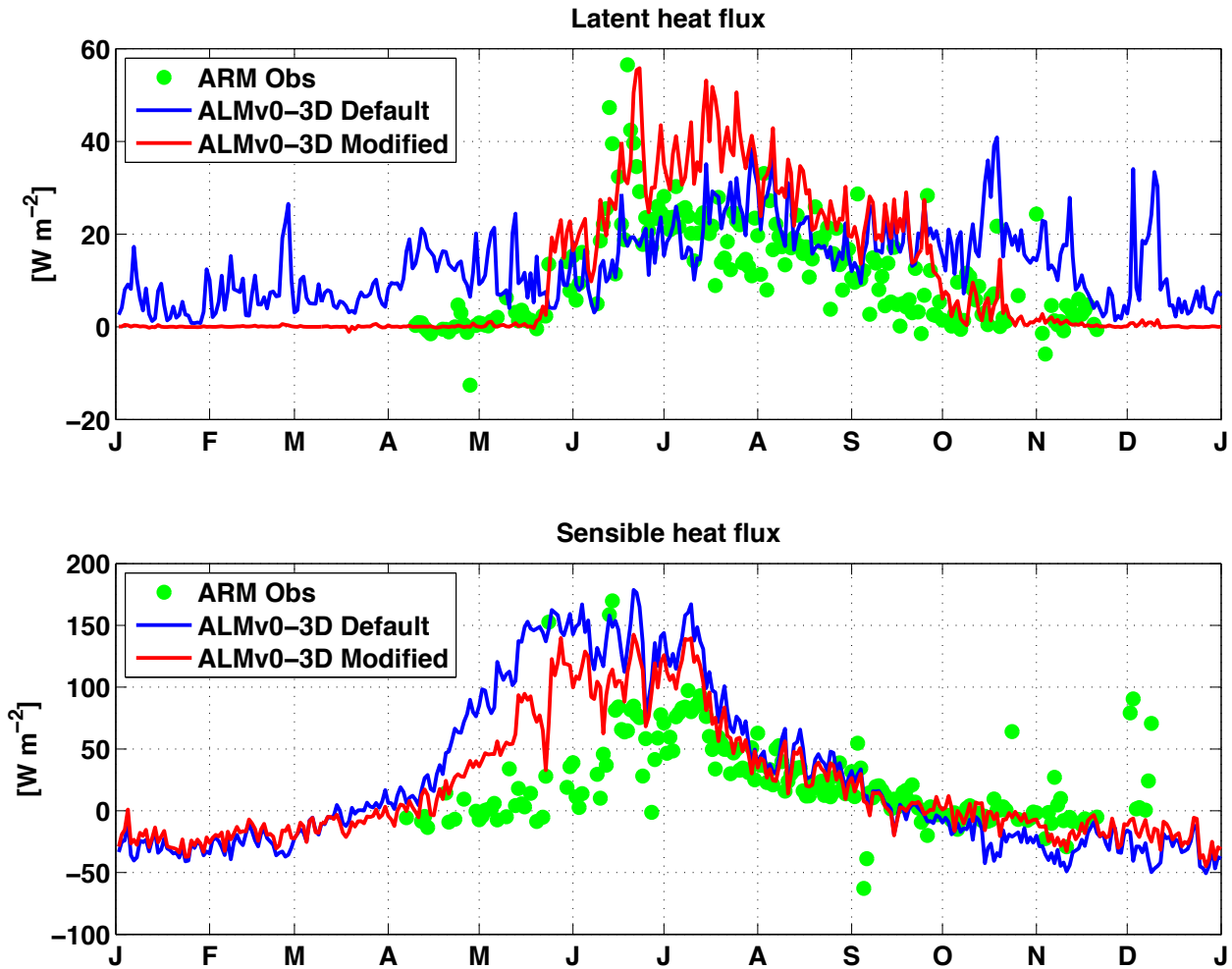


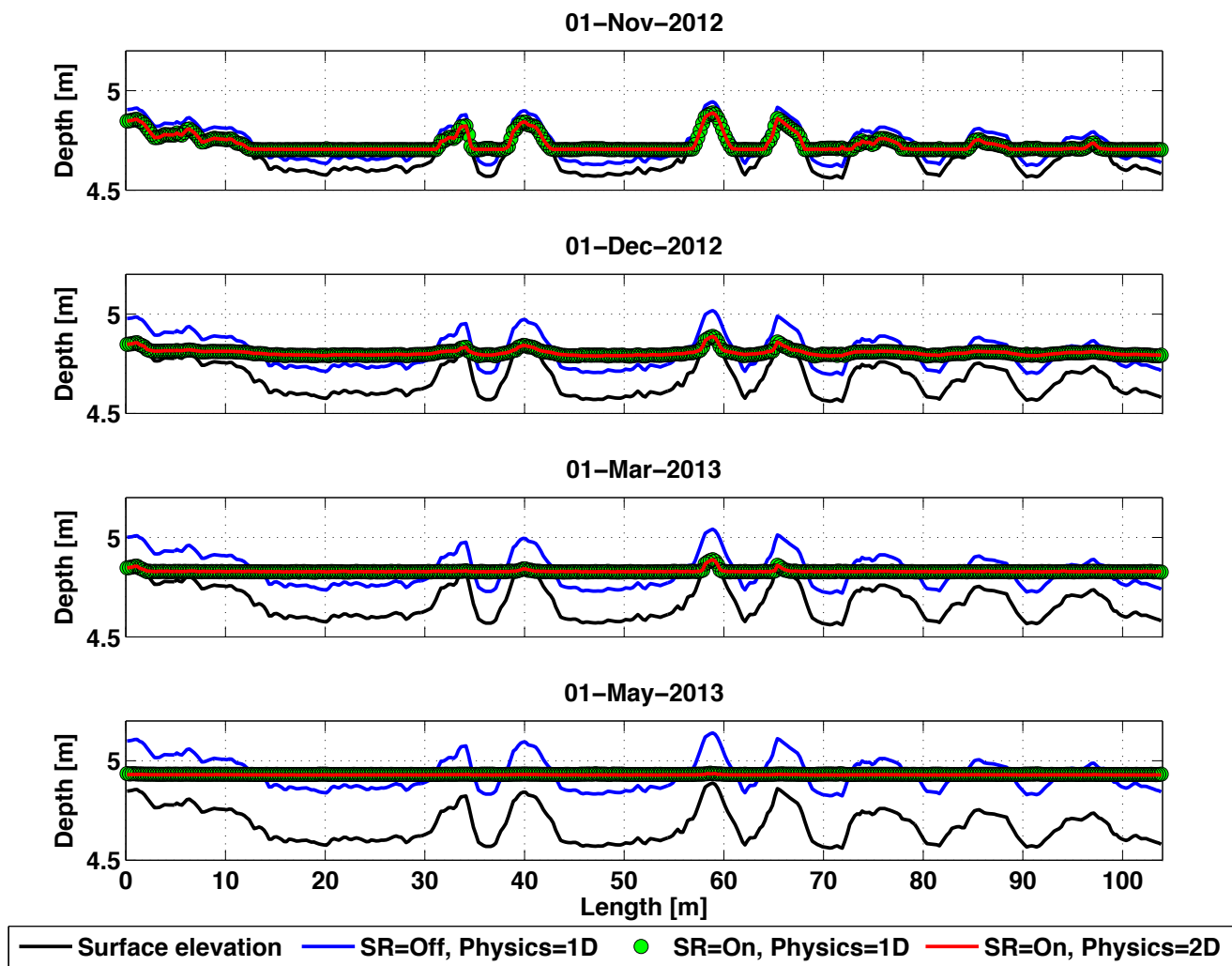
1 1 Supplementary Material



