

Fig. R1.1 Difference in elevation (meters) between the ERA-interim topography interpolated at  $0.5^\circ$  and the actual topography of the 25 km stereopolar grid.

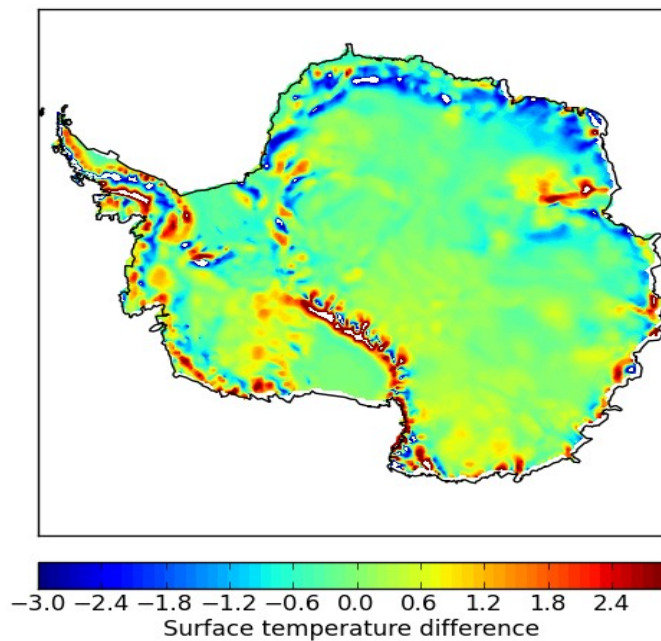


Fig. R1.2 Averaged surface temperature difference between the Crocus simulation with corrected meteorological forcings and the original one used in the paper (2000-2011).

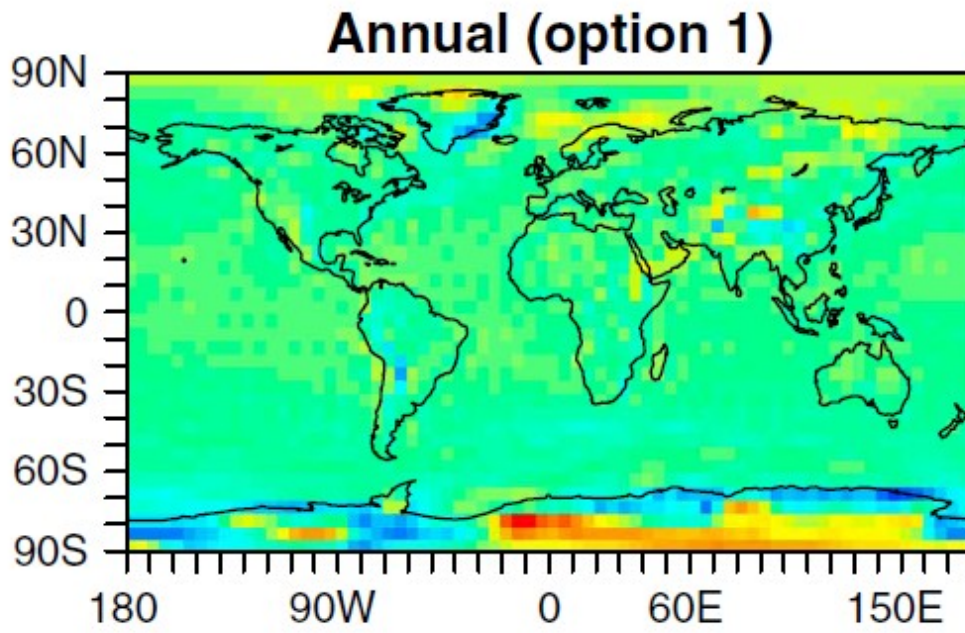


Figure R1.3 Sub-sample of Figure 2 in Jones and Harpham (2013) showing the warm bias of T2m over the Antarctic Plateau compared to HadCRUT4.

