We first would like to thank the Reviewer#2 for the thoughtful comments which will help to improve our manuscript.

I would like first to thank the authors for a well written, clear and easy to follow paper. The comparison of the appealing model ERA5 with “its older version” Era-Interim and some RCM is of interest to the field, however I do think that the work done in this paper is incomplete and needs some improvements to obtain sustainable conclusions. As a general idea, I would like to see more “proofs” or arguments of some of the statements claimed by the authors (see detailed comments below).

1.- The AWS used do not cover the whole ice sheet and I was wondering why not using some other available data as the one provided by GC-net stations.

The GC-Net observations have two major drawbacks: the fact that they are assimilated in reanalyses (ERA-Interim, ERA5 and ASR) that does not enable for a statically independent comparison, and then numerous measurement errors which is why we only used the observations from the PROMICE network.
However, as adding a comparison to GC-Net was requested by both reviewers, we suggested to add this comparison in supplementary material. We think that keeping this comparison independent of the evaluation using the PROMICE data is relevant as it keeps the independence between the evaluation and the models. Below, you will find the main result of this comparison that we plan to add in the supplementary material with Tables R1 and R2.

We used 16 AWS of the GC-Net network which have available data for the period 2010-2016. A selection of weather stations has been made (Table R2 p.3), similarly to the PROMICE selection. The stations excluded and the reasons why are described in point 2.2 p.4-13.

The main conclusions of this new analysis (Table R1) are presented here and will be added in the supplementary material.

Pressure
All statistical comparisons of the surface pressure demonstrate that all models succeed in representing the daily variability of the surface pressure, except the correlation which is in general lower when observations are compared to GC-Net than when compared to PROMICE. This is probably due to errors measurements as several GC-net data present discontinuities in the surface pressure records (see for example Figure R6 p. 9).

Temperature
The comparisons of ERA5 and ERA-Interim 2-m temperature (T2M) are almost identical. All GC-Net AWS are located in the accumulation area of the Greenland ice sheet where the spatial variability of the topography is weaker than in the ablation zone and can be represented even at lower resolution. Despite the increase in resolution, ERA5 does not improve the representation of the temperature relative to ERA-Interim in the accumulation area.

The mean bias of modelled temperature from MAR is lower than the temperature bias in the reanalysis products, as already shown when compare to PROMICE observations, but the correlations are lower than those of the reanalyses. However, as mentioned before, the assimilation of the GC-Net observations by the reanalyses biases this comparison and probably leads to artificially better results for ERA5, ERA-Interim and ASR than MAR.

Table R1. Mean bias (MB), RMSE, centered RMSE (RMSEc) and correlation (corr) between daily observations from the GC-Net dataset and MAREI ,MARE5 , EI, E5 and ASR. Annual and summer statistics are given for the 2-m temperature (T2M), the 10-m wind speed (W10M) and the shortwave downward radiative flux (SWD) over 2010 – 2016

		Annually				Summer			
		MB	RMSE	RMSEc	Corr	MB	RMSE	RMSEc	Corr
Pressure (hPa)	MAR_{EI}	0,44	4,49	2,74	0,96	-0,48	3,18	1,32	0,97
	MAR_{E5}	-0,34	4,53	2,78	0,96	-1,38	3,24	1,33	0,97
	E5	3,36	5,26	2,6	0,96	2,25	4,11	1,1	0,97
	EI	8,81	10,32	2,62	0,96	7,76	9,45	1,18	0,97
	ASR	2,96	5,65	2,59	0,96	1,8	4,37	1,16	0,97
mean obs (2010-2016)		767,29				778,16			
std obs (2016-2016)		12,28				6,41			
2m Temperature (°C)	MAR_{Ei}	0,36	4,45	3,71	0,94	-0,5	2,68	2,33	0,84
	MAR_{E5}	0,49	4,53	3,76	0,94	-0,66	2,72	2,36	0,83
	ERA5	0,71	4,22	3,27	0,96	-0,99	2,6	2,04	0,85
	ERAint	1,6	4,59	3,11	0,96	1,02	3,05	2,07	0,85
	ASR	-1,74	4,05	3,3	0,96	-0,98	2,81	2,31	0,85
mean obs (2010-2016)		-19,94				-7,02			
std obs (2016-2016)		11,48				4,15			
Wind Speed (m/s)	UV1 MAR_{Ei}	1,05	2,15	1,76	0,74	0,36	1,42	1,21	0,8
	UV2 MAR_{Ei}	-0,21	1,91	1,72	0,75	-0,67	1,54	1,23	0,79
	UV1 MAR_{E5}	1,23	2,25	1,78	0,75	0,53	1,47	1,25	0,79
	UV2 MAR_{E5}	-0,03	1,94	1,75	0,75	-0,5	1,51	1,27	0,78
	E5	1,15	2,23	1,67	0,79	0,72	1,48	1,15	0,84
	EI	0,69	2,28	1,86	0,75	0,1	1,62	1,37	0,8
	ASR	1,48	2,6	2,01	0,71	0,67	1,77	1,48	0,74
mean obs (2010-2016)		5,43				4,77			
std obs (2016-2016)		2,66				2			
Showave radiation down (SWD, W/m²)	MAR_{Ei}	-2,26	36,92	35,06	0,97	1,6	44,2	39,89	0,86
	MAR_{E5}	-2,72	36,97	35,02	0,96	1,21	44,16	39,81	0,86
	E5	6,54	31,01	28,33	0,98	8,41	35,08	28,84	0,92
	EI	0,58	36,64	34,94	0,97	2,66	45,91	41,5	0,88
	ASR	15,03	34,91	29,94	0,98	25,87	42,35	29,98	0,92
mean obs (2010-2016)		141,43				287,42			
std obs (2016-2016)		133,97				76			

Wind speed

ERA5 outperforms other models to represent the 10-m wind speed (W10M), as in the comparison with the PROMICE AWS. Correlations are also the highest and RMSEc in ERA5 are the lowest. The mean biases in ERA5 are not the lowest but there are lower than in other reanalyses (ERA-Interim and ASR).

SWD

ERA5 outperforms ERA-Interim to represent SWD, especially in summer. Only mean biases are lower in ERA-Interim than in ERA5. Such an improvement in ERA5 was already a conclusion of the comparison with the PROMICE observations, but this improvement is more significant in the accumulation area.

ASR and ERA5 better represent SWD than MAR for the same explanations discussed in the main manuscript (see p. 8 lines 21-26 of the manuscript).

