Real Time Water Quality (RTWQ) Deployment Report
NF02YL0012 – Humber River at Humber Village Bridge
June 2009 – July 2009

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- This monthly report interprets the data from the Humber River at Humber Village Bridge RTWQ station for the period of June 30th, 2009 to July 31st, 2009.

Maintenance and Calibration of Instrumentation

- The instrument was deployed from June 30th to July 31st, 2009 (31 day deployment period) at which point it was removed for maintenance and calibration. This was a medium length deployment period and the instrument appears to have kept a reasonable calibration for the duration of the deployment period.
- The results from comparing the Minisonde values to the Datasonde values can be seen in **Table 1.** Collection of QA/QC readings involves a second set of data readings being collected at the time of removal & installation, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of the QA/QC protocol.
- For installation a ranking of excellent was achieved for temperature, while pH, conductivity and dissolved oxygen all had a good ratings. For removal rankings of excellent were achieved for temperature and conductivity while pH had a good rating and dissolved oxygen had a poor rating indicating that it had drifted off calibration.

Table 1: QA/QC Data Comparison Rankings for installation – June 30th & removal - July 31st

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Humber River at Humber Village Bridge	June 30th, 2009	Installation	Excellent	Good	Good	Good
	July 31st, 2009	Removal	Excellent	Good	Excellent	Poor

Data Interpretation

- During the deployment period of June 30th to July 31st, 2009 the water quality was relatively stable for all water quality parameters with gentle variations throughout the month.
- Water temperature values **(Figure 1)** for the deployment period ranged from 10.2 °c to 18.8 °c which is typical of this period.

