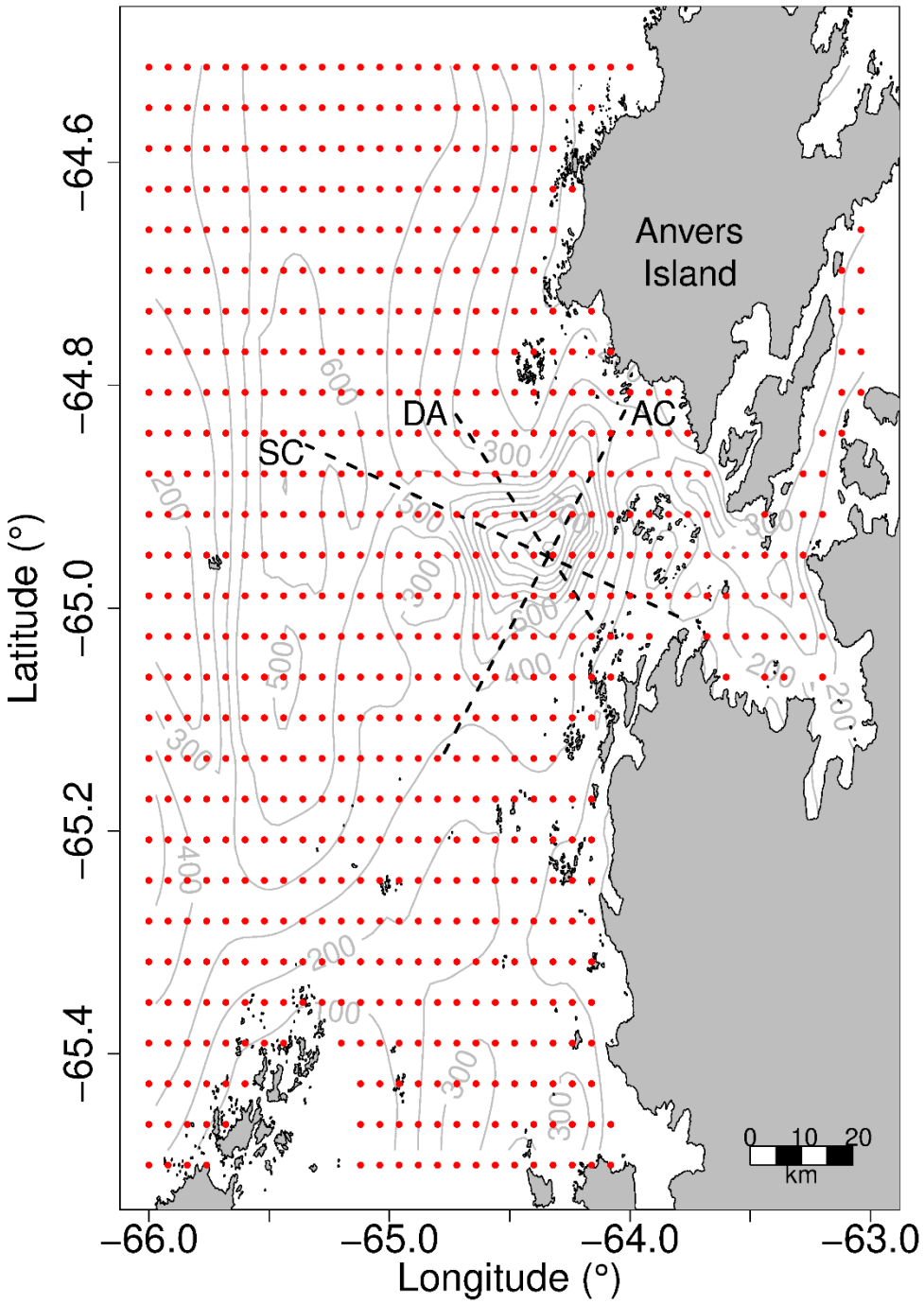

Figure S1. Study area used in this analysis, including bathymetric map of Palmer Deep Canyon and the surrounding shelf area. Red dots illustrate the release points of the simulated particles used in this analysis. The black dashed lines are the along-canyon (AC), shelf-canyon (SC), and deep across (DA) transects used in ROMS for average temperature, salinity, and density properties.