2

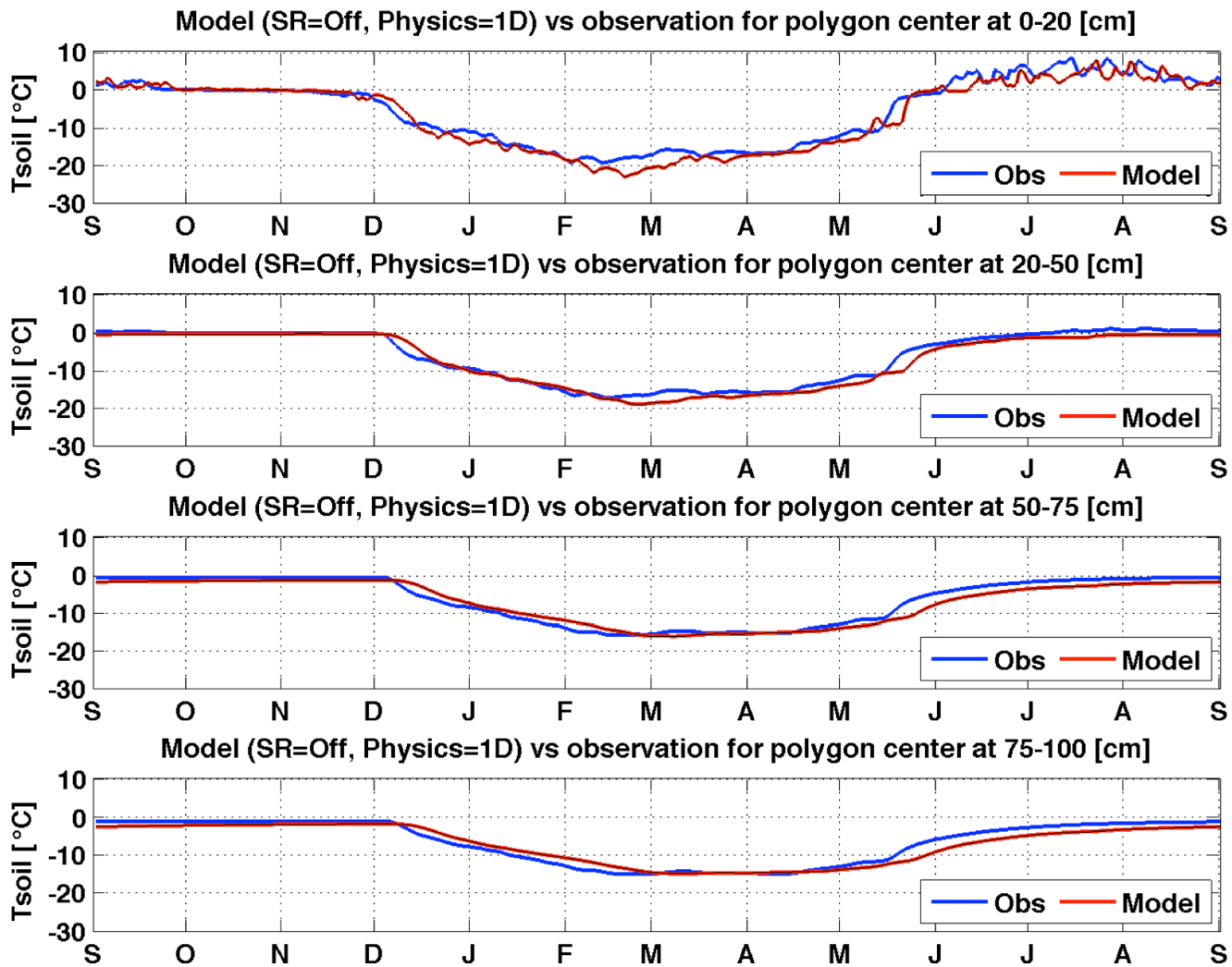
3 **Figure S 1. Effect of modifying the sublimation flux calculation in ALMv0-3D on the**
4 **predicted sensible and latent heat fluxes: (a) latent heat, (b) sensible heat.**

