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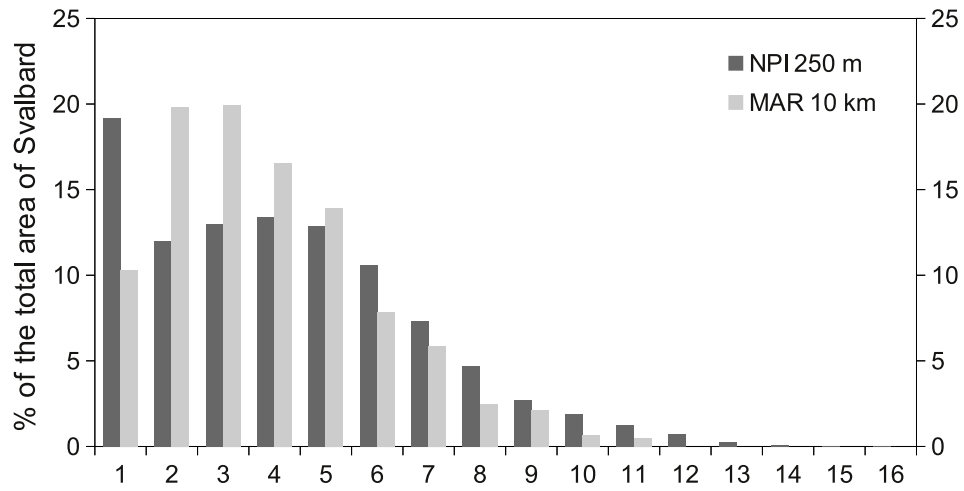


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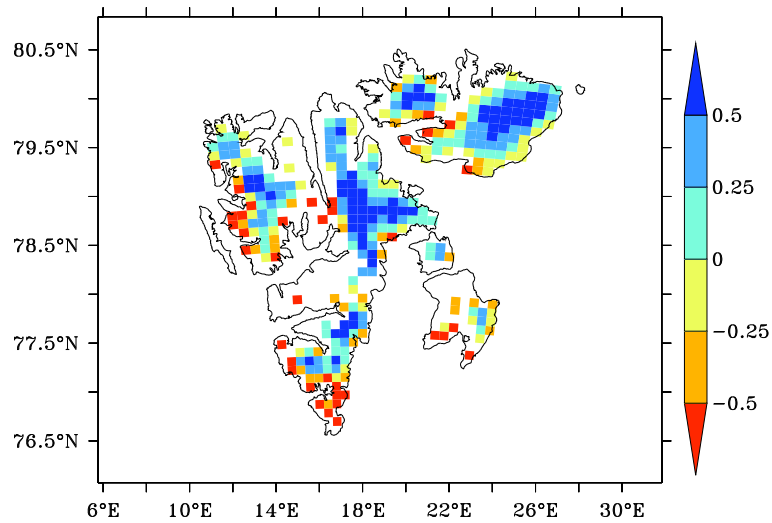
## **Stable climate and surface mass balance in Svalbard over 1979–2013 despite the Arctic warming**

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**Fig. 1.** 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.



**Fig. 2.** 2003–2008 MAR<sub>ERA</sub> mean elevation changes ( $dh/dt$ ,  $m\ yr^{-1}$ ).

**Table 1.** 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 10-km topography (used in MAR) for each elevation class.

Class	Alt range (m)	ME	MAE	% overestimated	% underestimated
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 2.** 2000–2010 mean annual and JJA correlation, RMSE and bias between the MAR<sub>ERA</sub> and the observed daily temperature.

Station	Annual			Summer		
	R <sup>2</sup>	RMSE	Bias	R <sup>2</sup>	RMSE	Bias
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	2.65	-1.99	0.70	2.95	-2.61
Svalbard Lufthavn	0.94	4.08	-3.51	0.71	3.81	-3.51
Sveagruva	0.92	4.89	-4.08	0.64	4.40	-4.10

**Table 3.** Same as Table 2 but for ASR.

Station	Annual			Summer		
	R <sup>2</sup>	RMSE	Bias	R <sup>2</sup>	RMSE	Bias
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	3.86	-2.82	0.74	4.04	-3.84
Svalbard Lufthavn	0.92	2.74	-1.20	0.79	1.77	-1.29
Sveagrauva	0.87	3.45	-0.70	0.64	2.24	-1.54