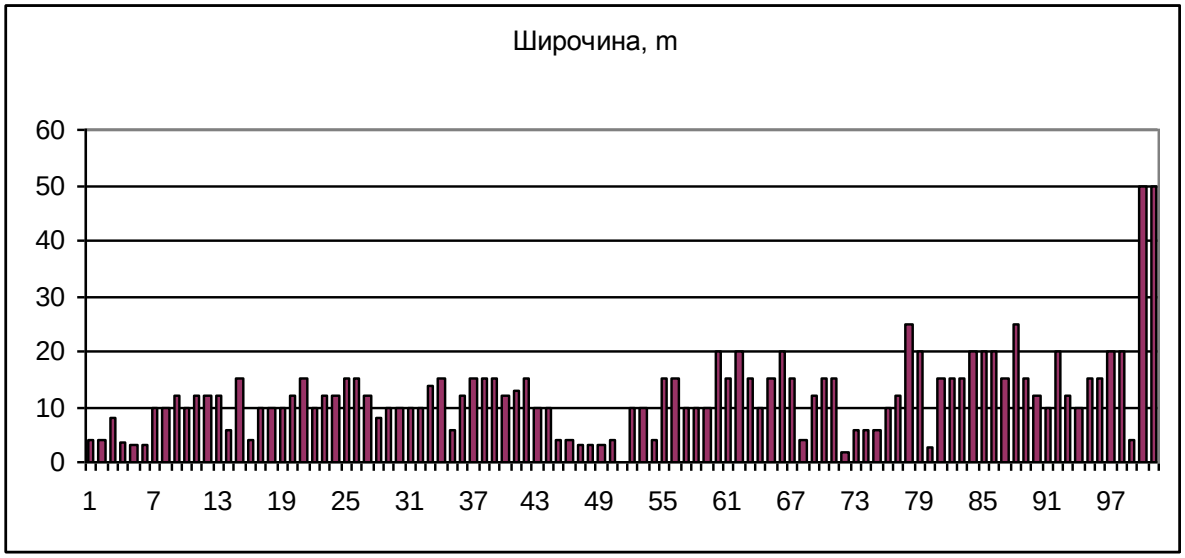
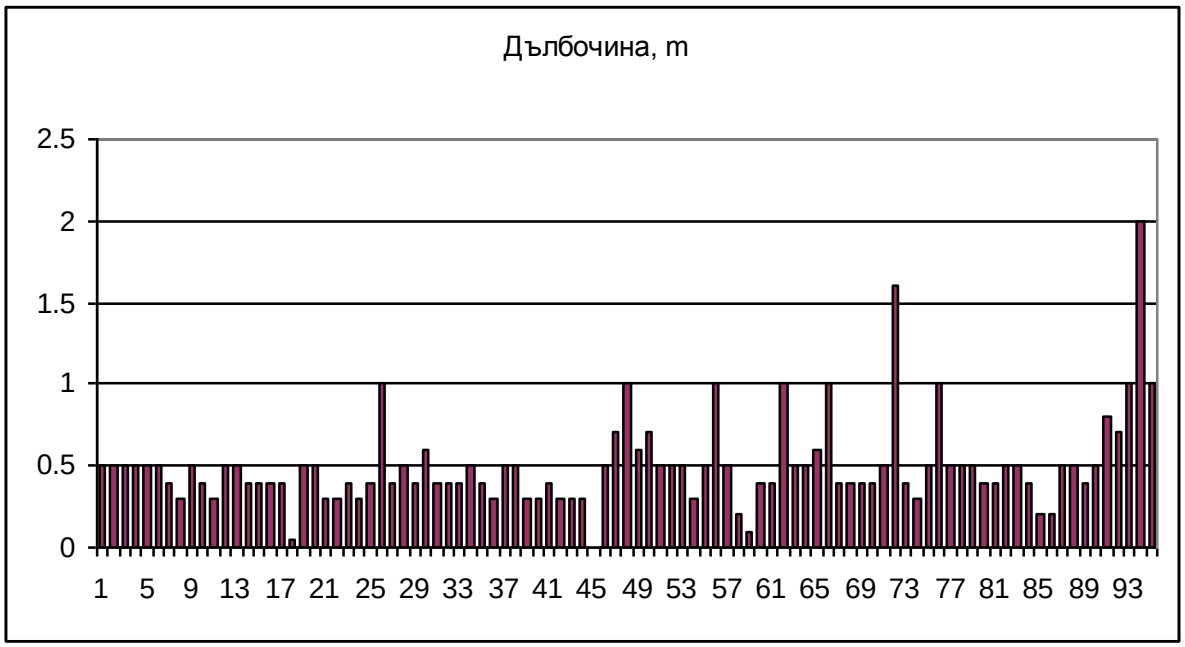
Проект "Екологичен мониторинг на река Драговищица"
Проектът се финансира в рамките на Програми BG02 и BG03
в България по Финансовия механизъм на
Европейското икономическо пространство 2009-2014 г.

ЕКОЛОГИЧЕН МОНИТОРИНГ НА РЕКА ДРАГОВИЩИЦА (ЛЕТЕН МОНИТОРИНГ 2015) ПРИЛОЖЕНИЕ СТАТИСТИКА

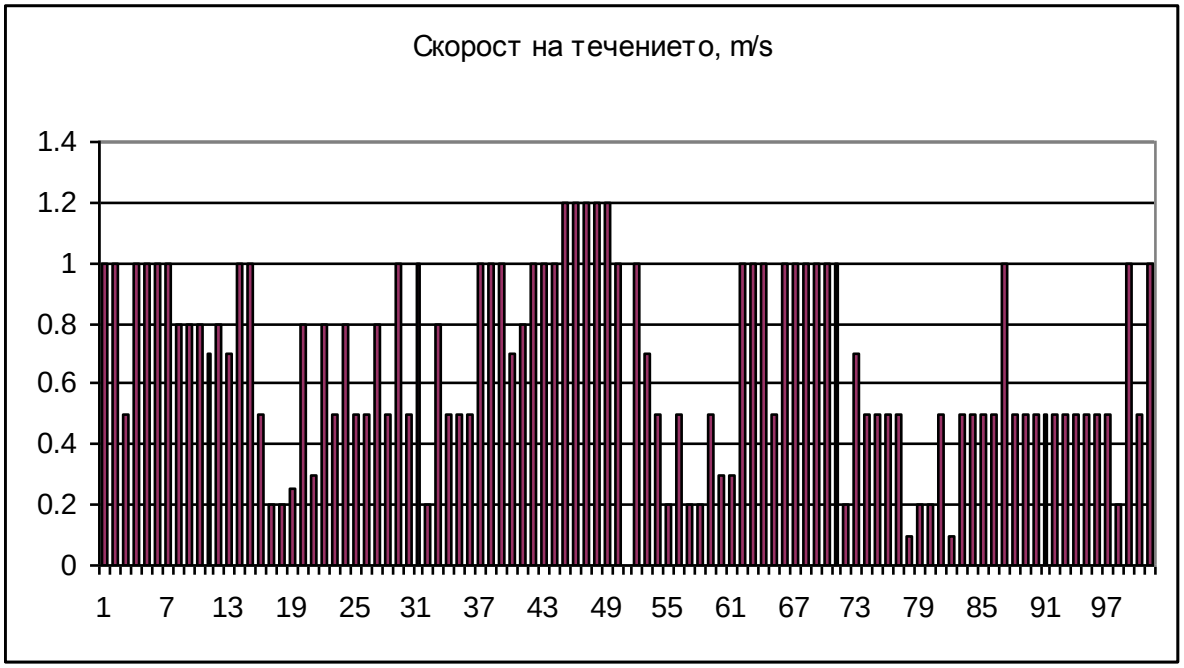
Антон Сотиров, Георги Табаков, Валерия Стоичкова, Михаела Йерусалимова, Светослав Йорданов, Ралица Тасева, Лусия Кулкина

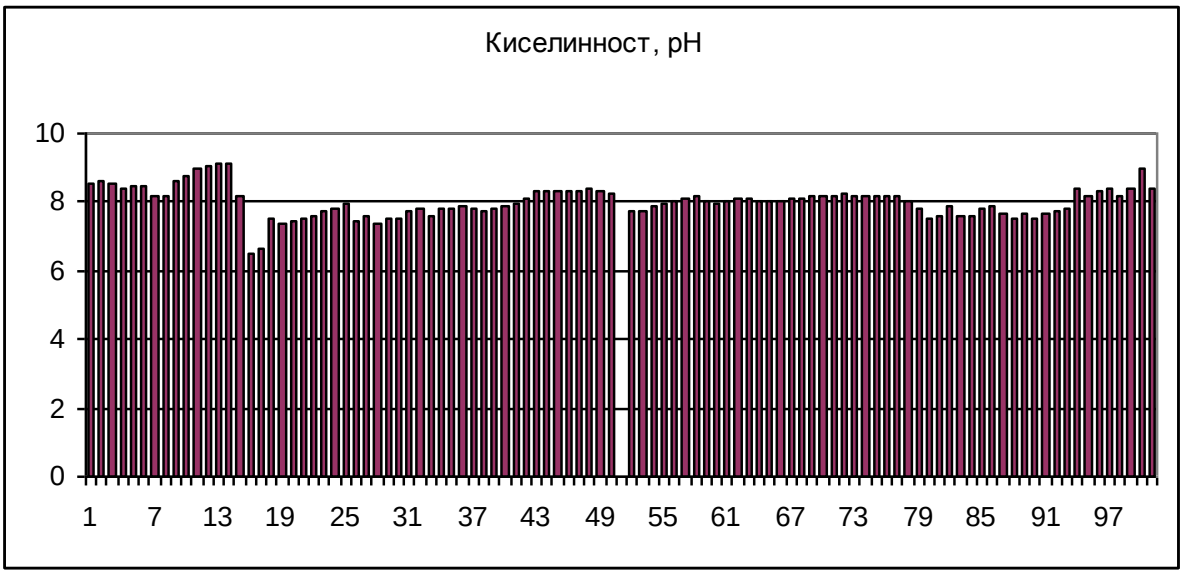
Статистическа обработка на получените резултати





Този документ е създаден с финансовата подкрепа на Програми BG02 и BG03 по Финансовия механизъм на Европейското икономическо пространство. Цялата отговорност за съдържанието на документа се носи от Сдружение "Български икономически форум" и при никакви обстоятелства не може да се приема, че този документ отразява официалното становище на Финансовия механизъм на Европейското икономическо пространство и Оператора на Програмата – Министерство на околната среда и водите
http://www.BG03.moew.government.bg


Скорост на течението, m/s
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Киселинност, pH
10
8
6
4
2
0
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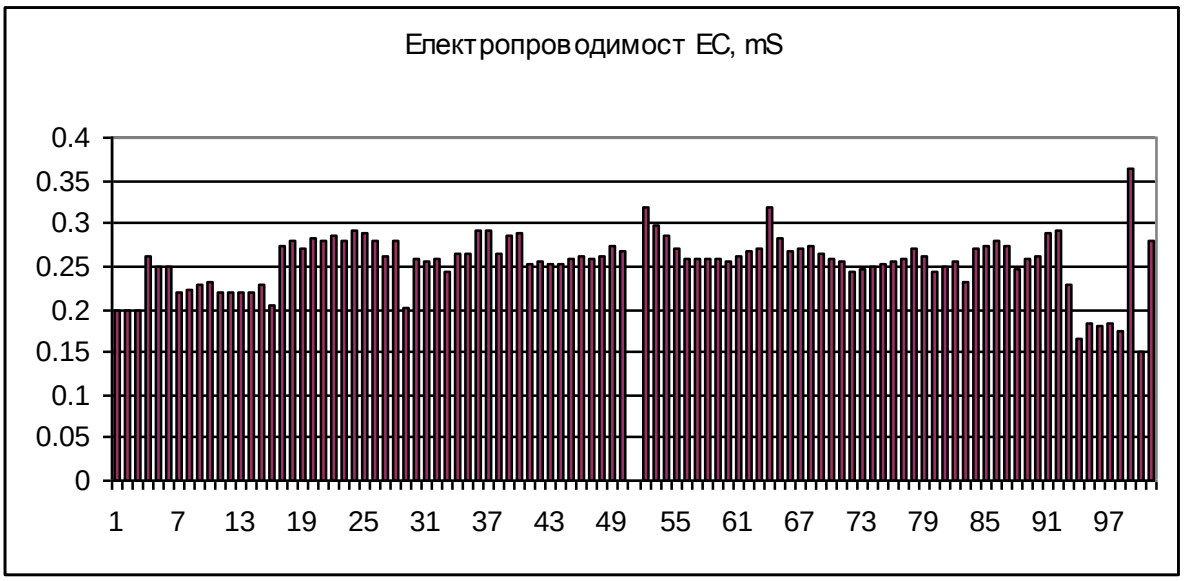
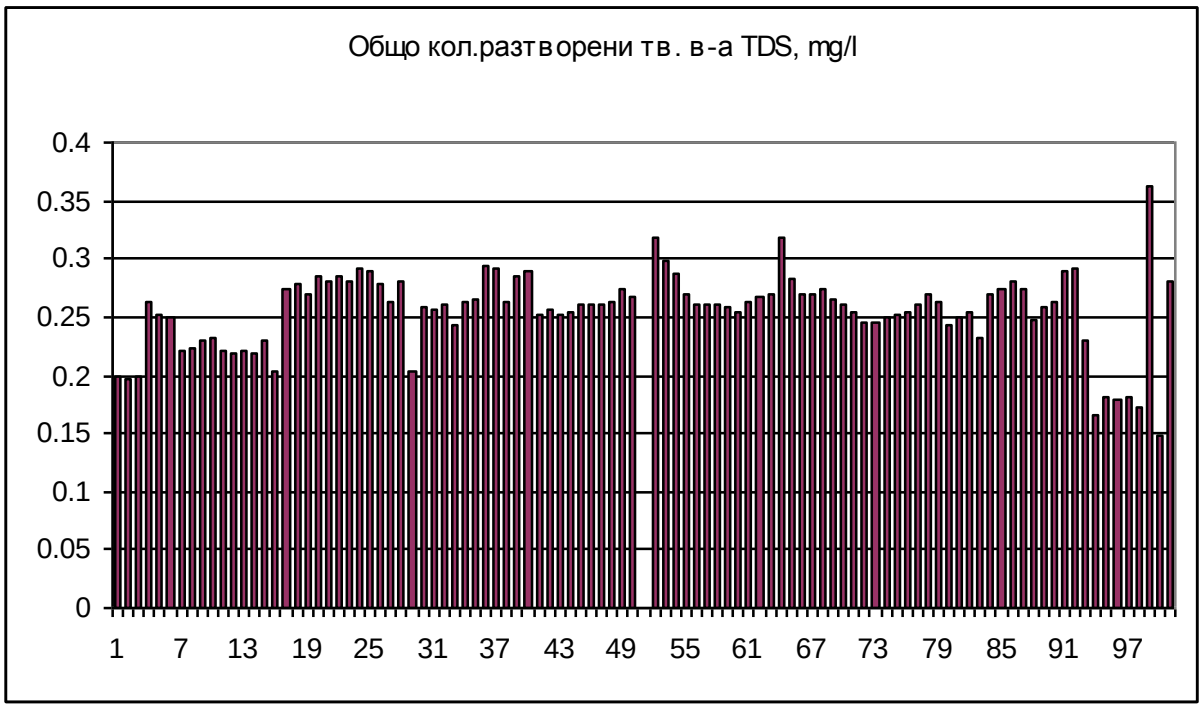
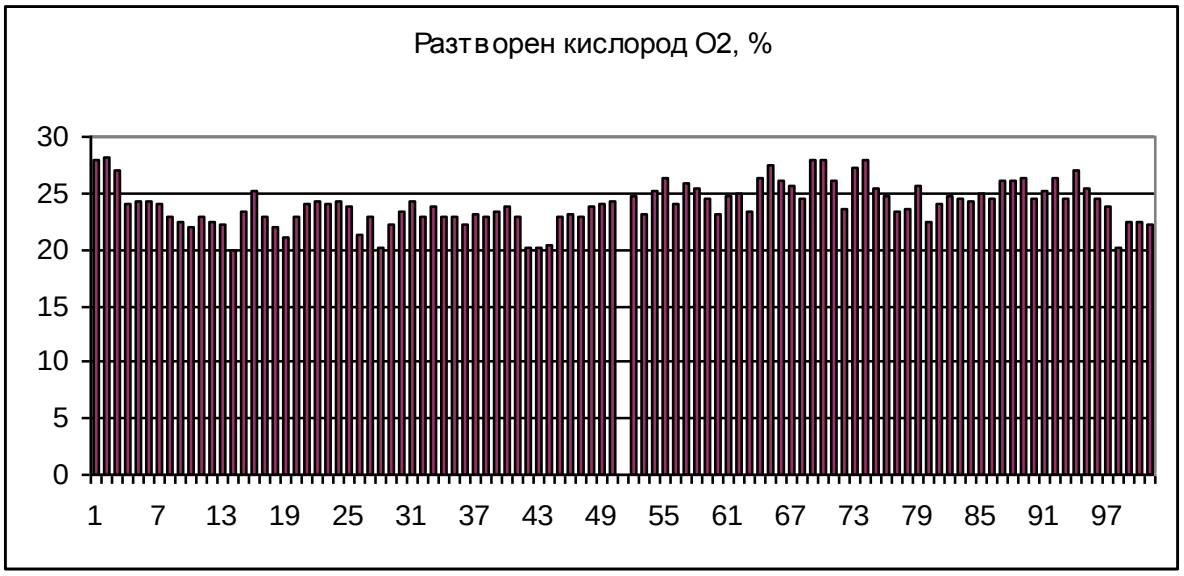
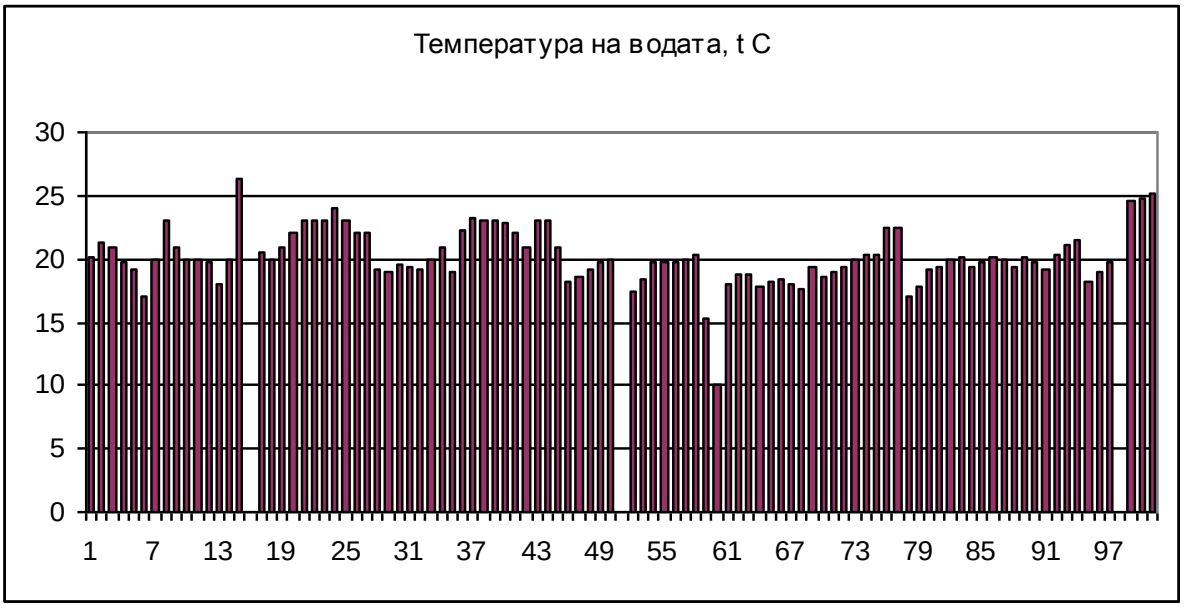
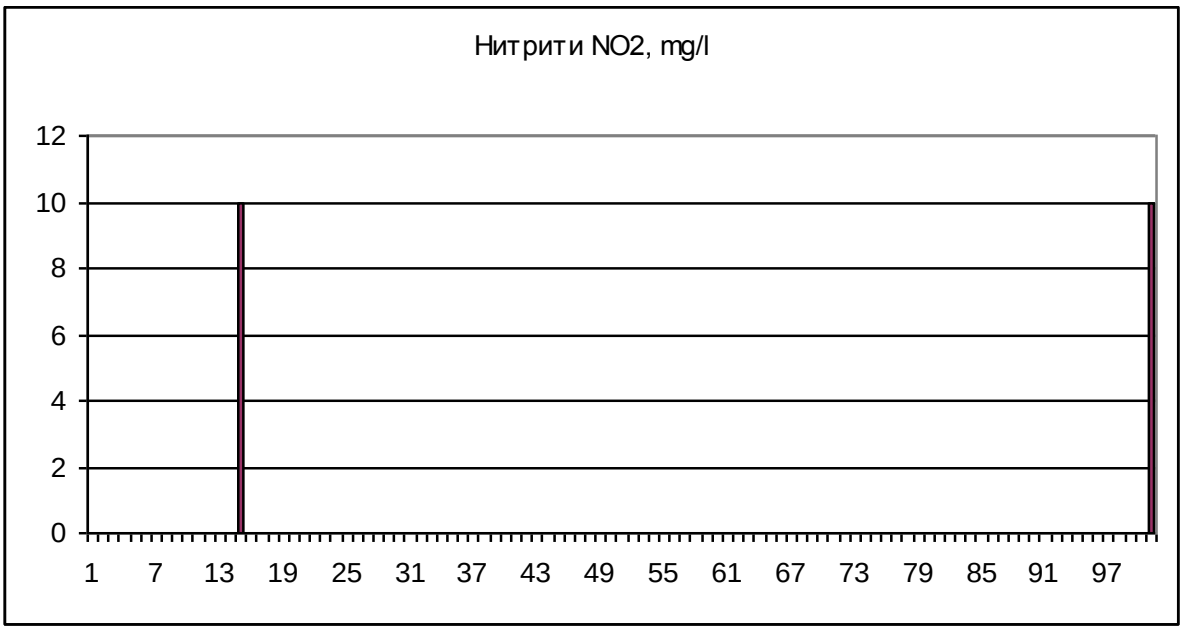
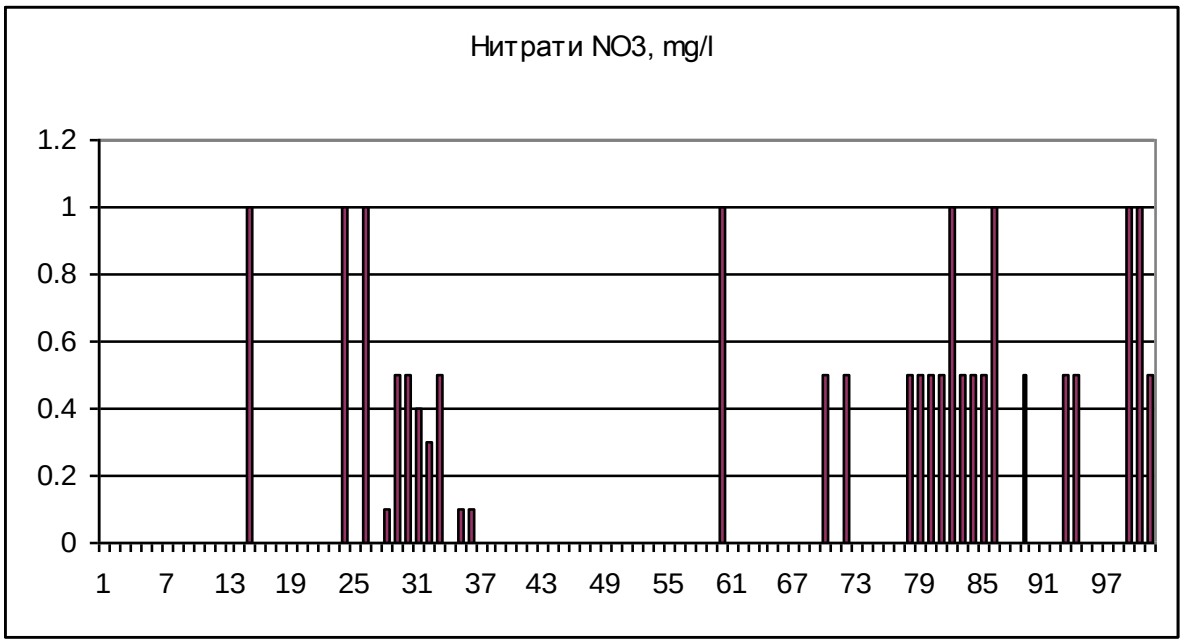

