:
```
x.loc[" Depth_ID":"R_PHAEO"]
```

Out[27]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	NaN	25.649	NaN	...
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	NaN	25.656	NaN	...
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN	25.654	NaN	...
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN	25.643	NaN	...
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN	25.643	NaN	...
...	...	...	...	...	...	...	...	...	...	...	...
495	16	496	063.3 058.0	19-4903CR-HY-065-1030-06330580-0700A-7	700	4.90	34.269	NaN	27.114	NaN	...
496	16	497	063.3 058.0	19-4903CR-HY-065-1030-06330580-0792A-3	792	4.50	34.310	NaN	27.191	NaN	...
497	16	498	063.3 058.0	19-4903CR-HY-065-1030-06330580-0800A-7	800	4.48	34.311	NaN	27.194	NaN	...
498	16	499	063.3 058.0	19-4903CR-HY-065-1030-06330580-0900A-7	900	4.21	34.319	NaN	27.230	NaN	...

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
499	16	500	063.3 058.0	19-4903CR-HY-065-1030-06330580-1000A-7	1000	3.95	34.329	NaN	27.265	NaN	...

500 rows × 74 columns

In [28]:
```
x[x["STheta"]<=2]
```

Out[28]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	R_F

0 rows × 74 columns

In [29]:
```
x.fillna(value=5)
```

Out[29]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	5.0	25.649	5.0	...
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	5.0	25.656	5.0	...
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	5.0	25.654	5.0	...
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	5.0	25.643	5.0	...
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	5.0	25.643	5.0	...
...	...	...	...	...	...	...	...	...	...	...	...
495	16	496	063.3 058.0	19-4903CR-HY-065-1030-06330580-0700A-7	700	4.90	34.269	5.0	27.114	5.0	...
496	16	497	063.3 058.0	19-4903CR-HY-065-1030-06330580-0792A-3	792	4.50	34.310	5.0	27.191	5.0	...
497	16	498	063.3 058.0	19-4903CR-HY-065-1030-06330580-0800A-7	800	4.48	34.311	5.0	27.194	5.0	...
498	16	499	063.3 058.0	19-4903CR-HY-065-1030-06330580-0900A-7	900	4.21	34.319	5.0	27.230	5.0	...

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
499	16	500	063.3 058.0	19-4903CR-HY-065-1030-06330580-1000A-7	1000	3.95	34.329	5.0	27.265	5.0	...

500 rows × 74 columns

In [30]:
```
x.dropna()
```

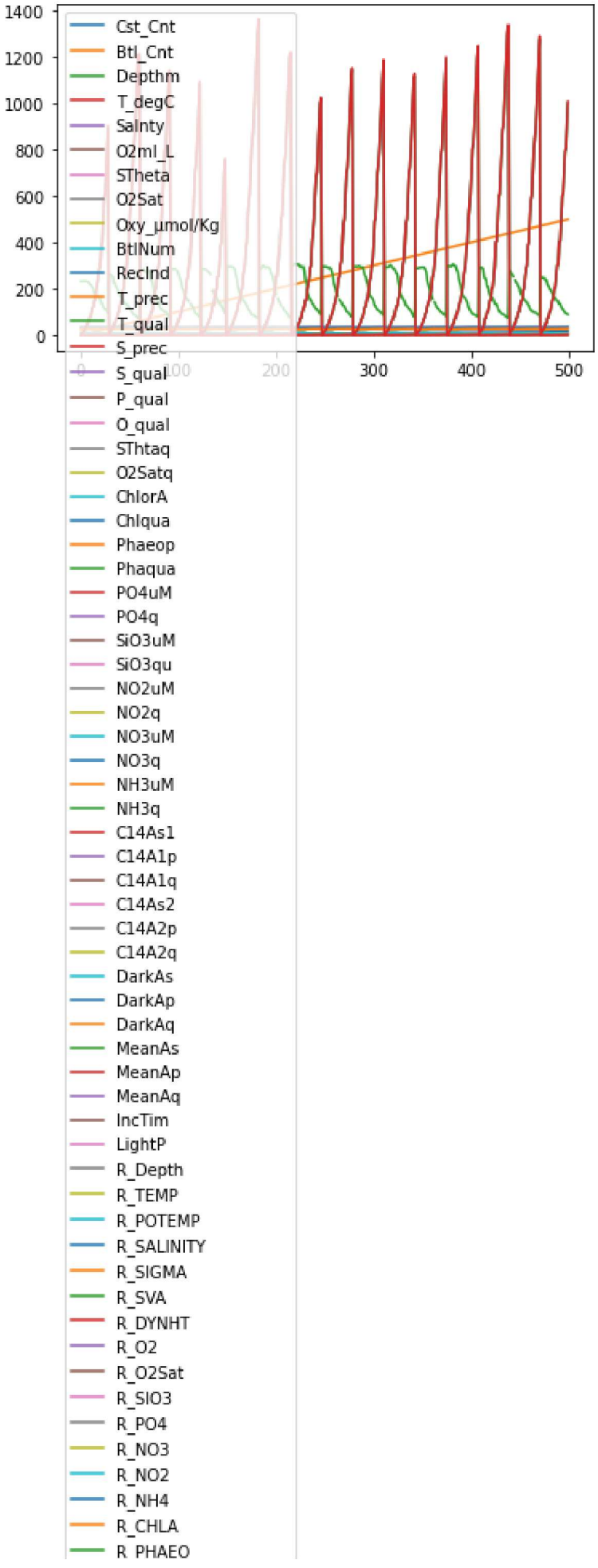
Out[30]:

