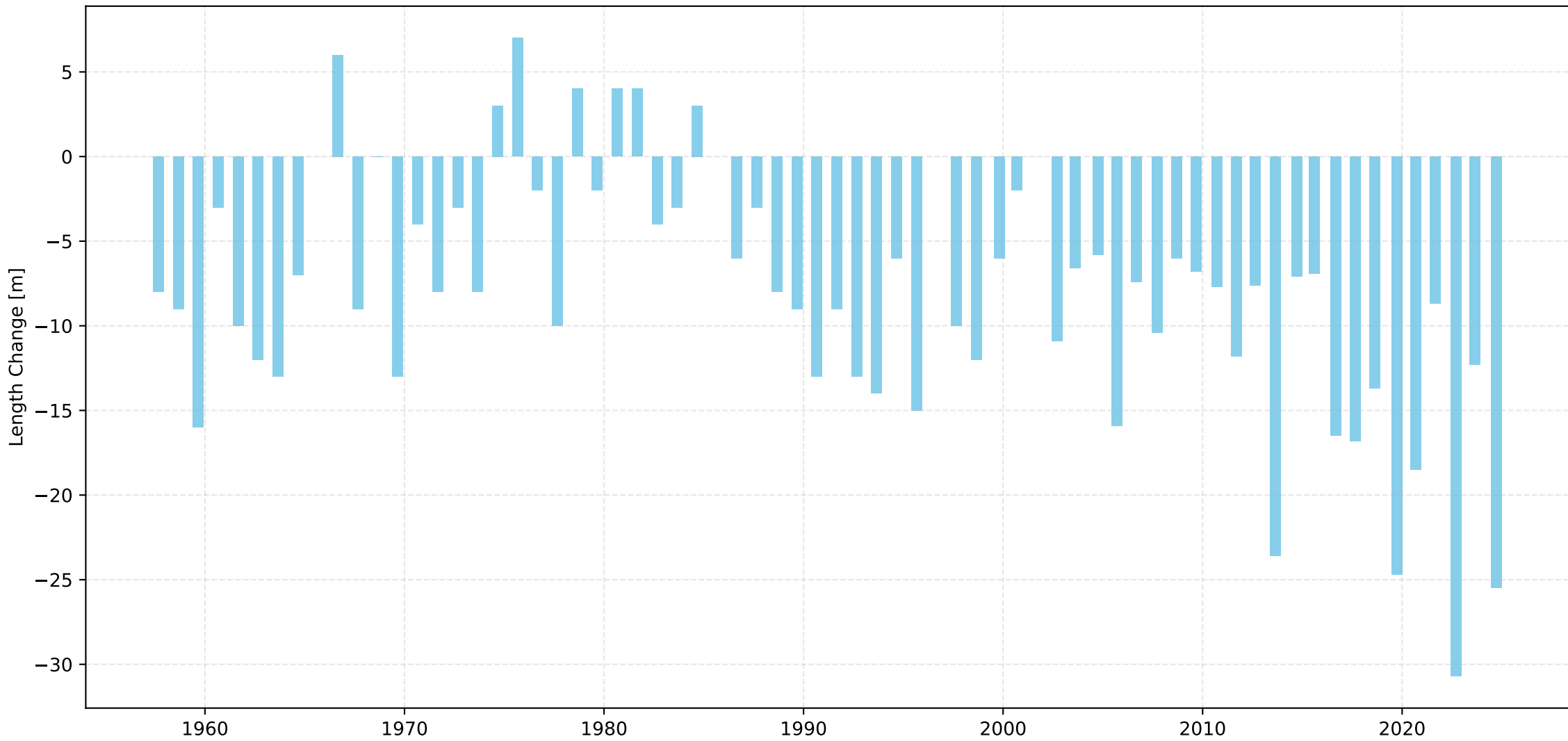
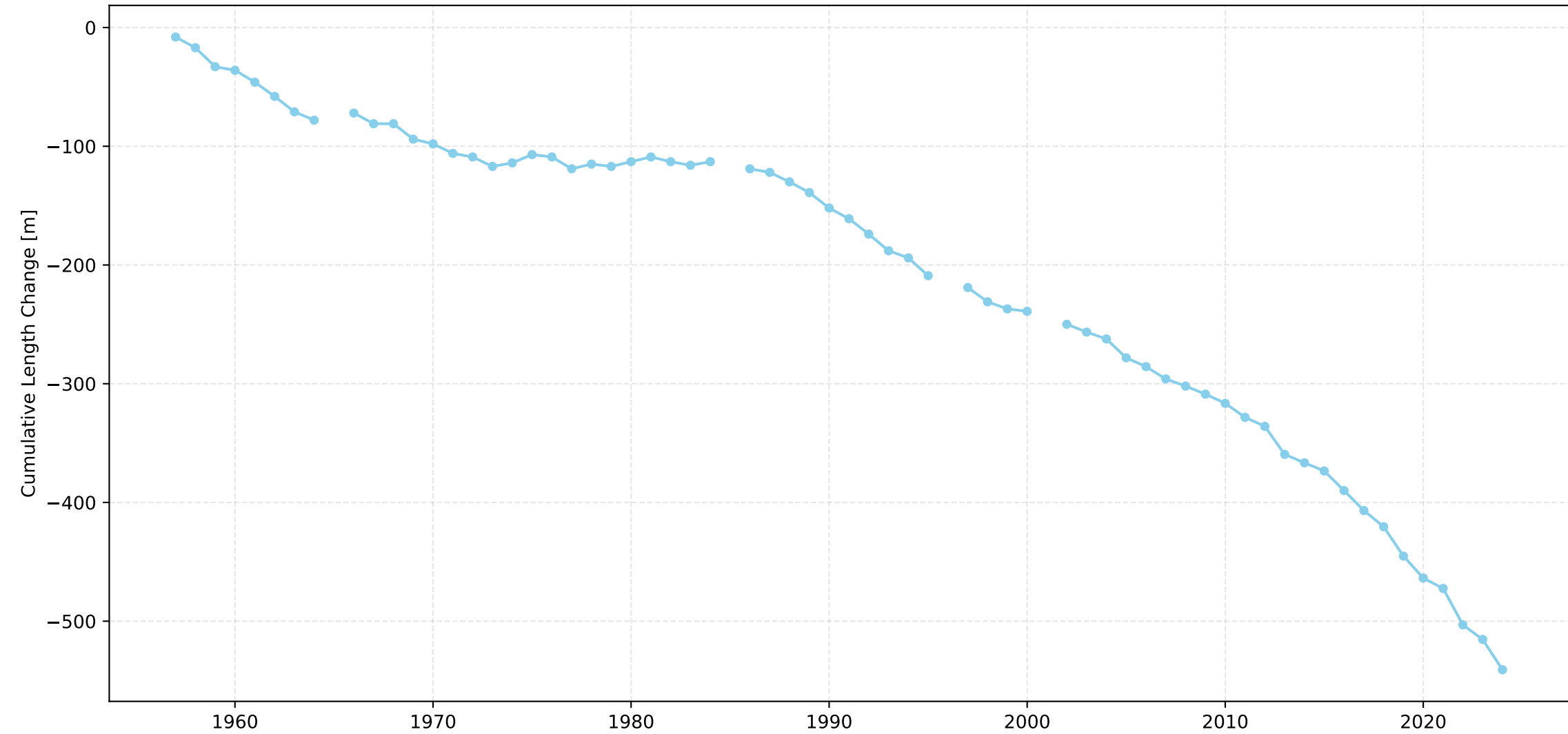