5

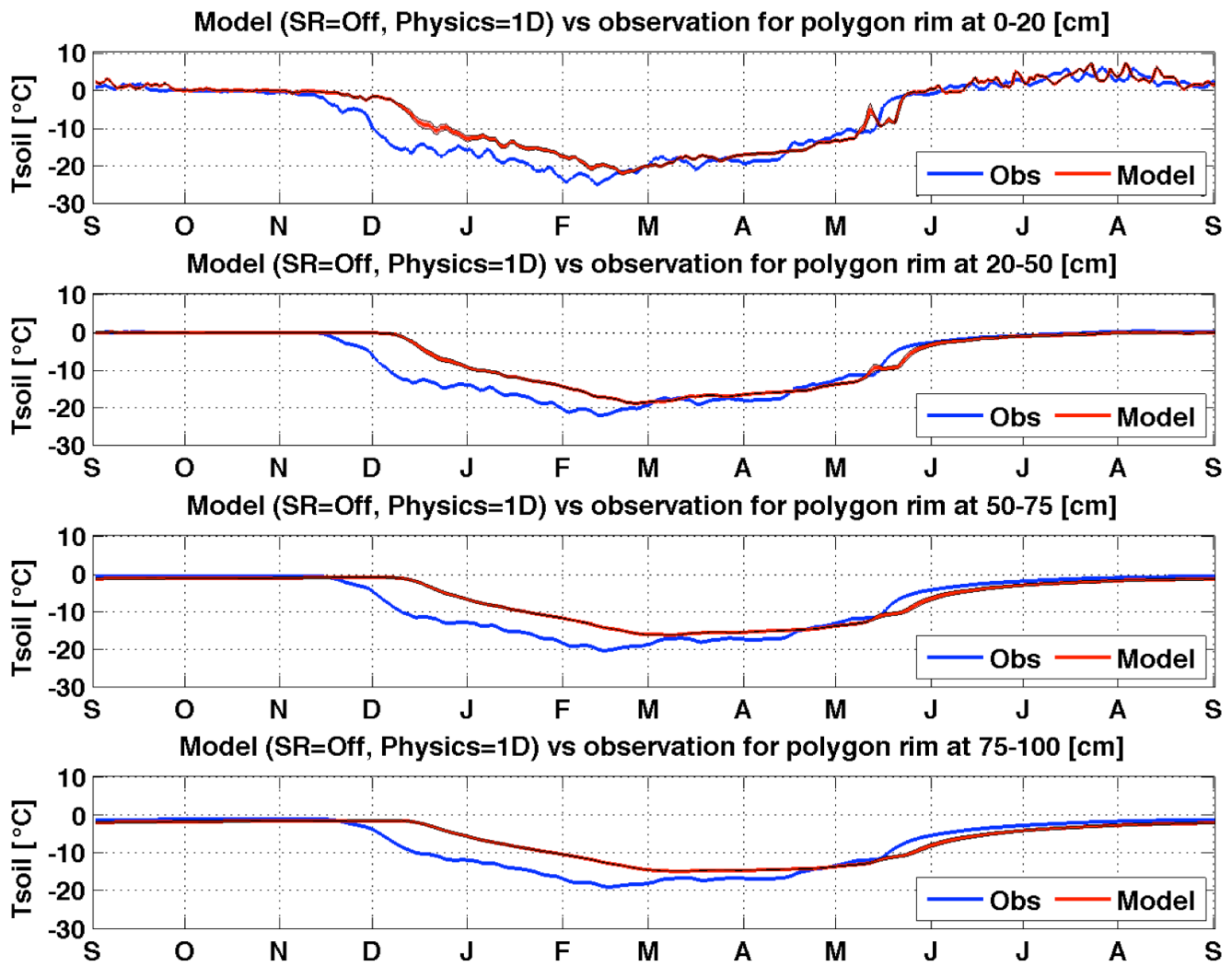


6
7 **Figure S 2. Simulated snow depth across the transect on (a) 1st November 2012, (b) 1st**
8 **December 2012, (c) 1st March 2013, and (d) 1st May 2013. Blue line shows model results for**
9 **the case snow redistribution (SR) is turned off and 1D subsurface physics, green symbols are**
10 **for model results with snow redistribution turned on and 1D subsurface physics, while red**
11 **line corresponds to model results with snow redistribution turned on and 2D subsurface**
12 **physics. Surface elevation of the transect is shown by solid black line.**

