Figure S1. The conservative temperature objectively mapped gridded fields for all years with potential density anomaly isopycnals (black contours). Original CTD and XCTD profile locations in the along-fjord direction are shown by triangle markers with vertical black lines representing the depth extent of each profile. White lines show where the bottom of a profile was filled in to facilitate greater data coverage for mapping. The bathymetry (grey area) is derived from a thalweg line (Figure 1) of BedMachine Greenland v4 data (Morlighem et al., 2017). Distance 0 km is the location of the Helheim terminus in 2019.
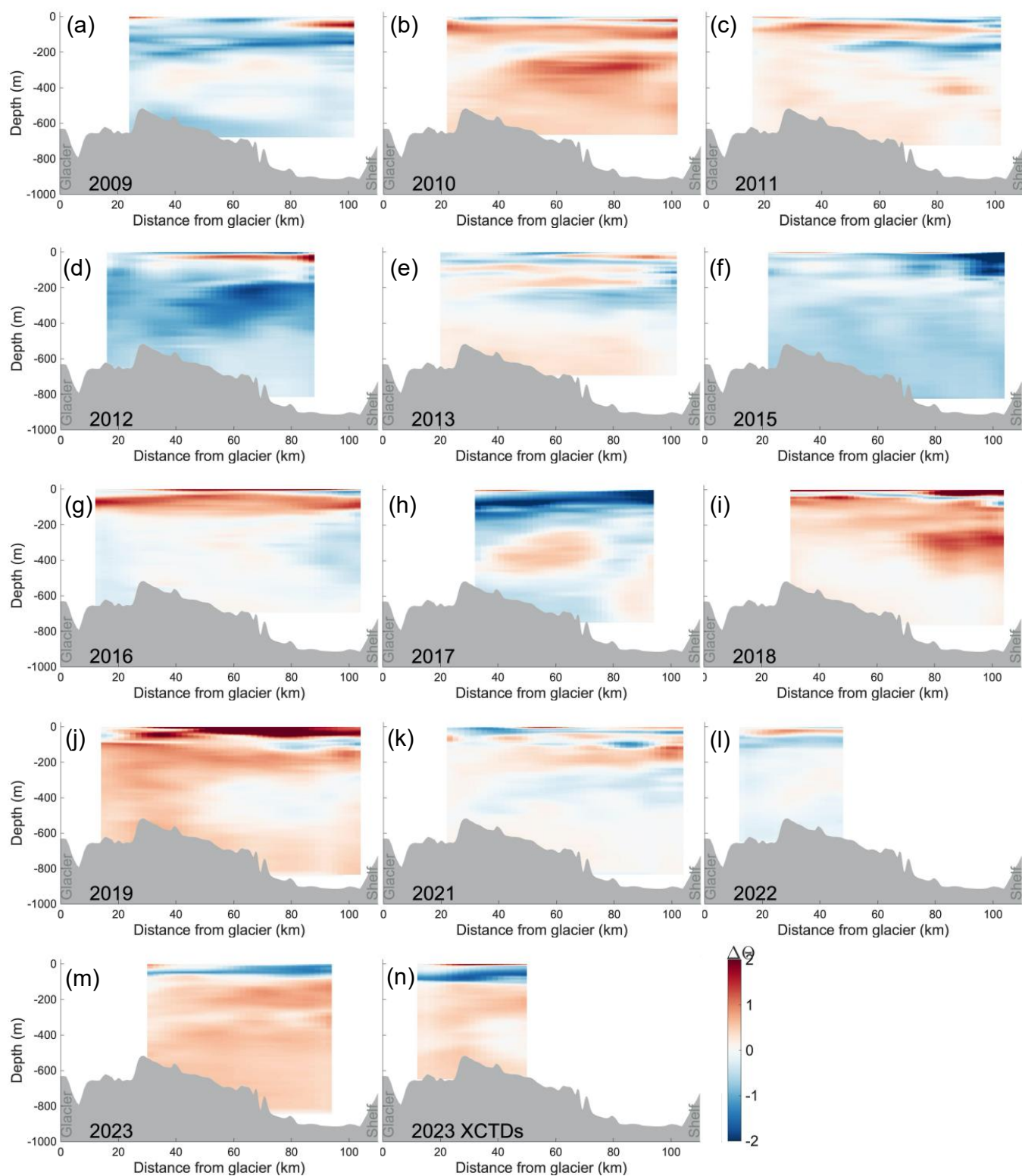
Figure S2. Conservative temperature anomalies from the climatological mean for all yearly grids. Cooler (warmer) colors show values less (greater) than the mean for each grid cell.