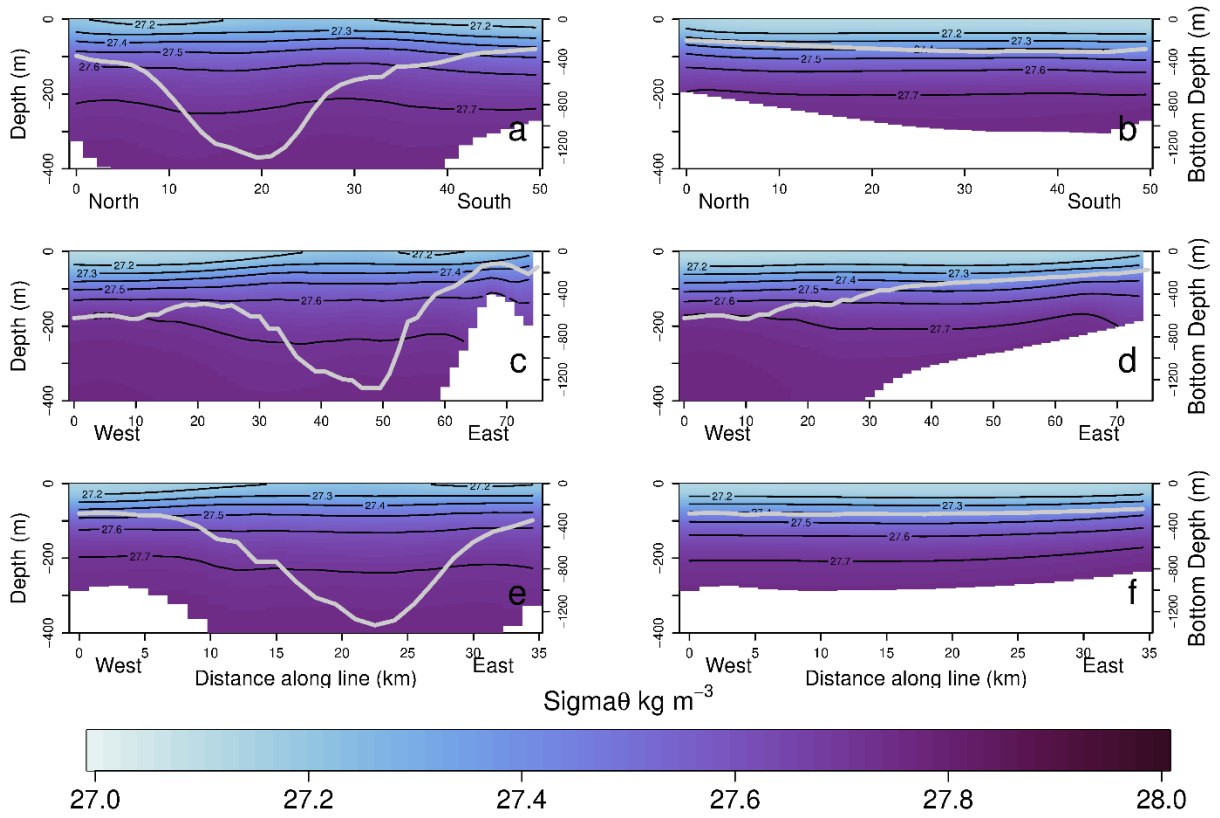

Figure S2. Average potential density (sigma$_\theta$) transects with 0.1 sigma$_\theta$ contours from the (a-b) along-canyon, (c-d) shelf-canyon, and (e-f) deep across transect lines in ROMS with (a,c,e) and without (b,d,f) Palmer Deep Canyon present in model simulations. The start of the transects (0 km) corresponds to the northern (a-b) and western flanks of the canyon (c-f). The left y-axis corresponds to the depth of the observations, and the right y-axis corresponds to the depth of the model bathymetry in grey. Model data were averaged from December to February to cover the austral summer, and averaged in 1.5 km horizontal bins and 1 m vertical bins.