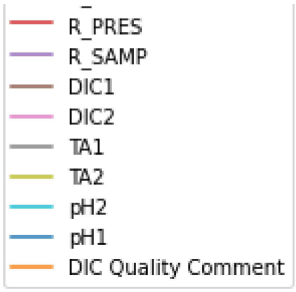
	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	R_F

0 rows × 74 columns

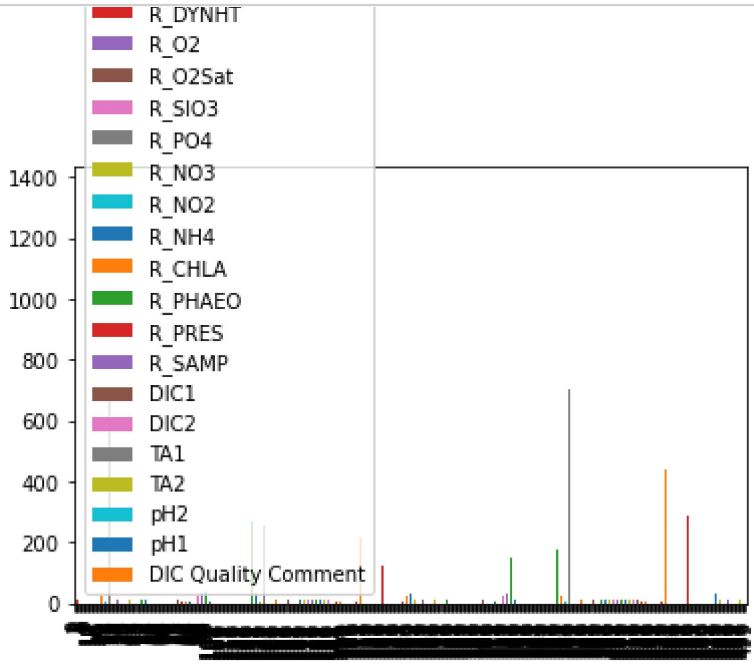
In [31]:
```
x.plot.line()
```

Out[31]:
```
<AxesSubplot:>
```


1400
1200
1000
800
600
400
200
0
0
100
200
300
400
500
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
SiO3qu
NO2uM
NO2q
NO3uM
NO3q
NH3uM
NH3q
C14As1
C14A1p
C14A1q
C14As2
C14A2p
C14A2q
DarkAs
DarkAp
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
R_PHAEO