Електропроводимост EC, mS
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

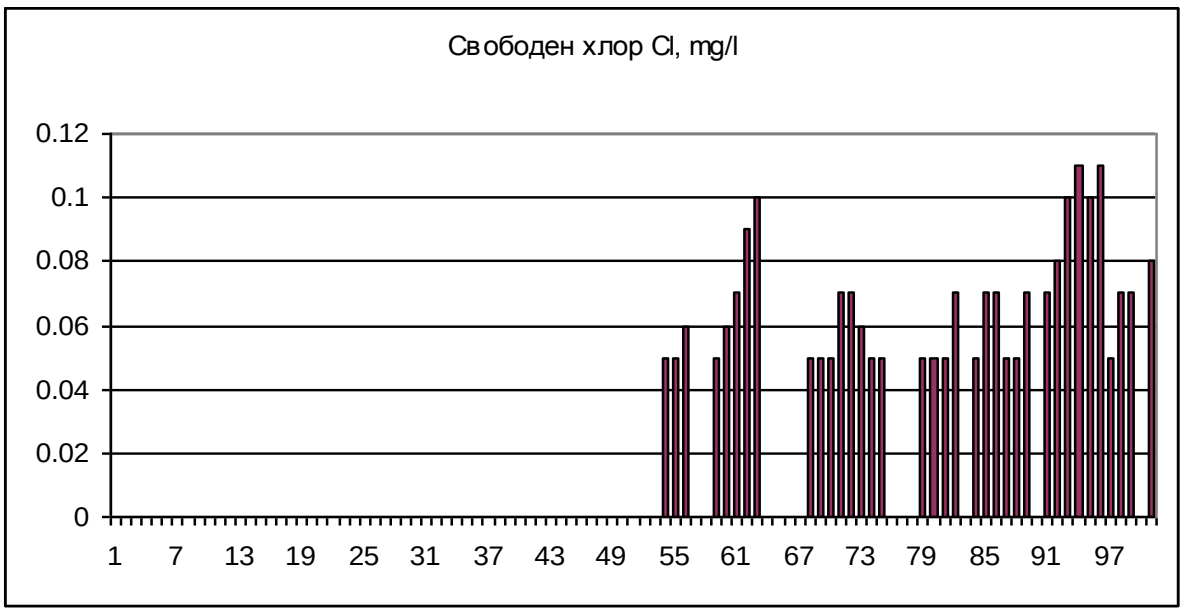

Общо кол.разтворени тв. в-а TDS, mg/l
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

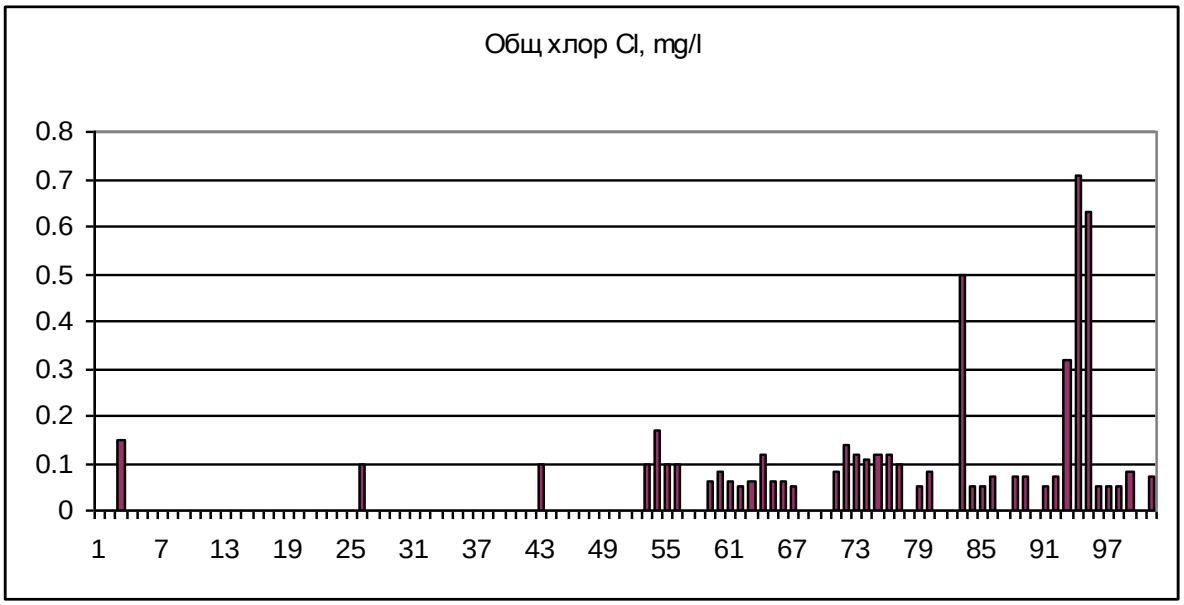

Разтворен кислород O2, %
30
25
20
15
10
5
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

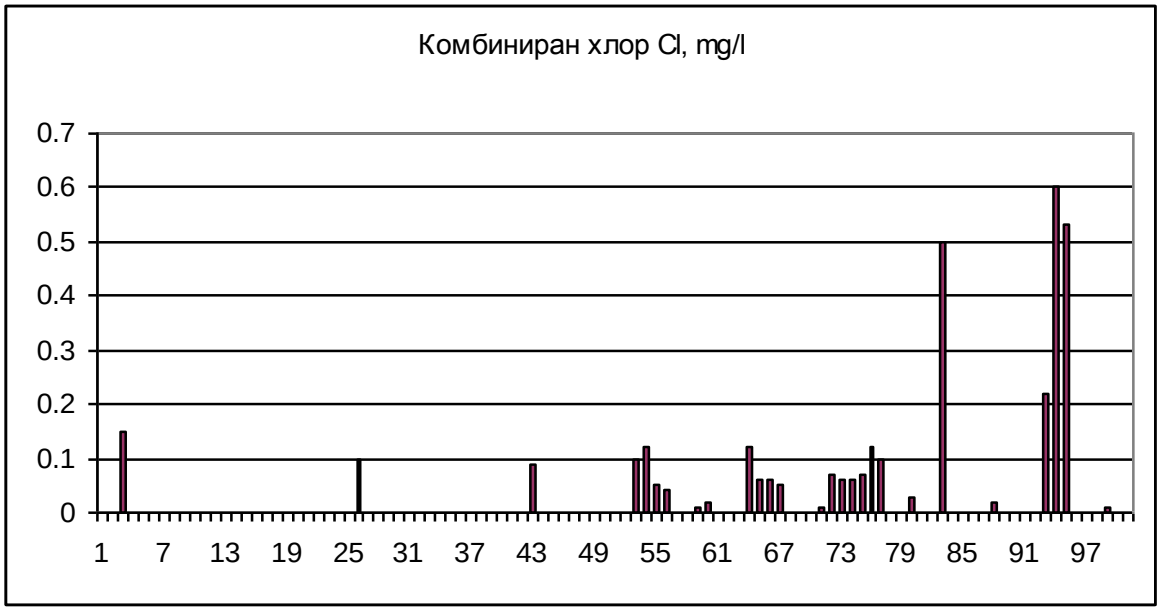

Температура на водата, t C
30
25
20
15
10
5
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

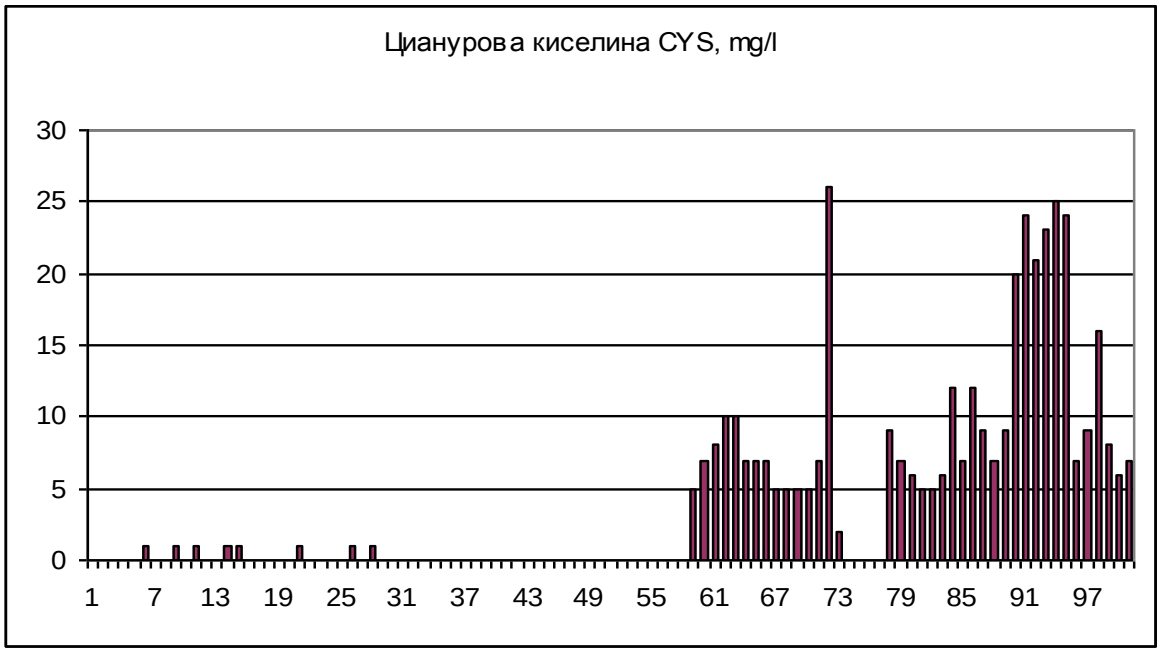

Нитрити NO2, mg/l
12
10
8
6
4
2
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

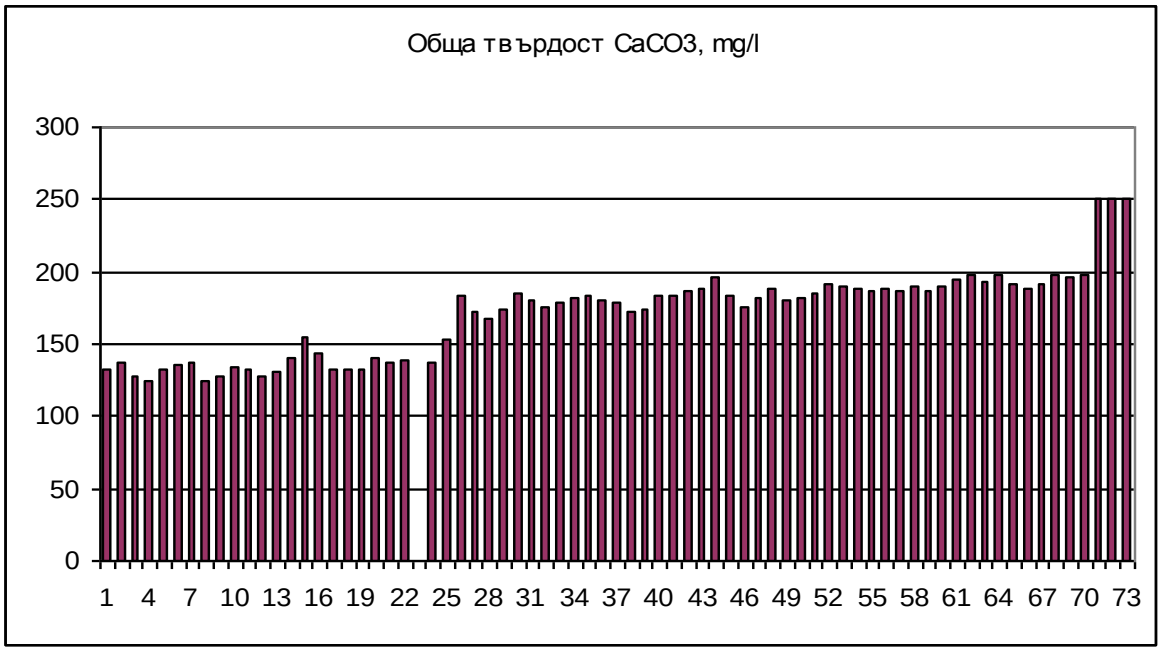

Нитрати NO3, mg/l
1.2
1
0.8
0.6
0.4
0.2
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

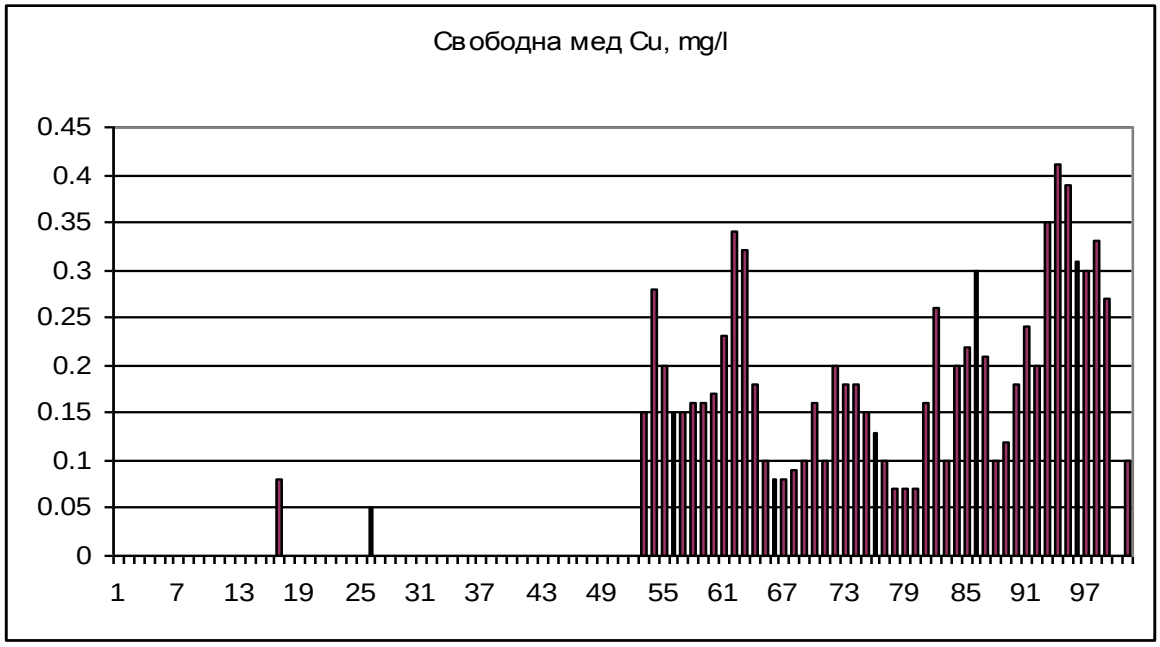

Свободен хлор Cl, mg/l
0.12
0.1
0.08
0.06
0.04
0.02
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

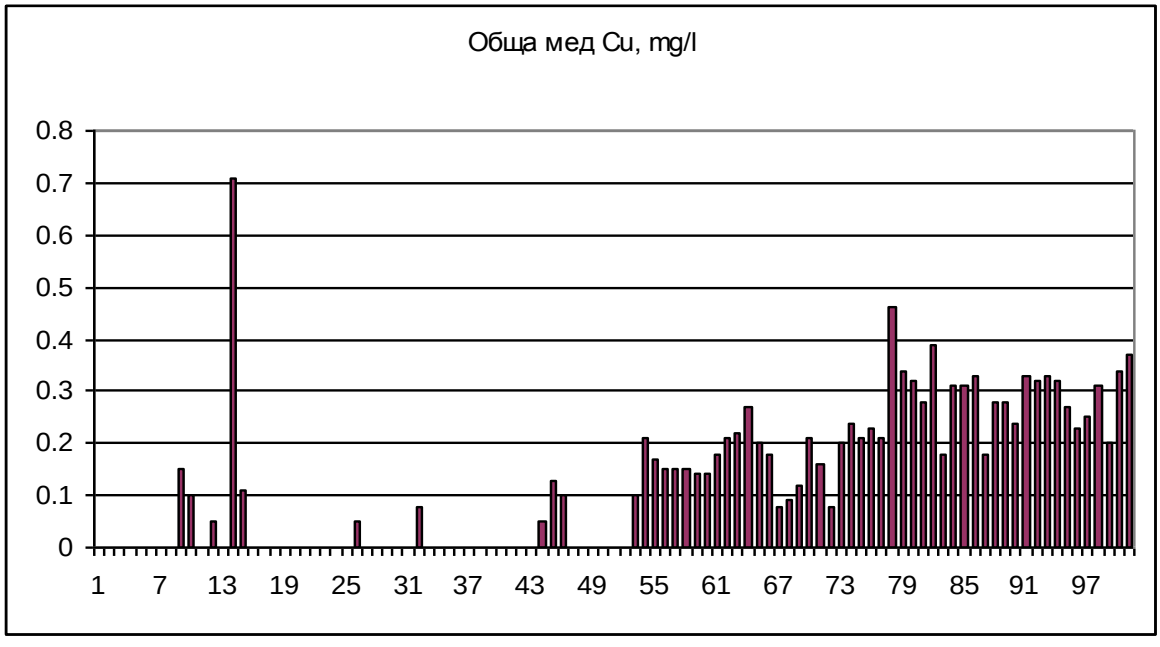

Общ хлор Cl, mg/l
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

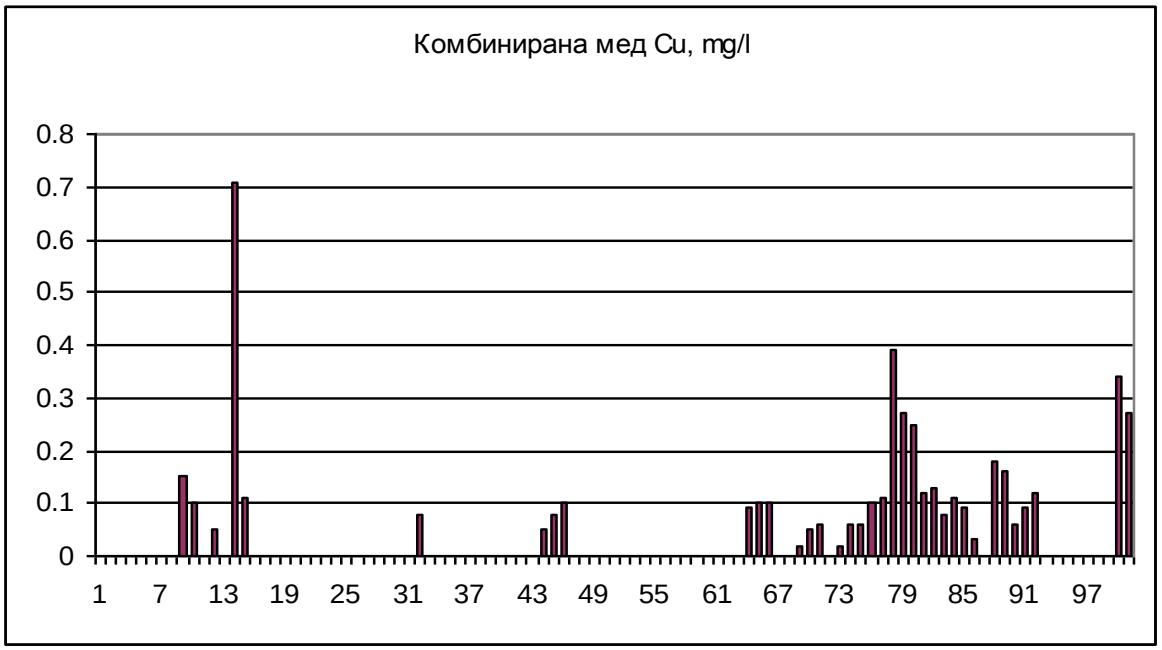

Комбиниран хлор Cl, mg/l
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

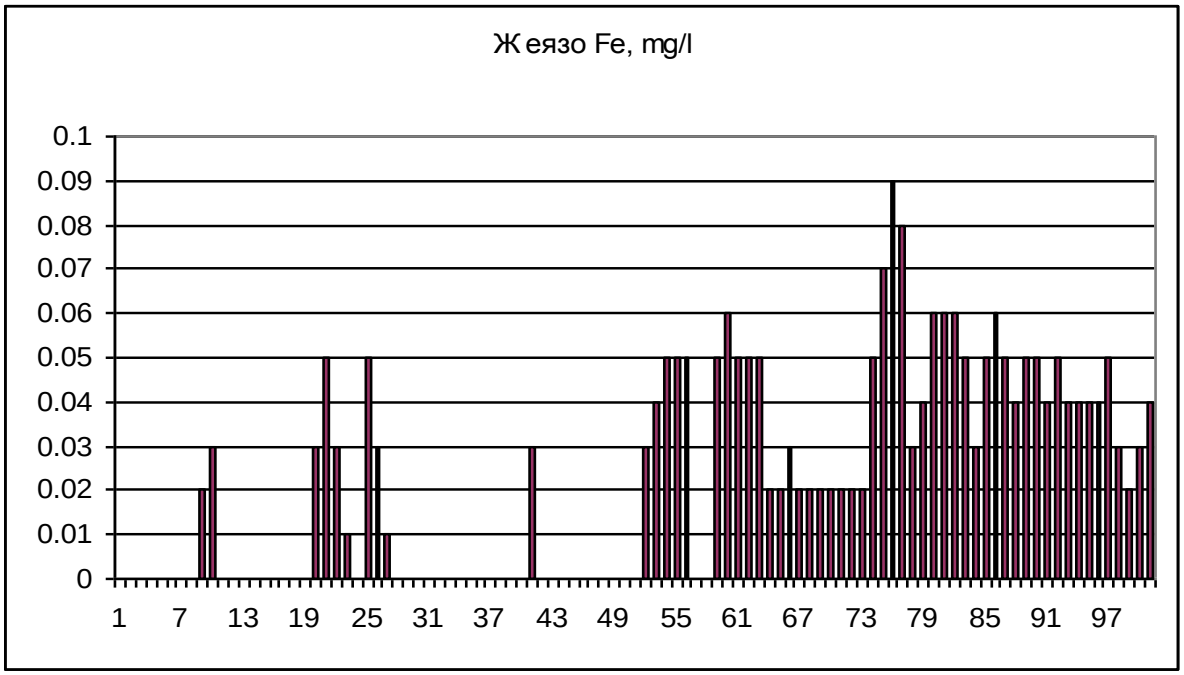

Цианурова киселина CYS, mg/l
30
25
20
15
10
5
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