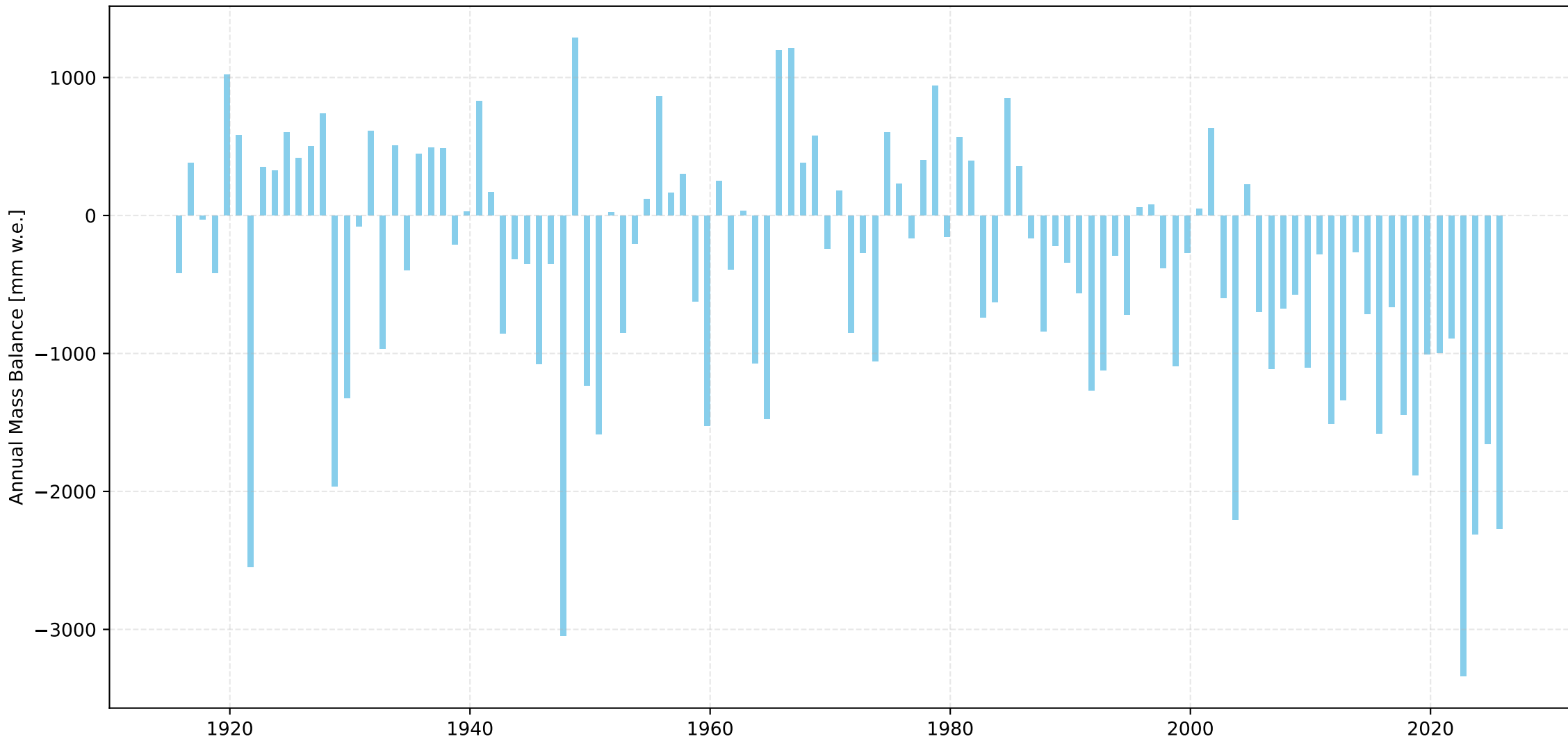
Silvrettagletscher Length Change Over Time



