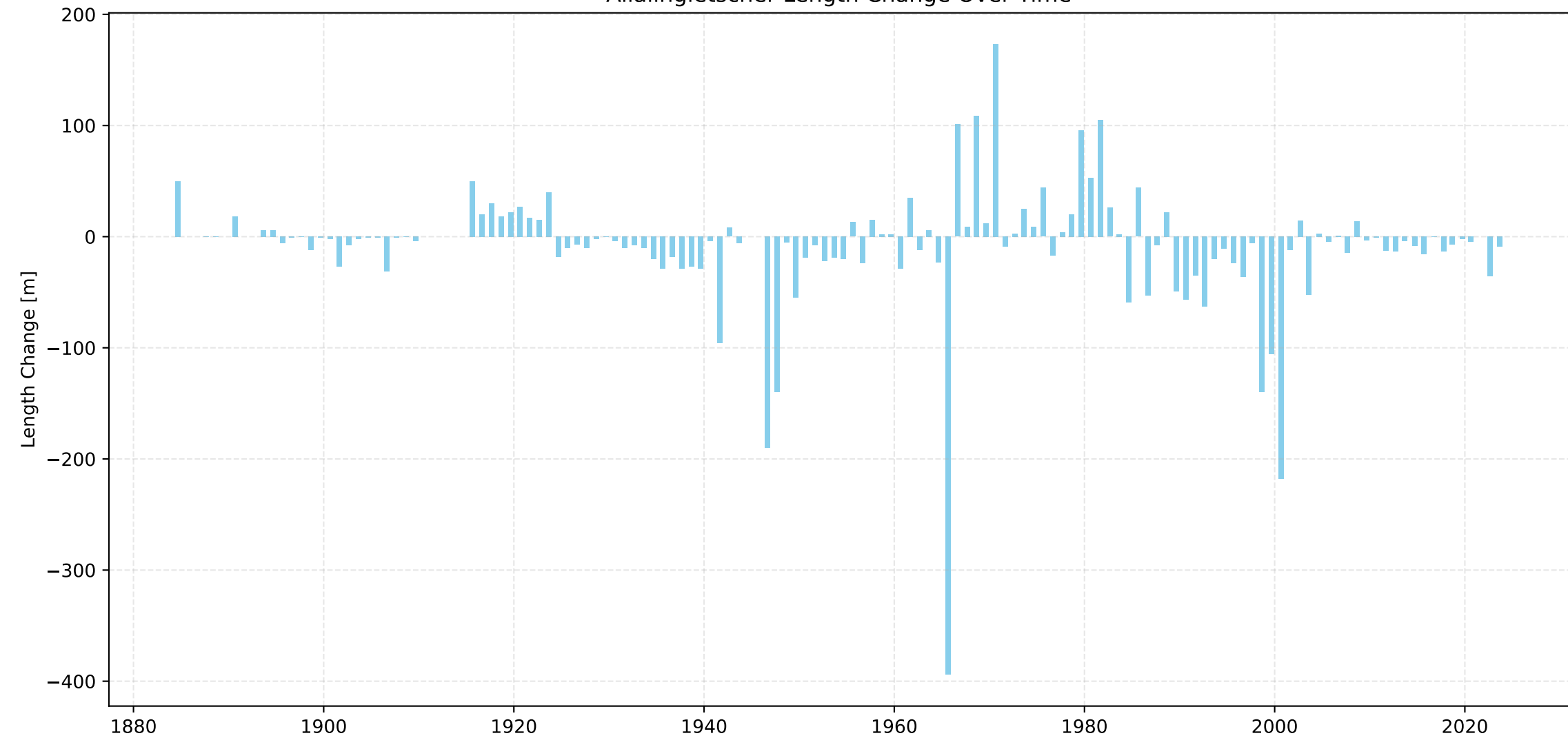
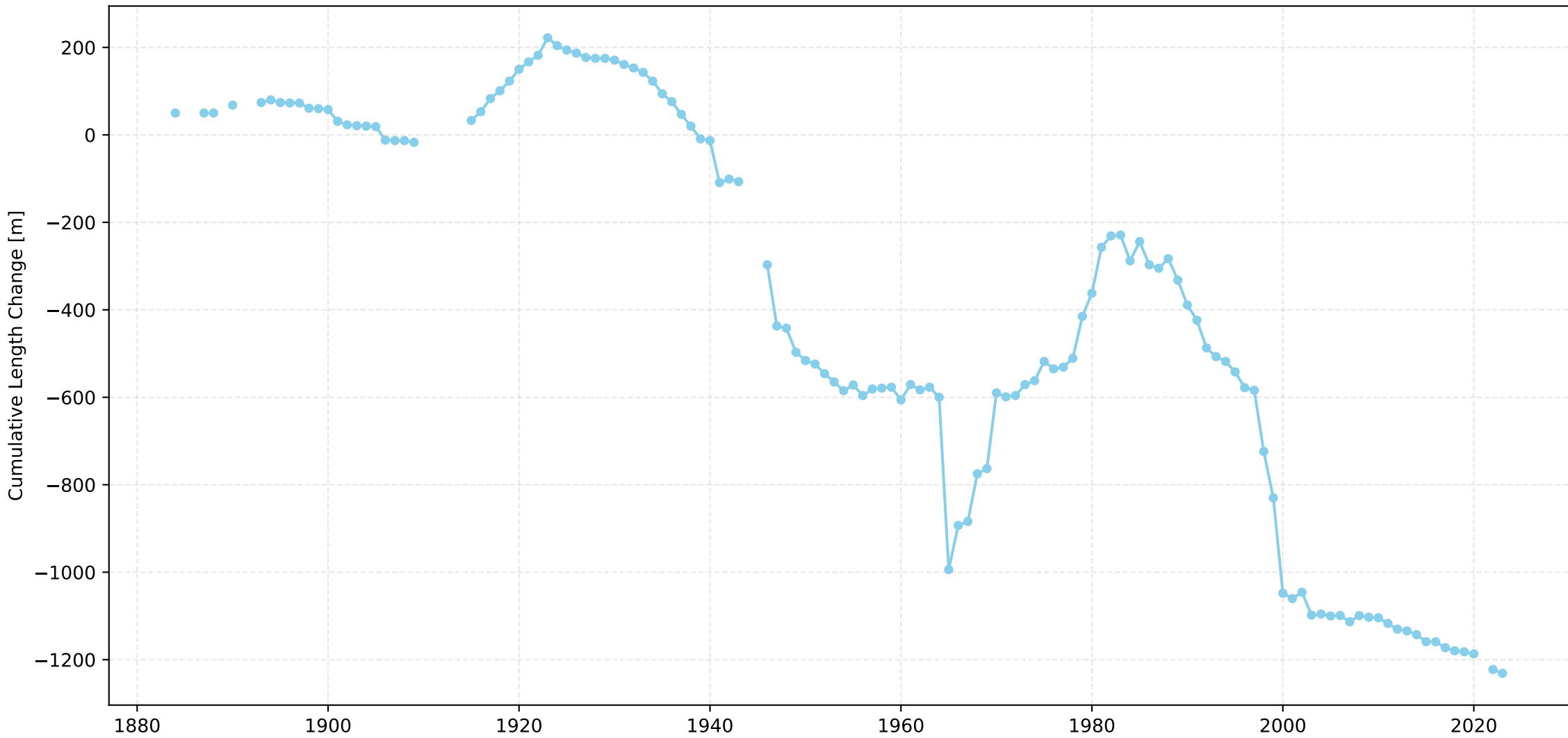


