

Hereafter are referred all the results for the 30 monitoring glaciers. Studies on each glacier have been run independently but with exactly the same method to process, filter the images as well as for the encompassed calculations.

- (a) shows the complete albedo cycle for the monitored  $\sim 16$ -yr in continuous black line. Shaded grey envelops illustrates the uncertainty on the glacier-wide albedo expressed as the internal variability (further explained in the main text of the article). Green dots represent for each summer the computed minimum albedo, and have been manually verified as cloud-free. Thin and dashed red and blue lines stand for the beginning of the ablation and accumulation season (May and October 1<sup>st</sup> respectively).

- (b) shows a map of each glaciers. Background corresponds to high resolution 2014 SPOT6 satellites images. Glaciers outlines from 1985-87 are represented in black and have been taken from Rabatel et al., 2013. Glaciers mask used in the computation are displayed in red.

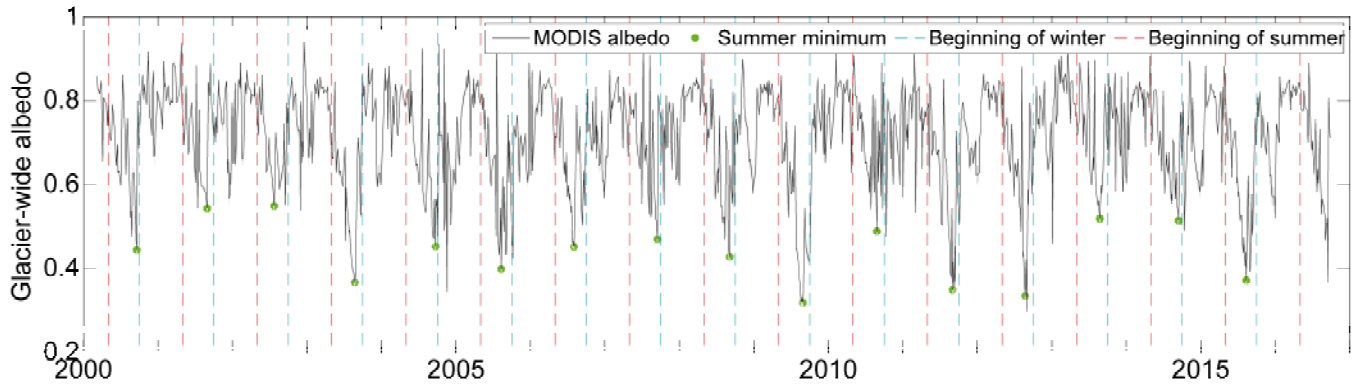
- (c) Albedo cycles as a function of the solar zenith angle. Each point corresponds to glacier-wide averaged albedo for each available image. The 16 years are displayed. Color scale gives indication on the date of the used image. The thick grey line describes the weekly albedo averaged over the entire study period. For readability purpose, the averaged albedo has been smoothed, using a 7 points running average.

- (d) Annual surface mass balances as a function of the MODIS retrieved summer minimum glacier-wide average albedo. Error bars on each point result on the dispersion of the available annual surface mass balance data and on the quadratic sum of the systematic errors made on each albedo measurement. The thin dashed grey line illustrates the line of best fit, along with regression coefficients and significance.

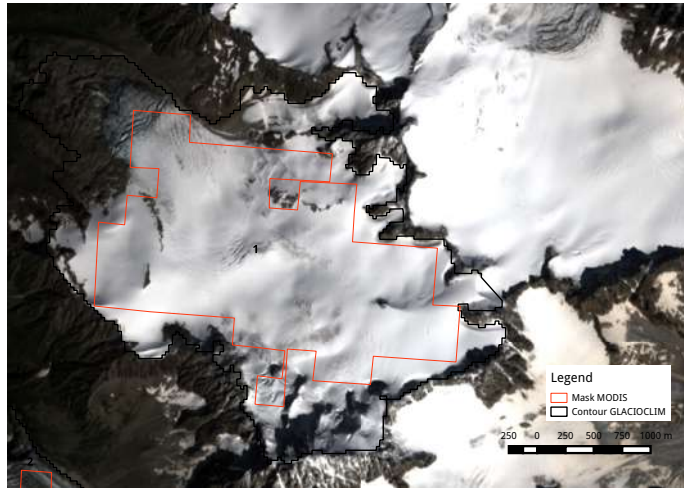
- (e) Summer surface mass balance  $b_s$  expressed as a function of the integrated albedo over the entire ablation season. Error bars result from the uncertainties related to the glaciological method (measurements and interpolation at the glacier scale of the punctual measurements,  $\pm 20$  cm *w.e.* in total), and on the quadratic sum of the systematic errors made on each albedo measurement. Thin dashed grey line represents the linear regression showing the best correlation between the two variables, together with correlation coefficients.

- (f) Winter surface mass balance,  $b_w$ , expressed as a function of the integrated albedo over the entire accumulation season. Winter balance of 2001 corresponds to the winter 2000/2001. Error bars result from the uncertainties related to the glaciological method and on the quadratic sum of the systematic errors made on each albedo measurement. Thin dashed grey line represents the linear regression showing the best correlation between the two variables, together with correlation coefficients.

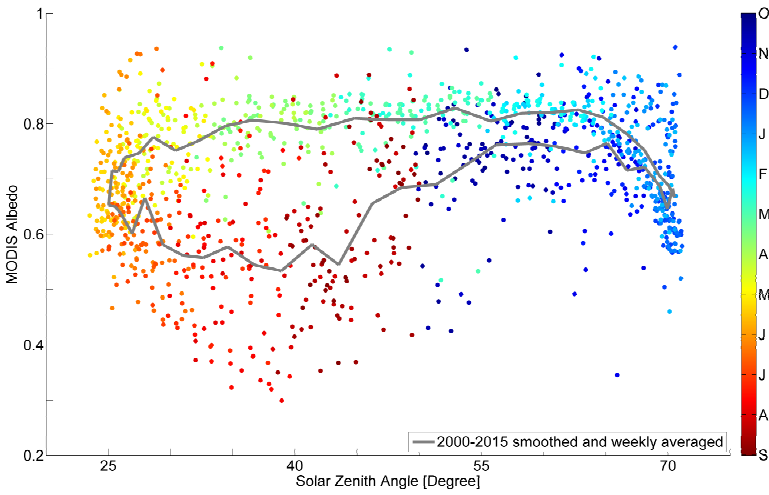
Figure S1: Tour



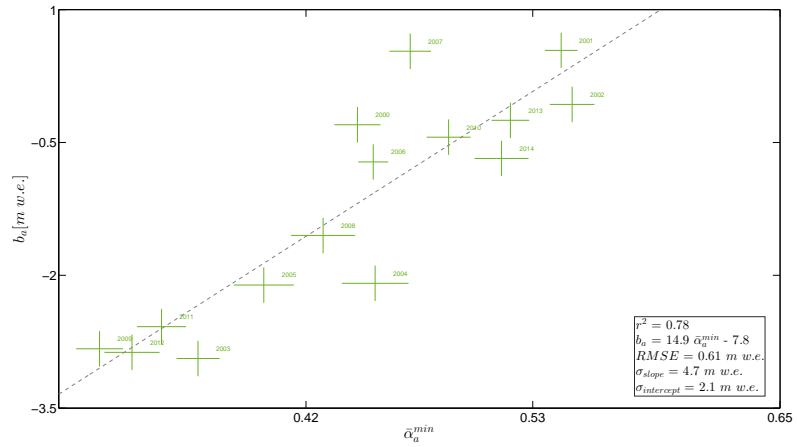
(a)



(b)

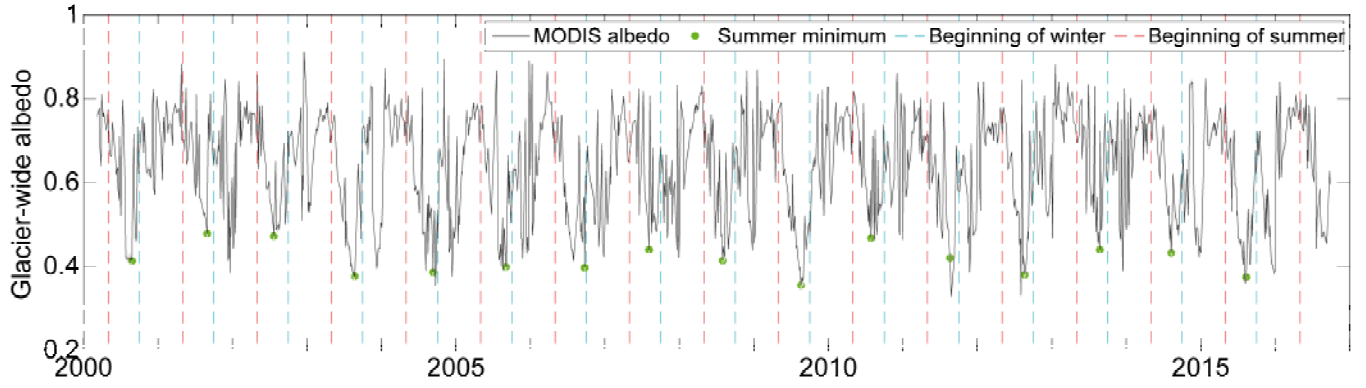


(c)

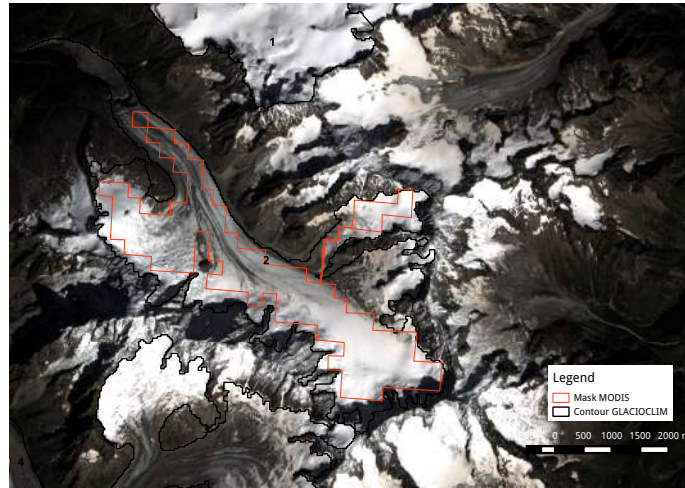


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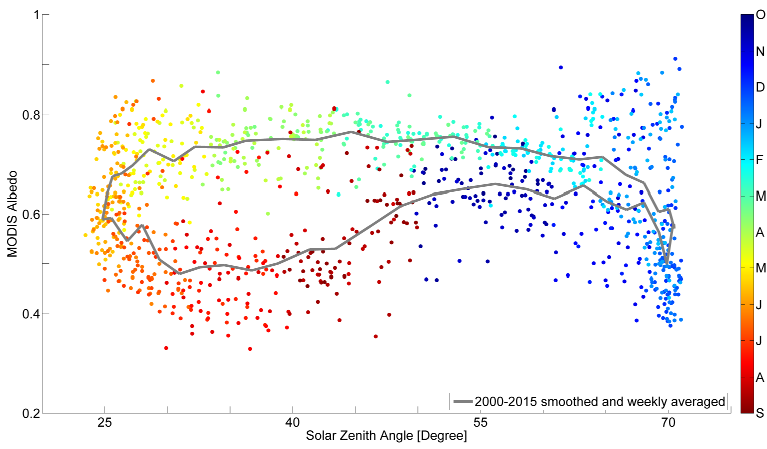
Figure S2: Argentiere



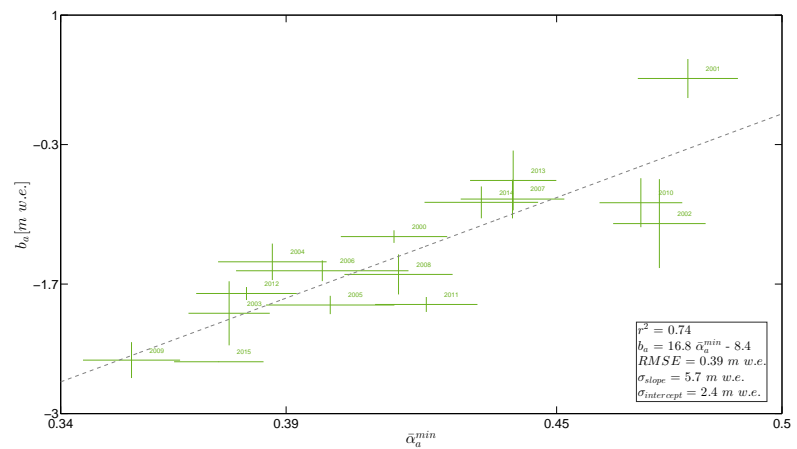
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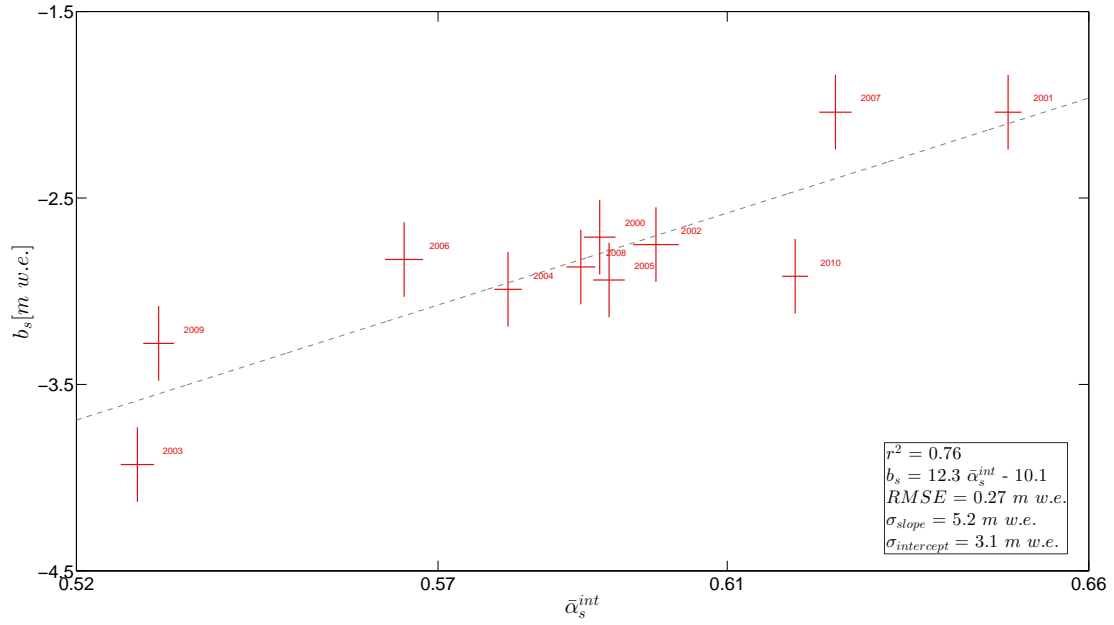
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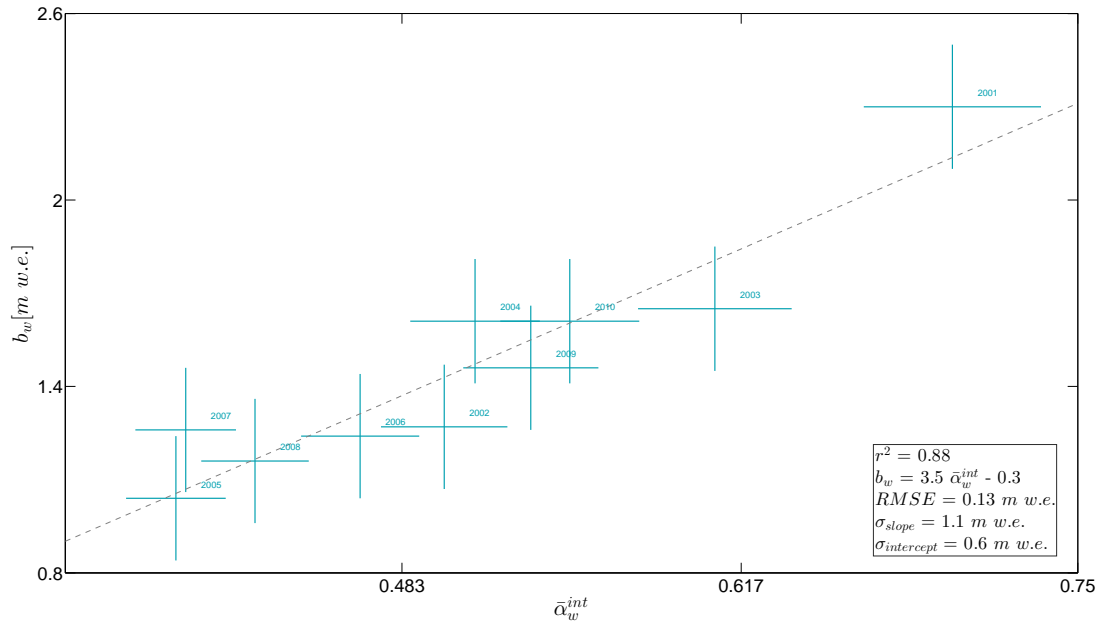
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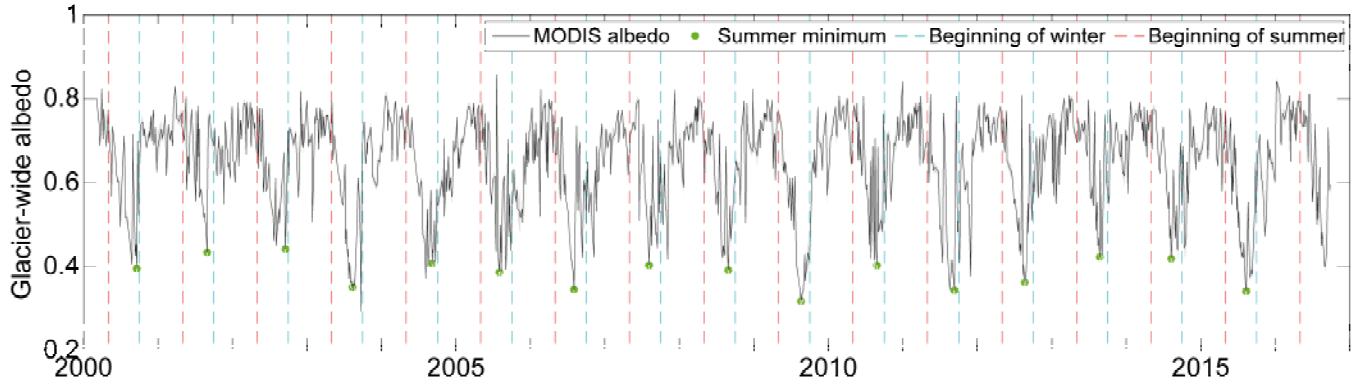
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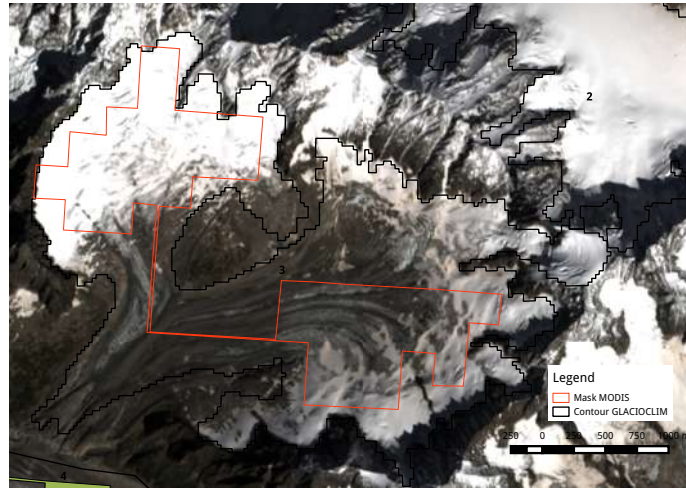
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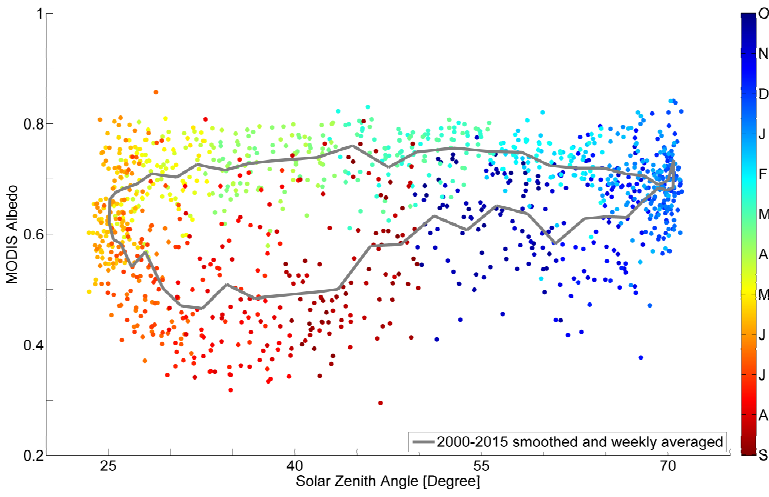
Figure S3: Taléfre



