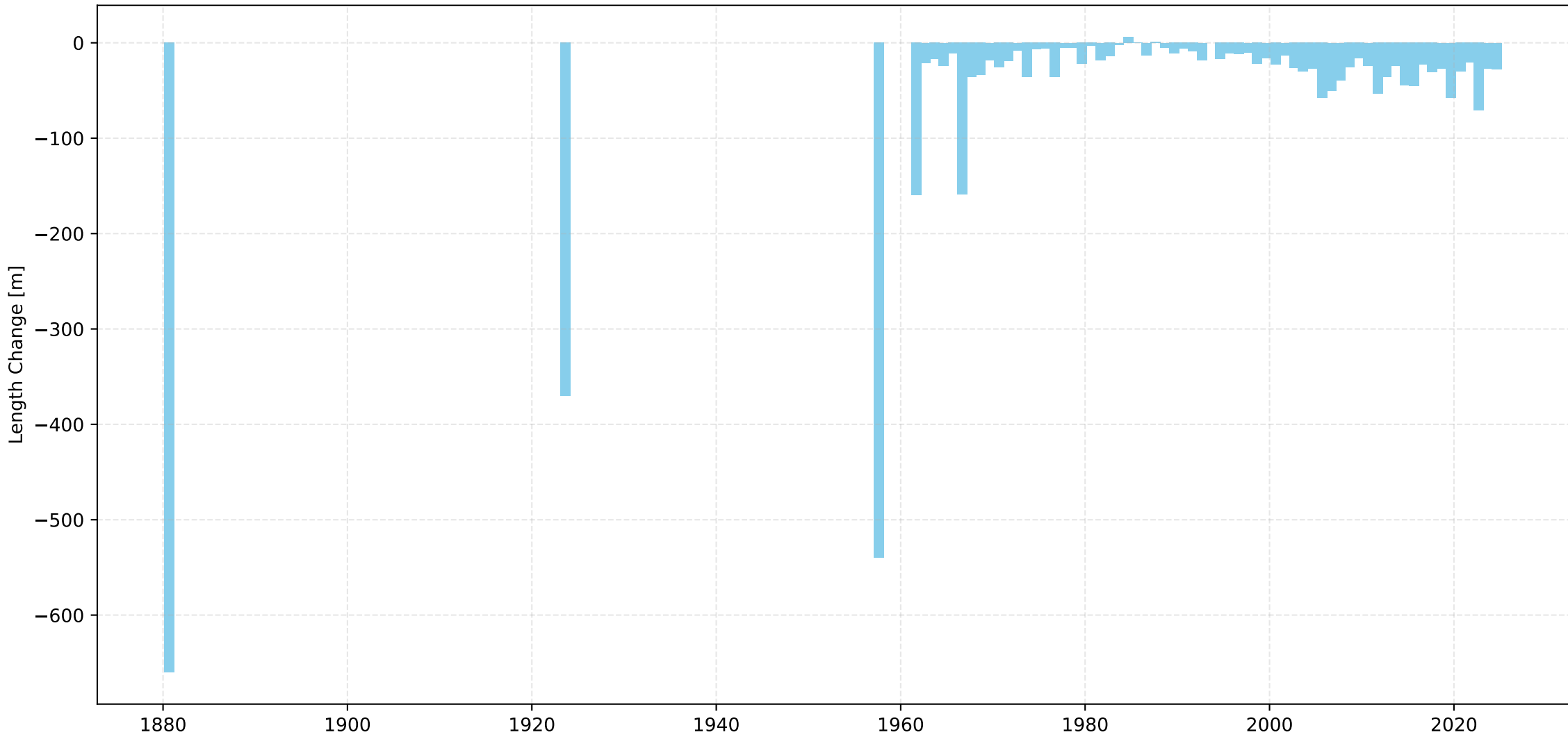
