30MinuteLabPrecisionData
crf 12/17/03

One minute readings in Formazin standards with 30-second stirrer activation and 30 second sensor warmup.
Two 2-minute shaking stress tests occurred for each Hydrolab - the four **(BOLDED)** passed both tests without power losses.
Statistics from the first 30 minutes of the Precision test are a better indicator of instrument capabilities.
Graphed data on attached worksheets show data for the first 30 minutes of readings.

5 NTU

Stress Test	**36405**	**36406**	36407	36408	36409	37355	**37356**	**37357**
Power Loss	**No**	**No**	No	Yes	Yes	Yes	**No**	**No**

20 NTU

	36405	**36406**	36407	36408	36409	37355	**37356**	**37357**
	No	**No**	Yes	No	No	Yes	**No**	**No**

ALL DATA

	36405	36406	36407	36408	36409	37355	37356	37357	**Ave**
Mean	4.3	4.4	4.3	4.2	4.1	3.8	3.4	4.4	4.1
Min	3.6	3.9	3.6	3.4	3.4	3.3	2.4	3.7	3.4
Max	5.0	4.9	4.9	4.9	4.8	4.5	4.9	5.1	4.9
StDev	0.29	0.26	0.24	0.29	0.31	0.27	0.46	0.30	0.30
# of Data	36	32	53	96	68	32	50	61	

ALL DATA

	36405	36406	36407	36408	36409	37355	37356	37357	**Ave**
	18.7	19.0	19.2	18.6	17.7	16.8	18.0	17.8	18.2
	16.6	18.2	18.7	17.7	16.7	15.1	17.2	16.4	17.1
	21.4	19.8	22.1	19.2	19.4	19.7	19.6	19.9	20.1
	1.12	0.34	0.55	0.34	0.70	0.89	0.54	0.77	0.66
	199	36	35	41	37	133	30	132	

ALL DATA

	5 NTU	**20 NTU**
Mean	4.1	18.1
Min	2.4	15.1
Max	5.2	22.1
StDev	0.434	1.170
# of Data	428	643

1ST 30 MINUTES

									Ave
Mean	4.3	4.4	4.3	4.2	4.3	3.8	3.4	4.4	4.2
Min	3.8	3.9	3.6	3.8	3.7	3.3	2.4	3.8	3.5
Max	5.0	5.2	4.6	4.6	4.8	4.5	4.1	5.1	4.7
StDev	0.28	0.29	0.22	0.22	0.27	0.28	0.40	0.27	0.28
# of Data	30	30	30	30	30	30	30	30	

1ST 30 MINUTES

									Ave
	20.5	19.0	19.2	18.7	17.9	18.0	18.0	18.8	18.8
	19.7	18.2	18.7	18.2	16.7	17.1	17.2	18.1	18.0
	21.4	19.8	19.7	19.2	19.4	19.4	19.6	19.9	19.8
	0.39	0.33	0.22	0.27	0.66	0.49	0.54	0.50	0.42
	30	30	30	30	30	30	30	30	

1ST 30 MINUTES

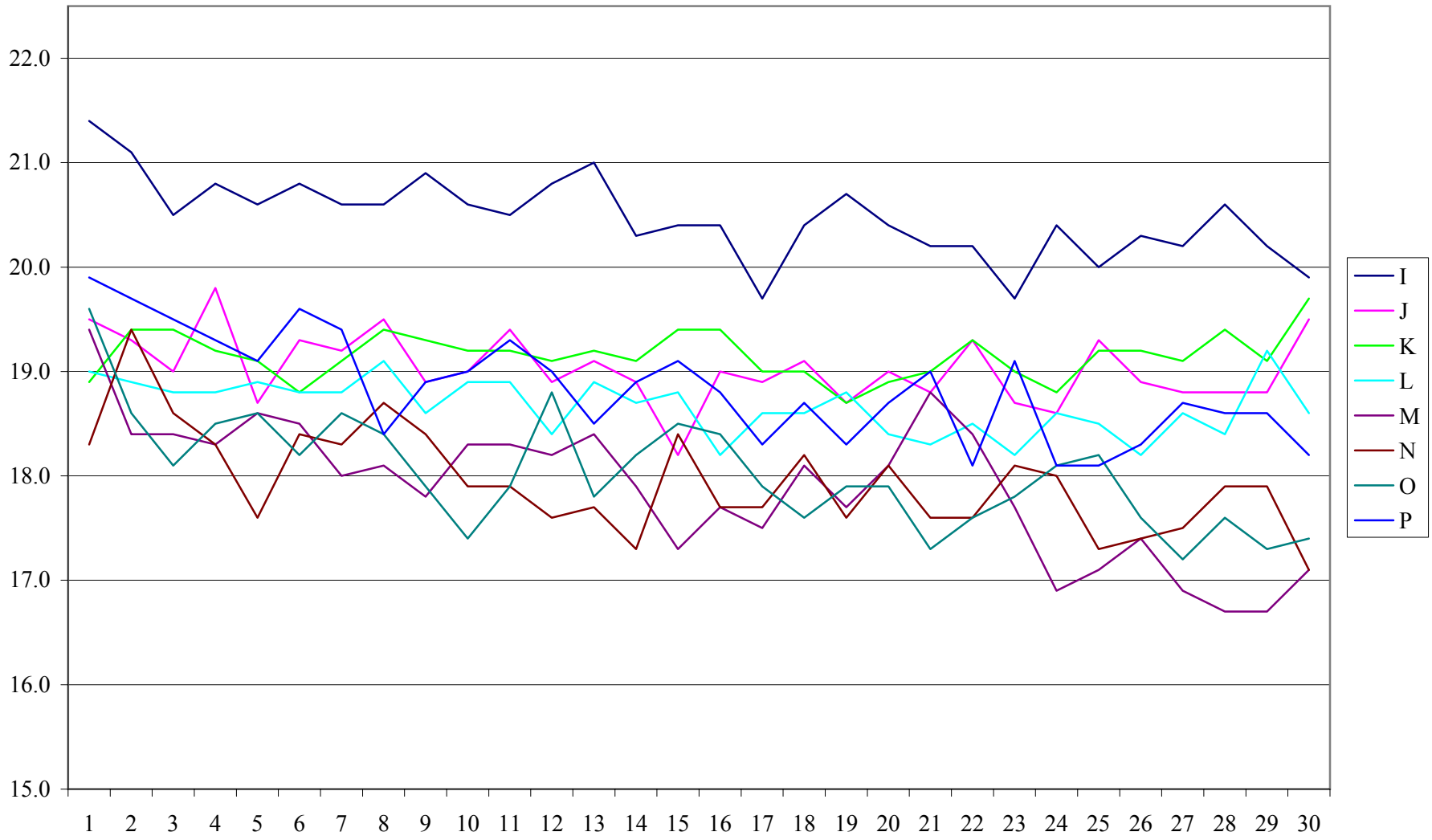
	5 NTU	**20 NTU**
Mean	4.2	18.8
Min	2.4	16.7
Max	5.2	21.4
StDev	0.439	0.9149
# of Data	240	240

	A	B	C	D	E	F	G	H
1	4.7	4.4	4.0	4.1	4.3	3.7	3.5	4.4
2	4.3	4.1	4.3	4.4	4.7	4.2	3.4	4.3
3	4.6	4.6	4.5	3.9	4.7	4.0	4.1	4.3
4	4.4	4.4	4.3	4.3	4.8	3.6	3.6	4.6
5	4.1	4.3	4.4	4.4	4.5	3.9	3.9	4.3
6	5.0	4.3	4.2	3.8	4.4	3.6	3.5	4.3
7	4.3	4.3	3.6	4.1	4.3	3.4	3.7	4.6
8	4.4	4.6	4.5	4.1	4.2	3.7	3.7	4.5

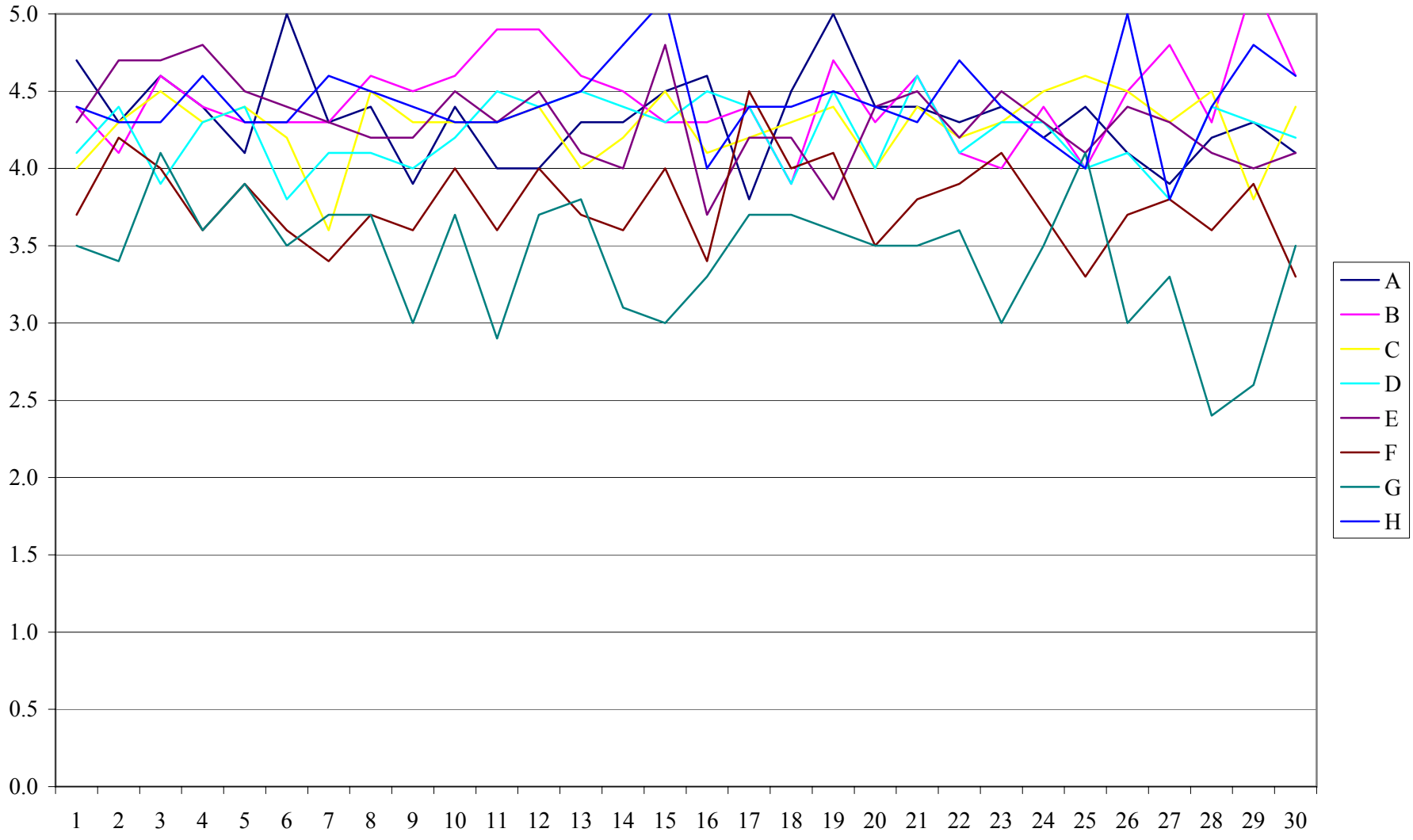
	I	J	K	L	M	N	O	P
1	21.4	19.5	18.9	19.0	19.4	18.3	19.6	19.9
2	21.1	19.3	19.4	18.9	18.4	19.4	18.6	19.7
3	20.5	19.0	19.4	18.8	18.4	18.6	18.1	19.5
4	20.8	19.8	19.2	18.8	18.3	18.3	18.5	19.3
5	20.6	18.7	19.1	18.9	18.6	17.6	18.6	19.1
6	20.8	19.3	18.8	18.8	18.5	18.4	18.2	19.6
7	20.6	19.2	19.1	18.8	18.0	18.3	18.6	19.4
8	20.6	19.5	19.4	19.1	18.1	18.7	18.4	18.4