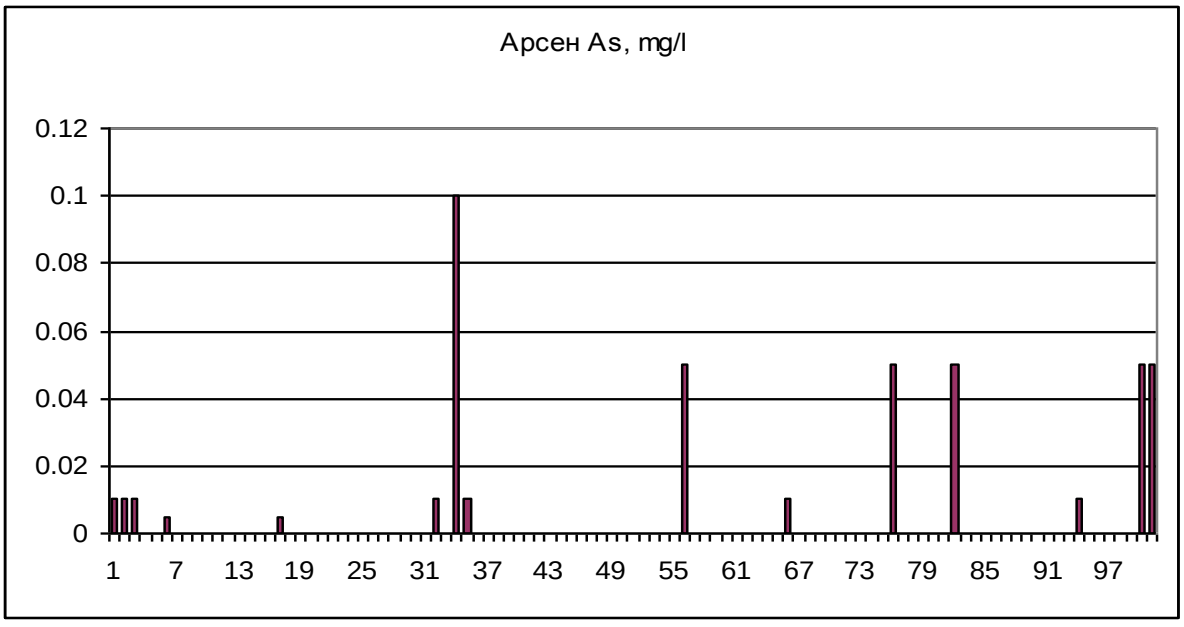

Обща твърдост CaCO3, mg/l
300
250
200
150
100
50
0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73

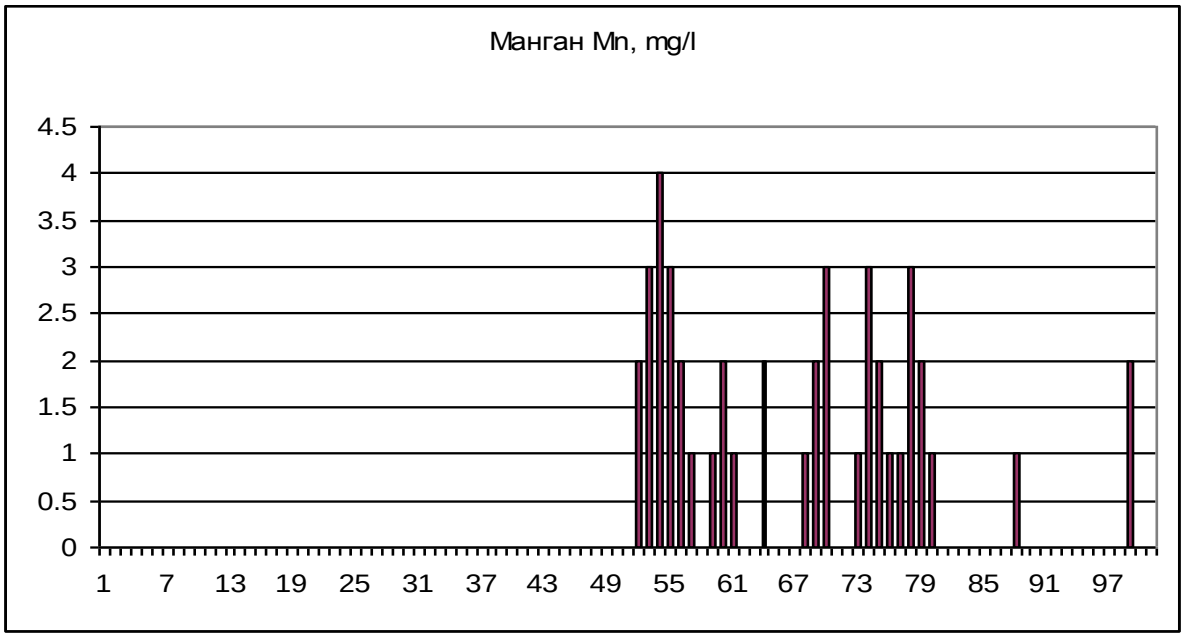

Свободна мед Cu, mg/l
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

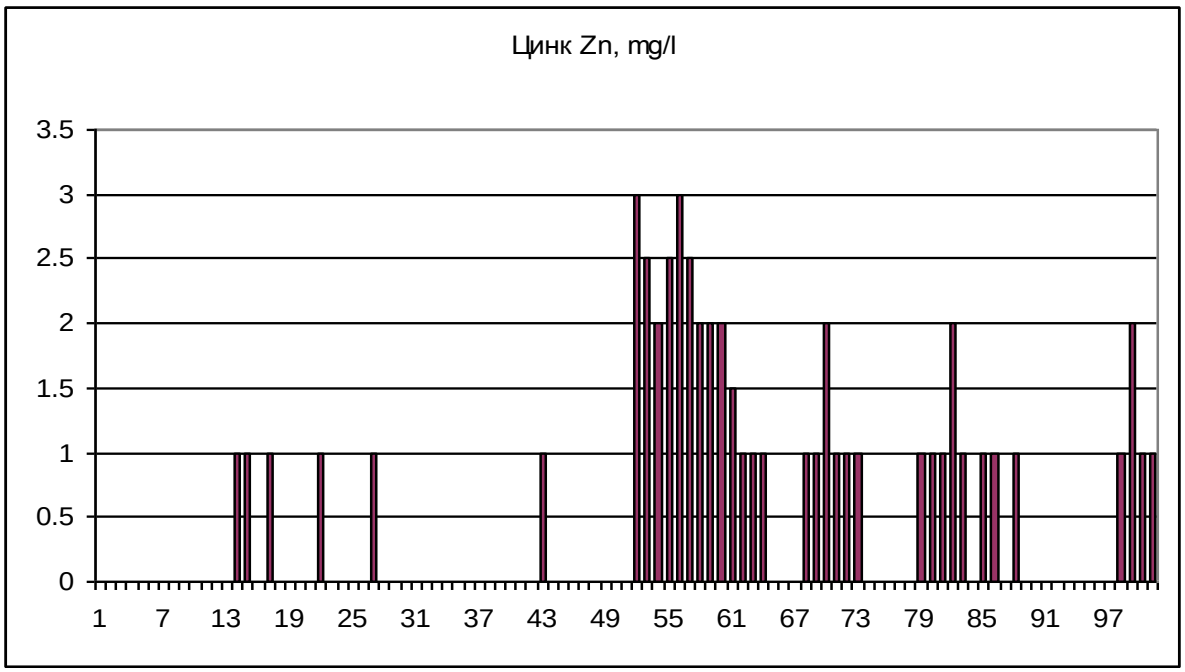

Обща мед Cu, mg/l
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Комбинирана мед Cu, mg/l
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Желязо Fe, mg/l
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Арсен As, mg/l
0.12
0.1
0.08
0.06
0.04
0.02
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Манган Mn, mg/l
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Цинк Zn, mg/l
3.5
3
2.5
2
1.5
1
0.5
0
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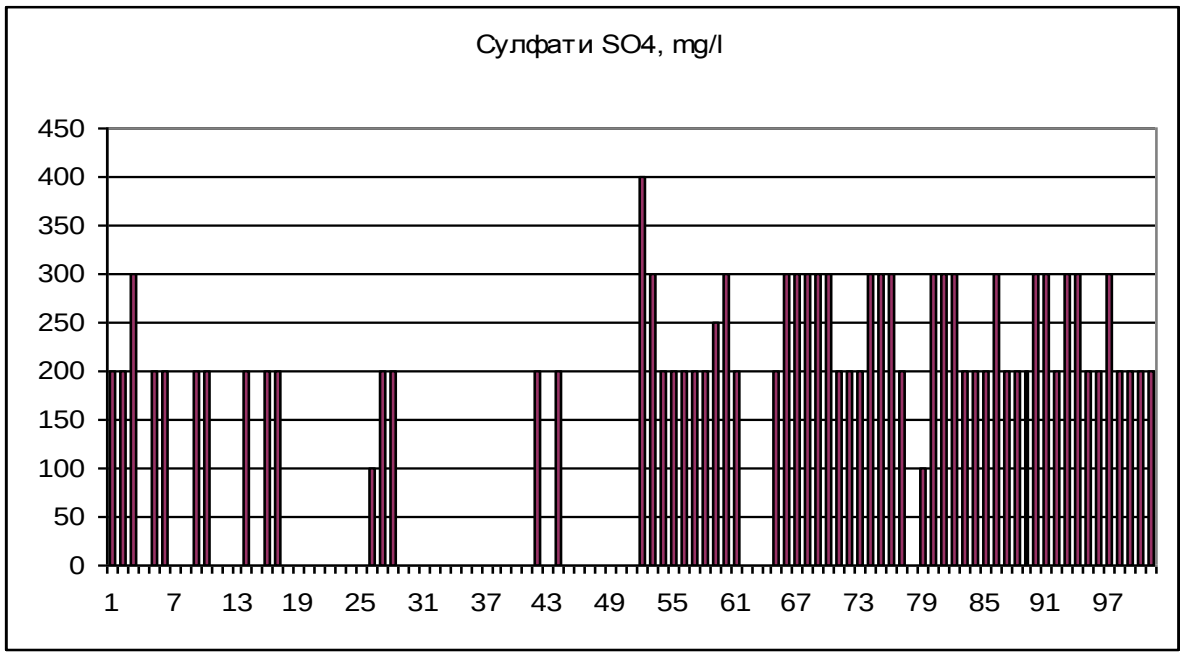
Сулфати SO4, mg/l
450
400
350
300
250
200
150
100
50
0
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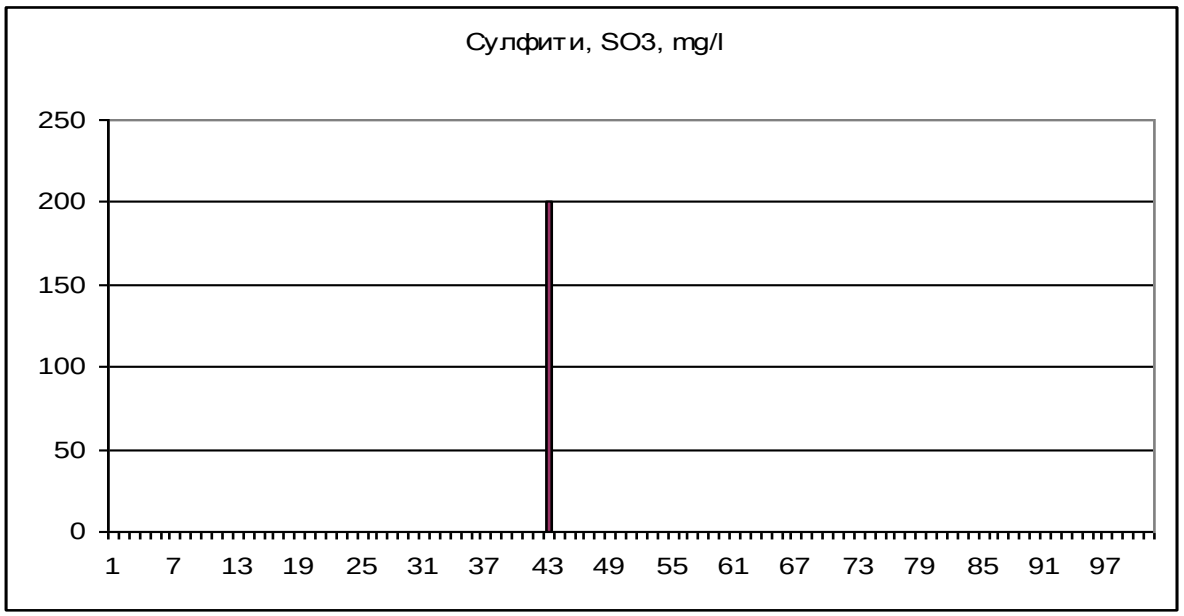
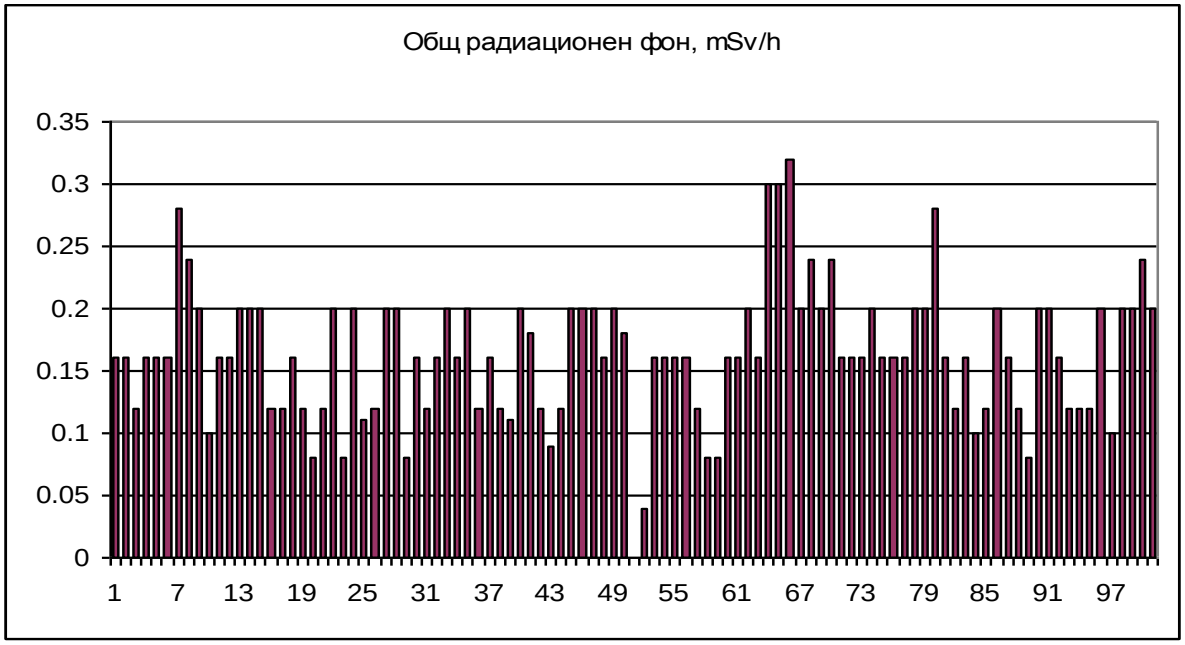
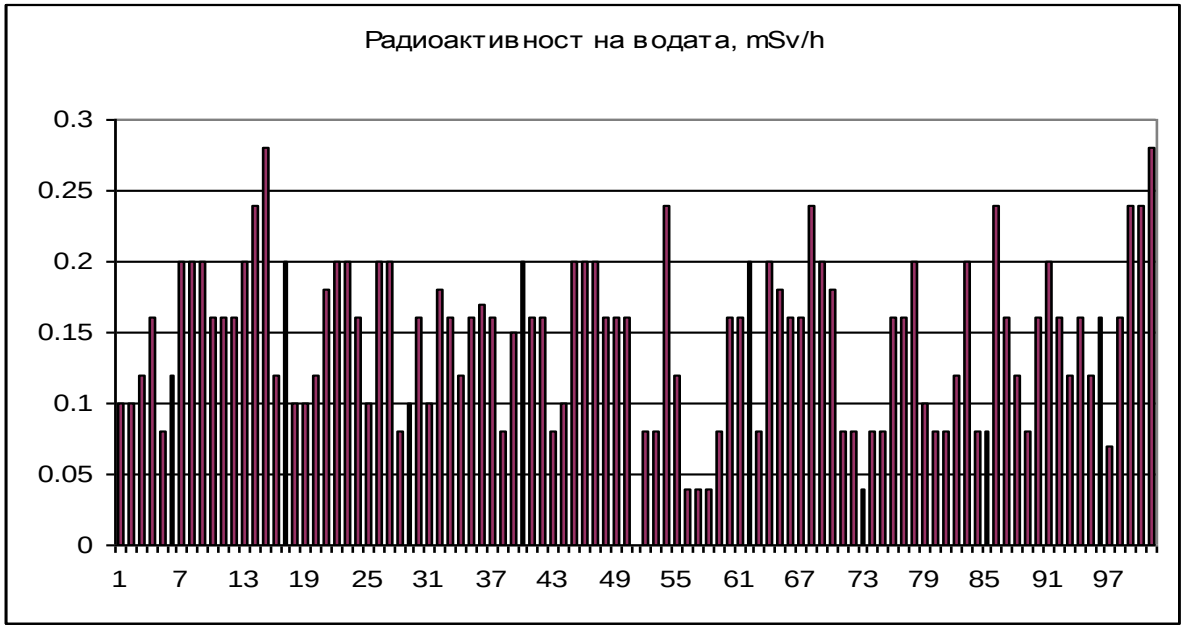
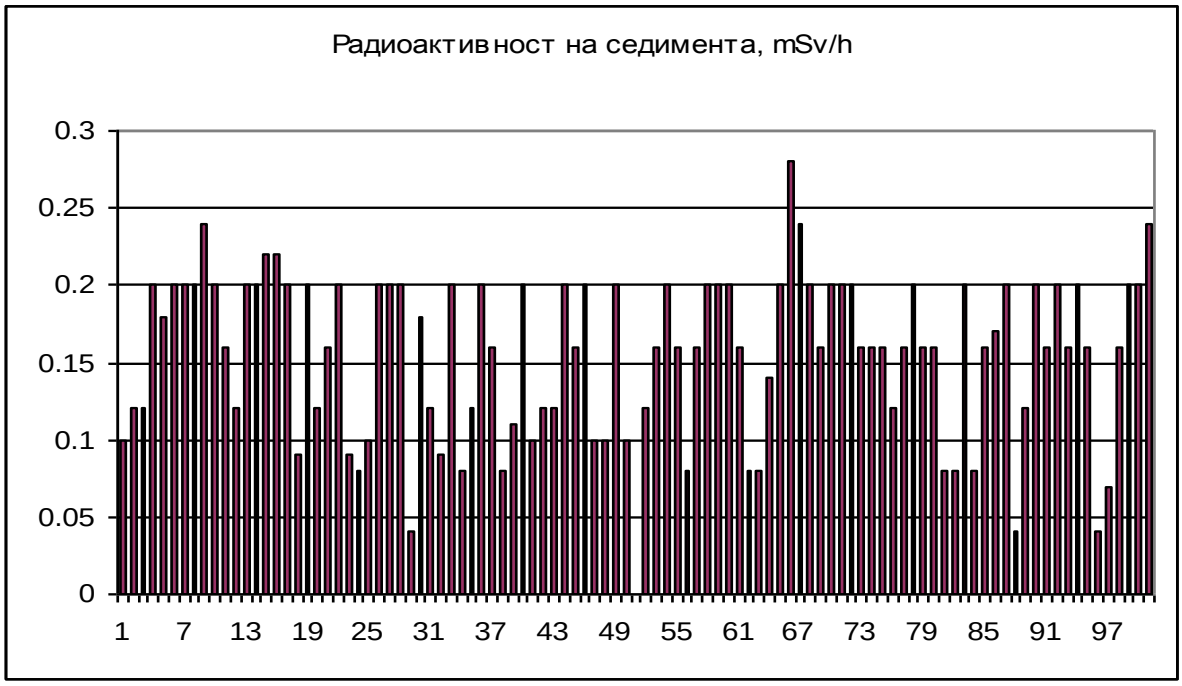