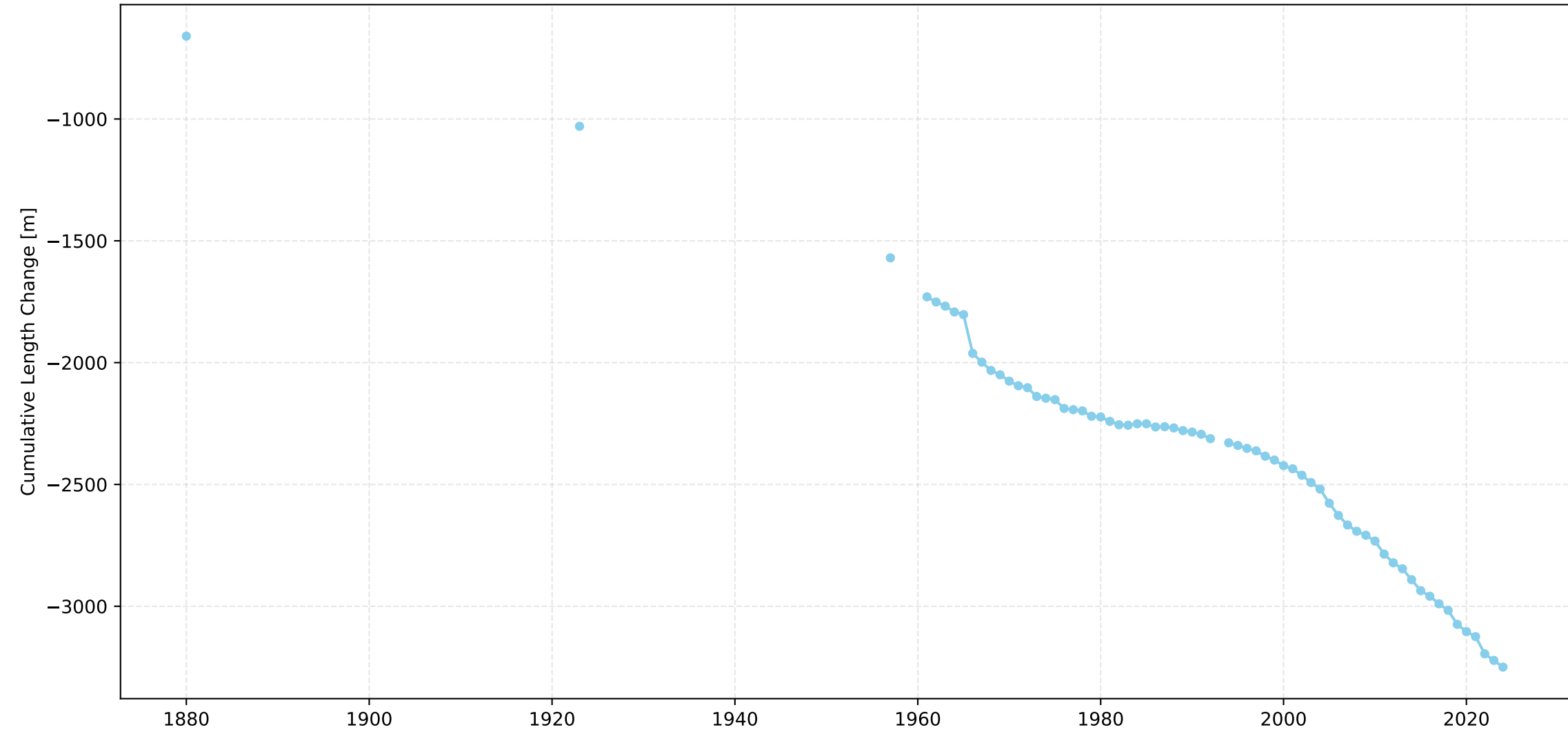