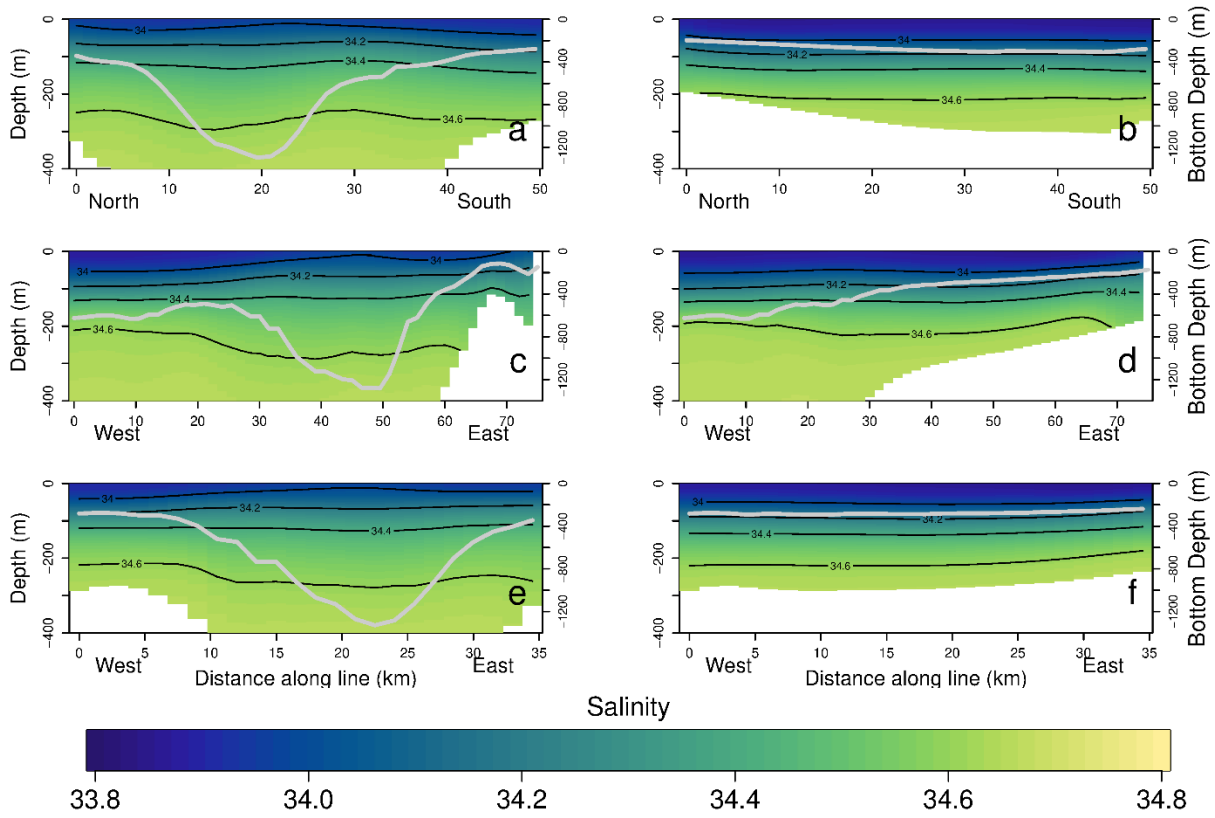

Figure S3. As in Figure S2, but with salinity and 0.1 contours.