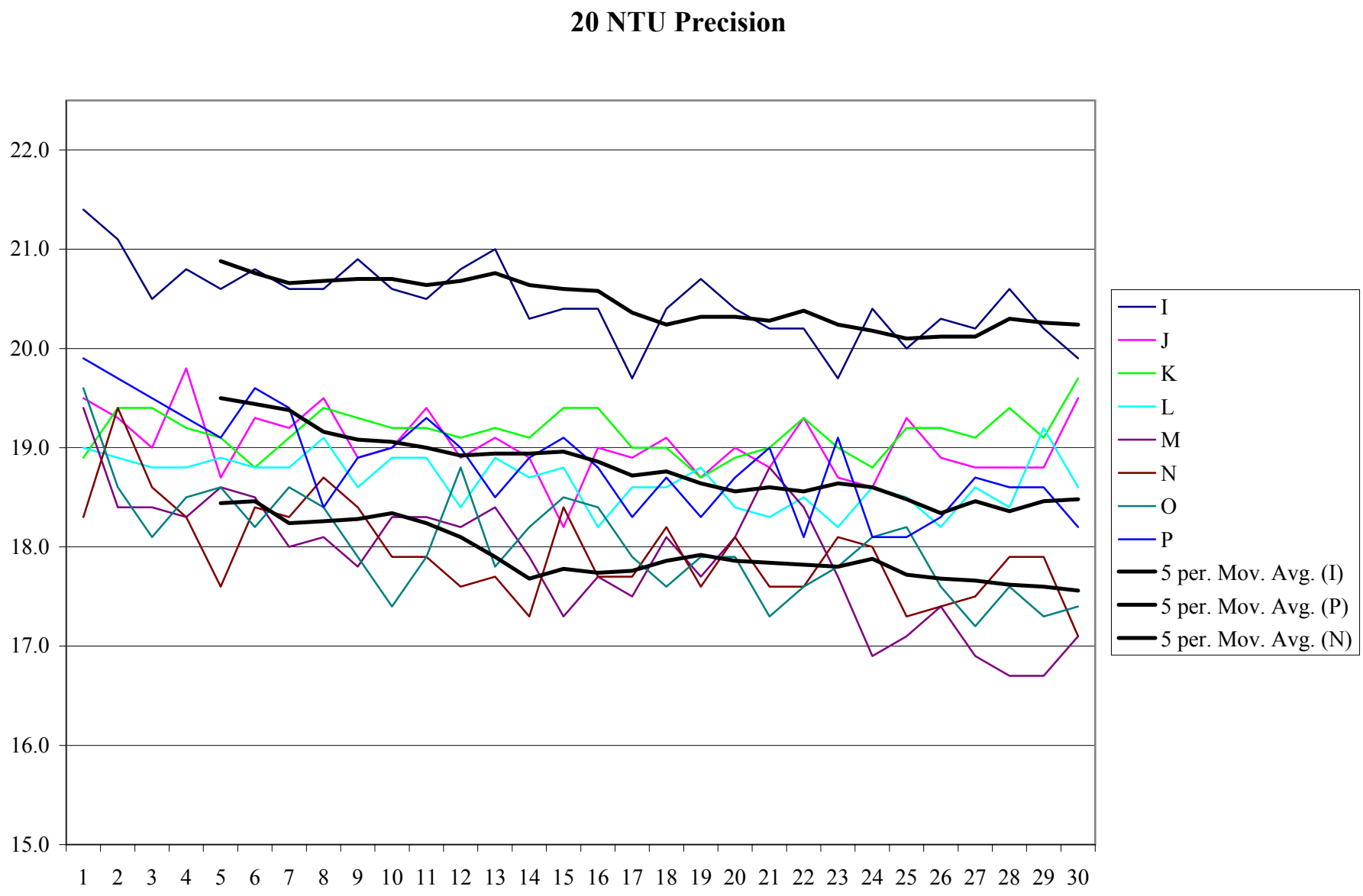
Letters correspond with those on Graphs (Tabs)

20 NTU Precision



5 NTU Precision

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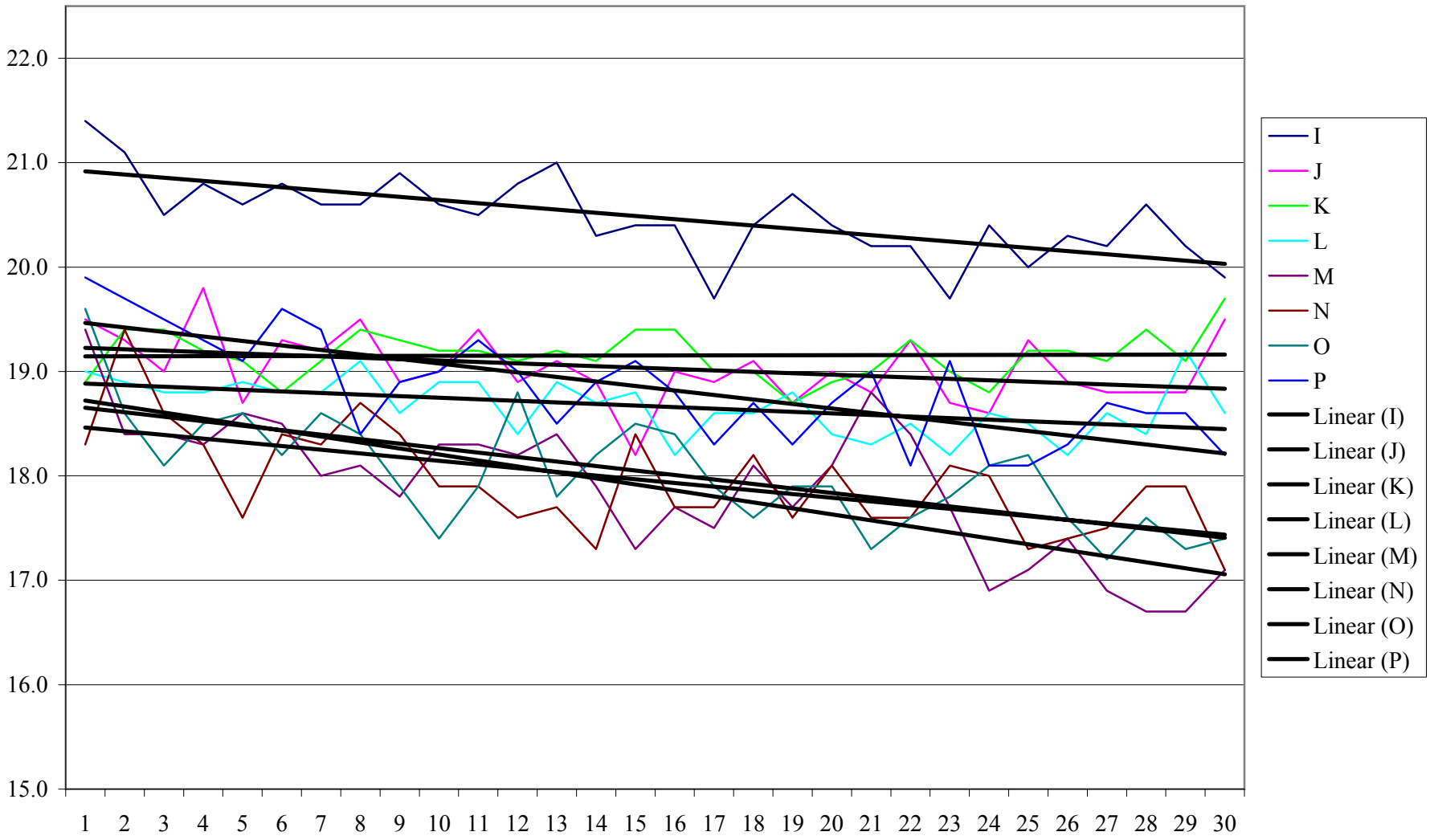
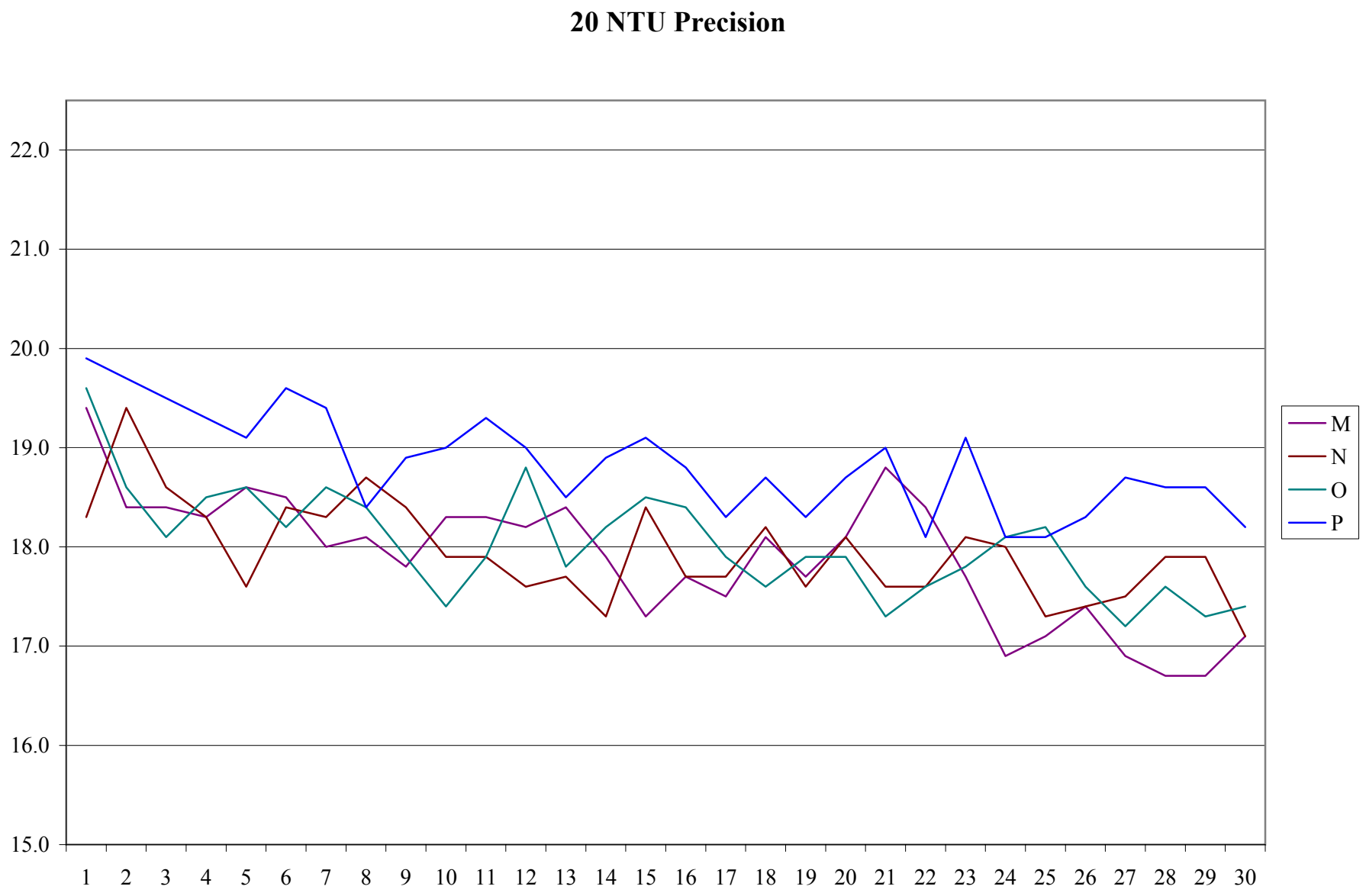
21.0
20.0
19.0
18.0
17.0
16.0
15.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
I
J
K
L
M
N
O
P
5 per. Mov. Avg. (I)
5 per. Mov. Avg. (P)
5 per. Mov. Avg. (N)