Сулфити, SO3, mg/l
250
200
150
100
50
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Общ радиационен фон, mSv/h
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Радиоактивност на водата, mSv/h
0.3
0.25
0.2
0.15
0.1
0.05
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Радиоактивност на седимента, mSv/h
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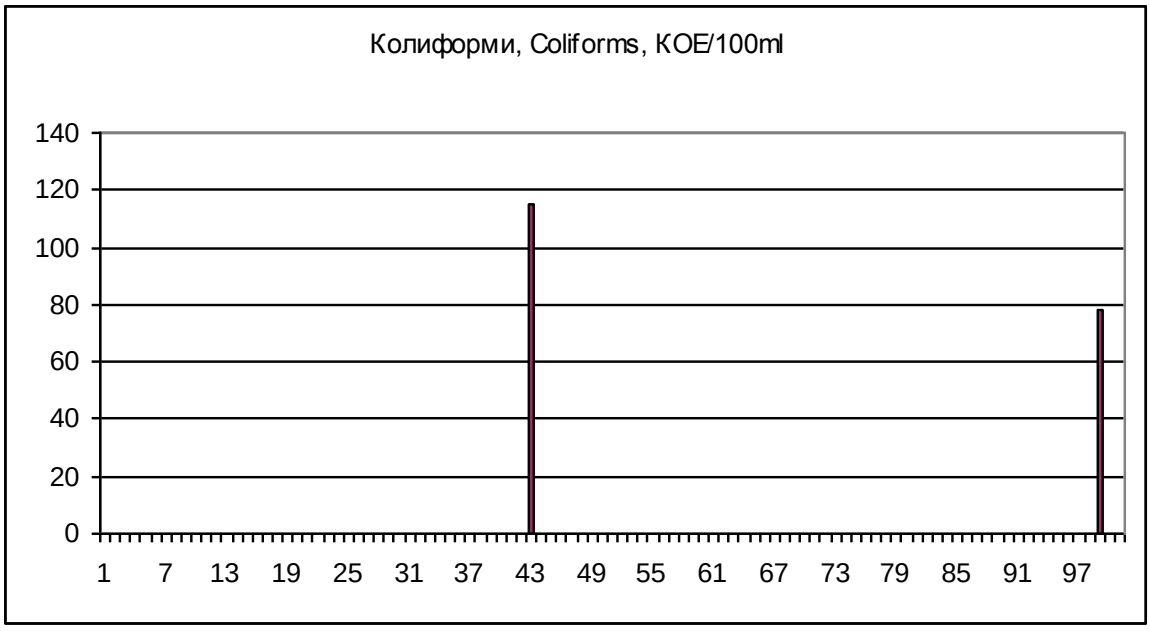
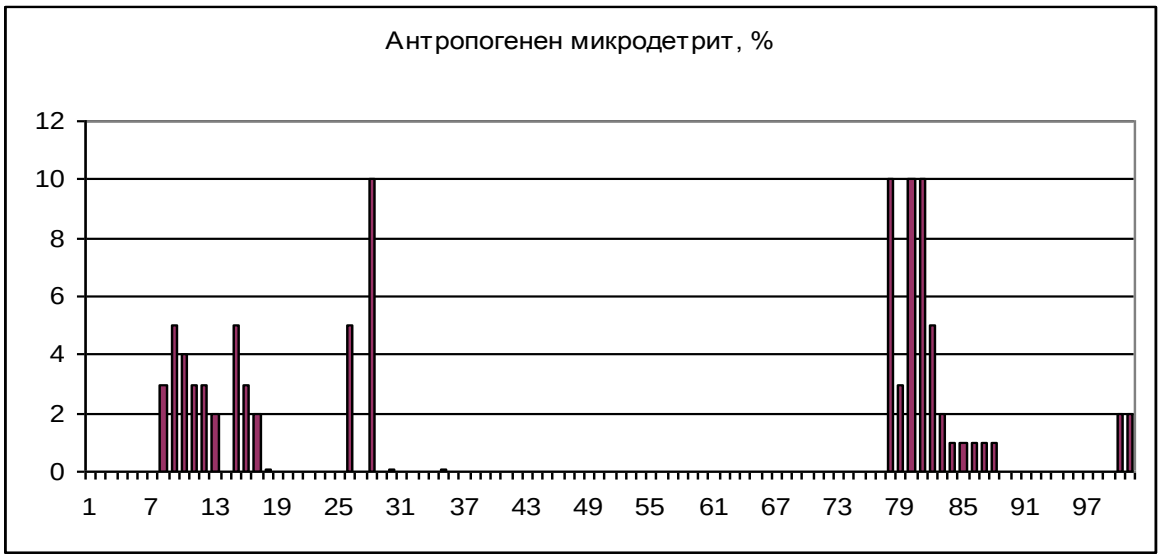
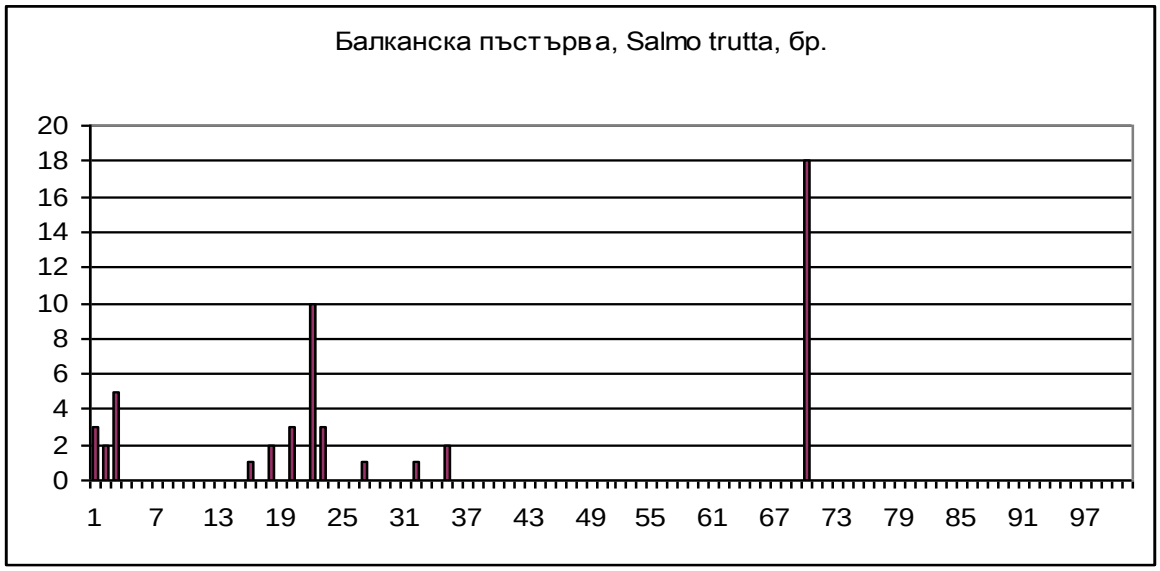
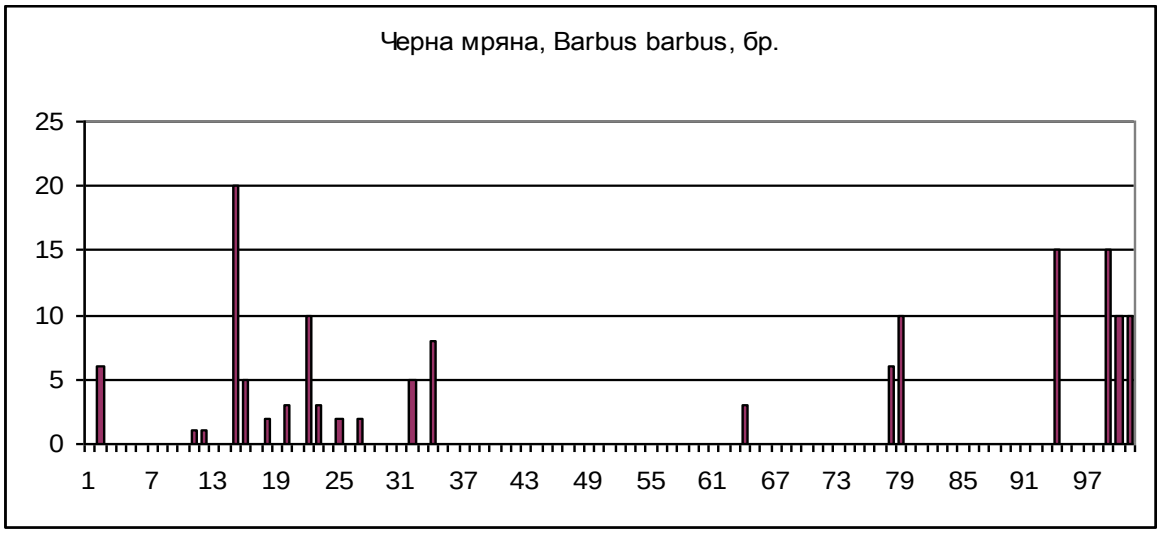
0.25
0.2
0.15
0.1
0.05
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

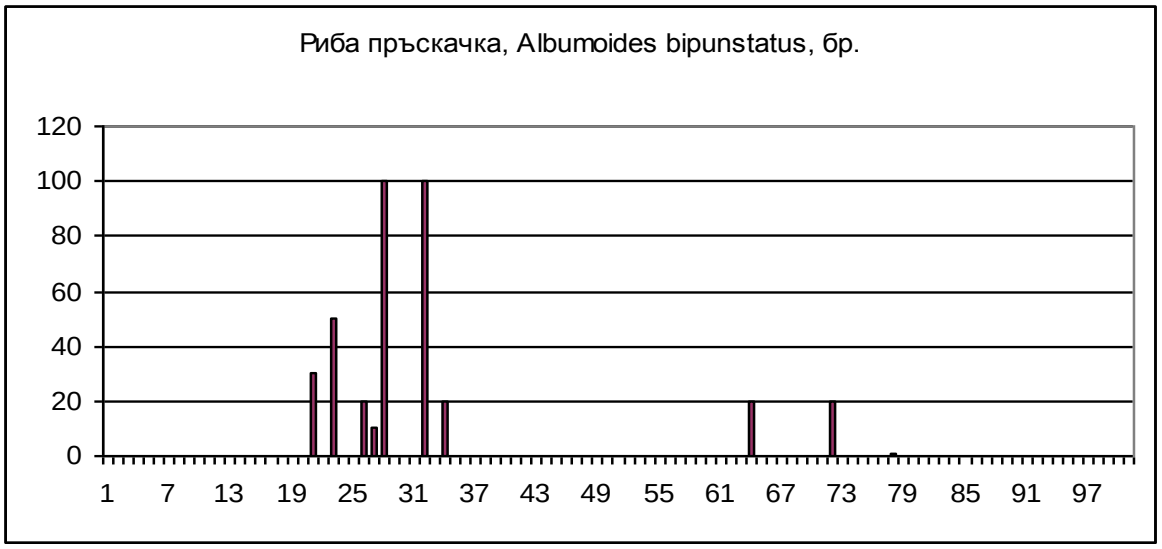

Колиформи, Coliforms, KOE/100ml
140
120
100
80
60
40
20
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

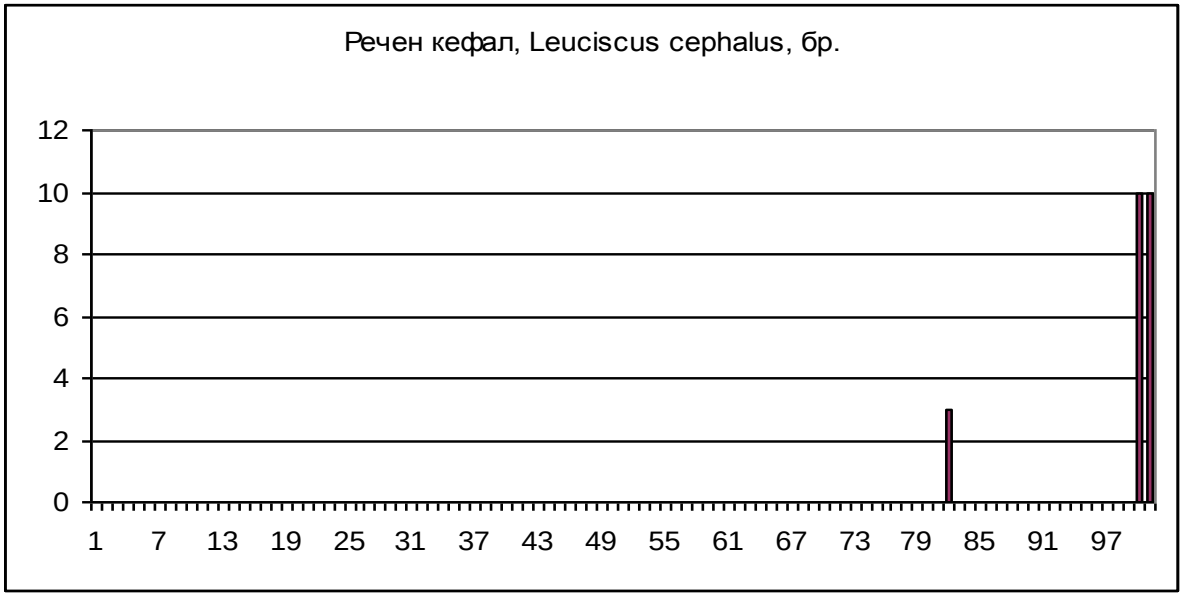

Антропогенен микродетрит, %
12
10
8
6
4
2
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

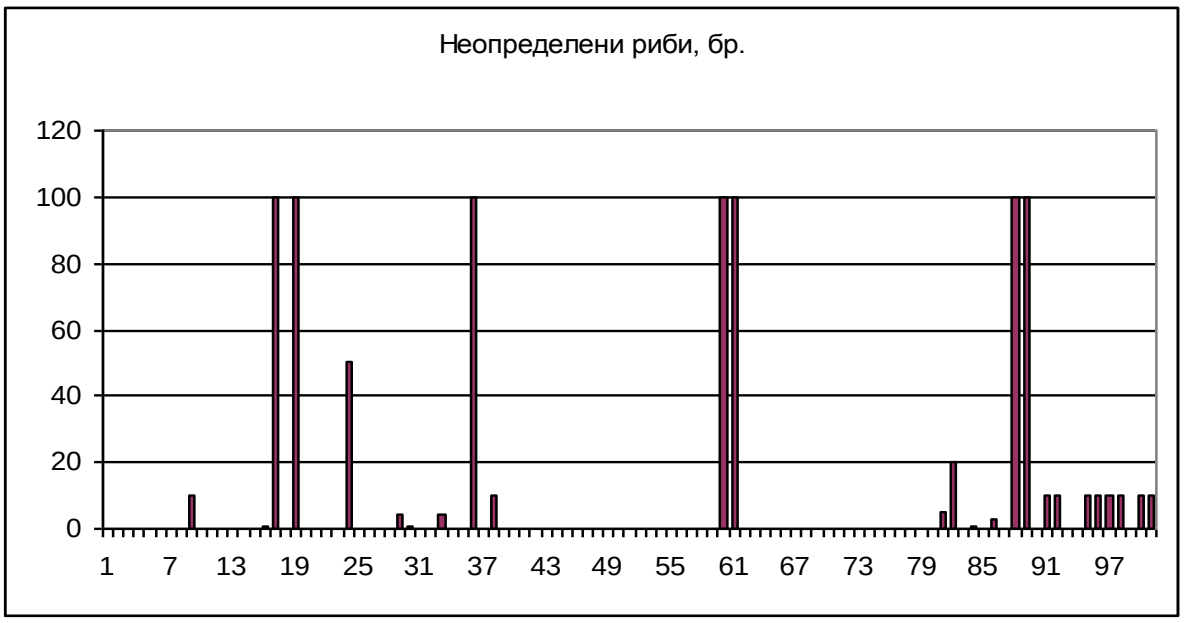

Балканска пъстърва, Salmo trutta, бр.
20
18
16
14
12
10
8
6
4
2
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

Македонска пъстърва, Salmo macedonica, бр.
6
5
4
3
2
1
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Черна мряна, Barbus barbus, бр.
25
20
15
10
5
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Риба пръскачка, Albumoides bipunstatus, бр.
120
100
80
60
40
20
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

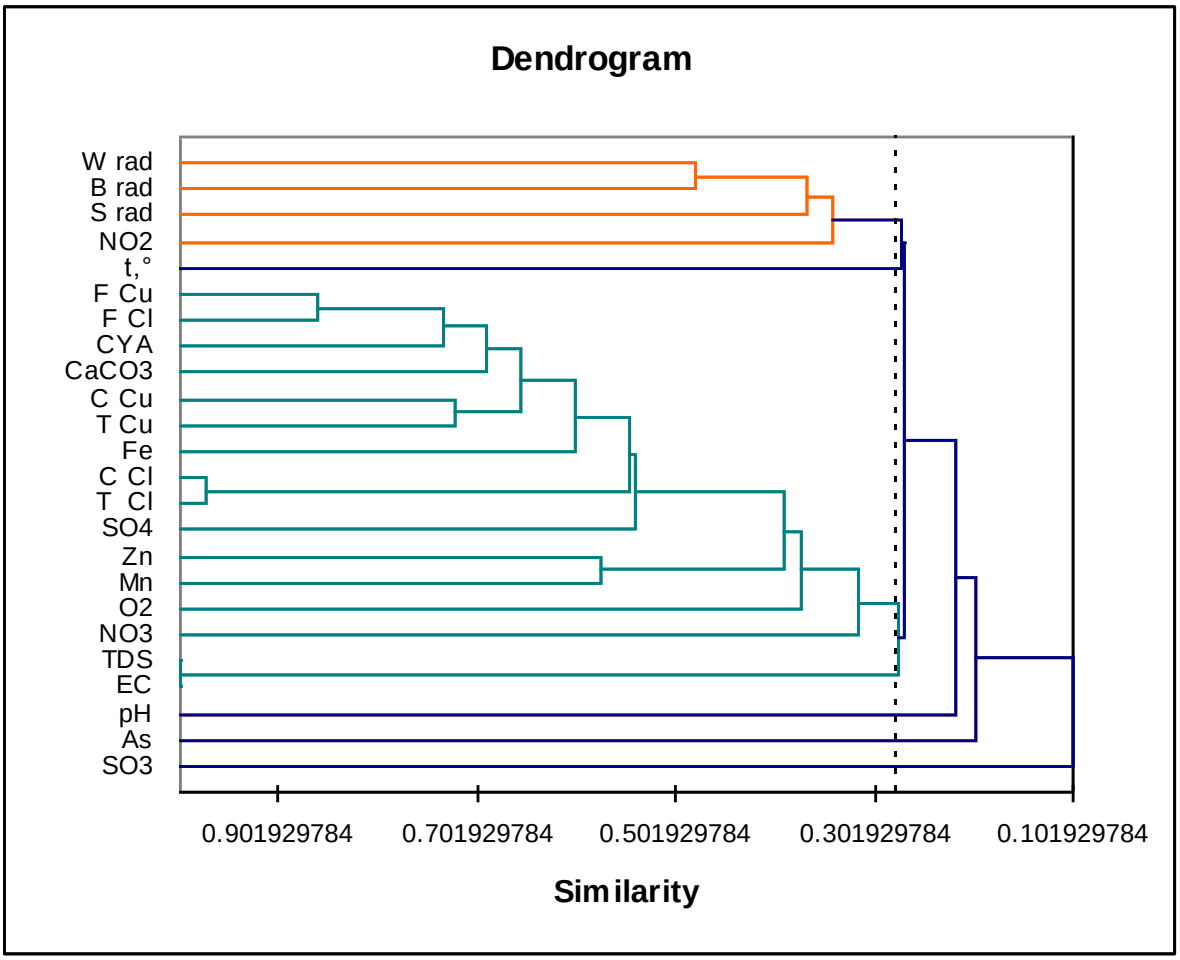

Речен кефал, Leuciscus cephalus, бр.
12
10
8
6
4
2
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97


Неопределени риби, бр.
120
100
80
60
40
20
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97

XLSTAT - Agglomerative hierarchical clustering (AHC)
Observations/variables table: Workbook = Danni leten monitoring_Cluster Analyses.
Cluster columns 24
Similarity: Pearson correlation coefficient
Agglomeration method: Single linkage
Center: No
Reduce: No
Truncation: Automatic - Entropy

Summary statistics:

№	Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
1	pH	100	0	100	6.500	9.100	8.016	0.444
2	EC	100	0	100	0.149	0.363	0.255	0.034
3	TDS	100	0	100	0.149	0.363	0.255	0.034
4	O2	100	0	100	20.000	28.100	24.053	1.858
5	t,°	100	0	100	0.000	26.300	20.000	2.973
6	NO2	100	0	100	0.010	10.000	0.210	1.406
7	NO3	100	0	100	0.000	1.000	0.177	0.304
8	F Cl	100	0	100	0.010	0.110	0.030	0.030
9	T Cl	100	0	100	0.010	0.710	0.058	0.111
10	C Cl	100	0	100	0.010	0.600	0.041	0.096
11	CYA	100	0	100	0.000	26.000	4.085	6.463
12	CaCO3	100	0	100	106.000	250.000	158.890	33.893
13	F Cu	100	0	100	0.010	0.410	0.097	0.109
14	T Cu	100	0	100	0.000	0.710	0.134	0.136
15	C Cu	100	0	100	0.000	0.710	0.055	0.099
16	Fe	100	0	100	0.010	0.090	0.027	0.020
17	As	100	0	100	0.000	0.100	0.012	0.013
18	Mn	100	0	100	0.010	4.000	0.448	0.910
19	Zn	100	0	100	0.010	3.000	0.536	0.793
20	SO4	100	0	100	0.010	400.000	142.504	122.753
21	SO3	100	0	100	0.010	200.000	2.010	19.999
22	B rad	100	0	100	0.040	0.320	0.165	0.052
23	W rad	100	0	100	0.040	0.280	0.147	0.056
24	S rad	100	0	100	0.040	0.280	0.157	0.052