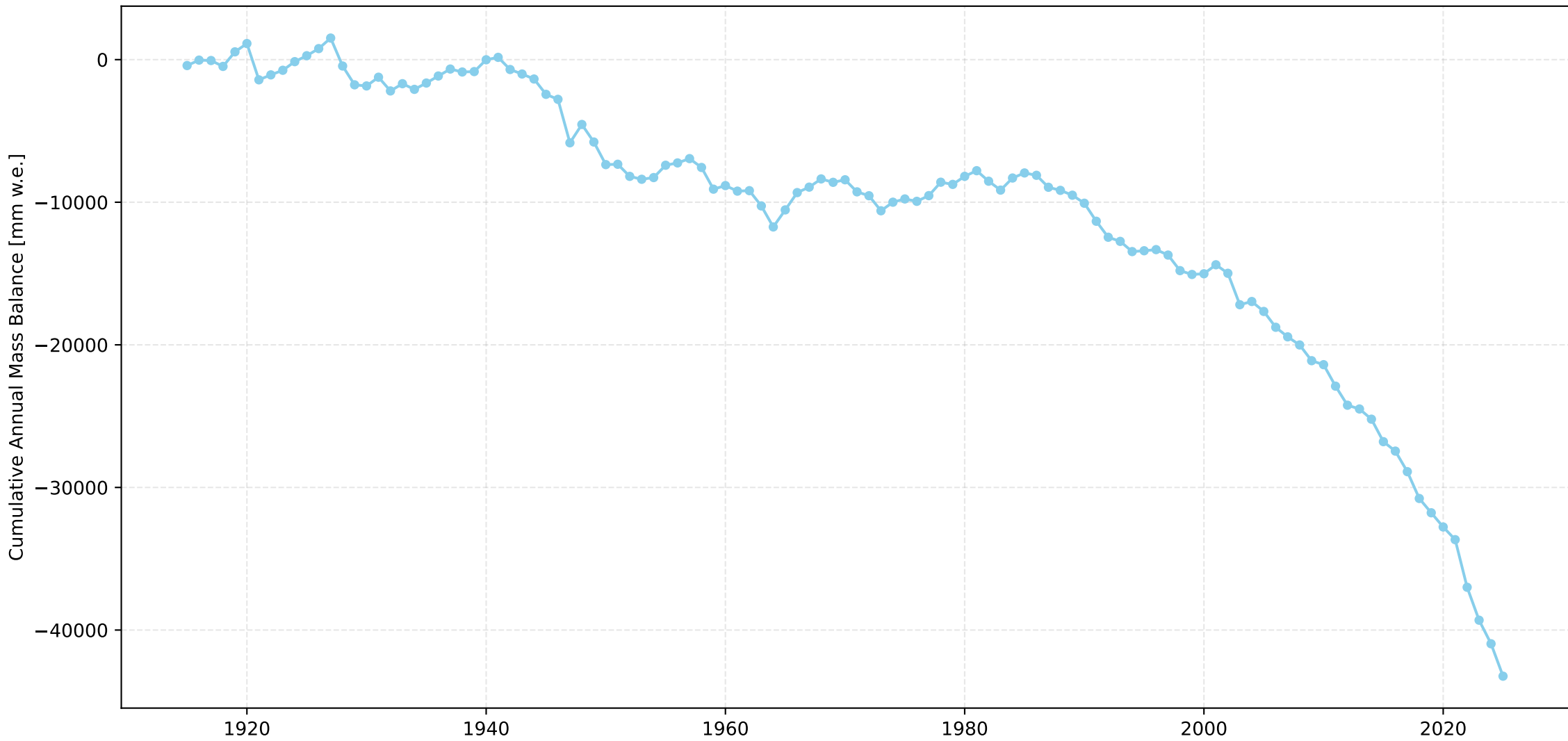
Silvrettagletscher Cumulative Length Change Over Time



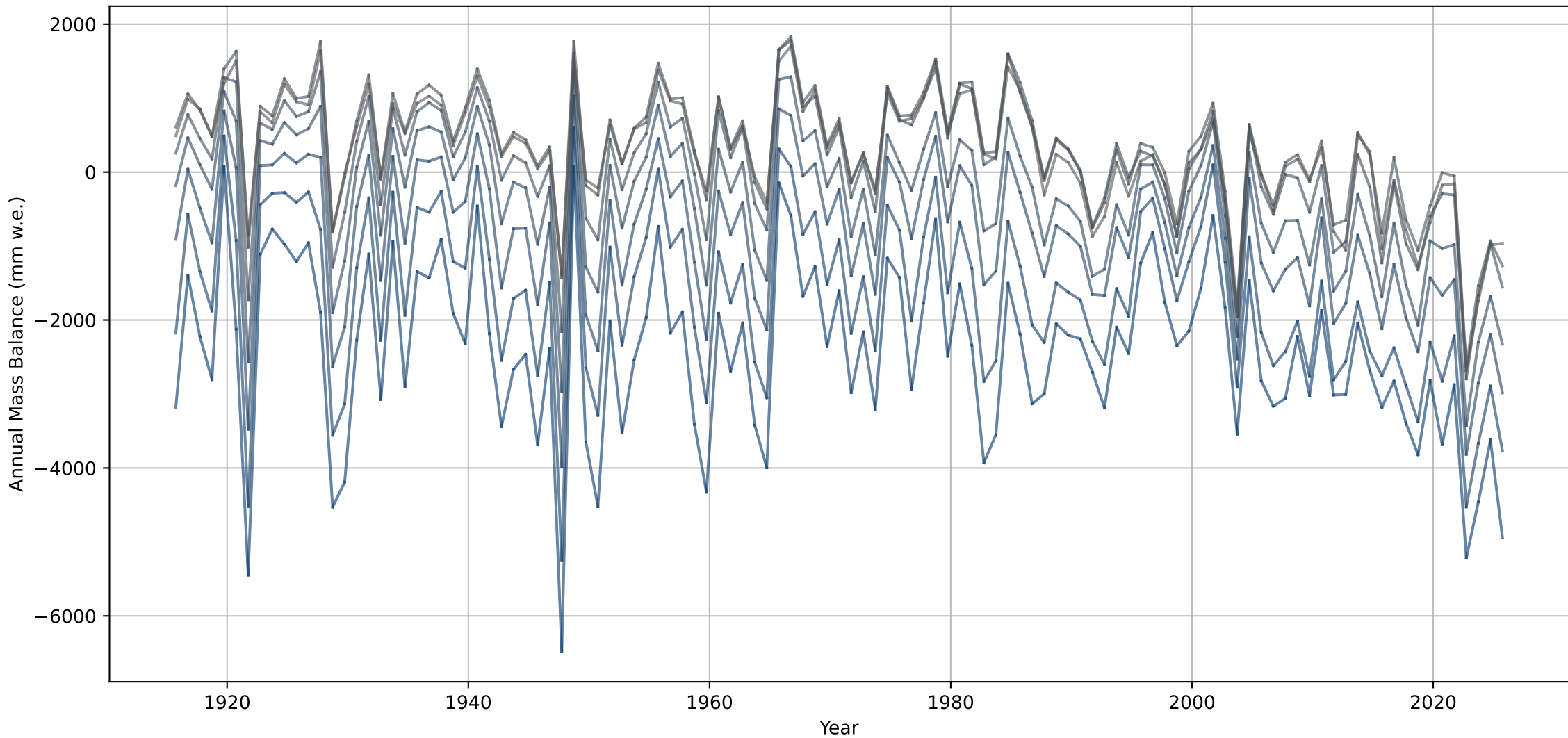
Silvrettagletscher Annual Mass Balance Over Time



