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Supplement of

Future projections of the climate and surface mass balance of Svalbard with the regional climate model MAR

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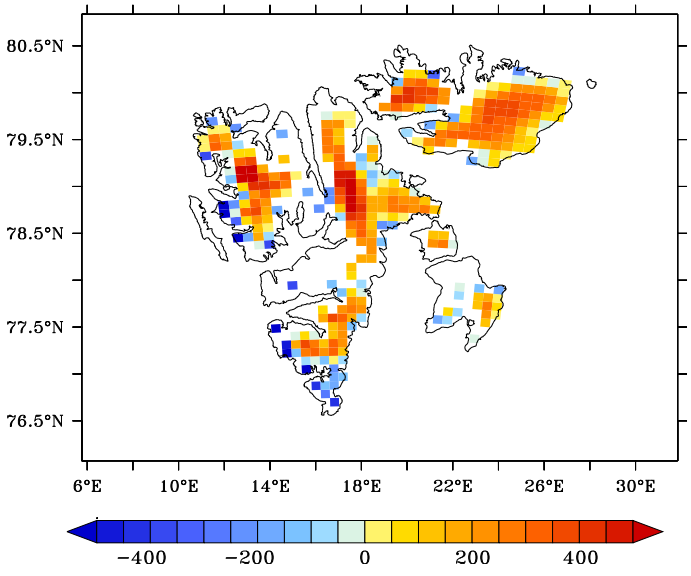

Fig. 1. 1980–2005 reference mean annual SMB ($\mathrm{mm\,w.e.\,yr^{-1}}$) simulated by $\mathrm{MAR_{histo}}$ from Lang et al. (2014).