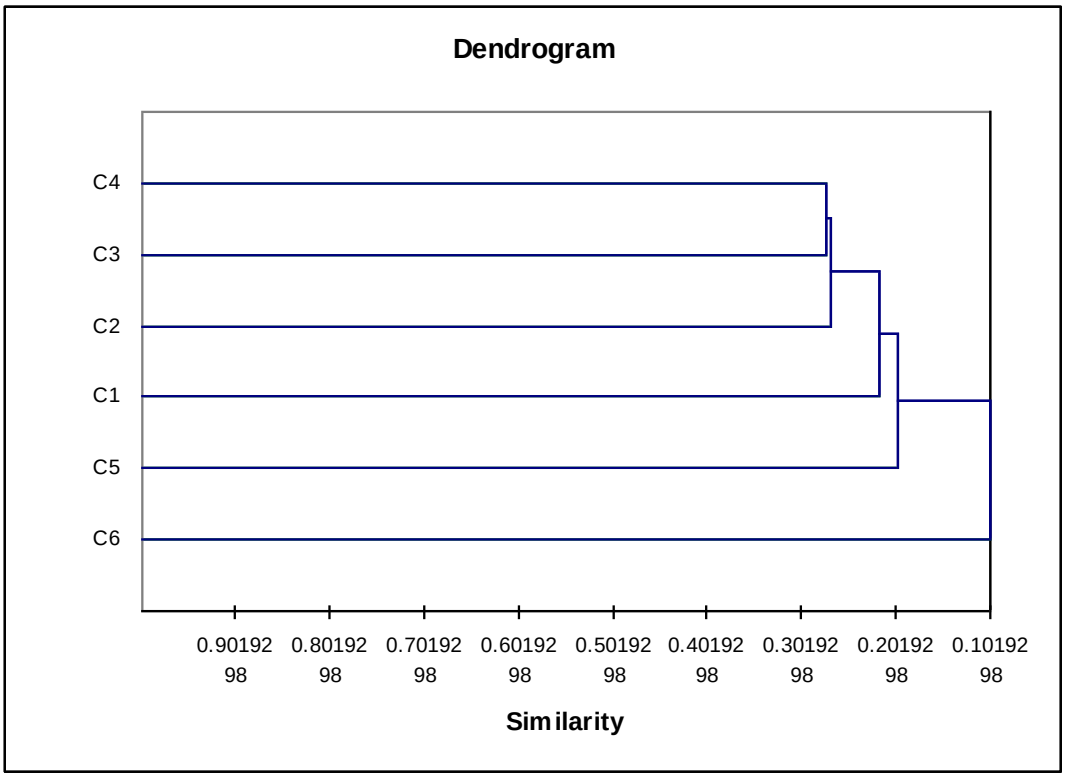


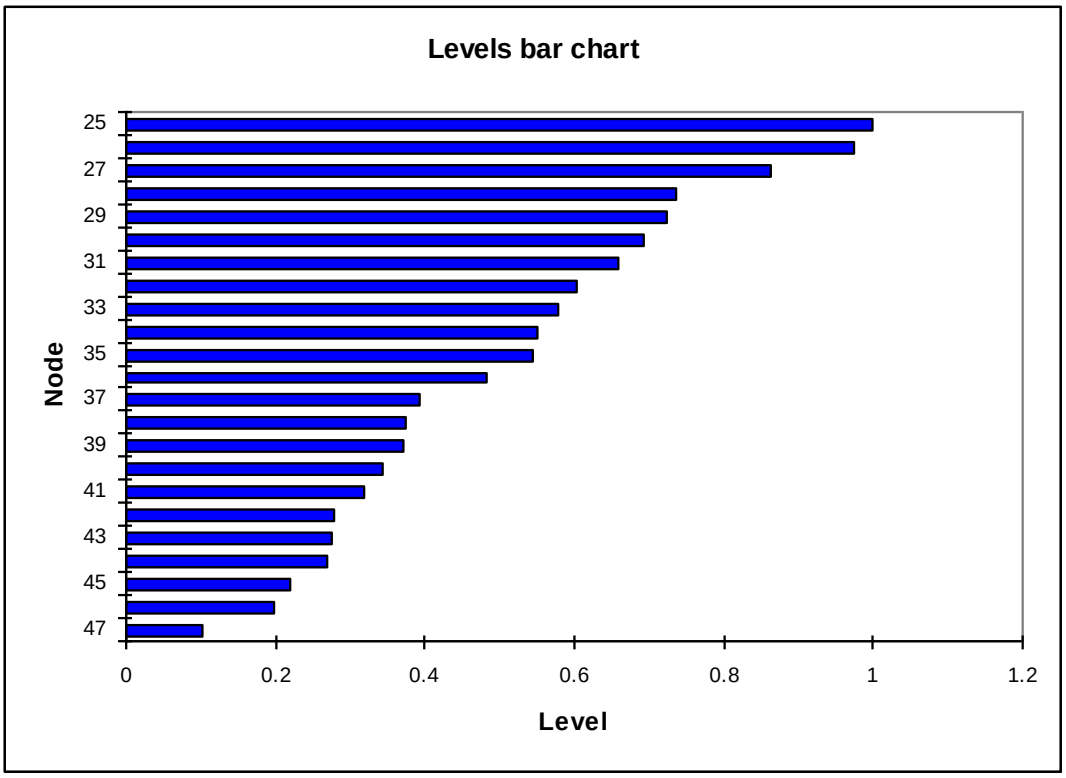
Results by object:

Observation	Class
pH	1
EC	2
TDS	2
O2	2
t,°	3
NO2	4
NO3	2
F Cl	2
T Cl	2
C Cl	2
CYA	2
CaCO3	2
F Cu	2
T Cu	2
C Cu	2
Fe	2
As	5
Mn	2
Zn	2
SO4	2
SO3	6
B rad	4
W rad	4
S rad	4

Distances between the class centroids:

	1	2	3	4	5	6
1	0	157.255	123.540	78.650	80.160	207.629
2	157.255	0	104.210	225.521	226.906	295.125
3	123.540	104.210	0	200.388	202.052	267.649
4	78.650	225.521	200.388	0	3.904	199.964
5	80.160	226.906	202.052	3.904	0	199.990
6	207.629	295.125	267.649	199.964	199.990	0





Node statistics:

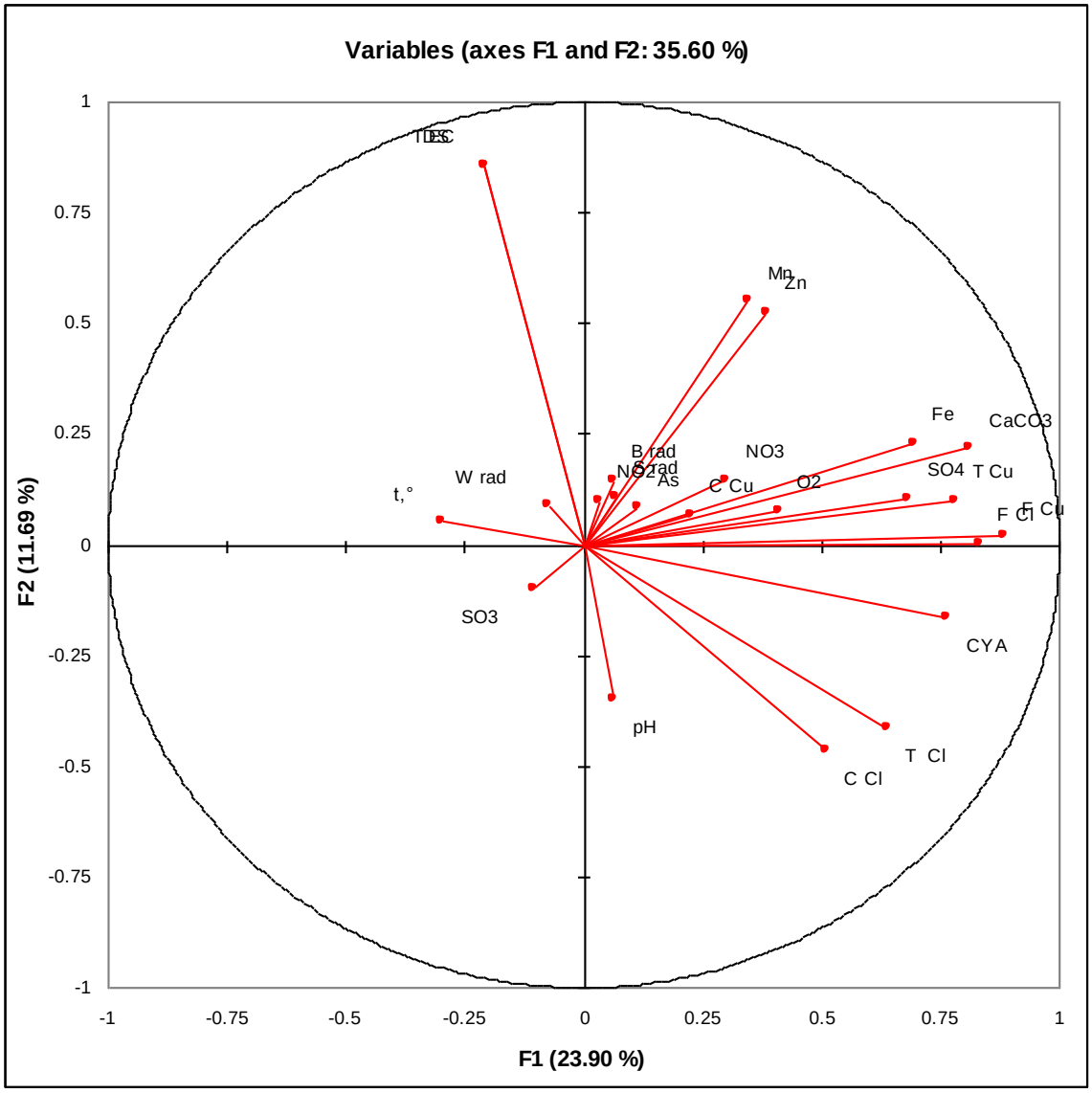
Node	Level	Weight	Objects	Left son	Right son
47	0.102	24	24	21	46
46	0.199	23	23	17	45
45	0.219	22	22	1	44
44	0.271	21	21	42	43
43	0.275	5	5	5	40
42	0.279	16	16	25	41
41	0.319	14	14	7	38
40	0.344	4	4	6	39
39	0.371	3	3	24	36
38	0.375	13	13	4	37
37	0.392	12	12	33	35
36	0.482	2	2	22	23
35	0.543	10	10	20	34
34	0.549	9	9	26	32
33	0.578	2	2	18	19
32	0.603	7	7	16	31
31	0.658	6	6	29	30
30	0.692	4	4	12	28
29	0.724	2	2	14	15
28	0.736	3	3	11	27
27	0.862	2	2	8	13
26	0.973	2	2	9	10
25	1.000	2	2	2	3

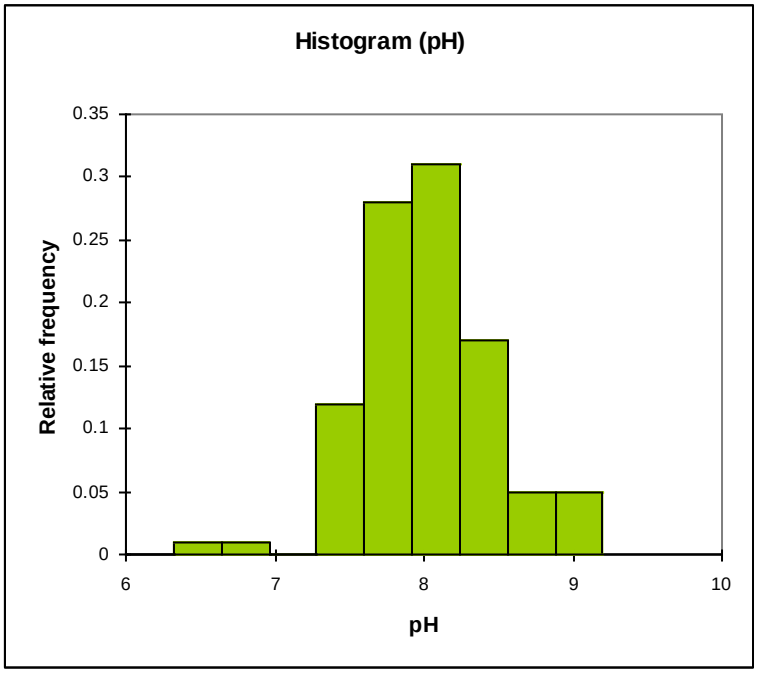
Correlation matrix (Pearson (n)):

Variables	pH	EC	TDS	O2	t,°	NO2	NO3	F Cl	T Cl	C Cl
pH	**1**	-0.380	-0.380	-0.019	-0.023	0.092	-0.096	0.015	0.032	0.030
EC	-0.380	**1**	1.000	-0.023	0.187	-0.001	-0.003	-0.127	-0.298	-0.306
TDS	-0.380	1.000	**1**	-0.023	0.187	-0.001	-0.003	-0.127	-0.298	-0.306
O2	-0.019	-0.023	-0.023	**1**	-0.023	-0.093	-0.072	0.307	0.250	0.213
t,°	-0.023	0.187	0.187	-0.023	**1**	0.275	0.108	-0.243	-0.030	0.017
NO2	0.092	-0.001	-0.001	-0.093	0.275	**1**	0.271	0.071	-0.024	-0.046
NO3	-0.096	-0.003	-0.003	-0.072	0.108	0.271	**1**	0.226	0.130	0.087
F Cl	0.015	-0.127	-0.127	0.307	-0.243	0.071	0.226	**1**	0.473	0.289
T Cl	0.032	-0.298	-0.298	0.250	-0.030	-0.024	0.130	0.473	**1**	0.973
C Cl	0.030	-0.306	-0.306	0.213	0.017	-0.046	0.087	0.289	0.973	**1**
CYA	-0.035	-0.155	-0.155	0.231	-0.266	-0.002	0.224	0.716	0.541	0.423
CaCO3	0.117	0.009	0.009	0.301	-0.180	0.123	0.319	0.671	0.327	0.202
F Cu	-0.012	-0.100	-0.100	0.339	-0.317	-0.056	0.171	0.862	0.549	0.411
T Cu	0.140	-0.140	-0.140	0.171	-0.192	0.112	0.297	0.585	0.308	0.206
C Cu	0.219	-0.129	-0.129	-0.133	0.047	0.197	0.221	0.017	-0.048	-0.060
Fe	-0.132	0.030	0.030	0.246	-0.117	-0.018	0.176	0.542	0.325	0.234
As	0.035	-0.046	-0.046	-0.063	0.156	0.199	0.151	0.062	-0.008	-0.015
Mn	-0.021	0.279	0.279	0.314	-0.186	-0.069	0.037	0.169	0.088	0.036
Zn	-0.033	0.225	0.225	0.129	-0.203	0.084	0.186	0.286	0.046	-0.022
SO4	0.006	-0.140	-0.140	0.375	-0.234	-0.050	0.107	0.433	0.299	0.230
SO3	0.065	-0.010	-0.010	-0.209	0.102	-0.014	-0.055	-0.070	0.038	0.051
B rad	0.207	0.030	0.030	0.105	-0.111	0.097	0.048	-0.032	-0.109	-0.095
W rad	0.168	0.089	0.089	-0.167	0.159	0.344	0.207	-0.106	-0.042	0.005
S rad	0.079	0.074	0.074	-0.019	-0.014	0.202	0.061	-0.104	0.096	0.112

CYA	CaCO3	F Cu	T Cu	C Cu	Fe	As	Mn	Zn	SO4	SO3
-0.035	0.117	-0.012	0.140	0.219	-0.132	0.035	-0.021	-0.033	0.006	0.065
-0.155	0.009	-0.100	-0.140	-0.129	0.030	-0.046	0.279	0.225	-0.140	-0.010
-0.155	0.009	-0.100	-0.140	-0.129	0.030	-0.046	0.279	0.225	-0.140	-0.010
0.231	0.301	0.339	0.171	-0.133	0.246	-0.063	0.314	0.129	0.375	-0.209
-0.266	-0.180	-0.317	-0.192	0.047	-0.117	0.156	-0.186	-0.203	-0.234	0.102
-0.002	0.123	-0.056	0.112	0.197	-0.018	0.199	-0.069	0.084	-0.050	-0.014
0.224	0.319	0.171	0.297	0.221	0.176	0.151	0.037	0.186	0.107	-0.055
0.716	0.671	0.862	0.585	0.017	0.542	0.062	0.169	0.286	0.433	-0.070
0.541	0.327	0.549	0.308	-0.048	0.325	-0.008	0.088	0.046	0.299	0.038
0.423	0.202	0.411	0.206	-0.060	0.234	-0.015	0.036	-0.022	0.230	0.051
1	0.613	0.736	0.571	0.103	0.381	-0.034	-0.063	0.016	0.400	-0.064
0.613	**1**	0.692	0.658	0.215	0.567	0.195	0.300	0.351	0.543	-0.015
0.736	0.692	**1**	0.619	-0.065	0.603	0.020	0.256	0.340	0.499	-0.081
0.571	0.658	0.619	**1**	0.724	0.560	0.147	0.256	0.264	0.481	-0.092
0.103	0.215	-0.065	0.724	**1**	0.160	0.152	0.094	0.053	0.138	-0.046
0.381	0.567	0.603	0.560	0.160	**1**	0.176	0.341	0.267	0.505	-0.090
-0.034	0.195	0.020	0.147	0.152	0.176	**1**	0.012	0.148	0.038	-0.019
-0.063	0.300	0.256	0.256	0.094	0.341	0.012	**1**	0.578	0.322	-0.049
0.016	0.351	0.340	0.264	0.053	0.267	0.148	0.578	**1**	0.392	0.059
0.400	0.543	0.499	0.481	0.138	0.505	0.038	0.322	0.392	**1**	-0.117
-0.064	-0.015	-0.081	-0.092	-0.046	-0.090	-0.019	-0.049	0.059	-0.117	**1**
0.071	0.153	-0.019	0.187	0.243	-0.053	0.037	0.125	-0.062	-0.019	-0.146
0.021	-0.033	-0.099	0.097	0.240	-0.110	0.022	-0.048	-0.130	-0.196	-0.122
0.110	0.086	-0.061	0.080	0.157	-0.092	-0.184	0.069	0.048	0.207	-0.073

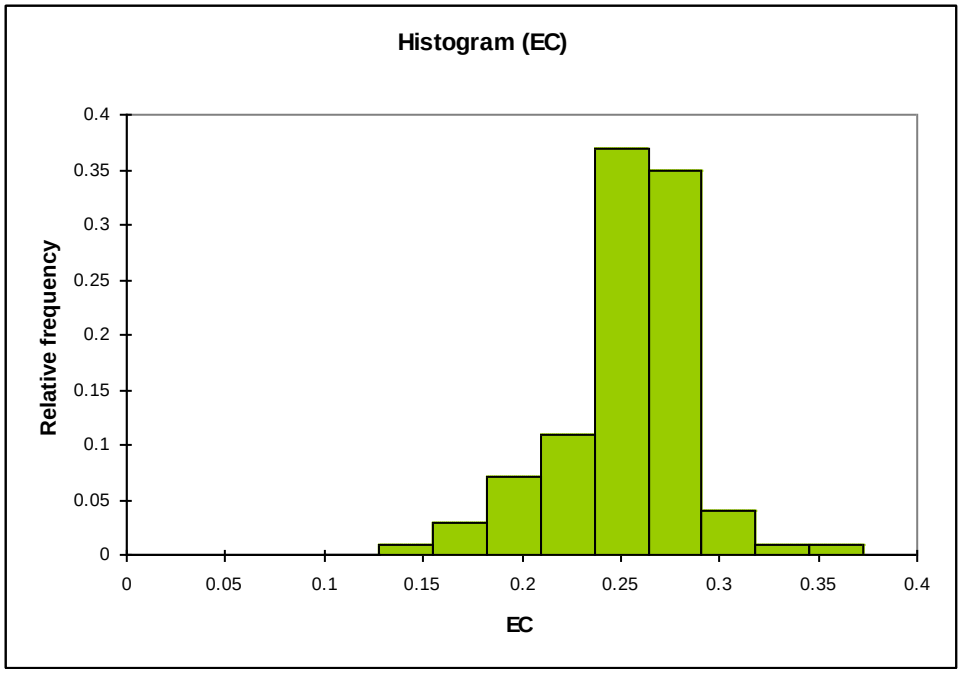
B rad	W rad	S rad
0.207	0.168	0.079
0.030	0.089	0.074
0.030	0.089	0.074
0.105	-0.167	-0.019
-0.111	0.159	-0.014
0.097	0.344	0.202
0.048	0.207	0.061
-0.032	-0.106	-0.104
-0.109	-0.042	0.096
-0.095	0.005	0.112
0.071	0.021	0.110
0.153	-0.033	0.086
-0.019	-0.099	-0.061
0.187	0.097	0.080
0.243	0.240	0.157
-0.053	-0.110	-0.092
0.037	0.022	-0.184
0.125	-0.048	0.069
-0.062	-0.130	0.048
-0.019	-0.196	0.207
-0.146	-0.122	-0.073
1	0.482	0.359
0.482	**1**	0.371
0.359	0.371	**1**


Variables (axes F1 and F2: 35.60 %)
F2 (11.69 %)
F1 (23.90 %)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1
-0.75
-0.5
-0.25
0
0.25
0.5
0.75
1
TDS
Mn
Zn
Fe
CaCO3
B rad
NO3
NO2
As
C Cu
O2
SO4
T Cu
W rad
t,°
F Cl
F Cu
SO3
CYA
pH
T Cl
C Cl