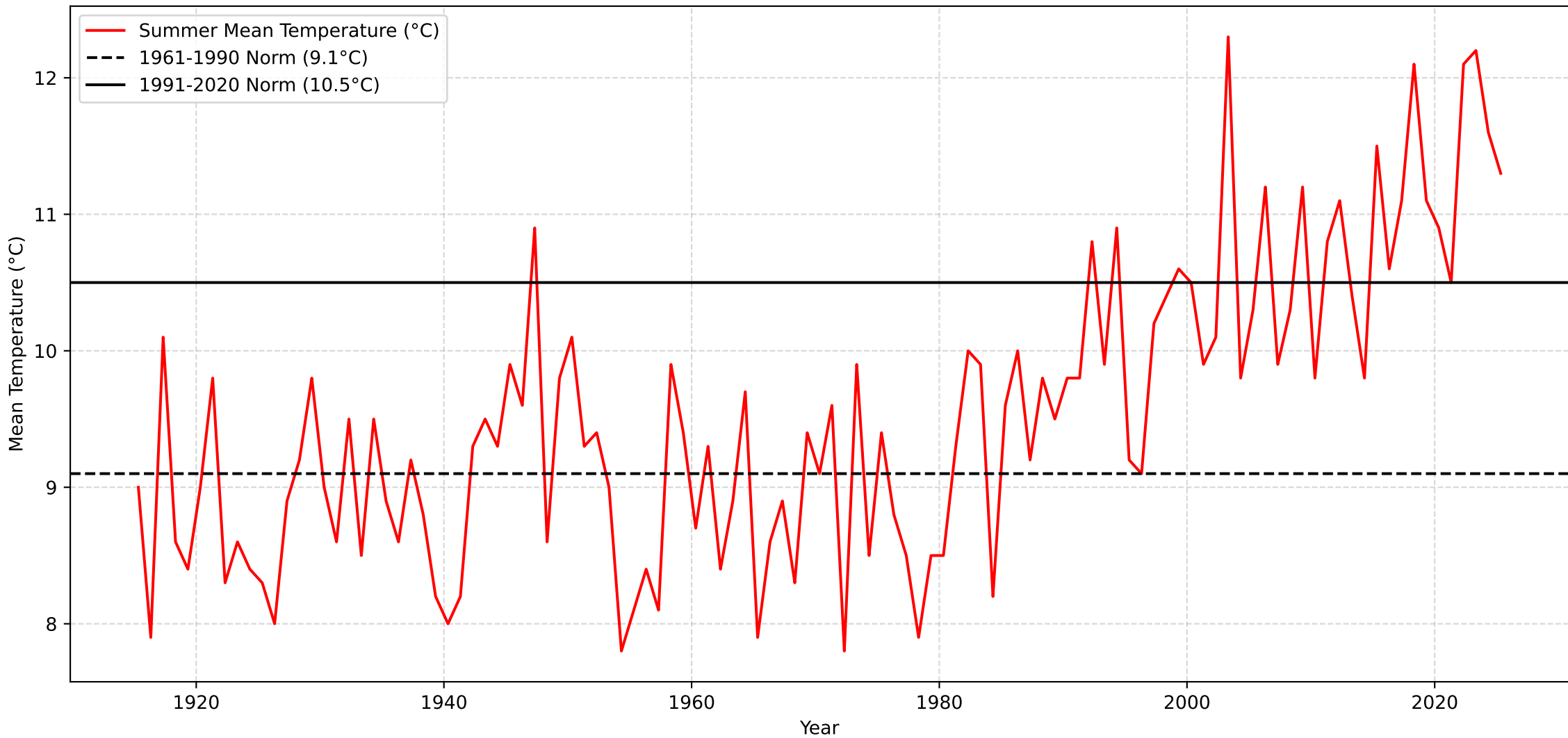
Silvrettagletscher Cumulative Annual Mass Balance Over Time