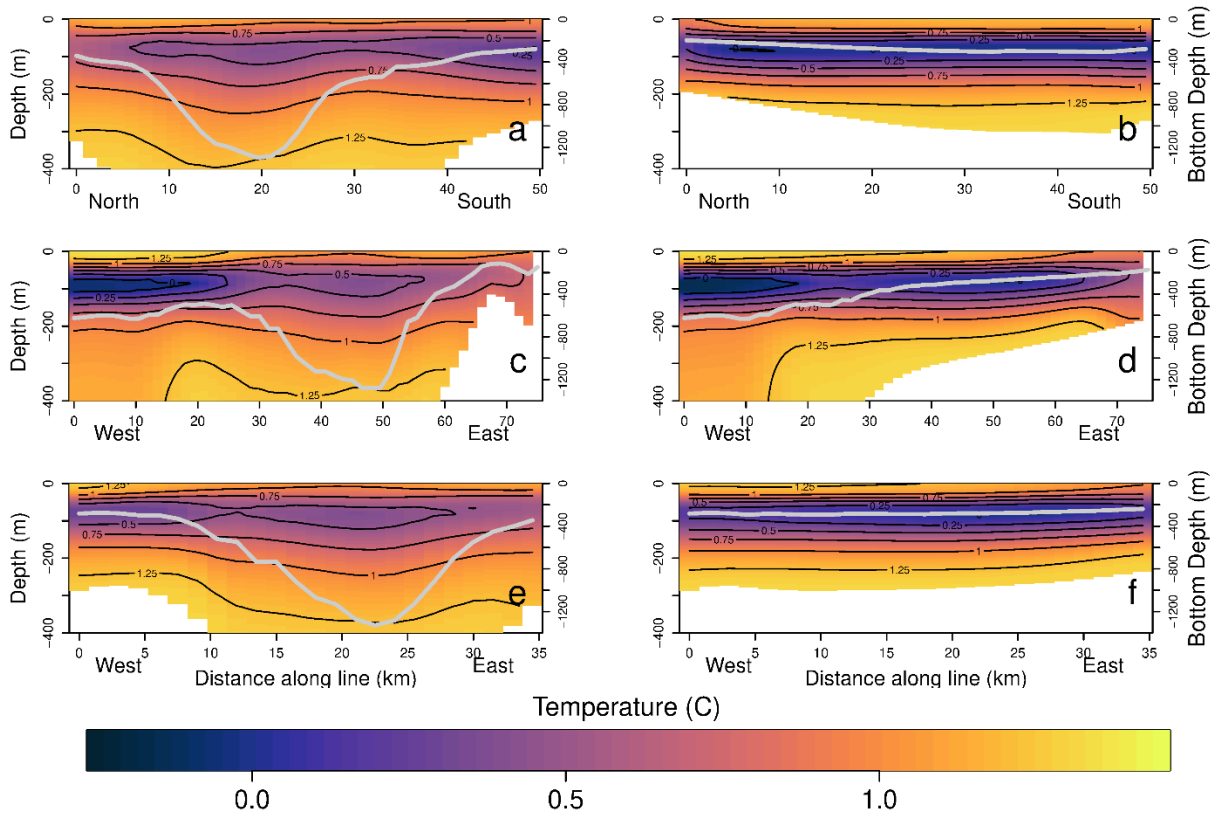

Figure S4. As in Figure S2, but with potential temperature and 0.1 °C contours.