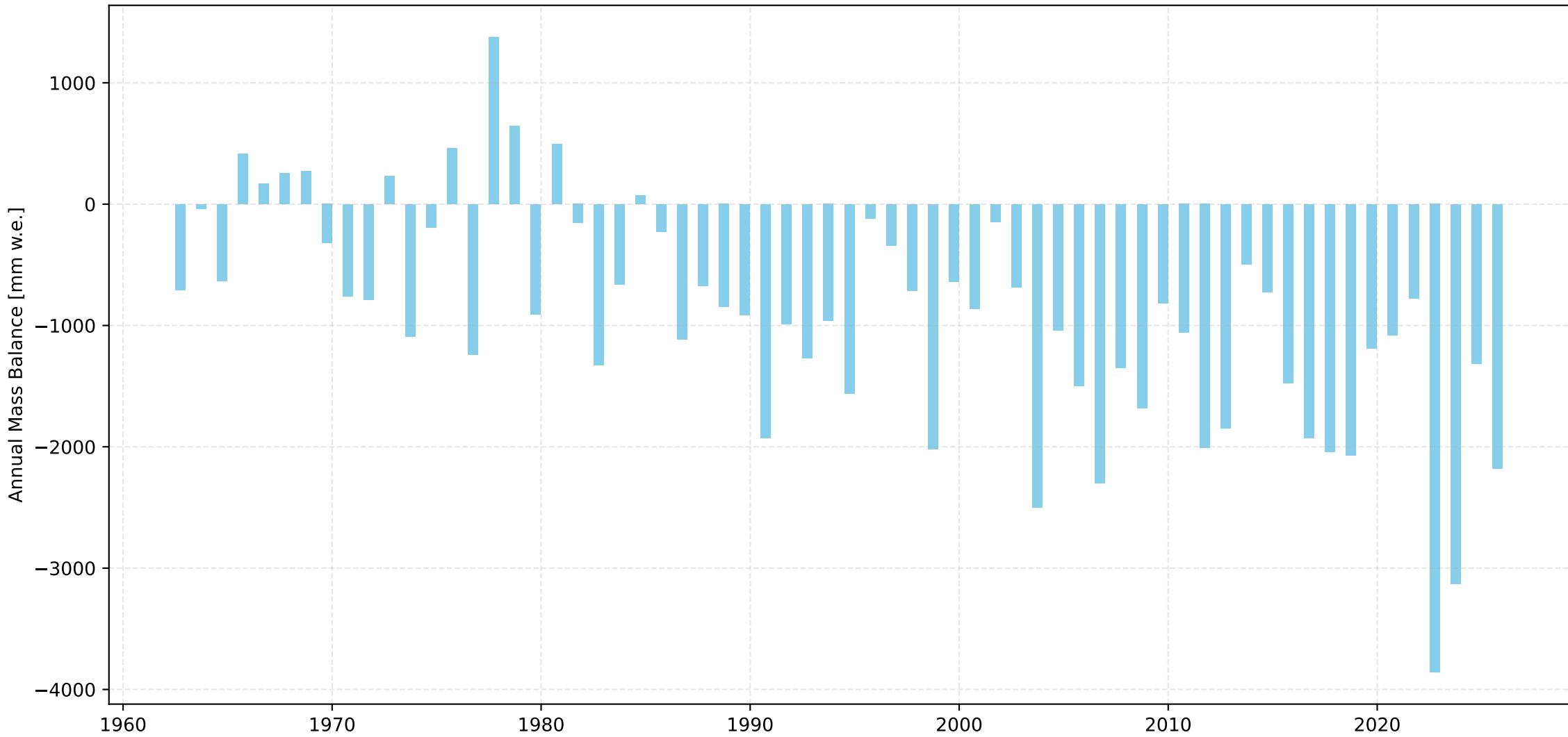
Griesgletscher Length Change Over Time



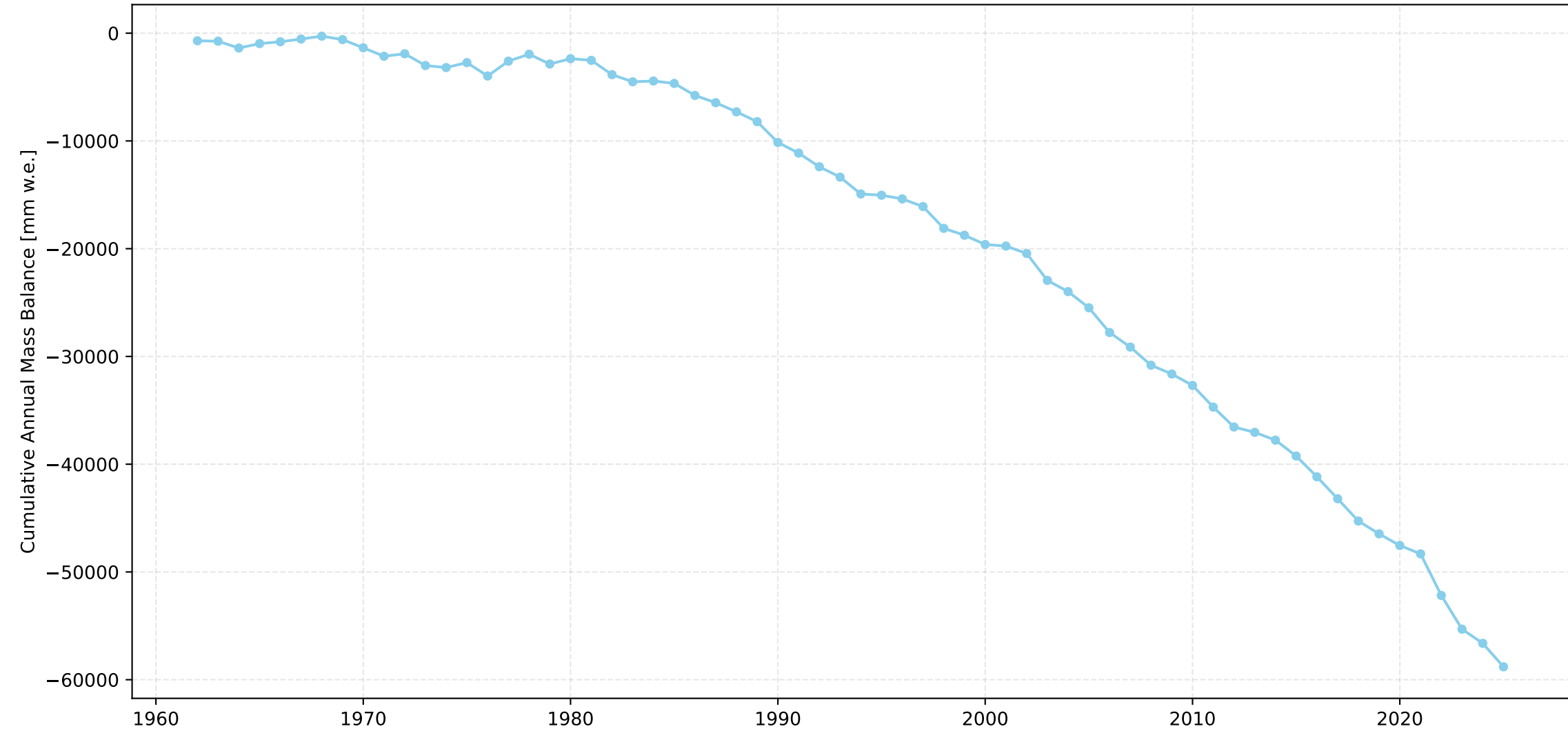