Variable	AWS	Justification
Surface Pressure		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	NASA-U	May 2011
	Crawford P1	May 2010
	GITS	Apr 2016
	DYE-2	May 2014 - May 2016
	JAR1	Apr 2014
	JAR2	Sep 2011
	Petermann-ELA	Apr 2013, Apr 2016
	Neel	Jun 2012
	Summit	Dec 2016 - Jun 2016
T2M	JAR2	Time shift of a few weeks
		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series:
	JAR1	Jan-Aug 2011
Wind Speed		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	Swiss Camp	Jun, Jul 2014, Jun 2015 - Mar 2016
	NASA-E	Jan-Apr, Dec 2010, Jun 2015 - Apr 2016
	NASA-SE	Nov 2010 - Feb 2011, Dec 2012 - Jan 2013, Feb, Apr - May 2016
	Saddle	Nov 2011, Oct-Dec 2012, Mar-Apr 2013, Mar-Apr, Sep, Oct, Nov 2014, Apr-Nov 2015, Jan-Feb, Apr, Dec 2016
	JAR2	Jul 2010, Sep 2010
SWD		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	GITS	May-Sep 2014, May-Oct 2016
	JAR2	Sep-Oct 2010, Time shift
	Petermann-ELA	Jun-Oct 2011, Mar-May 2012, May-Oct 2013, Mar-May 2014, May-Oct 2016
	NEEL	Mar-Apr 2010, Mar-May 2014, May-Oct 2016

Table R2. Dissmissed GC-Net AWS per studied variable (2-m temperature, 10-m wind speed, and shortwave downward radiative flux) and justifications.

In the main text p. 8 line 26, we suggest to add the following paragraph.
«*3.5 Additional analysis*
*The same statistical comparison with GC-Net (*Steffen *et al.*, 1996*) observations was performed to better cover Greenland, as GC-Net stations are mainly located in the accumulation area. However, it is important to note that GC-Net observations are assimilated into reanalyses (ERA-Interim, ERA5 and ASR) but not into MAR. Therefore, the comparison of models with GC-Net observations was carried out separately from PROMICE observations in order to keep the independence of the PROMICE comparison with data assimilation. The conclusions of this comparison are identical to the results presented above, except that the assimilation of this data set into reanalyses favours the reanalyses for the representation of T2M with respect to MAR. A more detailed analysis of the results can be found in the supplementary materials (see Table S4).* »

2.1 - The reasons given by the authors to exclude some AWS from the study need a better argumentation: "differences between interpolated elevations" shouldn't be a problem as long as the elevation correction is performed. The authors claim, "as the comparisons were not improved we concluded that applying such a correction would add more uncertainties than using the raw modelled fields without any correction" which from my perspective is wrong: if the correction needs to be done, it needs to be done, the fact of doing it cannot rely on the results you are getting.

		Annually				Summer			
	Correction	Mean bias (°C)	RMSE	RMSEc	Correlation	Mean bias (°C)	RMSE	RMSEc	Correlation
MAR_{E5}	None	-0,38	2,63	2,32	0,97	0,32	1,91	1,3	0,85
	Local	-0,32	2,94	2,71	0,96	0,84	2,2	1,58	0,82
	0.6°C/100m	-0,85	3,18	2,32	0,97	-0,15	2,43	1,3	0,85
MAR_{EI}	None	-0,33	2,64	2,33	0,97	0,58	1,91	1,29	0,85
	Local	-0,75	3,35	2,8	0,96	0,61	2,51	1,66	0,8
	0.6°C/100m	-0,36	3,56	2,33	0,97	0,52	2,85	1,29	0,85
ASR	None	-0,81	2,75	2,15	0,98	-0,22	2,14	1,25	0,86
	Local	-1,33	3,17	2,54	0,97	-0,53	2,68	1,58	0,79
	0.6°C/100m	-1,1	3,57	2,15	0,98	-0,49	2,98	1,25	0,86
E5	None	-0,69	3,44	2,43	0,97	-0,31	2,77	1,51	0,83
	Local	-0,62	3,45	2,67	0,97	-0,09	2,74	1,84	0,77
	0.6°C/100m	-1,14	4,24	2,43	0,97	-0,72	3,71	1,51	0,83
EI	None	-1,73	4	2,84	0,97	-0,15	2,09	1,46	0,82
	Local	-0,33	3,29	2,99	0,96	1,07	2,07	1,46	0,82
	0.6°C/100m	-3,11	5,38	2,84	0,97	-1,46	3,41	1,46	0,82
Mean Obs (°C)		-8,65				1,78			
Std (°C)		9,1				2,14			

Table R3: Temperature statistical comparisons for the 5 models with and without correction of the difference in elevation. All PROMICE AWS were used (21 AWS) for comparisons.

We have applied here two temperature corrections according to the elevation difference:
- a fixed one → 0.6°C/100m (Hanna *et al*., 2005, 2011)
- a time and local varying correction → temperature gradient as a function of the local altitude variation (4 grid cells around the pixel closest to the station) similarly to Franco *et al*. (2014).

The results being different depending on the correction used, we prefer to not introduce additional uncertainties associated with such a correction into the calculated statistics by choosing one correction rather than another. Moreover, the other variables cannot be corrected, therefore we prefer to remain consistent with them and keep the raw model data.

2.2 Another reason of removing some AWS are "unfavourable comparisons" or "unfavourable statistics", I am quite reluctant of accepting those as fair reasons unless some more specific information about them is provided (percentage of missing data, values that are totally out of range because of measurement errors…)

To better justify our selections of AWS, we have contacted the PROMICE network managers (D. Van as and R. S. Fausto), who will be added as co-authors of this paper. When the station fan is not running, temperature observations cannot be reliable. Therefore, only temperature data when fan is running (Fan current > 100 mA) are now considered. Finally, the stations with the two following points were excluded from the comparisons:
(1) Too large difference in elevation between the station and the corresponding grid cells of all models (> ± 250 m): we maintain that it is not possible to represent the different climate variables analysed here with such a difference in elevation.
(2) Data records containing measurement errors as illustrated below.