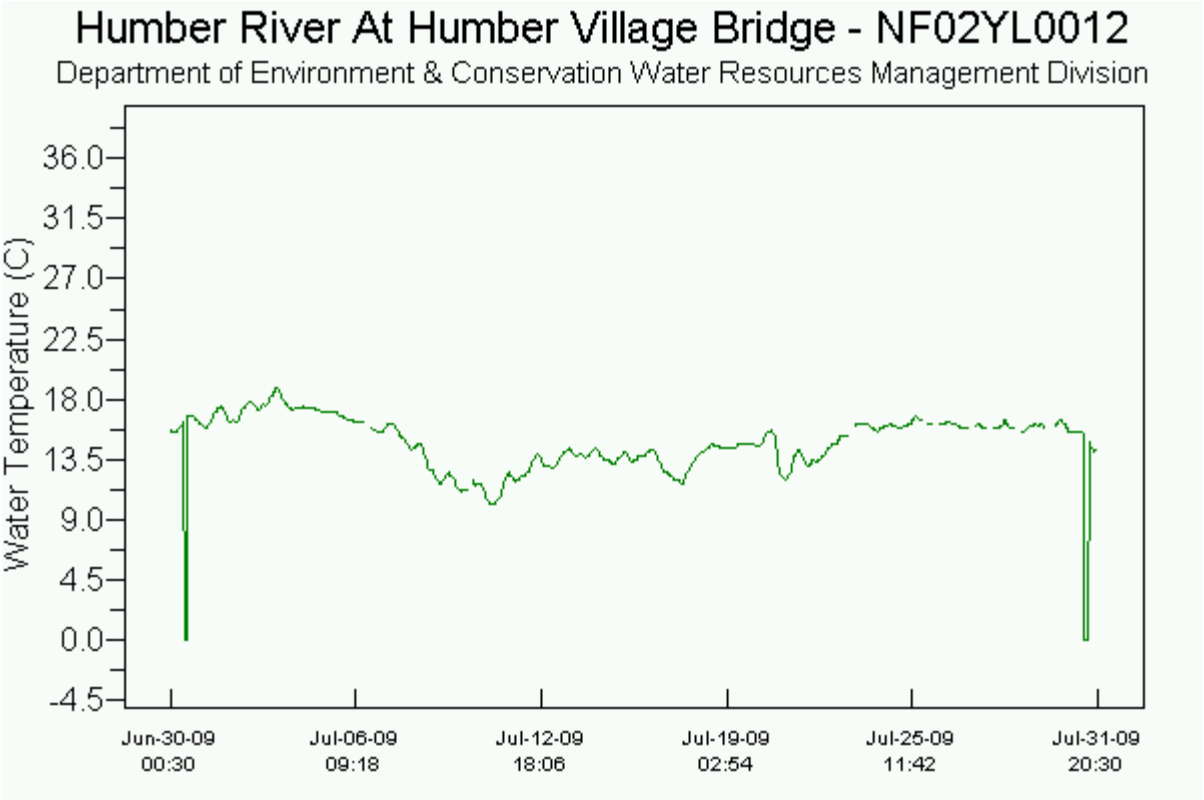

Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period were relatively constant throughout the month with some gentle variations. During the deployment period oxygen ranged from a high of 10.53 mg/l to a low of 8.09 mg/l which is typical of this period at this station.

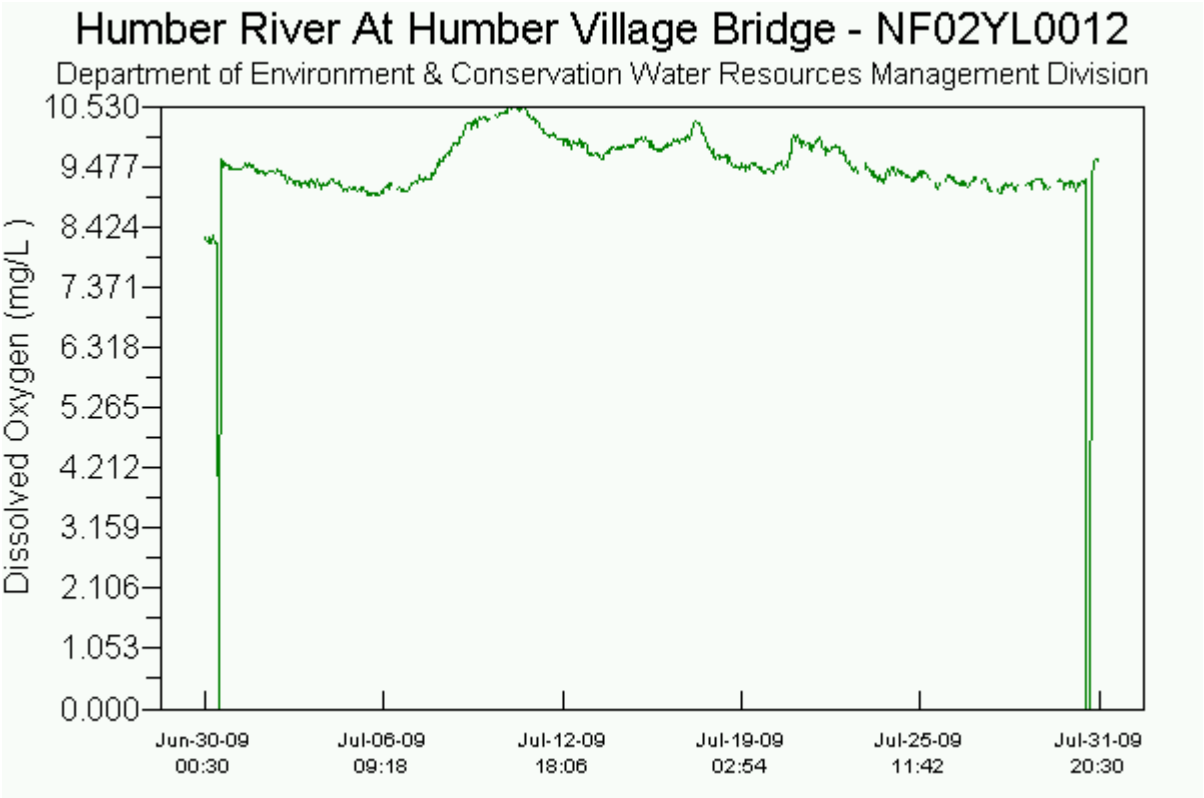

Figure 2

- There are 4 different guidelines for DO depending on the life cycle stage and water temperature (cold water/other life stages – above 6.5 mg/L; warm water/other life stages – above 5.5 mg/L; warm water/early life stages – above 6 mg/L; cold water/early life stages – 9.5 mg/L). All guidelines were met during this deployment period. It should be noted that some levels were below the 9.5 mg/l limit prescribed for the cold water/early life stages, however at this time water temperature was above 10^{o}c which is relatively warm.

