Analysis of Coral Growth Lab Report

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Corals and Temperature

#	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	06
32	26-30	372	378	06

#	Treatment (°C)	Initial (mg/cm^2)	Final (mg/cm^2)	Change (mg/cm^2)
33	26-30	333	344	11
34	26-30	567	578	11
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	08
40	26-30	337	351	14
41	26-30	365	373	08

Sample Sizes (Denoted as N):

$$N_{26°C} = \boxed{11}, \quad N_{28°C} = \boxed{9}, \quad N_{30°C} = \boxed{8}, \quad N_{26\text{-}30°C} = \boxed{11}$$

Average of Change (Denoted as MEAN):

$$\overline{X}_{26°C} = \frac{X_1+\cdots+X_{11}}{N_{26°C}},$$
$$= \boxed{9.82}$$

$$\overline{X}_{28°C} = \frac{X_{12}+\cdots+X_{23}}{N_{28°C}},$$
$$= \boxed{11.10}$$

$$\overline{X}_{30°C} = \frac{X_{24}+\cdots+X_{32}}{N_{30°C}},$$
$$= \boxed{13.33}$$

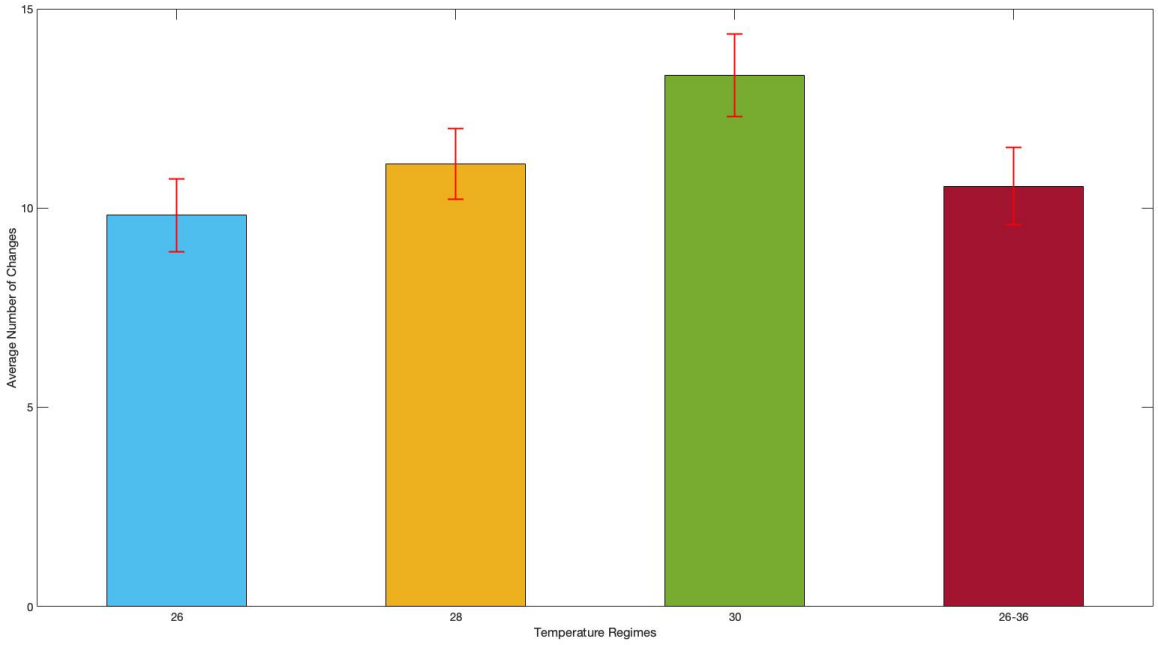
$$\overline{X}_{26\text{-}30°C} = \frac{X_{33}+\cdots+X_{41}}{N_{26\text{-}30°C}},$$
$$= \boxed{10.55}$$

Standard Deviations (Denoted as SD):

$$\sigma_{26°C} = \sqrt{\frac{\left|X_1-\overline{X}_{26\text{-}30°C}\right|^2+\cdots+\left|X_{11}-\overline{X}_{26\text{-}30°C}\right|^2}{N_{26°C}-1}},$$
$$= \boxed{3.03}$$

Standard Errors (Denoted as ±SE):

$$\epsilon_{26°C} = \frac{\sigma_{26°C}}{\sqrt{N_{26°C}}},$$
$$= \boxed{0.9127}$$



1. What was the mean ± standard error of coral growth (= change mg/cm2) at each of the four temperature categories?
   - 26°C = $09.82\ (mg/cm^2)\ \pm\ 0.91$
   - 28°C = $11.10\ (mg/cm^2)\ \pm\ 0.89$
   - 30°C = $13.33\ (mg/cm^2)\ \pm\ 1.04$
   - 26-30°C = $10.55\ (mg/cm^2)\ \pm\ 0.98$
2. What would happen if global climate change causes the average seawater temperature to increase to 30?
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