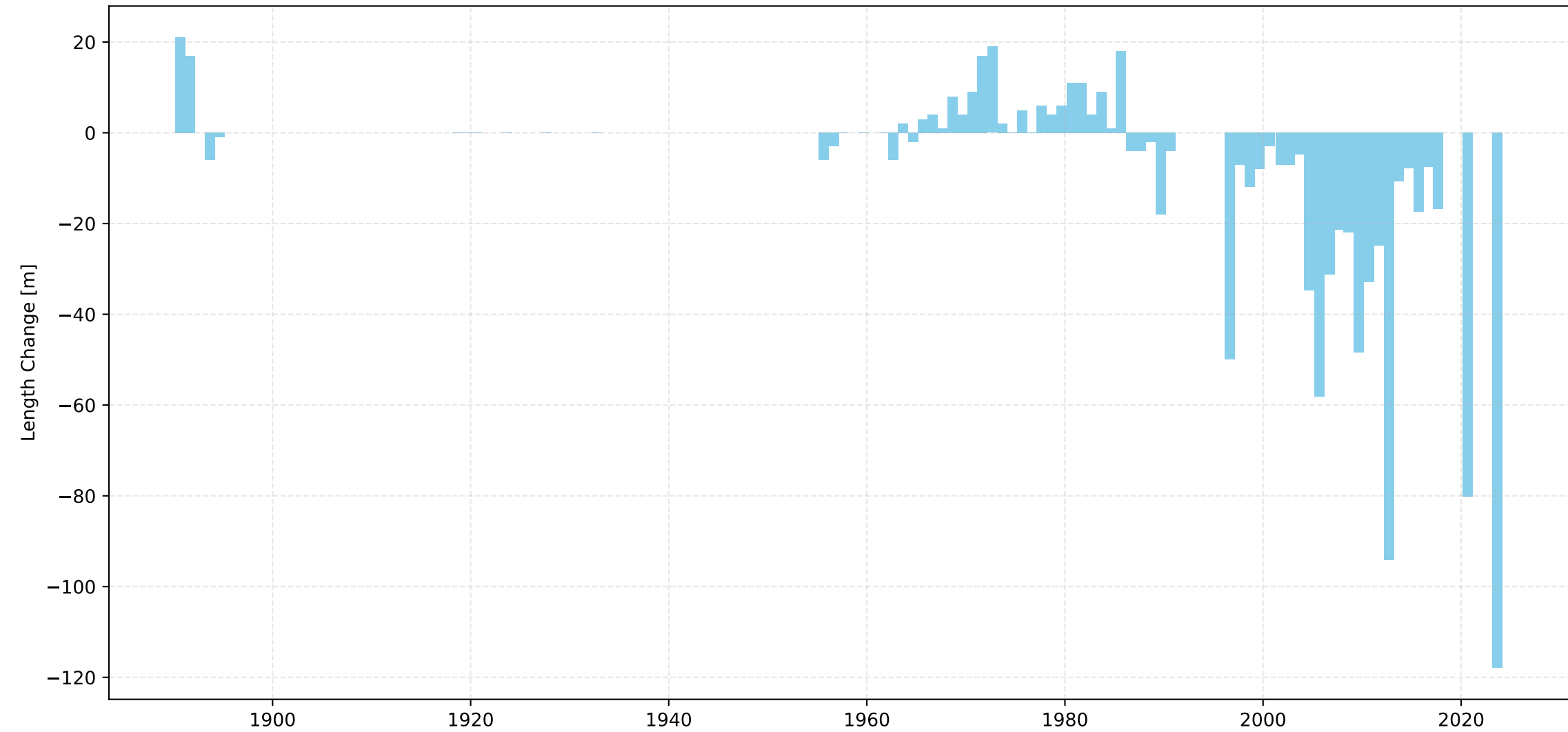
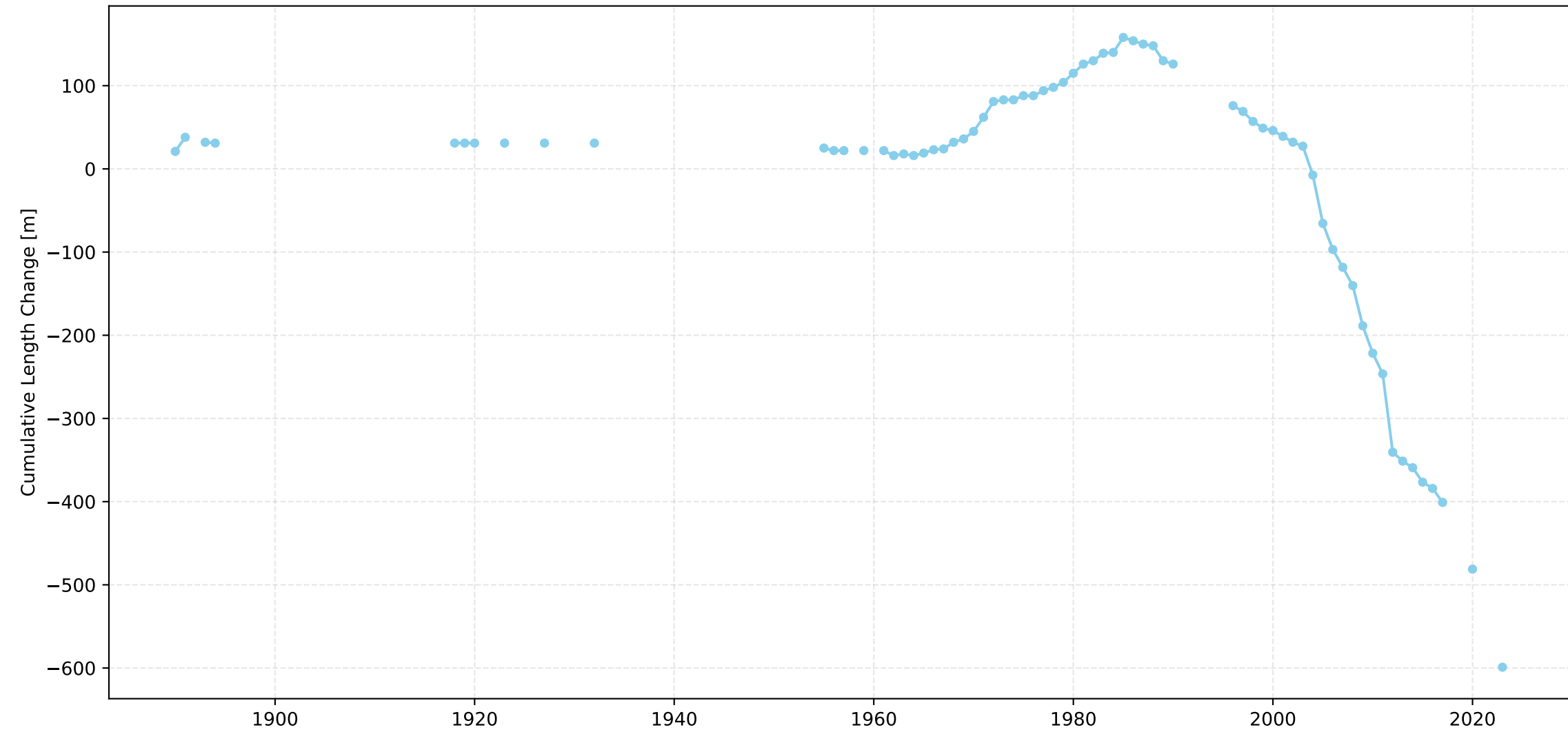