- pH values **(Figure 3)** ranged from 6.89 to 7.24 over the deployment period which is a typical range of values for this station. The CCME Guidelines for the Protection of Freshwater Aquatic Life for pH is a range of 6.5 – 9.0 and all of the readings were within this range.

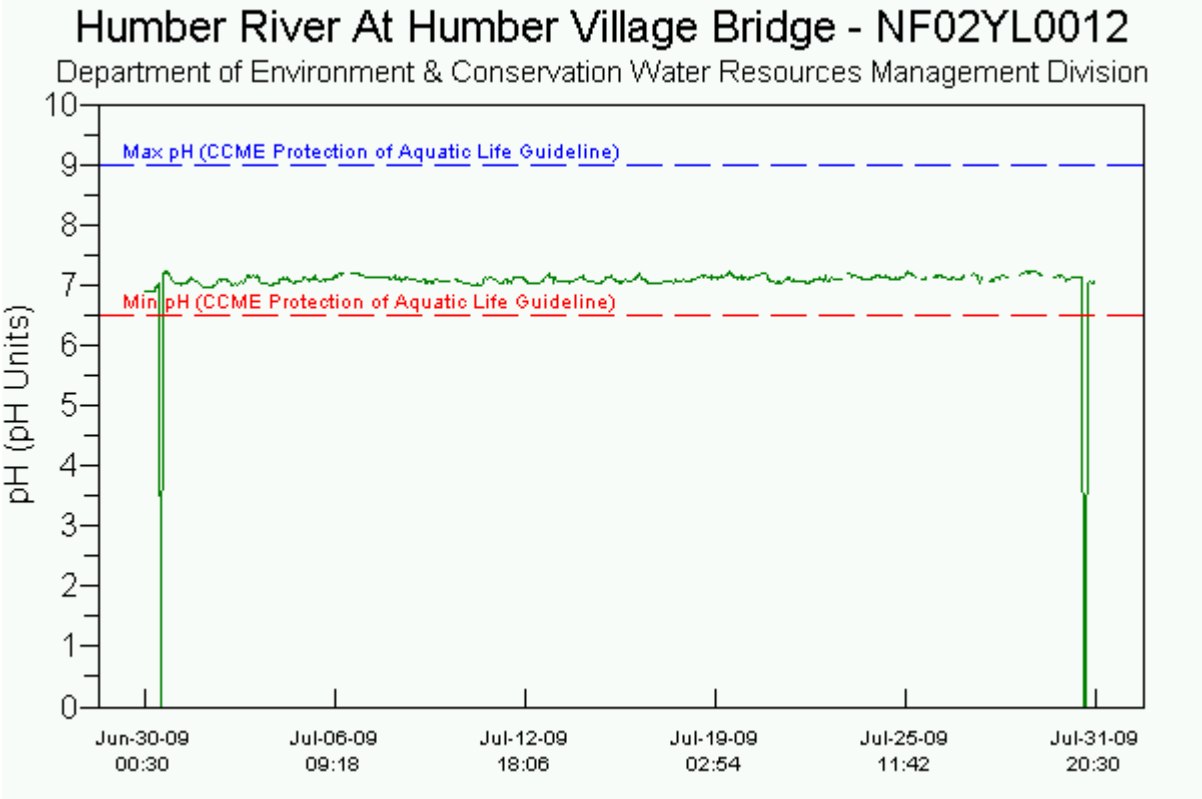

Figure 3

- Specific conductance values **(Figure 4)** were relatively consistent over the deployment period with a slight rising trend over the deployment period. Values ranged from 32.2 µS/cm to 38.3 µS/cm, which is typical for this station.