Histogram (pH)
Relative frequency
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
6
7
8
9
10
pH

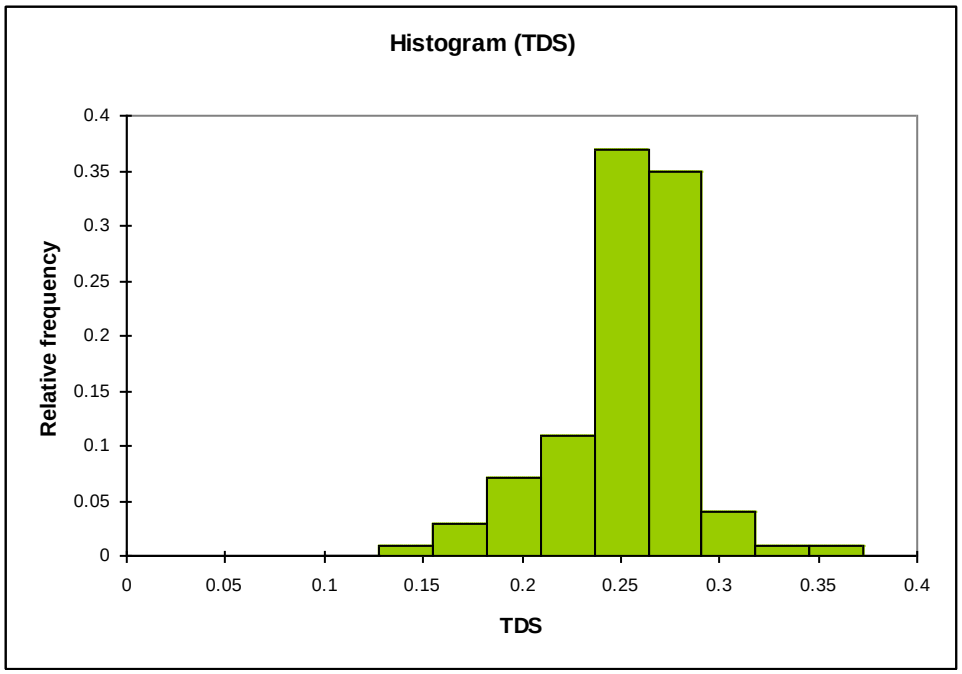
Descriptive statistics for the intervals (pH):

Lower bound	Upper bound	Frequency	Relative frequency	Density
6	6.32	0	0.000	0.000
6.32	6.64	1	0.010	0.031
6.64	6.96	1	0.010	0.031
6.96	7.28	0	0.000	0.000
7.28	7.6	12	0.120	0.375
7.6	7.92	28	0.280	0.875
7.92	8.24	31	0.310	0.969
8.24	8.56	17	0.170	0.531
8.56	8.88	5	0.050	0.156
8.88	9.2	5	0.050	0.156



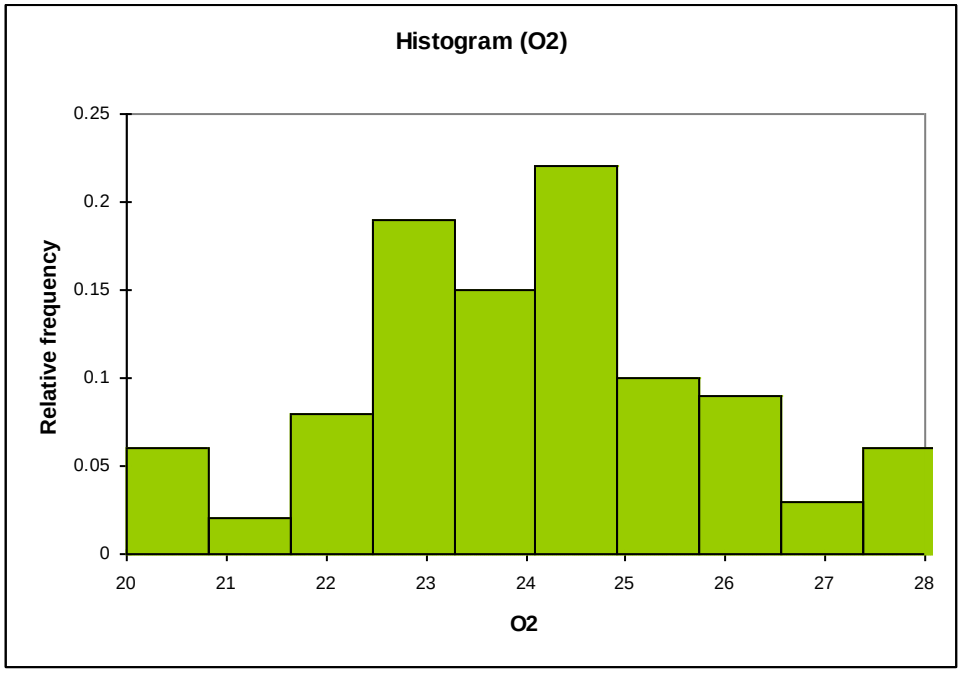
Descriptive statistics for the intervals (EC):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0.1	0.1273	0	0.000	0.000
0.1273	0.1546	1	0.010	0.366
0.1546	0.1819	3	0.030	1.099
0.1819	0.2092	7	0.070	2.564
0.2092	0.2365	11	0.110	4.029
0.2365	0.2638	37	0.370	13.553
0.2638	0.2911	35	0.350	12.821
0.2911	0.3184	4	0.040	1.465
0.3184	0.3457	1	0.010	0.366
0.3457	0.373	1	0.010	0.366



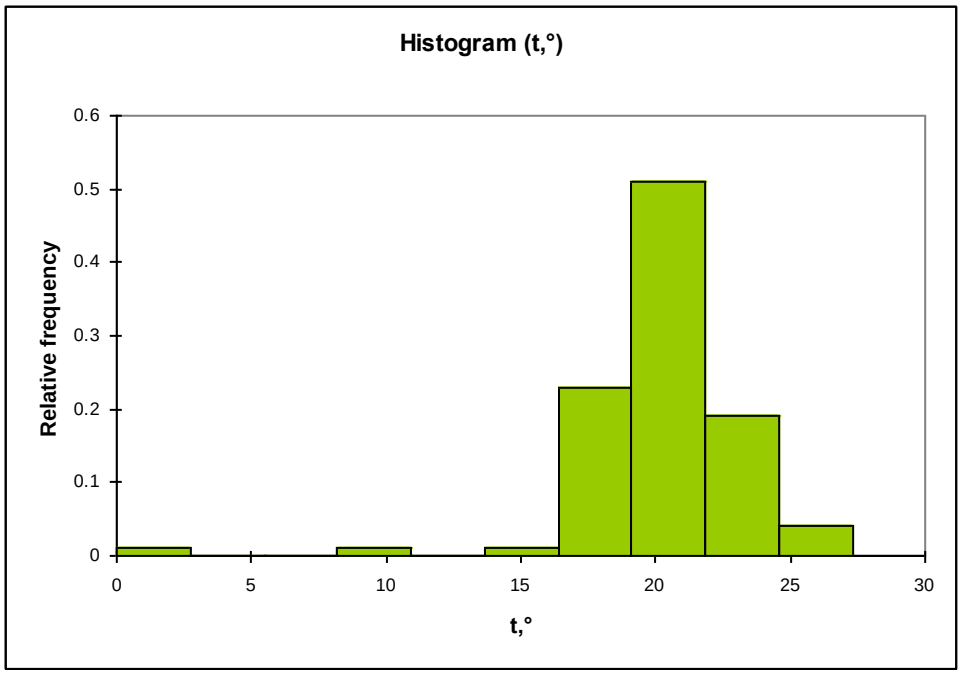
Descriptive statistics for the intervals (TDS):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0.1	0.1273	0	0.000	0.000
0.1273	0.1546	1	0.010	0.366
0.1546	0.1819	3	0.030	1.099
0.1819	0.2092	7	0.070	2.564
0.2092	0.2365	11	0.110	4.029
0.2365	0.2638	37	0.370	13.553
0.2638	0.2911	35	0.350	12.821
0.2911	0.3184	4	0.040	1.465
0.3184	0.3457	1	0.010	0.366
0.3457	0.373	1	0.010	0.366



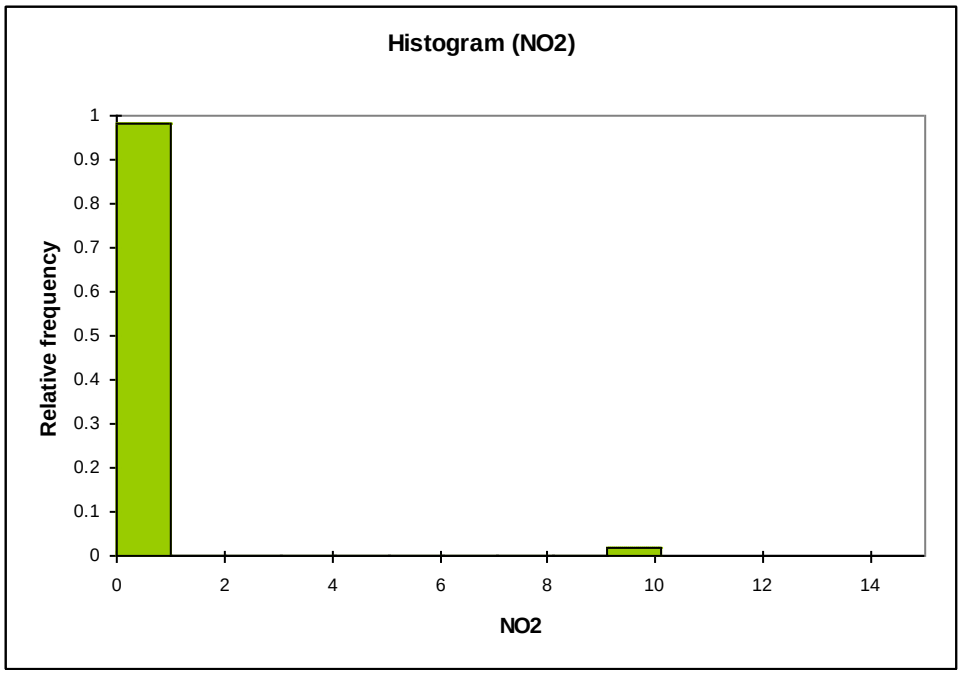
Descriptive statistics for the intervals (O2):

Lower bound	Upper bound	Frequency	Relative frequency	Density
20	20.82	6	0.060	0.073
20.82	21.64	2	0.020	0.024
21.64	22.46	8	0.080	0.098
22.46	23.28	19	0.190	0.232
23.28	24.1	15	0.150	0.183
24.1	24.92	22	0.220	0.268
24.92	25.74	10	0.100	0.122
25.74	26.56	9	0.090	0.110
26.56	27.38	3	0.030	0.037
27.38	28.2	6	0.060	0.073



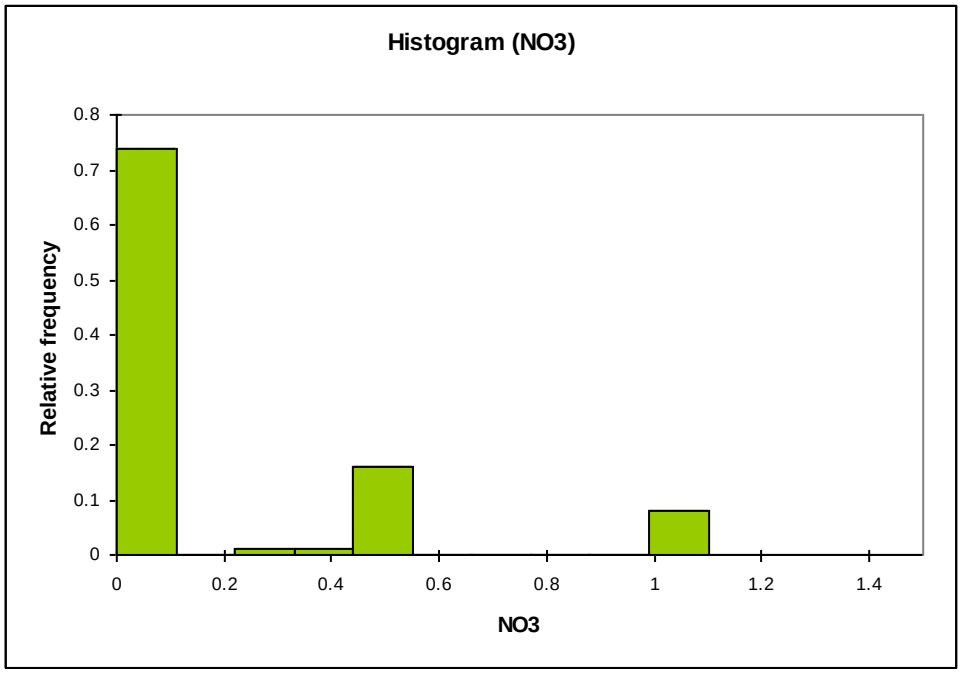
Descriptive statistics for the intervals (t,°):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	2.73	1	0.010	0.004
2.73	5.46	0	0.000	0.000
5.46	8.19	0	0.000	0.000
8.19	10.92	1	0.010	0.004
10.92	13.65	0	0.000	0.000
13.65	16.38	1	0.010	0.004
16.38	19.11	23	0.230	0.084
19.11	21.84	51	0.510	0.187
21.84	24.57	19	0.190	0.070
24.57	27.3	4	0.040	0.015



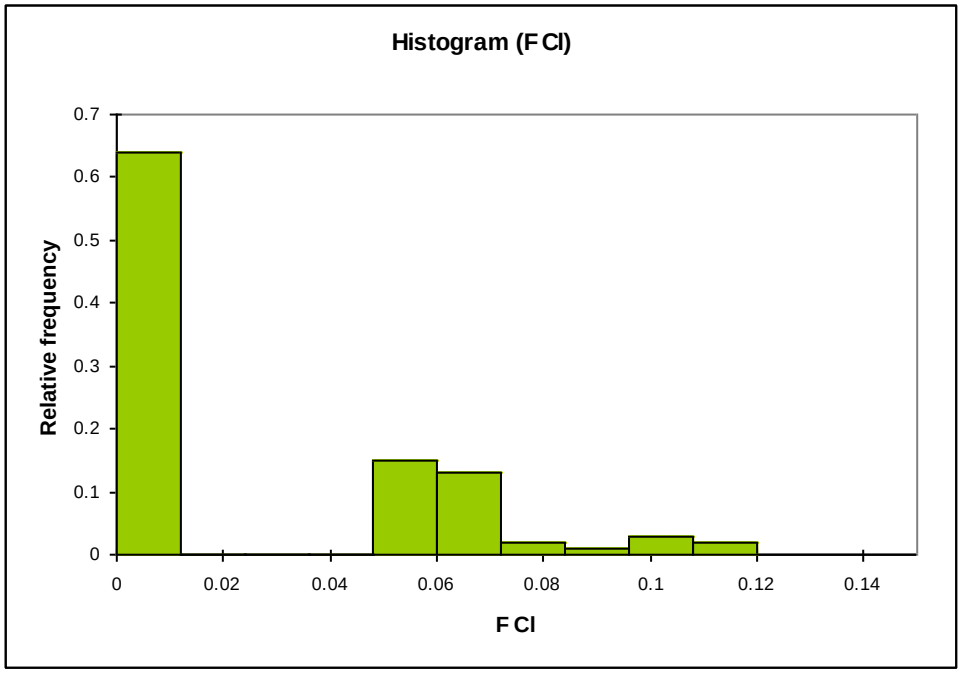
Descriptive statistics for the intervals (NO2):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	1.01	98	0.980	0.970
1.01	2.02	0	0.000	0.000
2.02	3.03	0	0.000	0.000
3.03	4.04	0	0.000	0.000
4.04	5.05	0	0.000	0.000
5.05	6.06	0	0.000	0.000
6.06	7.07	0	0.000	0.000
7.07	8.08	0	0.000	0.000
8.08	9.09	0	0.000	0.000
9.09	10.1	2	0.020	0.020



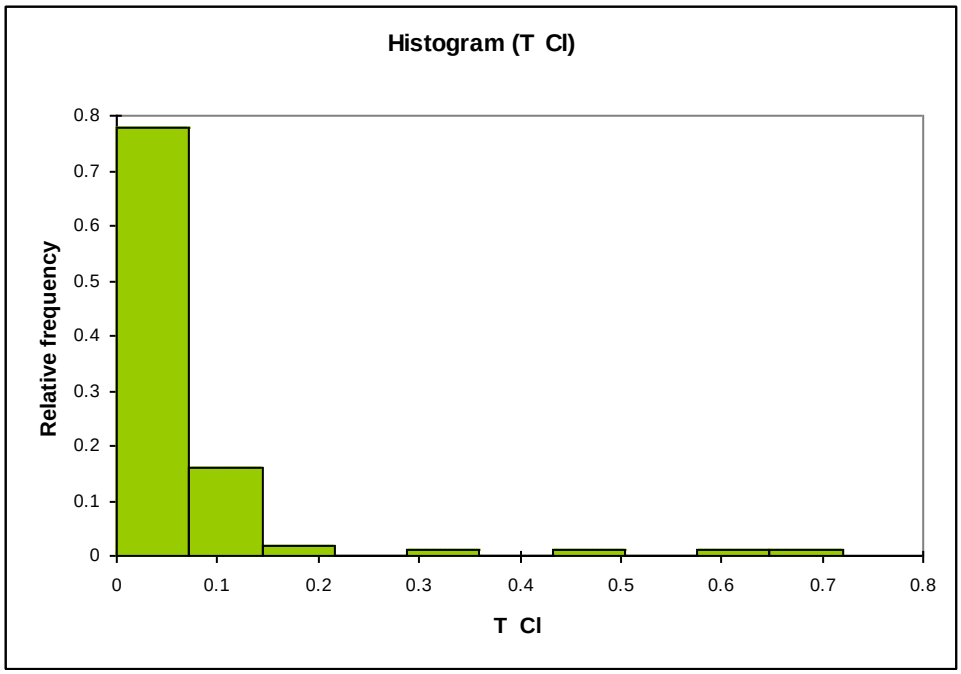
Descriptive statistics for the intervals (NO3):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.11	74	0.740	6.727
0.11	0.22	0	0.000	0.000
0.22	0.33	1	0.010	0.091
0.33	0.44	1	0.010	0.091
0.44	0.55	16	0.160	1.455
0.55	0.66	0	0.000	0.000
0.66	0.77	0	0.000	0.000
0.77	0.88	0	0.000	0.000
0.88	0.99	0	0.000	0.000
0.99	1.1	8	0.080	0.727



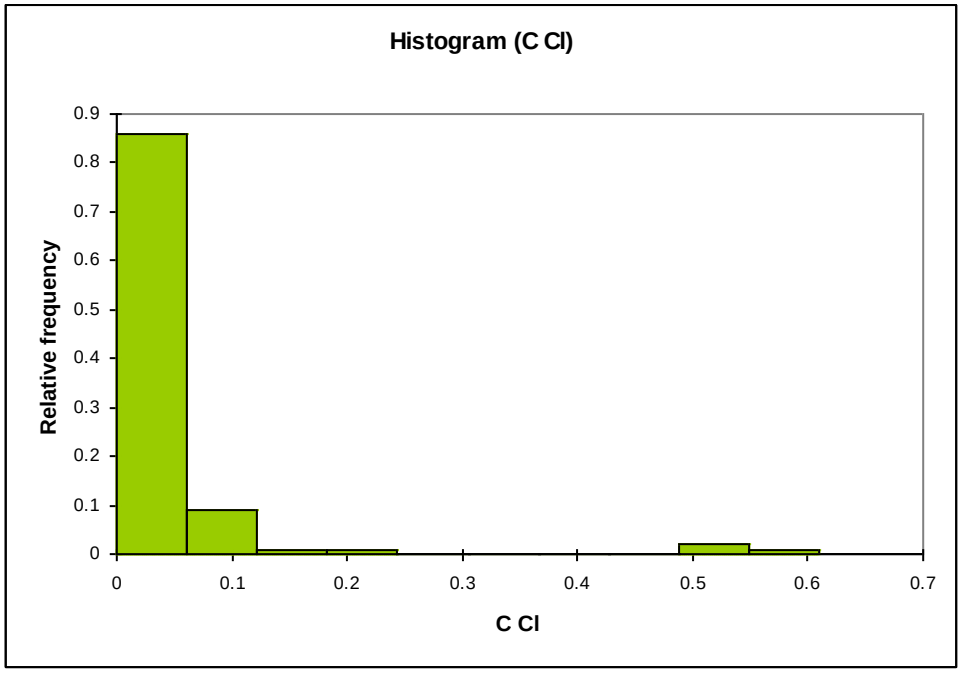
Descriptive statistics for the intervals (F Cl):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.012	64	0.640	53.333
0.012	0.024	0	0.000	0.000
0.024	0.036	0	0.000	0.000
0.036	0.048	0	0.000	0.000
0.048	0.06	15	0.150	12.500
0.06	0.072	13	0.130	10.833
0.072	0.084	2	0.020	1.667
0.084	0.096	1	0.010	0.833
0.096	0.108	3	0.030	2.500
0.108	0.12	2	0.020	1.667