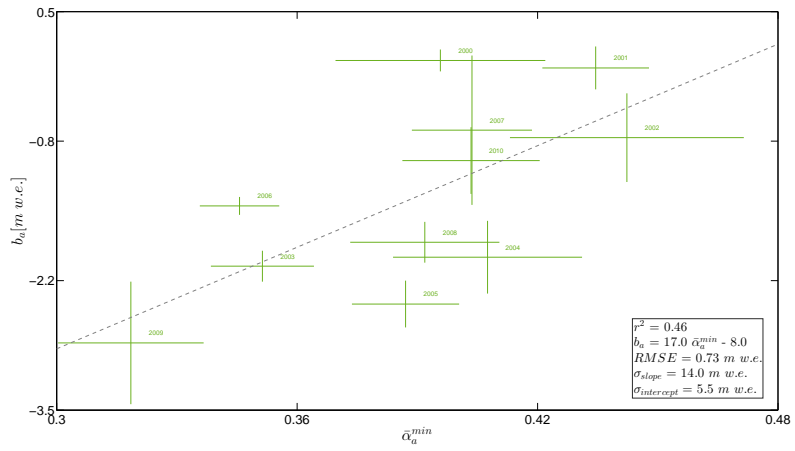
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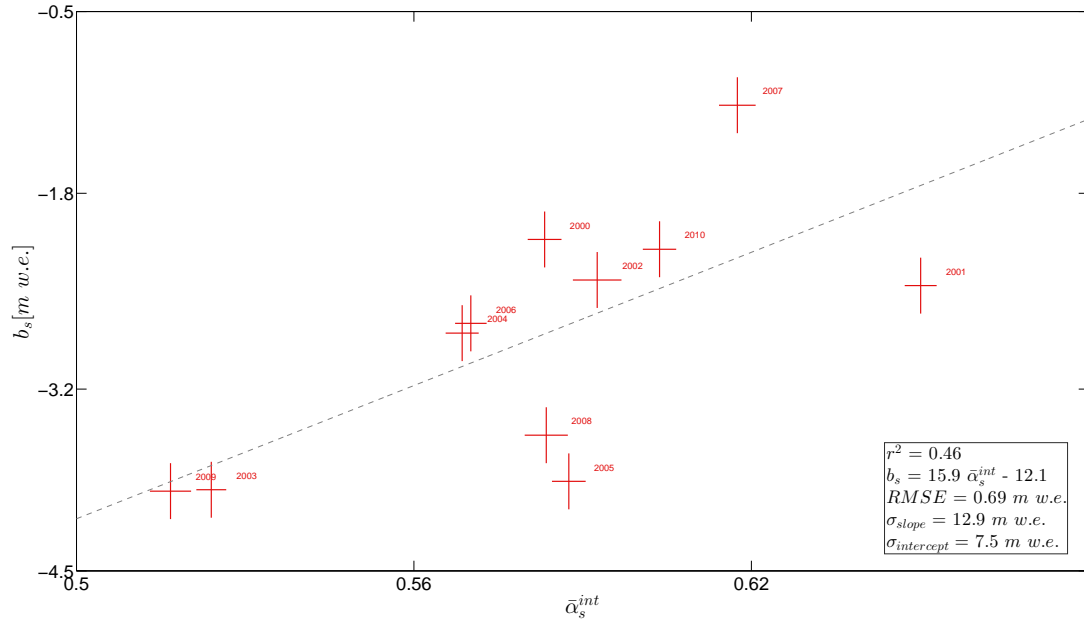
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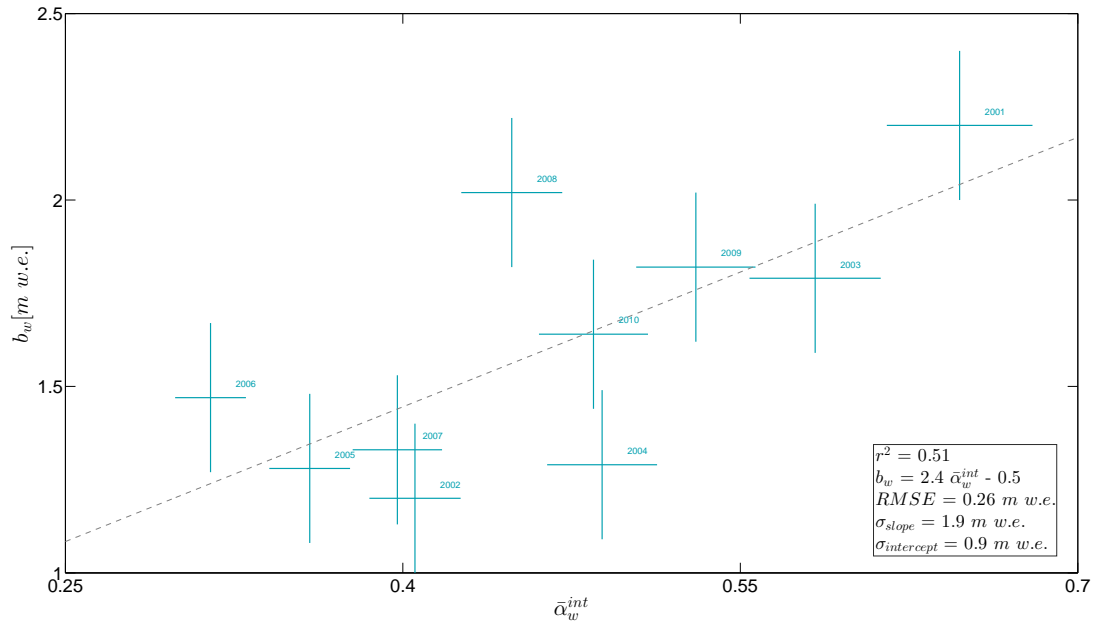
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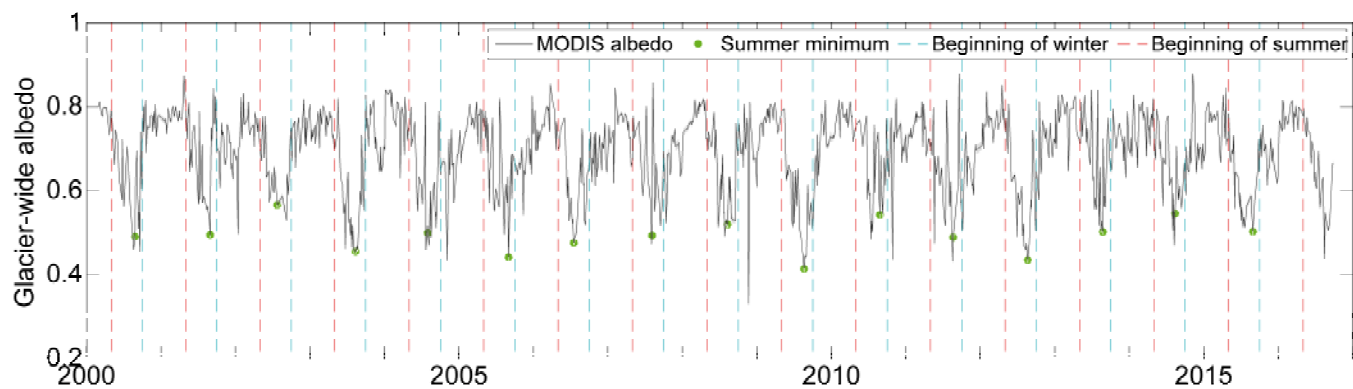


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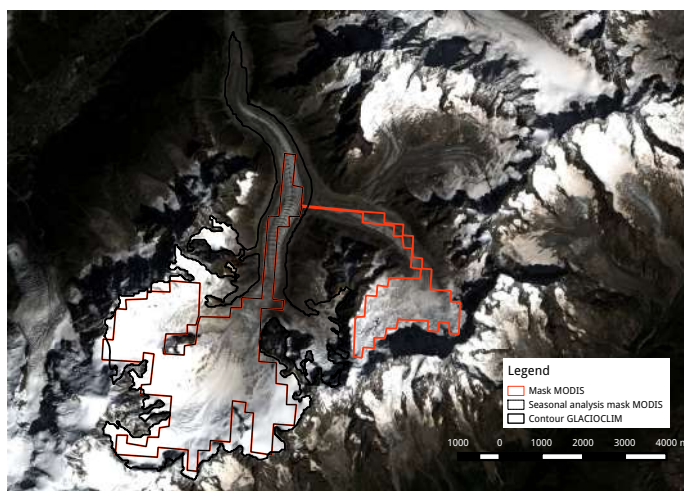


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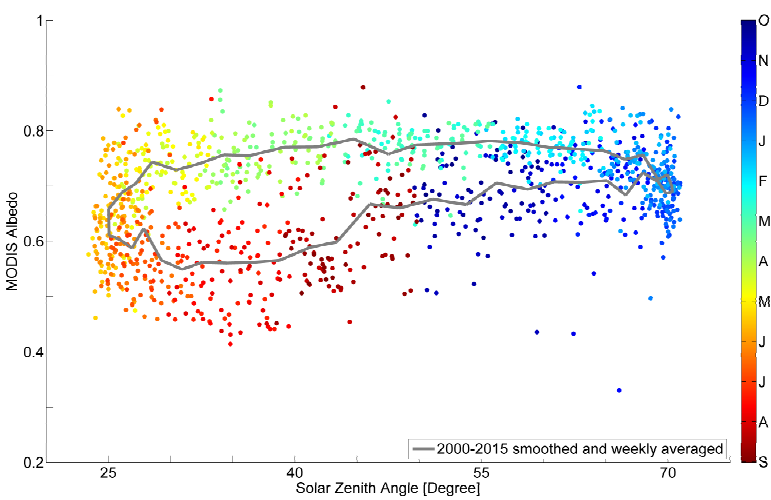
Figure S4: Mer de Glace



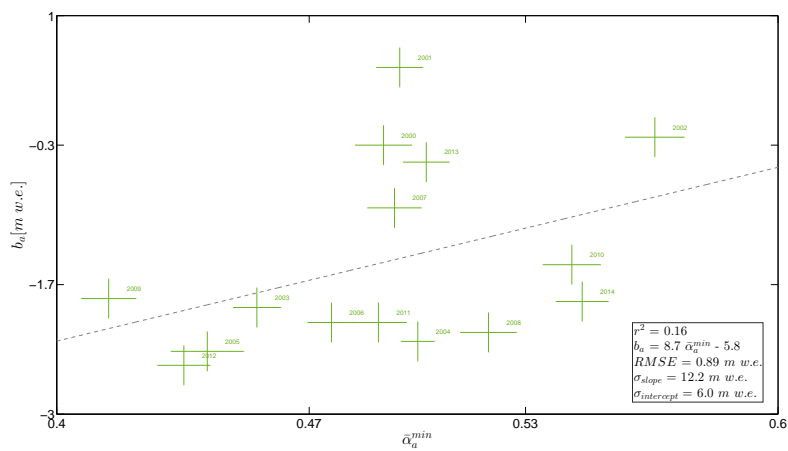
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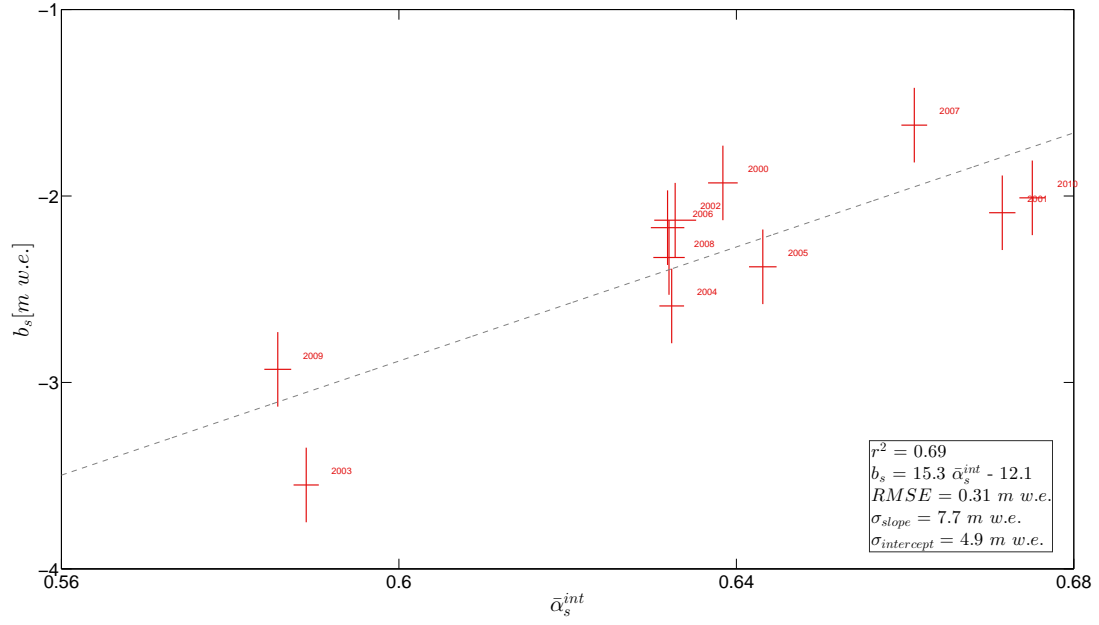
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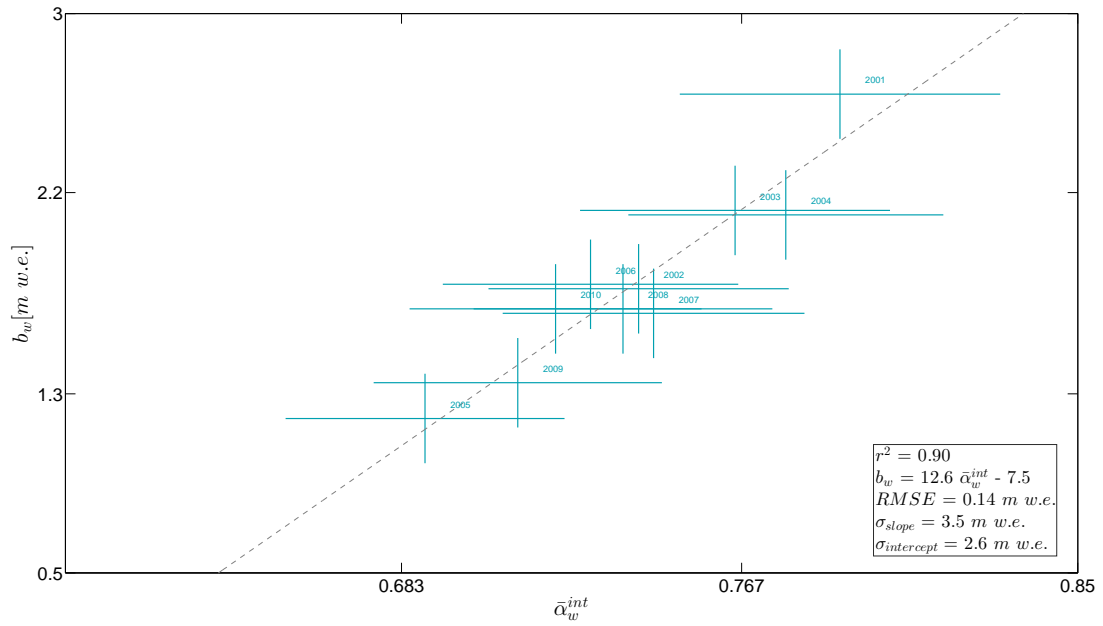
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(d)

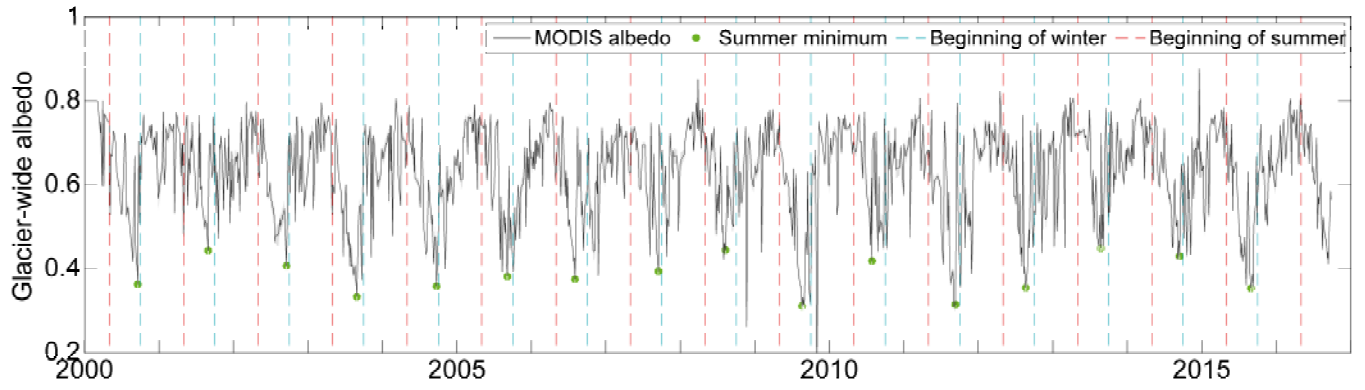


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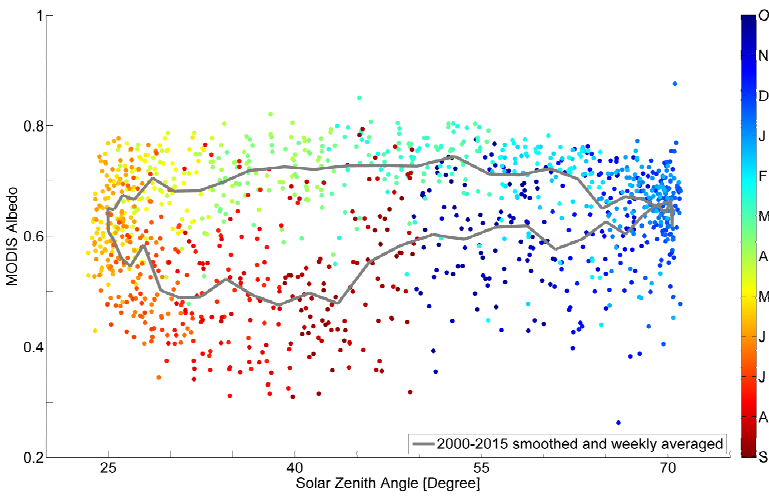
Figure S5: Tré la Tête



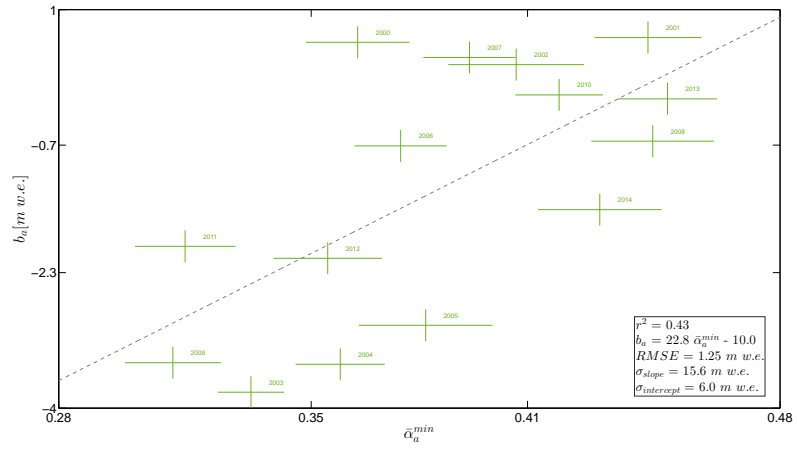
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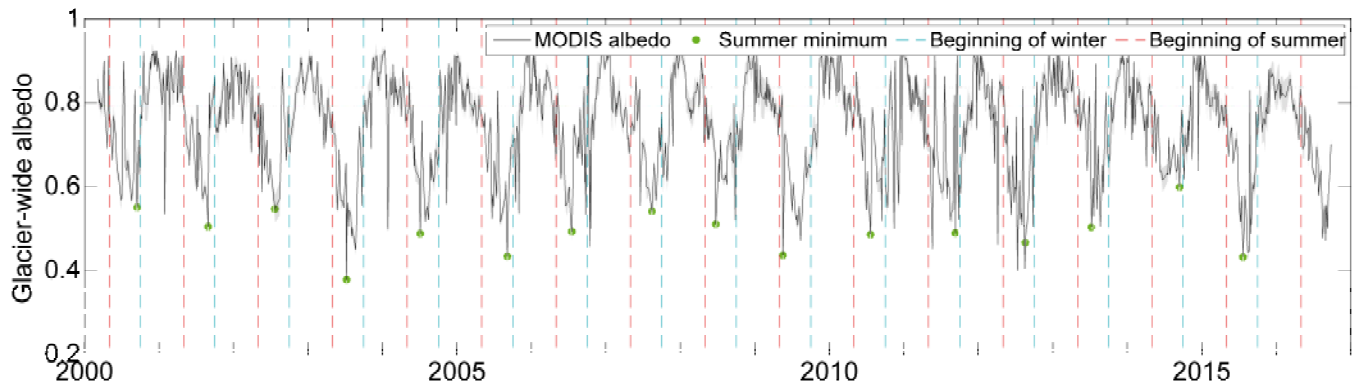


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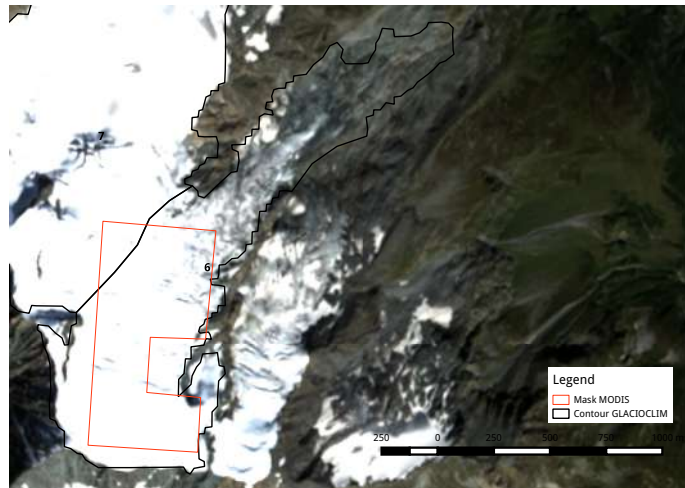


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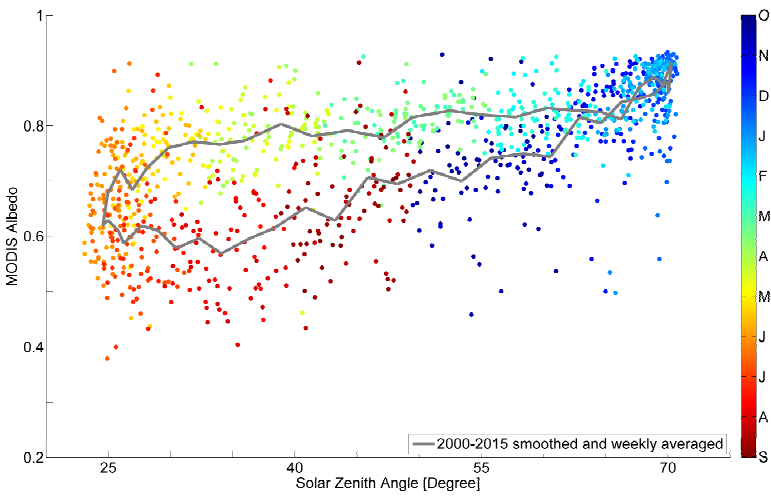
Figure S6: Savinaz



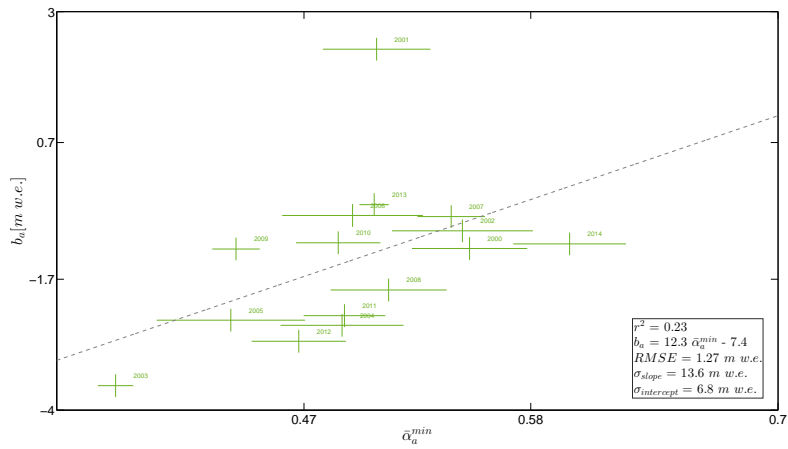
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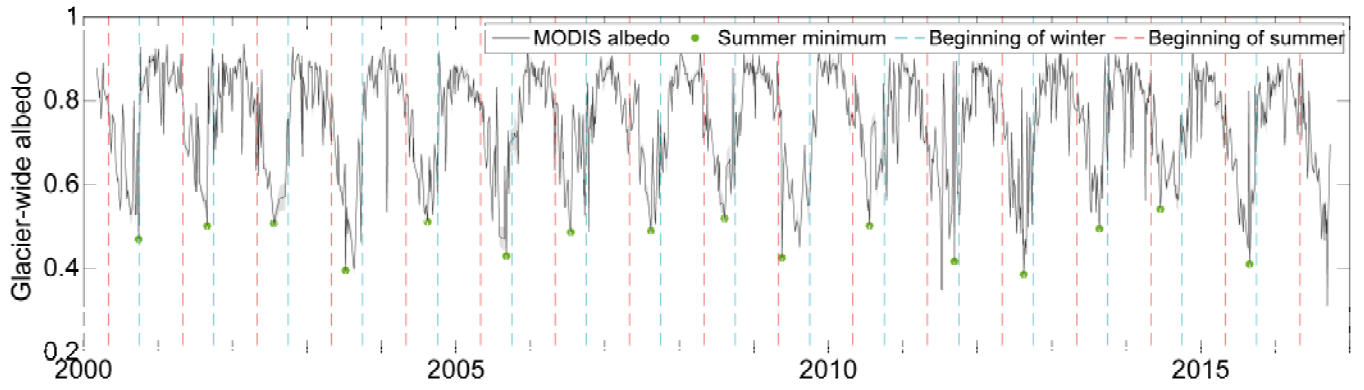


