# 00570 Glacier Info

## Input data files

| | |
|---|---|
| DEM file | RGI1_DEM/RGI60-01.00570_dem.tif |
| Change in thickness file | 00570_dhdt.tif (Hugonnet, 2000-2020) |
| Thickness file | 00570_h.tif (MillanThickness) |
| Velocity file(s) | ['ITS_LIVE_2017-2018', 'MillanVelocity_2017-2018', 'RETREAT_2017-2018'] |

## Input Constants and Assumptions

| Resolution (m) | Density (kg/m3) | Vel Col Scaling Factor | Elevation Bin Width (m) | Coordinate system |
|---|---|---|---|---|
| 20 | 850 | 0.8 | 50 | EPSG:32606 |

## Input Calculation Settings

| Smoothing Filter | Smoothing Factor (raw data) | Smoothing Factor (divQ product) |
|---|---|---|
| Dynamic Window Gaussian Filter | 4x local thickness | 1x local thickness |

**Smoothing is only done for velocity and ice thickness data. If dynamic smoothing uses 0 for both inputs, there is no smoothing**

## Calculation Results

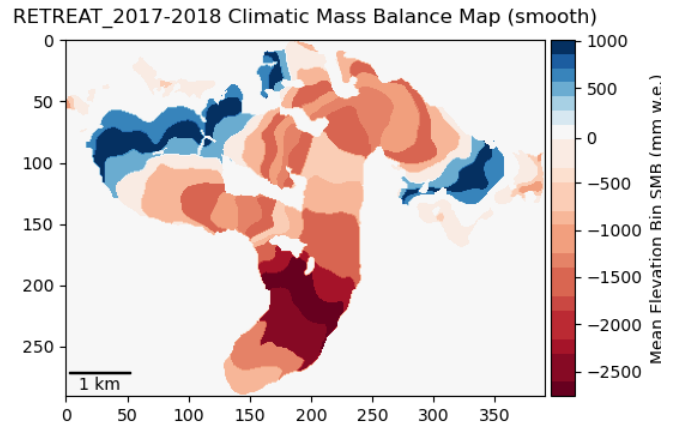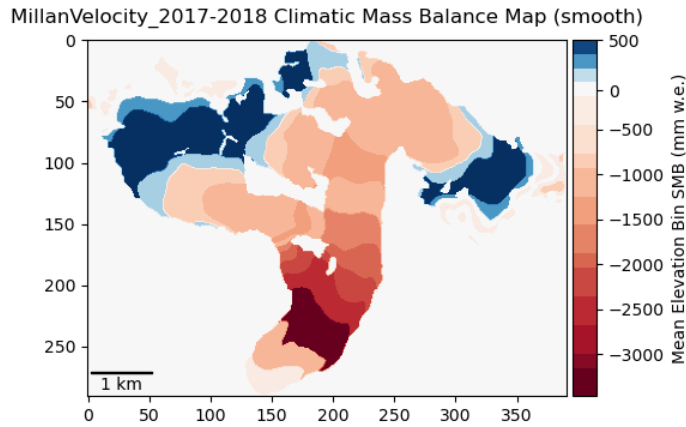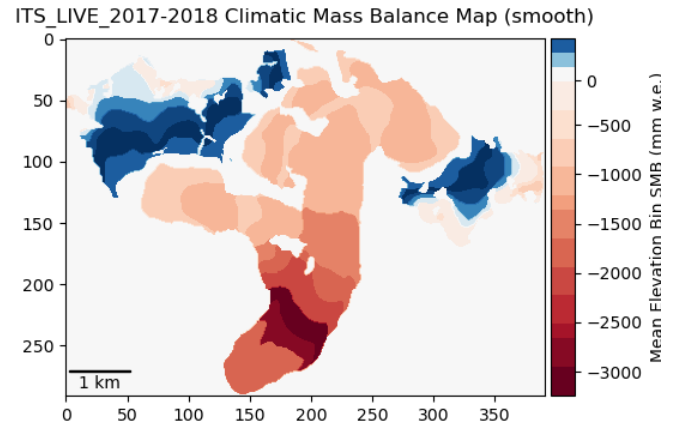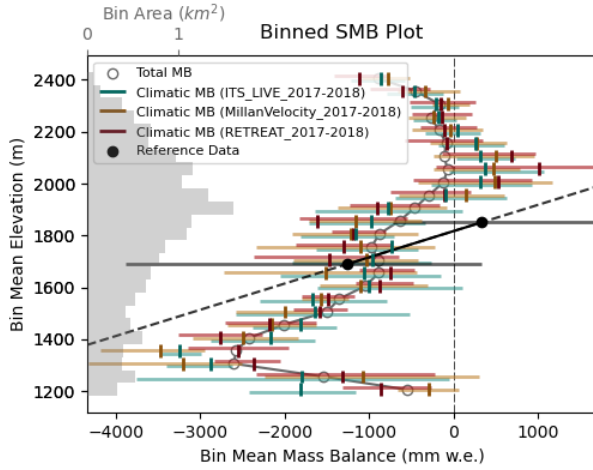| | |
|---|---|
| Area | 17.55 (sq. km) |
| Total MB | -758.33 (mm w.e.) |
| Total MB, alt-resolved | -758.33 (mm w.e.) |
| Climatic MB: ITS_LIVE_2017-2018 | -758.63 (mm w.e.) |
| Climatic MB: MillanVelocity_2017-2018 | -756.67 (mm w.e.) |
| Climatic MB: RETREAT_2017-2018 | -756.15 (mm w.e.) |
| Scatter plot error bar value | percentile: lower bound at 25%, upper bound at 75% |