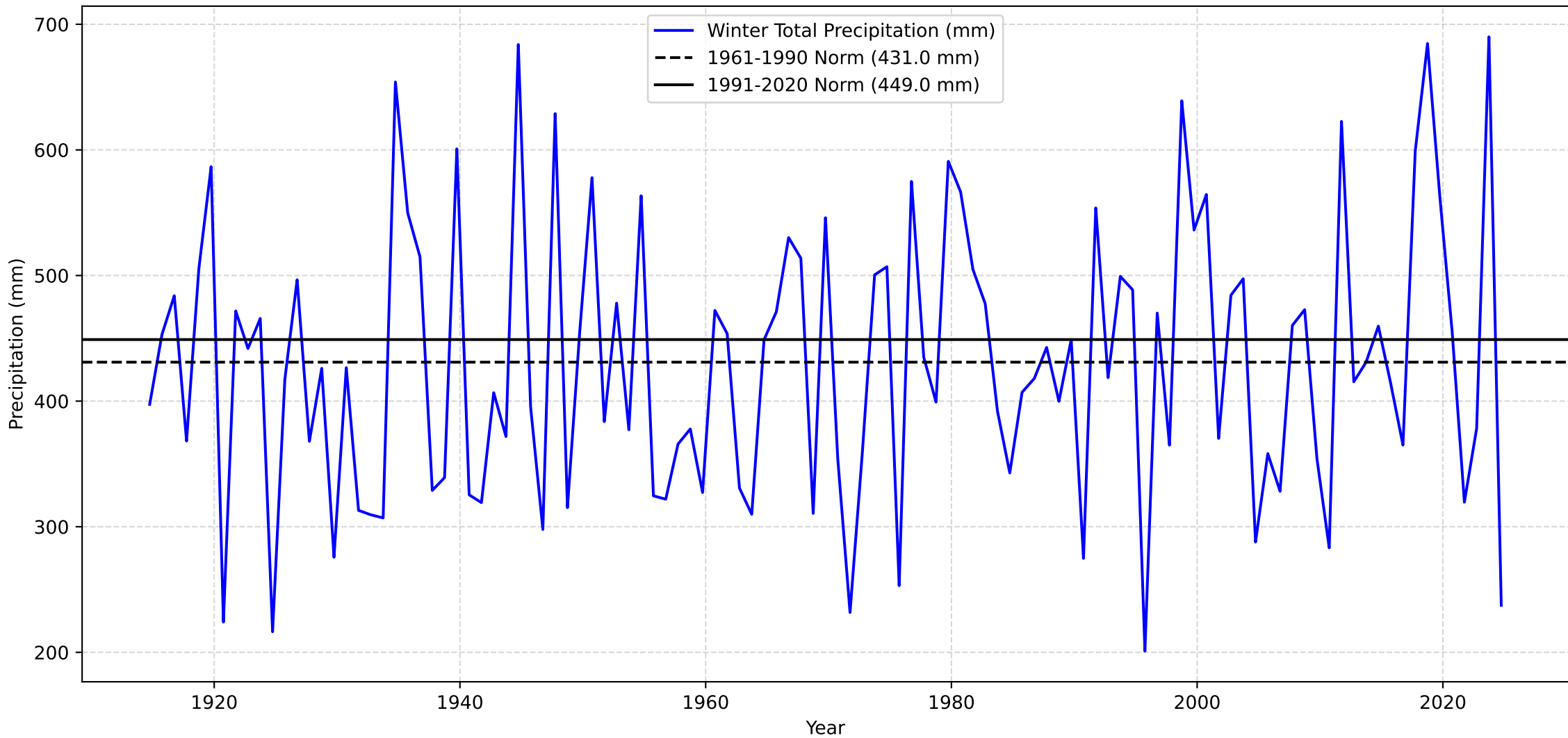
Annual Mass Balance for each Elevation Bin over Time - Silvrettagletscher