20 NTU Precision

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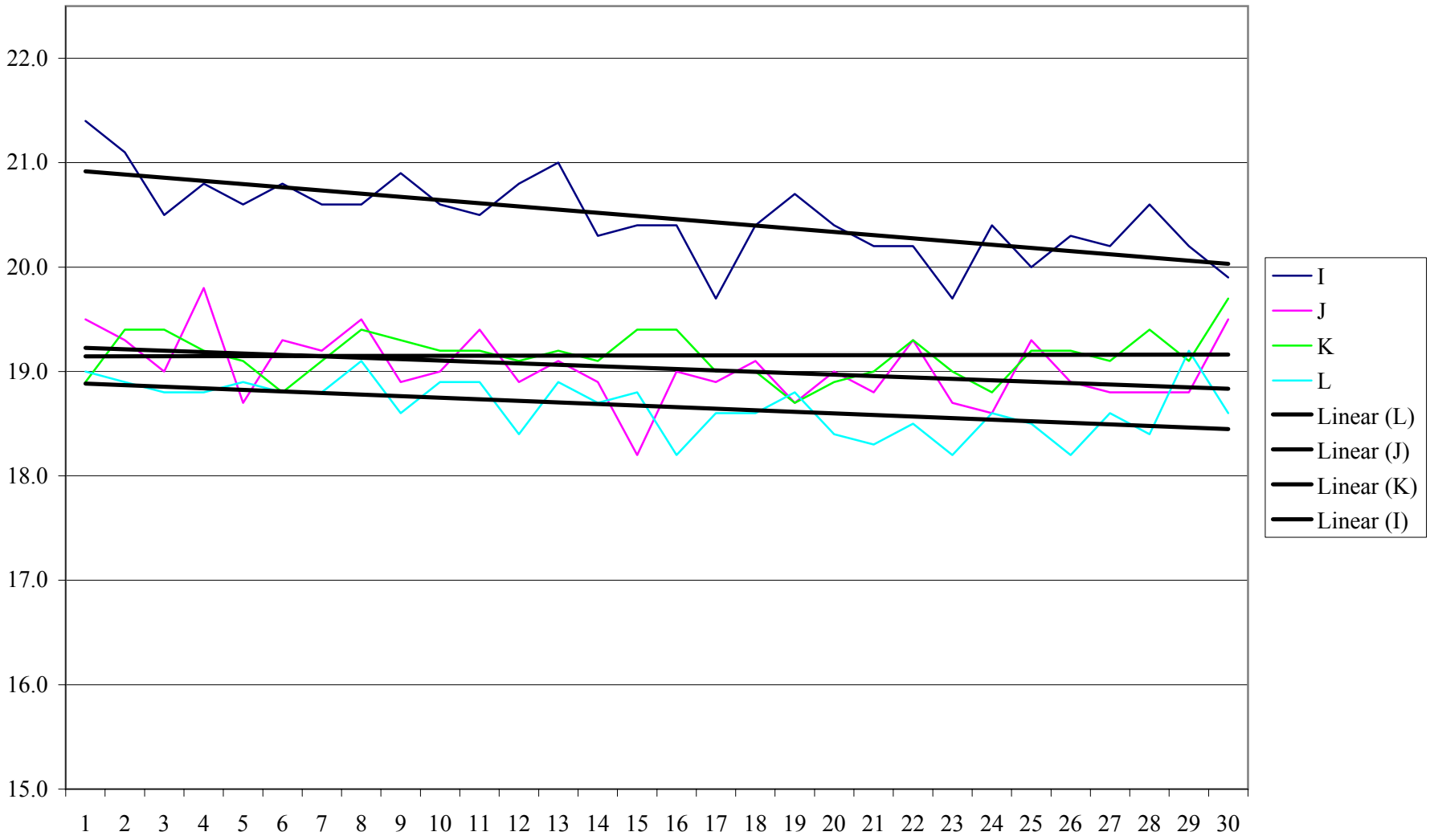
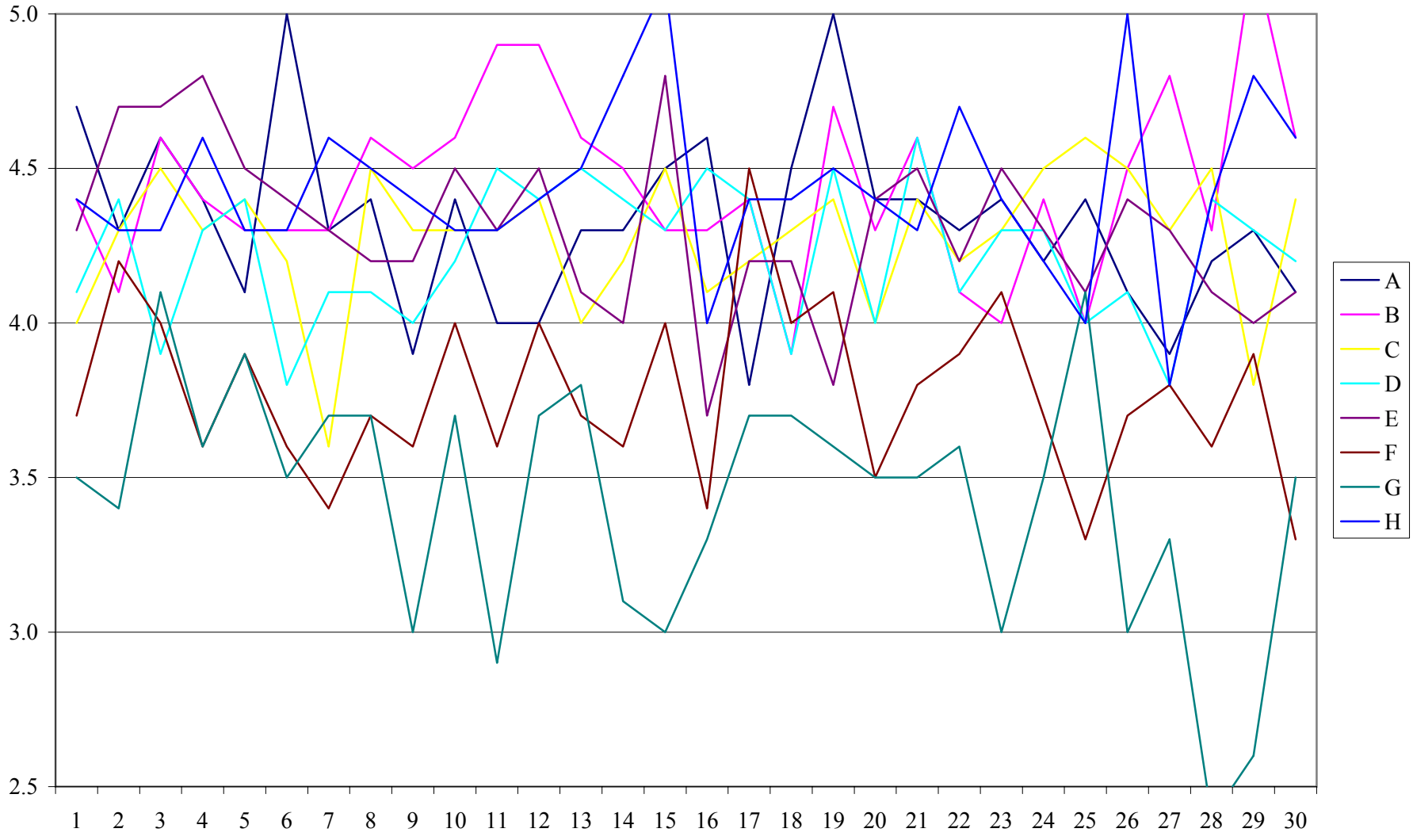
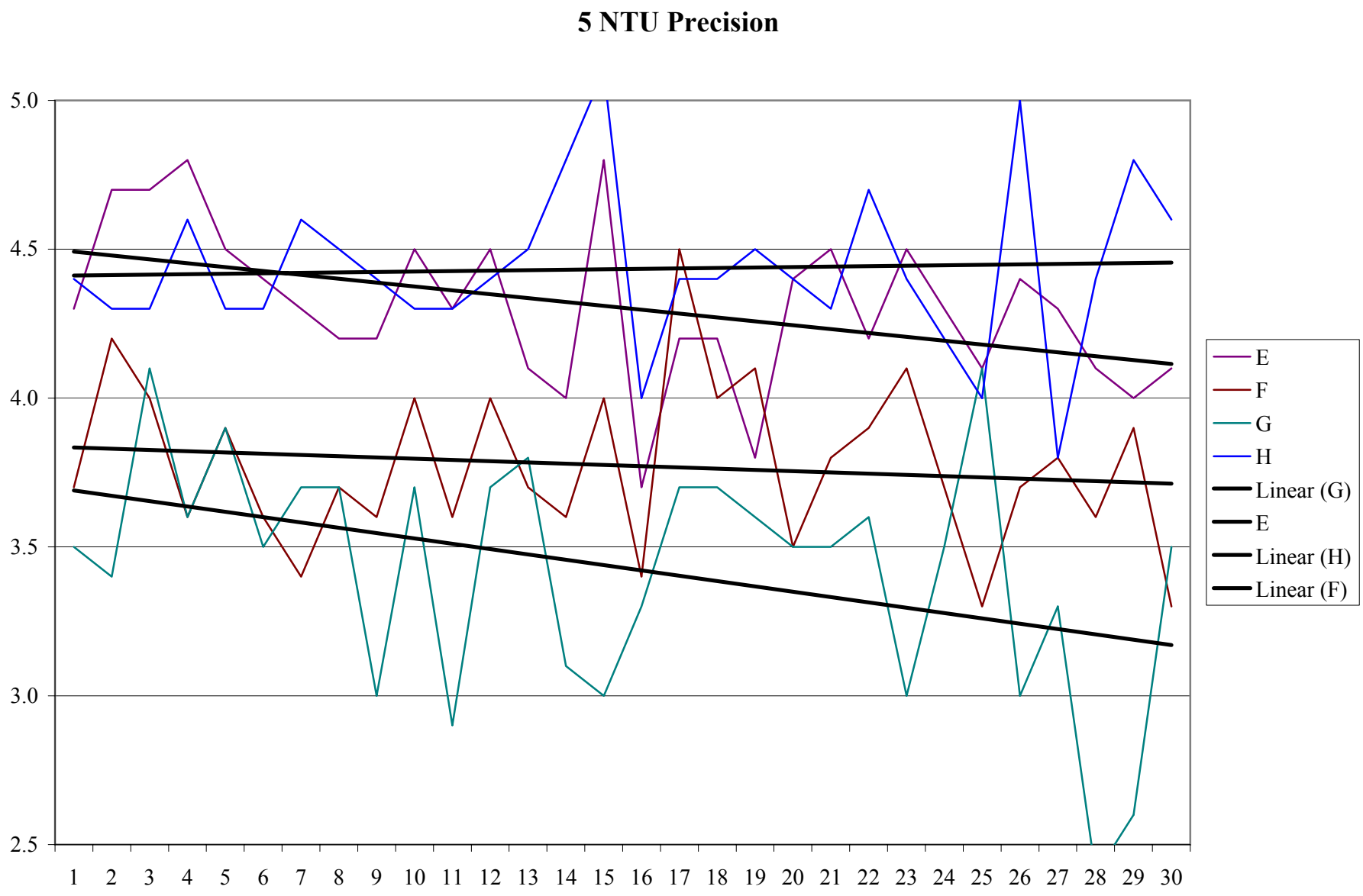
21.0
20.0
19.0
18.0
17.0
16.0
15.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
M
N
O
P