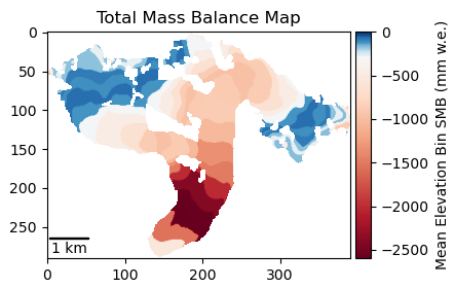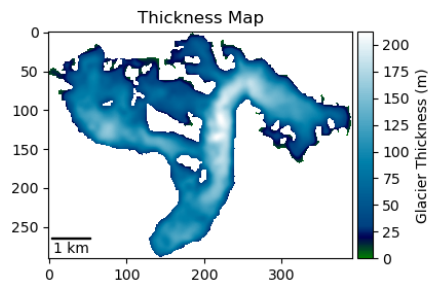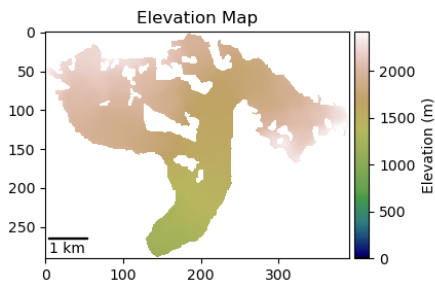**Climatic MB from emergence method does not use smoothed data**

## Error Metrics

| | Mean Absolute Error | Mean Bias Error | MAE (3-Bin Avg) | MBE (3-Bin Avg) |
|---|---|---|---|---|
| ITS_LIVE_2017-2018 | 796.13 (mm w.e.) | 505.39 (mm w.e.) | 789.28 (mm w.e.) | -460.89 (mm w.e.) |
| MillanVelocity_2017-2018 | 853.95 (mm w.e.) | 630.0 (mm w.e.) | 788.09 (mm w.e.) | -468.52 (mm w.e.) |
| RETREAT_2017-2018 | 1078.14 (mm w.e.) | 1078.14 (mm w.e.) | 787.35 (mm w.e.) | -465.05 (mm w.e.) |