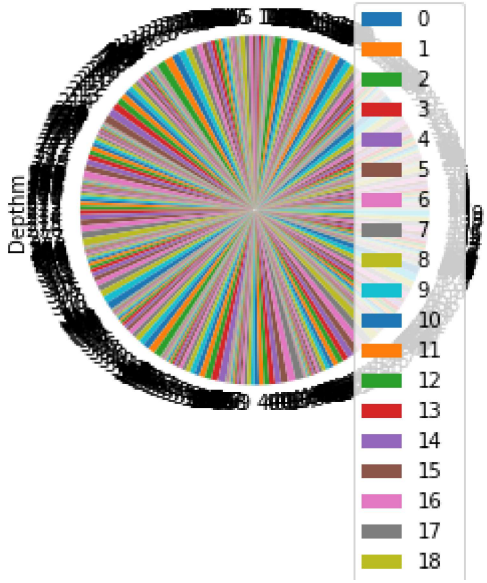


In [32]:
```
x.plot.bar()
```



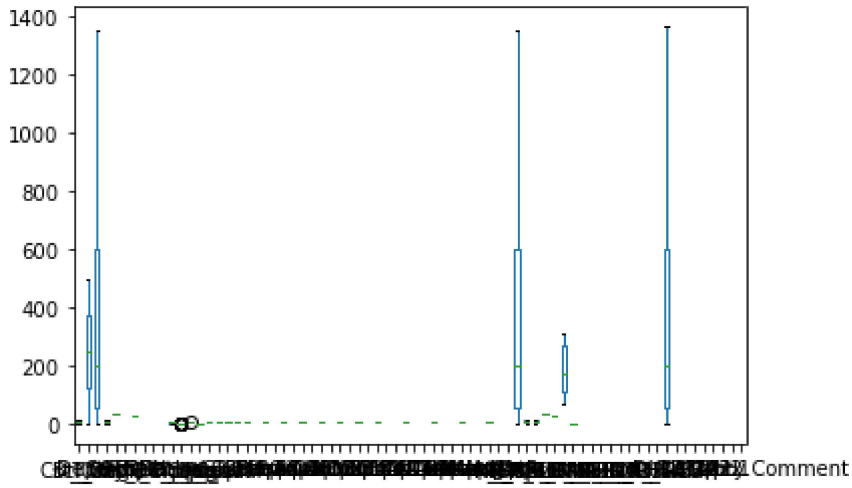
In [37]:
```
x.plot.pie(y='Depthm')
```

Out[37]: <AxesSubplot:ylabel='Depthm'>



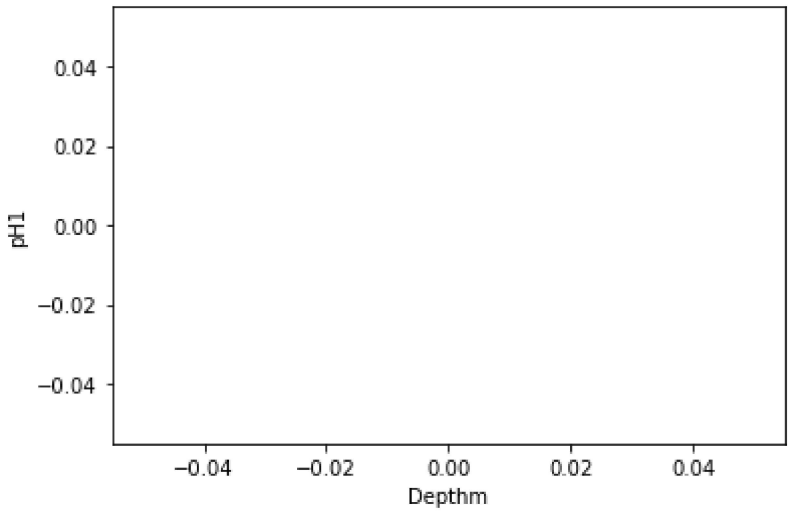
In [34]:
```
x.plot.box()
```

Out[34]: <AxesSubplot:>



In [39]:
```
x.plot.scatter(x='Depthm',y='pH1')
```

Out[39]: <AxesSubplot:xlabel='Depthm', ylabel='pH1'>



In [ ]:
```

```