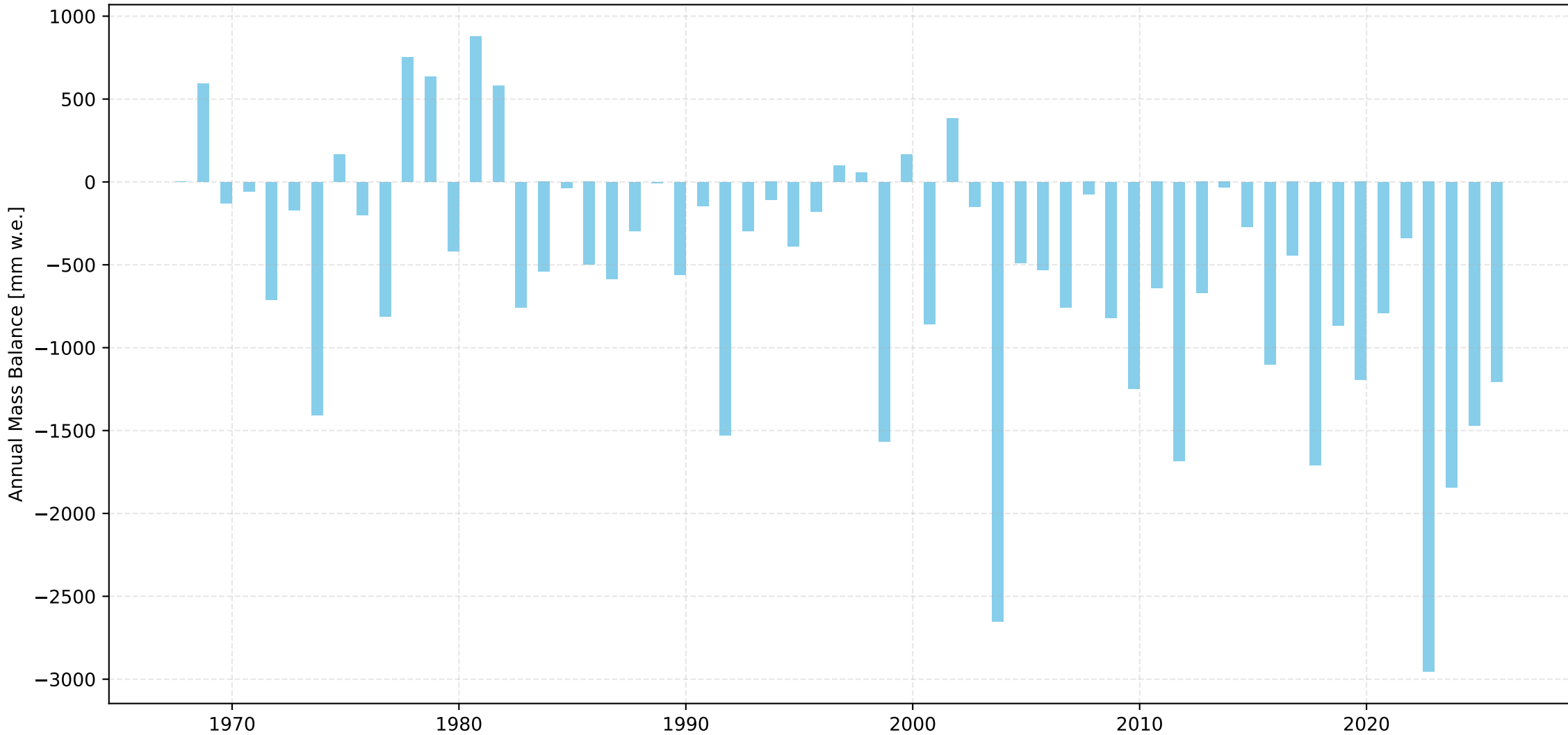
Glacier du Giétro Length Change Over Time



