Analysis of Coral Growth Lab Report

Philip Kim

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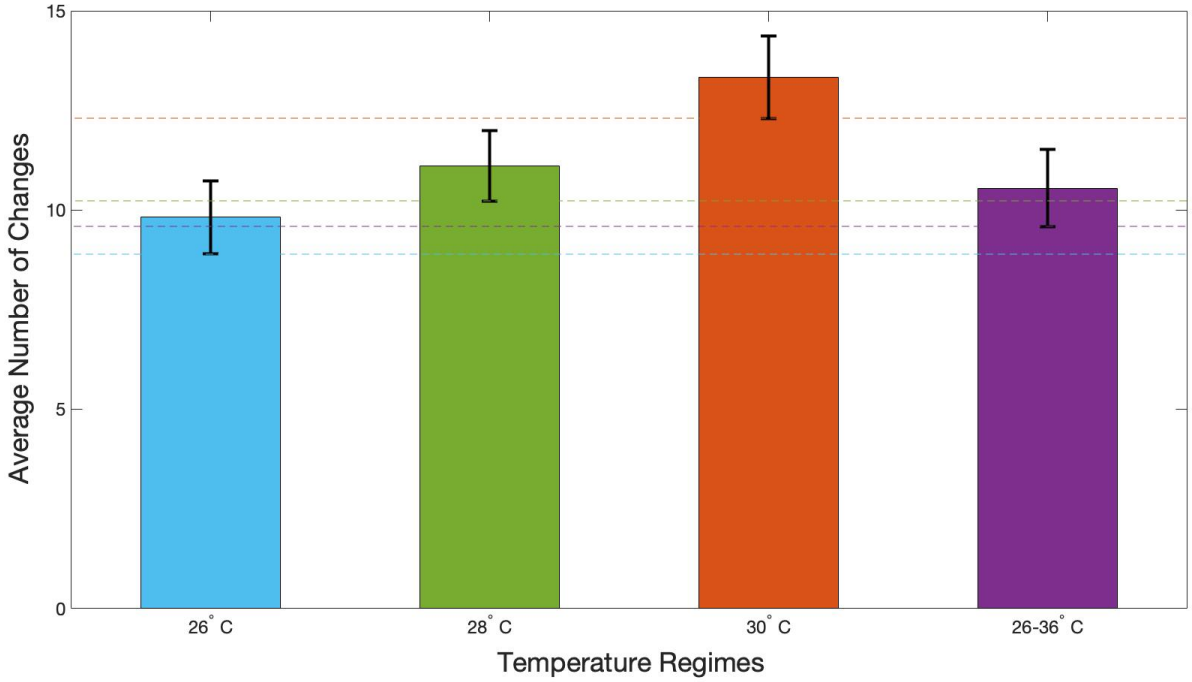
#	**TREATMENT** (°C)	**INITIAL** (mg/cm^2)	**FINAL** (mg/cm^2)	**CHANGE** (mg/cm^2)
1	**26**	552	563	11
2	**26**	341	352	11
3	**26**	461	467	6
4	**26**	430	437	7
5	**26**	312	320	8
6	**26**	364	374	10
7	**26**	468	479	11
8	**26**	449	460	11
9	**26**	398	415	17
10	**26**	394	401	7
11	**26**	360	369	9
12	**28**	517	528	11
13	**28**	428	443	15
14	**28**	407	415	8
15	**28**	441	452	11
16	**28**	472	488	16
17	**28**	383	391	8
18	**28**	466	479	13
19	**28**	345	354	9
20	**28**	382	393	11
21	**28**	494	503	9
22	**30**	573	585	12
23	**30**	354	369	15
24	**30**	532	545	13
25	**30**	393	410	17
26	**30**	269	277	8
27	**30**	517	526	9
28	**30**	469	484	15
29	**30**	306	322	16
30	**30**	431	446	15
31	**26-30**	306	312	6
32	**26-30**	372	378	6
33	**26-30**	333	344	11
34	**26-30**	567	578	11

#	TREATMENT (°C)	INITIAL (mg/cm^2)	FINAL (mg/cm^2)	CHANGE (mg/cm^2)
35	26-30	379	392	13
36	26-30	490	505	15
37	26-30	391	401	10
38	26-30	509	523	14
39	26-30	369	377	8
40	26-30	337	351	14
41	26-30	365	373	8

Sample Size, **N**
Final - Initial, **CHANGE** (**C**)
Average Change, **MEAN** ($\overline{\mathbf{C}}$)
Standard Deviation, **STD** (σ)
Standard Error, **ERR** (ϵ)

N	MEAN	STD	ERR
$26^{\circ}C_{\{01-11\}} = 11$	$\frac{C_{01}+\cdots+C_{11}}{11} = 09.82$	$\sqrt{\frac{\lvert C_{01}-\overline{C}\rvert^2+\cdots+\lvert C_{11}-\overline{C}\rvert^2}{11-1}} = 03.03$	$\frac{\overline{\sigma}_{\{01-11\}}}{\sqrt{11}} = 0.91$
$28^{\circ}C_{\{12-21\}} = 10$	$\frac{C_{12}+\cdots+C_{21}}{10} = 11.10$	$\sqrt{\frac{\lvert C_{12}-\overline{C}\rvert^2+\cdots+\lvert C_{21}-\overline{C}\rvert^2}{10-1}} = 02.81$	$\frac{\overline{\sigma}_{\{12-21\}}}{\sqrt{10}} = 0.89$
$30^{\circ}C_{\{22-30\}} = 09$	$\frac{C_{22}+\cdots+C_{30}}{09} = 13.33$	$\sqrt{\frac{\lvert C_{22}-\overline{C}\rvert^2+\cdots+\lvert C_{30}-\overline{C}\rvert^2}{09-1}} = 03.12$	$\frac{\overline{\sigma}_{\{22-30\}}}{\sqrt{09}} = 1.04$
$26\text{-}30^{\circ}C_{\{31-41\}} = 11$	$\frac{C_{31}+\cdots+C_{41}}{11} = 10.55$	$\sqrt{\frac{\lvert C_{31}-\overline{C}\rvert^2+\cdots+\lvert C_{41}-\overline{C}\rvert^2}{11-1}} = 03.24$	$\frac{\overline{\sigma}_{\{31-41\}}}{\sqrt{11}} = .98$



1. What was the mean ± standard error of coral growth at each of the four temperature categories?

   26°C = 09.82 ±0.91, **28°C** = 11.10 ±0.84, **30°C** = 13.33 ±1.04, **26-30°C** = 10.55 ±0.98

2. What would happen if global climate change causes the average seawater temperature to increase to 30°C?

   By analyzing the bar graph above, **30°C** is significantly different with all of the temperature regimes since the error bar does not overlap with any the other temperature regimes. This means the corals growth rate at **30°C** is significantly the highest. If global climate change causes the average seawater to increase from **26°C** to **30°C**, then it would be safe to assume that corals in the ocean would significantly increase.