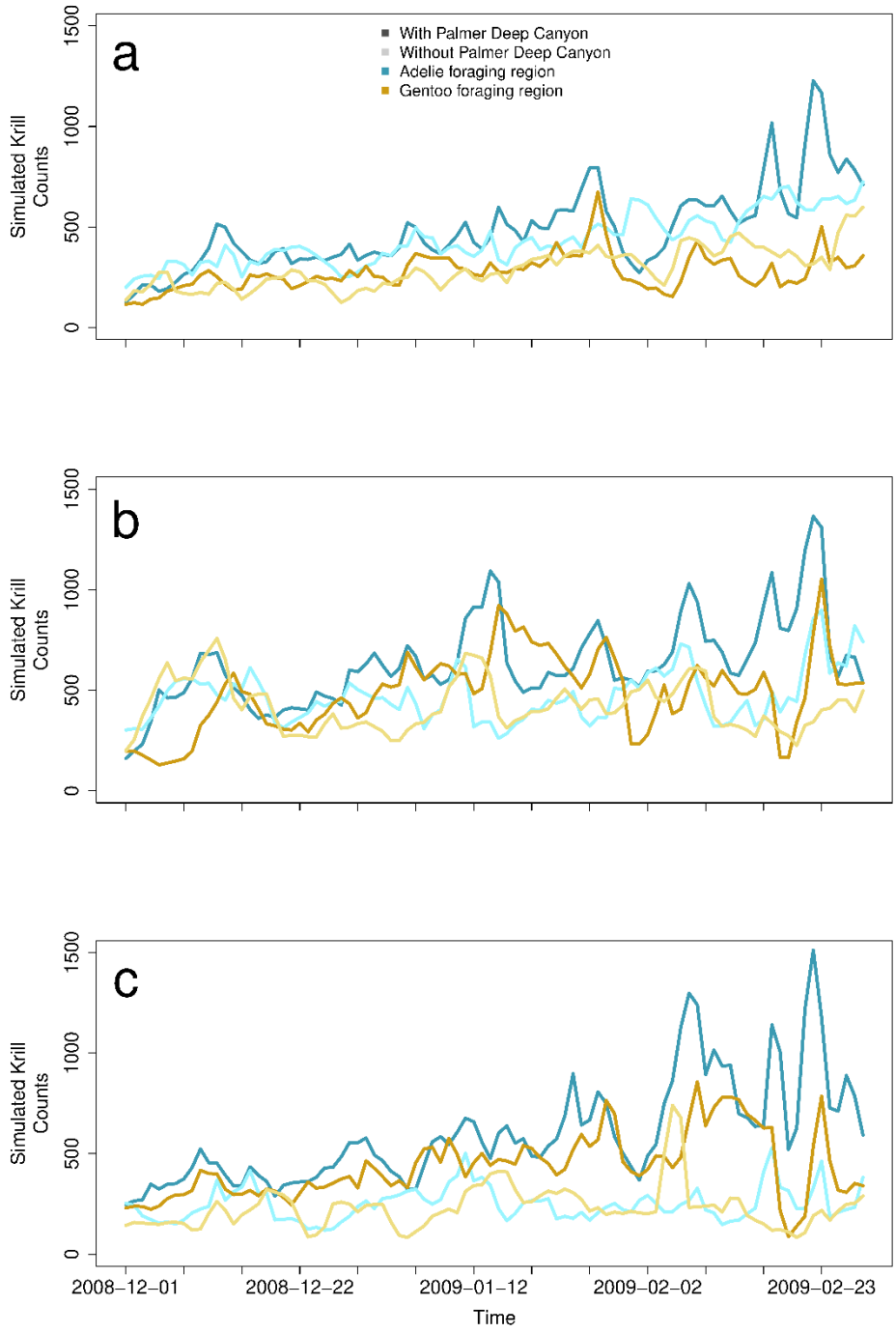

Figure S5. Timeseries of simulated krill counts in the Adélie and gentoo observed foraging regions with (dark colors) and without (light colors) Palmer Deep Canyon when simulated krill migrated down to (a) 50 m, (b) 150 m, and (c) 300 m.

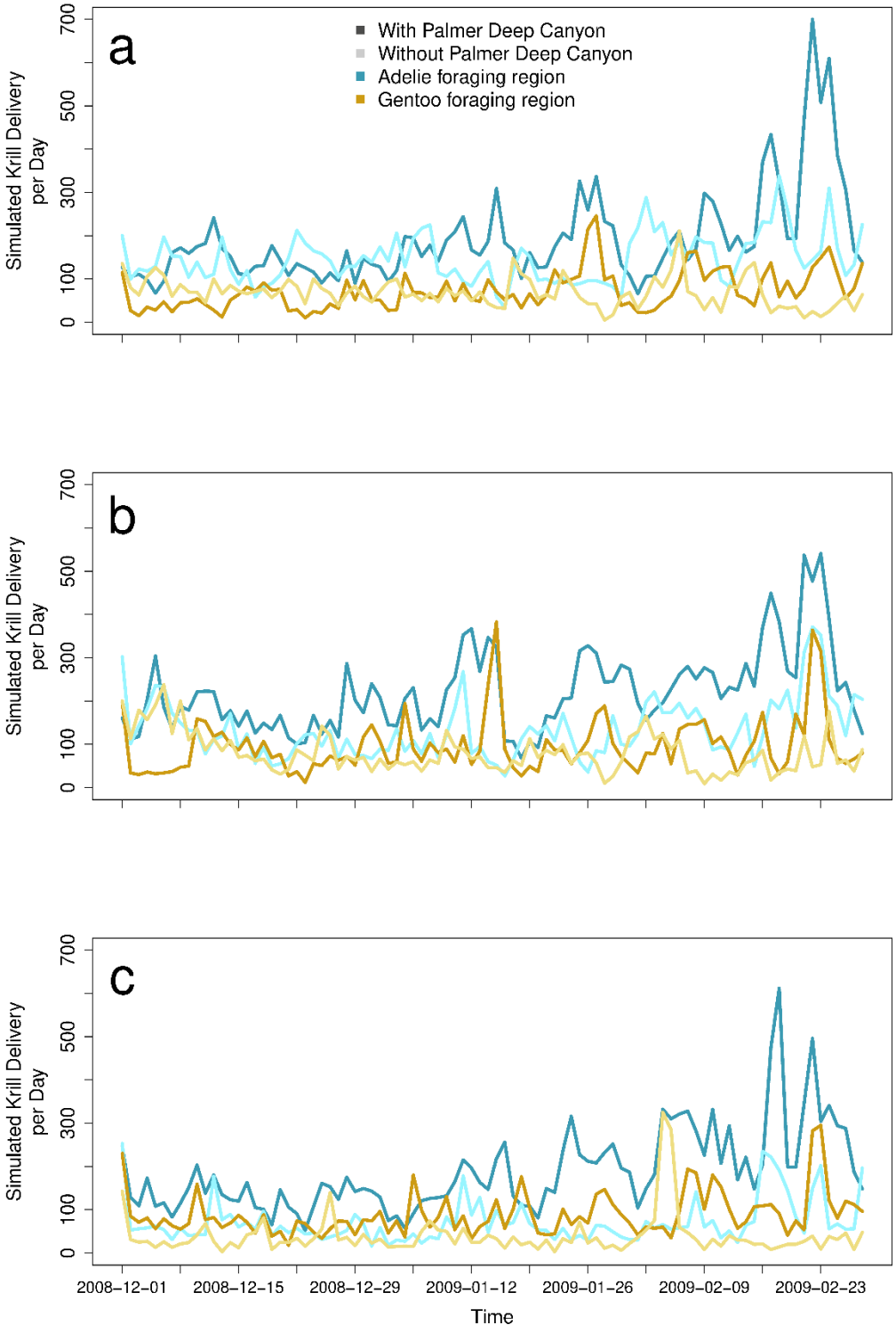

Figure S6. As in Figure S5, but with simulated krill delivery per day.