13

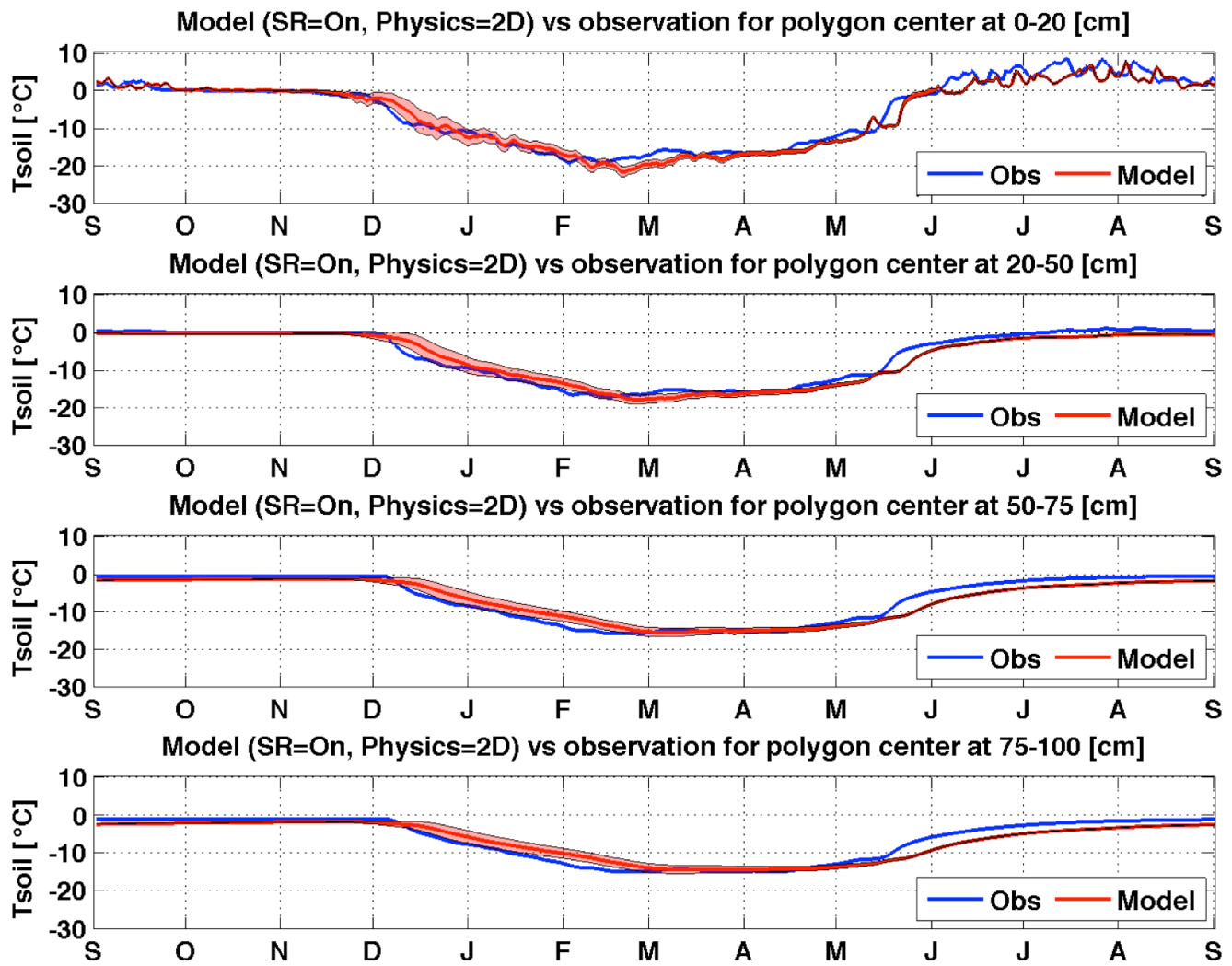


.4
 .5 **Figure S 3. Comparison of soil temperature observations and predictions in polygon center**
 .6 **for September 2012 and September 2013 at various soil depths. Simulation was performed**
 .7 **with no snow redistribution and 1D physics.**