Griesgletscher Cumulative Length Change Over Time



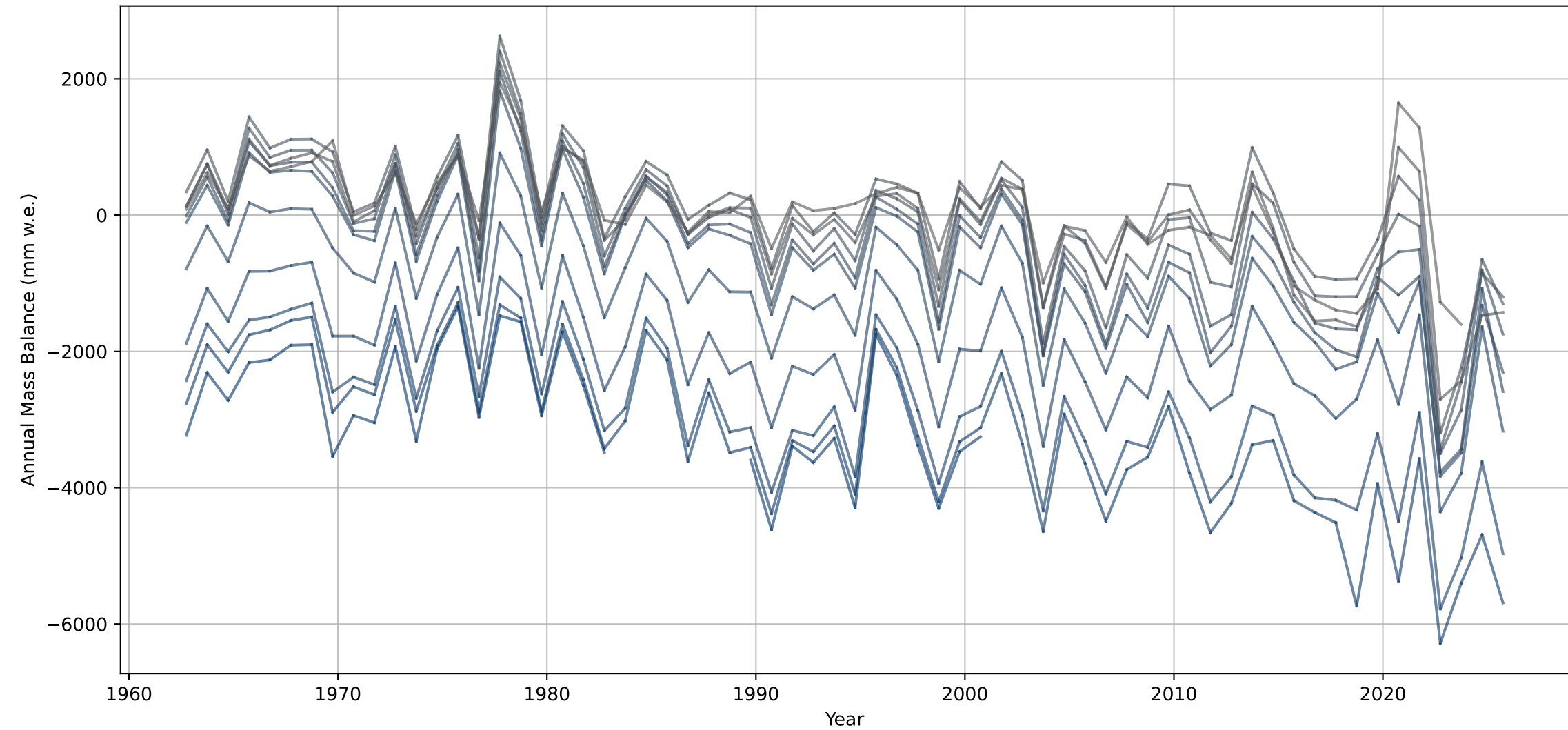
Griesgletscher Annual Mass Balance Over Time