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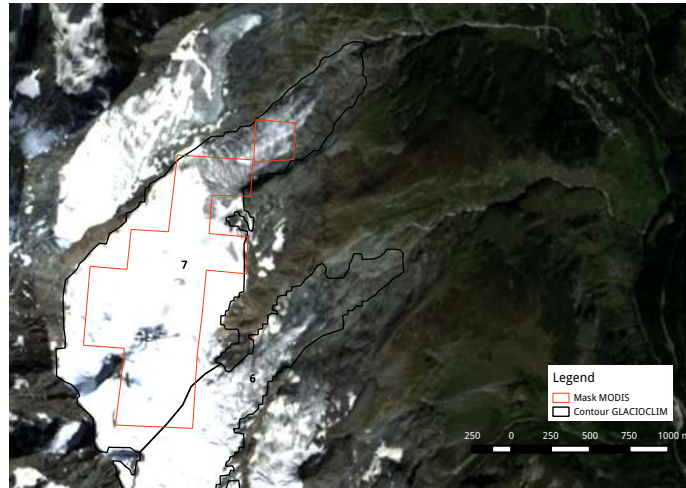


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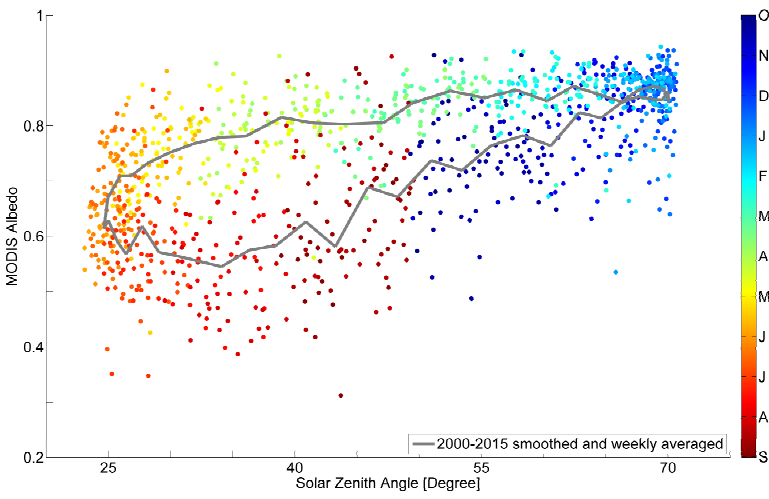
Figure S7: Gurratz



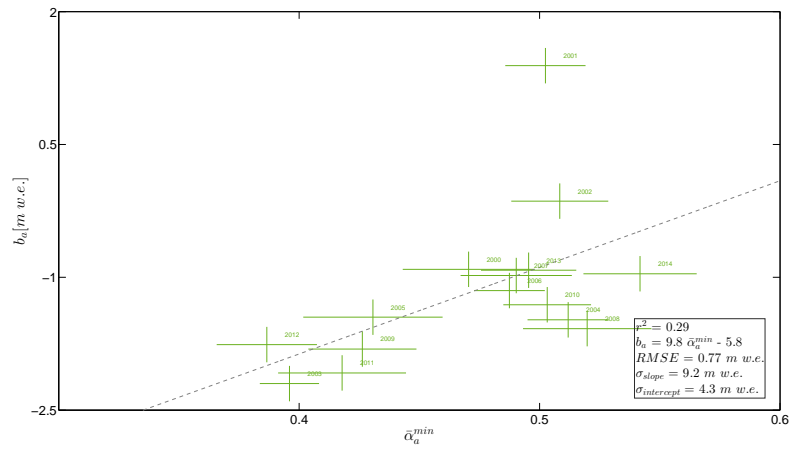
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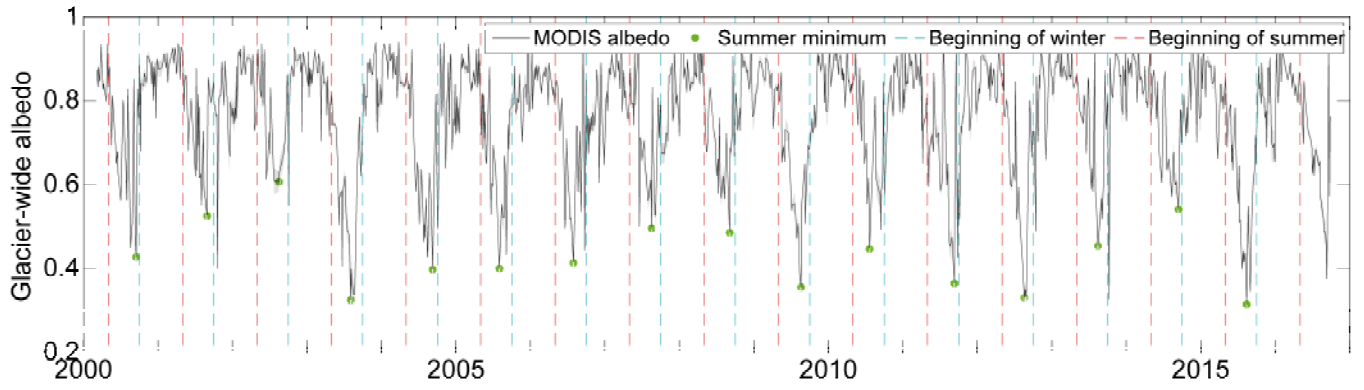
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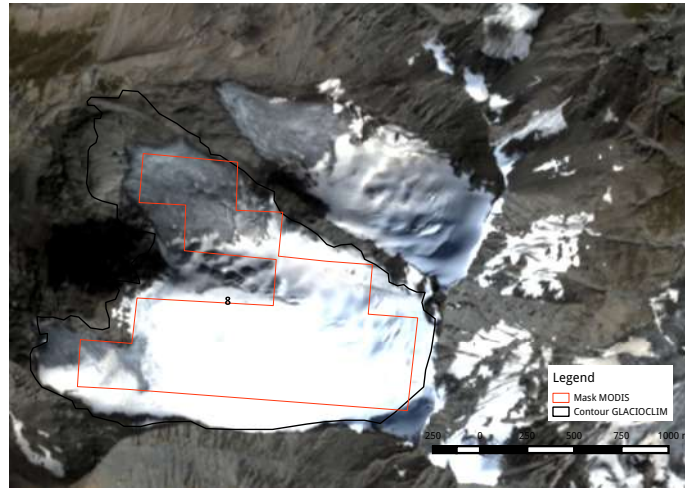
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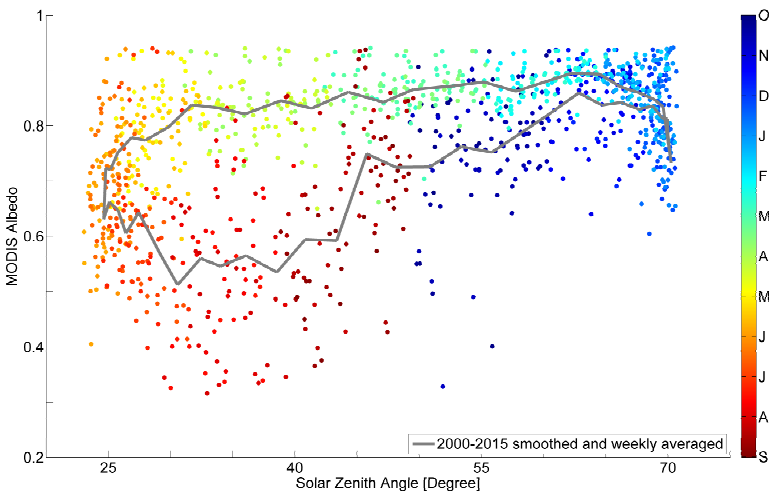
Figure S8: Sassièrè



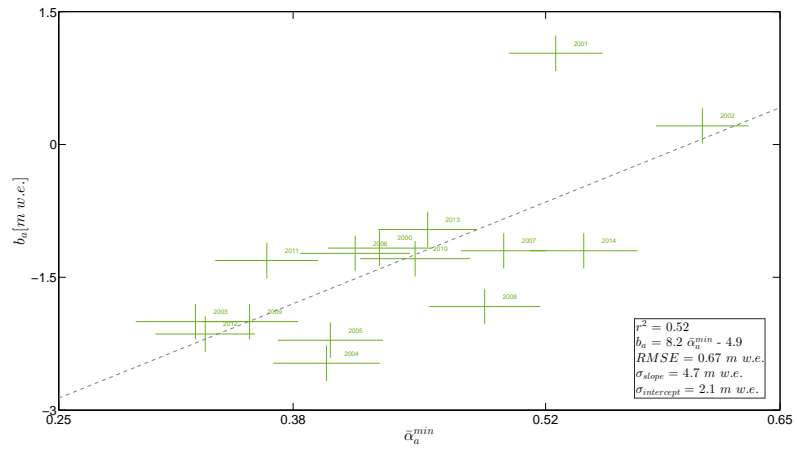
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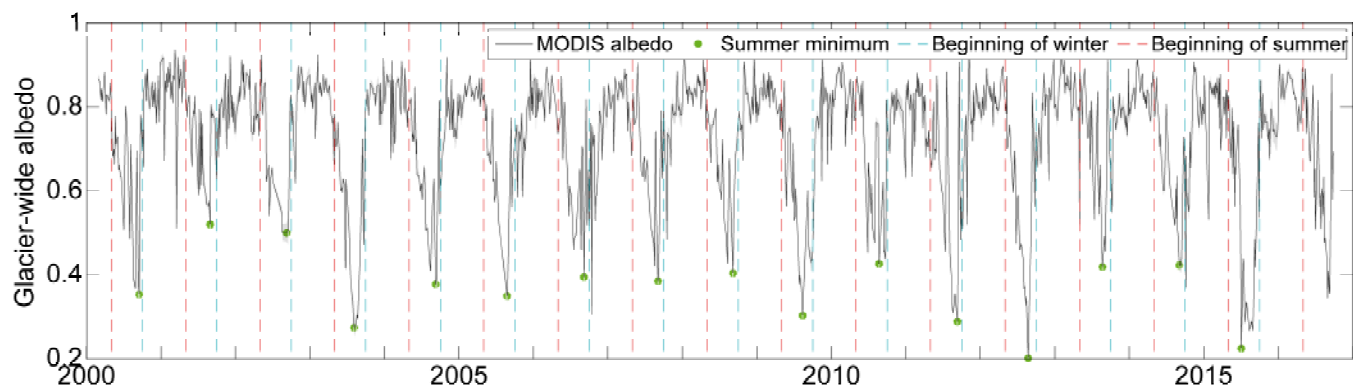
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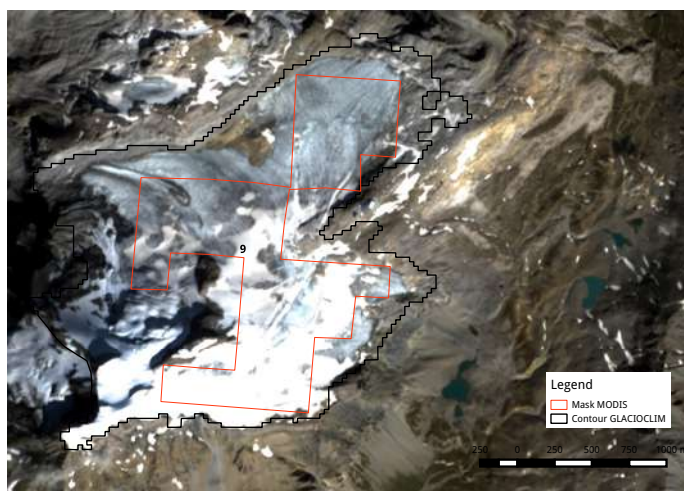
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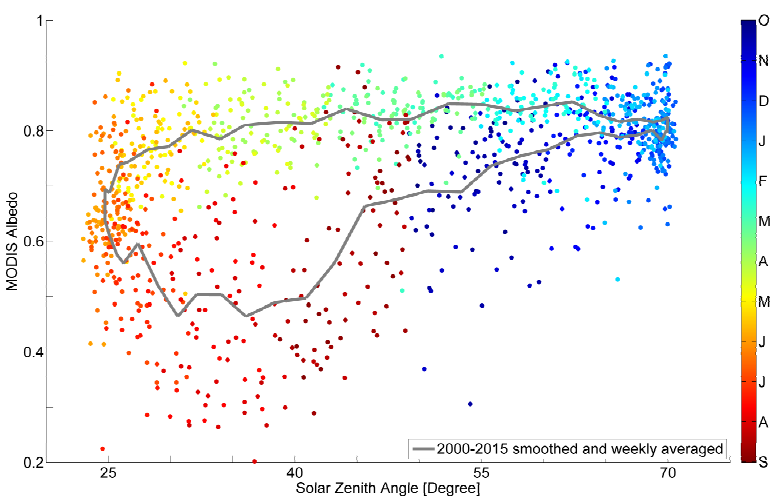
Figure S9: Grande Motte



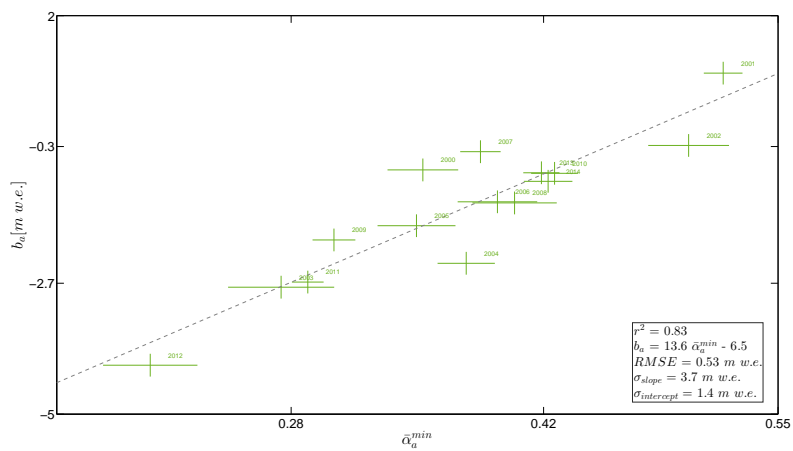
(a)



(b)

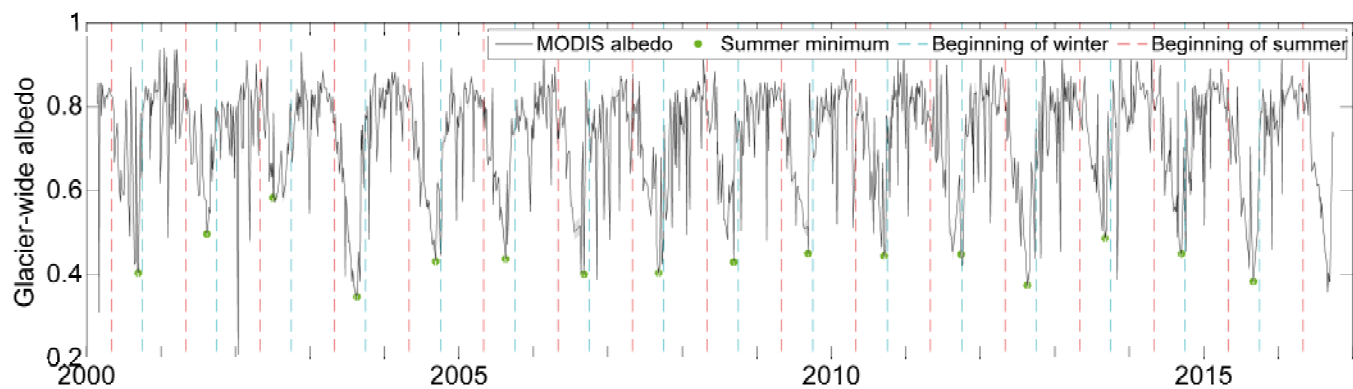


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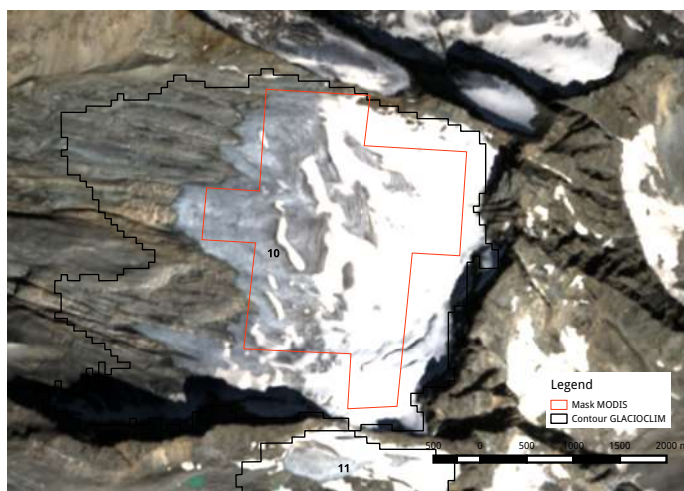


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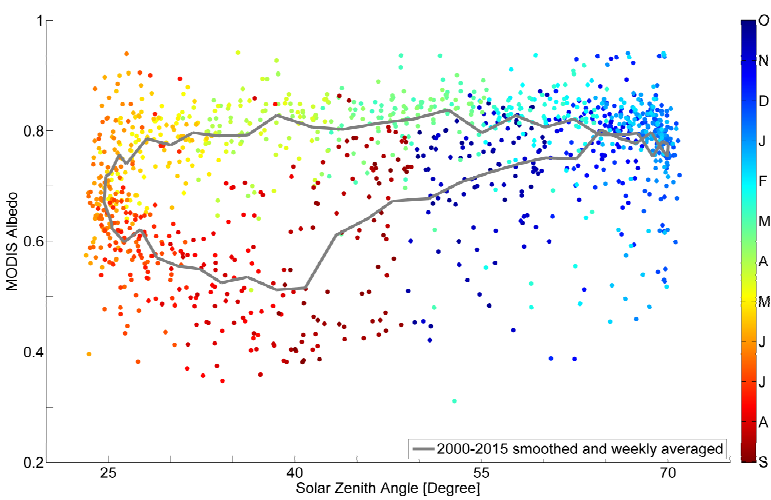
Figure S10: Mulinet



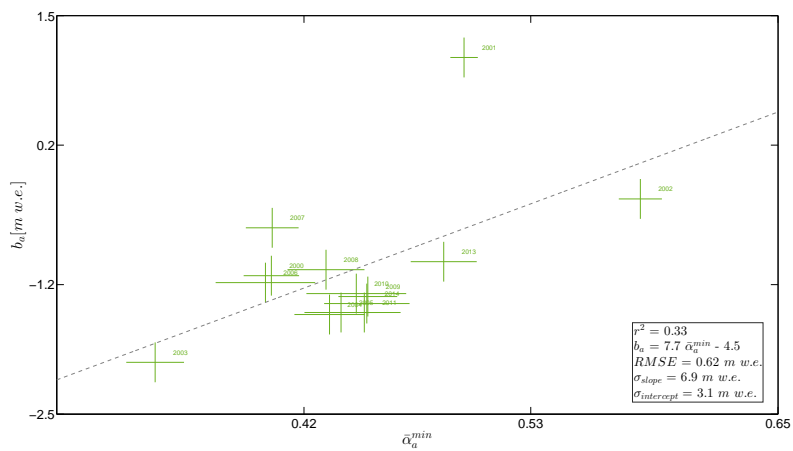
(a)



(b)

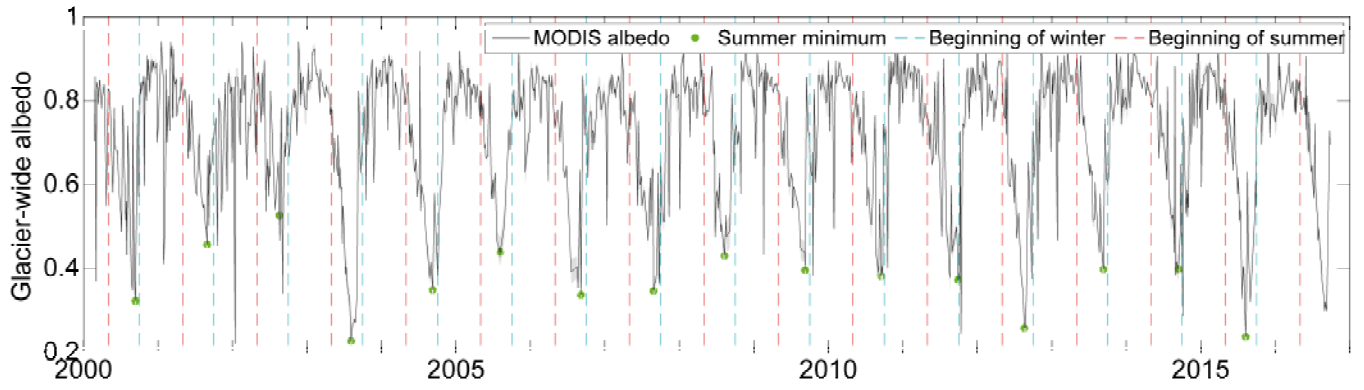


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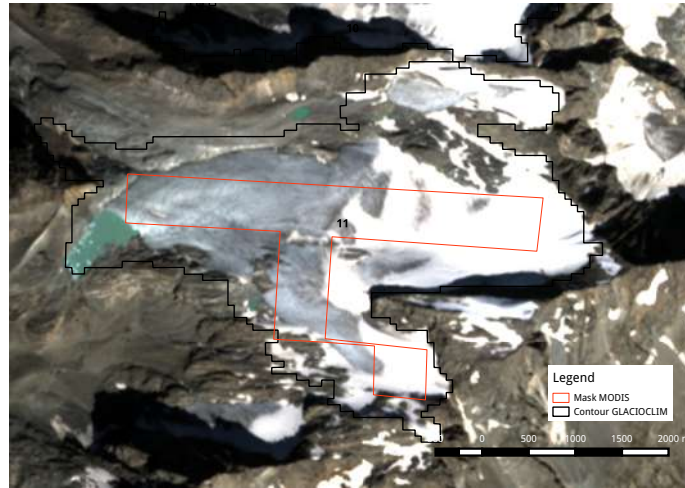


