Figure S1) Synoptic situation for the eight cases, sorted by CAPE. Shown are the atmospheric pressure and geopotential height at the 500 hPa level at 12:00 UTC, based on ECMWF ERA5 reanalysis data. The charts were obtained from Meteociel.fr.
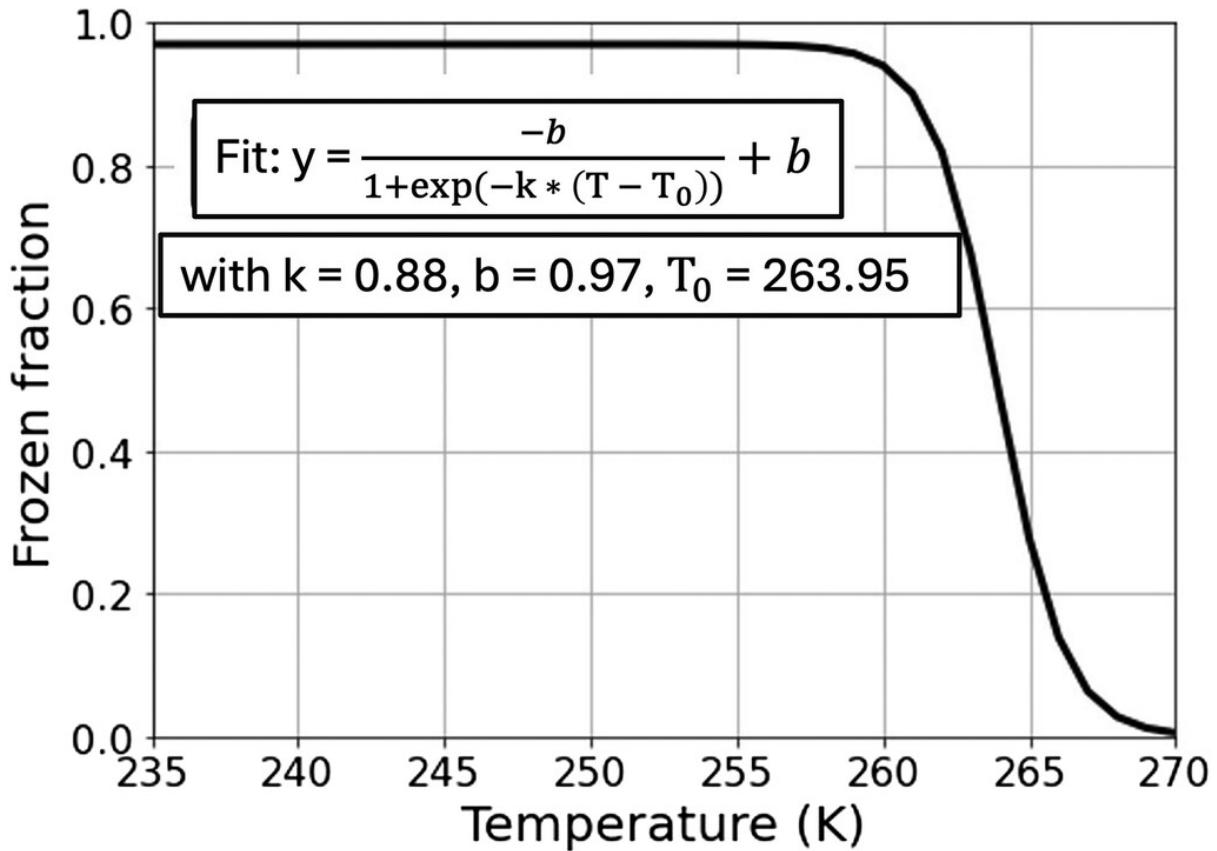
Figure S2) Frozen fraction as a function of temperature (K) for simulated AgI particles based on measurements from Marcolli et al. (2016). The above formula is valid for particles with a diameter of 400 nm.