Griesgletscher Cumulative Annual Mass Balance Over Time



Annual Mass Balance for each Elevation Bin over Time - Griesgletscher



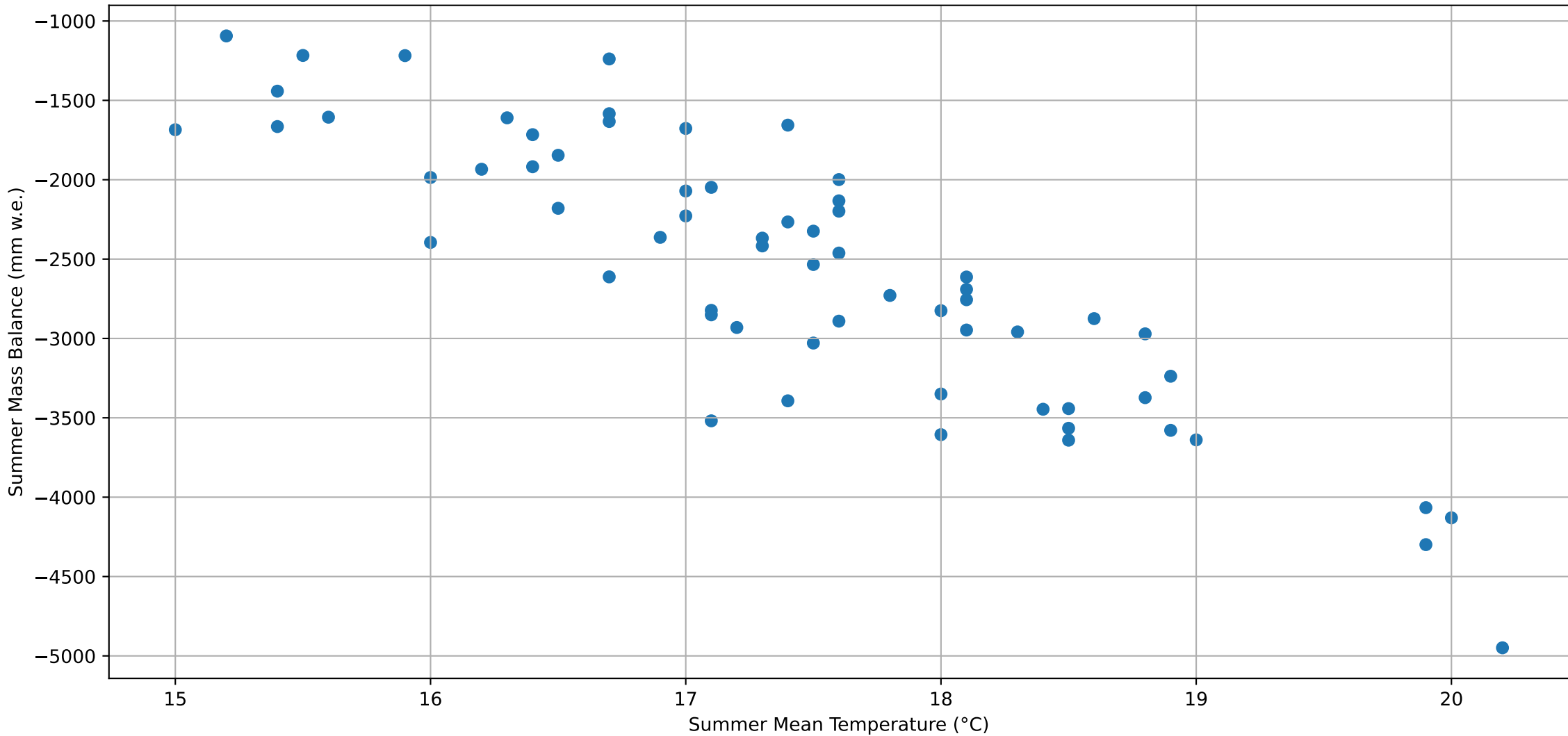
Sion Summer Mean Temperature



Sion Winter Total Precipitation

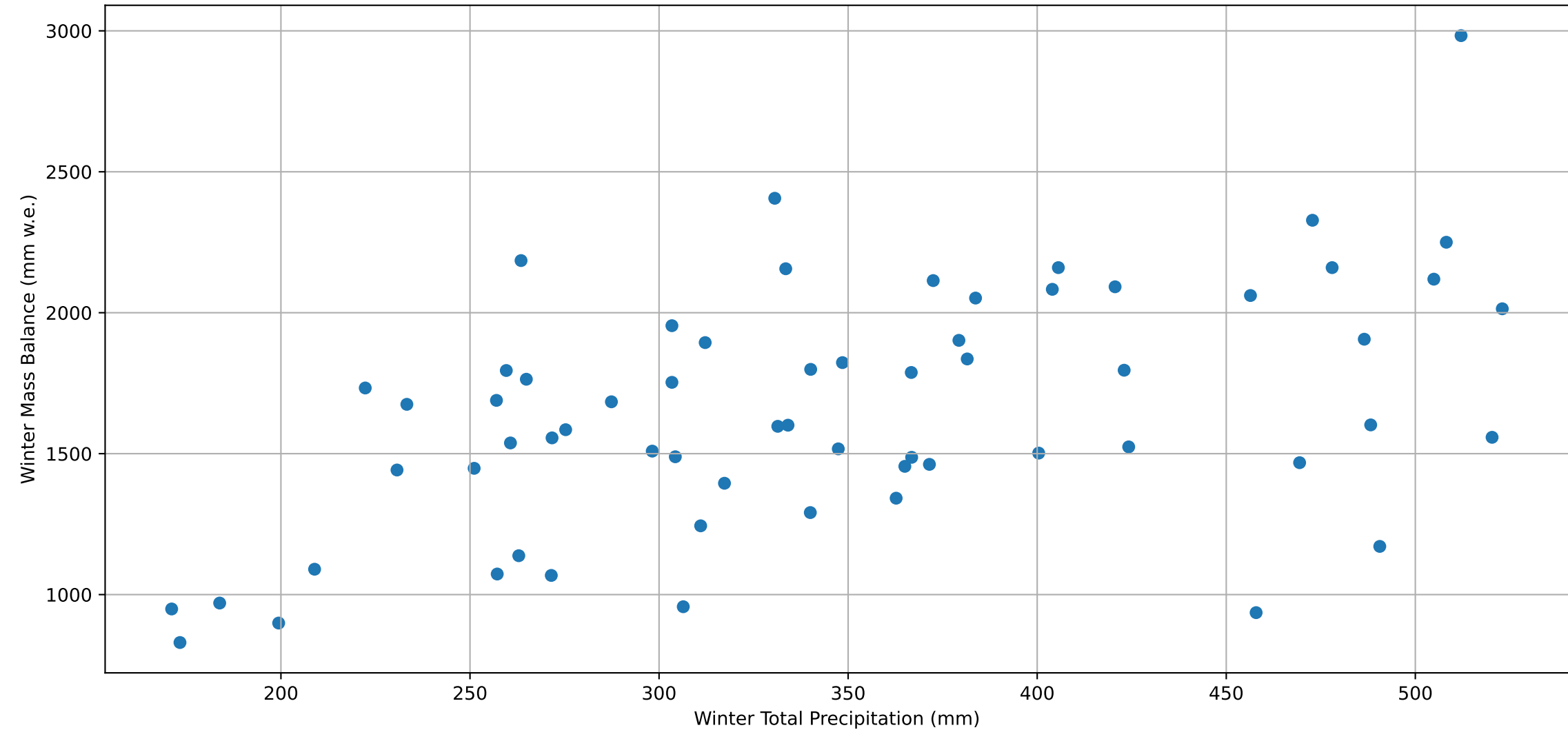


Griesgletscher Summer Mass Balance with relation to Temperature





Griesgletscher Winter Mass Balance with relation to Precipitation



Regression: Monthly 1961-1990

=====
MONTHLY DEVIATIONS for Griesgletscher using 1961-1990 climate norms
=====

Correlation Analysis with Significance Testing:
Skipping constant column: const
Table with 5 columns: Variable, Correlation Coefficient, P-value, Significant (p < 0.05), and an index column. Rows include months from June to December.

Number of observations: 64

Regression Summary:

OLS Regression Results
Table with 2 columns: Label and Value. Rows include Dep. Variable, Model, Method, Date, Time, No. Observations, Df Residuals, Df Model, Covariance Type, R-squared, Adj. R-squared, F-statistic, Prob (F-statistic), Log-Likelihood, AIC, and BIC.

Table with 7 columns: Variable, coef, std err, t, P>|t|, [0.025, 0.975]. Rows include const and months from May to April.