(d)

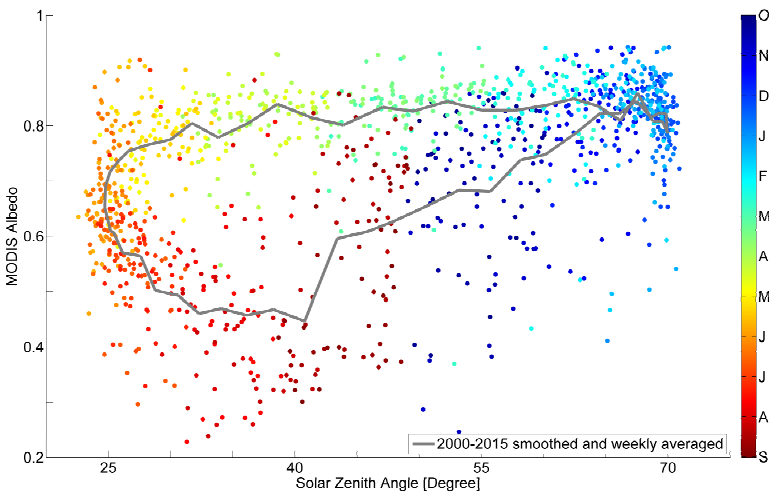
Figure S11: Grand Méan



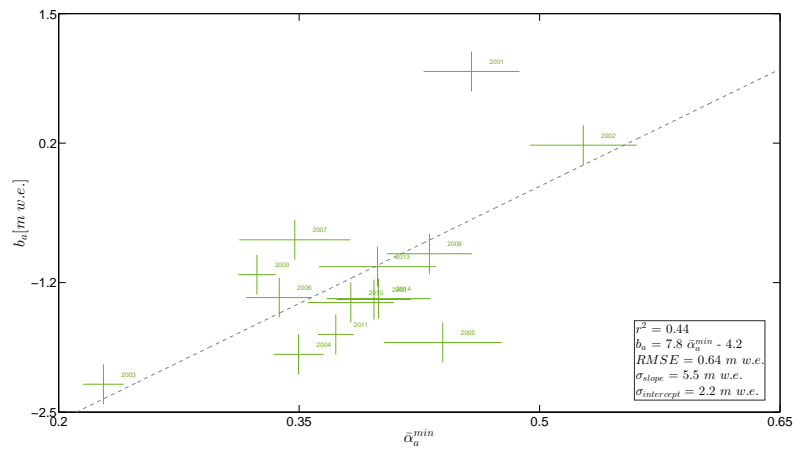
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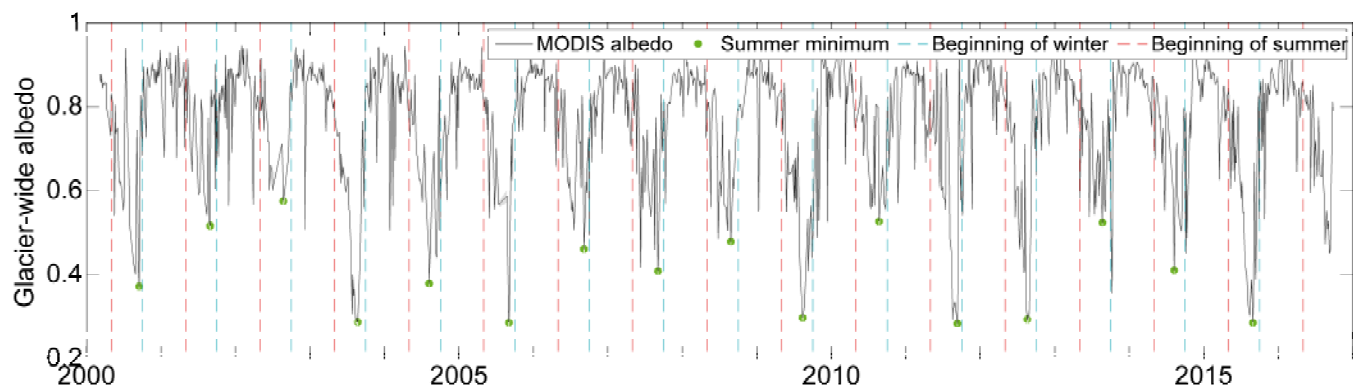


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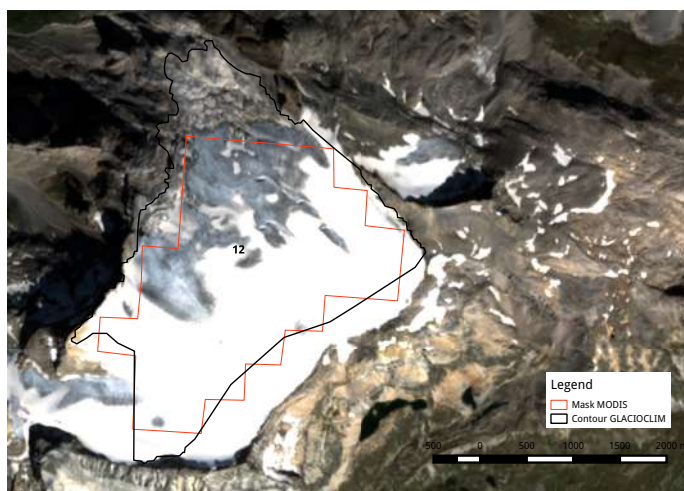


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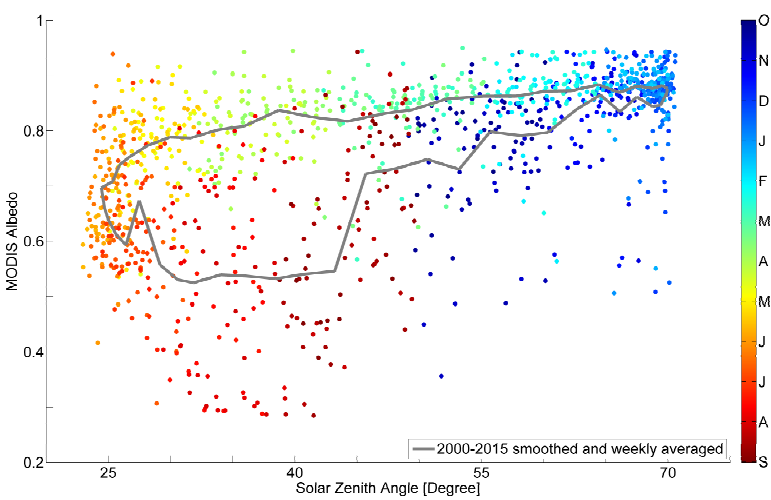
Figure S12: Arcelin



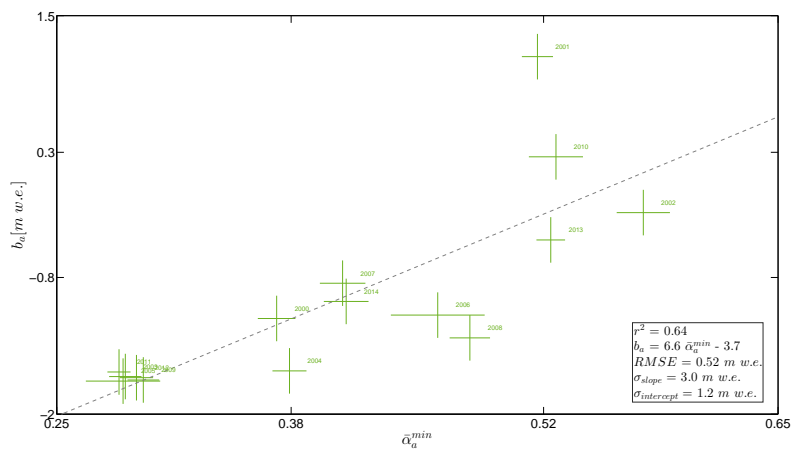
(a)



(b)

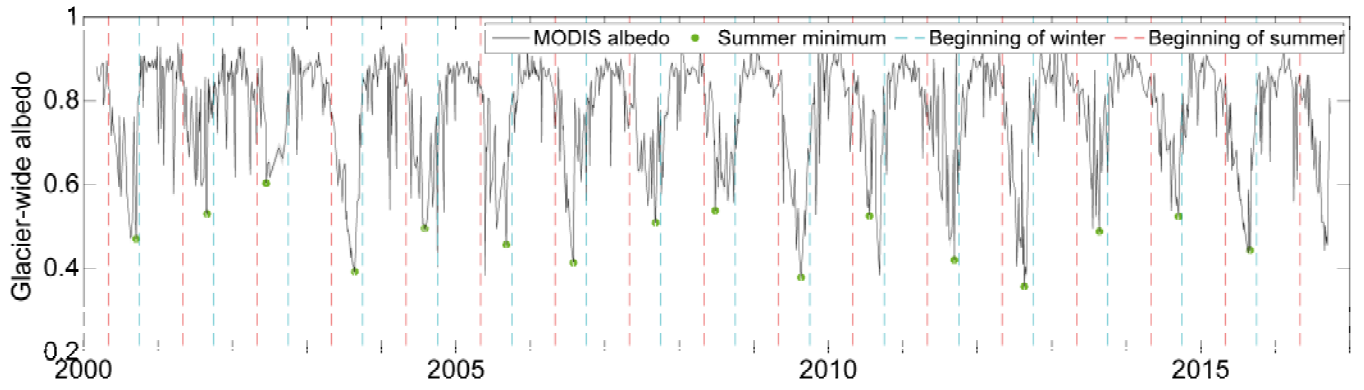


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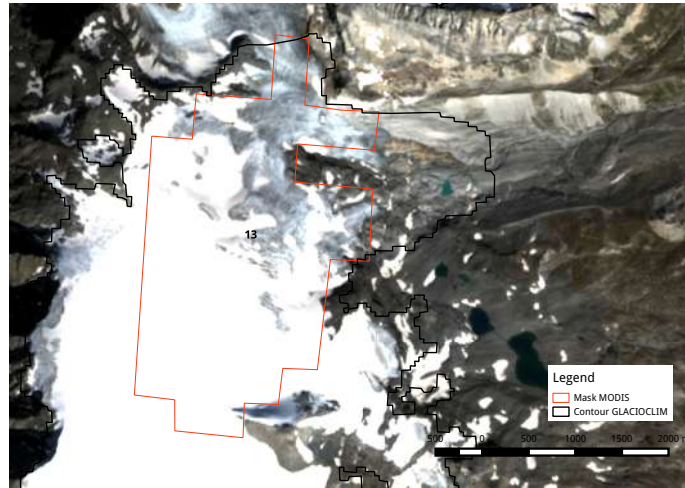


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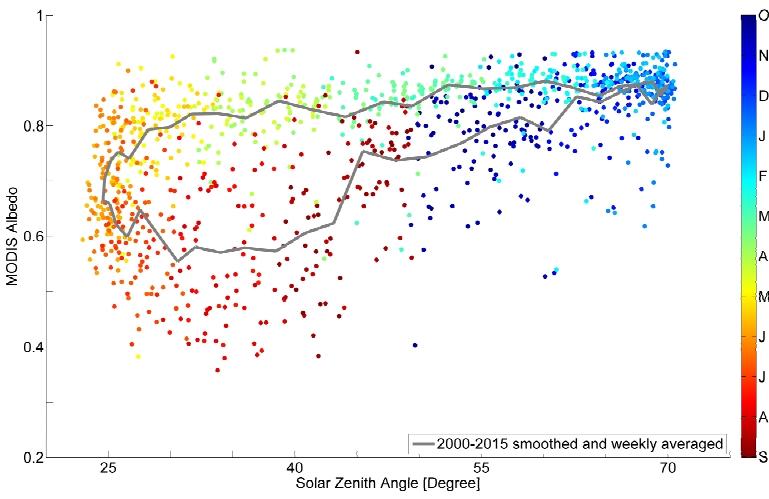
Figure S13: Pelve



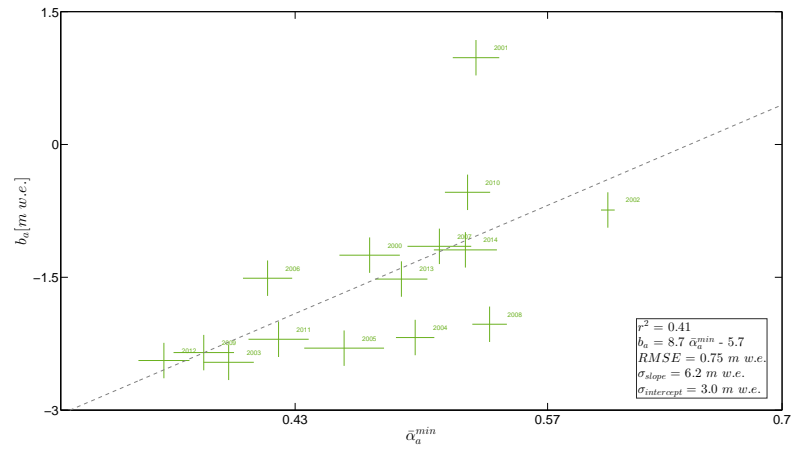
(a)



(b)



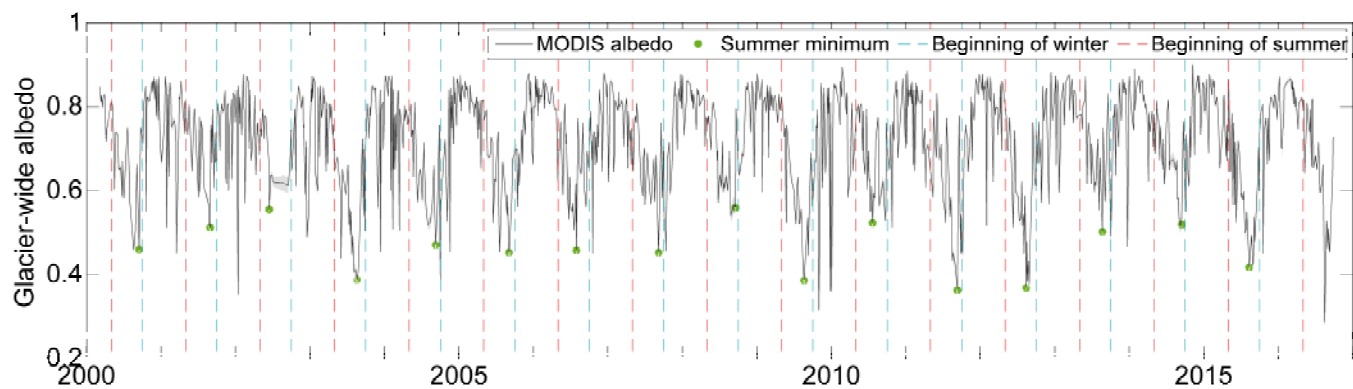
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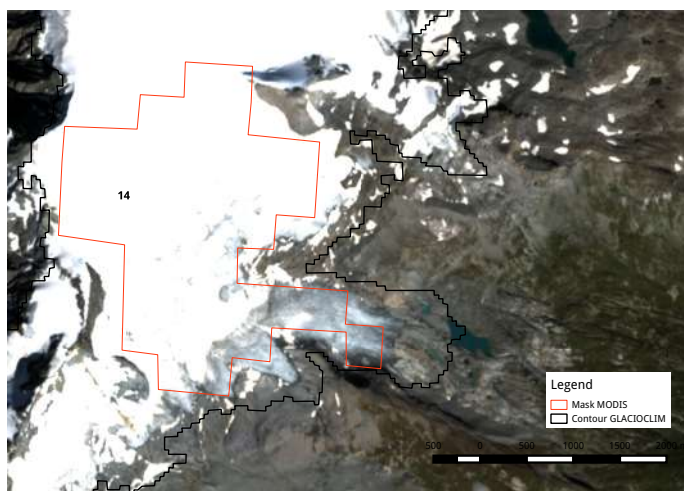
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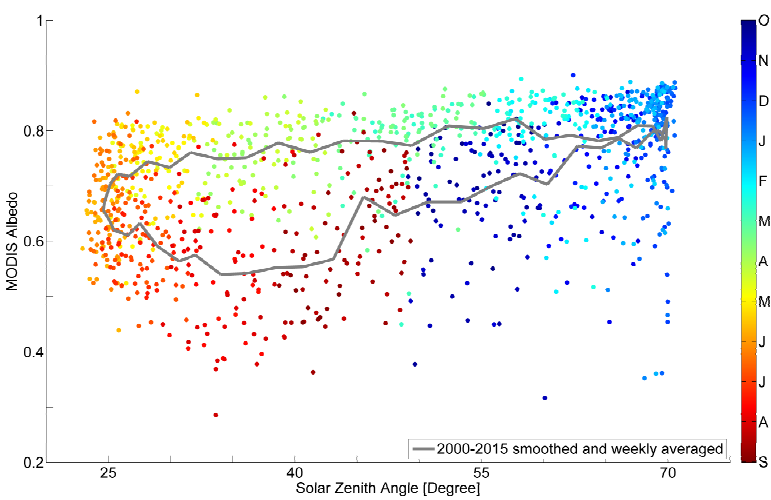
Figure S14: Arpont



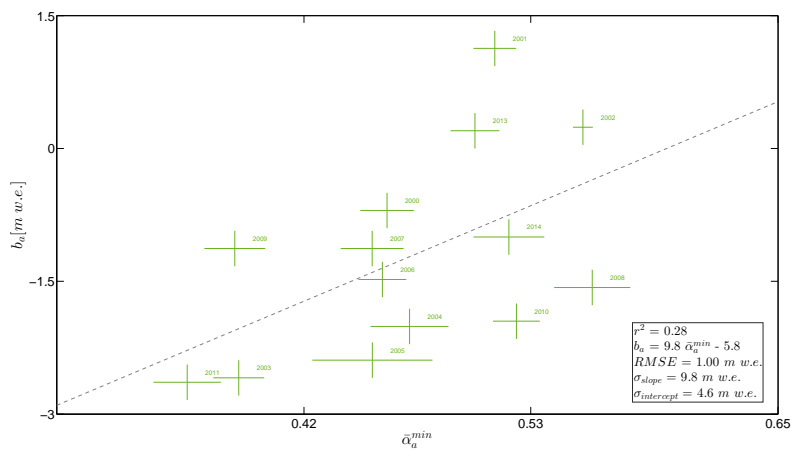
(a)



(b)

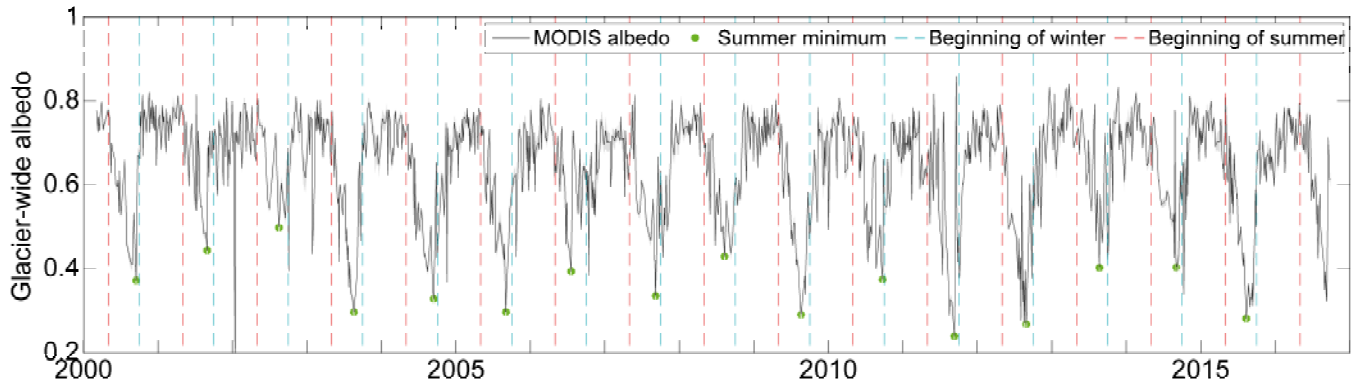


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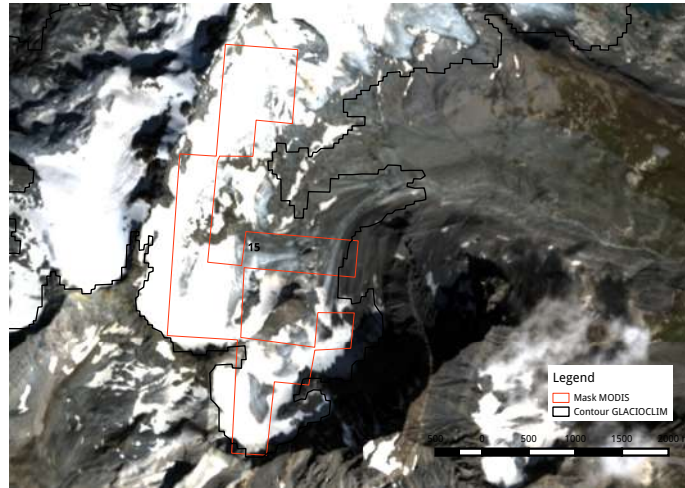


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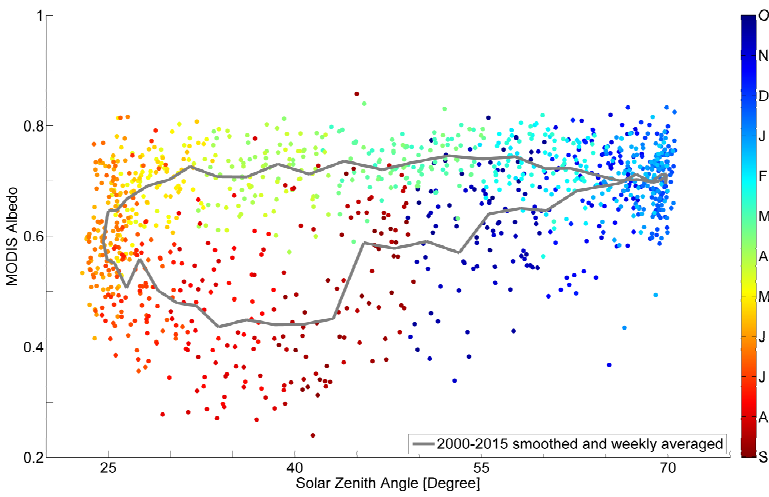
Figure S15: Mahure



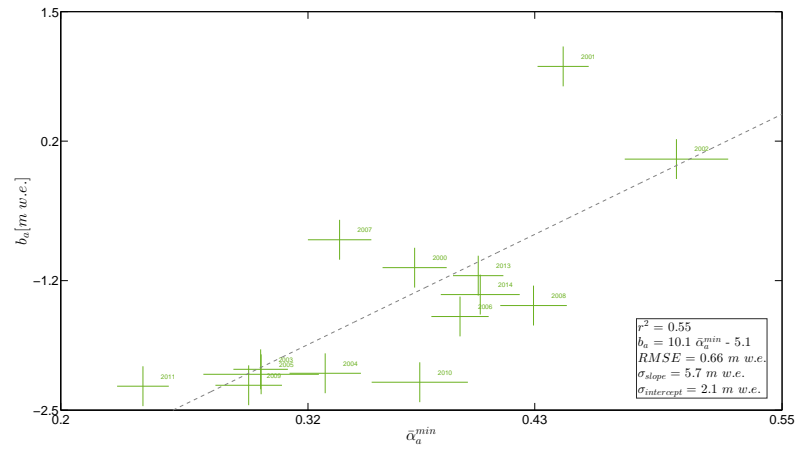
(a)