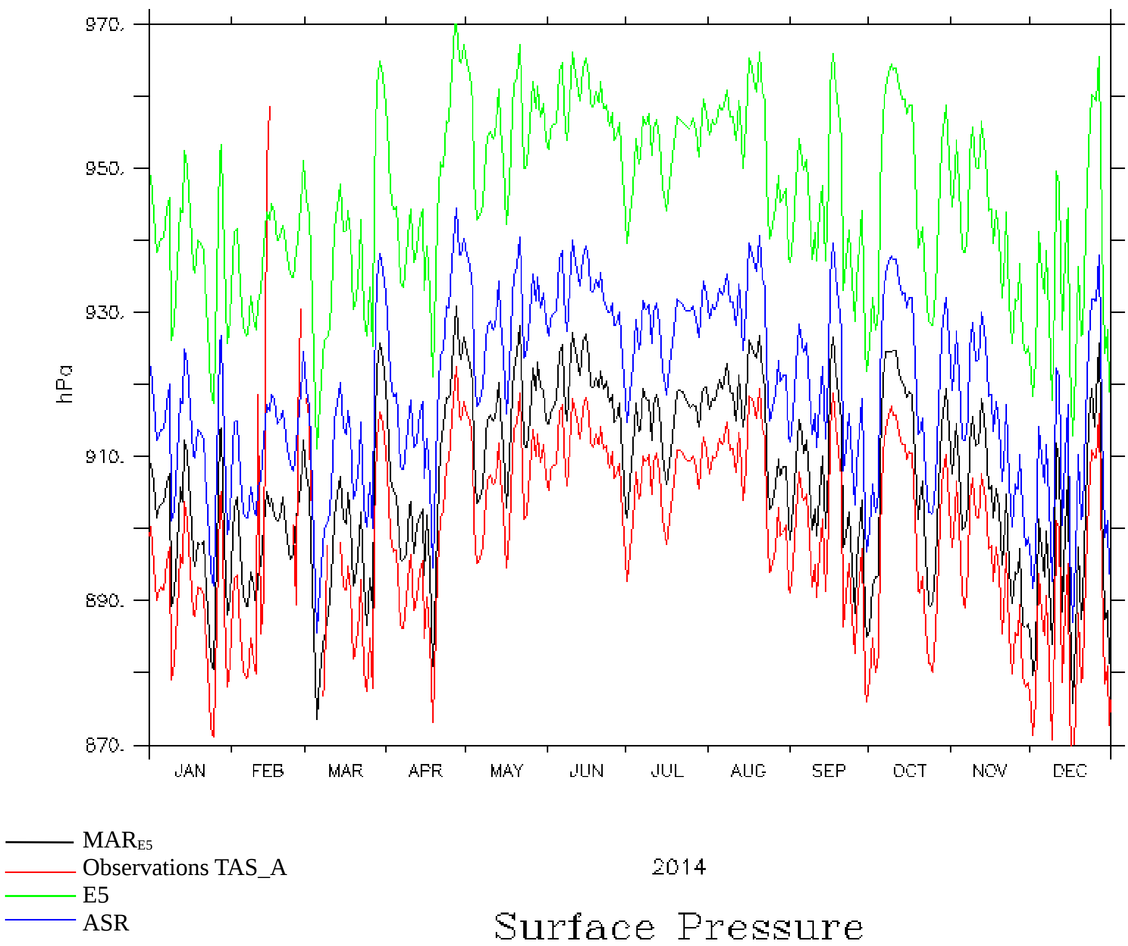
The same criteria were applied for the comparison of models with GC-Net observations. Except for the fan criterion that can't be applied for GC-Net temperature time series because a fan state time series is not available in the dataset.

Examples of instrument errors by variable and network (reason for exclusion (2)) are as follows. We compared the time series of the observations with those of 3 models (MAR_{E5}, E5 and ASR) to highlight measurement errors.

PROMICE AWS

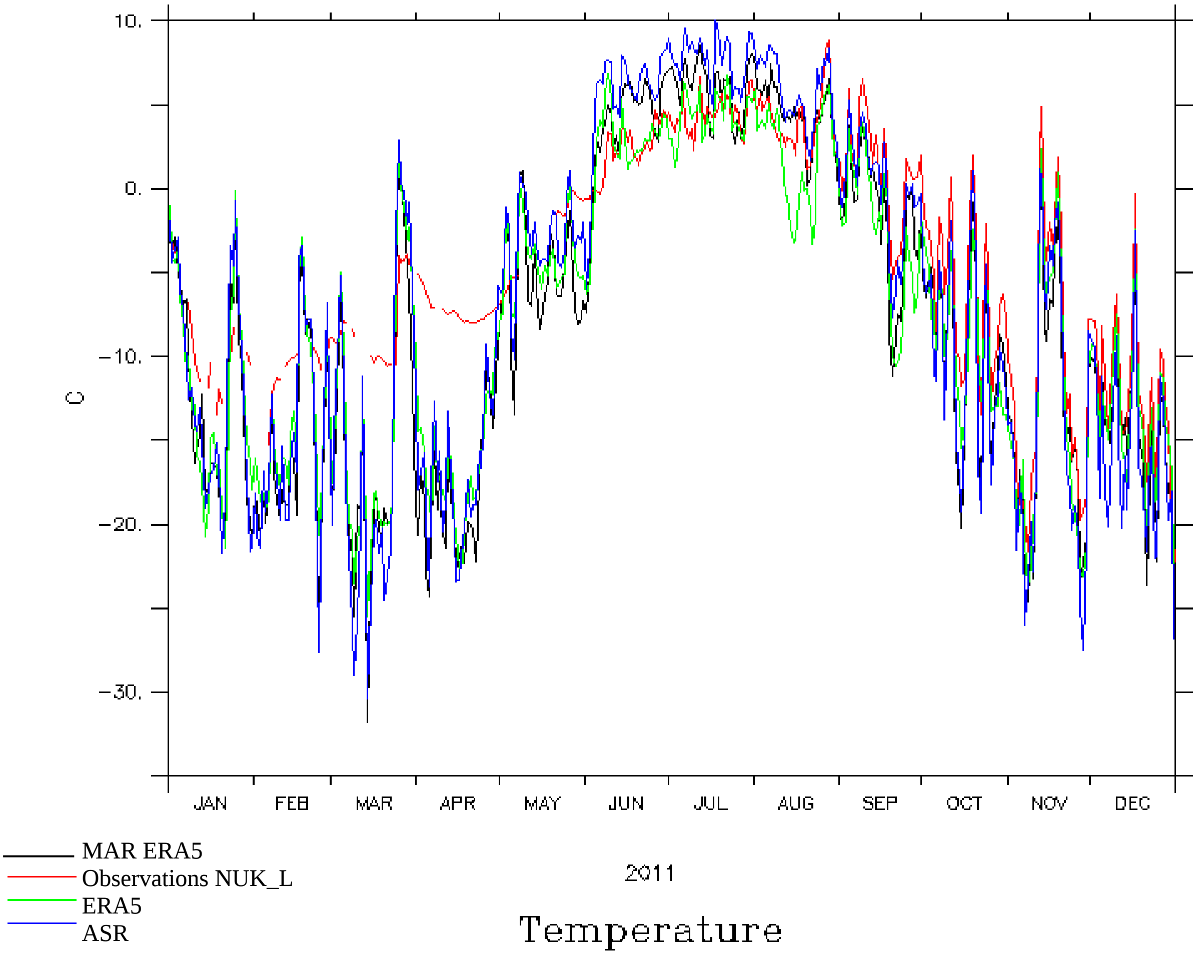
Pressure (hPa): Excluded AWS pressure time series are characterised by a shift of tens hPa in a few days which is no climatically possible. Here an example at TAS_A in February 2014. Systematic shift between models are due to difference in elevation of the respective grid cells.

Figure R1: Observed (red) and modelled (MAR_{E5} in black, E5 in green and ASR in blue) surface pressure at TAS_A in 2014.