Table with 4 columns: Statistic, Value, Statistic, Value. Rows include Omnibus, Prob(Omnibus), Skew, Kurtosis, Durbin-Watson, Jarque-Bera (JB), Prob(JB), and Cond. No.

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

Regression: Optimal 1961-1990

=====
OPTIMAL SEASONAL DEVIATIONS for Griesgletscher using 1961-1990 climate norms
=====

Correlation Analysis with Significance Testing:
Skipping constant column: const
Variable Correlation Coefficient P-value Significant (p < 0.05)
0 opt\_season\_td -0.842259 2.741200e-18 True
1 opt\_season\_pd 0.237420 5.888798e-02 False

Number of observations: 64

Regression Summary:

OLS Regression Results						
Dep. Variable:	annual mass balance (mm w.e.)			R-squared:	0.726	
Model:	OLS			Adj. R-squared:	0.717	
Method:	Least Squares			F-statistic:	80.84	
Date:	Fri, 12 Dec 2025			Prob (F-statistic):	7.04e-18	
Time:	18:45:57			Log-Likelihood:	-486.43	
No. Observations:	64			AIC:	978.9	
Df Residuals:	61			BIC:	985.3	
Df Model:	2					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	-274.3677	80.189	-3.422	0.001	-434.715	-114.020
opt_season_td	-602.0175	49.297	-12.212	0.000	-700.593	-503.442
opt_season_pd	1.4376	0.746	1.927	0.059	-0.054	2.930
Omnibus:	0.547	Durbin-Watson:		1.614		
Prob(Omnibus):	0.761	Jarque-Bera (JB):		0.597		