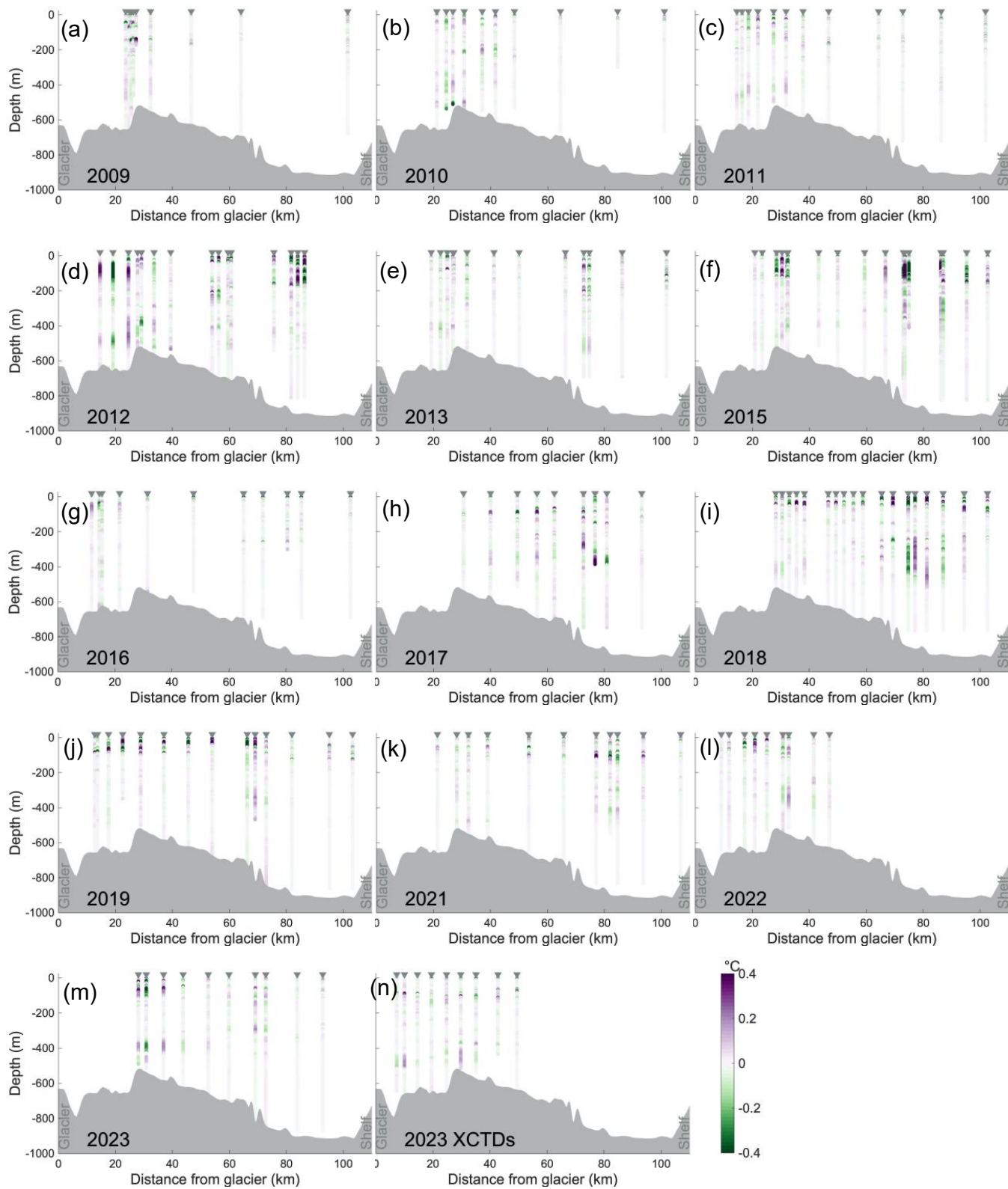
Figure S3. Conservative temperature residuals between the profile data and gridded data interpolated to the same position of every data point. Residuals were calculated as profile data minus gridded data values.