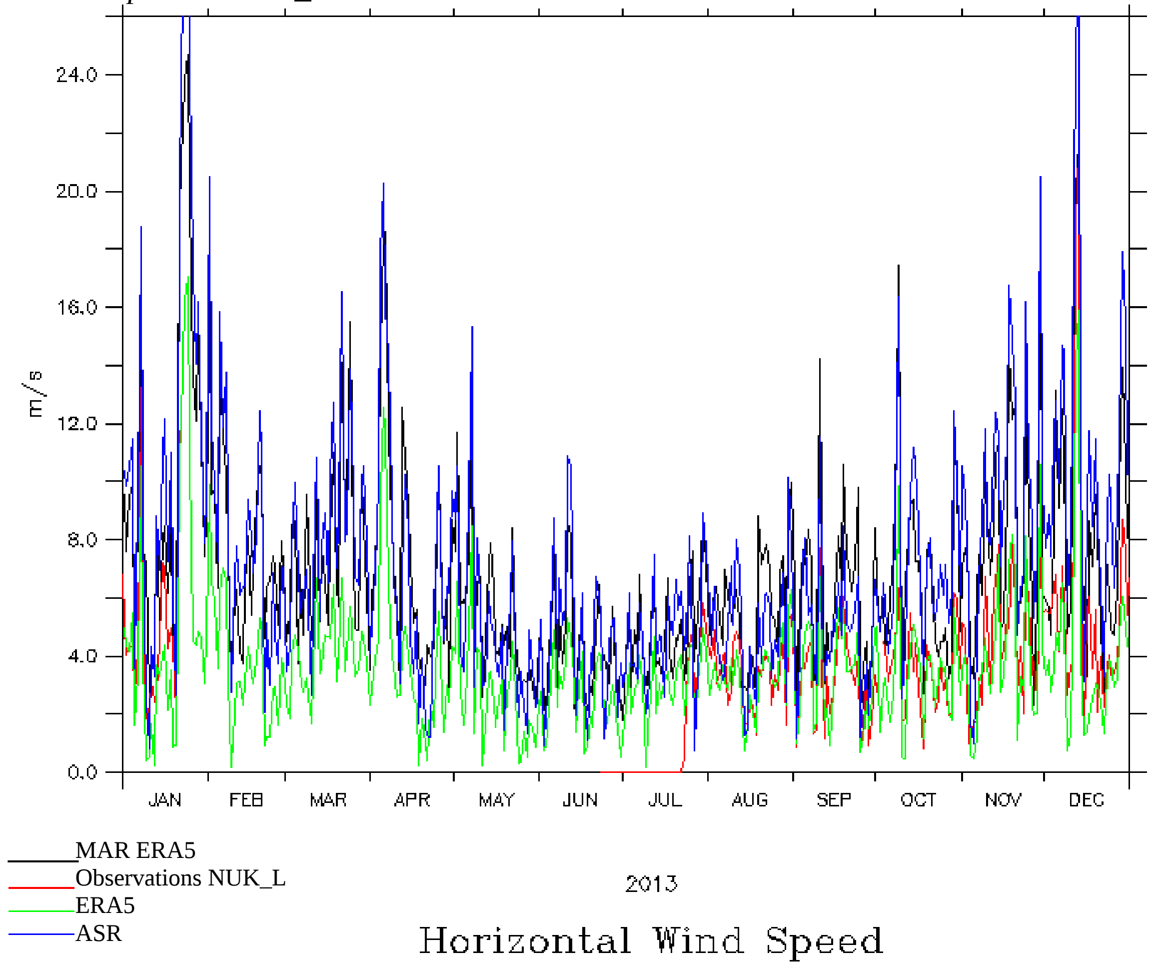
Temperature (°C): Malfunction of the artificial ventilation system can be responsible for significant biases in the temperature measurements (Van As, comm pers 2019). The comparison has been re-done by excluding data for which the ventilation system was not active. Although this undoubtedly improves the quality of the observational dataset, some other unexplained problems remain, like for station NUK_L in Winter and Spring 2011 (see below). Therefore, this station was dismissed.

Figure R2: Observed (red) and modelled (MAR_{E5} in black, E5 in green and ASR in blue) 2 m temperature at NUK_L in 2011.



Wind speed (m/s): As shown in the figure below for the NUK_L AWS in 2013 (June-July), a constant wind speed of 0 m/s over a quite long period is not climatically realistic and could be explained by frozen instruments.

Figure R3: Observed (red) and modelled (MAR_{E5} in black, E5 in green and ASR in blue) horizontal 10-m wind speed at NUK_L in 2013.



SWD & LWD (W/m²): The next two figures clearly illustrate examples of SWD and LWD sensor problems between March and July 2015 at QAS_U AWS.

Figure R4: Observed (red) and modelled (MAR_{E5} in black) shortwave radiation downward at QAS_U in 2015.

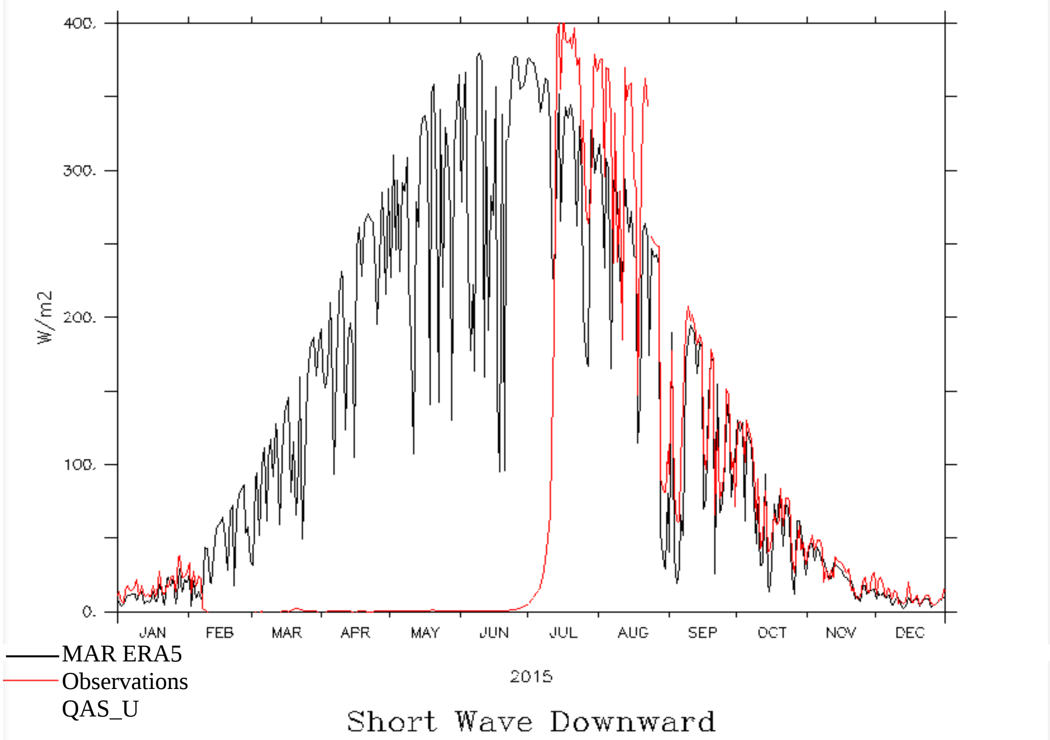
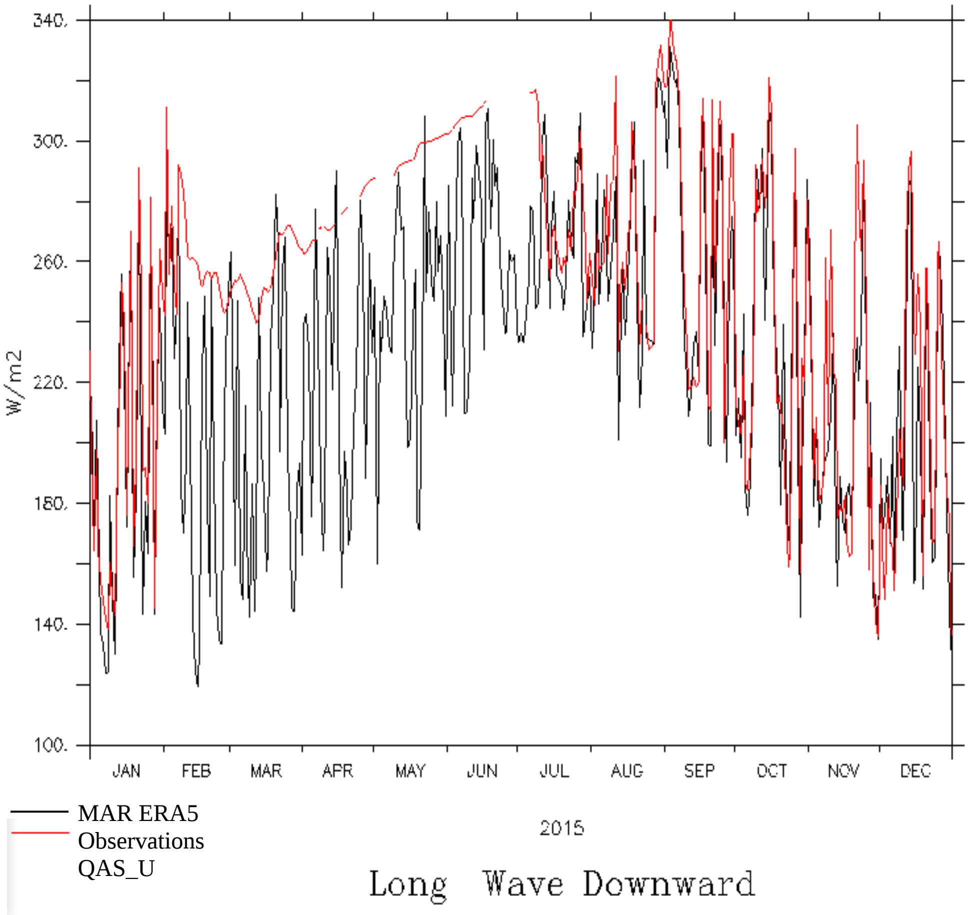


