The algorithm implemented for using the SOwISC12to60E2r4 T,S as an initial condition for the SOwISC12to30E3r3 grid are as follows:

1) Extract temperature and salinity from 20221116.CRYO1950.ne30pg2_SOwISC12to60E2r4.N2Dependent.submeso.chrysalis.0701-01-01.nc

2) Linearly interpolate horizontally from the SOwISC12to60E2r4 grid to a global 0.1x0.1 degree latitude-longitude grid. This intermediate grid was used to avoid using the unstructured grid in the following step.

3) Using ferret, extrapolate new fields horizontally using a 4-point smoother so that all grid points have a finite value. This is done so that reasonable values for T,S exist in areas where the new and old MPAS grids have discrepancies about the location of the coastline. Also note that there is no special treatment for ice shelf cavities, ie, “horizontal” extrapolation is done in vertical logical space so new values may be at a very different actual depth than where the defined values were. This seems to have not been a significant issue.

4) Using ferret, linearly interpolate in the vertical from the old 60 level grid to the 80 levels used in the new grid.

5) Linearly interpolate the resulting T,S from the 0.1x0.1 grid to the SOwISC12to30E3r3 grid.

6) Append the new T,S fields onto a copy of the original SOwISC12to30E3r3 initial condition after renaming the original temperature and salinity arrays. NOTE: the original initial condition is from ***before*** the short spinup performed in compass, so the ocean is at rest.

7) Spin up the new initial condition for a month, starting with a small timestep and strong Rayleigh damping, then increase the timestep and reduce the damping as stability allows. Unlike in compass, this is done in an E3SM G-case. The initial condition for sea ice is ice-free. The run was continued successfully for 2 more months with no damping and the desired 10 minute timestep, so the 1 month restart file was deemed satisfactory for using as a possible initial condition for the SOwISC12to30E3r3 production runs.