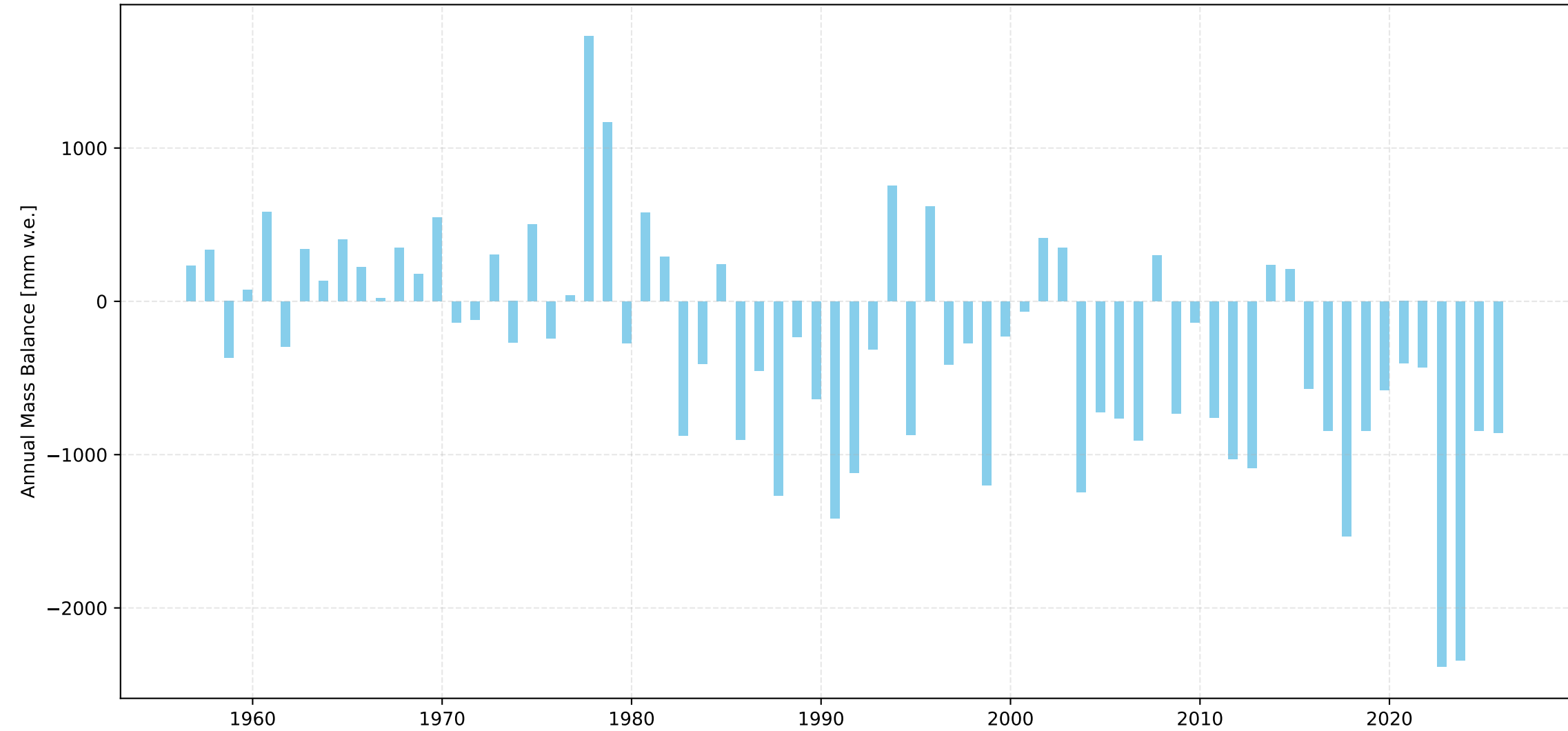
Allalingletscher Length Change Over Time