20 NTU Precision



5 NTU Precision

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4.5
4.0
3.5
3.0
2.5
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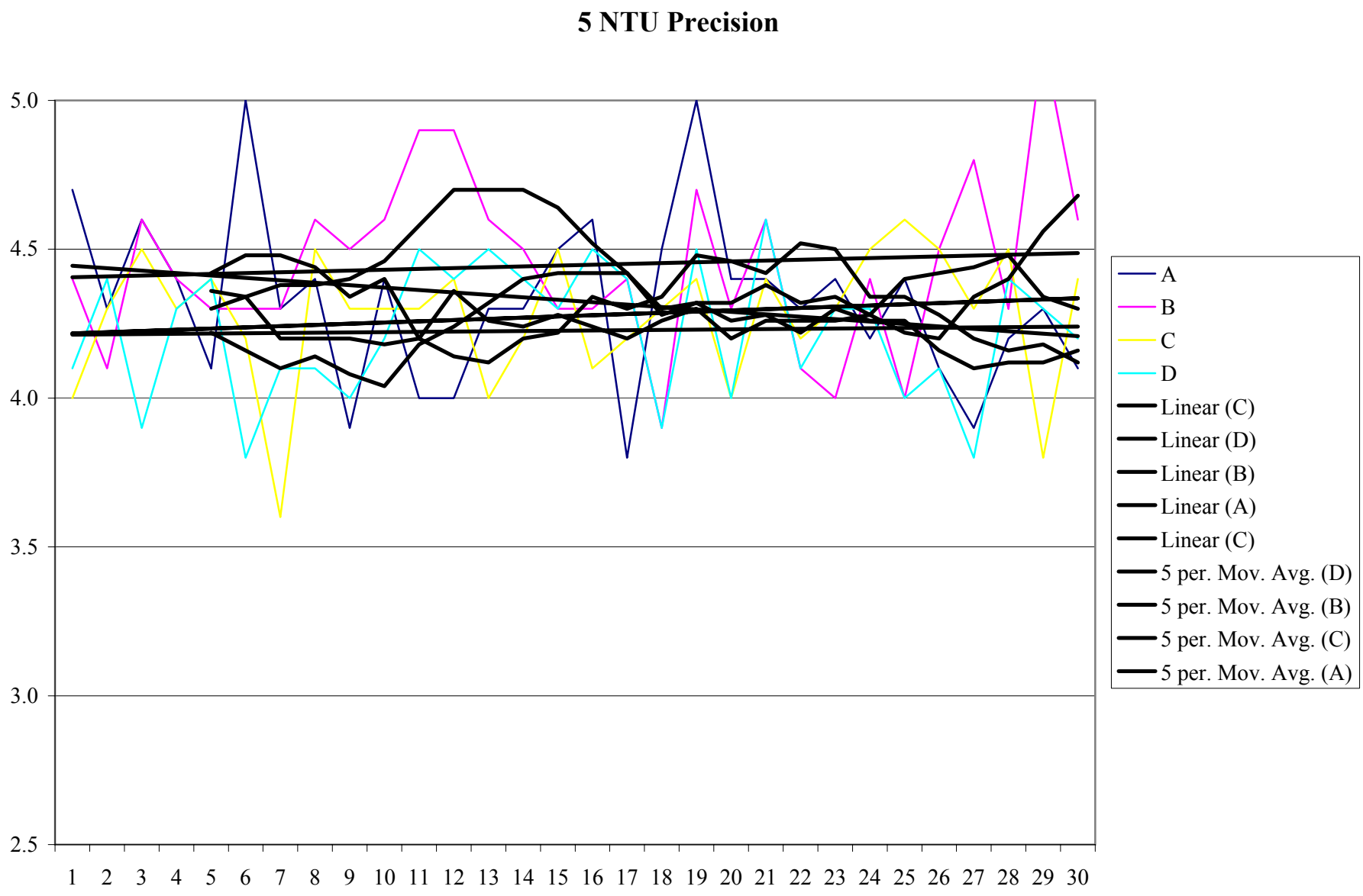
E
F
G
H
Linear (G)
E
Linear (H)
Linear (F)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4.5
4.0
3.5
3.0
2.5
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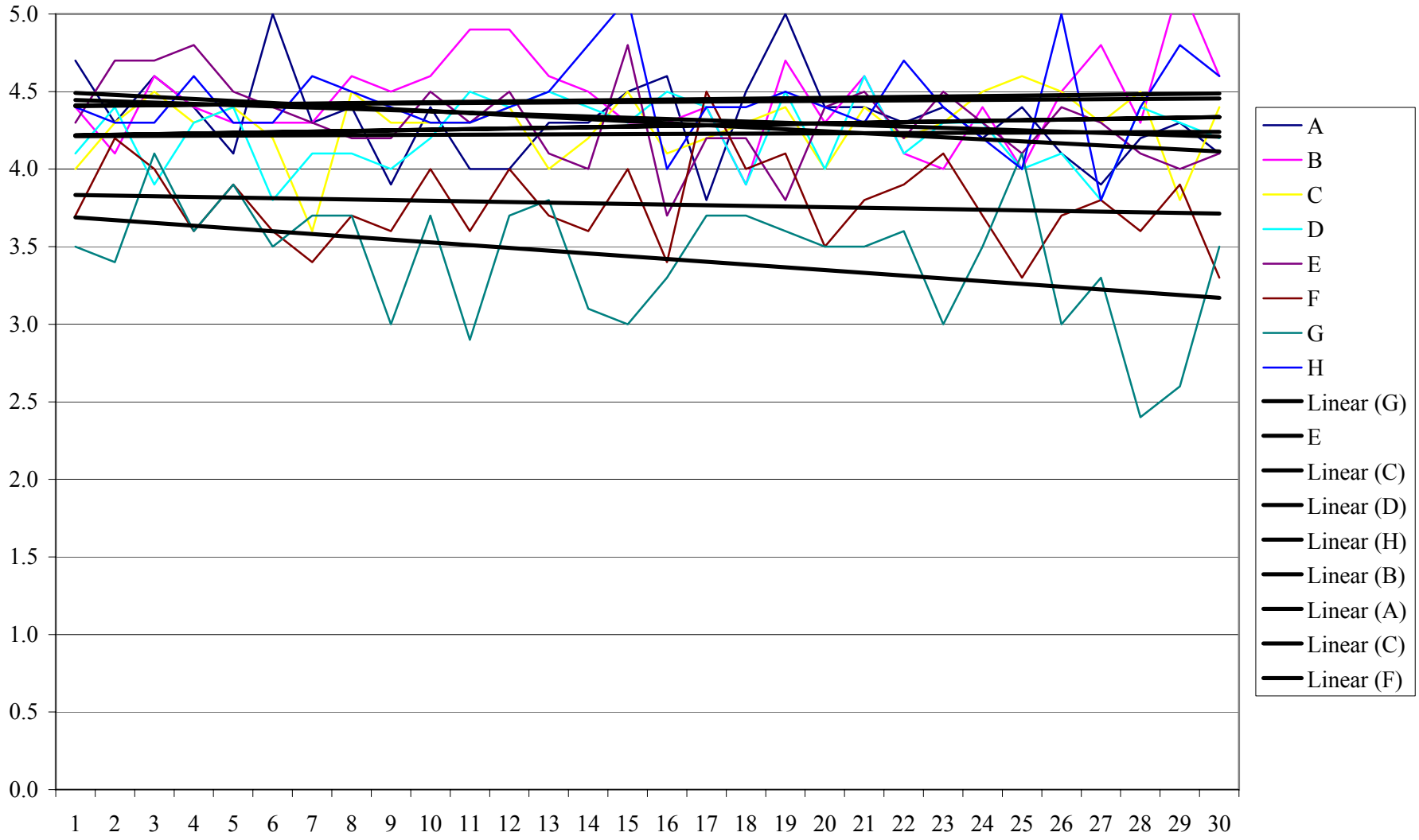
A
B
C
D
Linear (C)
Linear (D)
Linear (B)
Linear (A)
Linear (C)
5 per. Mov. Avg. (D)
5 per. Mov. Avg. (B)
5 per. Mov. Avg. (C)
5 per. Mov. Avg. (A)

5 NTU Precision



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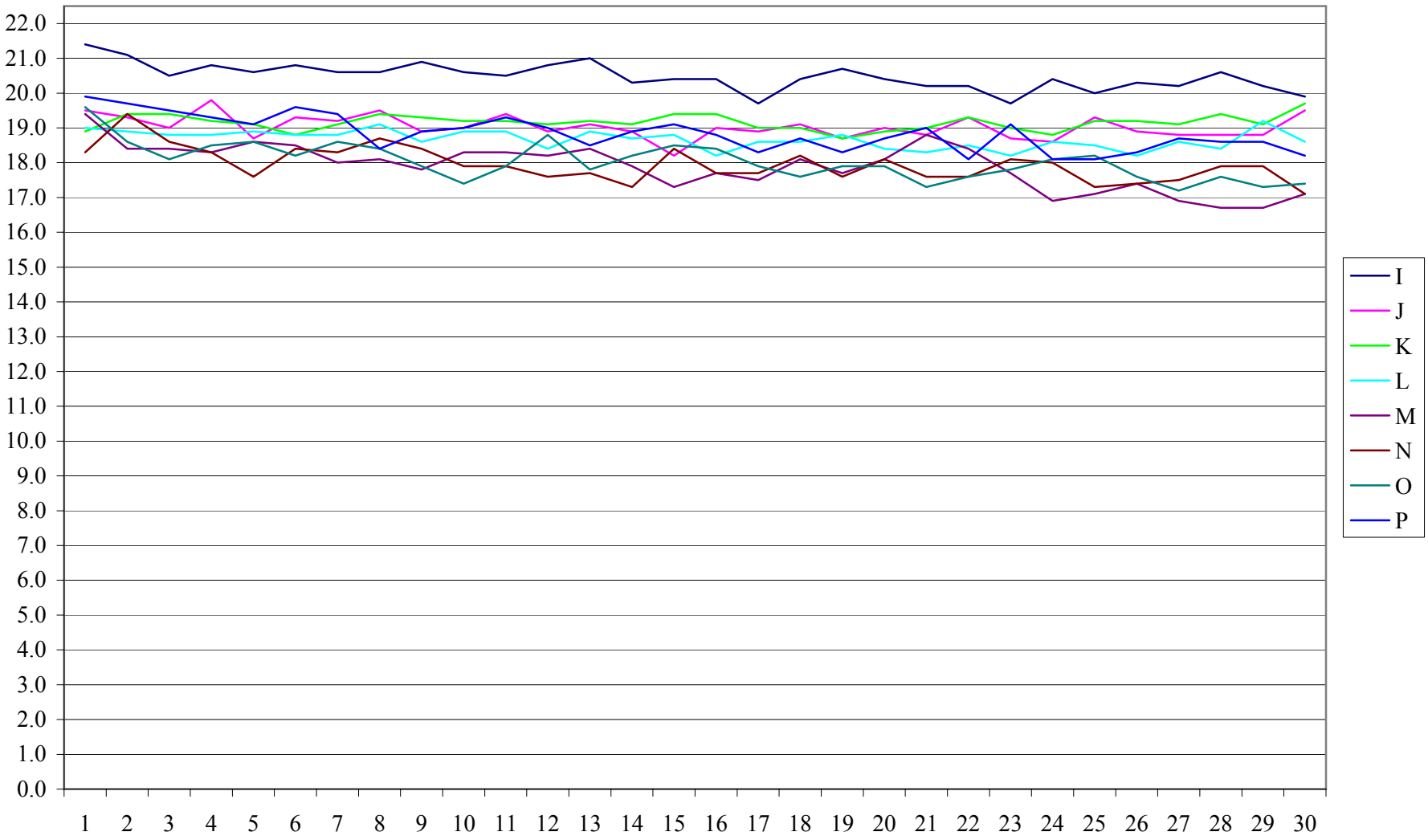


AllLabPrecisionData

crf 12/17/03

One minute readings in Formazin standards with 30-second stirrer activation and 30 second sensor warmup.
Two 2-minute shaking stress tests occurred for each Hydrolab - the four **(BOLDED)** passed both tests without power losses.
Graphed data appear on additional worksheets.