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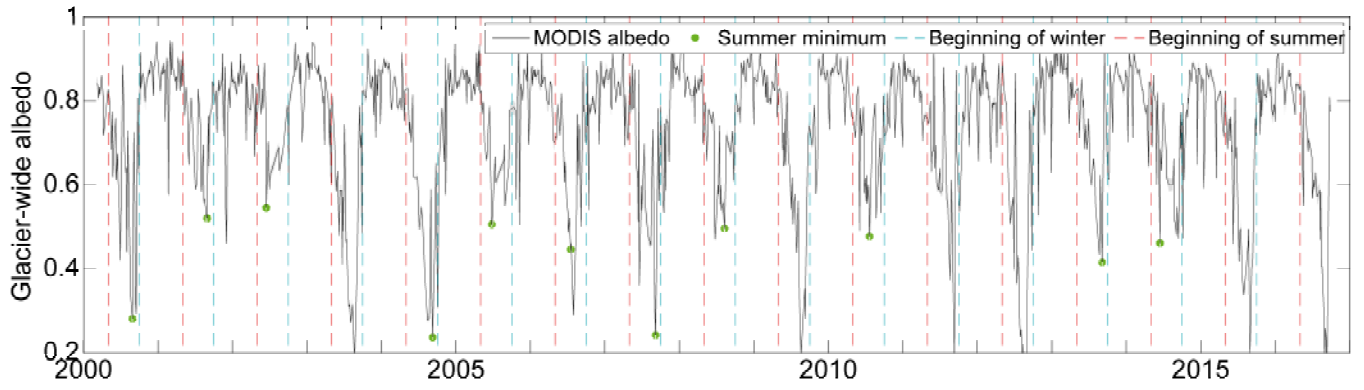


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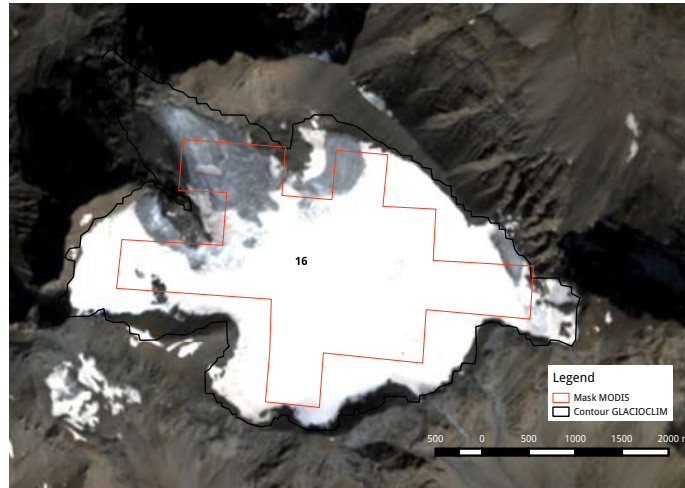


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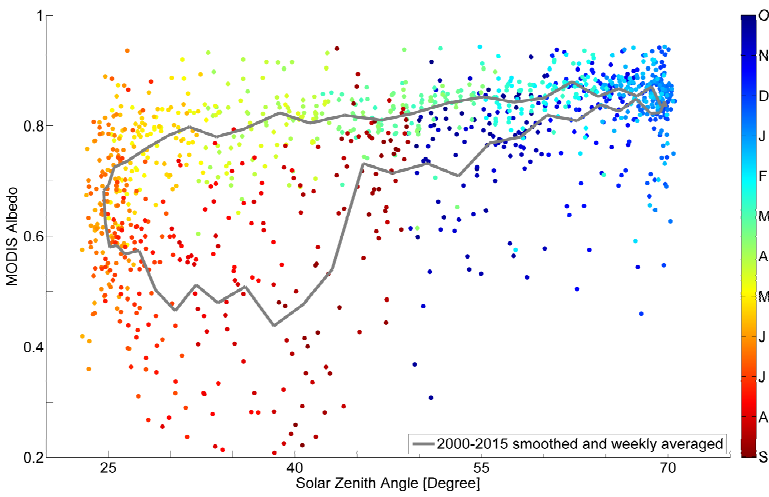
Figure S16: Vallonnet



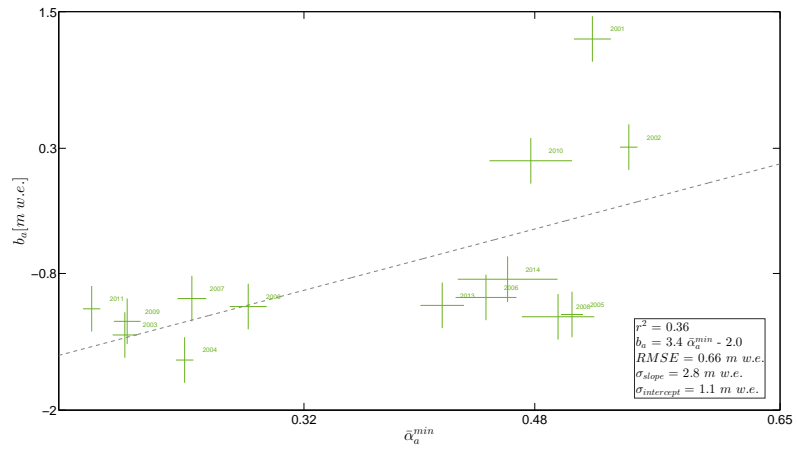
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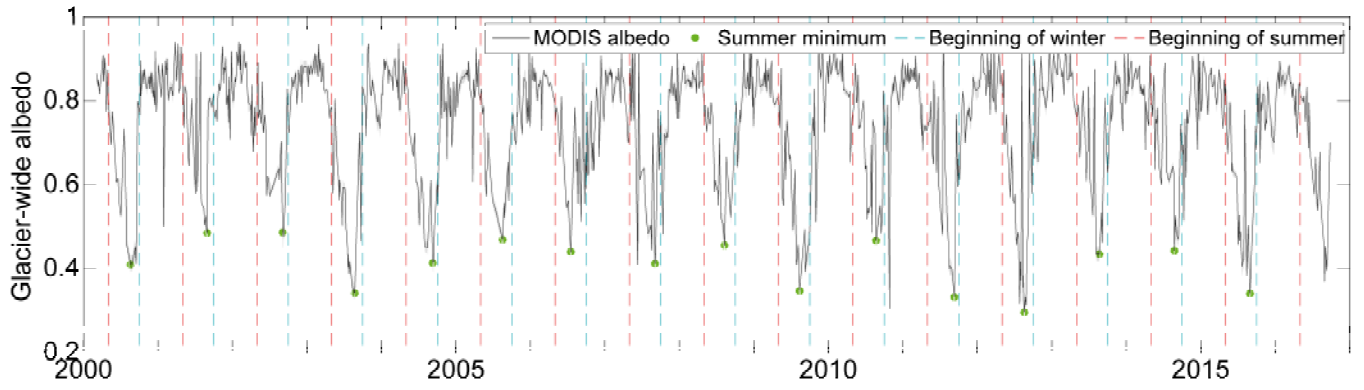
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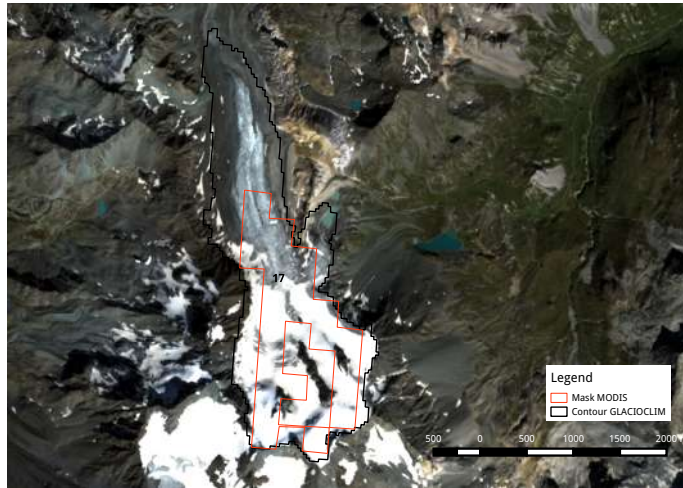
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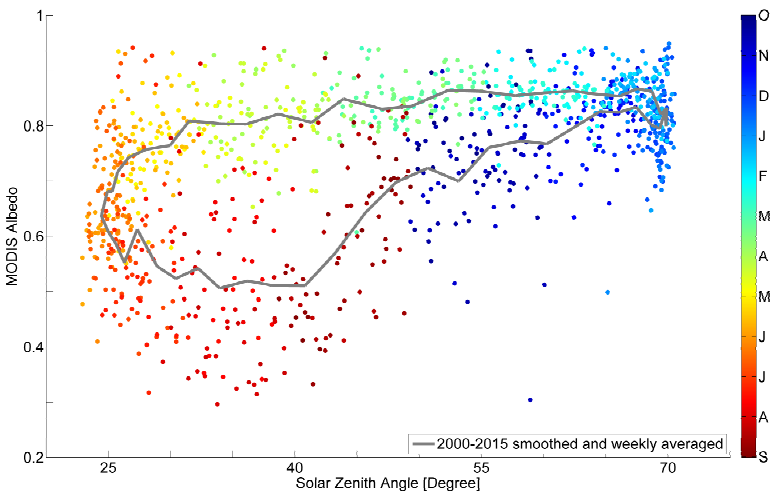
Figure S17: Gebroulaz



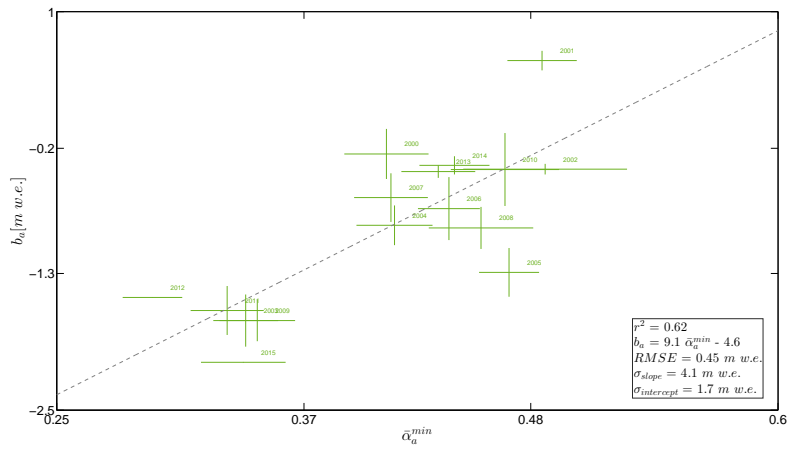
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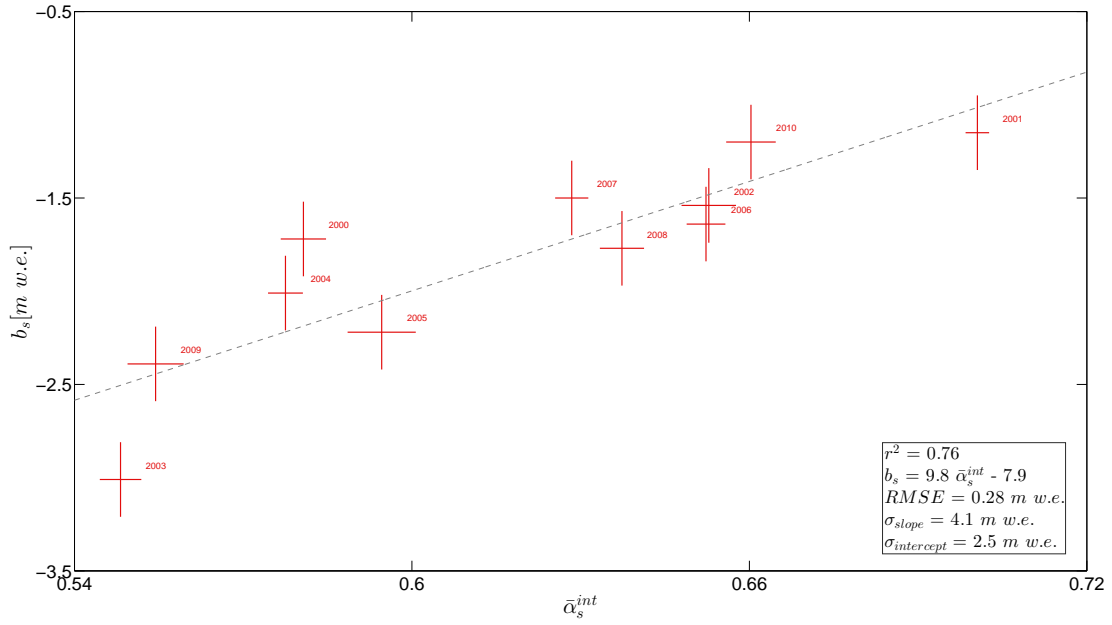
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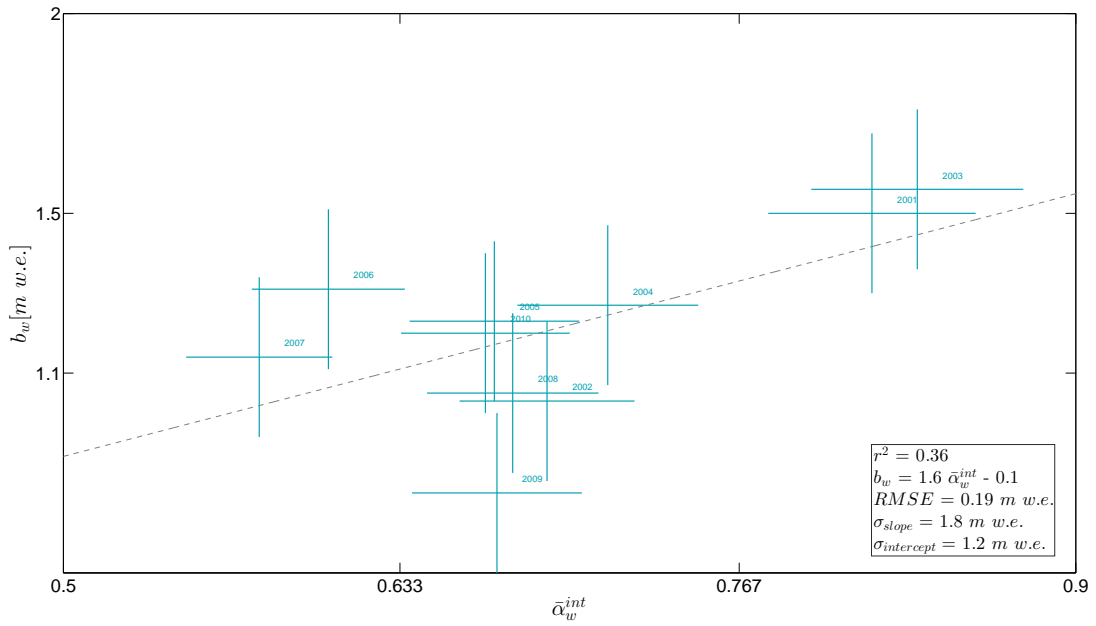
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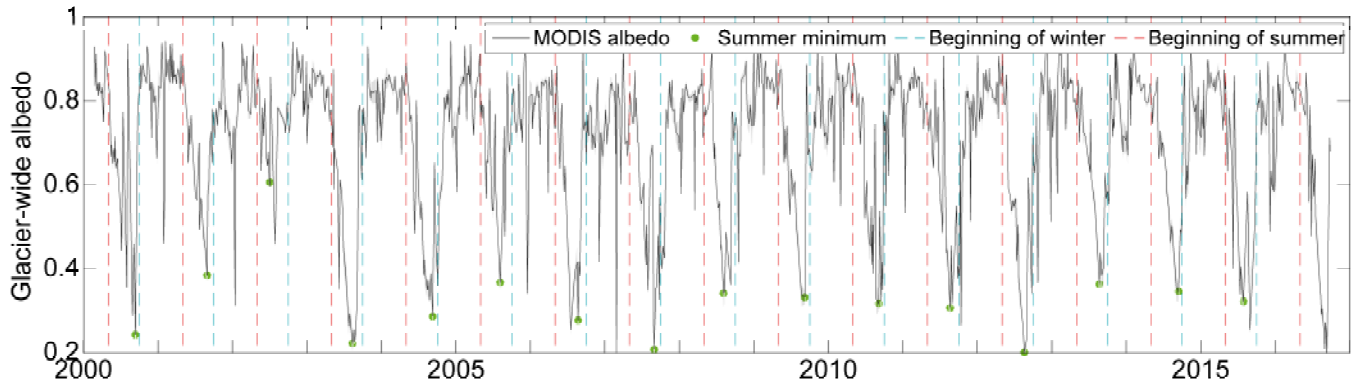


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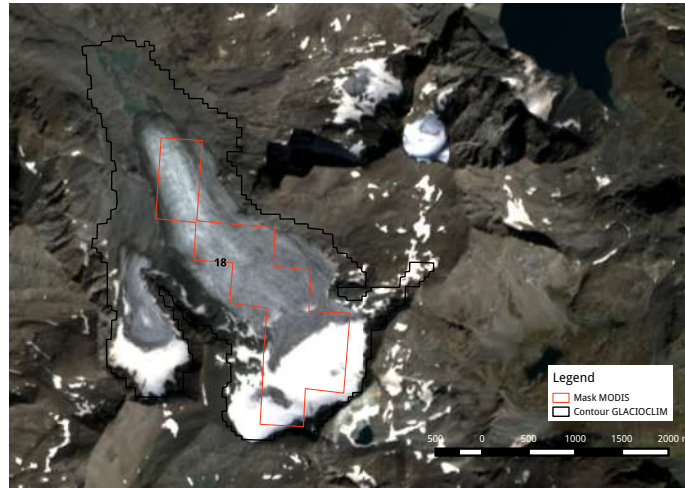


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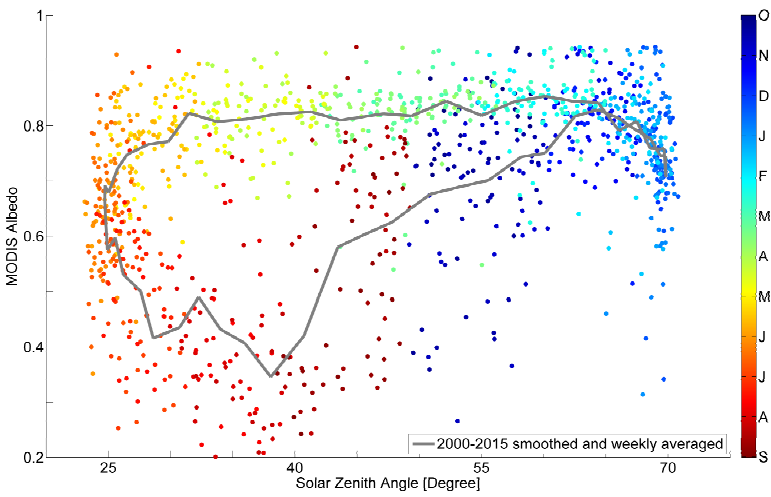
Figure S18: Baounet



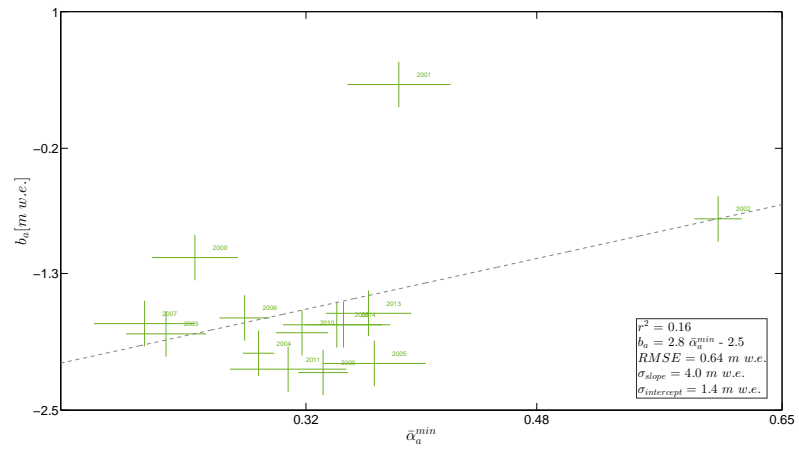
(a)



(b)

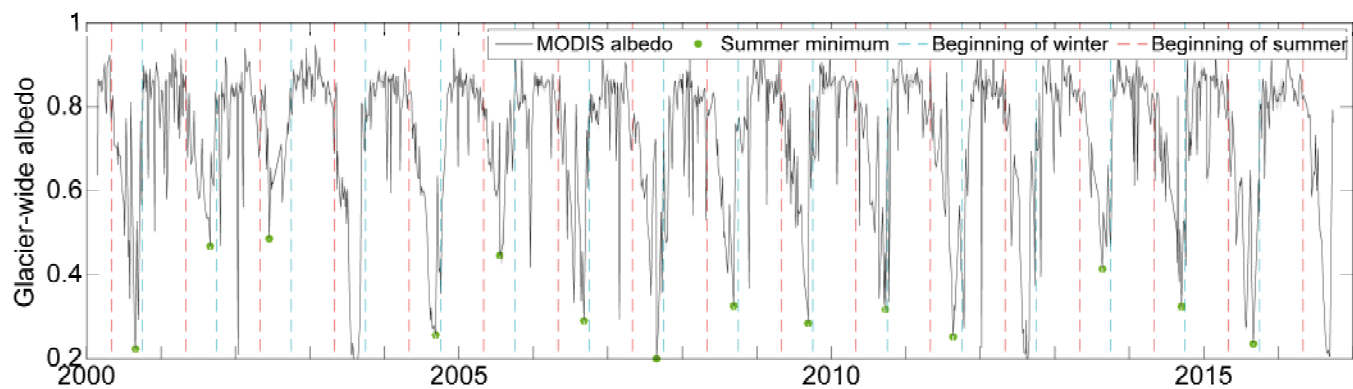


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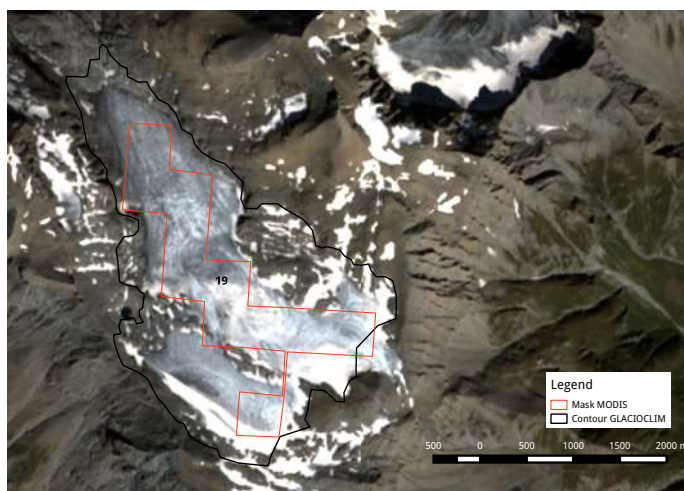