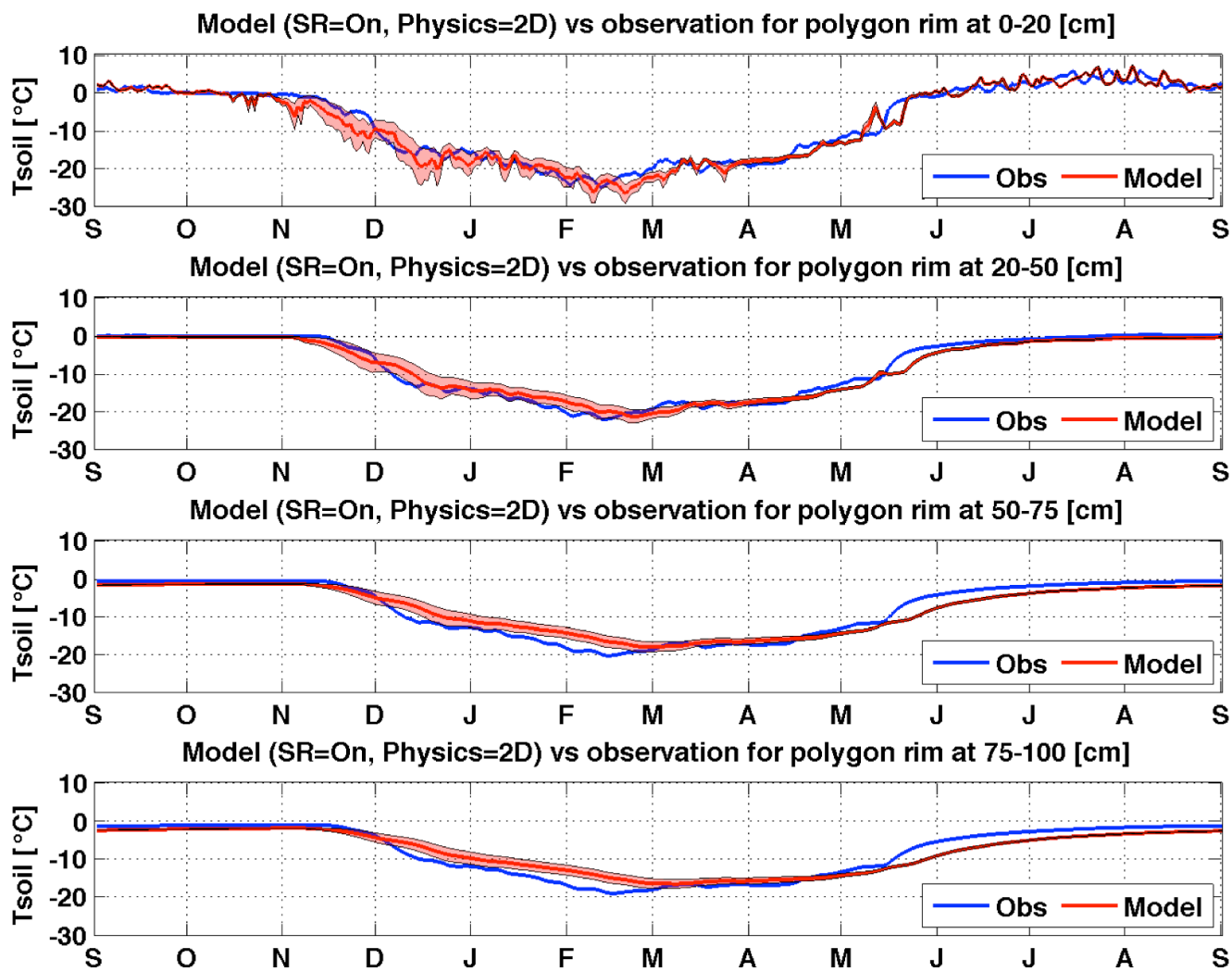


.8
 .9 **Figure S 4 Same as Figure S 3 except for soil temperature in polygon rim.**