5 NTU

Stress Test	**36405**	**36406**	36407	36408	36409	37355	**37356**	**37357**
Power Loss	**No**	**No**	No	Yes	Yes	Yes	**No**	**No**

20 NTU

36405	**36406**	36407	36408	36409	37355	**37356**	**37357**
No	**No**	Yes	No	No	Yes	**No**	**No**

ALL DATA

	36405	36406	36407	36408	36409	37355	37356	37357	**Ave**
Mean	4.3	4.4	4.3	4.2	4.1	3.8	3.4	4.4	4.1
Min	3.6	3.9	3.6	3.4	3.4	3.3	2.4	3.7	3.4
Max	5.0	4.9	4.9	4.9	4.8	4.5	4.9	5.1	4.9
StDev	0.29	0.26	0.24	0.29	0.31	0.27	0.46	0.30	0.30
# of Data	36	32	53	96	68	32	50	61	

ALL DATA

	36405	36406	36407	36408	36409	37355	37356	37357	**Ave**
	18.7	19.0	19.2	18.6	17.7	16.8	18.0	17.8	18.2
	16.6	18.2	18.7	17.7	16.7	15.1	17.2	16.4	17.1
	21.4	19.8	22.1	19.2	19.4	19.7	19.6	19.9	20.1
	1.12	0.34	0.55	0.34	0.70	0.89	0.54	0.77	0.66
	199	36	35	41	37	133	30	132	

ALL DATA

	5 NTU	**20 NTU**
Mean	4.1	18.1
Min	2.4	15.1
Max	5.2	22.1
StDev	0.434	1.170
# of Data	428	643

1ST 30 MINUTES

									Ave
Mean	4.3	4.4	4.3	4.2	4.3	3.8	3.4	4.4	4.2
Min	3.8	3.9	3.6	3.8	3.7	3.3	2.4	3.8	3.5
Max	5.0	5.2	4.6	4.6	4.8	4.5	4.1	5.1	4.7
StDev	0.28	0.29	0.22	0.22	0.27	0.28	0.40	0.27	0.28
# of Data	30	30	30	30	30	30	30	30	

1ST 30 MINUTES

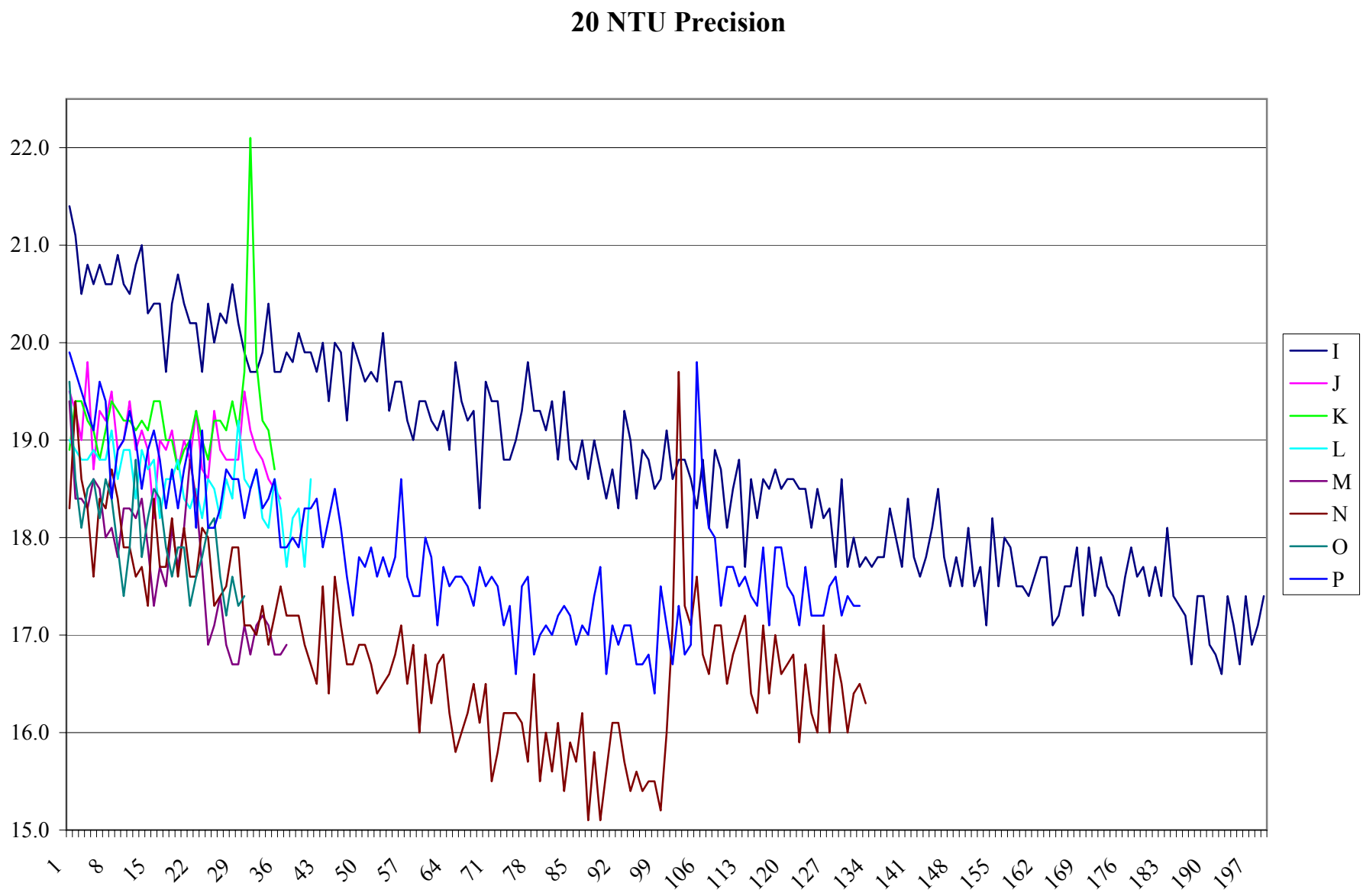
									Ave
	20.5	19.0	19.2	18.7	17.9	18.0	18.0	18.8	18.8
	19.7	18.2	18.7	18.2	16.7	17.1	17.2	18.1	18.0
	21.4	19.8	19.7	19.2	19.4	19.4	19.6	19.9	19.8
	0.39	0.33	0.22	0.27	0.66	0.49	0.54	0.50	0.42
	30	30	30	30	30	30	30	30	

1ST 30 MINUTES

	5 NTU	**20 NTU**
Mean	4.2	18.8
Min	2.4	16.7
Max	5.2	21.4
StDev	0.439	0.9149
# of Data	240	240

	A	B	C	D	E	F	G	H
1	4.7	4.4	4.0	4.1	4.3	3.7	3.5	4.4
2	4.3	4.1	4.3	4.4	4.7	4.2	3.4	4.3
3	4.6	4.6	4.5	3.9	4.7	4.0	4.1	4.3
4	4.4	4.4	4.3	4.3	4.8	3.6	3.6	4.6
5	4.1	4.3	4.4	4.4	4.5	3.9	3.9	4.3
6	5.0	4.3	4.2	3.8	4.4	3.6	3.5	4.3
7	4.3	4.3	3.6	4.1	4.3	3.4	3.7	4.6
8	4.4	4.6	4.5	4.1	4.2	3.7	3.7	4.5

	I	J	K	L	M	N	O	P
1	21.4	19.5	18.9	19.0	19.4	18.3	19.6	19.9
2	21.1	19.3	19.4	18.9	18.4	19.4	18.6	19.7
3	20.5	19.0	19.4	18.8	18.4	18.6	18.1	19.5
4	20.8	19.8	19.2	18.8	18.3	18.3	18.5	19.3
5	20.6	18.7	19.1	18.9	18.6	17.6	18.6	19.1
6	20.8	19.3	18.8	18.8	18.5	18.4	18.2	19.6
7	20.6	19.2	19.1	18.8	18.0	18.3	18.6	19.4
8	20.6	19.5	19.4	19.1	18.1	18.7	18.4	18.4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19.0
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1
8
15
22
29
36
43
50
57
64
71
78
85
92
99
106
113
120
127
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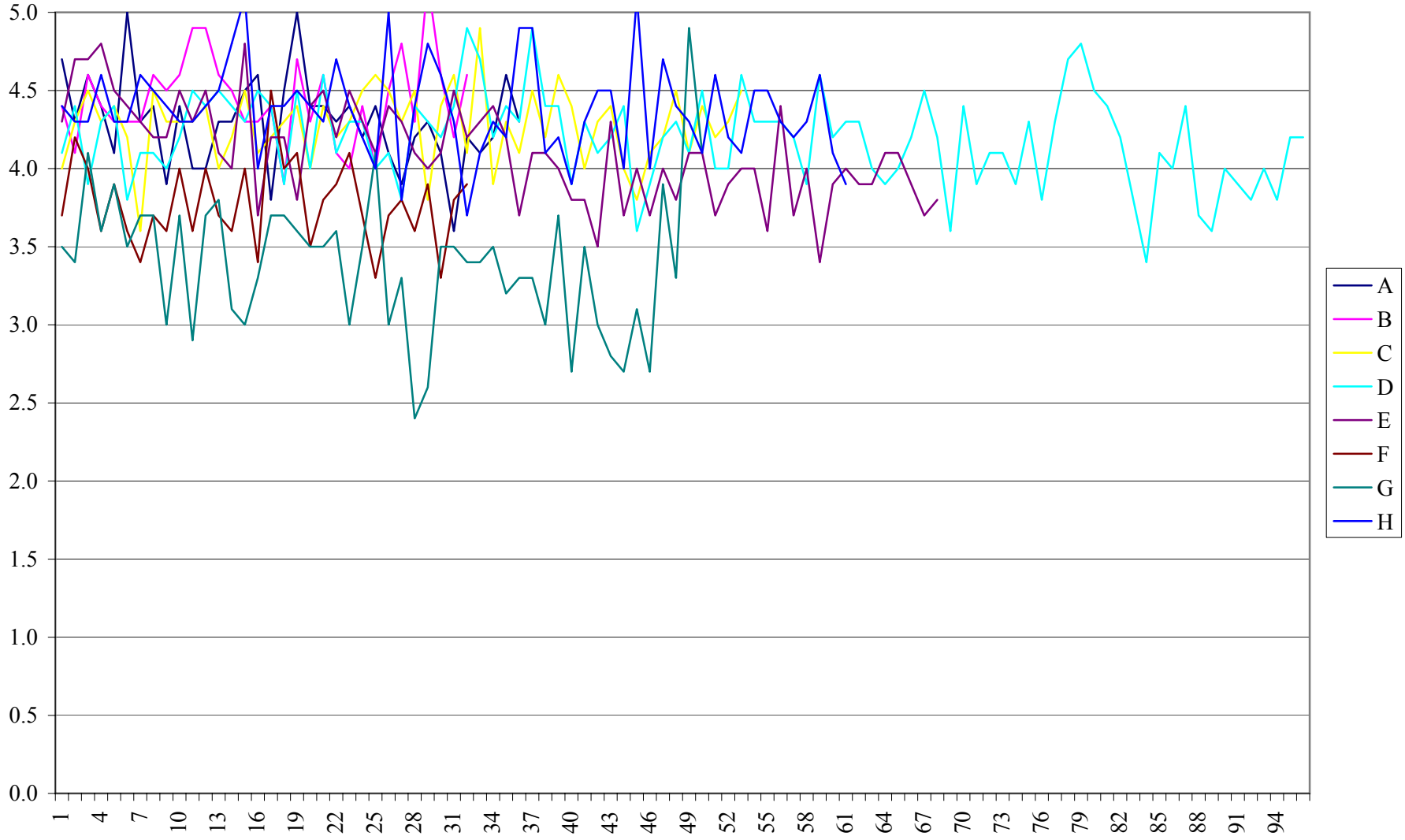
I
J
K
L
M
N
O
P