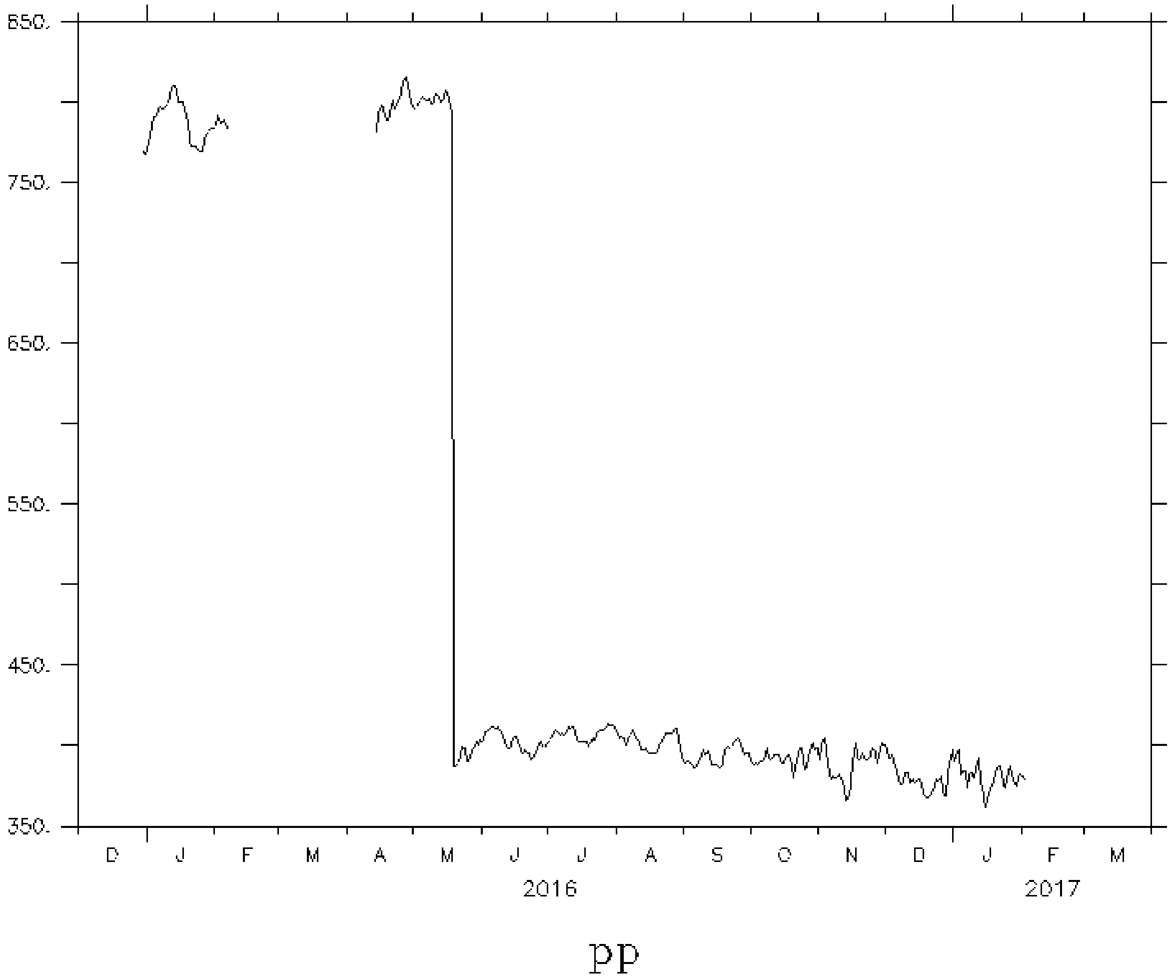
Figure R5: Observed (red) and modelled (MAR_{E5} in black) longwave radiation downward at QAS_U in 2015.