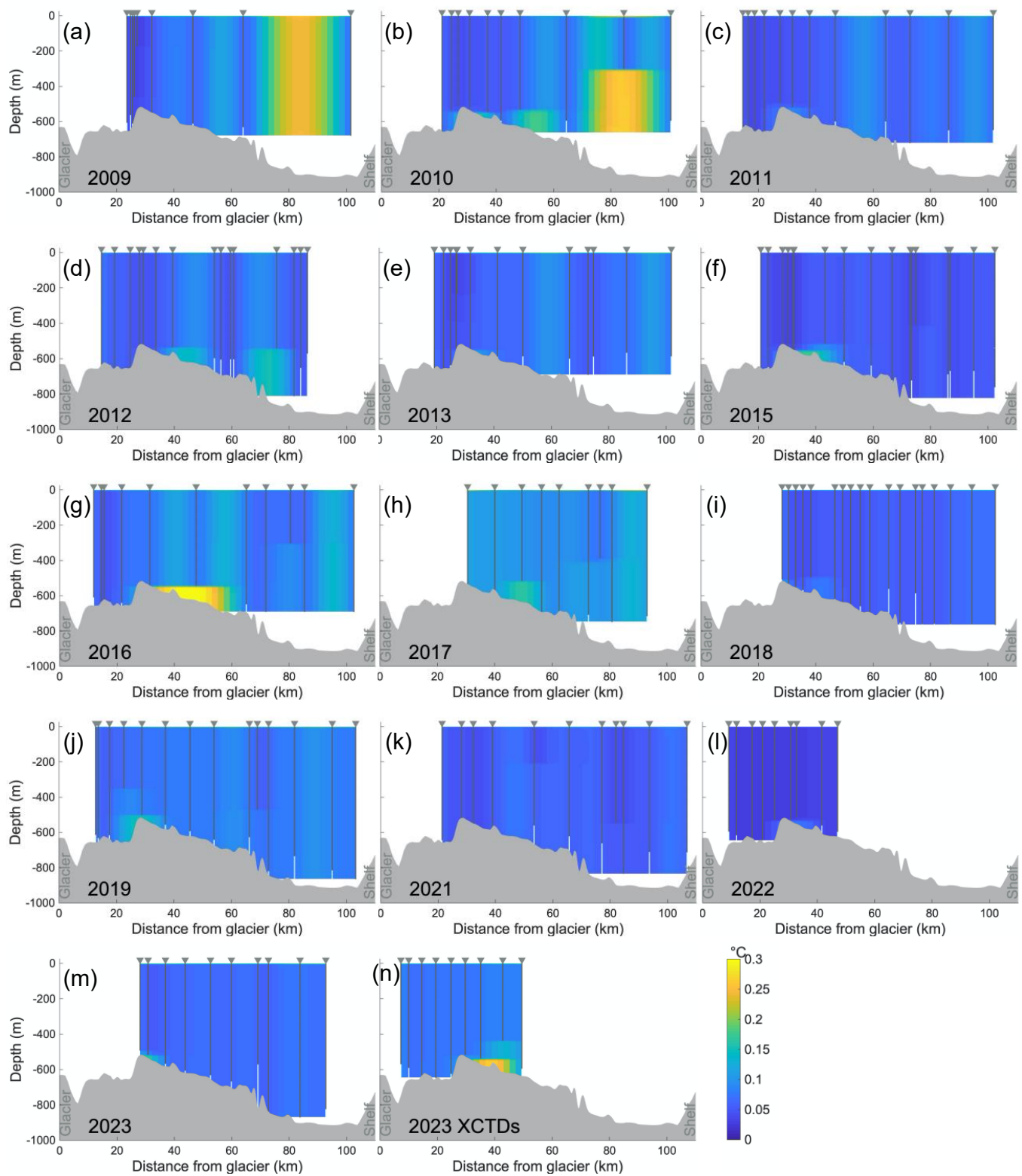
Figure S4. Conservative temperature mapping relative error. Original CTD and XCTD profile locations in the along-fjord direction are shown by triangle markers with vertical black lines representing the depth extent of each profile. White lines show where the bottom of a profile was filled in to facilitate greater data coverage for mapping.