5 NTU Precision



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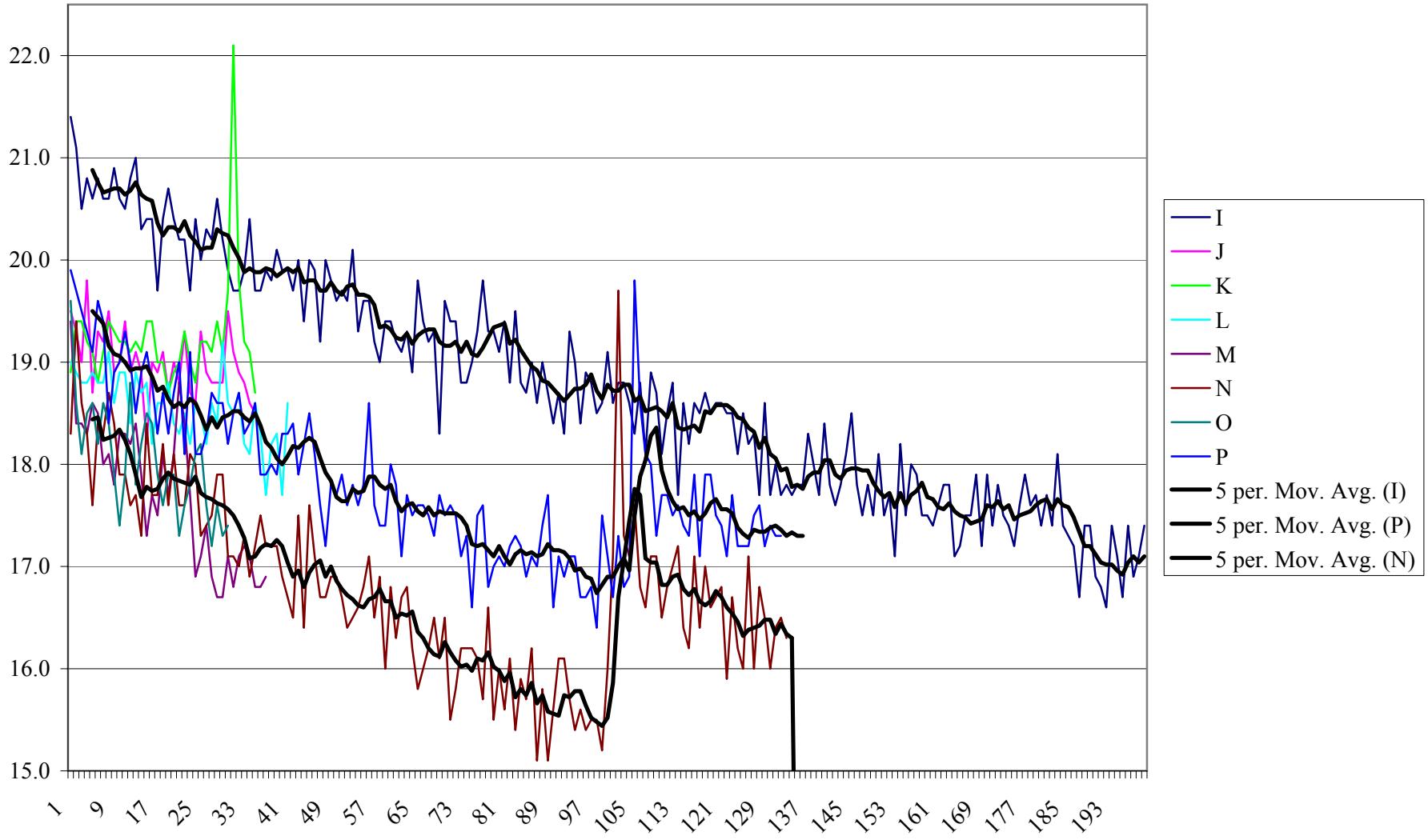

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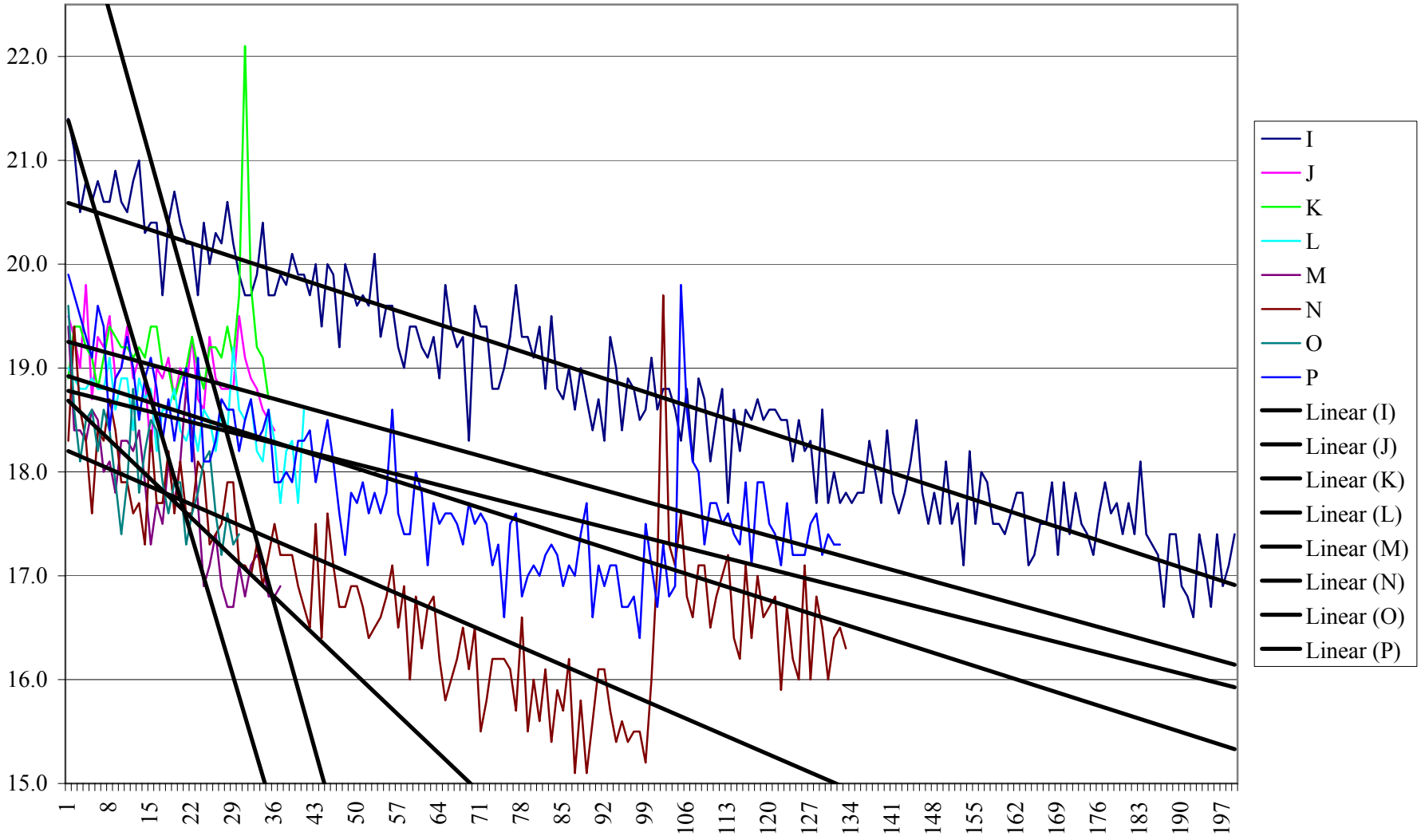