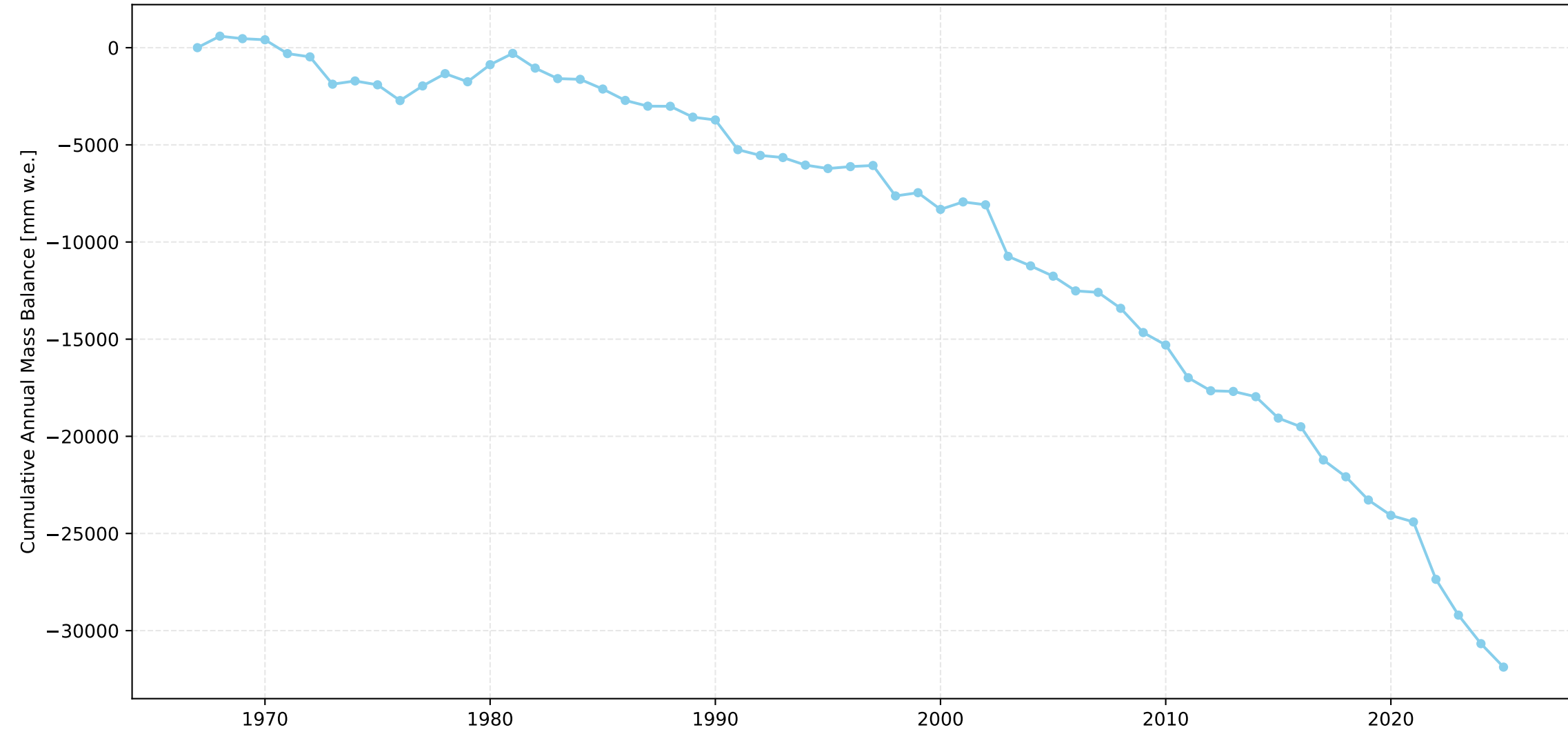
Glacier du Giétro Cumulative Length Change Over Time