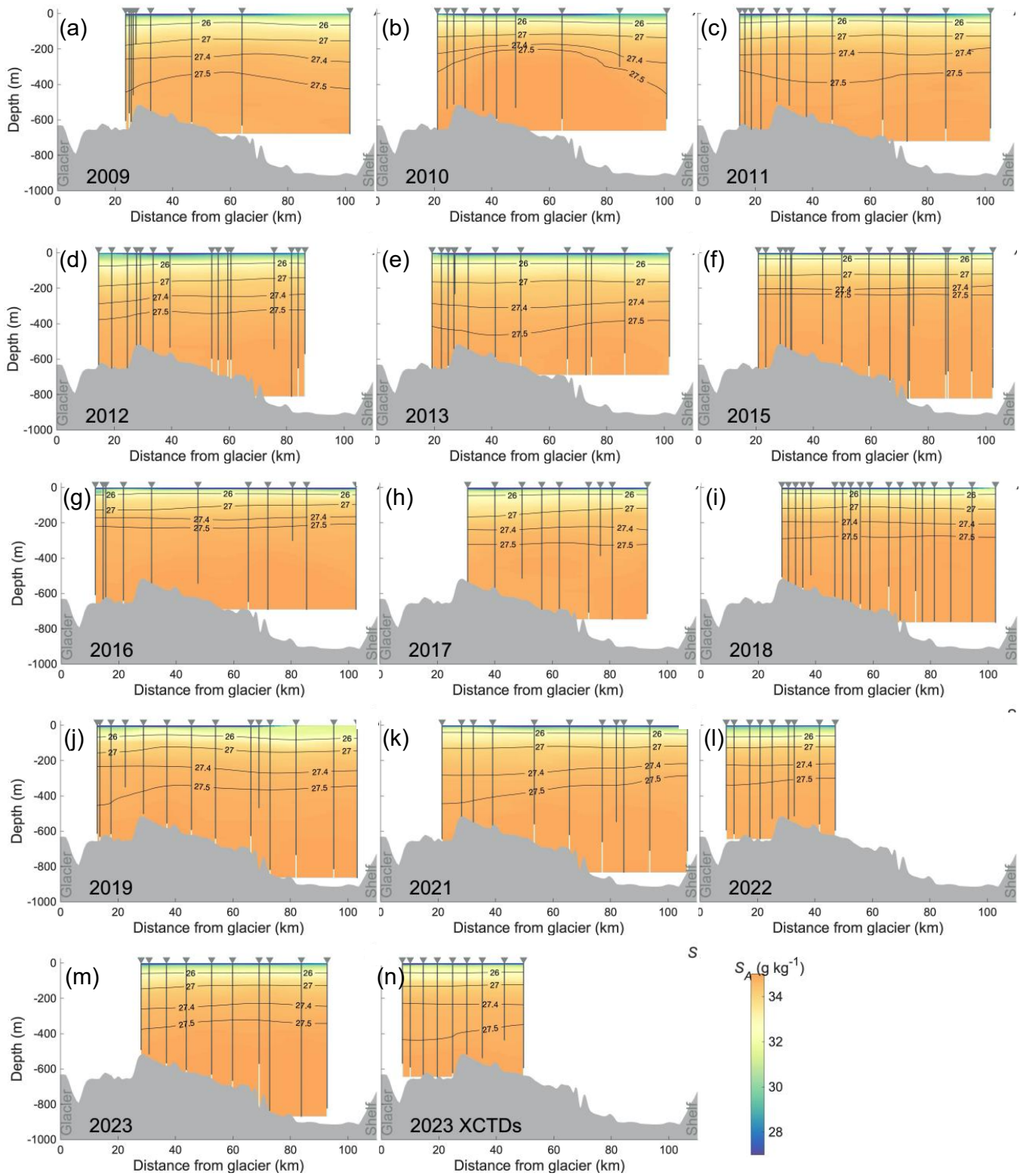
Figure S5. The absolute salinity objectively mapped gridded fields for all years with potential density anomaly isopycnals (black contours). Original CTD and XCTD profile locations in the along-fjord direction are shown by triangle markers with vertical black lines representing the depth extent of each profile. White lines show where the bottom of a profile was filled in to facilitate greater data coverage for mapping. The bathymetry (grey area) is derived from a thalweg line (Figure 1) of BedMachine Greenland v4 data (Morlighem et al., 2017). Distance 0 km is the location of the Helheim terminus in 2019.