GC-Net

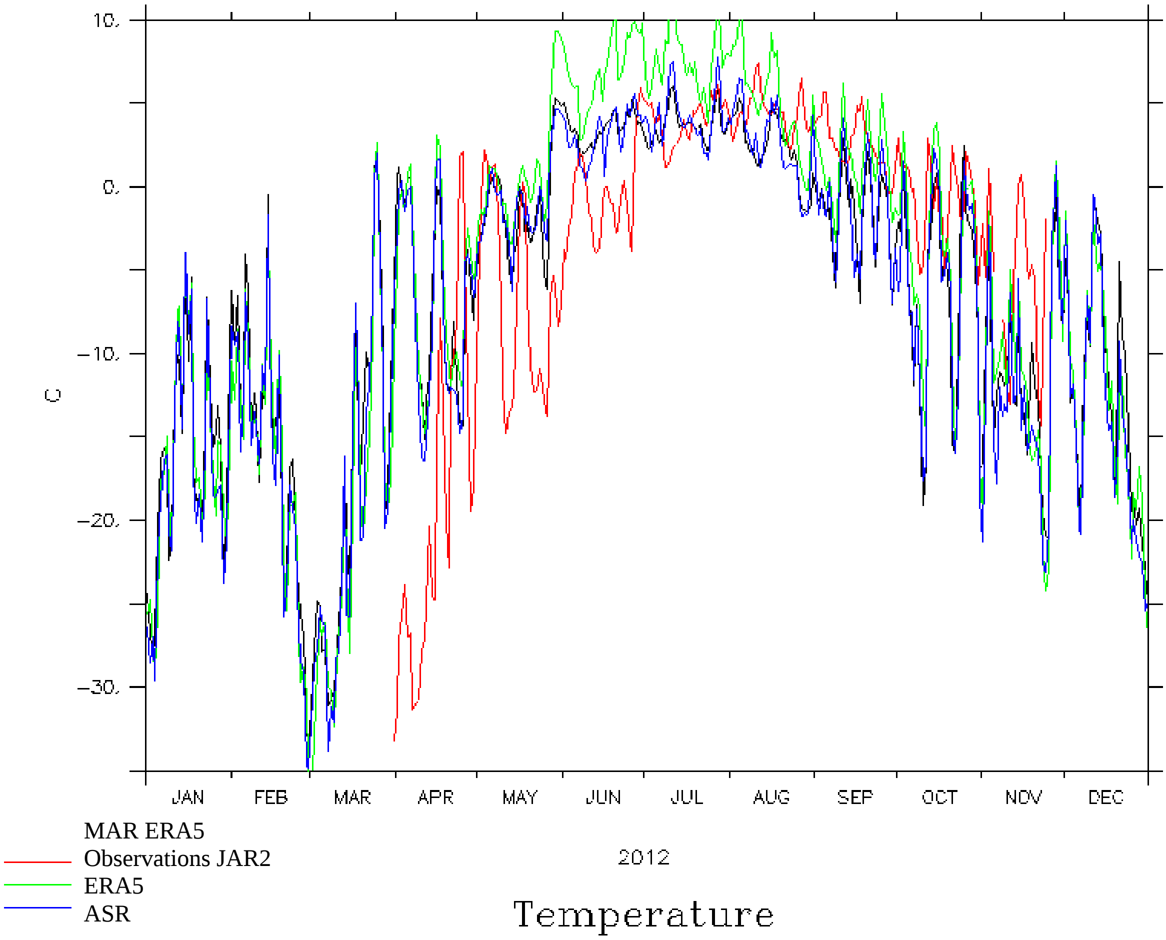
Pressure (hPa): Excluded AWS pressure time series are characterised by shift of tens hPa in few days which is no climatically possible. Here an example of GITS station in 2016.

Figure R6: Observed surface pressure at GITS during 2016-2017.



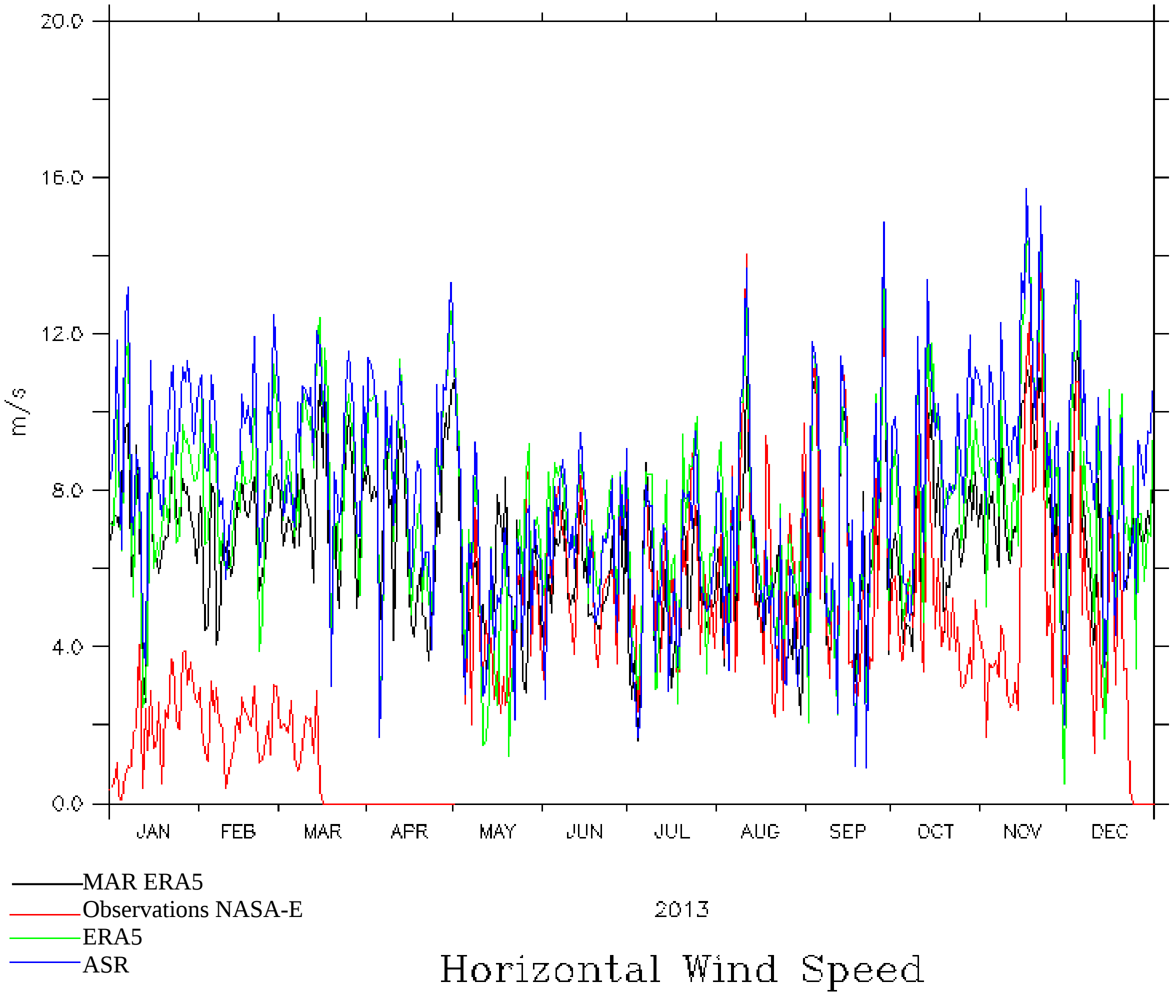
Temperature: Temperarute time serie of JAR2 is time shifted of few weeks.