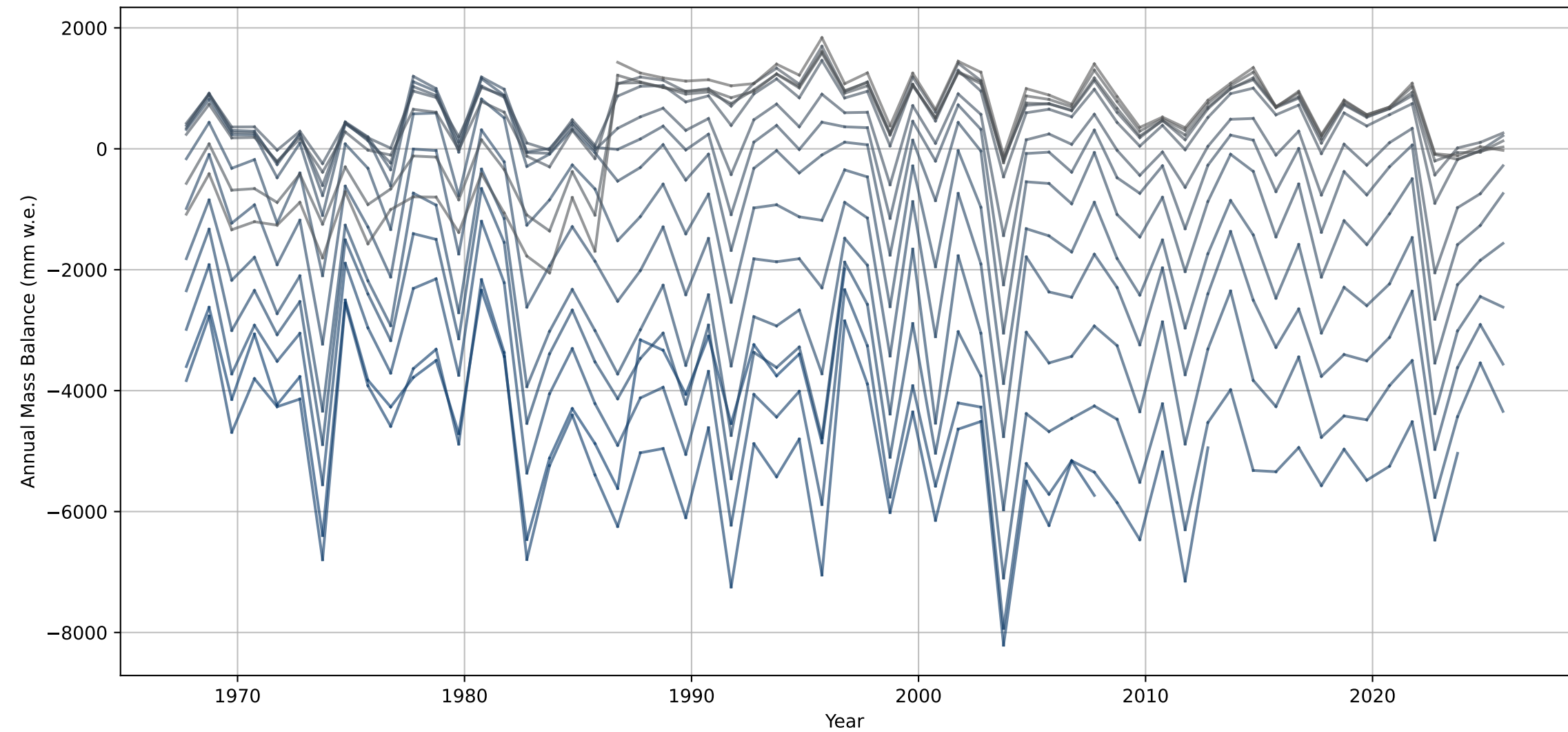
Glacier du Giéto Annual Mass Balance Over Time