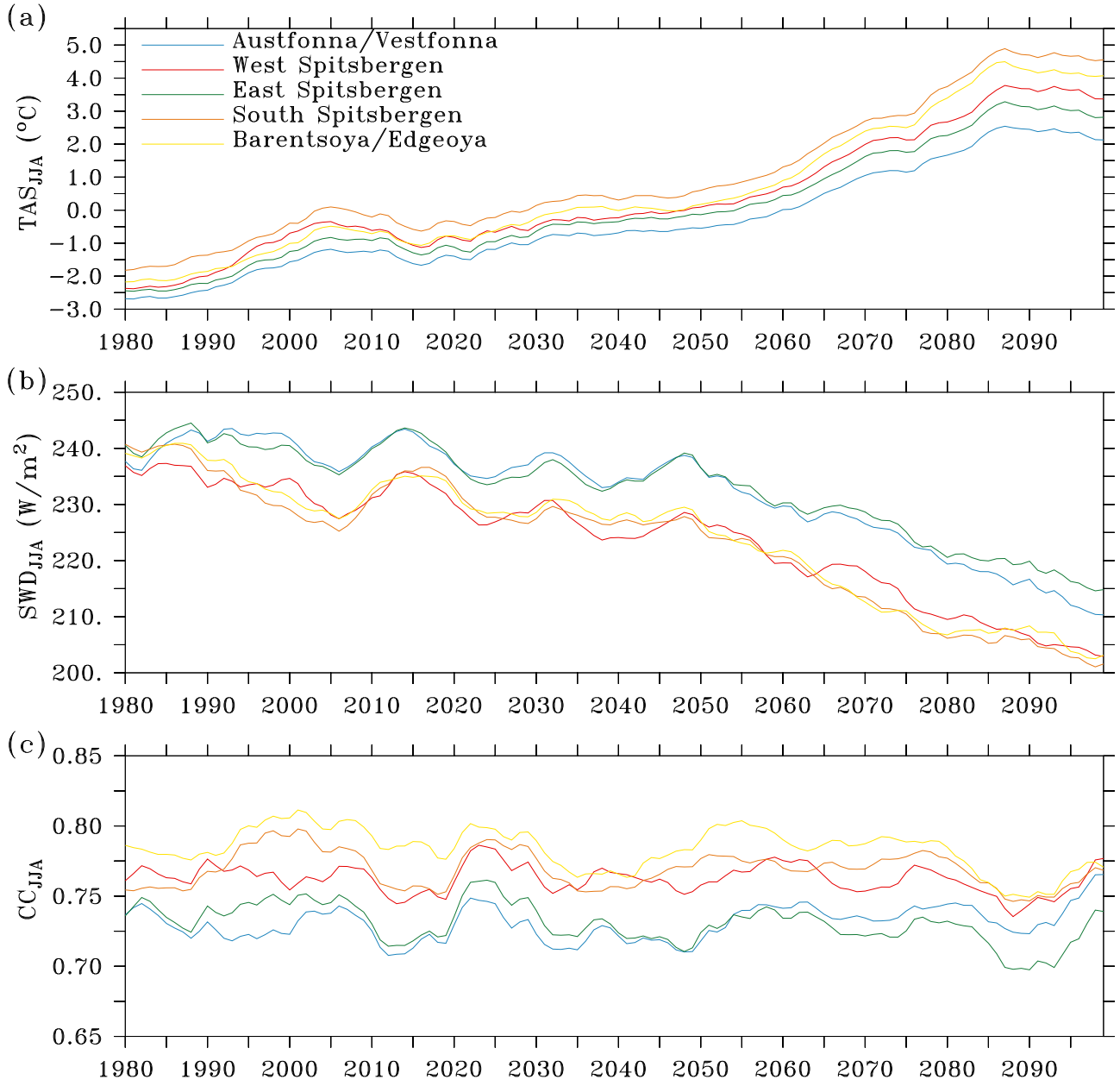

Fig. 2. (a) Near-surface JJA temperature (TAS_{JJA}) 10-year running mean (°C) for the 5 different regions shown in Figure 3 as simulated by MAR forced by the MIROC5 based historical scenario over 1980–2005 and RCP8.5 afterwards. (b) Same as (a) but for the JJA net solar radiation (SWD_{JJA},W m^{-2}). (c) Same as (a) but for the cloud cover (CC_{JJA}, going from 0 for completely clear sky to 1 for completely overcast).

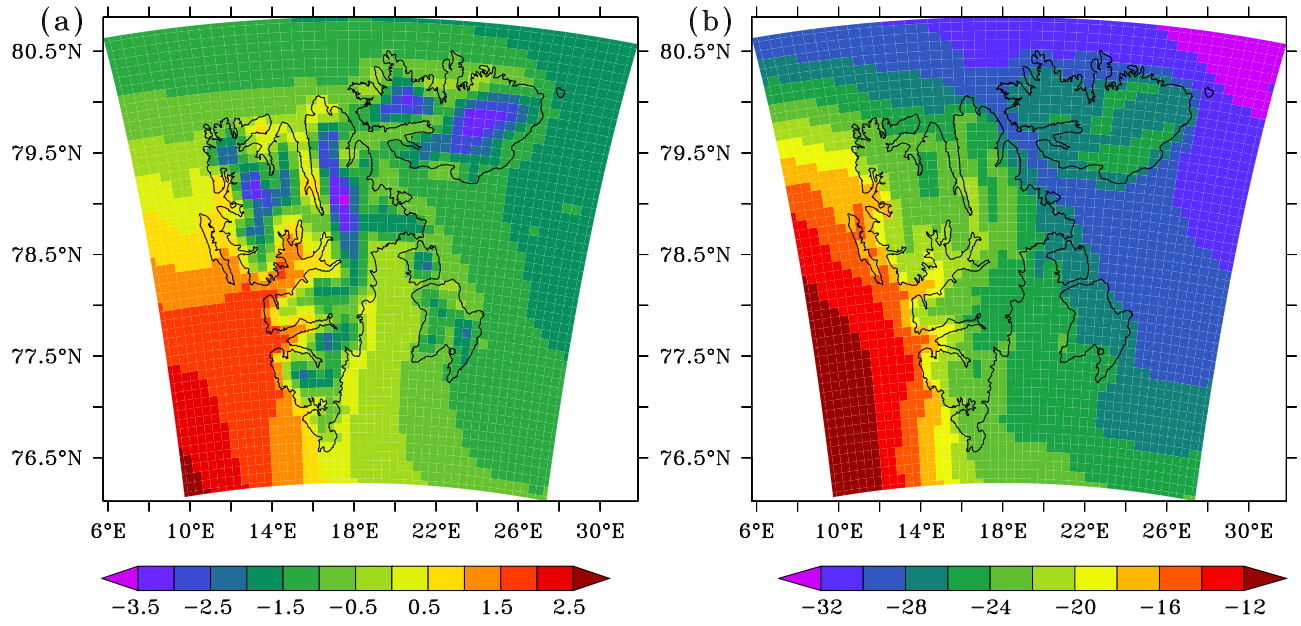

Fig. 3. (a) 1980–2005 mean summer (JJA) near-surface temperature (°C). (b) Same as (a) but for winter (DJF).