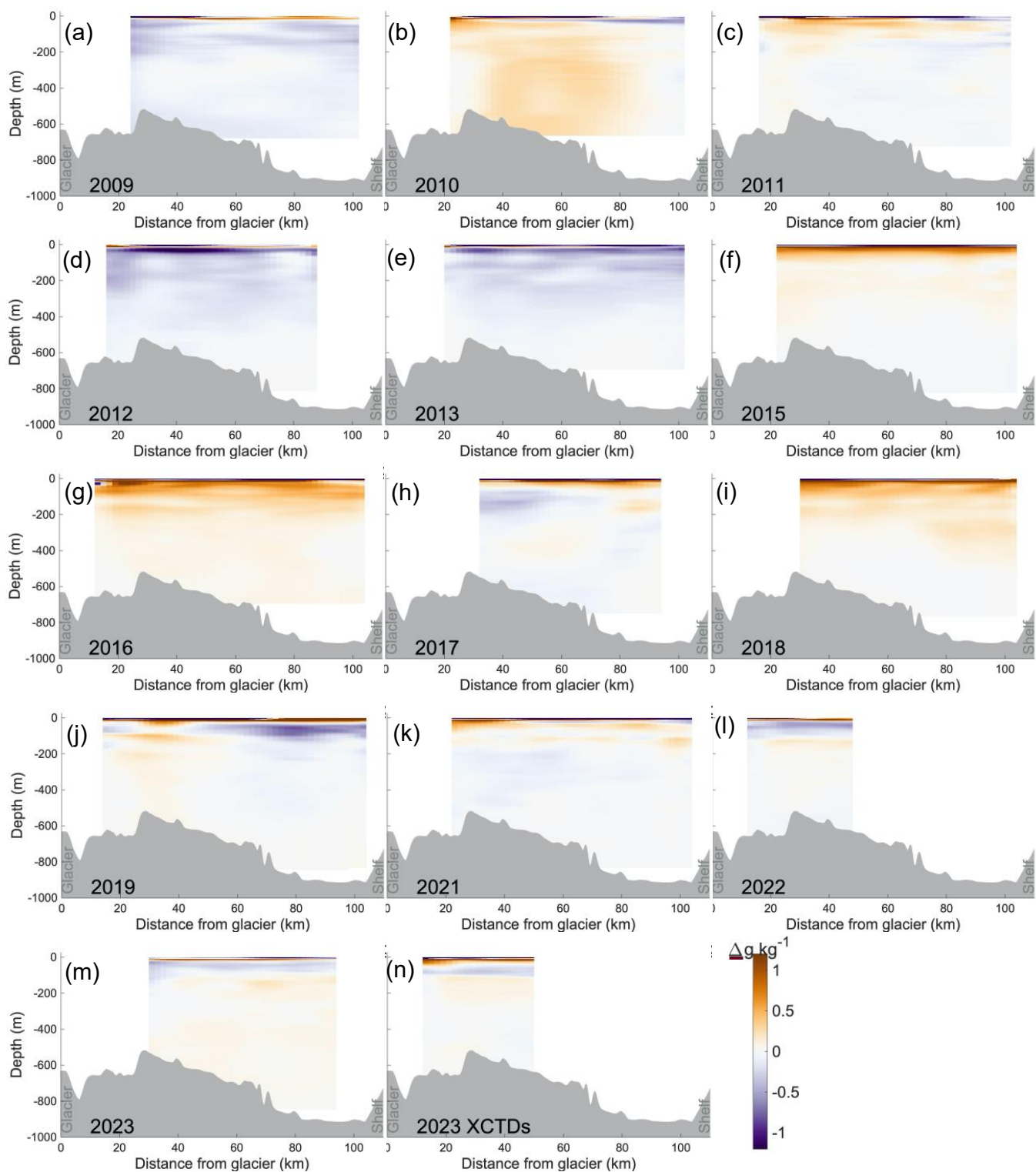
Figure S6. Absolute salinity anomalies from the climatological mean for all yearly grids. Warmer (cooler) colors show values greater (less) than the mean for each grid cell.