Glacier du Giéto Cumulative Annual Mass Balance Over Time



Annual Mass Balance for each Elevation Bin over Time - Glacier du Giétro



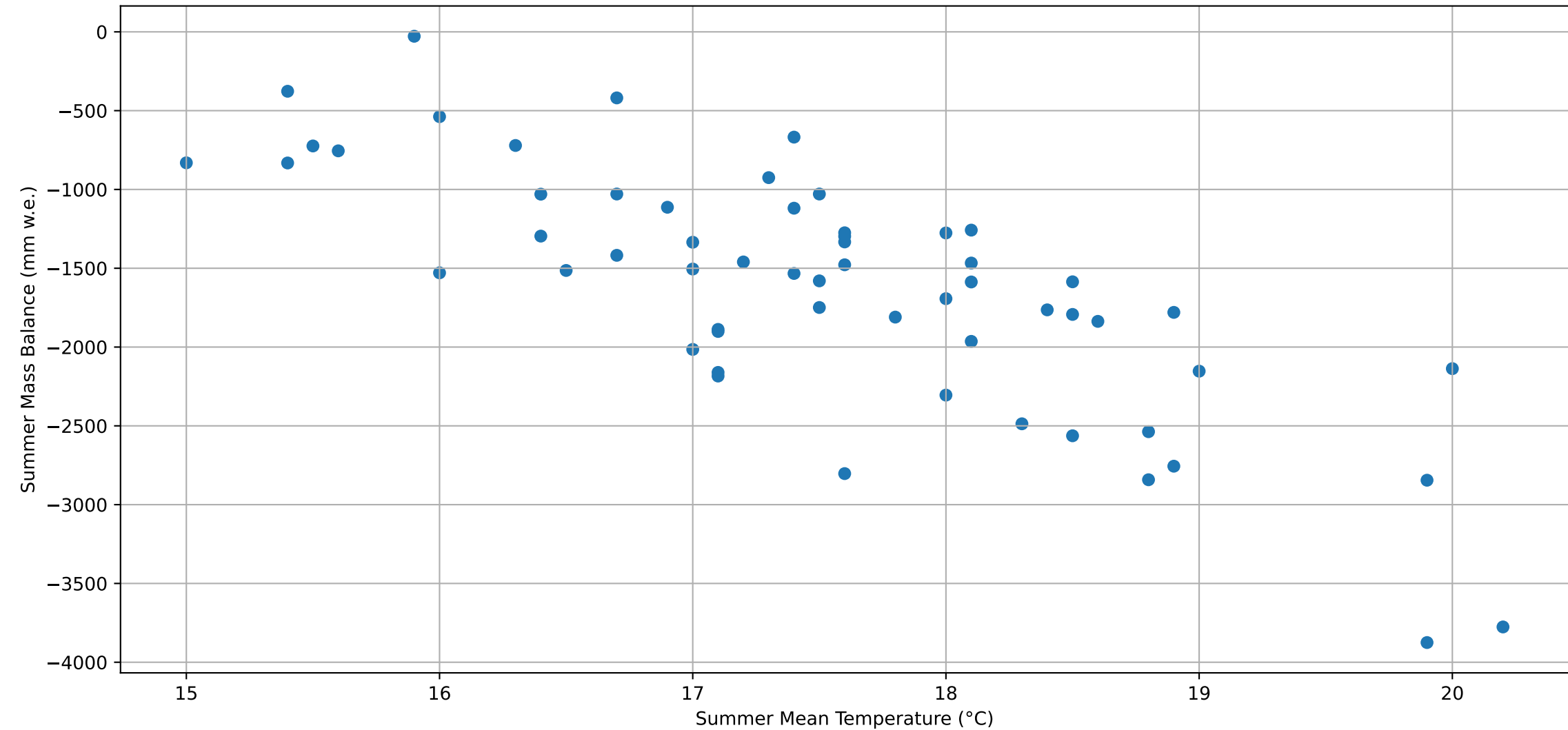
Sion Summer Mean Temperature



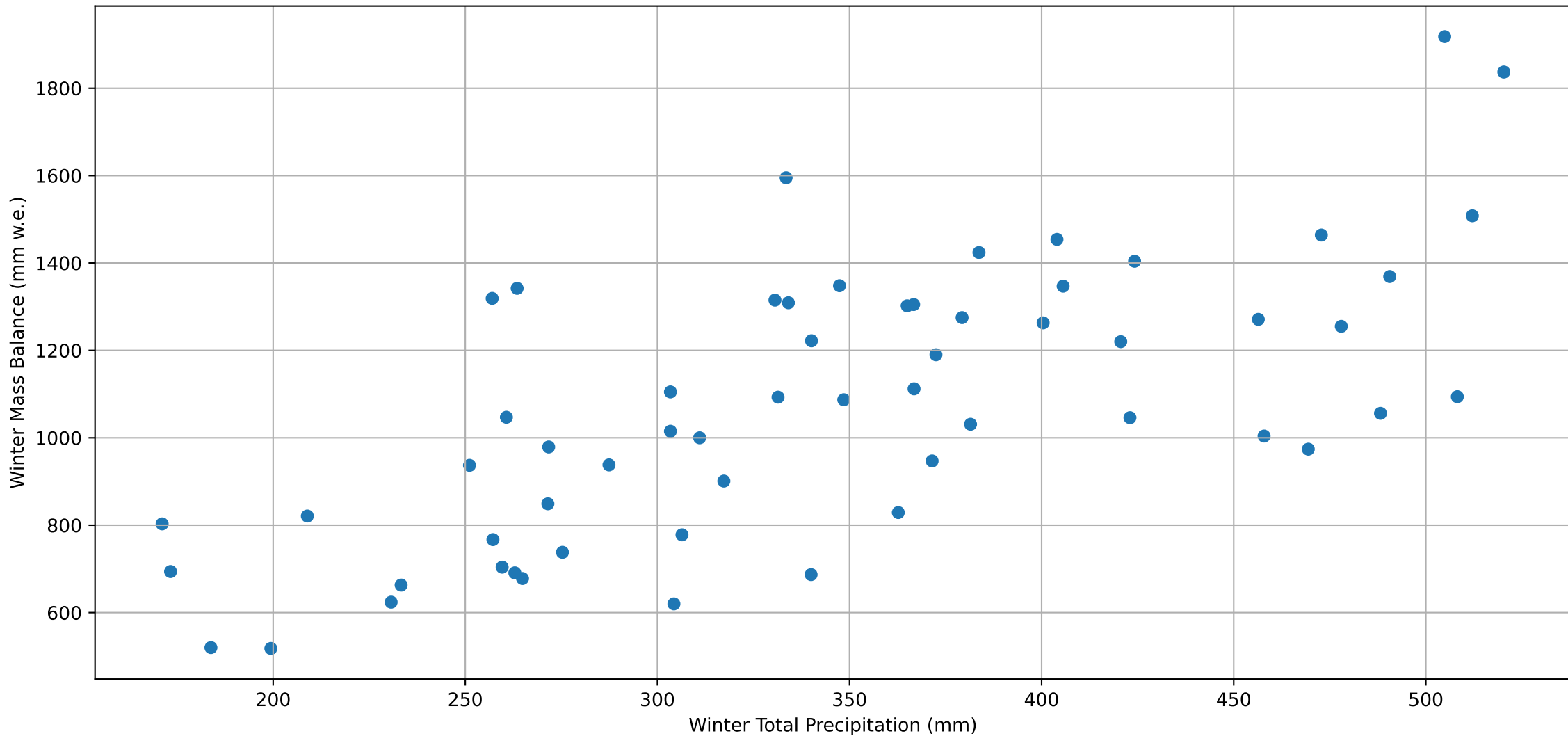
Sion Winter Total Precipitation



Glacier du Giétro Summer Mass Balance with relation to Temperature



Glacier du Giéto Winter Mass Balance with relation to Precipitation



Regression: Monthly 1961-1990

=====
MONTHLY DEVIATIONS for Glacier du Giétro 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 april.

Number of observations: 59

Regression Summary:

OLS Regression Results
Table with 2 columns: Dep. Variable: annual mass balance (mm w.e.) and various statistics including R-squared, Adj. R-squared, F-statistic, Prob (F-statistic), Log-Likelihood, AIC, BIC, and Covariance Type: nonrobust.

Table with 7 columns: coef, std err, t, P>|t|, [0.025, 0.975]. Rows include coefficients for const, months (may to april), and various statistical tests.

Table with 2 columns: Statistic and 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 Glacier du Giétro 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 | -0.763681 | 2.003258e-12 | True |
| 1 | opt_season_pd | 0.265071 | 4.246513e-02 | True |