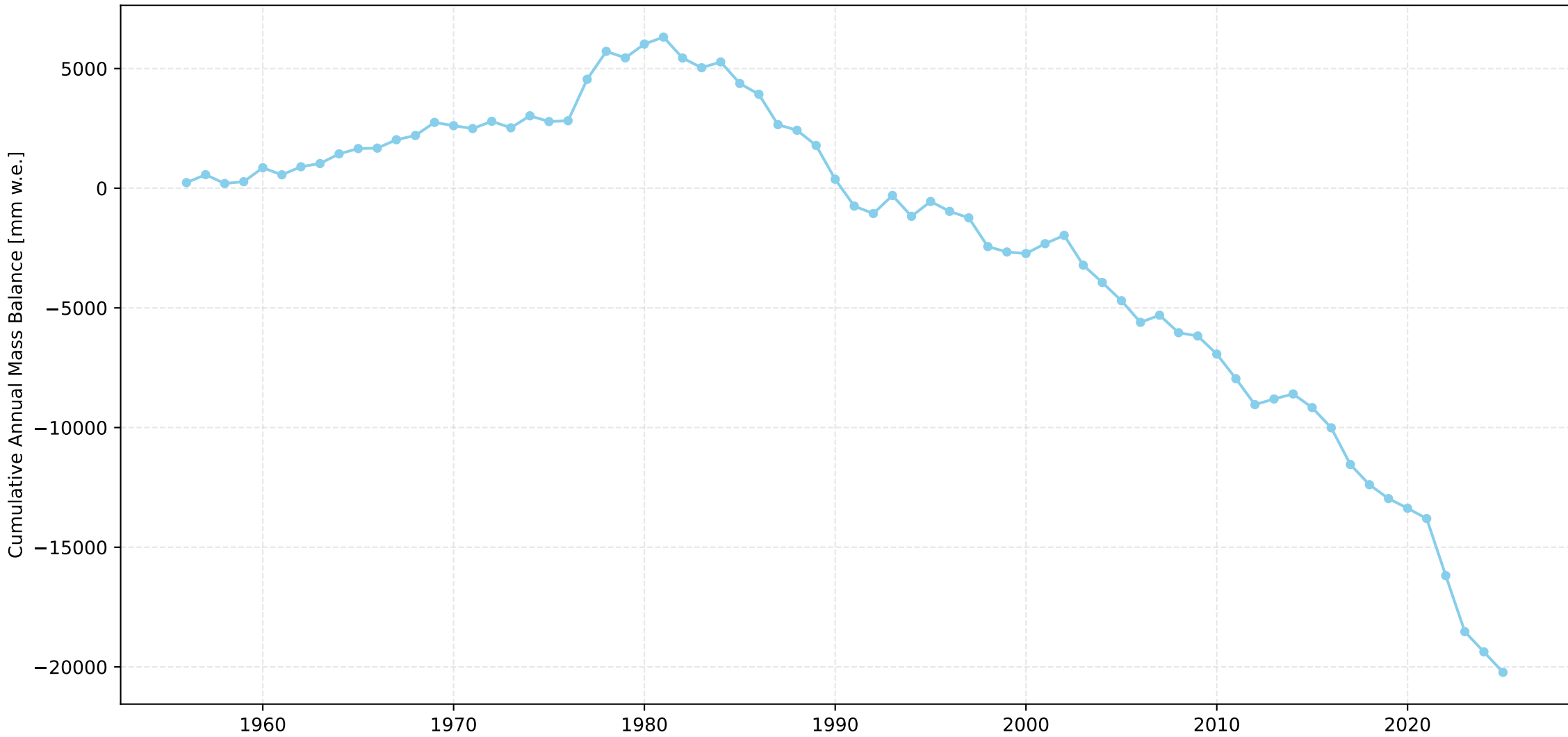
Allalingletscher Cumulative Length Change Over Time