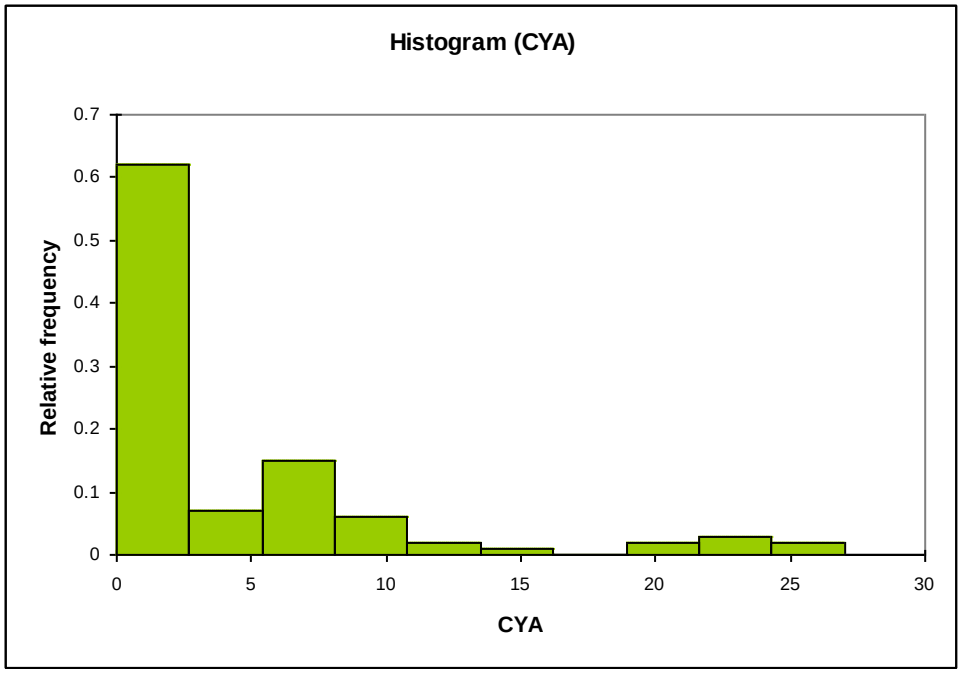
Descriptive statistics for the intervals (T Cl):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.072	78	0.780	10.833
0.072	0.144	16	0.160	2.222
0.144	0.216	2	0.020	0.278
0.216	0.288	0	0.000	0.000
0.288	0.36	1	0.010	0.139
0.36	0.432	0	0.000	0.000
0.432	0.504	1	0.010	0.139
0.504	0.576	0	0.000	0.000
0.576	0.648	1	0.010	0.139
0.648	0.72	1	0.010	0.139



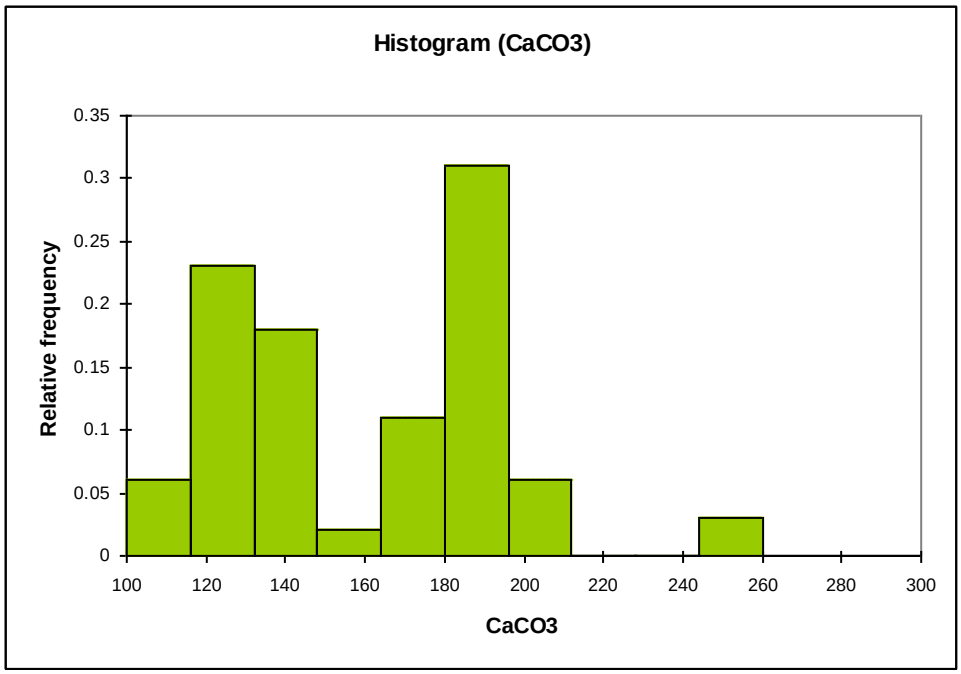
Descriptive statistics for the intervals (C Cl):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.061	86	0.860	14.098
0.061	0.122	9	0.090	1.475
0.122	0.183	1	0.010	0.164
0.183	0.244	1	0.010	0.164
0.244	0.305	0	0.000	0.000
0.305	0.366	0	0.000	0.000
0.366	0.427	0	0.000	0.000
0.427	0.488	0	0.000	0.000
0.488	0.549	2	0.020	0.328
0.549	0.61	1	0.010	0.164



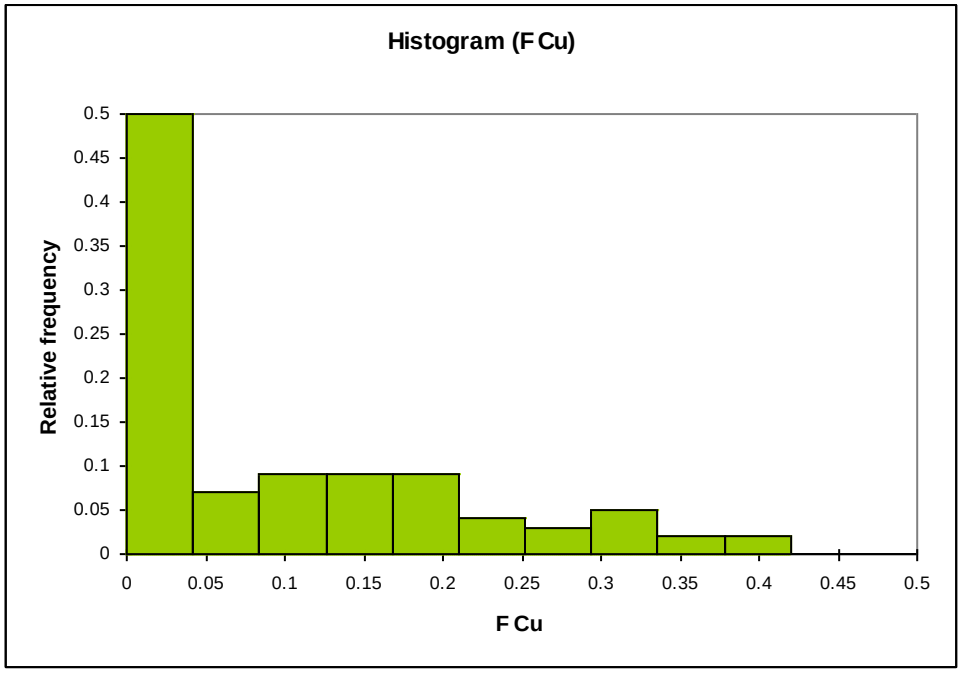
Descriptive statistics for the intervals (CYA):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	2.7	62	0.620	0.230
2.7	5.4	7	0.070	0.026
5.4	8.1	15	0.150	0.056
8.1	10.8	6	0.060	0.022
10.8	13.5	2	0.020	0.007
13.5	16.2	1	0.010	0.004
16.2	18.9	0	0.000	0.000
18.9	21.6	2	0.020	0.007
21.6	24.3	3	0.030	0.011
24.3	27	2	0.020	0.007



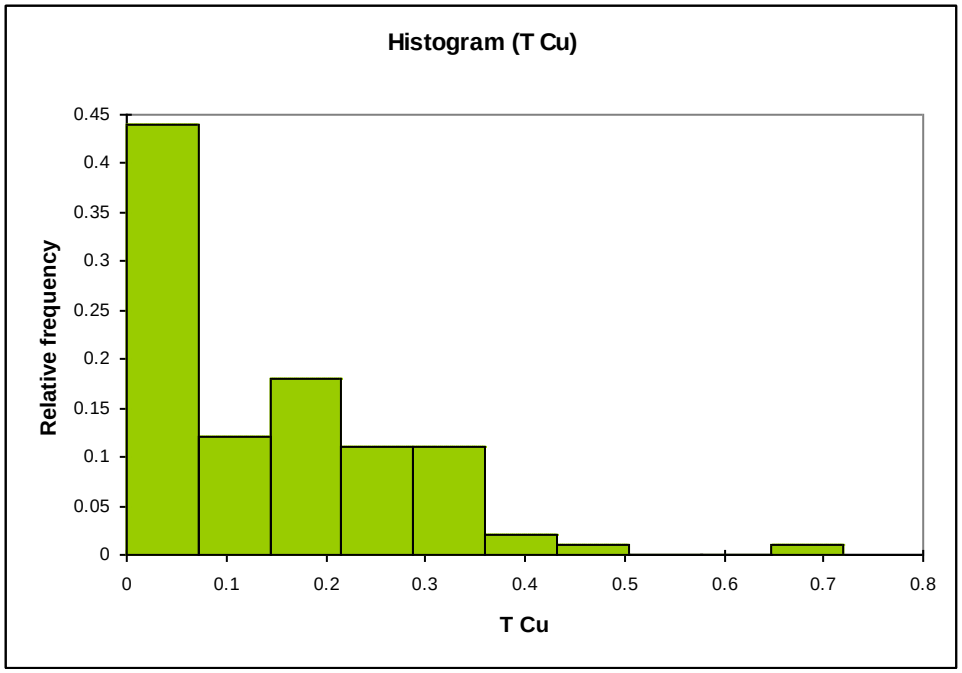
Descriptive statistics for the intervals (CaCO3):

Lower bound	Upper bound	Frequency	Relative frequency	Density
100	116	6	0.060	0.004
116	132	23	0.230	0.014
132	148	18	0.180	0.011
148	164	2	0.020	0.001
164	180	11	0.110	0.007
180	196	31	0.310	0.019
196	212	6	0.060	0.004
212	228	0	0.000	0.000
228	244	0	0.000	0.000
244	260	3	0.030	0.002



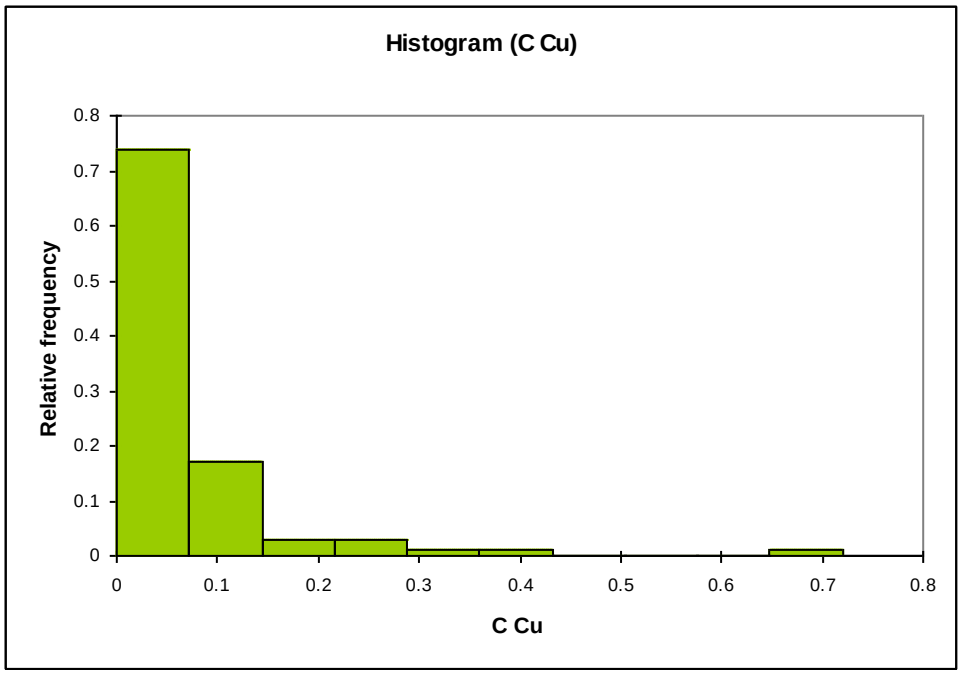
Descriptive statistics for the intervals (F Cu):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.042	50	0.500	11.905
0.042	0.084	7	0.070	1.667
0.084	0.126	9	0.090	2.143
0.126	0.168	9	0.090	2.143
0.168	0.21	9	0.090	2.143
0.21	0.252	4	0.040	0.952
0.252	0.294	3	0.030	0.714
0.294	0.336	5	0.050	1.190
0.336	0.378	2	0.020	0.476
0.378	0.42	2	0.020	0.476



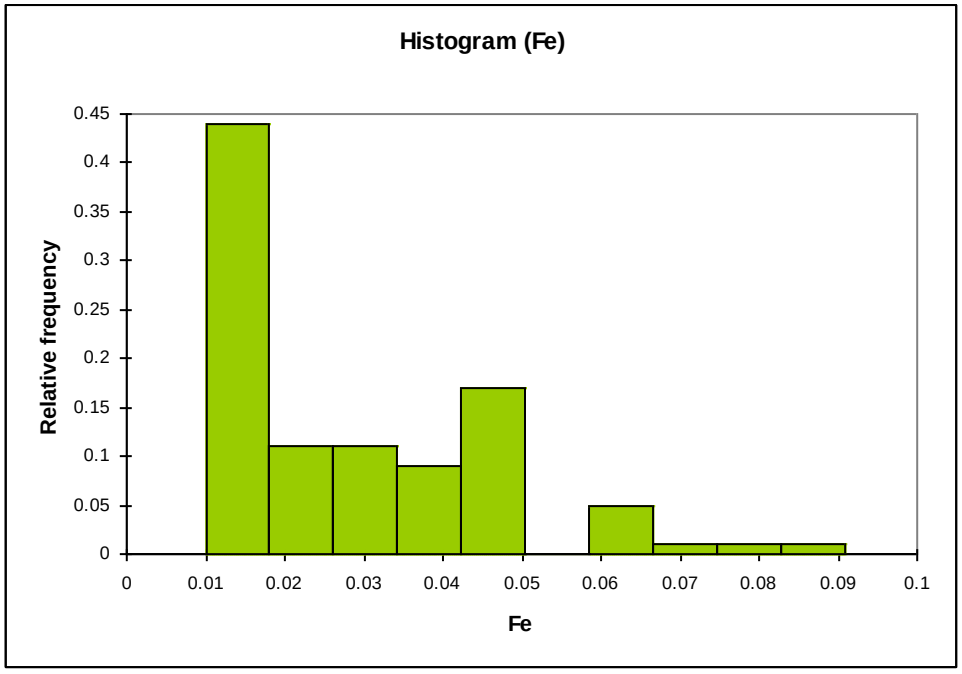
Descriptive statistics for the intervals (T Cu):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.072	44	0.440	6.111
0.072	0.144	12	0.120	1.667
0.144	0.216	18	0.180	2.500
0.216	0.288	11	0.110	1.528
0.288	0.36	11	0.110	1.528
0.36	0.432	2	0.020	0.278
0.432	0.504	1	0.010	0.139
0.504	0.576	0	0.000	0.000
0.576	0.648	0	0.000	0.000
0.648	0.72	1	0.010	0.139



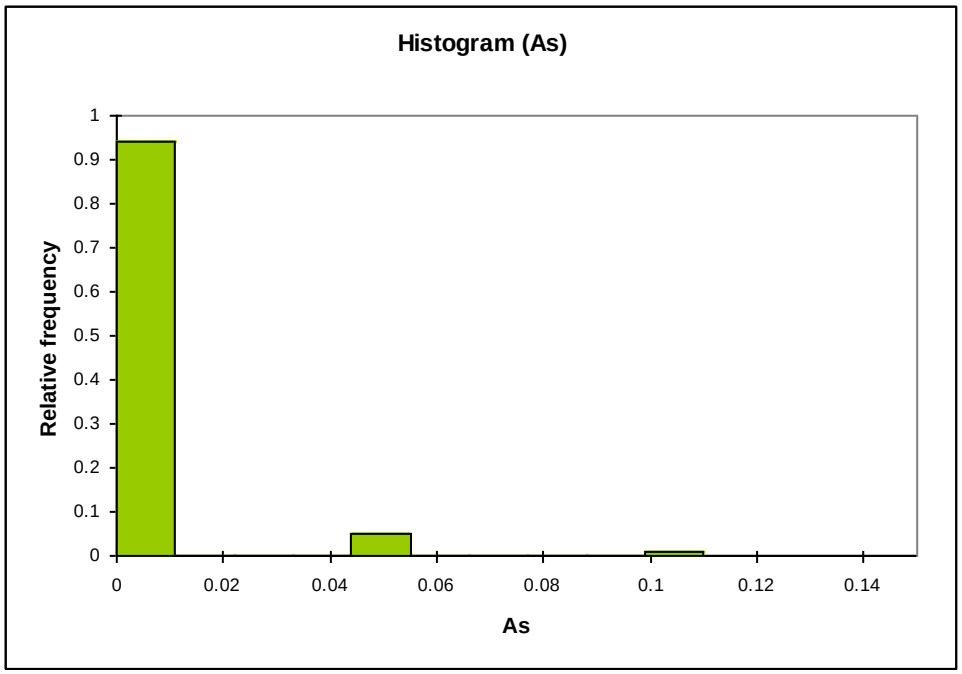
Descriptive statistics for the intervals (C Cu):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.072	74	0.740	10.278
0.072	0.144	17	0.170	2.361
0.144	0.216	3	0.030	0.417
0.216	0.288	3	0.030	0.417
0.288	0.36	1	0.010	0.139
0.36	0.432	1	0.010	0.139
0.432	0.504	0	0.000	0.000
0.504	0.576	0	0.000	0.000
0.576	0.648	0	0.000	0.000
0.648	0.72	1	0.010	0.139



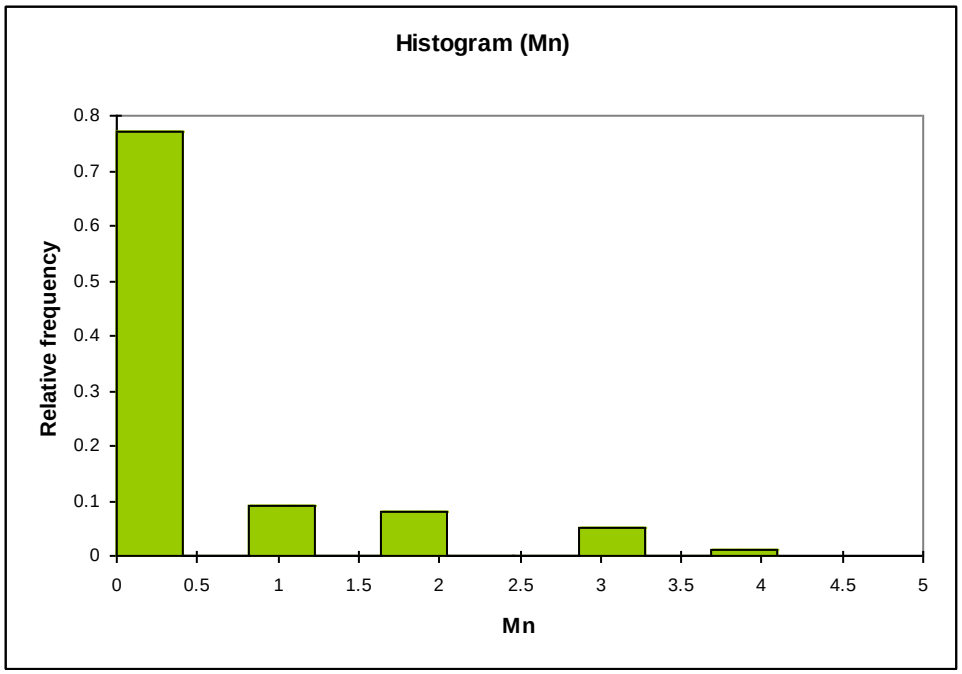
Descriptive statistics for the intervals (Fe):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0.01	0.0181	44	0.440	54.321
0.0181	0.0262	11	0.110	13.580
0.0262	0.0343	11	0.110	13.580
0.0343	0.0424	9	0.090	11.111
0.0424	0.0505	17	0.170	20.988
0.0505	0.0586	0	0.000	0.000
0.0586	0.0667	5	0.050	6.173
0.0667	0.0748	1	0.010	1.235
0.0748	0.0829	1	0.010	1.235
0.0829	0.091	1	0.010	1.235



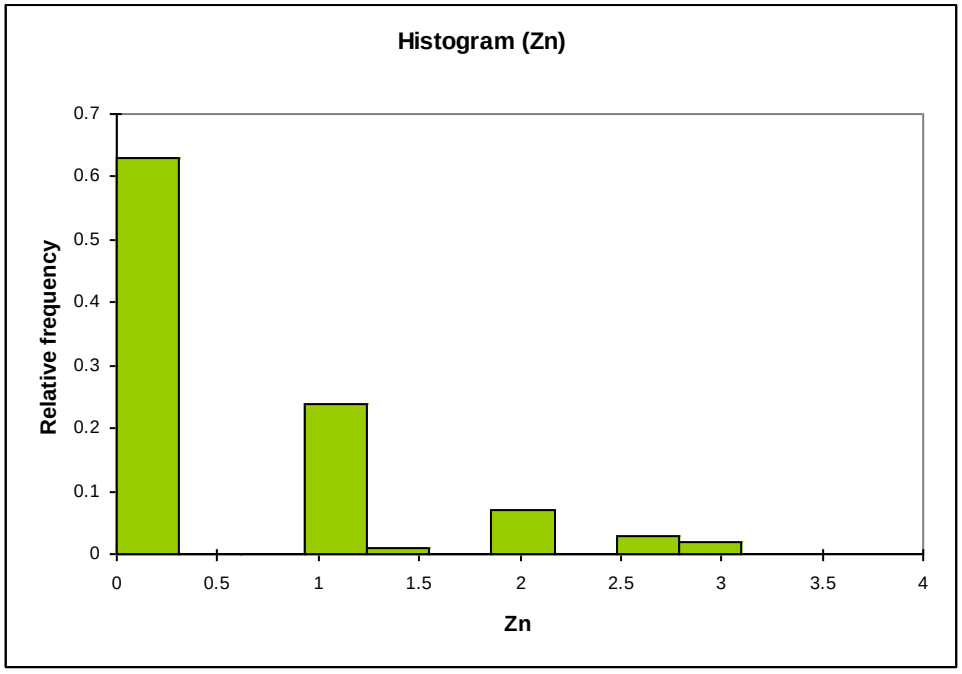
Descriptive statistics for the intervals (As):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.011	94	0.940	85.455
0.011	0.022	0	0.000	0.000
0.022	0.033	0	0.000	0.000
0.033	0.044	0	0.000	0.000
0.044	0.055	5	0.050	4.545
0.055	0.066	0	0.000	0.000
0.066	0.077	0	0.000	0.000
0.077	0.088	0	0.000	0.000
0.088	0.099	0	0.000	0.000
0.099	0.11	1	0.010	0.909