Number of observations: 59

Regression Summary:

| OLS Regression Results | | | | | | |
|------------------------|-------------------------------|---------|-------------------|---------------------|----------|----------|
| ===== | | | | | | |
| Dep. Variable: | annual mass balance (mm w.e.) | | | R-squared: | 0.608 | |
| Model: | OLS | | | Adj. R-squared: | 0.594 | |
| Method: | Least Squares | | | F-statistic: | 43.42 | |
| Date: | Mon, 22 Dec 2025 | | | Prob (F-statistic): | 4.11e-12 | |
| Time: | 14:58:15 | | | Log-Likelihood: | -447.09 | |
| No. Observations: | 59 | | | AIC: | 900.2 | |
| Df Residuals: | 56 | | | BIC: | 906.4 | |
| Df Model: | 2 | | | | | |
| Covariance Type: | nonrobust | | | | | |
| ===== | | | | | | |
| | coef | std err | t | P> t | [0.025 | 0.975] |
| ----- | | | | | | |
| const | -20.9892 | 84.812 | -0.247 | 0.805 | -190.889 | 148.910 |
| opt_season_td | -442.8249 | 50.529 | -8.764 | 0.000 | -544.047 | -341.603 |
| opt_season_pd | 1.4986 | 0.797 | 1.880 | 0.065 | -0.098 | 3.095 |
| ===== | | | | | | |
| Omnibus: | 1.915 | | Durbin-Watson: | | 2.013 | |
| Prob(Omnibus): | 0.384 | | Jarque-Bera (JB): | | 1.702 | |
| Skew: | -0.410 | | Prob(JB): | | 0.427 | |
| Kurtosis: | 2.862 | | Cond. No. | | 118. | |
| ===== | | | | | | |