**3-Bin averages are area-weighted**
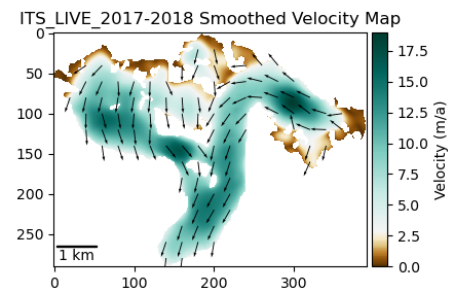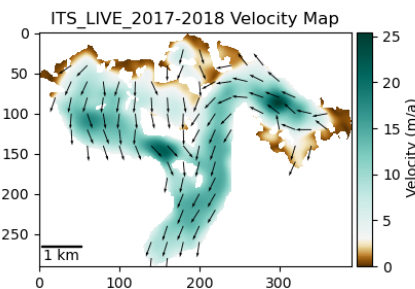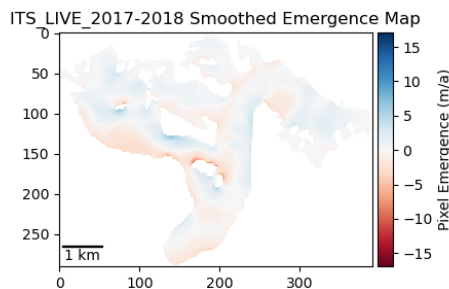
**00570 Velocity Product Comparison**

Binned SMB Plot

ITS_LIVE_2017-2018 Climatic Mass Balance Map (smooth)

MillanVelocity_2017-2018 Climatic Mass Balance Map (smooth)

RETREAT_2017-2018 Climatic Mass Balance Map (smooth)

**00570 Thickness, Elevation, Total MB Plots**

Elevation Map

Thickness Map

Total Mass Balance Map

**00570 ITS_LIVE_2017-2018 Velocity Products**

ITS_LIVE_2017-2018 Smoothed Emergence Map
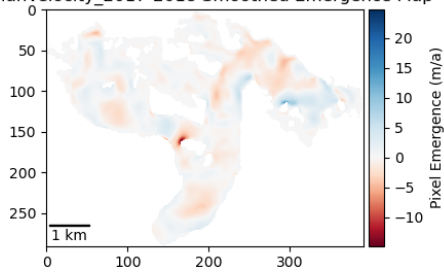
ITS_LIVE_2017-2018 Velocity Map
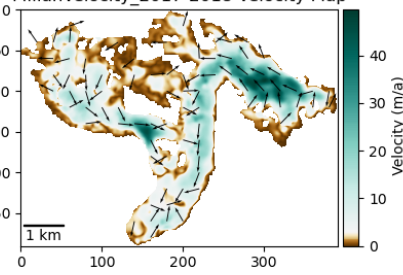
ITS_LIVE_2017-2018 Smoothed Velocity Map

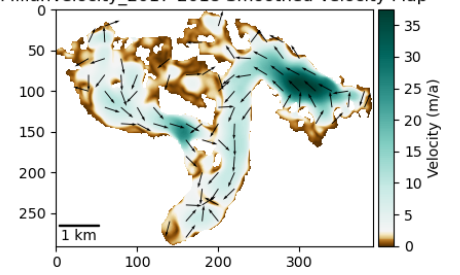**00570 MillanVelocity_2017-2018 Velocity Products**

MillanVelocity_2017-2018 Smoothed Emergence Map

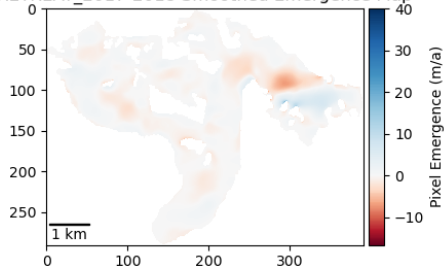MillanVelocity_2017-2018 Velocity Map
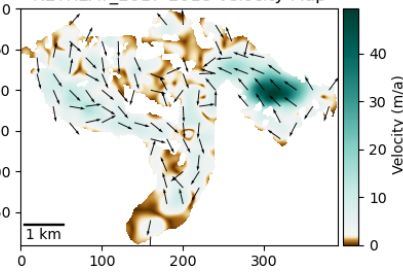
MillanVelocity_2017-2018 Smoothed Velocity Map



**00570 RETREAT_2017-2018 Velocity Products**

RETREAT_2017-2018 Smoothed Emergence Map

RETREAT_2017-2018 Velocity Map

RETREAT_2017-2018 Smoothed Velocity Map