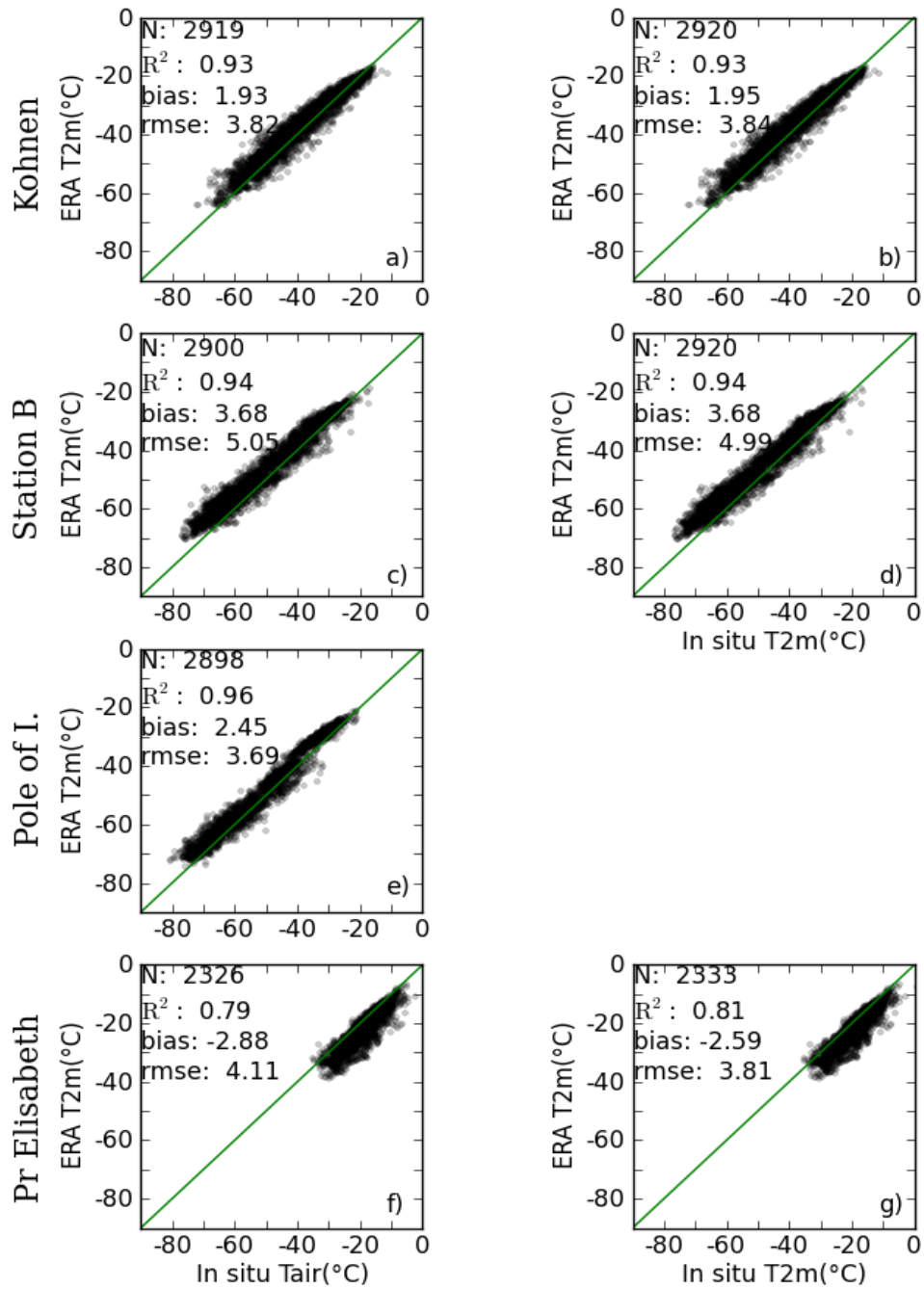


Fig R1.4 : Left column : comparisons of ERA-i T<sub>2m</sub> and in situ T<sub>air</sub> at (a) Kohnen (2892 m.a.s.l., z<sub>ERA-i</sub> = 2867 m), (c) Plateau Station B (3619 m.a.s.l, z<sub>ERA-i</sub> = 3617 m), (d) Pole of Inaccessibility (3718 m.a.s.l., z<sub>ERA-i</sub> = 3746 m) and (f) Princess Elisabeth (1372 m.a.s.l, z<sub>ERA-i</sub> = 1316 m) during 2009. Right column : comparisons of ERA-i T<sub>2m</sub> and in situ T<sub>2m</sub> at (b) Kohnen, (d) Plateau Station B and (g) Princess Elisabeth during 2009.