Figure R7: Observed (red) and modelled (MAR$_{E5}$ in black, E5 in green and ASR in blue) 2 m temperature at JAR2 in 2012.



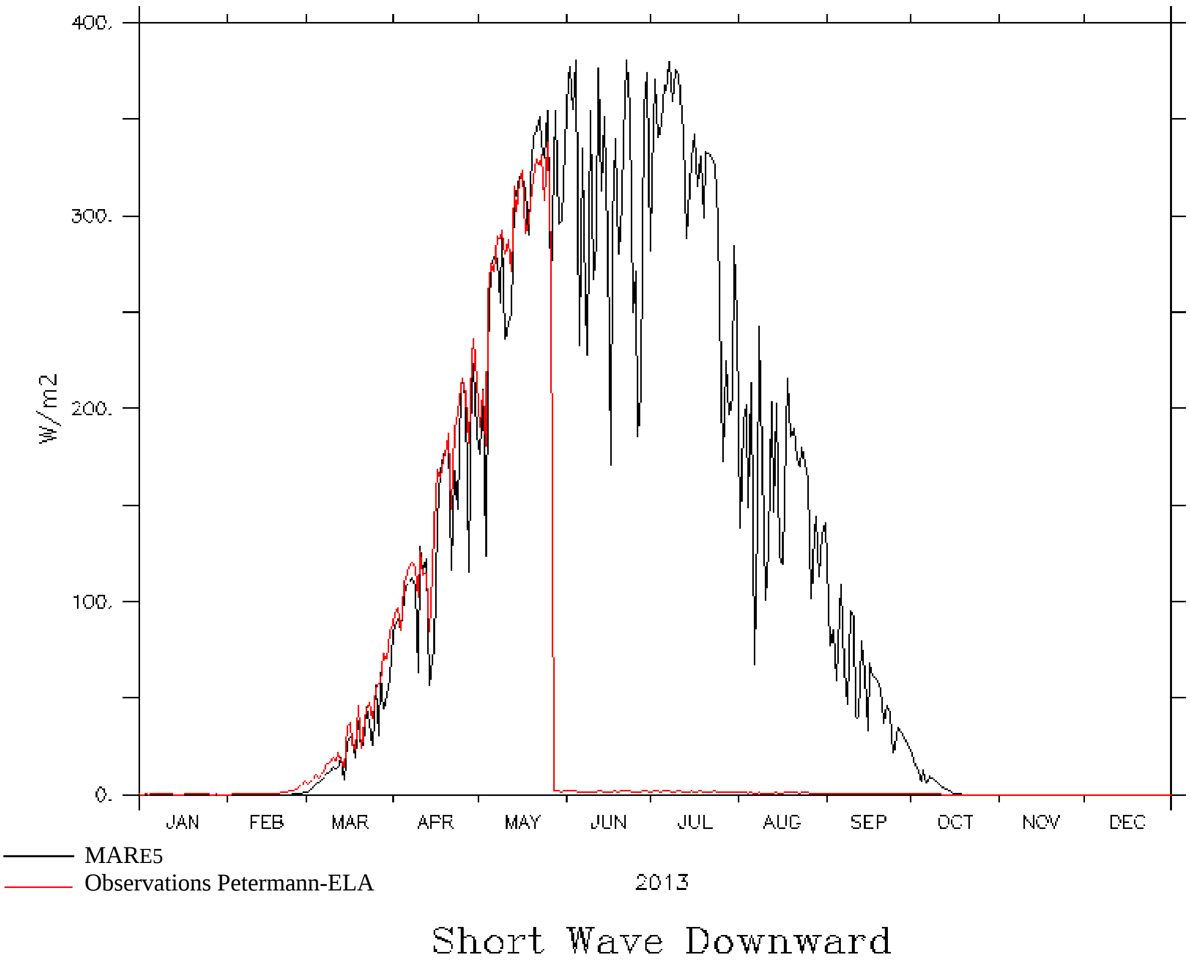
Wind speed (m/s): As shown in the figure below for the NASA-E AWS in 2013 (March-April), a constant wind speed of 0 m/s over a quite long period is not climatically realistic and could be explained by frozen instruments.

Figure R8: Observed (red) and modelled (MAR$_{E5}$ in black, E5 in green and ASR in blue) horizontal 10 m wind speed at NASA-E in 2013.



SWD (W/m³): The Fig. R9 clearly illustrate a SWD sensor problem between May and October 2013 at Petermann-ELA station.

Figure R9: Observed (red) and modelled (MAR_{E5} in black) shortwave radiation downward at Petermann-ELA in 2013.



We suggest them to change this paragraph (Pg. 3 lines 21-26) :

« For each of the studied variables (pressure, 2-m temperature, 10-m wind speed, short-wave and long-wave downward radiative fluxes), we excluded the AWS with: (1) differences between all the interpolated elevations of the four models (see section 2.3.3) and the actual AWS elevation higher than 250 m, (2) unfavourable comparisons resulted from measurement errors in the observed time series, and (3) unfavourable statistics (correlation and RMSE) for the four models (MAR, ASR, E5 and EI) suggesting a likely influence of local surface conditions not represented at the spatial resolutions of the models used here. The AWS excluded and the reasons for their exclusion are listed in Table S1.»

to:

« For each of the studied variables (pressure, 2-m temperature, 10-m wind speed, short-wave and long-wave downward radiative fluxes), we excluded the AWS with (1) too large a difference in elevation between the station and the corresponding grid cells of all models (> +- 250 m), and (2) data records clearly subject to instrument malfunction. The AWS excluded and the reasons for their exclusion are listed in Table S1 of the supplementary material.

The time series of temperature observations have been improved. A selection criterion for observations was applied to these time series to exclude measurements when the ventilation of the station is not active. Indeed, an unventilated temperature can be significantly warm biased by solar radiation and thus cannot be considered as reliable.»

In the supplementary materials, we suggest to improve Table S1 as follows (Table R4):

Variable	AWS	Justification
Surface Pressure	SCO_L	Difference between AWS and interpolated model elevations higher than 250 m in absolute value for all models
		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	TAS_A	Feb 2014
	QAS_A	Feb 2015
	TAS_L	May-Jun 2011, Mar 2012, Nov 2013
T2M	SCO_L	Difference between AWS and interpolated model elevations higher than 250 m in absolute value for all models
		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	NUK_L	Jan-Jun 2012
Wind Speed	SCO_L	Difference between AWS and interpolated model elevations higher than 250 m in absolute value for all models
		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	NUK_L	Jun-Jul 2013
LWD	SCO_L	Difference between AWS and interpolated model elevations higher than 250 m in absolute value for all models
		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	QAS_U	Feb-May and Jul-Aug 2012, Feb-Jul 2015
	NUK_U	Dec 2010, Jan-Aug 2011
	TAS_U	Jan-Jul 2011
SWD	SCO_L	Difference between AWS and interpolated model elevations higher than 250 m in absolute value for all models
		Inconsistencies and period of malfunction have been evidenced from visual inspection of the time series :
	QAS_U	Feb-May and Jul-Aug 2012, Nov-Dec 2013, Jan-Apr 2014 and Feb-Jul 2015
	NUK_U	Jan-Aug 2011
	NUK_L	Jan-Jun 2011
	TAS_U	Jan-Jul 2011

Table R4. Dissmissed PROMICE AWS per studied variable (2-m temperature, 10-m wind speed, longwave and shortwave downward radiative flux) and justifications.