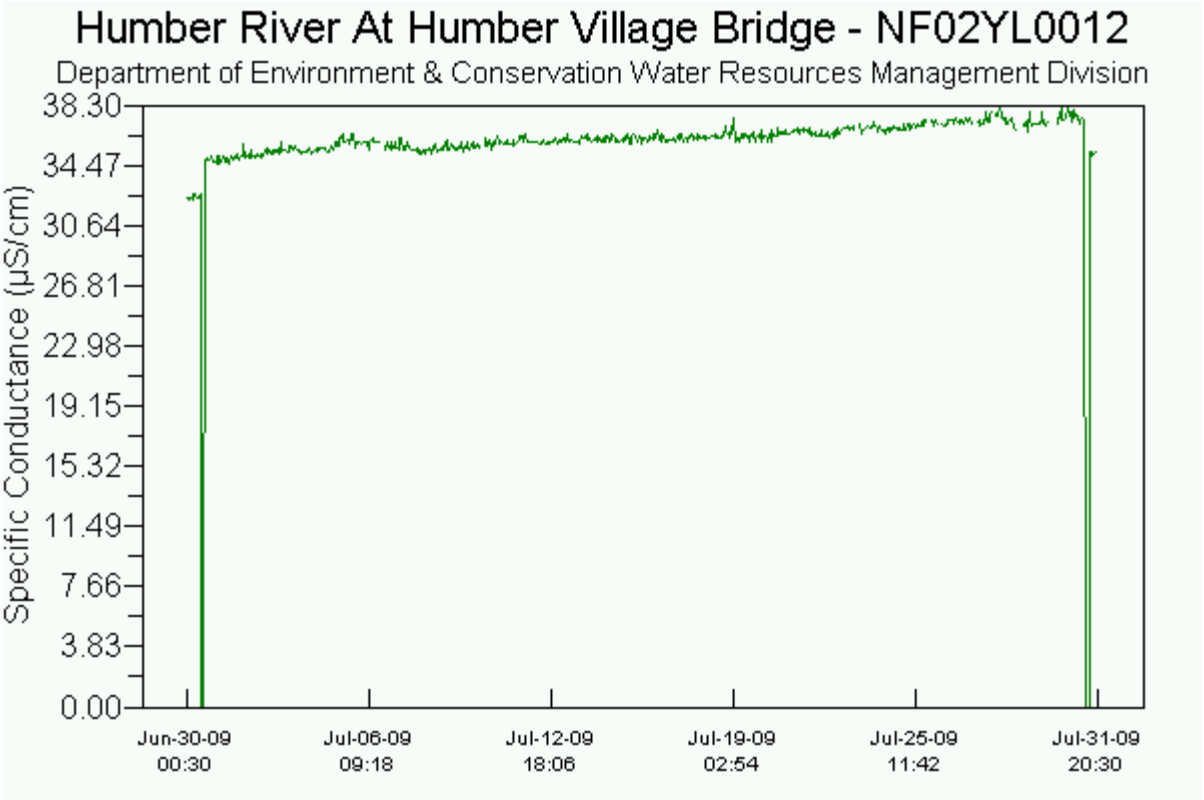

Figure 4

- Turbidity values were at zero throughout most of the deployment period with several low level readings on the last day of the deployment period. Values ranged from 0 to 2.5 NTU for the deployment period and a graph of the data can be seen in Figure 5.