.10
 .11

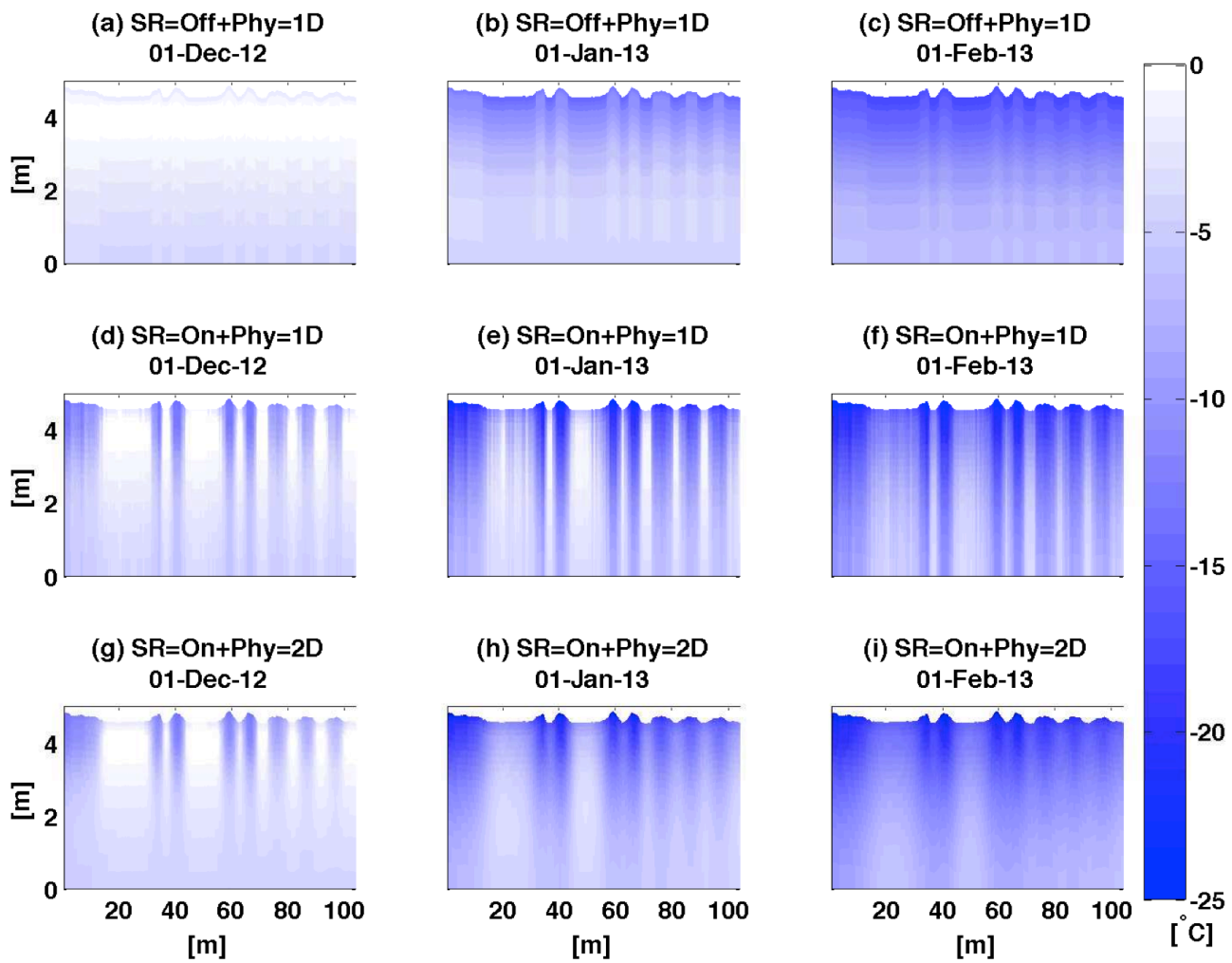


12
 13 **Figure S 5 Comparison of soil temperature observations and predictions, shown as solid**
 14 **lines, in polygon center for September 2012 and September 2013 at various soil depths.**
 15 **Simulation was performed with snow redistribution and 2D physics. The red band**
 16 **represents ± 1 spatial standard deviation around the simulated mean soil temperature.**



17
18 **Figure S 6** Same as Figure S 5 except for soil temperature in polygon rims.

19



}0
 }1 **Figure S 7. Snapshot of simulated soil temperature profile across the transect on 1st**
 }2 **December 2012, 1st January 2013 and 1st February 2013 for (a-c) no snow redistribution and**
 }3 **1 dimensional subsurface physics; (d-f) with snow redistribution and 1 dimensional**
 }4 **subsurface physics; and (g-i) with snow redistribution and 2 dimensional subsurface physics.**

}5