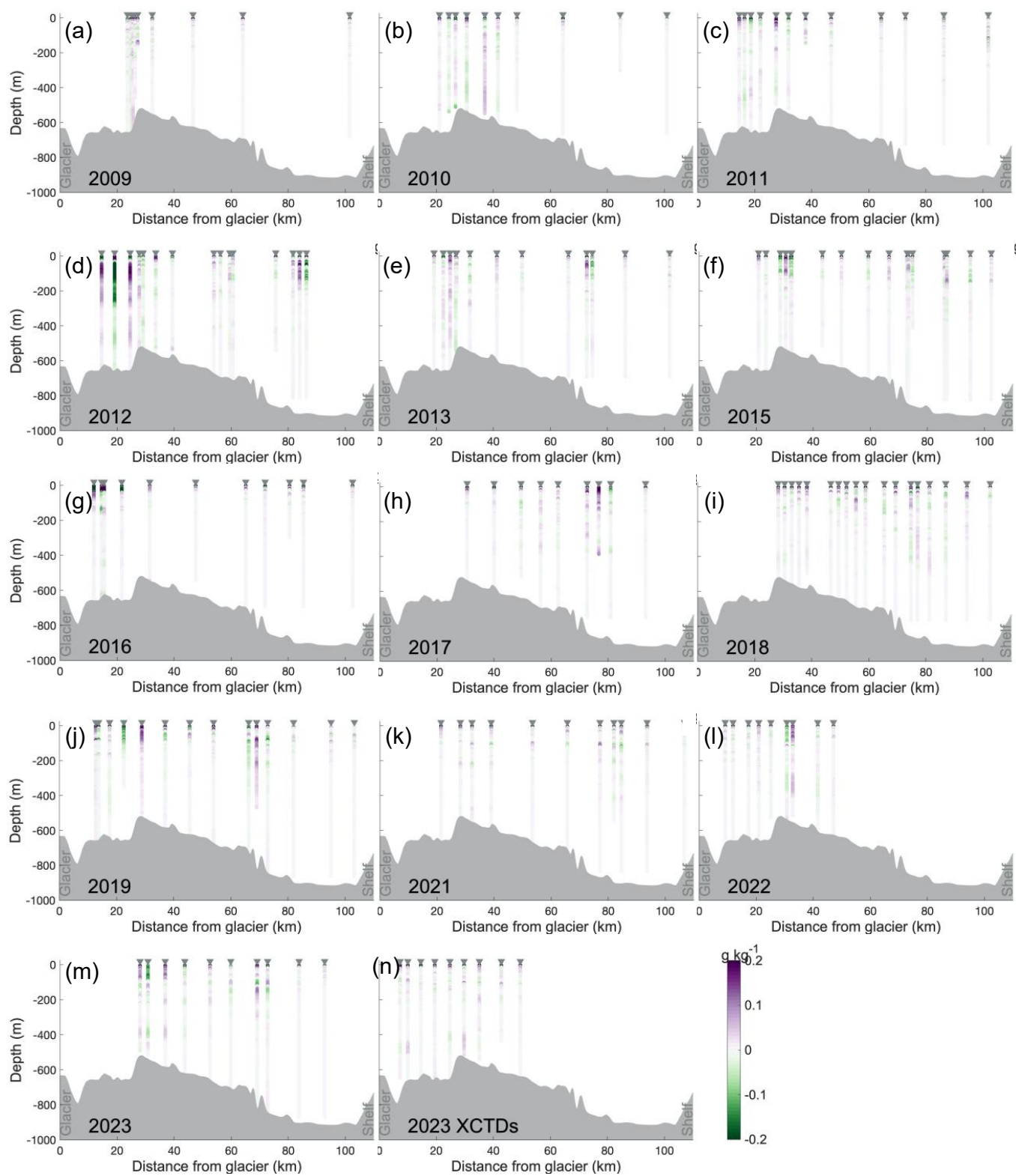
Figure S7. Absolute salinity residuals between the profile data and gridded data interpolated to the same position of every data point. Residuals were calculated as profile data minus gridded data values.