Skew:	-0.208	Prob(JB):		0.742		
Kurtosis:	2.773	Cond. No.		119.		

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

Regression: Seasonal 1961-1990

=====
SUMMER/WINTER SEASONAL DEVIATIONS for Griesgletscher using 1961-1990 climate norms
=====

Correlation Analysis with Significance Testing:
Skipping constant column: const
Variable Correlation Coefficient P-value Significant (p < 0.05)
0 summer\_td -0.855394 2.273303e-19 True
1 winter\_pd 0.240352 5.574003e-02 False

Number of observations: 64

Regression Summary:

OLS Regression Results						
Dep. Variable:	annual mass balance (mm w.e.)			R-squared:	0.753	
Model:	OLS			Adj. R-squared:	0.745	
Method:	Least Squares			F-statistic:	93.11	
Date:	Fri, 12 Dec 2025			Prob (F-statistic):	2.91e-19	
Time:	18:45:57			Log-Likelihood:	-483.09	
No. Observations:	64			AIC:	972.2	
Df Residuals:	61			BIC:	978.6	
Df Model:	2					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	-262.7624	75.959	-3.459	0.001	-414.651	-110.874
summer_td	-659.9391	50.330	-13.112	0.000	-760.580	-559.298
winter_pd	1.4463	0.627	2.308	0.024	0.193	2.699
Omnibus:	0.715		Durbin-Watson:		1.725	
Prob(Omnibus):	0.699		Jarque-Bera (JB):		0.563	
Skew:	-0.227		Prob(JB):		0.755	
Kurtosis:	2.934		Cond. No.		137.	

