Climate Change Project

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ATM 320

Tables

1980 - 1999

Local temperature:

T_{avg} (°C)	σT (°C)	T_{max} (°C)	T_{min} (°C)
8.58	10.48	22.4	-10.0

Global temperature:

T_{avg} (°C)	σT (°C)	T_{max} (°C)	T_{min} (°C)
0.3	0.1	0.52	0.13

SOI index:

avg	σ	max	min
0.12	0.93	2.0	-2.1

2000 - 2019

Local temperature:

T_{avg} (°C)	σT (°C)	T_{max} (°C)	T_{min} (°C)
9.24	9.6	24.7	-10.7

Global temperature:

T_{avg} (°C)	σT (°C)	T_{max} (°C)	T_{min} (°C)
0.52	0.26	1.37	-0.04

SOI index:

avg	σ	max	min
0.03	1.62	4.8	-6.0

1980 - 2019

Local temperature:

T_{avg} (°C)	σT (°C)	T_{max} (°C)	T_{min} (°C)
9.21	9.64	24.7	-10.7

Global temperature:

T_{avg} (°C)	σT (°C)	T_{max} (°C)	T_{min} (°C)
0.51	0.26	1.37	-0.04

SOI index:

avg	σ	max	min
0.04	1.6	4.8	-6.0

Correlation Coefficient

The correlation coefficient is a quantification of the strength of the linear relationship between two variables. Correlations of -1 or +1 imply an exact linear relationship, while 0 implies no correlation. The Pearson correlation coefficient is calculated using the equation 1.

$$r = \frac{\sum(x - \overline{x})(y - \overline{y})}{\sqrt{\sum(x - \overline{x})^2 \sum(y - \overline{y})^2}} \tag{1}$$

The statistical significance of the correlation coefficient can be interpreted using the p-value method. The p-value P is calculated using a t-distribution with $n - 2$ degrees of freedom as shown in equation 2.

$$t = \frac{r\sqrt{n-2}}{\sqrt{1 - r^2}} \tag{2}$$

We use $\alpha = 0.05$ as the threshold significance level.

- If $P < \alpha$, the variables *are* linear because r *is* sufficiently different from zero.
- If $P > \alpha$, the variables *are not* linear because r *is not* sufficiently different from zero.