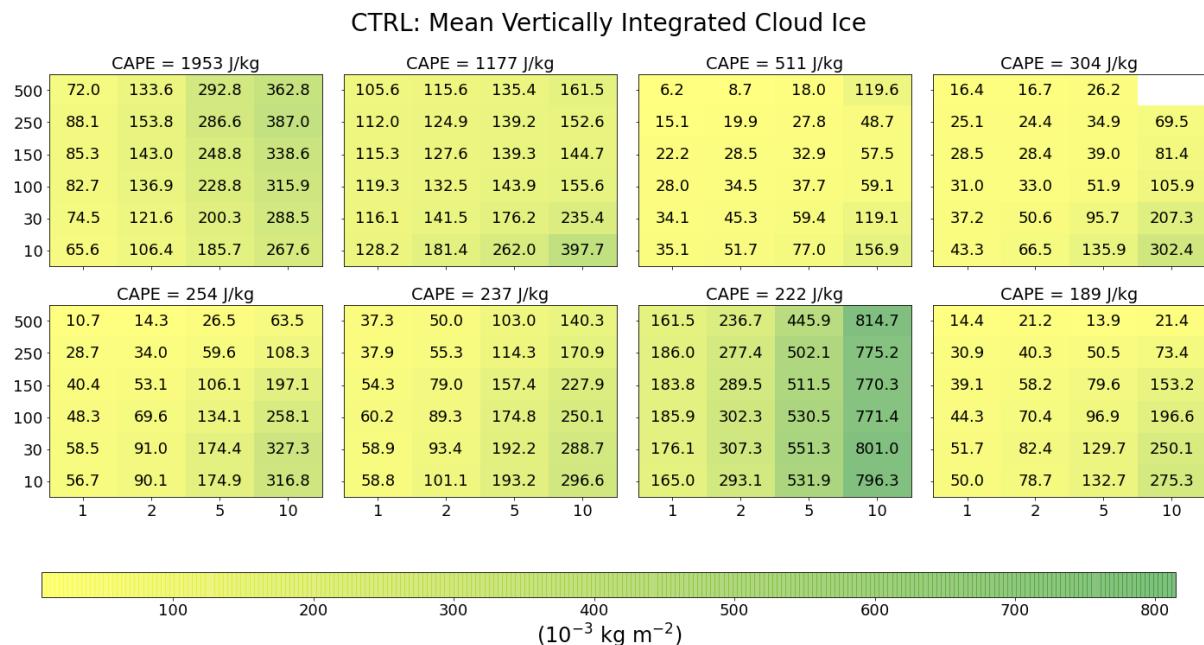
Figure S3) The CTRL panel of Figure 10 (manuscript).
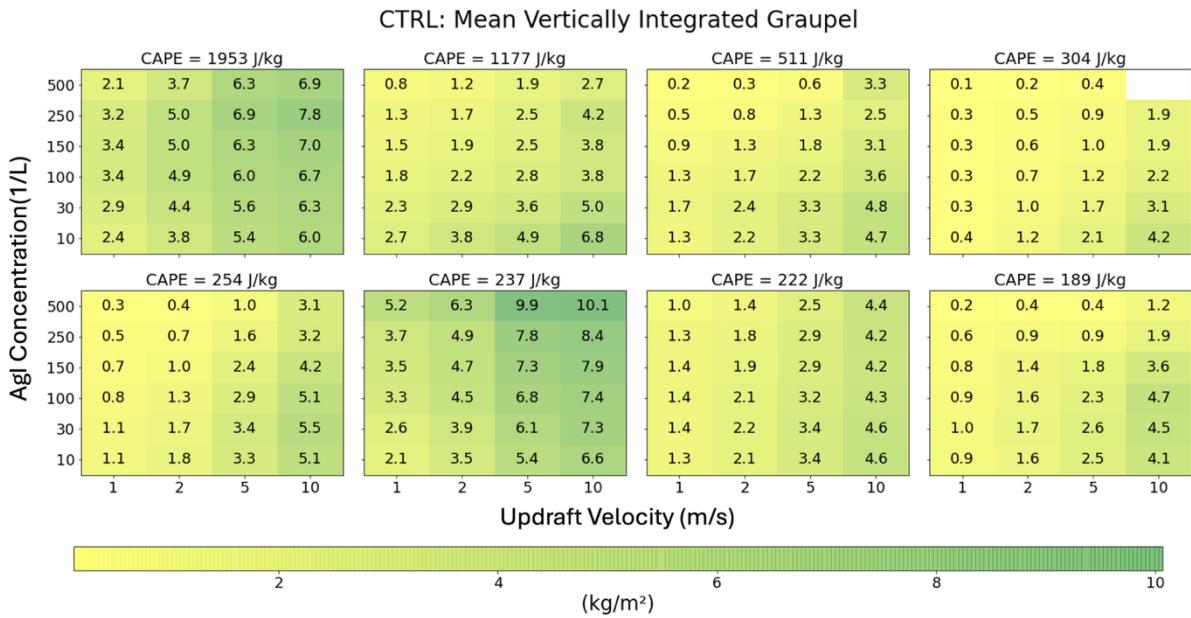