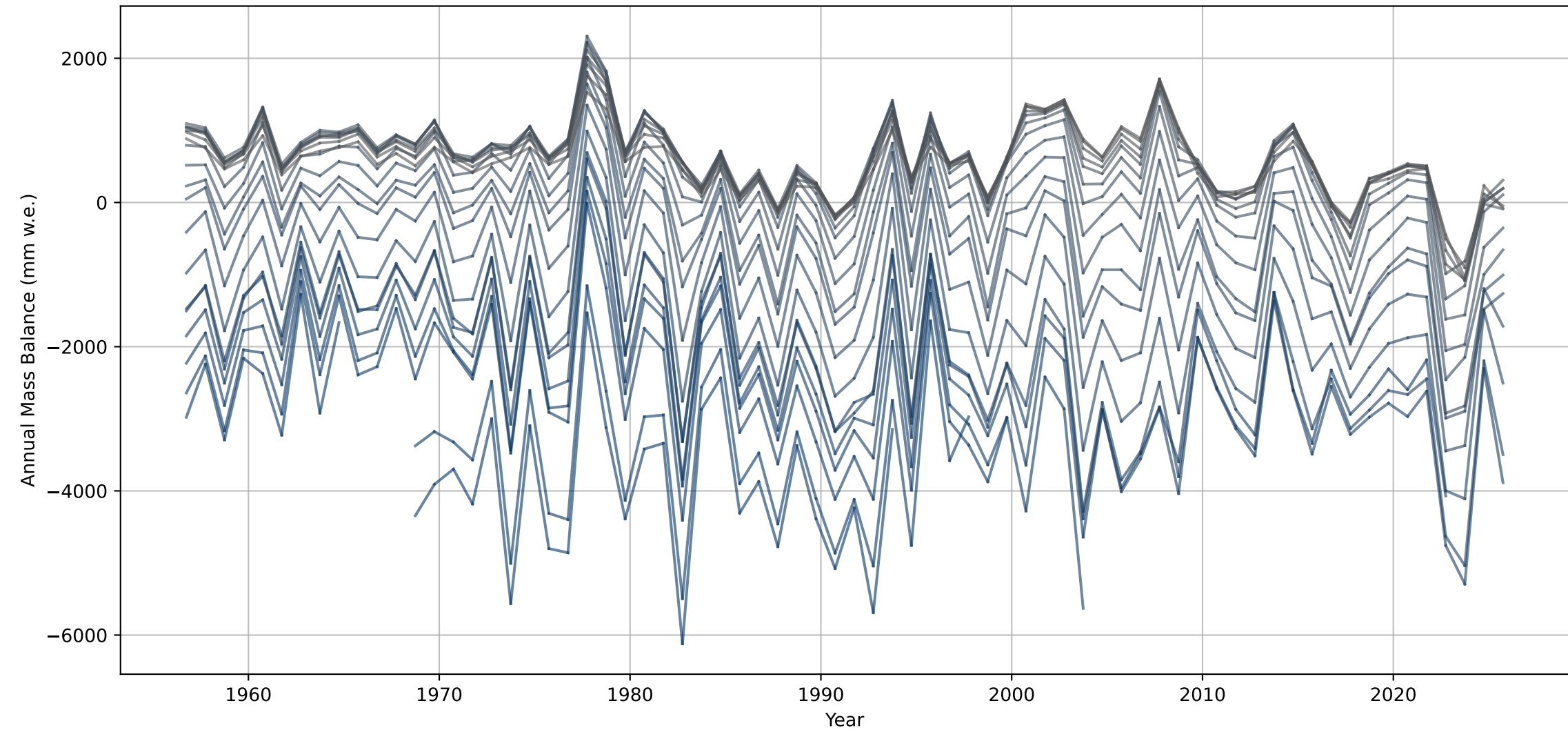
Allalingletscher Annual Mass Balance Over Time