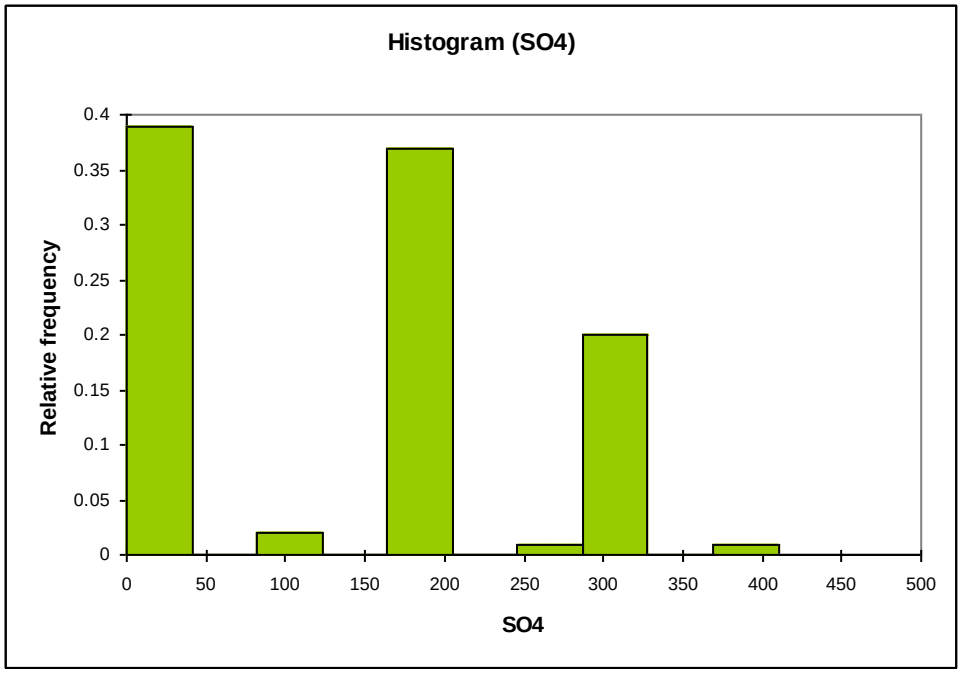
Descriptive statistics for the intervals (Mn):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.41	77	0.770	1.878
0.41	0.82	0	0.000	0.000
0.82	1.23	9	0.090	0.220
1.23	1.64	0	0.000	0.000
1.64	2.05	8	0.080	0.195
2.05	2.46	0	0.000	0.000
2.46	2.87	0	0.000	0.000
2.87	3.28	5	0.050	0.122
3.28	3.69	0	0.000	0.000
3.69	4.1	1	0.010	0.024



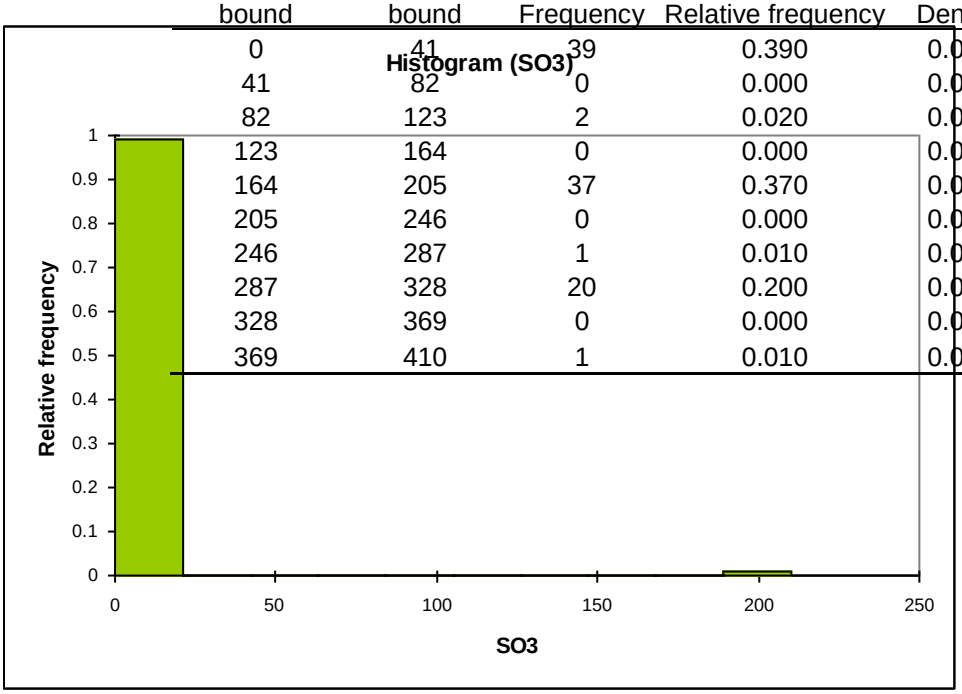
Descriptive statistics for the intervals (Zn):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.31	63	0.630	2.032
0.31	0.62	0	0.000	0.000
0.62	0.93	0	0.000	0.000
0.93	1.24	24	0.240	0.774
1.24	1.55	1	0.010	0.032
1.55	1.86	0	0.000	0.000
1.86	2.17	7	0.070	0.226
2.17	2.48	0	0.000	0.000
2.48	2.79	3	0.030	0.097
2.79	3.1	2	0.020	0.065



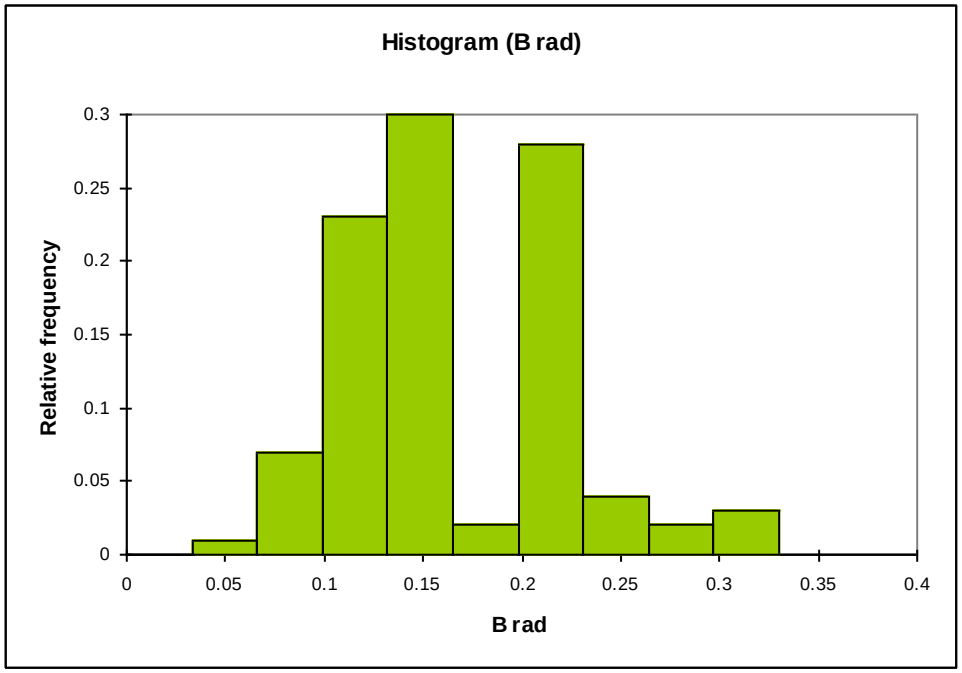
Descriptive statistics for the intervals (SO4):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	41	39	0.390	0.010
41	82	0	0.000	0.000
82	123	2	0.020	0.000
123	164	0	0.000	0.000
164	205	37	0.370	0.009
205	246	0	0.000	0.000
246	287	1	0.010	0.000
287	328	20	0.200	0.005
328	369	0	0.000	0.000
369	410	1	0.010	0.000



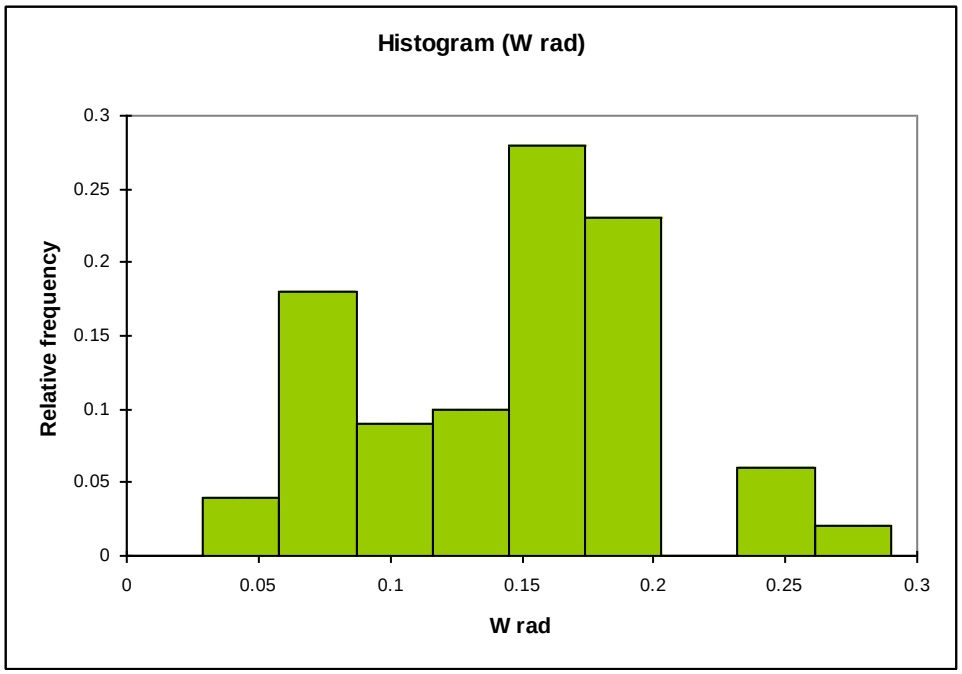
Descriptive statistics for the intervals (SO3):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	21	99	0.990	0.047
21	42	0	0.000	0.000
42	63	0	0.000	0.000
63	84	0	0.000	0.000
84	105	0	0.000	0.000
105	126	0	0.000	0.000
126	147	0	0.000	0.000
147	168	0	0.000	0.000
168	189	0	0.000	0.000
189	210	1	0.010	0.000



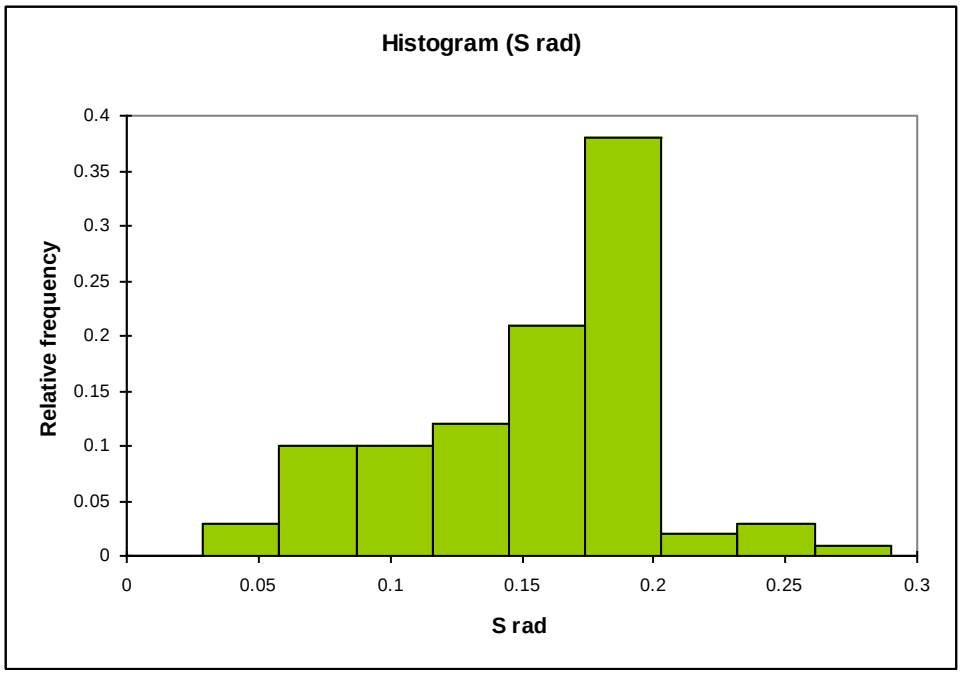
Descriptive statistics for the intervals (B rad):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.033	0	0.000	0.000
0.033	0.066	1	0.010	0.303
0.066	0.099	7	0.070	2.121
0.099	0.132	23	0.230	6.970
0.132	0.165	30	0.300	9.091
0.165	0.198	2	0.020	0.606
0.198	0.231	28	0.280	8.485
0.231	0.264	4	0.040	1.212
0.264	0.297	2	0.020	0.606
0.297	0.33	3	0.030	0.909



Descriptive statistics for the intervals (W rad):

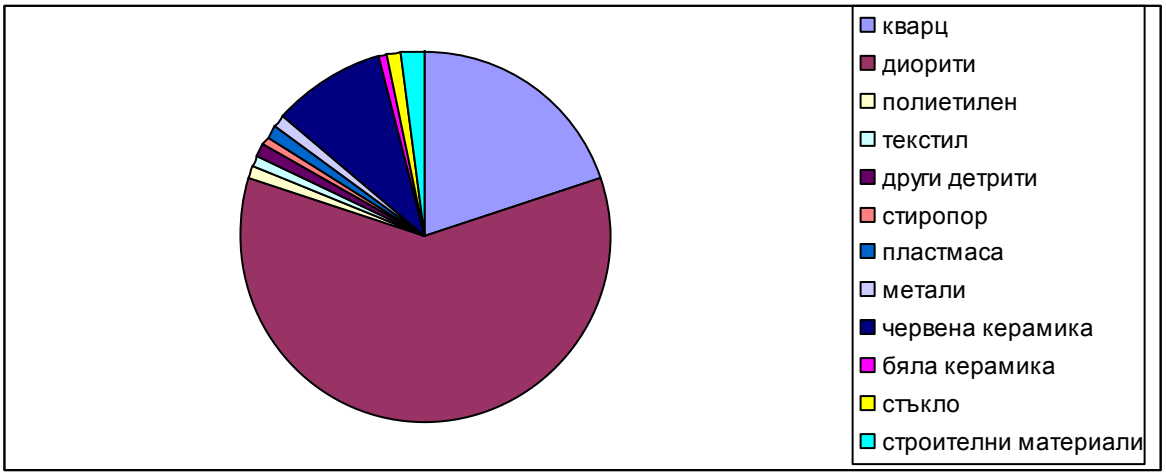
Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.029	0	0.000	0.000
0.029	0.058	4	0.040	1.379
0.058	0.087	18	0.180	6.207
0.087	0.116	9	0.090	3.103
0.116	0.145	10	0.100	3.448
0.145	0.174	28	0.280	9.655
0.174	0.203	23	0.230	7.931
0.203	0.232	0	0.000	0.000
0.232	0.261	6	0.060	2.069
0.261	0.29	2	0.020	0.690



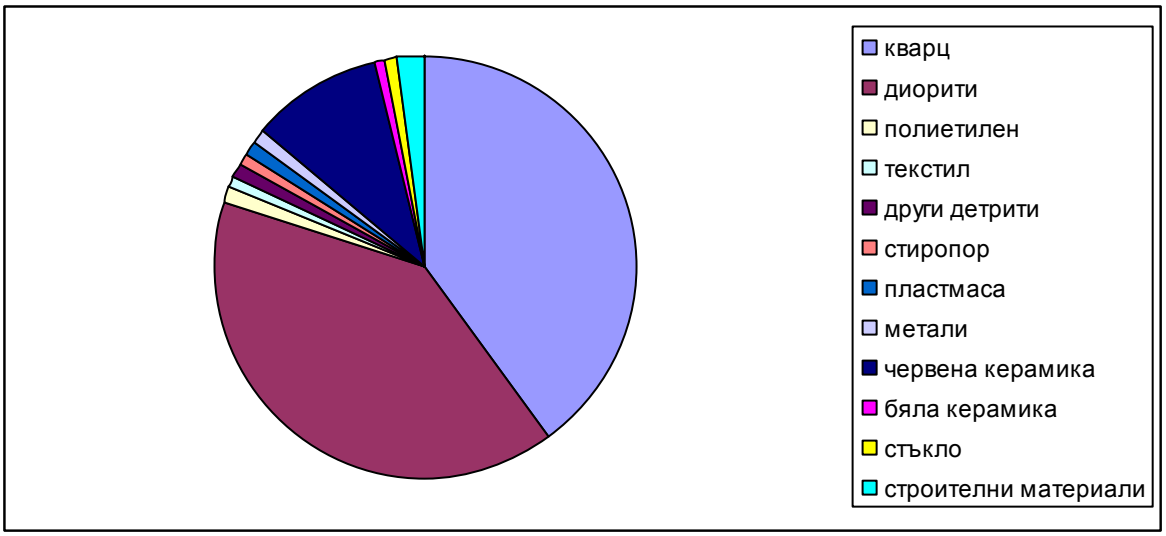
Descriptive statistics for the intervals (S rad):

Lower bound	Upper bound	Frequency	Relative frequency	Density
0	0.029	0	0.000	0.000
0.029	0.058	3	0.030	1.034
0.058	0.087	10	0.100	3.448
0.087	0.116	10	0.100	3.448
0.116	0.145	12	0.120	4.138
0.145	0.174	21	0.210	7.241
0.174	0.203	38	0.380	13.103
0.203	0.232	2	0.020	0.690
0.232	0.261	3	0.030	1.034
0.261	0.29	1	0.010	0.345

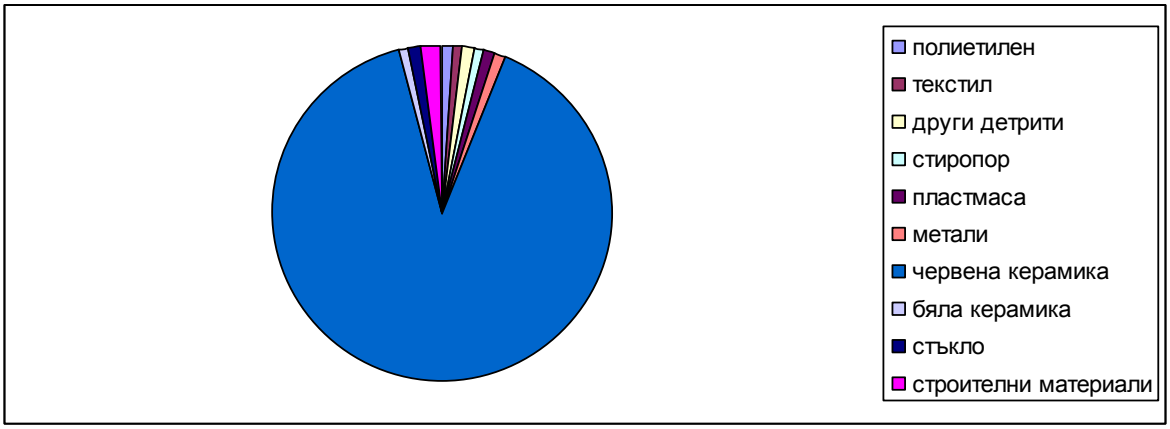
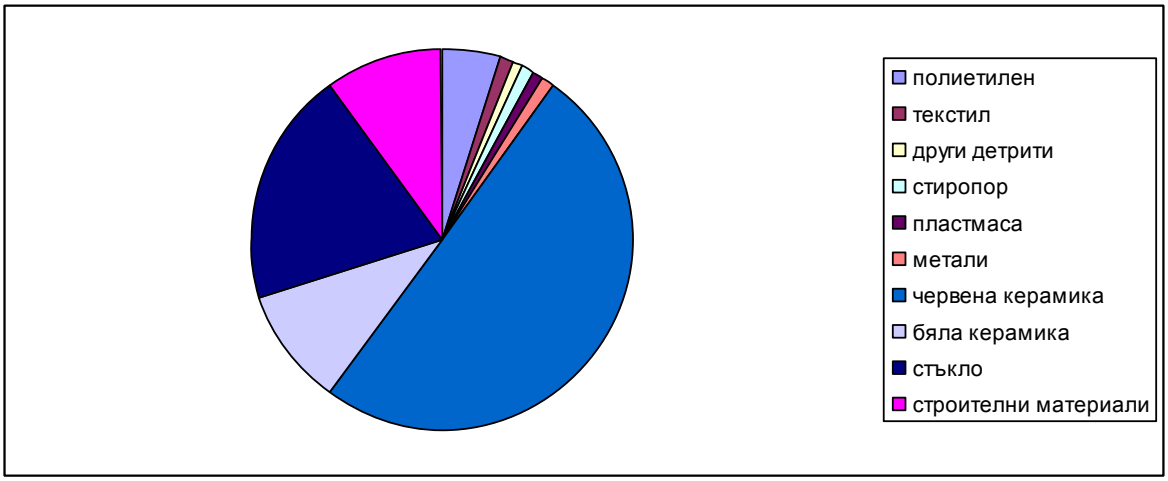
Профил на седимента и антропогенния микродетрит в планинската част на реката, с включено минерално съдържание, обемни проценти Vol.%



Профил на седимента и антропогенния микродетрит в rawninnata част на реката, с включено минерално съдържание, обемни проценти Vol.%



Профил на антропогенния микродетрит в равнинната част на реката, с изключено минерално съсържание, обемни проценти Vol.%



Профил на антропогенния микродетрит в някои замърсени пункта на сръбската част на реката (в планинската част в България почти не се наблюдава), с изключено минерално съдържание, обемни проценти Vol.%