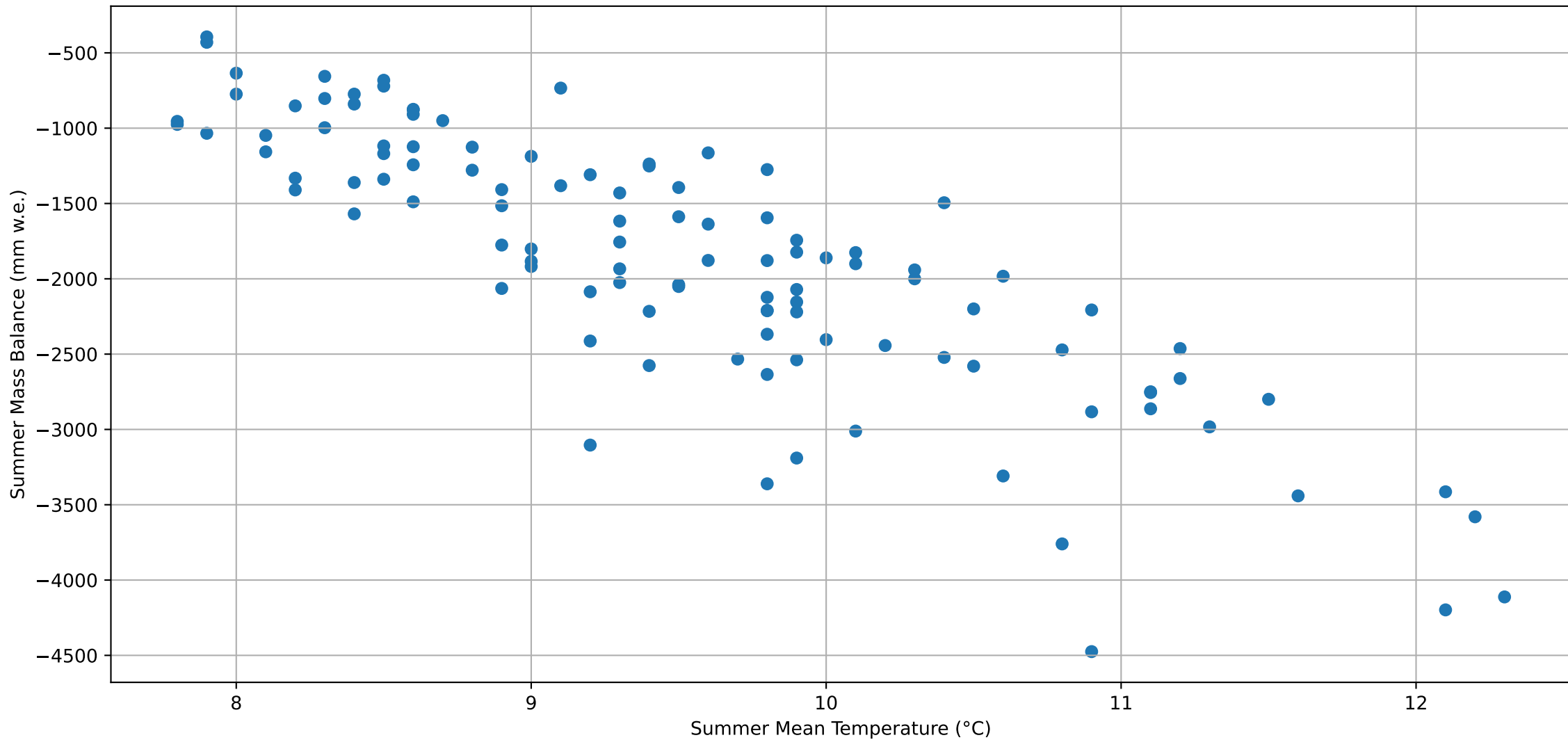
Davos Summer Mean Temperature



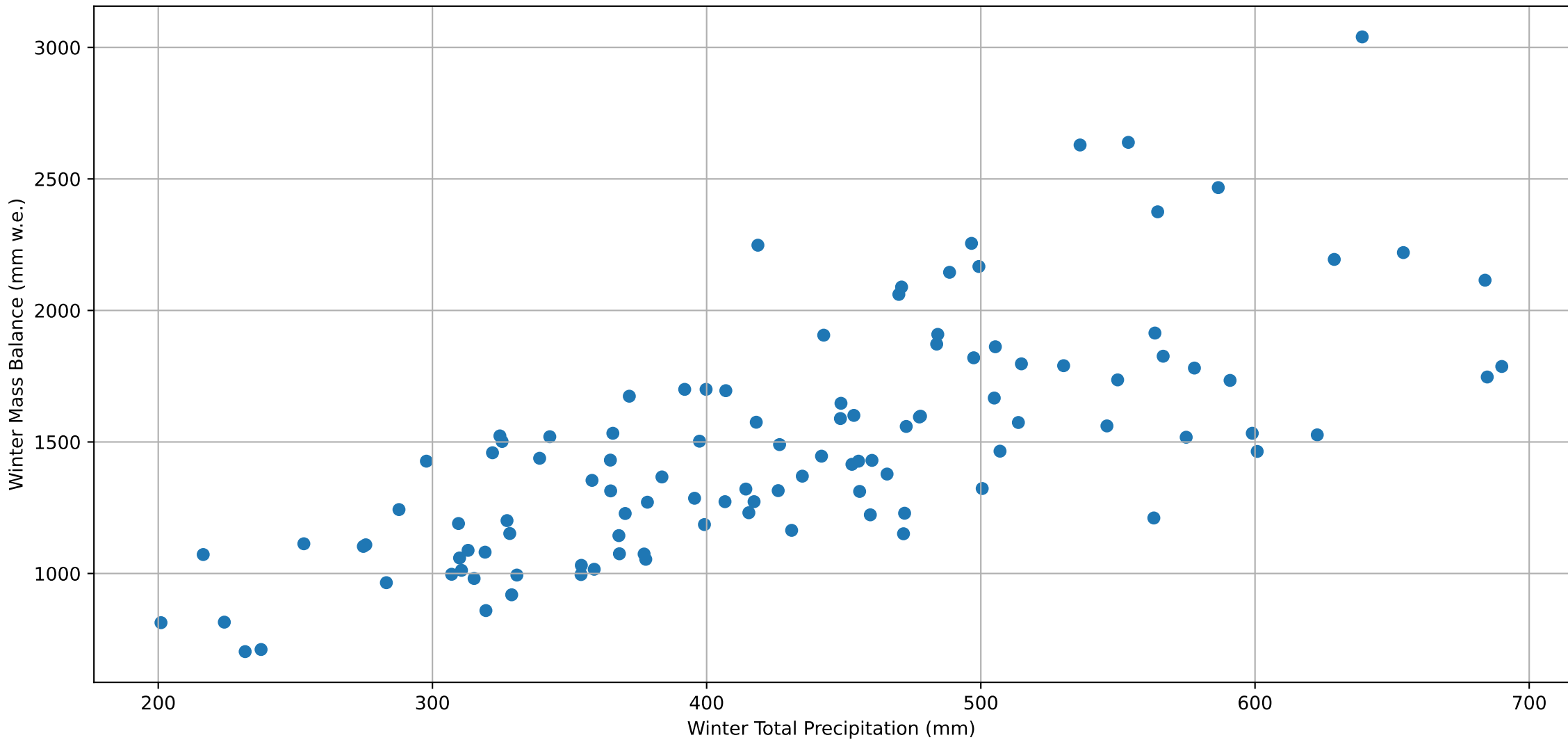
Davos Winter Total Precipitation



Silvrettagletscher Summer Mass Balance with relation to Temperature



Silvrettagletscher Winter Mass Balance with relation to Precipitation



Regression: Monthly 1961-1990

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MONTHLY DEVIATIONS ANALYSIS USING 1961-1990 CLIMATE NORMS

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MONTHLY DEVIATIONS for Silvrettagletscher (1961-1990 norms)

