01104 Glacier Info

Input data files

DEM file	RGI1_DEM/RGI60-01.01104_dem.tif
Change in thickness file	01104_dhdt.tif (Hugonnet, 2015-2020)
Thickness file	01104_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	9.65 (sq. km)
Total MB	-1493.44 (mm w.e.)
Total MB, alt-resolved	-1493.44 (mm w.e.)
Climatic MB: ITS_LIVE_2017-2018	-1441.07 (mm w.e.)
Climatic MB: MillanVelocity_2017-2018	-1421.26 (mm w.e.)
Climatic MB: RETREAT_2017-2018	-1486.83 (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: to WGMS Stake Points

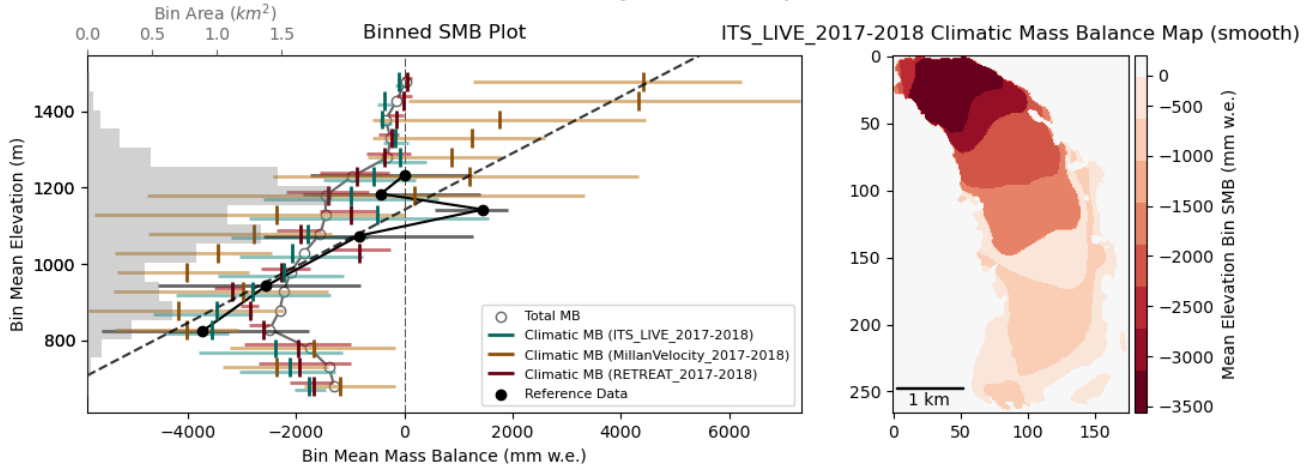|	Mean Absolute Error	Mean Bias Error	MAE (3-Bin Avg)	MBE (3-Bin Avg)
ITS_LIVE_2017-2018	744.57 (mm w.e.)	683.35 (mm w.e.)	1396.67 (mm w.e.)	-610.61 (mm w.e.)
MillanVelocity_2017-2018	1383.5 (mm w.e.)	779.22 (mm w.e.)	1406.38 (mm w.e.)	-572.61 (mm w.e.)
RETREAT_2017-2018	1189.36 (mm w.e.)	812.61 (mm w.e.)	1419.14 (mm w.e.)	-702.34 (mm w.e.)

3-Bin averages are area-weighted

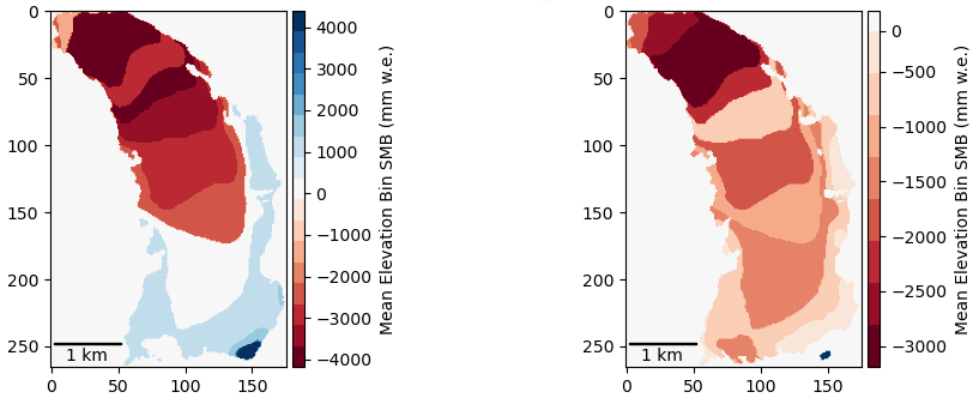## Error Metrics: to WGMS Stake Point L.O.B.F.