Notes:

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

Regression: Seasonal 1961-1990

=====
SUMMER/WINTER SEASONAL DEVIATIONS for Glacier du Giétro 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 -0.769112 1.119720e-12 True
1 winter_pd 0.303591 1.941328e-02 True

Number of observations: 59

Regression Summary:

| OLS Regression Results | | | | | | |
|------------------------|-------------------------------|-------------------|--------|---------------------|----------|----------|
| Dep. Variable: | annual mass balance (mm w.e.) | | | R-squared: | 0.640 | |
| Model: | OLS | | | Adj. R-squared: | 0.627 | |
| Method: | Least Squares | | | F-statistic: | 49.78 | |
| Date: | Mon, 22 Dec 2025 | | | Prob (F-statistic): | 3.77e-13 | |
| Time: | 14:58:15 | | | Log-Likelihood: | -444.58 | |
| No. Observations: | 59 | | | AIC: | 895.2 | |
| Df Residuals: | 56 | | | BIC: | 901.4 | |
| Df Model: | 2 | | | | | |
| Covariance Type: | nonrobust | | | | | |
| | coef | std err | t | P> t | [0.025 | 0.975] |
| const | -2.1532 | 81.438 | -0.026 | 0.979 | -165.293 | 160.986 |
| summer_td | -481.9572 | 52.207 | -9.232 | 0.000 | -586.541 | -377.374 |
| winter_pd | 1.8171 | 0.662 | 2.746 | 0.008 | 0.492 | 3.143 |
| Omnibus: | 2.332 | Durbin-Watson: | | 2.072 | | |
| Prob(Omnibus): | 0.312 | Jarque-Bera (JB): | | 2.224 | | |
| Skew: | -0.405 | Prob(JB): | | 0.329 | | |
| Kurtosis: | 2.503 | Cond. No. | | 140. | | |

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

Regression: Monthly 1991-2020

=====

MONTHLY DEVIATIONS for Glacier du Giétro using 1991-2020 climate norms

=====

Correlation Analysis with Significance Testing:

Skipping constant column: const

| | Variable | Correlation Coefficient | P-value | Significant (p < 0.05) |
|----|--------------|-------------------------|--------------|------------------------|
| 3 | august_td | -0.658178 | 1.470237e-08 | True |
| 1 | june_td | -0.644929 | 3.523408e-08 | True |
| 2 | july_td | -0.579919 | 1.483556e-06 | True |
| 0 | may_td | -0.474425 | 1.469830e-04 | True |
| 4 | september_td | -0.402591 | 1.571603e-03 | True |
| 9 | february_pd | 0.344876 | 7.473511e-03 | True |
| 10 | march_pd | 0.185747 | 1.589784e-01 | False |
| 8 | january_pd | 0.175636 | 1.833241e-01 | False |
| 5 | october_pd | 0.153290 | 2.464077e-01 | False |
| 6 | november_pd | -0.079989 | 5.470221e-01 | False |
| 7 | december_pd | -0.079247 | 5.507605e-01 | False |
| 11 | april_pd | 0.014406 | 9.137634e-01 | False |

Number of observations: 59

Regression Summary:

OLS Regression Results

| | | | |
|-------------------|-------------------------------|---------------------|----------|
| Dep. Variable: | annual mass balance (mm w.e.) | R-squared: | 0.703 |
| Model: | OLS | Adj. R-squared: | 0.625 |
| Method: | Least Squares | F-statistic: | 9.065 |
| Date: | Mon, 22 Dec 2025 | Prob (F-statistic): | 1.40e-08 |
| Time: | 14:58:15 | Log-Likelihood: | -438.92 |
| No. Observations: | 59 | AIC: | 903.8 |
| Df Residuals: | 46 | BIC: | 930.9 |
| Df Model: | 12 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P> t | [0.025 | 0.975] |
|--------------|-----------|---------|---------|-------|----------|----------|
| const | -848.2916 | 69.883 | -12.139 | 0.000 | -988.959 | -707.625 |
| may_td | -38.2728 | 50.064 | -0.764 | 0.448 | -139.046 | 62.500 |
| june_td | -89.3936 | 45.822 | -1.951 | 0.057 | -181.629 | 2.842 |
| july_td | -145.8930 | 49.850 | -2.927 | 0.005 | -246.235 | -45.551 |
| august_td | -120.0130 | 61.355 | -1.956 | 0.057 | -243.515 | 3.489 |
| september_td | -75.7921 | 47.156 | -1.607 | 0.115 | -170.713 | 19.129 |
| october_pd | 2.3180 | 2.186 | 1.060 | 0.295 | -2.083 | 6.719 |
| november_pd | -1.5704 | 1.698 | -0.925 | 0.360 | -4.988 | 1.847 |
| december_pd | 1.3308 | 1.522 | 0.874 | 0.386 | -1.733 | 4.395 |
| january_pd | 3.3608 | 1.667 | 2.017 | 0.050 | 0.006 | 6.715 |
| february_pd | 2.8796 | 1.417 | 2.032 | 0.048 | 0.027 | 5.732 |
| march_pd | 1.7271 | 1.961 | 0.881 | 0.383 | -2.219 | 5.674 |
| april_pd | 3.1540 | 2.942 | 1.072 | 0.289 | -2.768 | 9.076 |