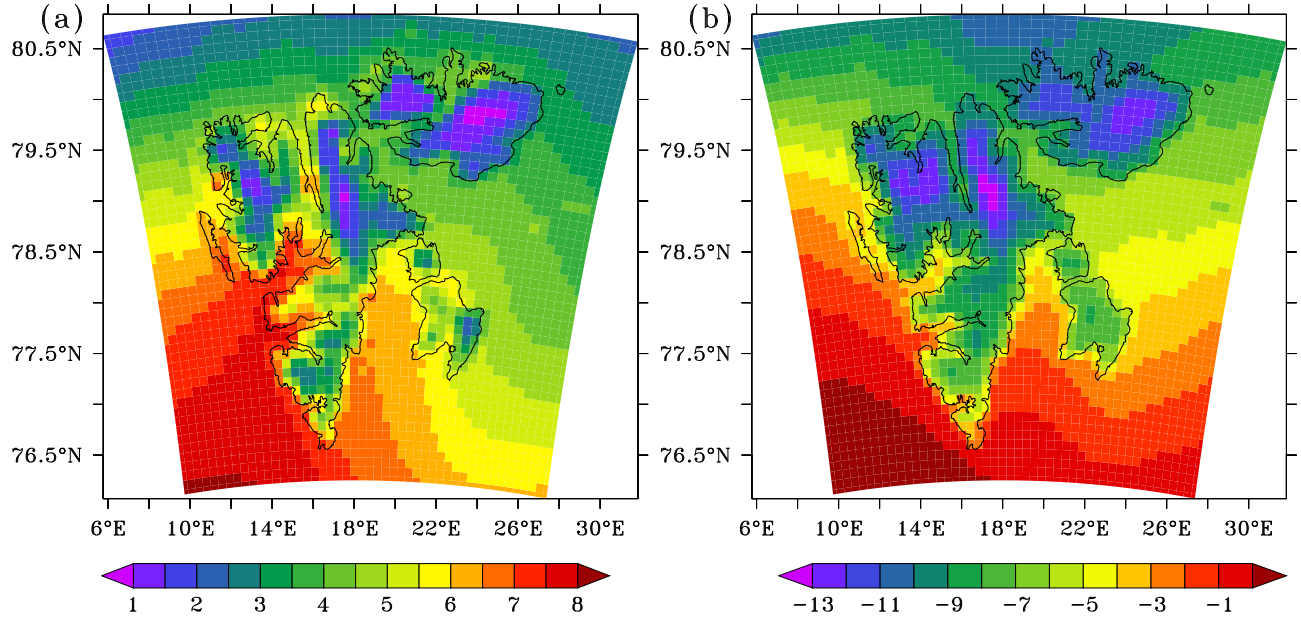

Fig. 4. (a) Same as Figure S3a but for 2070–2099. (b) Same as (a) but for winter (DJF).

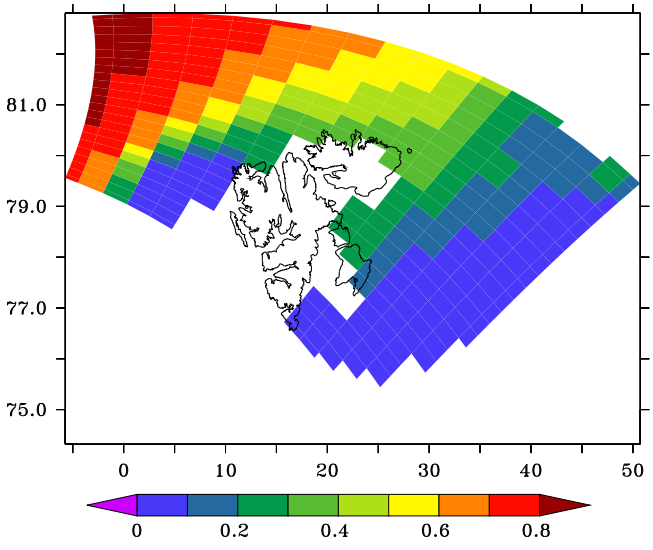

Fig. 5. 2070–2099 mean winter (DJF) sea-ice cover from MIROC5.

Table 1. Relative contribution of the energy balance components to the NET anomaly over 2080–2099 with respect to the 1980–2005 mean.

E balance component	% of NET anomaly (2080–2099)
SWDnet	33
SWDalb	49
SWDswd	-7.5
SHF	24
LHF	22
LWnet	21