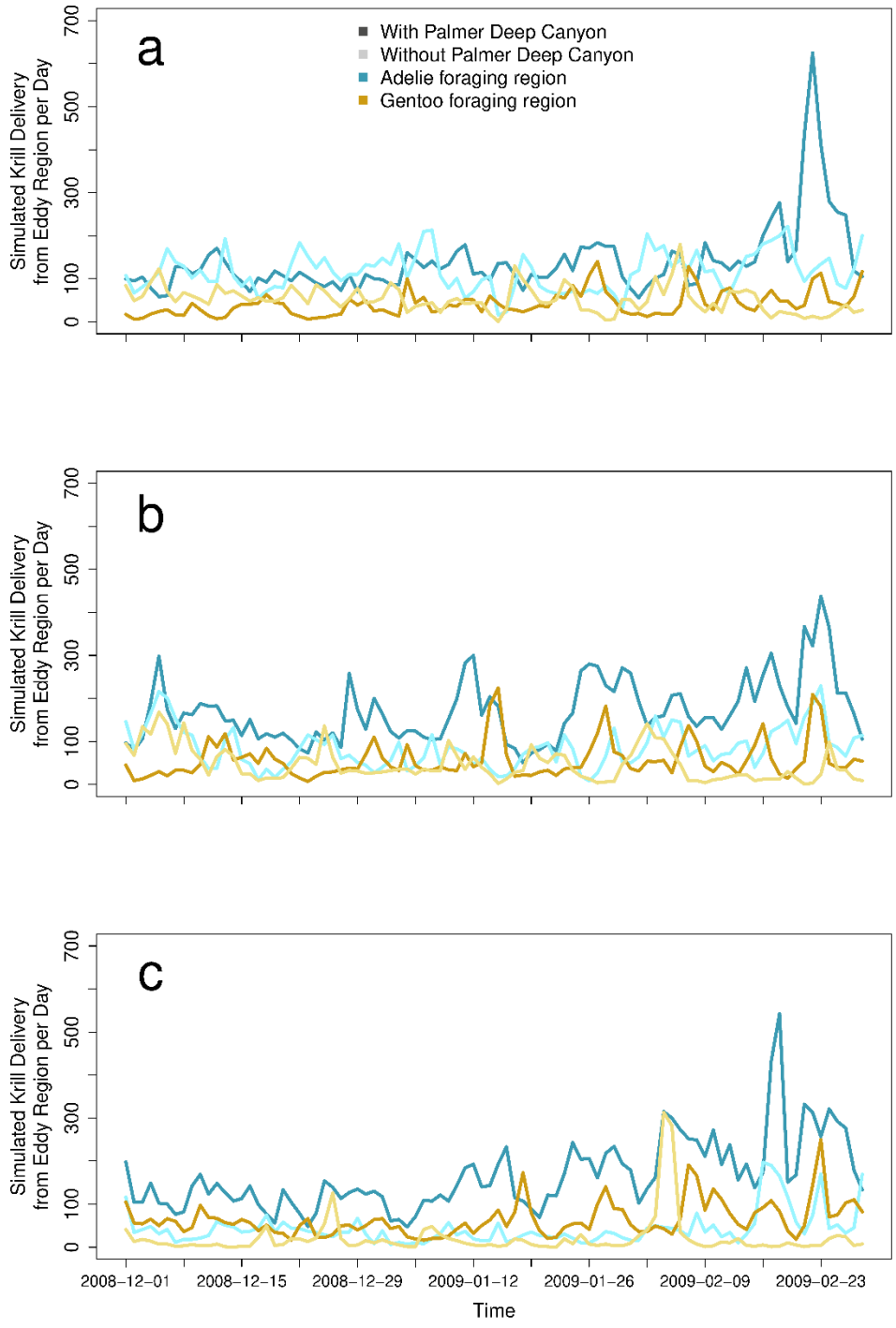

Figure S7. As in Figure S5, but with simulated krill delivery from the eddy region per day.