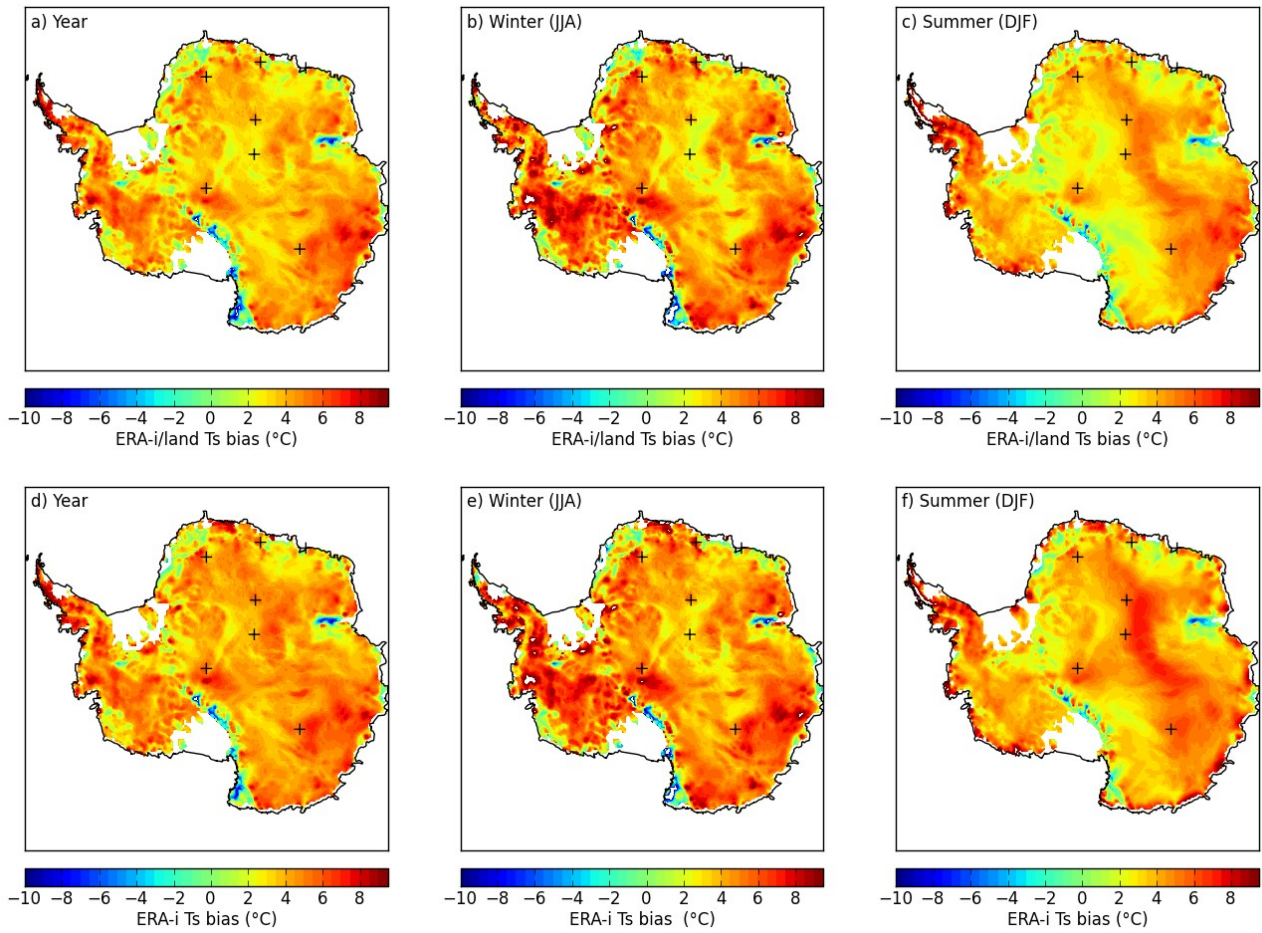


Fig R1.5: (a) 2000-2010 averaged ERA-i/land Ts bias, (b) ERA-i/land Ts bias in winter (JJA) and (c) ERA-i/land Ts bias in summer (DJF), with respect to MODIS Ts. (d) 2000-2010 averaged ERA-i Ts bias, (e) ERA-i Ts bias in winter (JJA) and (f) ERA-i/land Ts bias in summer (DJF), with respect to MODIS Ts.