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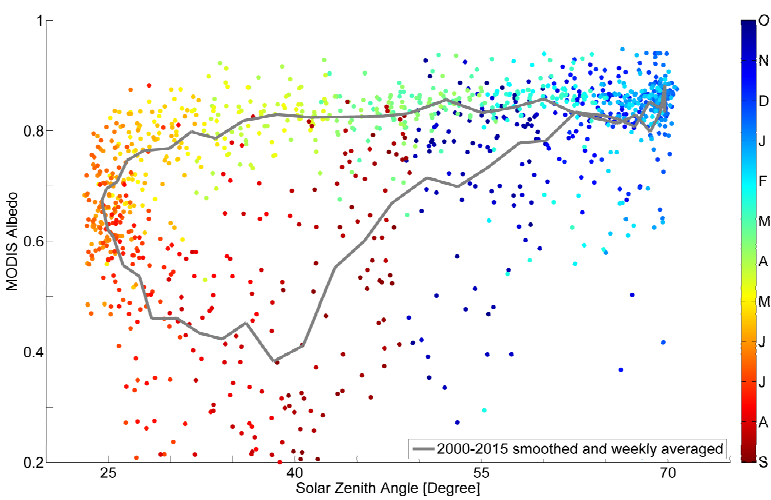
Figure S19: Rochemelon



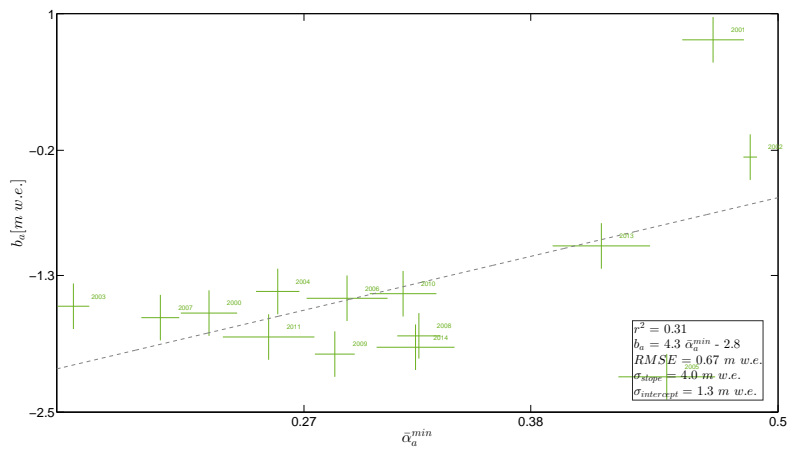
(a)



(b)

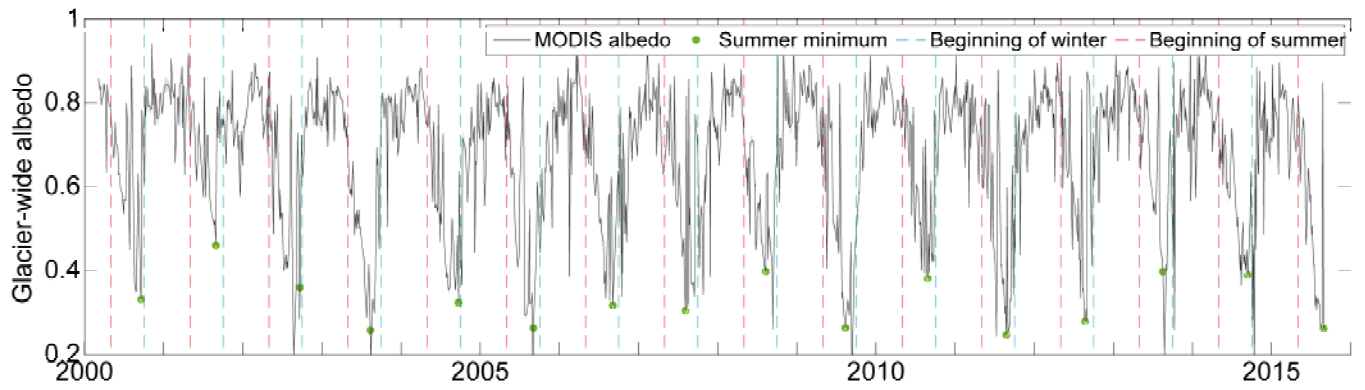


(c)

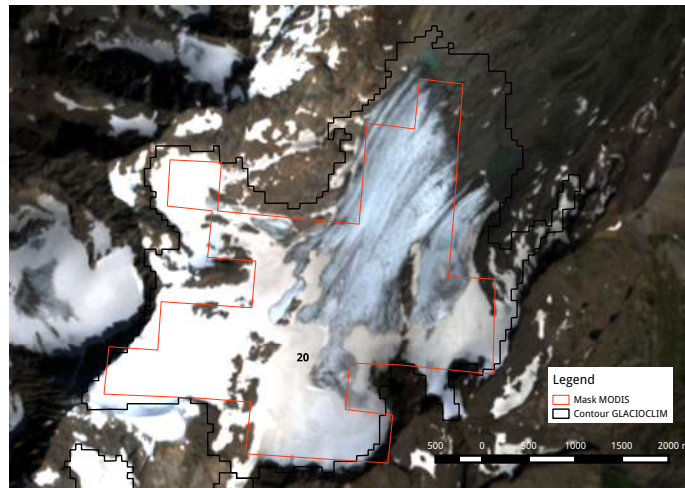


(d)

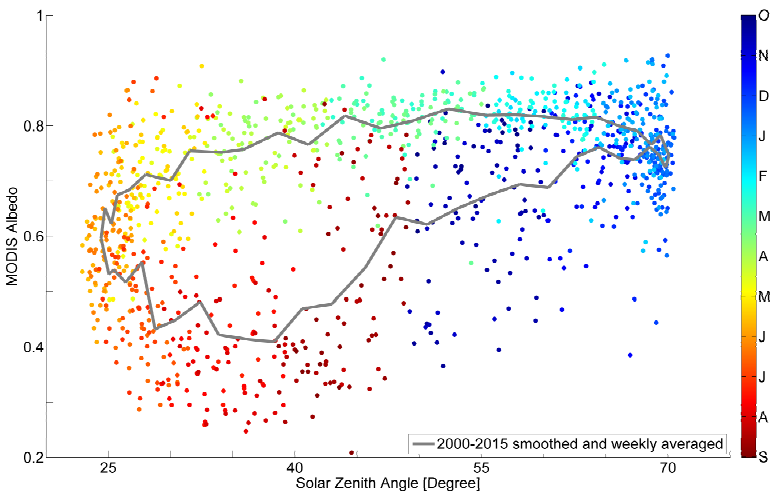
Figure S20: Saint-Sorlin



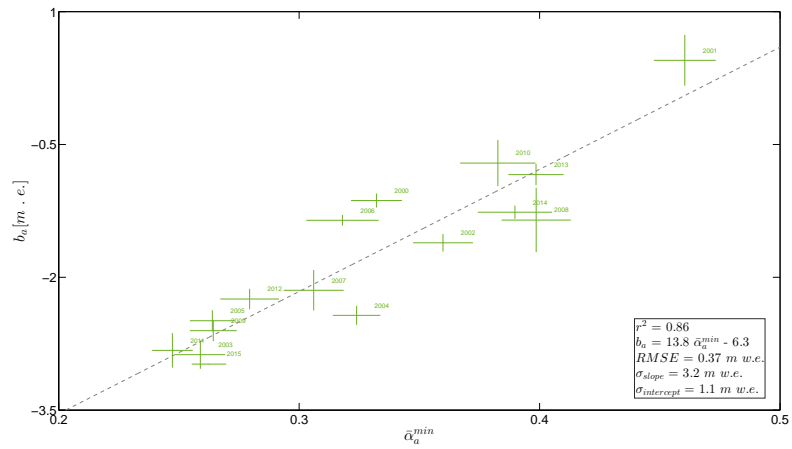
(a)



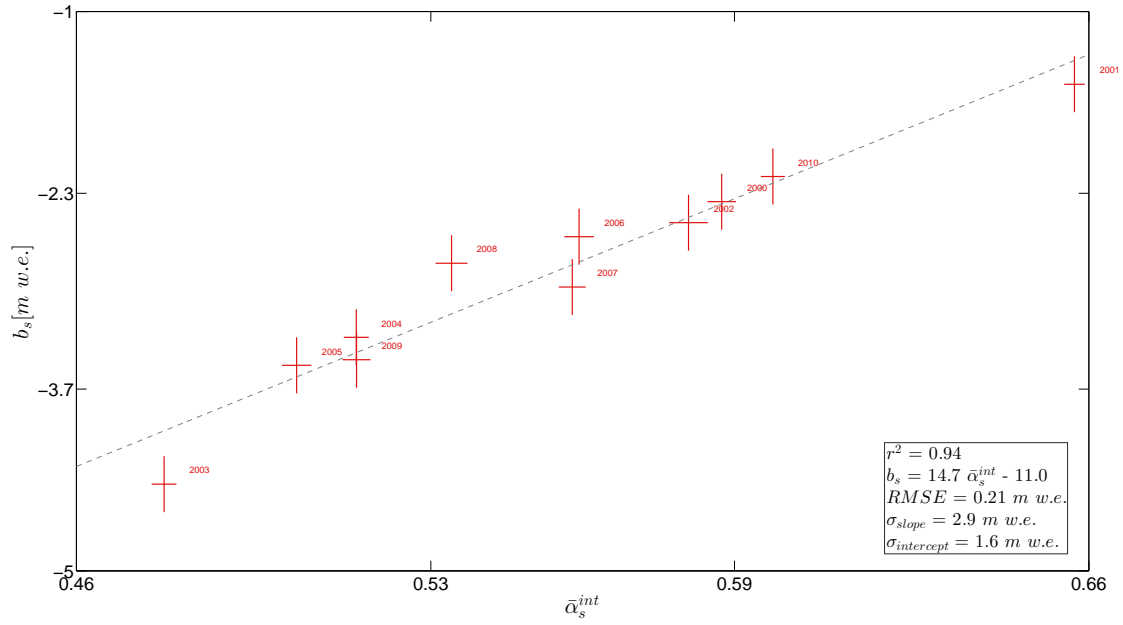
(b)



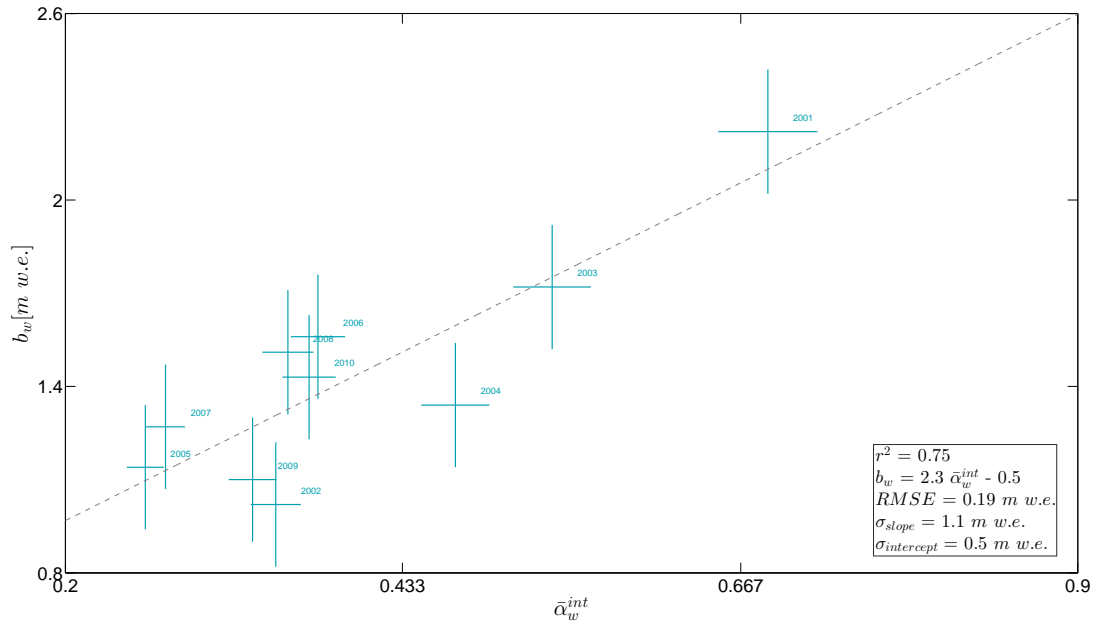
(c)



(d)

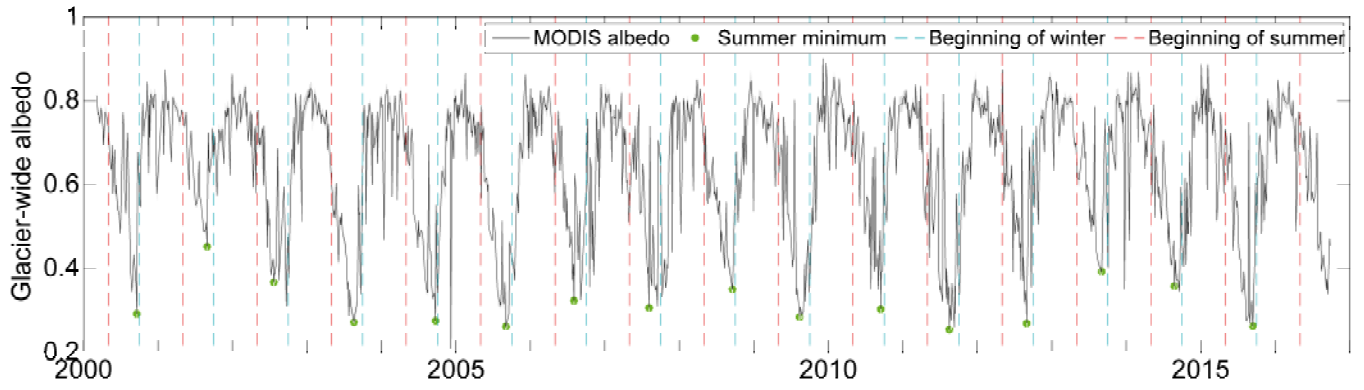


(e)

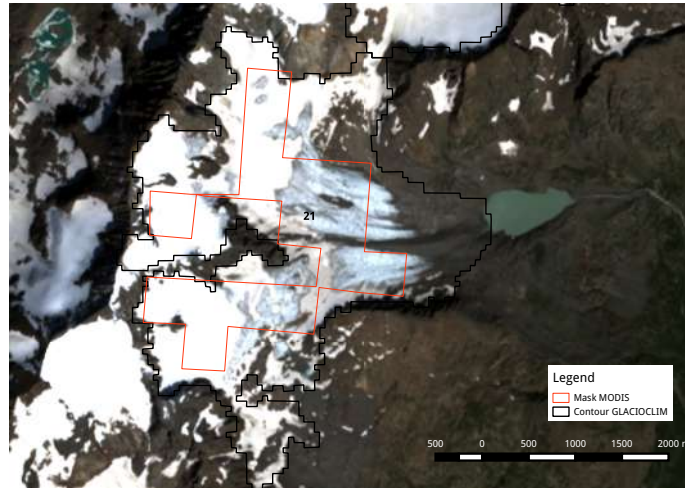


(f)

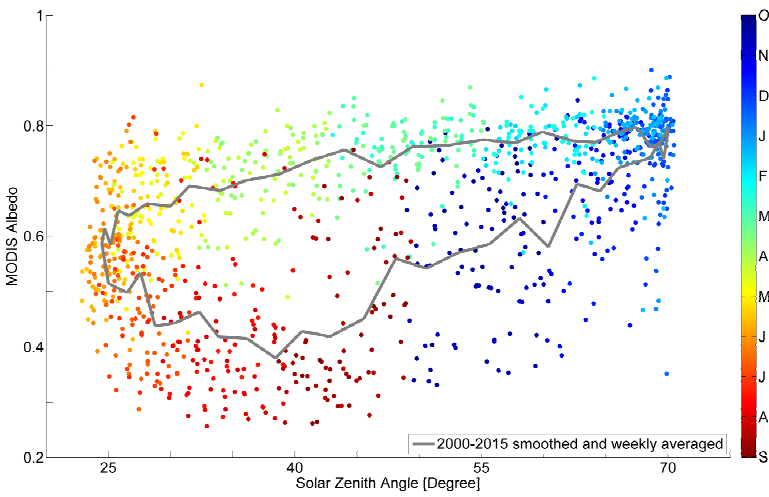
Figure S21: Quirlies



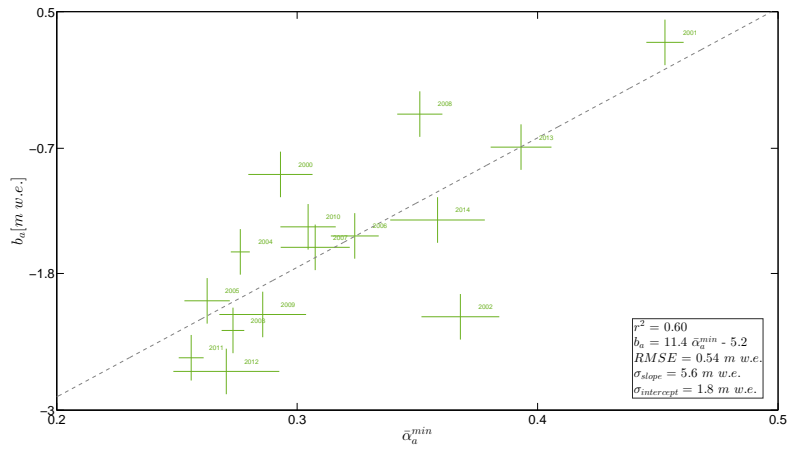
(a)



(b)



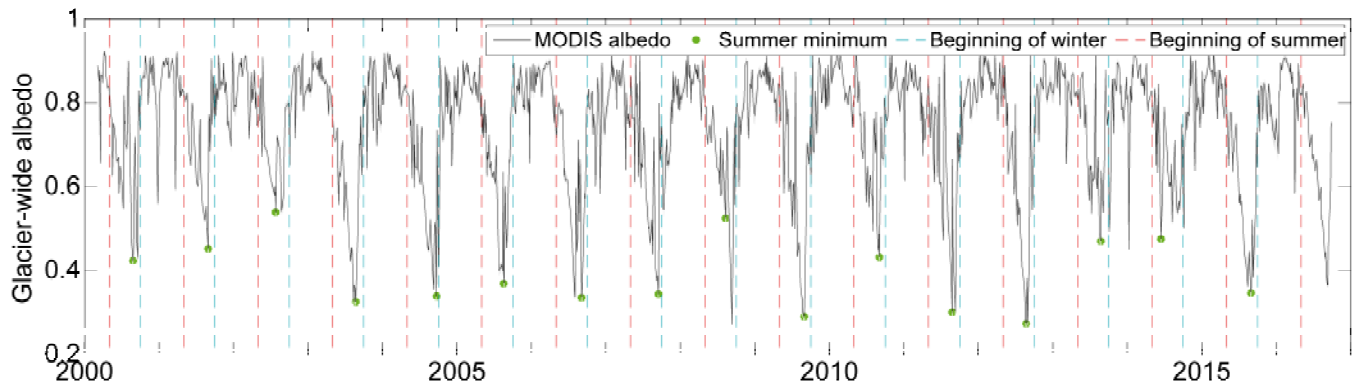
(c)



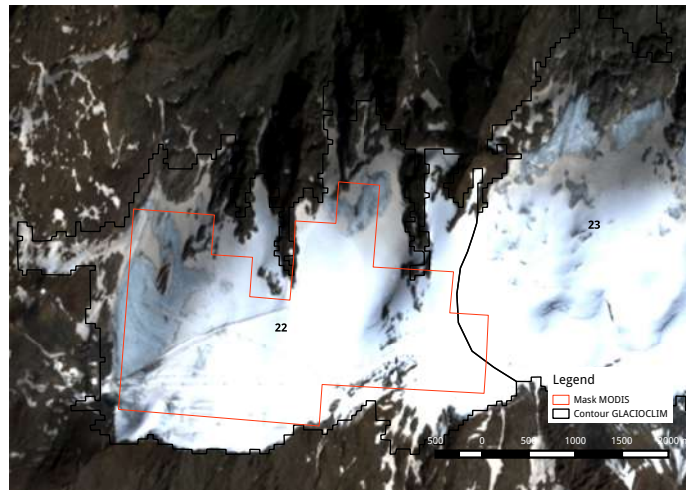
(d)



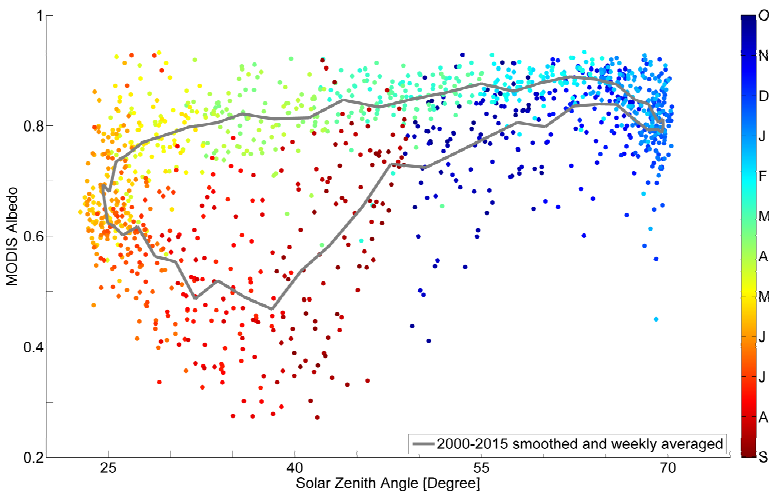
Figure S22: Mont de Lans



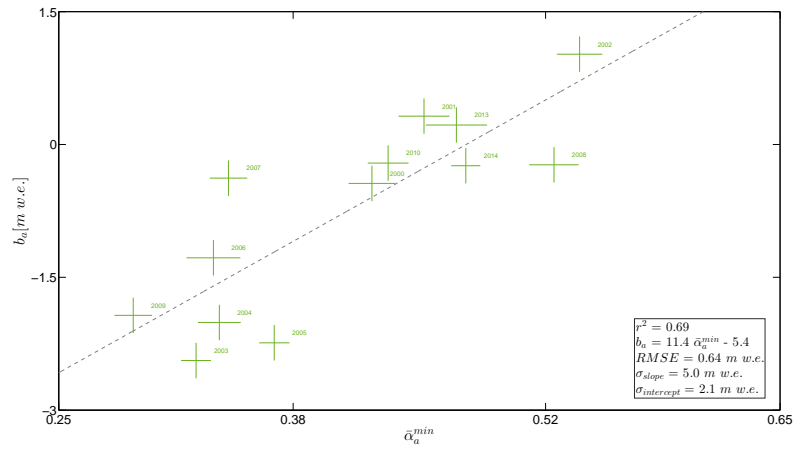
(a)



(b)