Allalingletscher Cumulative Annual Mass Balance Over Time



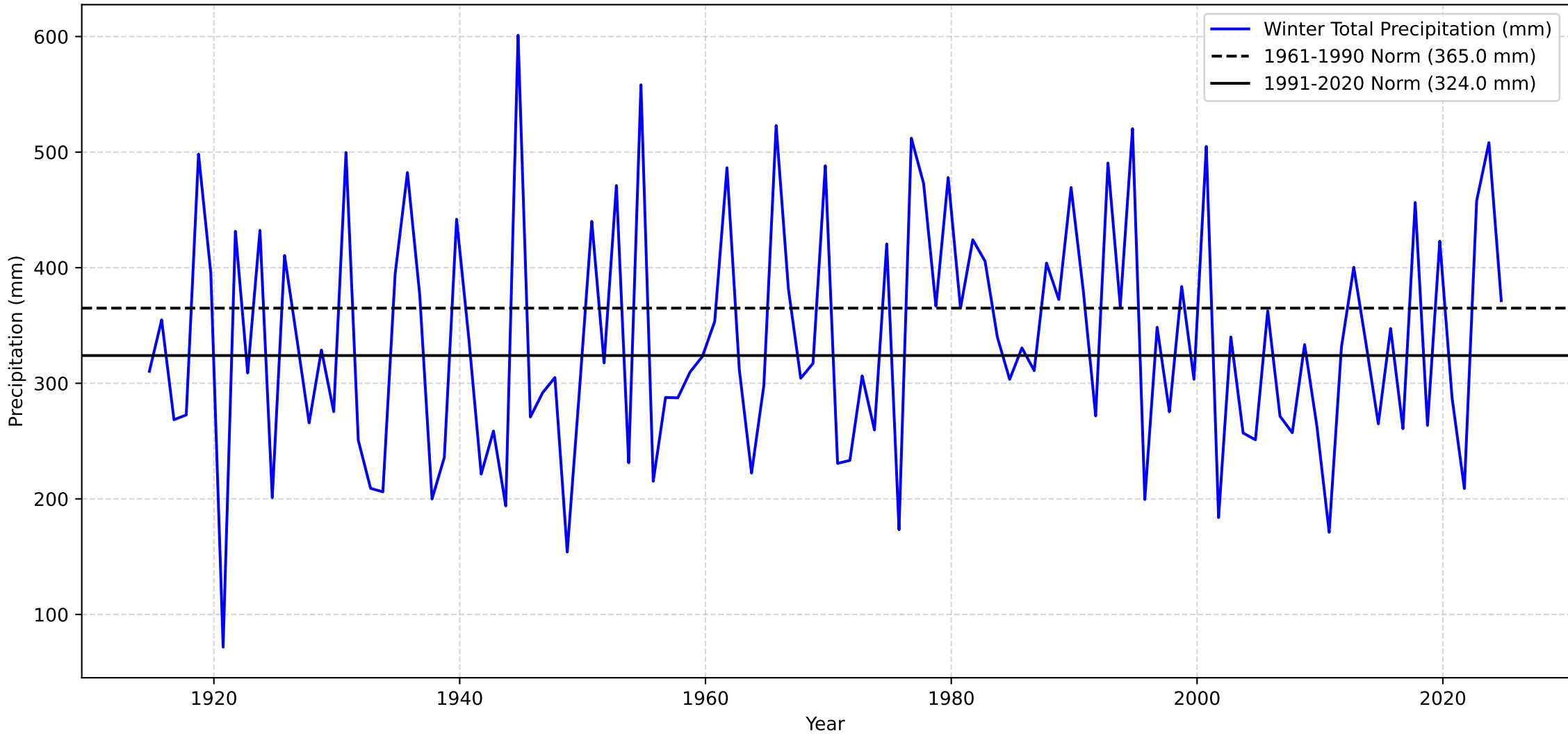
Annual Mass Balance for each Elevation Bin over Time - Allalingletscher