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Number of observations: 111

Regression Summary:

OLS Regression Results			
Dep. Variable:	annual mass balance (mm w.e.)	R-squared:	0.730
Model:	OLS	Adj. R-squared:	0.697
Method:	Least Squares	F-statistic:	22.11
Date:	Fri, 05 Dec 2025	Prob (F-statistic):	8.96e-23
Time:	00:05:16	Log-Likelihood:	-841.07
No. Observations:	111	AIC:	1708.
Df Residuals:	98	BIC:	1743.
Df Model:	12		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	-97.6019	55.476	-1.759	0.082	-207.692	12.488
may_td	-82.7007	32.167	-2.571	0.012	-146.535	-18.867
june_td	-129.4217	30.488	-4.245	0.000	-189.924	-68.919
july_td	-186.8879	34.816	-5.368	0.000	-255.979	-117.797
august_td	-138.3572	36.665	-3.774	0.000	-211.118	-65.596
september_td	-144.9407	32.587	-4.448	0.000	-209.608	-80.273
october_pd	3.2888	1.205	2.729	0.008	0.897	5.680
november_pd	1.9937	1.141	1.747	0.084	-0.271	4.258
december_pd	3.3502	1.027	3.262	0.002	1.312	5.388
january_pd	2.1727	0.953	2.279	0.025	0.281	4.065
february_pd	2.8034	0.989	2.834	0.006	0.840	4.766
march_pd	3.0489	1.374	2.219	0.029	0.322	5.776
april_pd	3.1920	2.086	1.530	0.129	-0.948	7.332

Omnibus:	9.671	Durbin-Watson:	1.744
Prob(Omnibus):	0.008	Jarque-Bera (JB):	9.749
Skew:	-0.621	Prob(JB):	0.00764
Kurtosis:	3.752	Cond. No.	65.3

Notes:

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

Coefficient Interpretation:

Intercept (normal mass balance): -97.60 (p=0.0816)

may\_td: -82.70 (p=0.0116)

june\_td: -129.42 (p=0.0000)

july\_td: -186.89 (p=0.0000)

august\_td: -138.36 (p=0.0003)

september\_td: -144.94 (p=0.0000)

october\_pd: 3.29 (p=0.0075)

november\_pd: 1.99 (p=0.0837)

december\_pd: 3.35 (p=0.0015)

january\_pd: 2.17 (p=0.0248)

february\_pd: 2.80 (p=0.0056)

march\_pd: 3.05 (p=0.0256)

april\_pd: 3.19 (p=0.1290)

Regression: Optimal 1961-1990

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OPTIMAL SEASONAL DEVIATIONS ANALYSIS USING 1961-1990 CLIMATE NORMS
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OPTIMAL SEASONAL DEVIATIONS for Silvretta Tagletscher (1961-1990 norms)
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Number of observations: 111

Regression Summary:

OLS Regression Results
Dep. Variable: annual mass balance (mm w.e.) R-squared: 0.627
Model: OLS Adj. R-squared: 0.620
Method: Least Squares F-statistic: 90.75
Date: Fri, 05 Dec 2025 Prob (F-statistic): 7.51e-24
Time: 00:05:16 Log-Likelihood: -859.06
No. Observations: 111 AIC: 1724.
Df Residuals: 108 BIC: 1732.
Df Model: 2
Covariance Type: nonrobust

Table with 7 columns: , coef, std err, t, P>|t|, [0.025, 0.975]. Rows include const, opt\_season\_td, opt\_season\_pd, Omnibus, Prob(Omnibus), Skew, Kurtosis.

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

Coefficient Interpretation:
Intercept (normal mass balance): -77.37 (p=0.1943)
opt\_season\_td: -587.88 (p=0.0000)
opt\_season\_pd: 2.65 (p=0.0000)

Variance Inflation Factors (VIF):
Variable VIF
0 const 1.227043
1 opt\_season\_td 1.006793
2 opt\_season\_pd 1.006793

R-squared: 0.6269
Adjusted R-squared: 0.6200

Regression: Seasonal 1961-1990

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SUMMER/WINTER SEASONAL DEVIATIONS ANALYSIS USING 1961-1990 CLIMATE NORMS
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SUMMER/WINTER SEASONAL DEVIATIONS for Silvrettagletscher (1961-1990 norms)
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Number of observations: 111

Regression Summary:

OLS Regression Results
Dep. Variable: annual mass balance (mm w.e.) R-squared: 0.714
Model: OLS Adj. R-squared: 0.709
Method: Least Squares F-statistic: 134.9
Date: Fri, 05 Dec 2025 Prob (F-statistic): 4.34e-30
Time: 00:05:16 Log-Likelihood: -844.30
No. Observations: 111 AIC: 1695.
Df Residuals: 108 BIC: 1703.
Df Model: 2
Covariance Type: nonrobust

Table with 7 columns: , coef, std err, t, P>|t|, [0.025, 0.975]. Rows include const, summer\_td, winter\_pd, and diagnostic statistics like 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.