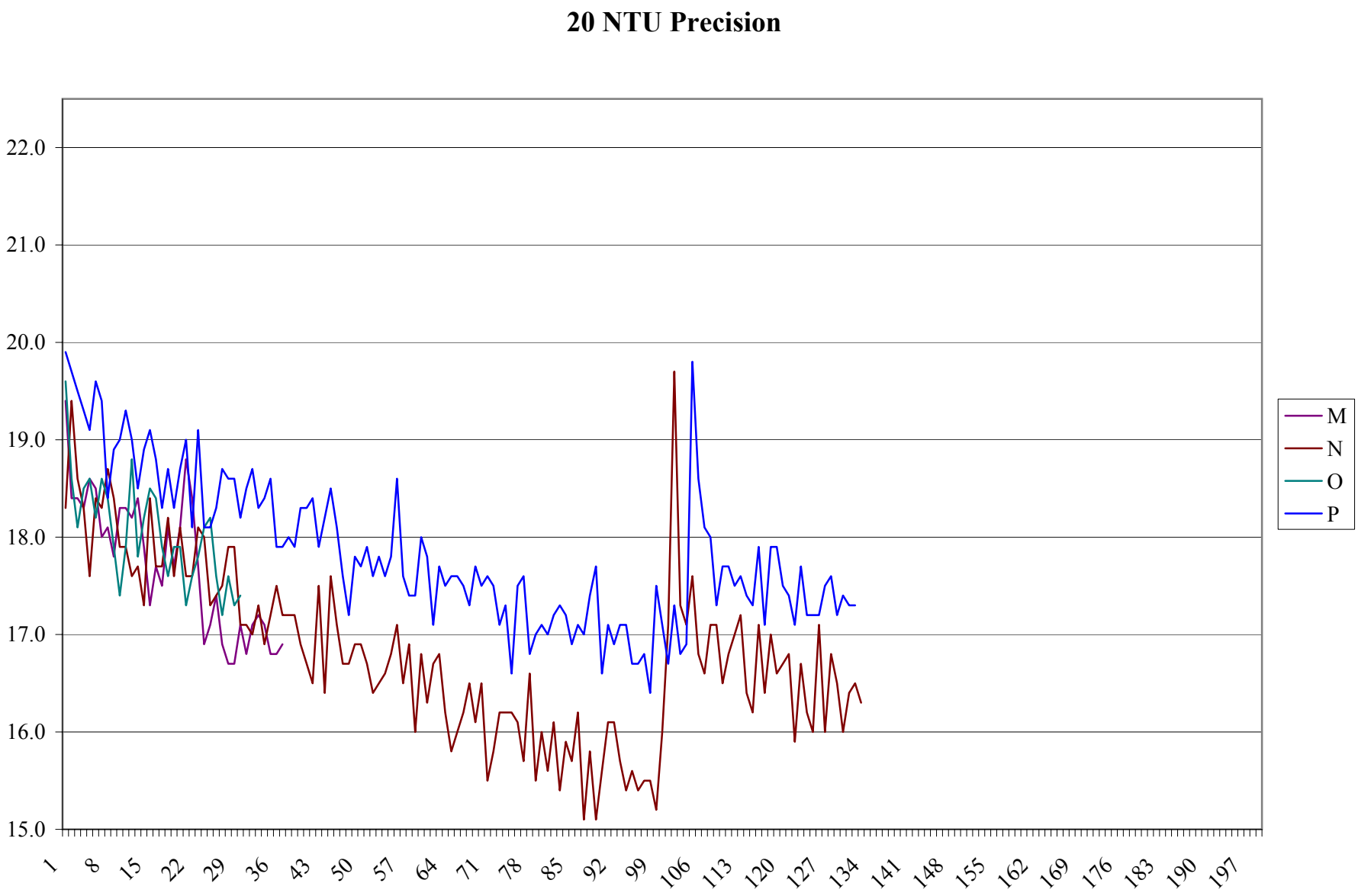
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15
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29
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43
50
57
64
71
78
85
92
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141
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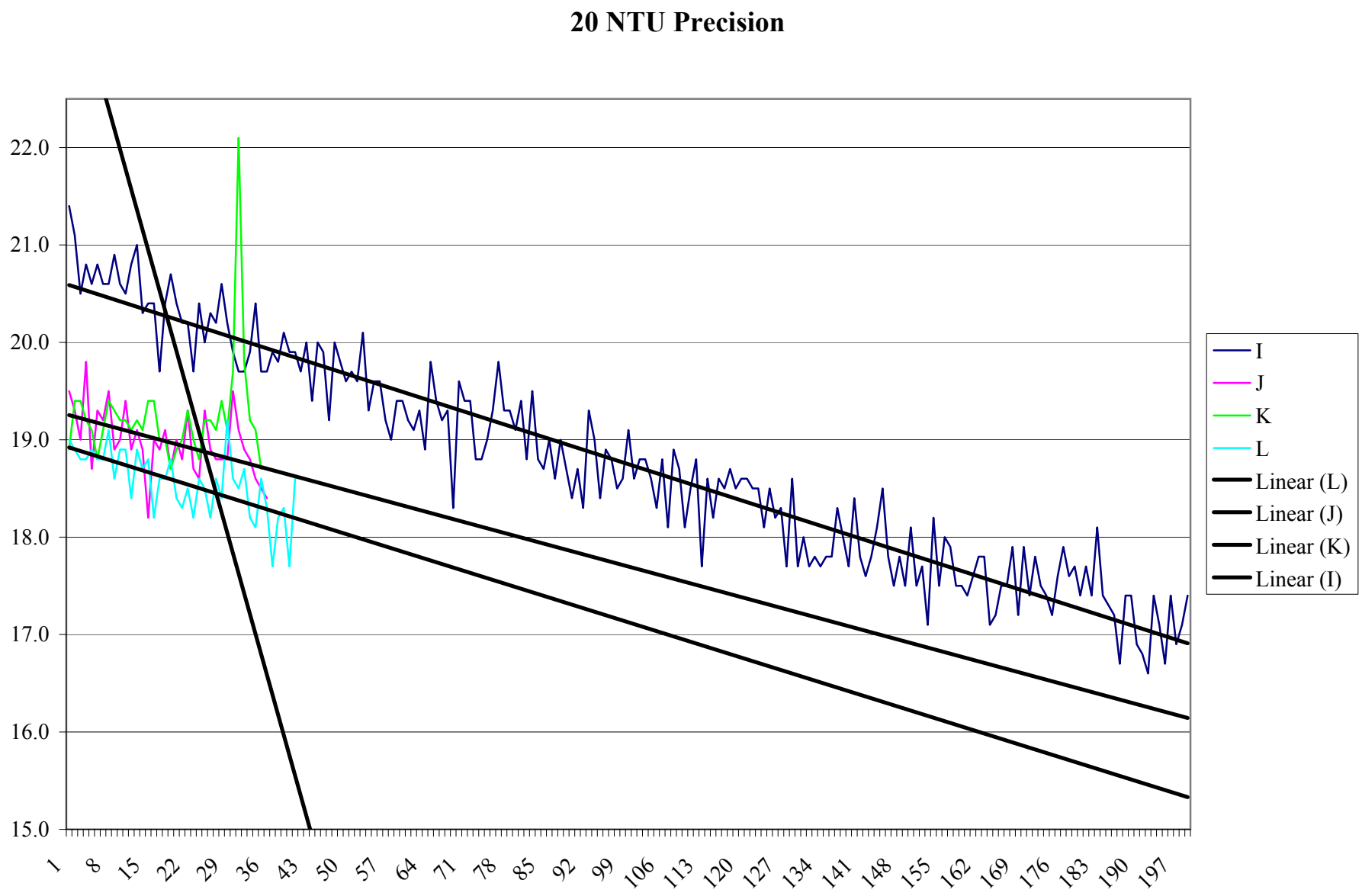
197
M
N
O
P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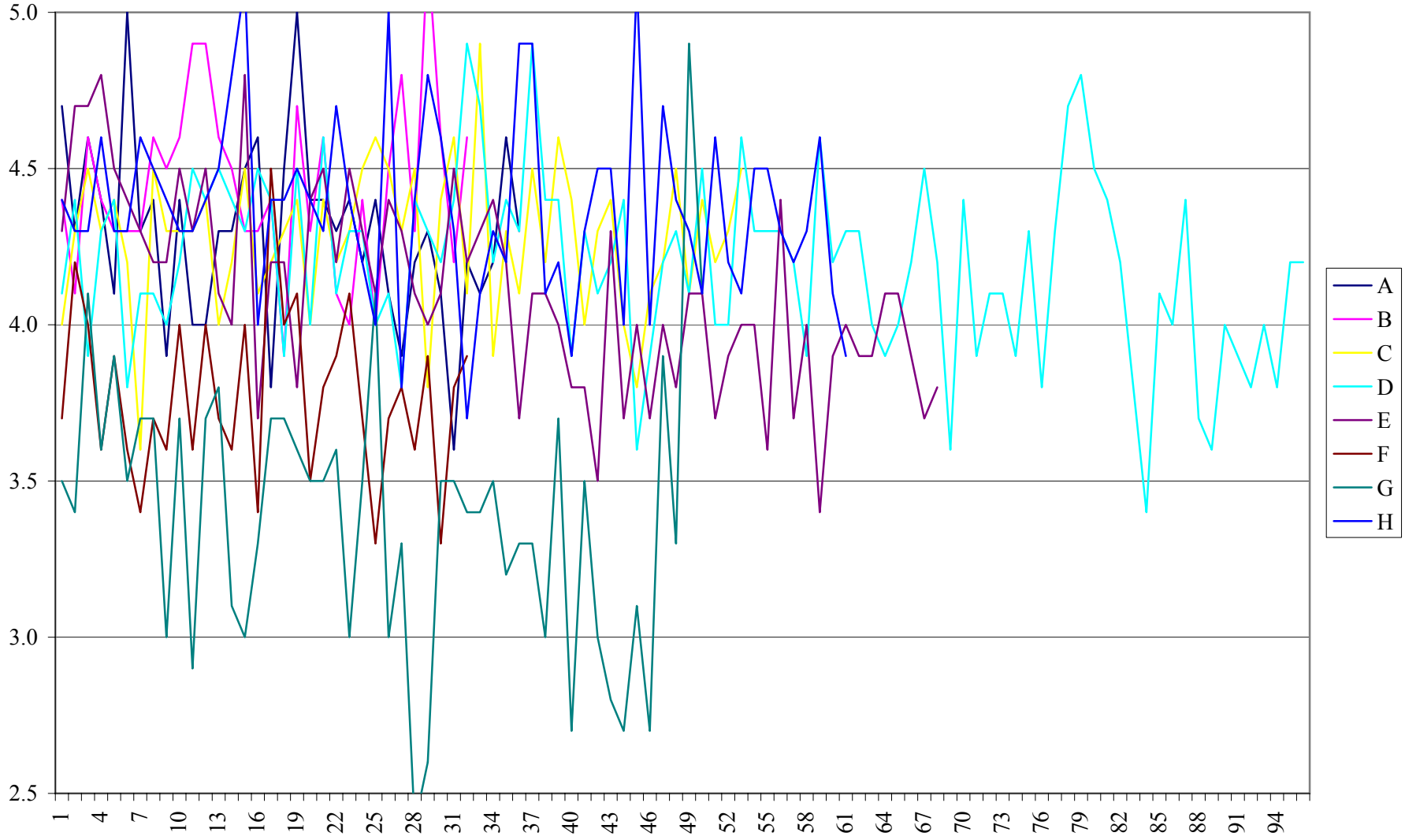
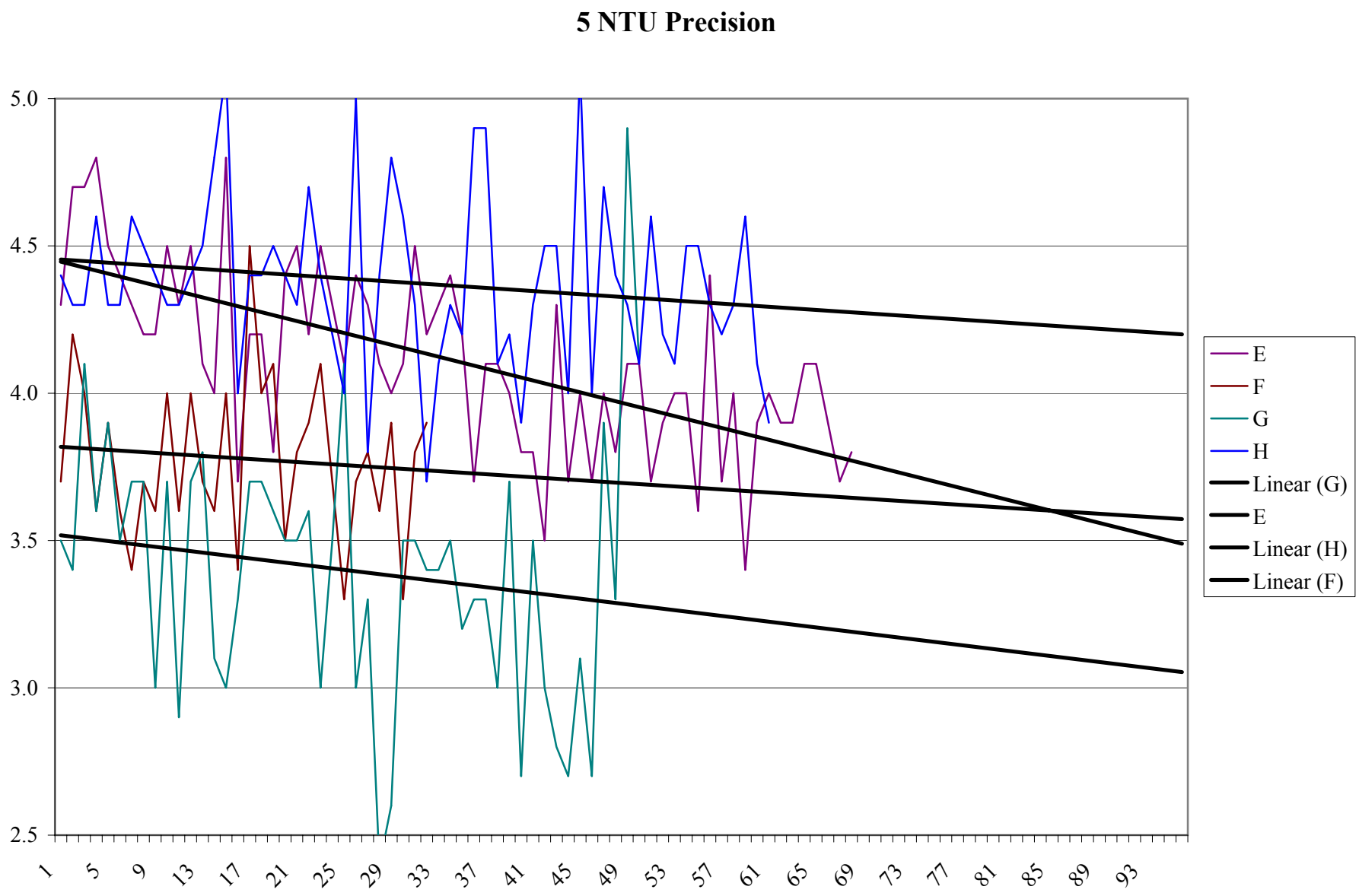
64
71
78
85
92
99
106
113
120
127
134
141
148
155
162
169
176
183
190
197
I
J
K
L
Linear (L)
Linear (J)
Linear (K)
Linear (I)