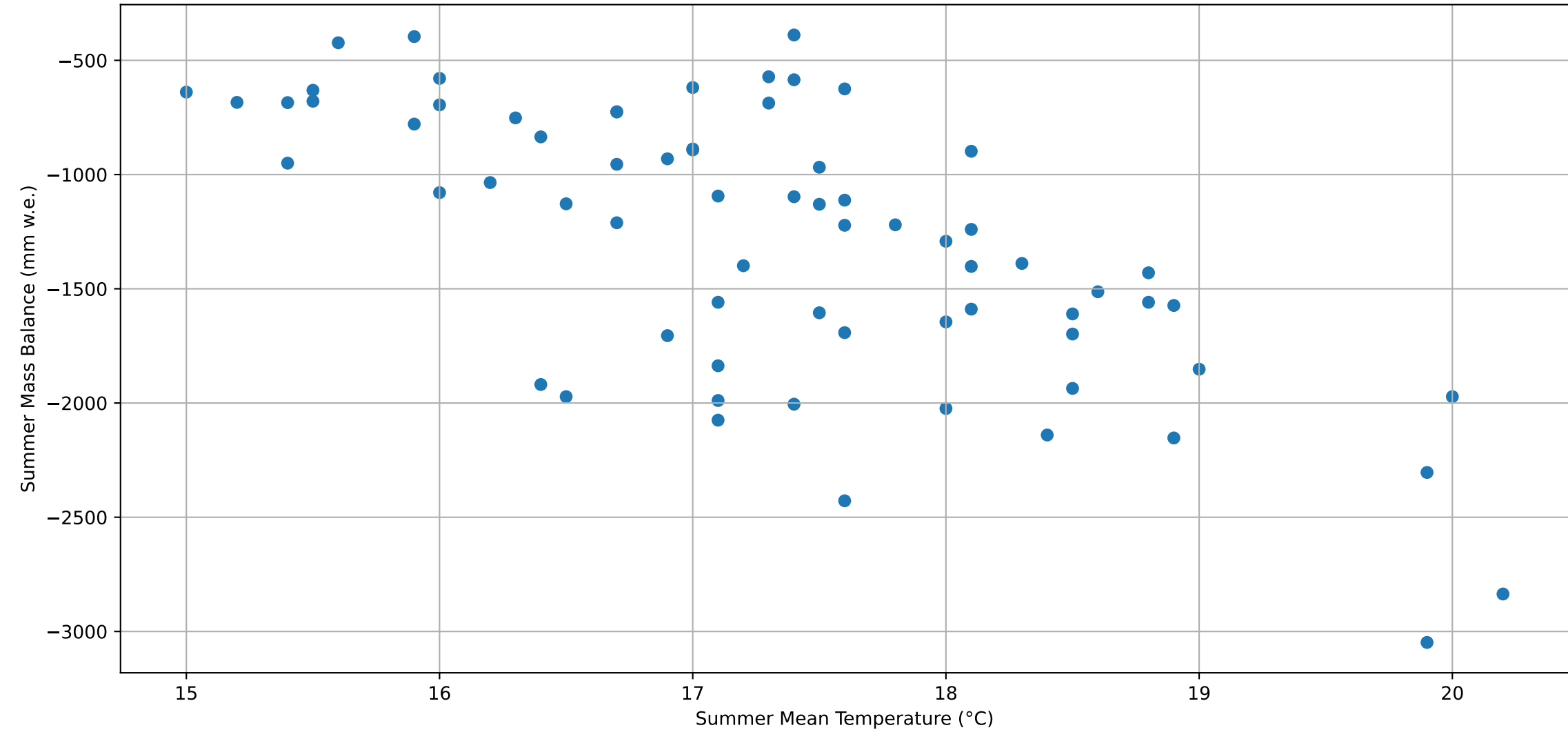
Sion Summer Mean Temperature



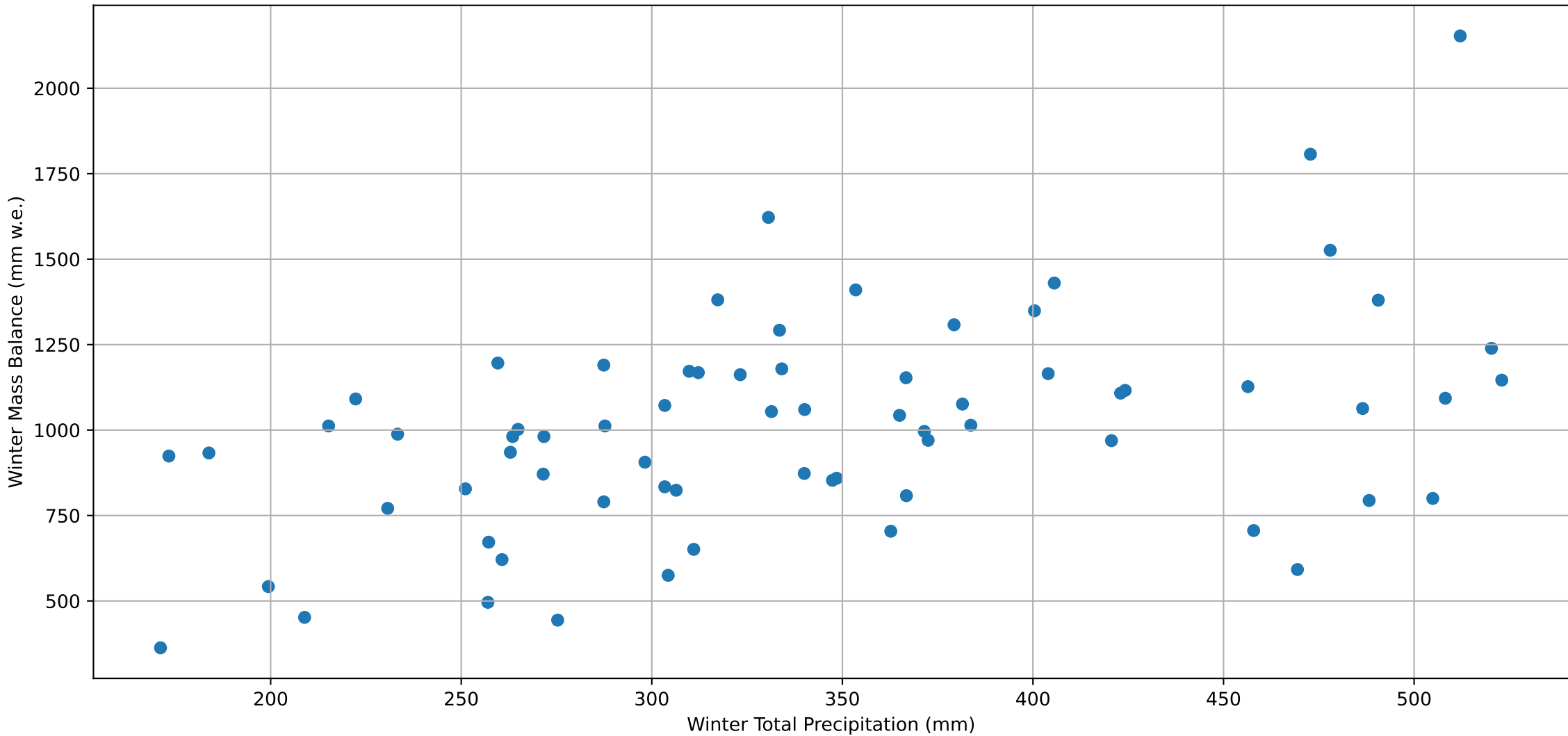
Sion Winter Total Precipitation



Allalingletscher Summer Mass Balance with relation to Temperature



Allalingletscher Winter Mass Balance with relation to Precipitation



Regression: Monthly 1961-1990

=====
MONTHLY DEVIATIONS for Allalngletscher 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 august to january.

Number of observations: 70

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

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OPTIMAL SEASONAL DEVIATIONS for Allalingletscher 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	-0.663145	3.977237e-10	True
1	opt_season_pd	0.186076	1.230024e-01	False

Number of observations: 70

Regression Summary:

OLS Regression Results						
=====						
Dep. Variable:	annual mass balance (mm w.e.)			R-squared:	0.454	
Model:	OLS			Adj. R-squared:	0.437	
Method:	Least Squares			F-statistic:	27.83	
Date:	Fri, 12 Dec 2025			Prob (F-statistic):	1.59e-09	
Time:	18:46:04			Log-Likelihood:	-539.03	
No. Observations:	70			AIC:	1084.	
Df Residuals:	67			BIC:	1091.	
Df Model:	2					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]

const	73.5746	81.436	0.903	0.370	-88.972	236.122
opt_season_td	-370.5059	51.675	-7.170	0.000	-473.650	-267.362
opt_season_pd	1.0606	0.810	1.310	0.195	-0.556	2.677
=====						
Omnibus:	2.669		Durbin-Watson:		1.541	
Prob(Omnibus):	0.263		Jarque-Bera (JB):		1.882	