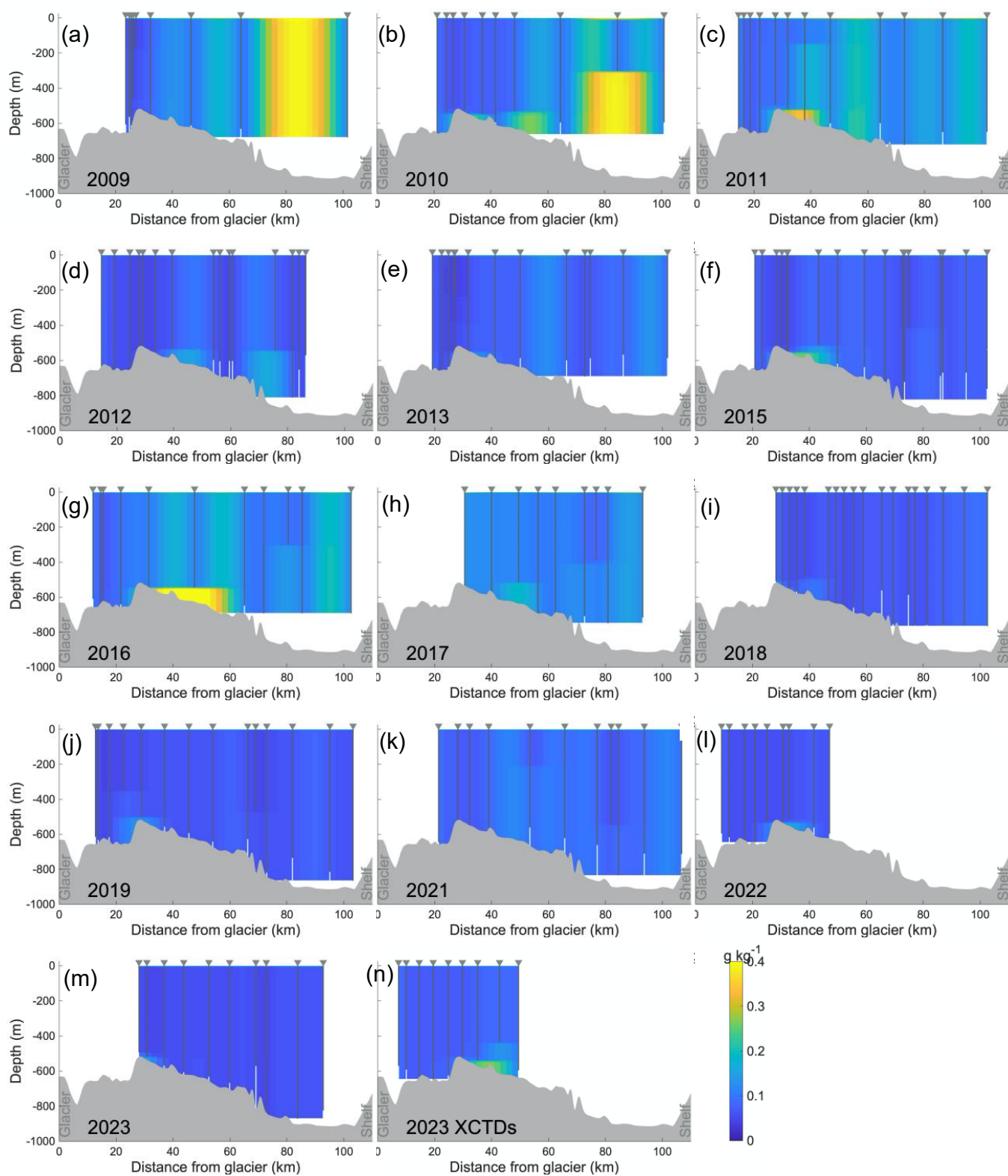
Figure S8. Conservative temperature mapping relative error. Original CTD and XCTD profile locations in the along-fjord direction are shown by triangle markers with vertical black lines representing the depth extent of each profile. White lines show where the bottom of a profile was filled in to facilitate greater data coverage for mapping.