The Cryosphere

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Discussions

Supplement of

Stable climate and surface mass balance in Svalbard over 1979–2013 despite the Arctic warming

C. Lang et al.

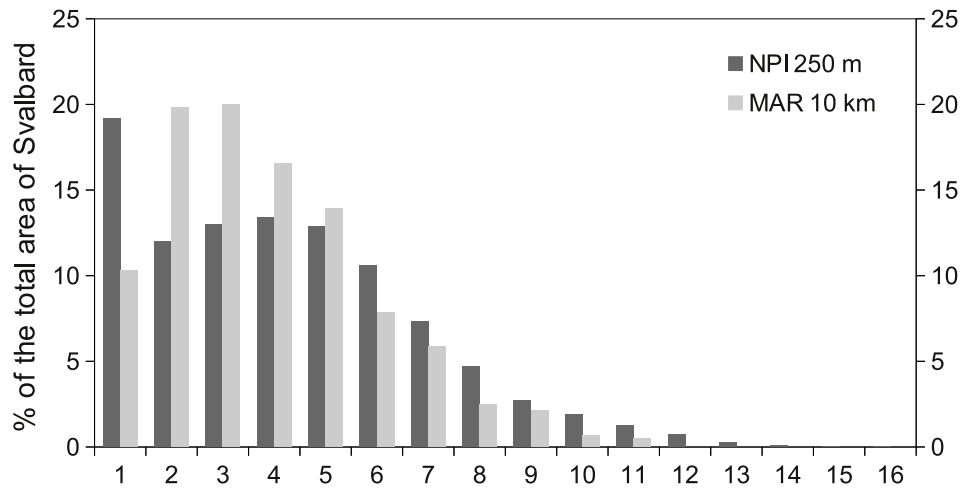*Correspondence to:* C. Lang (charlotte.lang@ulg.ac.be)

Fig. S1. Histogram of the 16 elevation classes area in percentage of the total area of Svalbard for the Norsk Polarinstitutt topography interpolated on a 250 m grid and the 10 km-topography as used in MAR.

Table S1. Elevation classes. ME = mean error, MAE = mean absolute error. The last two columns give the percentage of the area that over- and underestimates the elevation in the 10km- topography (used in MAR) for each elevation class.

Class	Alt range (m)	ME (m)	MAE(m)	% overest.	% underest.
1	]0,100]	96.4	115.0	69	31
2	]100,200]	42.5	104.0	60	40
3	]200,300]	-9.2	99.4	45	55
4	]300,400]	-62.4	115.2	31	69
5	]400,500]	-96.3	128.9	22	78
6	]500,600]	-116.9	139.6	17	83
7	]600,700]	-129.4	150.8	16	84
8	]700,800]	-163.9	182.7	11	89
9	]800,900]	-205.0	220.0	11	89
10	]900,1000]	-216.3	223.5	8	92
11	]1000,1100]	-257.8	258.2	2	98
12	]1100,1200]	-318.7	318.7	0	100
13	]1200,1300]	-377.9	377.9	0	100
14	]1300,1400]	-404.4	404.4	0	100
15	]1400,1500]	-478.9	478.9	0	100
16	>1500	-585.8	585.8	0	100

Table S2. 2000-2010 mean annual and JJA correlation, RMSE and bias between the MAR_{ERA} and the observed daily temperature.

Station	Annual			Summer		
	R^2	RMSE (˚C)	Bias (˚C)	R^2	RMSE (˚C)	Bias (˚C)
Horsund	0.94	4.03	-3.49	0.45	2.92	-2.57
Kapp Heuglin	0.92	4.19	-3.07	0.57	1.58	-0.80
Ny-Ålesund	0.95	2.67	-2.00	0.69	2.99	-2.65
Svalbard Lufthavn	0.94	4.10	-3.53	0.71	3.83	-3.52
Sveagruva	0.92	4.87	-4.05	0.64	4.33	-4.03

Table S3. Same as Table S2 but for ASR.

Station	Annual			Summer		
	R^2	RMSE (˚C)	Bias (˚C)	R^2	RMSE (˚C)	Bias (˚C)
Horsund	0.89	2.43	-1.40	0.63	1.90	-1.63
Kapp Heuglin	0.85	3.33	-0.63	0.43	1.89	0.65
Ny-Ålesund	0.88	3.93	-2.83	0.71	4.06	-3.85
Svalbard Lufthavn	0.91	2.83	-1.20	0.78	1.76	-1.24
Sveagruva	0.86	3.52	-0.63	0.63	2.16	-1.41