Coefficient Interpretation:
Intercept (normal mass balance): -72.59 (p=0.1576)
summer\_td: -690.04 (p=0.0000)
winter\_pd: 2.82 (p=0.0000)

Variance Inflation Factors (VIF):
Variable VIF
0 const 1.187213
1 summer\_td 1.008990
2 winter\_pd 1.008990

R-squared: 0.7141
Adjusted R-squared: 0.7088

Regression: Monthly 1991-2020

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MONTHLY DEVIATIONS ANALYSIS USING 1991-2020 CLIMATE NORMS

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MONTHLY DEVIATIONS for Silvrettagletscher (1991-2020 norms)

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Number of observations: 111

Regression Summary:

OLS Regression Results						
Dep. Variable:	annual mass balance (mm w.e.)	R-squared:		0.730		
Model:	OLS	Adj. R-squared:		0.697		
Method:	Least Squares	F-statistic:		22.11		
Date:	Fri, 05 Dec 2025	Prob (F-statistic):		8.96e-23		
Time:	00:05:16	Log-Likelihood:		-841.07		
No. Observations:	111	AIC:		1708.		
Df Residuals:	98	BIC:		1743.		
Df Model:	12					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	-1012.9579	67.730	-14.956	0.000	-1147.366	-878.550
may_td	-82.7007	32.167	-2.571	0.012	-146.535	-18.867
june_td	-129.4217	30.488	-4.245	0.000	-189.924	-68.919
july_td	-186.8879	34.816	-5.368	0.000	-255.979	-117.797
august_td	-138.3572	36.665	-3.774	0.000	-211.118	-65.596
september_td	-144.9407	32.587	-4.448	0.000	-209.608	-80.273
october_pd	3.2888	1.205	2.729	0.008	0.897	5.680
november_pd	1.9937	1.141	1.747	0.084	-0.271	4.258
december_pd	3.3502	1.027	3.262	0.002	1.312	5.388
january_pd	2.1727	0.953	2.279	0.025	0.281	4.065
february_pd	2.8034	0.989	2.834	0.006	0.840	4.766
march_pd	3.0489	1.374	2.219	0.029	0.322	5.776
april_pd	3.1920	2.086	1.530	0.129	-0.948	7.332
Omnibus:	9.671	Durbin-Watson:		1.744		
Prob(Omnibus):	0.008	Jarque-Bera (JB):		9.749		
Skew:	-0.621	Prob(JB):		0.00764		
Kurtosis:	3.752	Cond. No.		80.0		

Notes:

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

Coefficient Interpretation:

Intercept (normal mass balance): -1012.96 (p=0.0000)

may\_td: -82.70 (p=0.0116)

june\_td: -129.42 (p=0.0000)

july\_td: -186.89 (p=0.0000)

august\_td: -138.36 (p=0.0003)

september\_td: -144.94 (p=0.0000)

october\_pd: 3.29 (p=0.0075)

november\_pd: 1.99 (p=0.0837)

december\_pd: 3.35 (p=0.0015)

january\_pd: 2.17 (p=0.0248)

february\_pd: 2.80 (p=0.0056)

march\_pd: 3.05 (p=0.0256)

april\_pd: 3.19 (p=0.1290)

Regression: Optimal 1991-2020

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OPTIMAL SEASONAL DEVIATIONS ANALYSIS USING 1991-2020 CLIMATE NORMS
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OPTIMAL SEASONAL DEVIATIONS for Silvretta Tagletscher (1991-2020 norms)
=====

Number of observations: 111

Regression Summary:

OLS Regression Results
Dep. Variable: annual mass balance (mm w.e.) R-squared: 0.627
Model: OLS Adj. R-squared: 0.620
Method: Least Squares F-statistic: 90.75
Date: Fri, 05 Dec 2025 Prob (F-statistic): 7.51e-24
Time: 00:05:16 Log-Likelihood: -859.06
No. Observations: 111 AIC: 1724.
Df Residuals: 108 BIC: 1732.
Df Model: 2
Covariance Type: nonrobust

Table with 7 columns: coef, std err, t, P>|t|, [0.025, 0.975]. Rows include const, opt\_season\_td, opt\_season\_pd, Omnibus, Prob(Omnibus), Skew, Kurtosis.

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

Coefficient Interpretation:
Intercept (normal mass balance): -1017.00 (p=0.0000)
opt\_season\_td: -587.88 (p=0.0000)
opt\_season\_pd: 2.65 (p=0.0000)

Variance Inflation Factors (VIF):
Variable VIF
0 const 1.941487
1 opt\_season\_td 1.006793
2 opt\_season\_pd 1.006793

R-squared: 0.6269
Adjusted R-squared: 0.6200

# Regression: Seasonal 1991-2020

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SUMMER/WINTER SEASONAL DEVIATIONS ANALYSIS USING 1991-2020 CLIMATE NORMS

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SUMMER/WINTER SEASONAL DEVIATIONS for Silvrettagletscher (1991-2020 norms)

=====

Number of observations: 111

Regression Summary:

OLS Regression Results			
Dep. Variable:	annual mass balance (mm w.e.)	R-squared:	0.714
Model:	OLS	Adj. R-squared:	0.709
Method:	Least Squares	F-statistic:	134.9
Date:	Fri, 05 Dec 2025	Prob (F-statistic):	4.34e-30
Time:	00:05:16	Log-Likelihood:	-844.30
No. Observations:	111	AIC:	1695.
Df Residuals:	108	BIC:	1703.
Df Model:	2		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
-----	-----	-----	-----	-----	-----	-----
const	-1017.5852	64.008	-15.898	0.000	-1144.460	-890.710
summer_td	-690.0372	44.285	-15.582	0.000	-777.818	-602.256
winter_pd	2.8235	0.425	6.638	0.000	1.980	3.667
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Omnibus:	10.787		Durbin-Watson:		1.798	
Prob(Omnibus):	0.005		Jarque-Bera (JB):		11.208	
Skew:	-0.659		Prob(JB):		0.00368	
Kurtosis:	3.828		Cond. No.		173.	
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Notes:

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

Coefficient Interpretation:

Intercept (normal mass balance): -1017.59 (p=0.0000)

summer\_td: -690.04 (p=0.0000)

winter\_pd: 2.82 (p=0.0000)

Variance Inflation Factors (VIF):

Variable	VIF
0 const	1.869045
1 summer_td	1.008990
2 winter_pd	1.008990

R-squared: 0.7141

Adjusted R-squared: 0.7088