| | | | |
|----------------|--------|-------------------|-------|
| Omnibus: | 1.577 | Durbin-Watson: | 2.085 |
| Prob(Omnibus): | 0.454 | Jarque-Bera (JB): | 1.584 |
| Skew: | -0.345 | Prob(JB): | 0.453 |
| Kurtosis: | 2.589 | Cond. No. | 59.6 |

Notes:

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

Regression: Optimal 1991-2020

=====

OPTIMAL SEASONAL DEVIATIONS for Glacier du Giétro 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 | -0.768057 | 1.255240e-12 | True |
| 1 | opt_season_pd | 0.265071 | 4.246513e-02 | True |

Number of observations: 59

Regression Summary:

| OLS Regression Results | | | | | | |
|------------------------|-------------------------------|---------|-------------------|---------------------|----------|----------|
| ===== | | | | | | |
| Dep. Variable: | annual mass balance (mm w.e.) | | | R-squared: | 0.613 | |
| Model: | OLS | | | Adj. R-squared: | 0.599 | |
| Method: | Least Squares | | | F-statistic: | 44.30 | |
| Date: | Mon, 22 Dec 2025 | | | Prob (F-statistic): | 2.91e-12 | |
| Time: | 14:58:15 | | | Log-Likelihood: | -446.73 | |
| No. Observations: | 59 | | | AIC: | 899.5 | |
| Df Residuals: | 56 | | | BIC: | 905.7 | |
| Df Model: | 2 | | | | | |
| Covariance Type: | nonrobust | | | | | |
| ===== | | | | | | |
| | coef | std err | t | P> t | [0.025 | 0.975] |
| ----- | | | | | | |
| const | -852.7609 | 71.051 | -12.002 | 0.000 | -995.092 | -710.429 |
| opt_season_td | -448.0476 | 50.588 | -8.857 | 0.000 | -549.388 | -346.707 |
| opt_season_pd | 1.4408 | 0.793 | 1.816 | 0.075 | -0.148 | 3.030 |
| ===== | | | | | | |
| Omnibus: | 1.850 | | Durbin-Watson: | | 2.024 | |
| Prob(Omnibus): | 0.396 | | Jarque-Bera (JB): | | 1.632 | |
| Skew: | -0.402 | | Prob(JB): | | 0.442 | |
| Kurtosis: | 2.871 | | Cond. No. | | 99.0 | |
| ===== | | | | | | |

Notes:

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

Regression: Seasonal 1991-2020

=====
SUMMER/WINTER SEASONAL DEVIATIONS for Glacier du Giétro 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 -0.769107 1.120325e-12 True
1 winter_pd 0.303591 1.941328e-02 True

Number of observations: 59

Regression Summary:

| OLS Regression Results | | | | | | |
|------------------------|-------------------------------|---------|-------------------|---------------------|-----------|----------|
| ===== | | | | | | |
| Dep. Variable: | annual mass balance (mm w.e.) | | | R-squared: | 0.639 | |
| Model: | OLS | | | Adj. R-squared: | 0.626 | |
| Method: | Least Squares | | | F-statistic: | 49.62 | |
| Date: | Mon, 22 Dec 2025 | | | Prob (F-statistic): | 3.99e-13 | |
| Time: | 14:58:15 | | | Log-Likelihood: | -444.64 | |
| No. Observations: | 59 | | | AIC: | 895.3 | |
| Df Residuals: | 56 | | | BIC: | 901.5 | |
| Df Model: | 2 | | | | | |
| Covariance Type: | nonrobust | | | | | |
| ===== | | | | | | |
| | coef | std err | t | P> t | [0.025 | 0.975] |
| ----- | | | | | | |
| const | -863.4615 | 68.764 | -12.557 | 0.000 | -1001.212 | -725.711 |
| summer_td | -482.6673 | 52.371 | -9.216 | 0.000 | -587.580 | -377.755 |
| winter_pd | 1.8040 | 0.663 | 2.723 | 0.009 | 0.477 | 3.131 |
| ===== | | | | | | |
| Omnibus: | 2.461 | | Durbin-Watson: | | 2.051 | |
| Prob(Omnibus): | 0.292 | | Jarque-Bera (JB): | | 2.309 | |
| Skew: | -0.407 | | Prob(JB): | | 0.315 | |
| Kurtosis: | 2.475 | | Cond. No. | | 116. | |
| ===== | | | | | | |

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