3.- “all the models succeed in representing the daily variability of the surface pressure”, in my opinion this cannot be concluded just by seeing values on Table S3-S7. Actually, some biases and RMSE are higher than I expected.

These biases are due to difference in elevation between AWS and models grid cells corresponding elevation (example Fig. R1 p. 5). In a standard atmosphere, the pressure/altitude ratio is 10 hPa/100 m. In the case of TAS_A, difference in elevation with the station are:

- MAR -95 m
- ERA5-401 m
- ASR -251 m

The correlation here is a more relevant statistical index (than RMSE and mean bias) because it accounts for the time variability in surface pressure without being influenced by differences in elevation between models and stations.

4.- The authors write several times about “statistical significance” when no hypothesis testing procedures seems to have been applied. Hence, without a test statistics we cannot conclude “just by eye” if a value is or not significant. Please be careful with that.

We agree with this point. The first time we used “statistically significant” in the paper, we forgot to explain what it means. We use “significant” when the RMSE is lower than the standard deviation, which means lower than the daily variability.

This specification will be added to the paper as follows:

We suggest then to change this paragraph (pg. 5 lines 7-8):
“*All models have correlations higher than 0.96 at the annual scale and higher than 0.82 in summer with PROMICE based T2M and a RMSE representing about 30% of the daily variability and then the biases can be considered as not statistically significant.*”

to :
“*All models have correlations higher than 0.96 at the annual scale and higher than 0.82 in summer with PROMICE based T2M and a RMSE representing about 30% of the daily variability and then the biases can be considered as not statistically significant (i.e. lower than the daily variability of the PROMICE observations).*”

5.- “RMSE representing 30% of the daily variability” (p.5 l. 8) I am not sure how the authors could have computed that. Similar to p.7 l.12.

These 30% are calculated by comparing the RMSE to the standard deviation. Annually, RMSE range for all models is 2.41 – 3.65 °C, which represent about 30% of the standard deviation (9.33°C).

We suggest then to change this sentence (p. 5 line 8):
“*All models have correlations higher than 0.96 at the annual scale and higher than 0.82 in summer with PROMICE based T2M and a RMSE representing about 30% of the daily variability and then the biases can be considered as not statistically significant.*”

to:
“*All models have correlations higher than 0.96 at the annual scale and higher than 0.82 in summer with PROMICE based T2M and a RMSE representing about 30% of the daily variability (taken as the standard deviation) and then the biases can be considered as not statistically significant.*”

6.- “Two distinct elements can explain the statistical differences between the representation of T2M by the models considered here. First, the difference in altitude between the station and the corresponding interpolated model elevation” (p. 5 l.18). This is confirmed after having written at the end of page 4 that the elevation correction was not needed (see also item 2 in my comments).

We understand that there may be a misunderstanding here. The temperature correction as a function of difference in elevation was not applied because we consider that adds more uncertainty and not because no correction should be applied. The difference in altitude between model and station has an obvious influence on the statistical comparison of temperature with observations, but not only on this last one, this also influence the other variables like SWD, LWD, wind speed,…

7.- "To conclude, MAR shows the best accuracy when modelling T2M which might also lead to a better representation of the surface melt (not evaluated here) and therefore of the SMB." (p.7 l.8) I think this is too much to be concluded from the analysis the authors performed.

We agree. This sentence will be transformed to "*To conclude, MAR shows the best accuracy when modelling T2M which might also lead to a better representation of the surface melt (not evaluated here)*.", because the SMB evaluation is not the aim of this paper and surely requires additional analysis.

8.- "the correlation of the wind speed is neither sensitive to the vertical level used in MAR (2-m vs 10-m) nor to switching the forcing from EI to E5." (p.7 l.24) A statistical test has not been performed so I do not think the authors can claim that those correlations are not sensitive to vertical levels.

As we explained in point 4) above, for this type of explanation, we rely on the fact that a difference is significant if it is higher than the daily variability of the observations.

9.- In the discussion section be careful with using the terms "statistical significance" when no testing procedure has been applied.

As we explained in point 4) above, significance refers here to higher than the standard deviation.

10.- I agree to RMSE being a common element that does not need to be explicitly defined, but for the centred version at least the formula should be provided in the supplementary material.

RMSEc formula will be add in the supplementary materials:

$$cRMSE = RMSE - bias = \sqrt{\frac{\sum_{i=1}^{n}(m_i - o_i)^2}{n} - (\bar{m} - \bar{o})^2}$$

Where n is the number of observation, m_i is the modelled value, o_i is the observed value and $\bar{m}$ and $\bar{o}$ are respectively average of modelled and observed values.

11.- As probably a possible extension of this work some other measurements (more than annual or summer means) should be taken into account to fully analyse the behaviour of ERA5 against any of the other models.

We are not sure that we have understood the meaning of this remark. We used daily observations to evaluate ERA5 and the other models (specified in p.4 line 1 of the paper). The statistic index (mean bias, correlation and RMSE(c)) between the time series (daily scale) were calculated for the summer period (JJA), the most interesting period for the ice sheet, as well as for the annual period to complete the analysis. By doing so, time series analysis for other seasonal periods might be of lesser interest and we decided to ignore them.
If the Reviewer means using more data, as explained in the first point, we add the statistical comparison with GC-Net observations available to better cover the Greenland ice sheet. We plan to write a companion paper discussing SMB and its components resulting from MAR forced by ERA5

with those from MAR forced by ERA-Interim and ERA-40 when ERA5 will be available from 1950. We will add this perspective in our conclusions.

References

Franco, B., Fettweis, X., & Erpicum, M. (2013). Future projections of the Greenland ice sheet energy balance driving the surface melt. The Cryosphere, 7(1), 1–18. https://doi.org/10.5194/tc-7-1-2013

Hanna, E., Huybrechts, P., Janssens, I., Cappelen, J., Steffen, K., & Stenhens, A. (2005). Runoff and mass balance of the Greenland ice sheet: 1958-2003. Journal of Geophysical Research Atmospheres, 110(13), 1–16. https://doi.org/10.1029/2004JD005641

Hanna, E., Huybrechts, P., Cappelen, J., Steffen, K., Bales, R. C., Burgess, E., … Savas, D. (2011). Greenland Ice Sheet surface mass balance 1870 to 2010 based on Twentieth Century Reanalysis, and links with global climate forcing. Journal of Geophysical Research Atmospheres, 116(24), 1–20. https://doi.org/10.1029/2011JD016387

Steffen, K., J. E. Box, and W. Abdalati. (1996). "Greenland Climate Network: GC-Net", in Colbeck, S. C. Ed. CRREL 96-27 Special Report on Glaciers, Ice Sheets and Volcanoes, trib. to M. Meier, pp. 98-103.