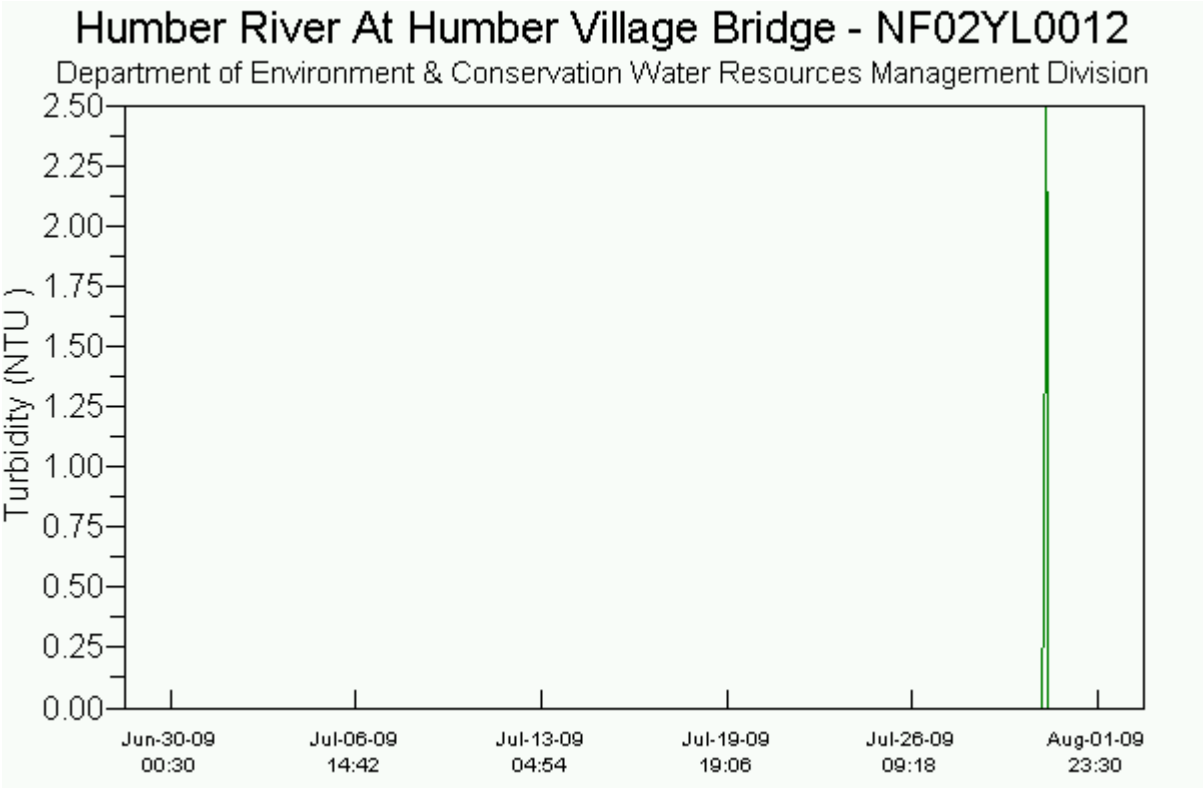

Figure 5

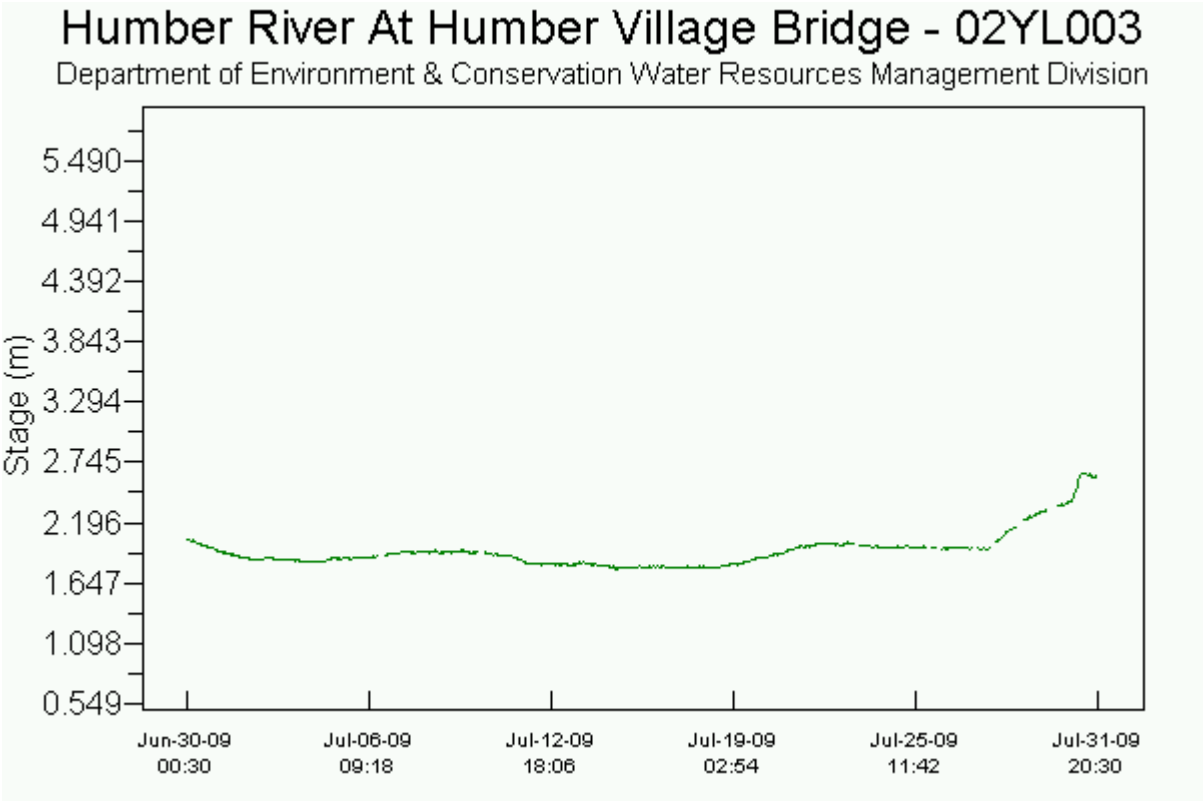

Figure 6

- Stage height readings **(Figure 6)** showed relatively stable levels through the deployment period which is not surprising given the low level of precipitation (appendix 1) during the month of July. During the deployment period the height of the river ranged from 1.770 m to 2.647 m, which translates to a range of 186 m^3/s to 340 m^3/s.

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Appendix 1 – Weather Data

Daily Data Report for July 2009

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01†	27.3	10.7	19.0	0.0	1.0	M	M	0.0			<31
02†	29.2	11.2	20.2	0.0	2.2	M	M	0.0			<31
03†	26.8	13.7	20.3	0.0	2.3	M	M	0.0			<31
04†	21.5	11.8	16.7	1.3	0.0	M	M	0.0		8	32
05†	14.2	8.0	11.1	6.9	0.0	M	M	0.0		6	39
06†	10.5	4.8	7.7	10.3	0.0	M	M	0.0		5	39
07†	13.0	2.9	8.0	10.0	0.0	M	M	0.0		29	32
08†	19.0	3.0	11.0	7.0	0.0	M	M	0.0			<31
09†	20.4	8.0	14.2	3.8	0.0	M	M	0.0			<31
10†	24.5	10.4	17.5	0.5	0.0	M	M	0.0		20	32