Skew:	-0.338		Prob(JB):		0.390	
Kurtosis:	3.433		Cond. No.		111.	
=====						

Notes:

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

Regression: Seasonal 1961-1990

=====
SUMMER/WINTER SEASONAL DEVIATIONS for Allalngletscher 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 -0.712312 4.685311e-12 True
1 winter_pd 0.183920 1.274798e-01 False

Number of observations: 70

Regression Summary:

OLS Regression Results						
=====						
Dep. Variable:	annual mass balance (mm w.e.)			R-squared:	0.527	
Model:	OLS			Adj. R-squared:	0.513	
Method:	Least Squares			F-statistic:	37.38	
Date:	Fri, 12 Dec 2025			Prob (F-statistic):	1.25e-11	
Time:	18:46:04			Log-Likelihood:	-533.96	
No. Observations:	70			AIC:	1074.	
Df Residuals:	67			BIC:	1081.	
Df Model:	2					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]

const	116.6081	76.826	1.518	0.134	-36.737	269.953
summer_td	-434.6813	51.969	-8.364	0.000	-538.412	-330.950
winter_pd	1.1106	0.660	1.682	0.097	-0.207	2.428
=====						
Omnibus:	2.272		Durbin-Watson:		1.565	
Prob(Omnibus):	0.321		Jarque-Bera (JB):		1.650	
Skew:	-0.360		Prob(JB):		0.438	
Kurtosis:	3.219		Cond. No.		132.	
=====						

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

Regression: Monthly 1991-2020

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MONTHLY DEVIATIONS for Allalngletscher using 1991-2020 climate norms

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Correlation Analysis with Significance Testing:

Skipping constant column: const

	Variable	Correlation Coefficient	P-value	Significant (p < 0.05)
3	august_td	-0.575838	1.834509e-07	True
2	july_td	-0.569002	2.755457e-07	True
4	september_td	-0.524591	3.138374e-06	True
1	june_td	-0.507660	7.269171e-06	True
0	may_td	-0.383095	1.062868e-03	True
9	february_pd	0.191023	1.131806e-01	False
6	november_pd	0.139067	2.509042e-01	False
10	march_pd	0.078152	5.201751e-01	False
7	december_pd	-0.056406	6.427920e-01	False
5	october_pd	0.049693	6.828859e-01	False
11	april_pd	-0.033442	7.834401e-01	False
8	january_pd	0.026701	8.263267e-01	False

Number of observations: 70

Regression Summary:

OLS Regression Results

Dep. Variable:	annual mass balance (mm w.e.)	R-squared:	0.577
Model:	OLS	Adj. R-squared:	0.488
Method:	Least Squares	F-statistic:	6.472
Date:	Fri, 12 Dec 2025	Prob (F-statistic):	4.26e-07
Time:	18:46:04	Log-Likelihood:	-530.10
No. Observations:	70	AIC:	1086.
Df Residuals:	57	BIC:	1115.
Df Model:	12		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	-645.4679	76.214	-8.469	0.000	-798.084	-492.852
may_td	-35.6575	49.823	-0.716	0.477	-135.427	64.112
june_td	-43.8331	46.968	-0.933	0.355	-137.885	50.218
july_td	-107.0402	50.392	-2.124	0.038	-207.949	-6.132
august_td	-116.1017	59.460	-1.953	0.056	-235.168	2.965
september_td	-150.8187	47.312	-3.188	0.002	-245.560	-56.078
october_pd	1.3714	2.318	0.592	0.556	-3.269	6.012
november_pd	2.9680	1.722	1.723	0.090	-0.480	6.416
december_pd	1.1423	1.439	0.794	0.431	-1.740	4.024
january_pd	1.9309	1.751	1.102	0.275	-1.576	5.438
february_pd	0.8317	1.360	0.611	0.543	-1.892	3.555
march_pd	0.5088	2.002	0.254	0.800	-3.500	4.518
april_pd	2.4437	3.058	0.799	0.428	-3.680	8.568

Omnibus:	1.054	Durbin-Watson:	1.687
Prob(Omnibus):	0.590	Jarque-Bera (JB):	1.056
Skew:	-0.164	Prob(JB):	0.590
Kurtosis:	2.496	Cond. No.	65.8

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 Allalngletscher 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	-0.665403	3.303086e-10	True
1	opt_season_pd	0.186076	1.230024e-01	False

Number of observations: 70

Regression Summary:

OLS Regression Results

=====

Dep. Variable:	annual mass balance (mm w.e.)	R-squared:	0.455
Model:	OLS	Adj. R-squared:	0.439
Method:	Least Squares	F-statistic:	28.02
Date:	Fri, 12 Dec 2025	Prob (F-statistic):	1.44e-09
Time:	18:46:04	Log-Likelihood:	-538.92
No. Observations:	70	AIC:	1084.
Df Residuals:	67	BIC:	1091.
Df Model:	2		
Covariance Type:	nonrobust		

=====

	coef	std err	t	P> t	[0.025	0.975]
const	-616.3370	78.515	-7.850	0.000	-773.054	-459.620
opt_season_td	-374.0837	51.987	-7.196	0.000	-477.850	-270.318
opt_season_pd	1.0113	0.809	1.250	0.216	-0.604	2.626

=====

Omnibus:	2.208	Durbin-Watson:	1.529
Prob(Omnibus):	0.332	Jarque-Bera (JB):	1.476
Skew:	-0.299	Prob(JB):	0.478
Kurtosis:	3.386	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 Allalingletscher 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 -0.711854 4.903874e-12 True
1 winter_pd 0.183920 1.274798e-01 False

Number of observations: 70

Regression Summary:

OLS Regression Results						
Dep. Variable:	annual mass balance (mm w.e.)				R-squared:	0.526
Model:	OLS				Adj. R-squared:	0.512
Method:	Least Squares				F-statistic:	37.16
Date:	Fri, 12 Dec 2025				Prob (F-statistic):	1.38e-11
Time:	18:46:04				Log-Likelihood:	-534.07
No. Observations:	70				AIC:	1074.
Df Residuals:	67				BIC:	1081.
Df Model:	2					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	-639.4128	73.187	-8.737	0.000	-785.495	-493.330
summer_td	-433.6850	52.004	-8.339	0.000	-537.485	-329.885
winter_pd	1.0890	0.661	1.647	0.104	-0.231	2.409
Omnibus:		2.028	Durbin-Watson:			1.553
Prob(Omnibus):		0.363	Jarque-Bera (JB):			1.428
Skew:		-0.333	Prob(JB):			0.490
Kurtosis:		3.217	Cond. No.			124.

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