5 NTU Precision

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4.0
3.5
3.0
2.5
1
5
9
13
17
21
25
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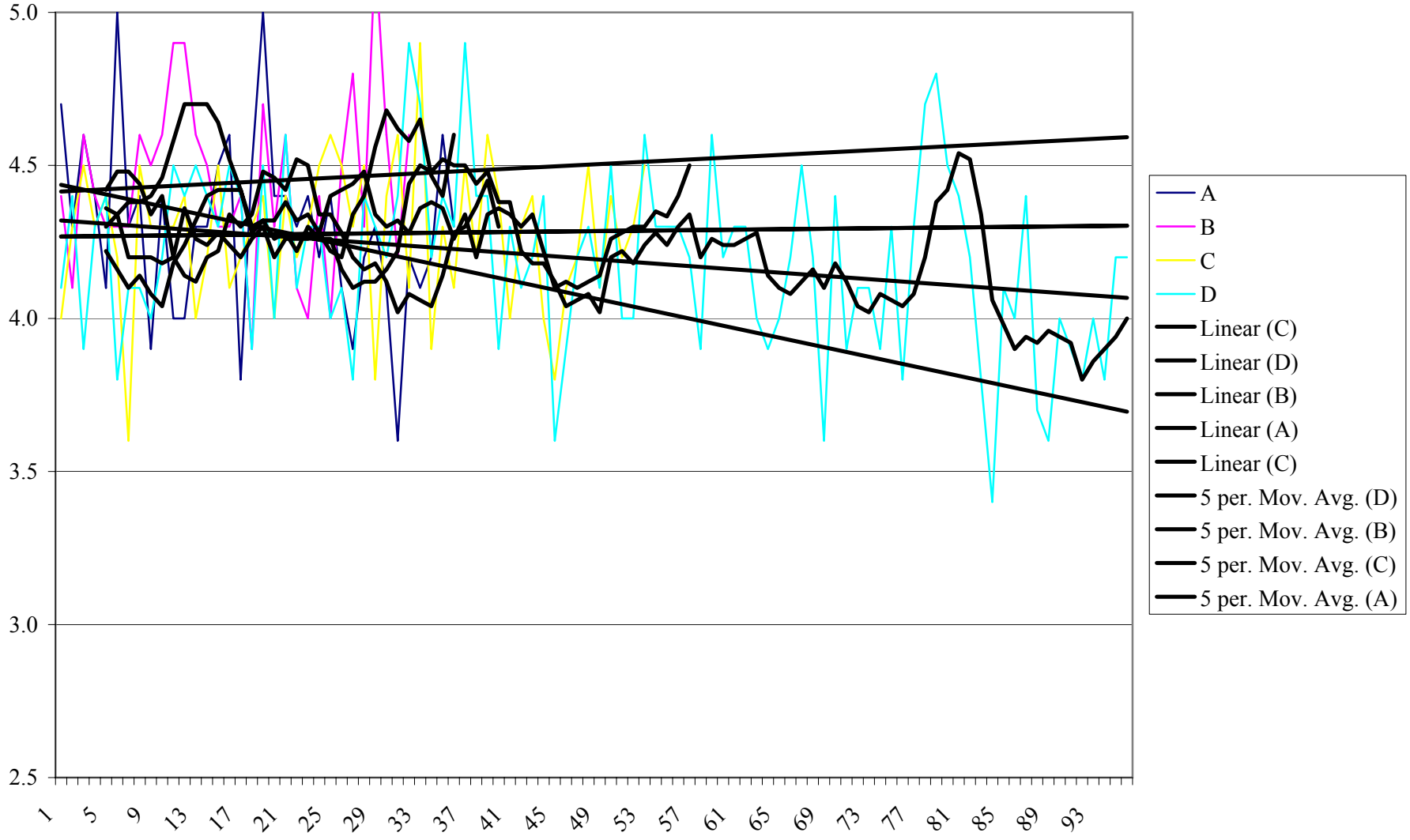
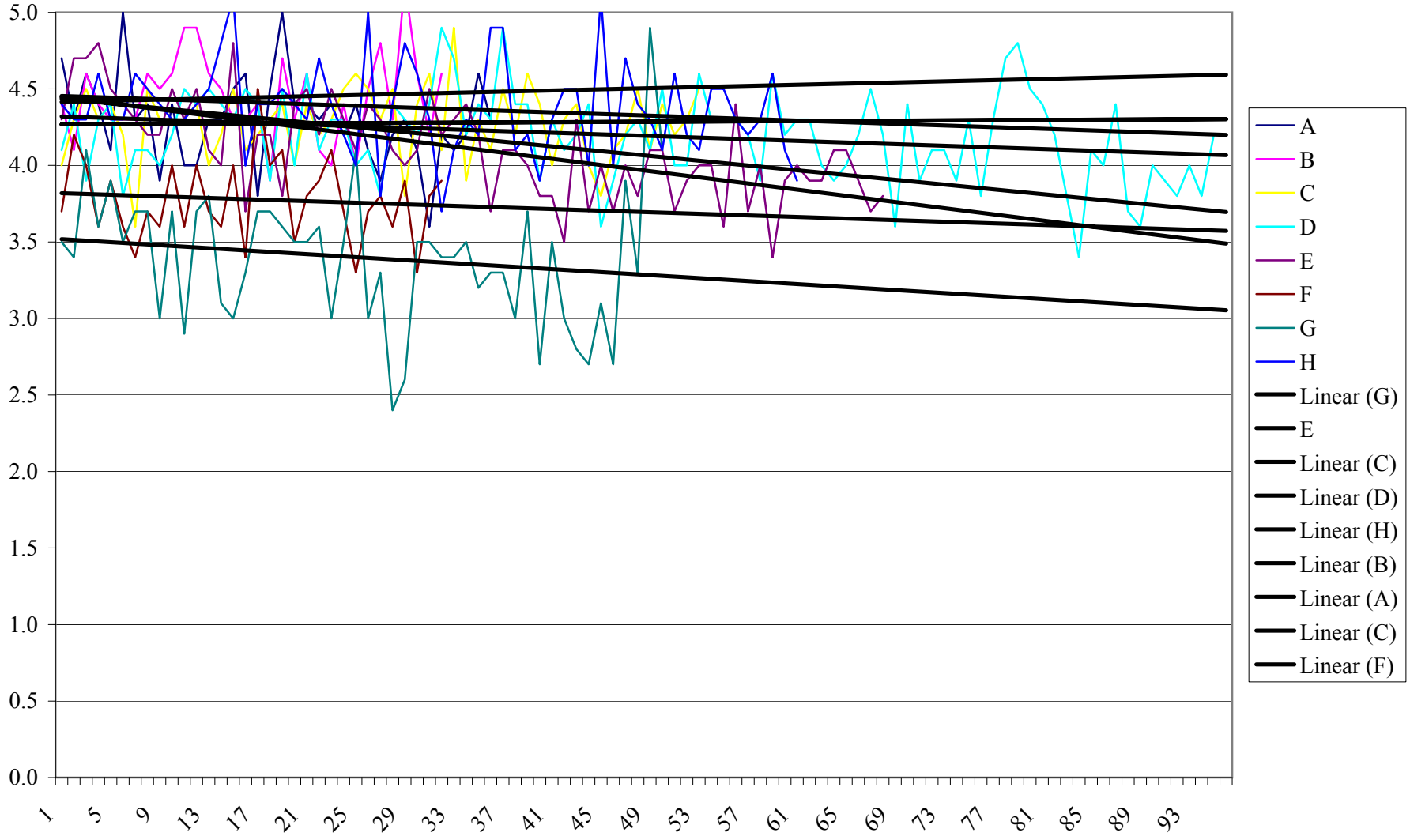
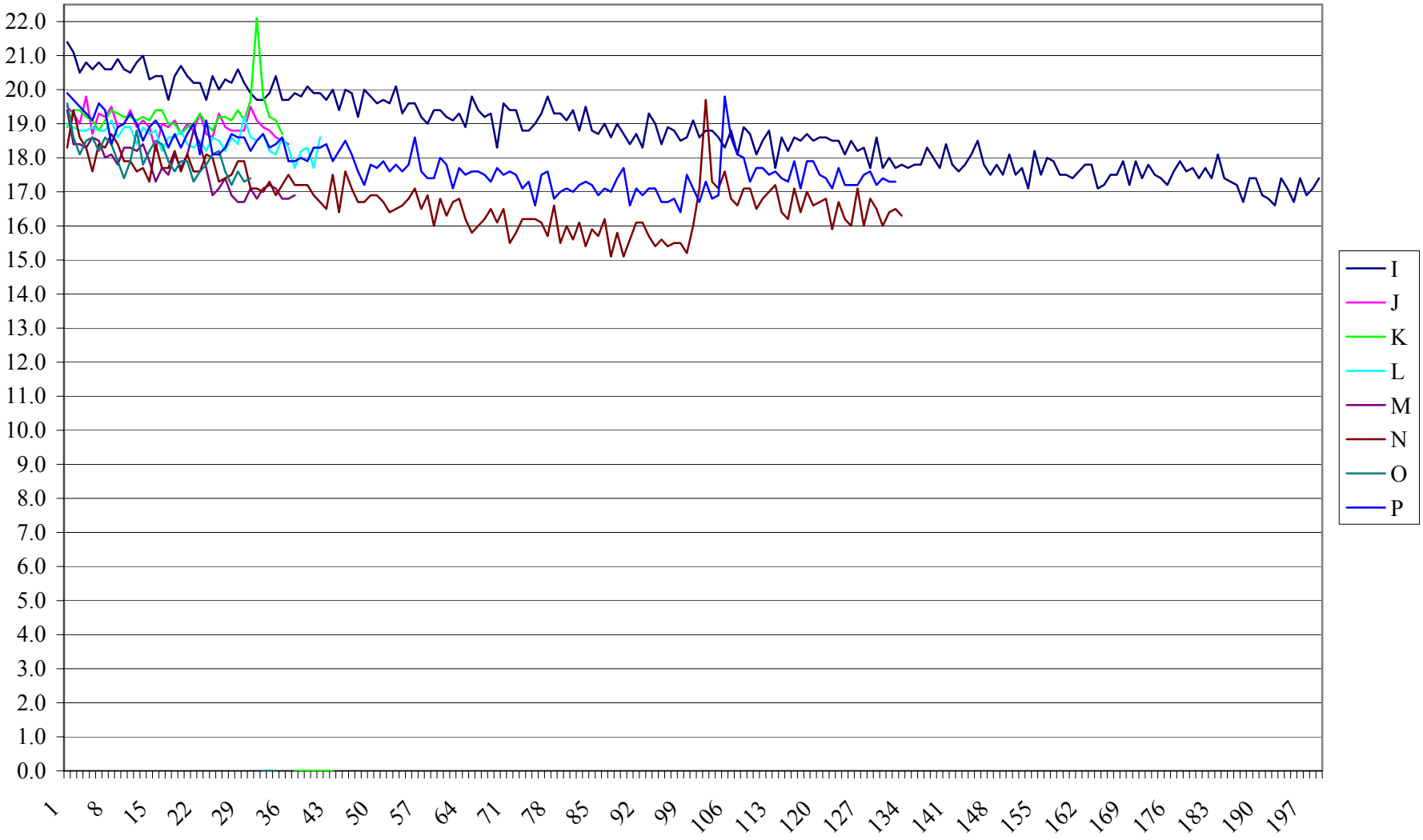
33
37
41
45
49
53
57
61
65
69
73
77
81
85
89
93
E
F
G
H
Linear (G)
E
Linear (H)
Linear (F)

5 NTU Precision



5 NTU Precision



20 NTU Precision