	Mean Absolute Error	Mean Bias Error	Clim MB Gradient Error
ITS_LIVE_2017-2018	1410.4 (mm w.e.)	1282.13 (mm w.e.)	-95.22 (%)
MillanVelocity_2017-2018	1022.51 (mm w.e.)	915.68 (mm w.e.)	11.39 (%)
RETREAT_2017-2018	1644.0 (mm w.e.)	1180.52 (mm w.e.)	-118.89 (%)

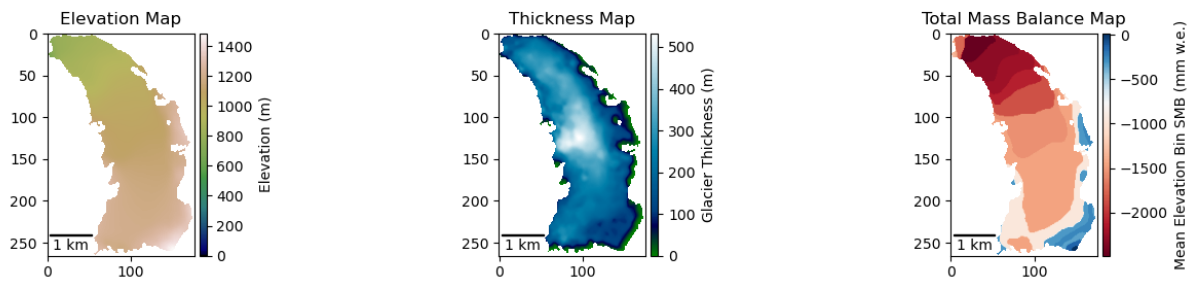**Positive error means the calculated product predicts more mass loss per elevationthan the stake measurements**
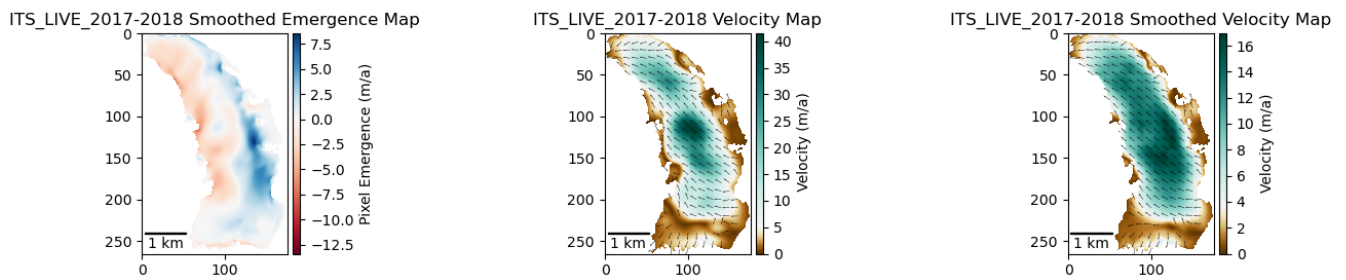
01104 Velocity Product Comparison

Binned SMB Plot

Bin Area (km^2)

Legend:
- ○ Total MB
- Climatic MB (ITS_LIVE_2017-2018)
- Climatic MB (MillanVelocity_2017-2018)
- Climatic MB (RETREAT_2017-2018)
- ● Reference Data

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)
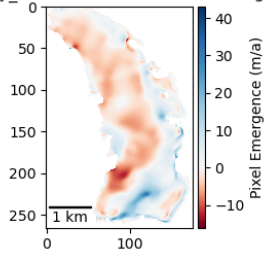

01104 Thickness, Elevation, Total MB Plots

Elevation Map

Thickness Map

Total Mass Balance Map

01104 ITS_LIVE_2017-2018 Velocity Products

ITS_LIVE_2017-2018 Smoothed Emergence Map

ITS_LIVE_2017-2018 Velocity Map

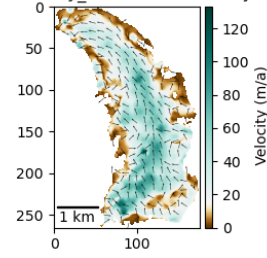### ITS_LIVE_2017-2018 Smoothed Velocity Map

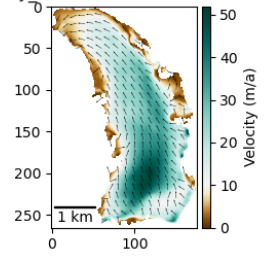## 01104 MillanVelocity_2017-2018 Velocity Products

MillanVelocity_2017-2018 Smoothed Emergence Map

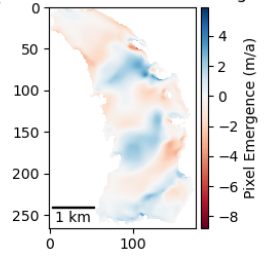### MillanVelocity_2017-2018 Velocity Map
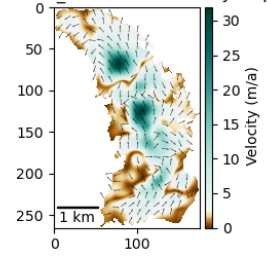
MillanVelocity_2017-2018 Smoothed Velocity Map

01104 RETREAT_2017-2018 Velocity Products

RETREAT_2017-2018 Smoothed Emergence Map

RETREAT_2017-2018 Velocity Map

RETREAT_2017-2018 Smoothed Velocity Map