11†	28.1	13.0	20.6	0.0	2.6	M	M	0.0		21	35
12†	25.7	11.8	18.8	0.0	0.8	M	M	0.0		27	39
13†	22.0	14.2	18.1	0.0	0.1	M	M	0.0		14	46
14†	23.5	12.3	17.9	0.1	0.0	M	M	0.0		23	35
15†	21.1	11.1	16.1	1.9	0.0	M	M	0.0		21	37
16†	20.7	11.6	16.2	1.8	0.0	M	M	0.0		23	44
17†	19.0	11.6	15.3	2.7	0.0	M	M	0.0			<31
18†	14.9	9.4	12.2	5.8	0.0	M	M	0.0		5	44
19†	21.7	9.4	15.6	2.4	0.0	M	M	0.0		22	43
20†	24.5	14.0	19.3	0.0	1.3	M	M	0.0		24	43
21†	24.6	13.8	19.2	0.0	1.2	M	M	0.0		25	35
22†	22.0	11.1	16.6	1.4	0.0	M	M	0.0			<31
23†	22.3	10.2	16.3	1.7	0.0	M	M	0.0			<31
24†	21.1	8.7	14.9	3.1	0.0	M	M	0.0			<31
25†	20.4	11.6	16.0	2.0	0.0	M	M	0.0			<31
26†	18.9	12.3	15.6	2.4	0.0	M	M	0.0			<31
27†	21.3	11.8	16.6	1.4	0.0	M	M	0.0		33	33
28†	22.9	16.5	19.7	0.0	1.7	M	M	0.0		25	33
29†	24.4	16.2	20.3	0.0	2.3	M	M	0.0			<31
30†	25.5	15.4	20.5	0.0	2.5	M	M	0.0		21	37
31†	26.6	17.6	22.1	0.0	4.1	M	M	0.0		23	33
Sum				**66.5**	**22.1**	**M**	**M**	**0.0**			
Avg	**21.9**	**11.2**	**16.54**								
Xtrm	**29.2**	**2.9**								**14**	**46**