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

Regression: Monthly 1991-2020

=====
MONTHLY DEVIATIONS for Griesgletscher using 1991-2020 climate norms
=====

Correlation Analysis with Significance Testing:
Skipping constant column: const
Table with 5 columns: Variable, Correlation Coefficient, P-value, Significant (p < 0.05), and an index column. Rows include months from June to December.

Number of observations: 64

Regression Summary:

OLS Regression Results
Table with 2 columns: Label and Value. Rows include Dep. Variable, Model, Method, Date, Time, No. Observations, Df Residuals, Df Model, Covariance Type, R-squared, Adj. R-squared, F-statistic, Prob (F-statistic), Log-Likelihood, AIC, and BIC.

Table with 7 columns: Variable, coef, std err, t, P>|t|, [0.025, 0.975]. Rows include const and months from May to April.

Table with 4 columns: Statistic, Value, Statistic, Value. Rows include Omnibus, Prob(Omnibus), Skew, Kurtosis, Durbin-Watson, Jarque-Bera (JB), Prob(JB), and Cond. No.

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

Regression: Optimal 1991-2020

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OPTIMAL SEASONAL DEVIATIONS for Griesgletscher using 1991-2020 climate norms

=====

Correlation Analysis with Significance Testing:  
Skipping constant column: const

	Variable	Correlation Coefficient	P-value	Significant (p < 0.05)
0	opt_season_td	-0.844729	1.747008e-18	True
1	opt_season_pd	0.237420	5.888798e-02	False

Number of observations: 64

Regression Summary:

OLS Regression Results

=====

Dep. Variable:	annual mass balance (mm w.e.)	R-squared:	0.728
Model:	OLS	Adj. R-squared:	0.719
Method:	Least Squares	F-statistic:	81.73
Date:	Fri, 12 Dec 2025	Prob (F-statistic):	5.53e-18
Time:	18:45:57	Log-Likelihood:	-486.17
No. Observations:	64	AIC:	978.3
Df Residuals:	61	BIC:	984.8
Df Model:	2		
Covariance Type:	nonrobust		

=====

	coef	std err	t	P> t	[0.025	0.975]
const	-1387.5375	71.772	-19.333	0.000	-1531.054	-1244.021
opt_season_td	-608.4661	49.547	-12.281	0.000	-707.542	-509.391
opt_season_pd	1.3504	0.744	1.815	0.074	-0.137	2.838

=====

Omnibus:	0.389	Durbin-Watson:	1.612
Prob(Omnibus):	0.823	Jarque-Bera (JB):	0.461
Skew:	-0.175	Prob(JB):	0.794
Kurtosis:	2.774	Cond. No.	107.

=====

Notes:

[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

Regression: Seasonal 1991-2020

=====
SUMMER/WINTER SEASONAL DEVIATIONS for Griesgletscher using 1991-2020 climate norms
=====

Correlation Analysis with Significance Testing:
Skipping constant column: const
Variable Correlation Coefficient P-value Significant (p < 0.05)
0 summer\_td -0.860874 7.474647e-20 True
1 winter\_pd 0.240352 5.574003e-02 False

Number of observations: 64

Regression Summary:

OLS Regression Results						
=====						
Dep. Variable:	annual mass balance (mm w.e.)			R-squared:	0.761	
Model:	OLS			Adj. R-squared:	0.753	
Method:	Least Squares			F-statistic:	97.21	
Date:	Fri, 12 Dec 2025			Prob (F-statistic):	1.07e-19	
Time:	18:45:57			Log-Likelihood:	-482.04	
No. Observations:	64			AIC:	970.1	
Df Residuals:	61			BIC:	976.6	
Df Model:	2					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]
-----						
const	-1402.5838	67.574	-20.756	0.000	-1537.707	-1267.460
summer_td	-664.4016	49.568	-13.404	0.000	-763.518	-565.285
winter_pd	1.3968	0.617	2.264	0.027	0.163	2.630
=====						
Omnibus:	0.605		Durbin-Watson:		1.692	
Prob(Omnibus):	0.739		Jarque-Bera (JB):		0.494	
Skew:	-0.211		Prob(JB):		0.781	
Kurtosis:	2.912		Cond. No.		124.	
=====						

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.