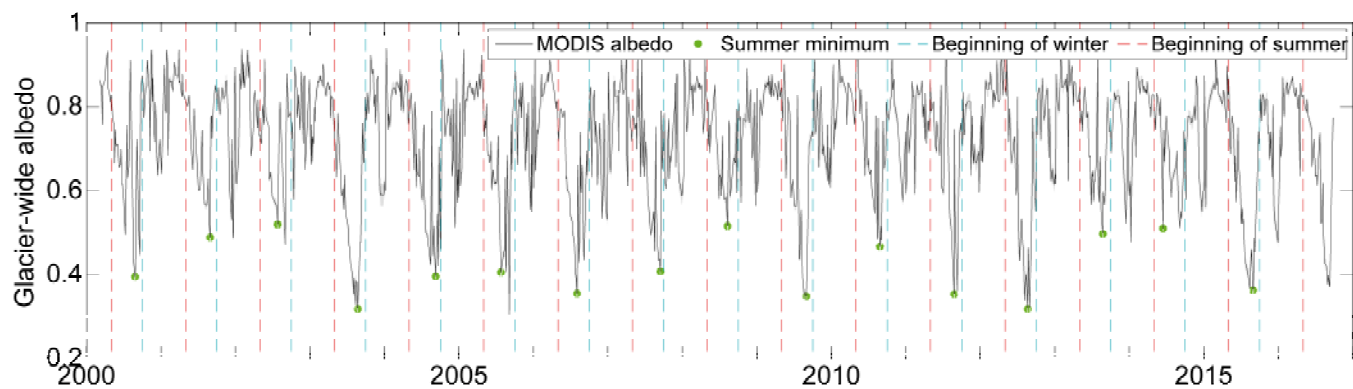
(c)



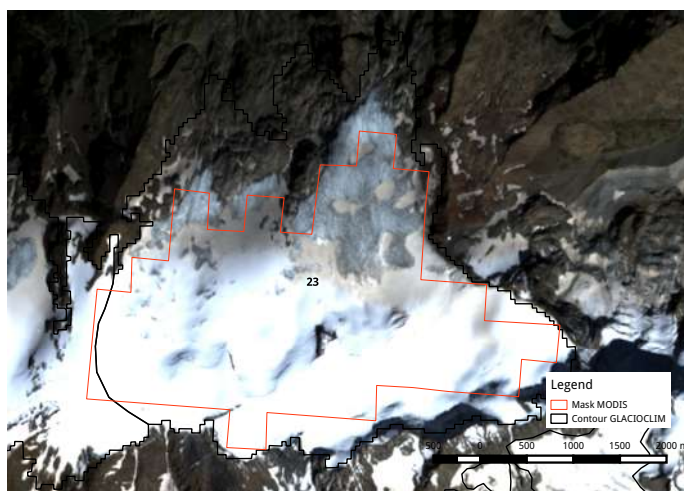
(d)



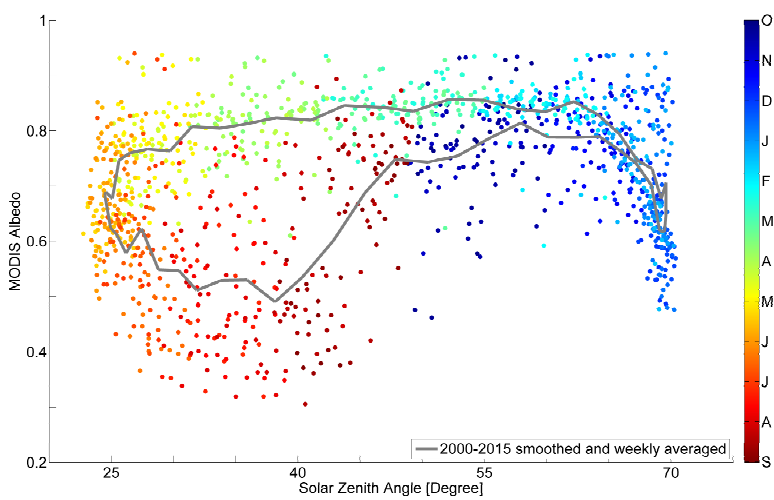
Figure S23: Girose



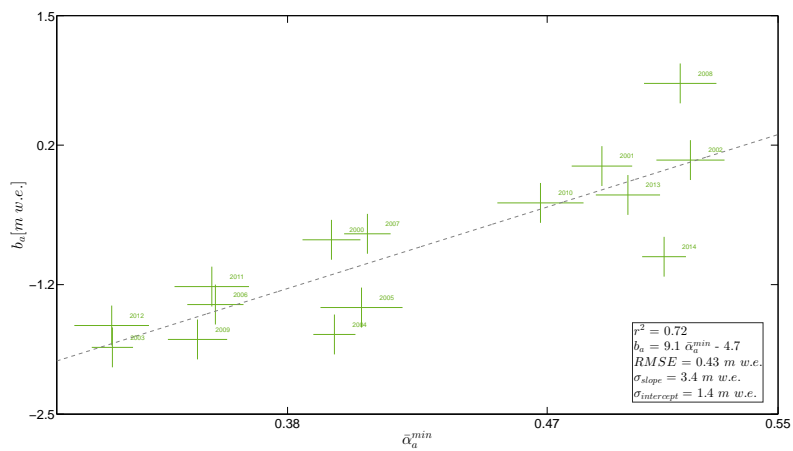
(a)



(b)

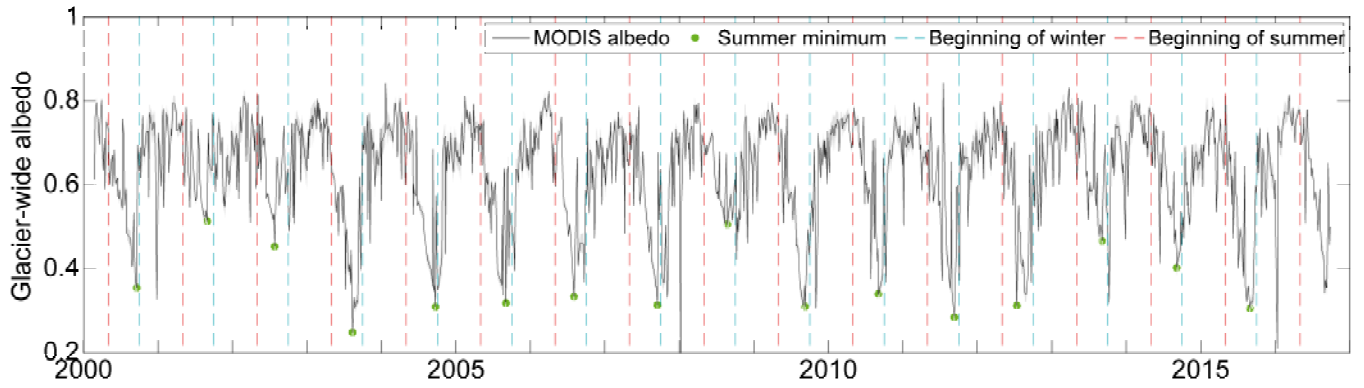


(c)

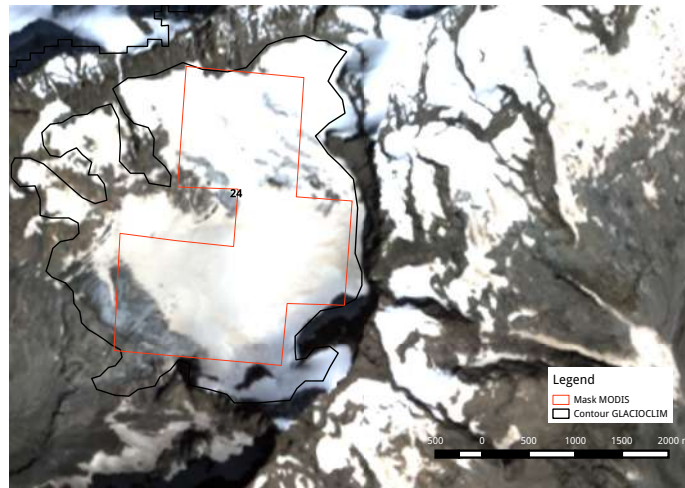


(d)

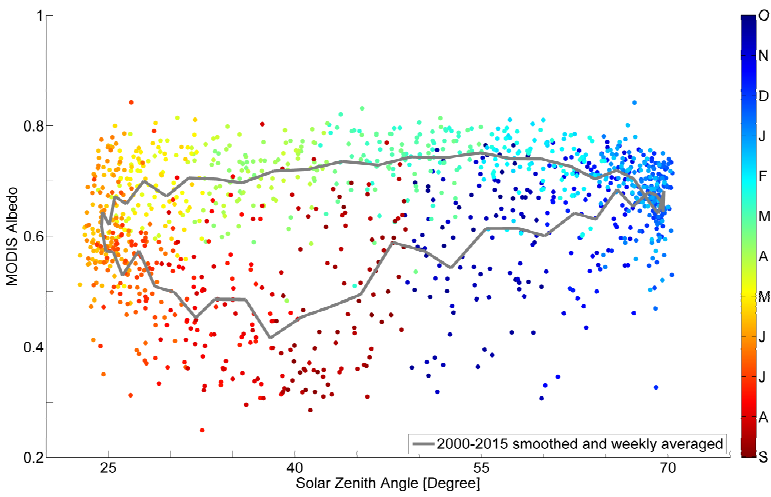
Figure S24: Selle



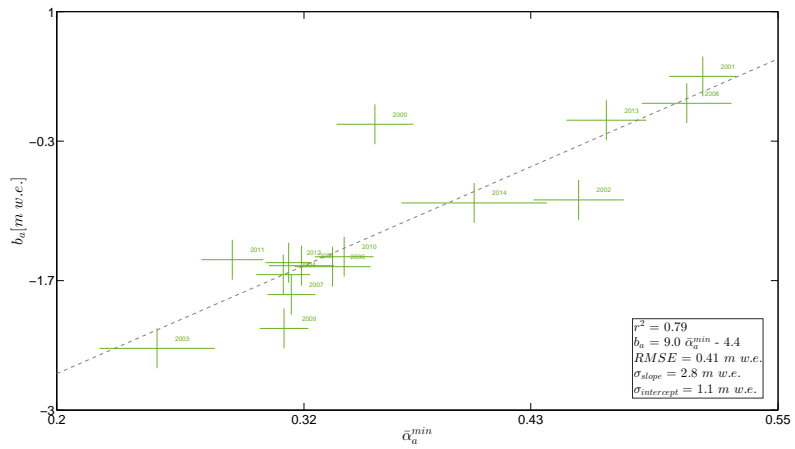
(a)



(b)

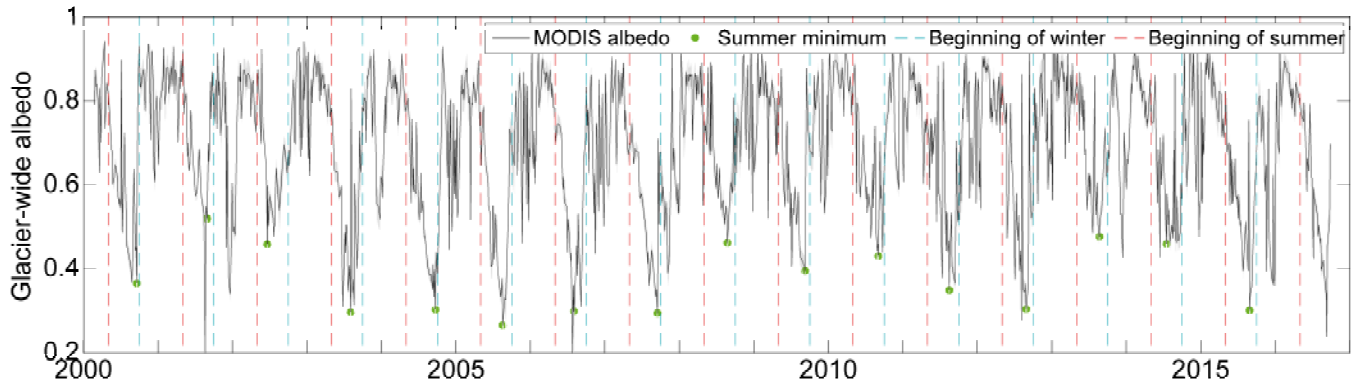


(c)

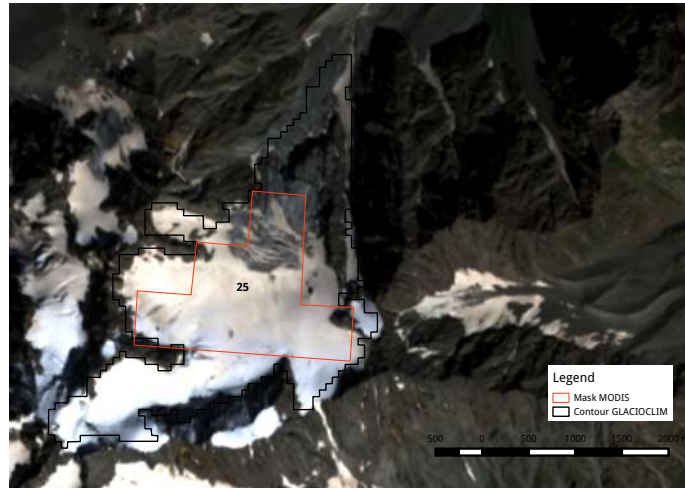


(d)

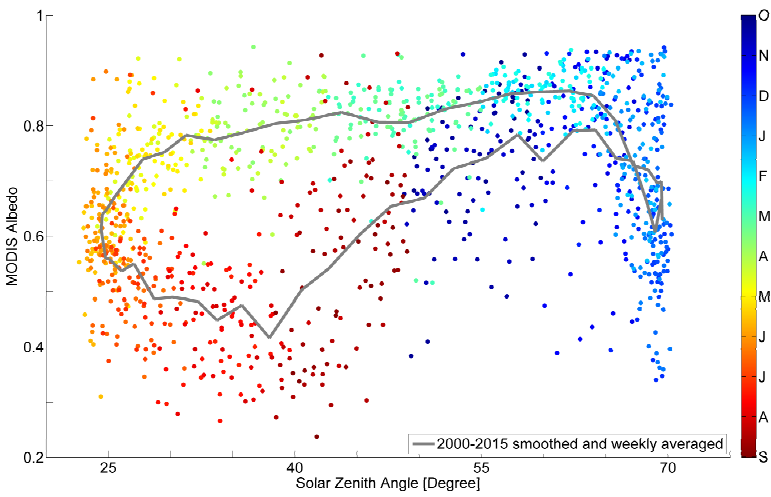
Figure S25: Casset



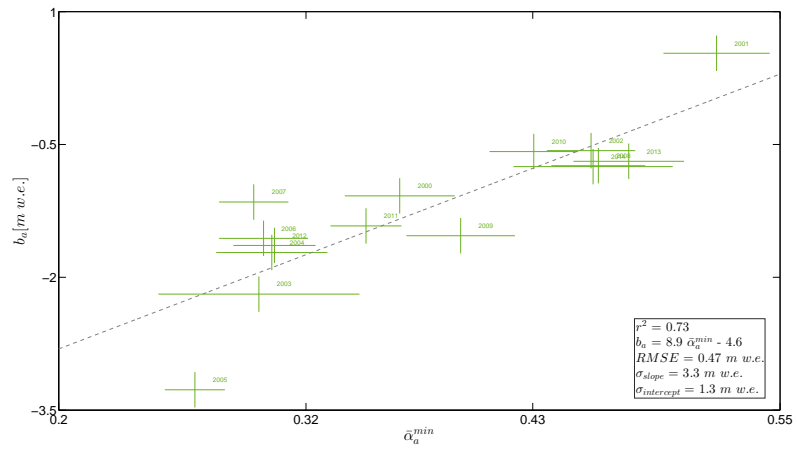
(a)



(b)

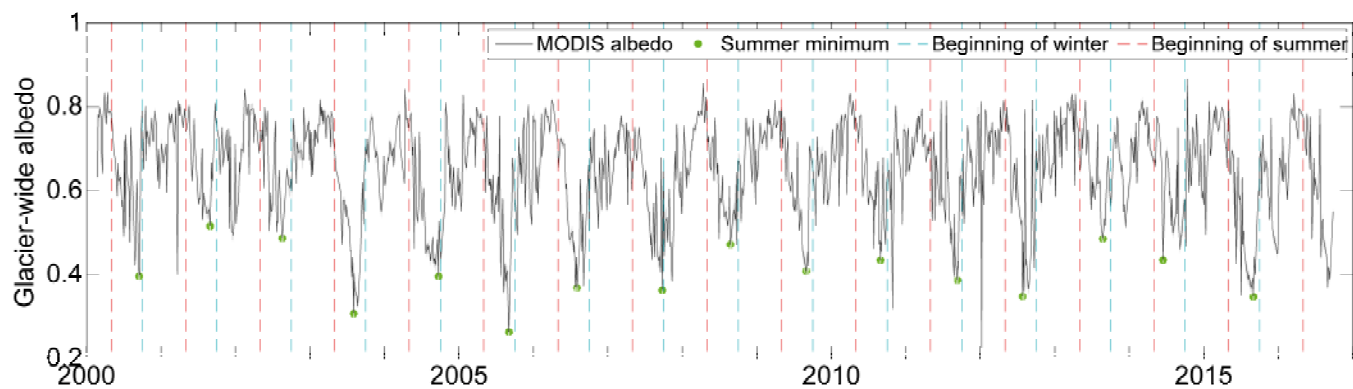


(c)

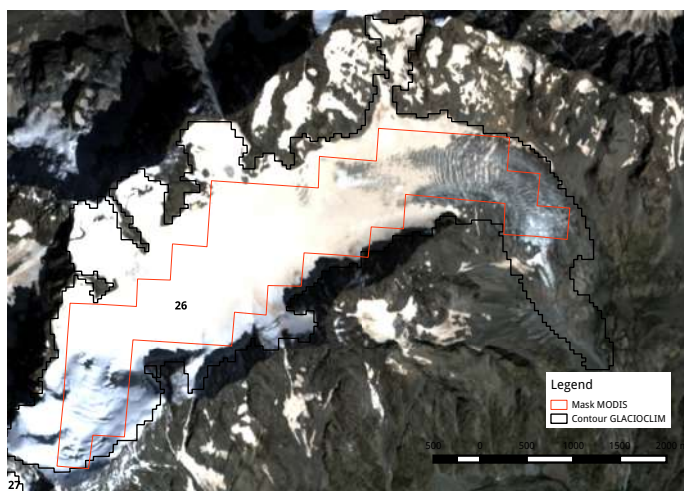


(d)

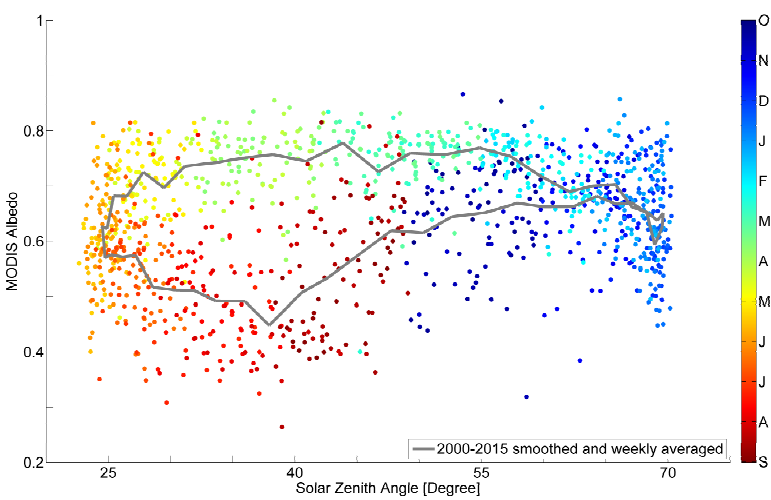
Figure S26: Blanc



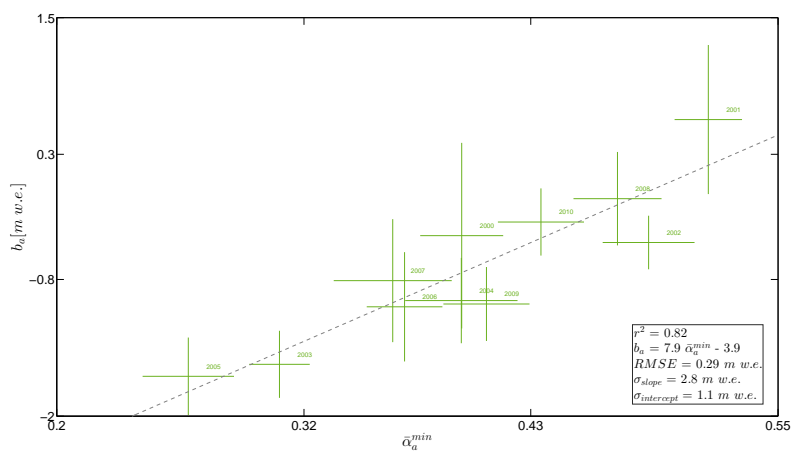
(a)



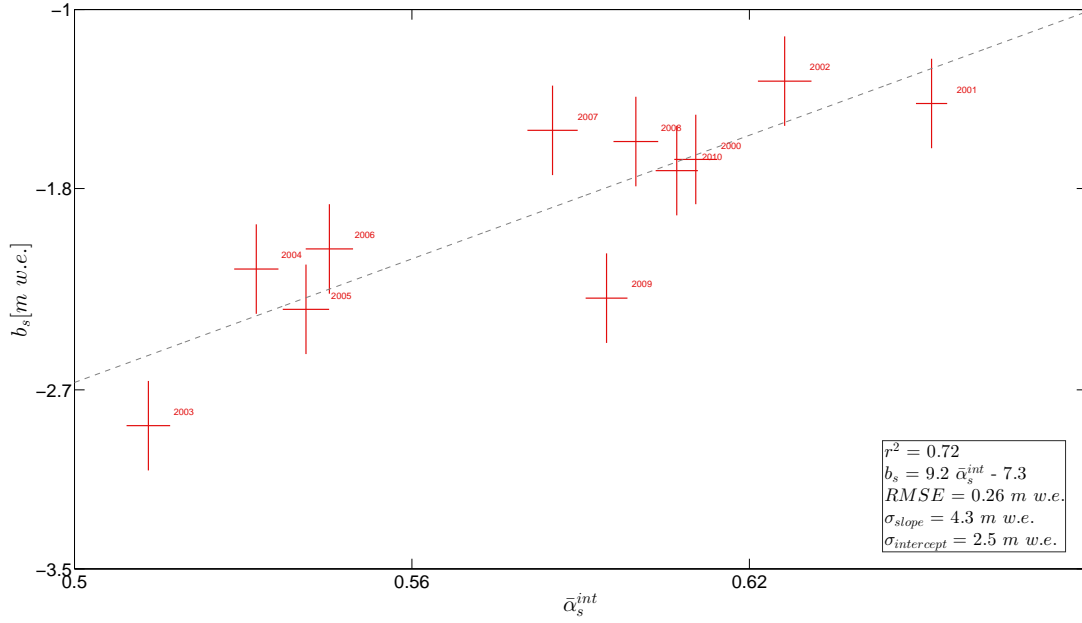
(b)



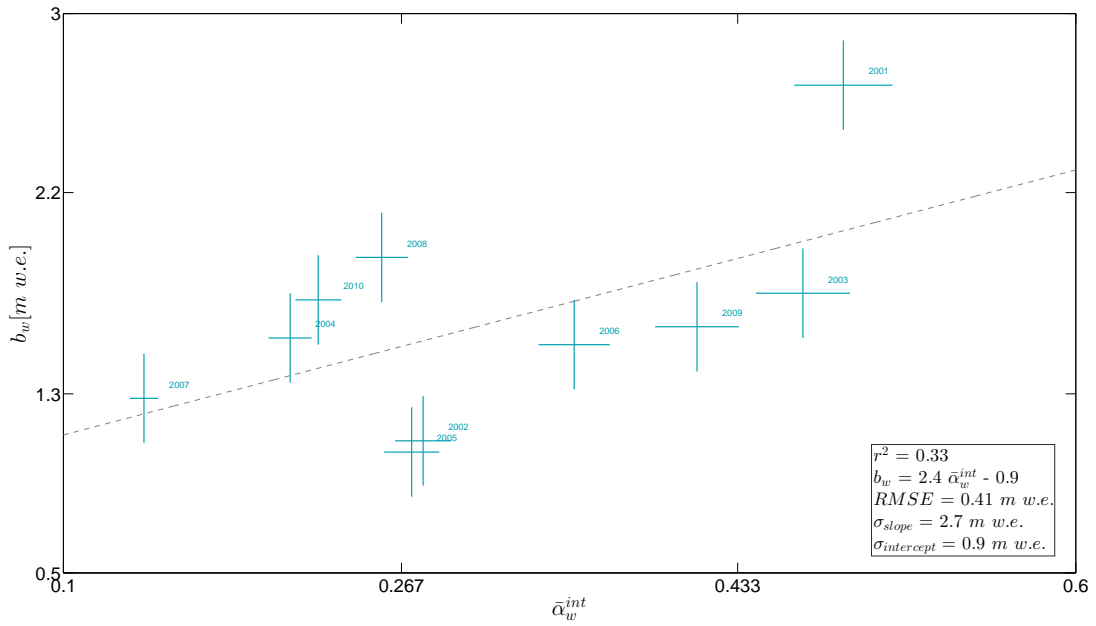
(c)



(d)

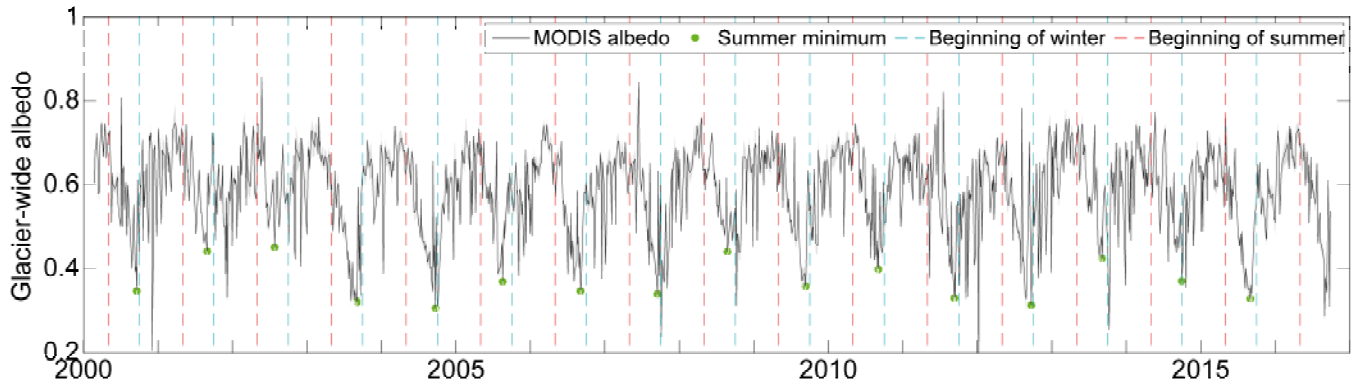


(e)

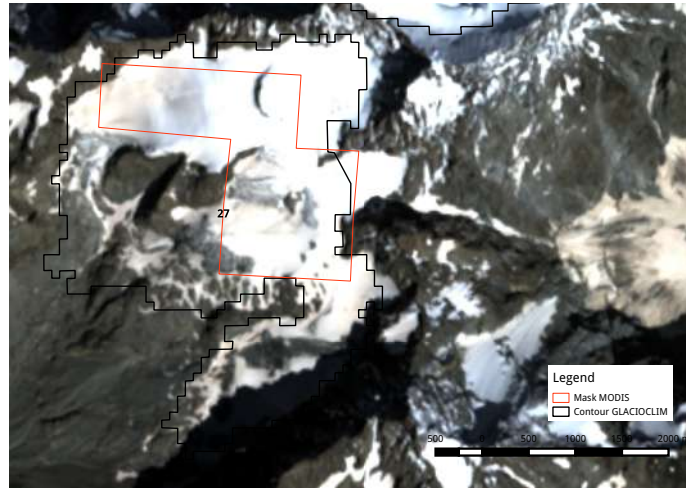


(f)

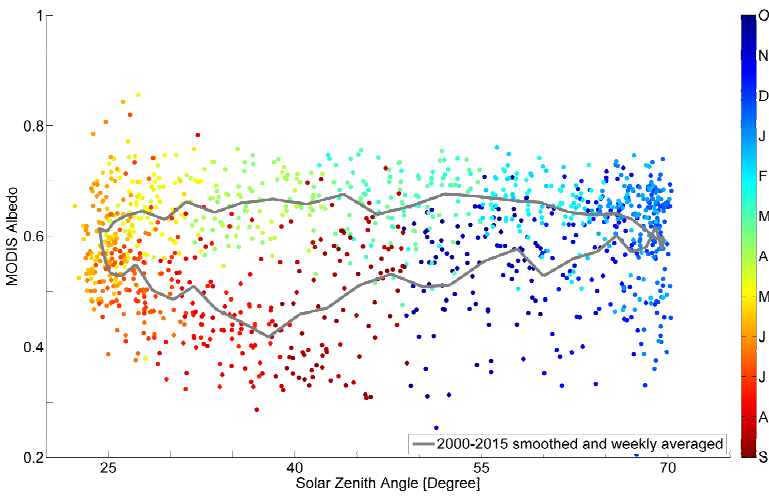
Figure S27: Vallon Pilatte



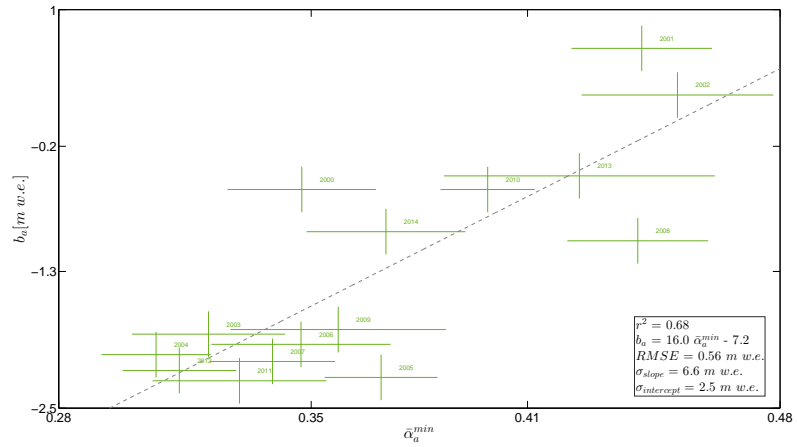
(a)



(b)



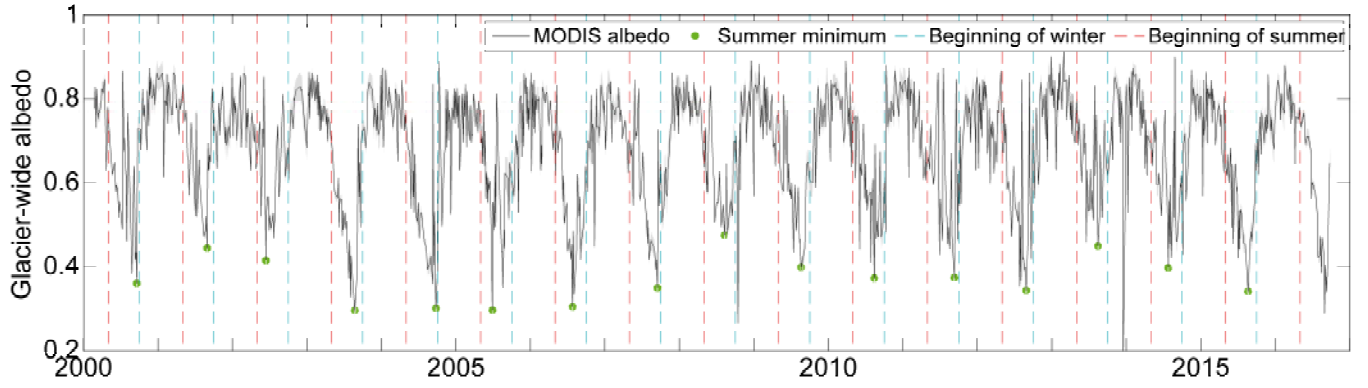
(c)



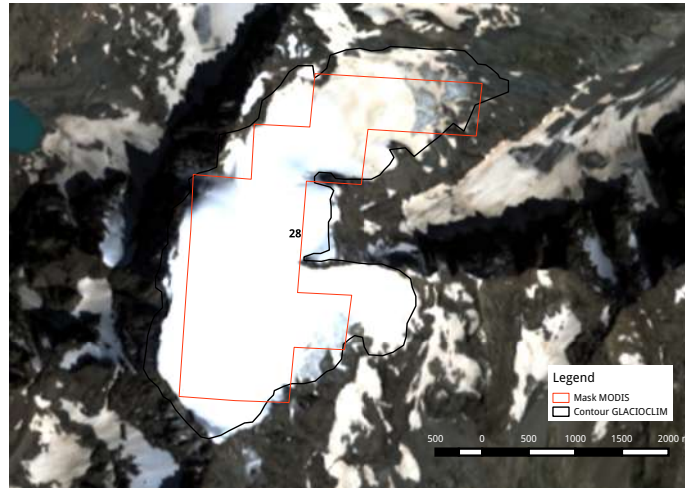
(d)



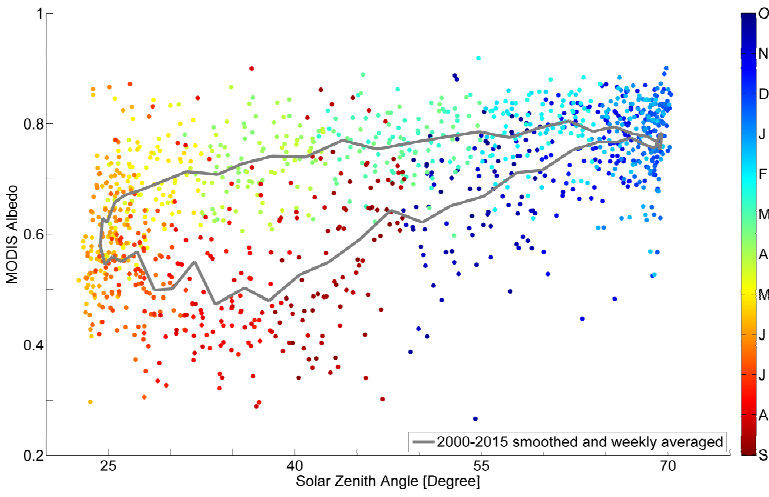
Figure S28: Rouies



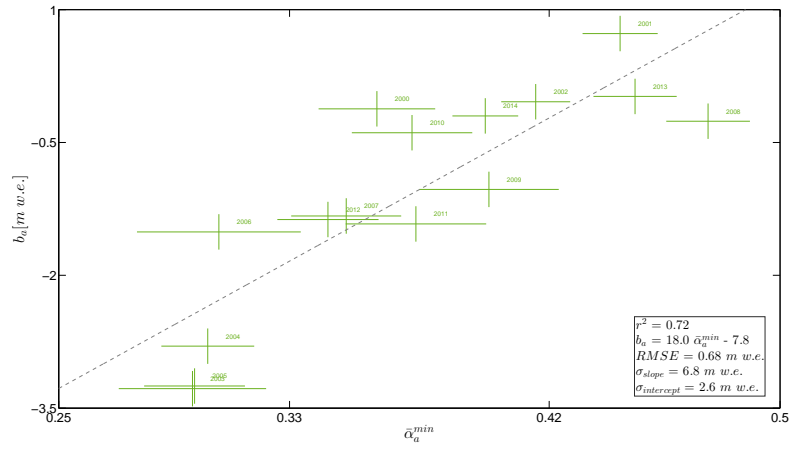
(a)



(b)

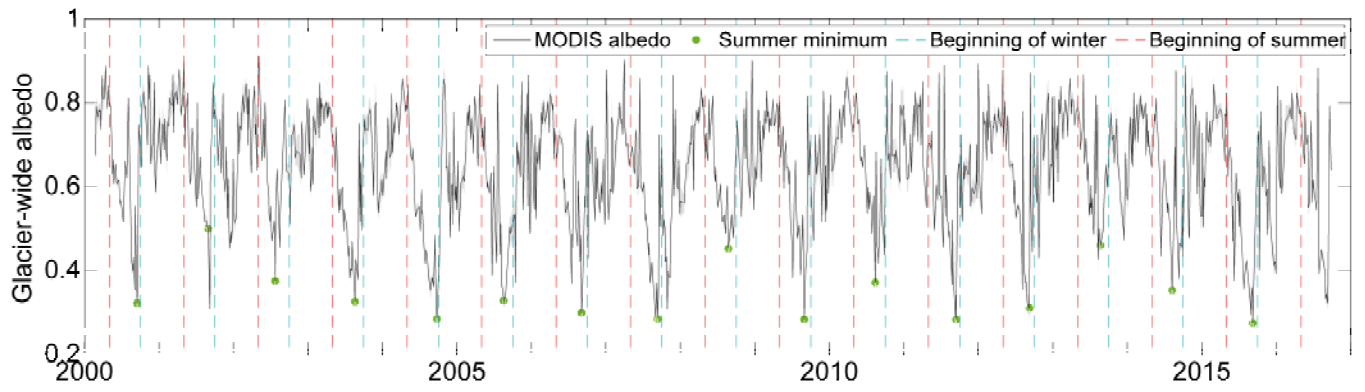


(c)

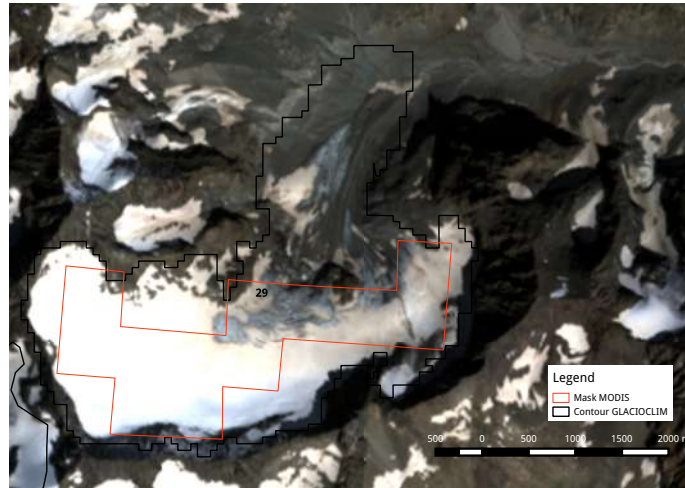


(d)

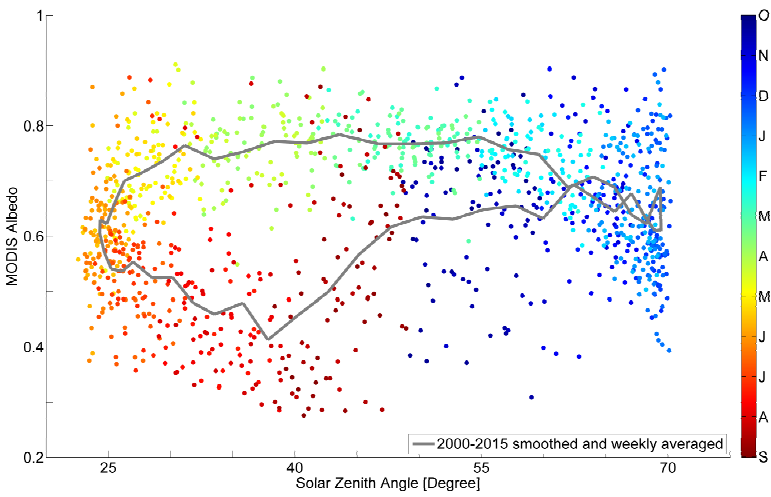
Figure S29: Sélé



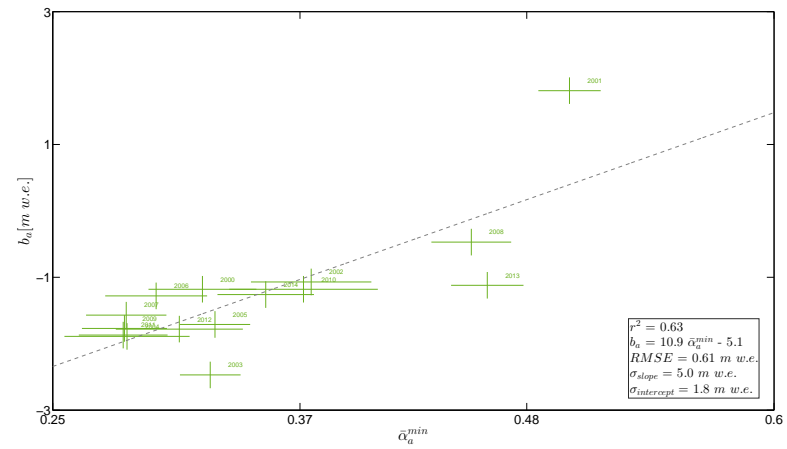
(a)



(b)



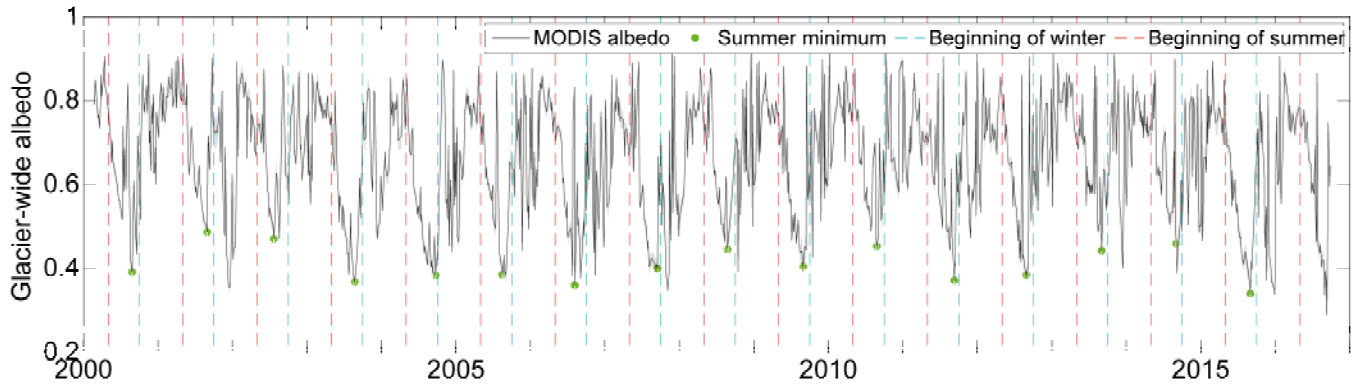
(c)



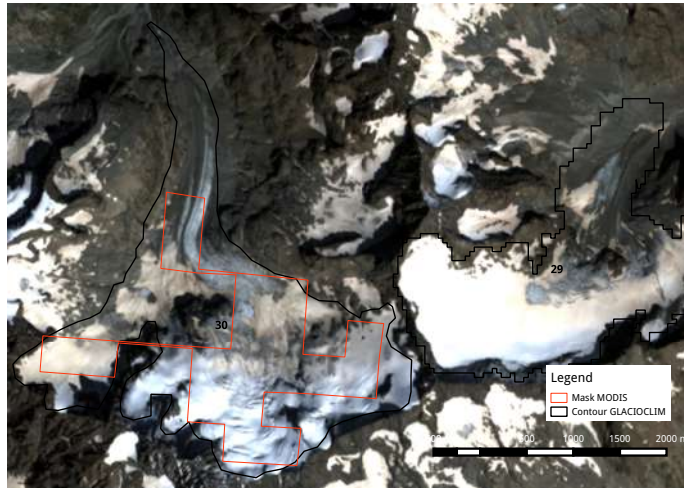
(d)



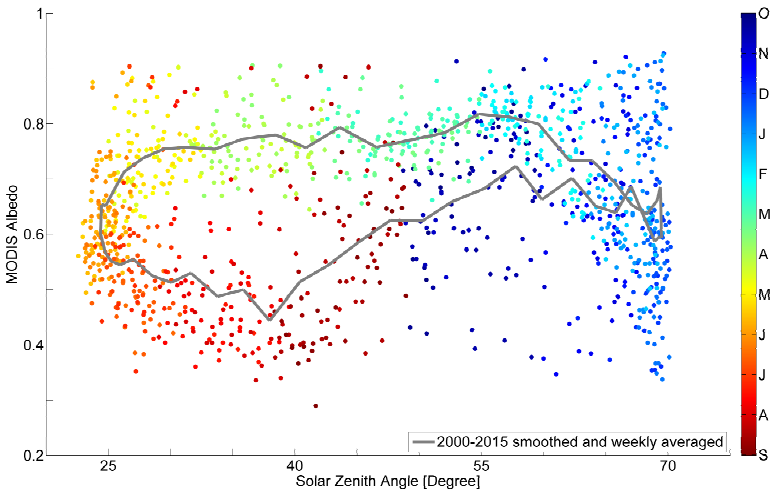
Figure S30: Pilatte



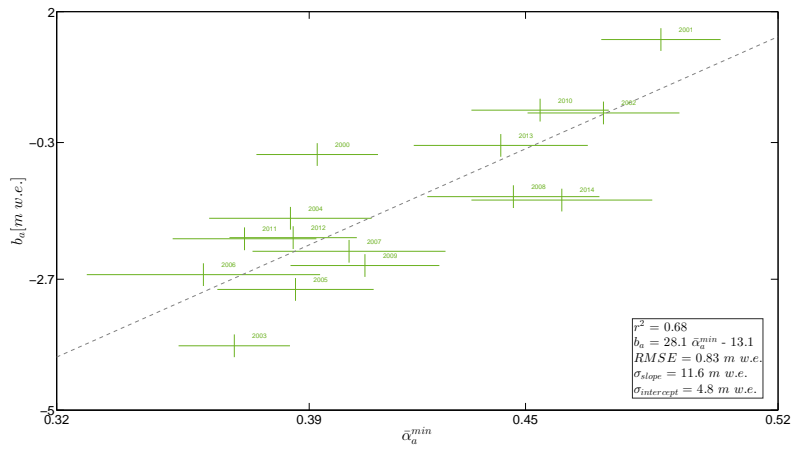
(a)



(b)



(c)



(d)