Figure S4) The CTRL panel of Figure 11 (manuscript).
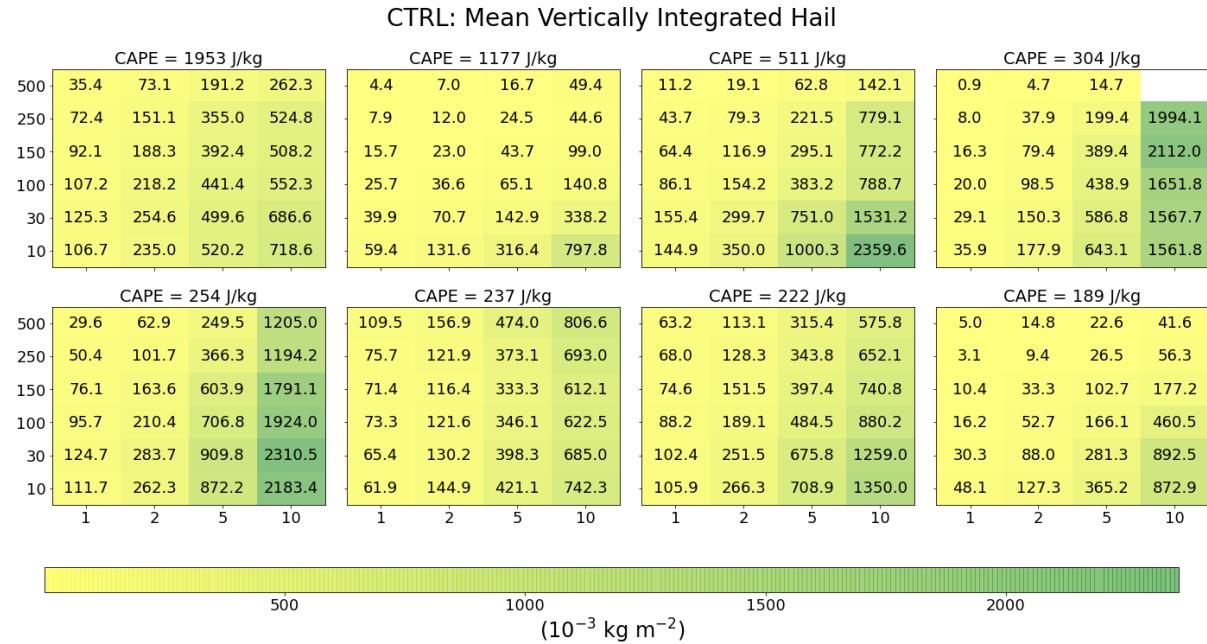
Figure S5) The CTRL panel of Figure 12 (manuscript).
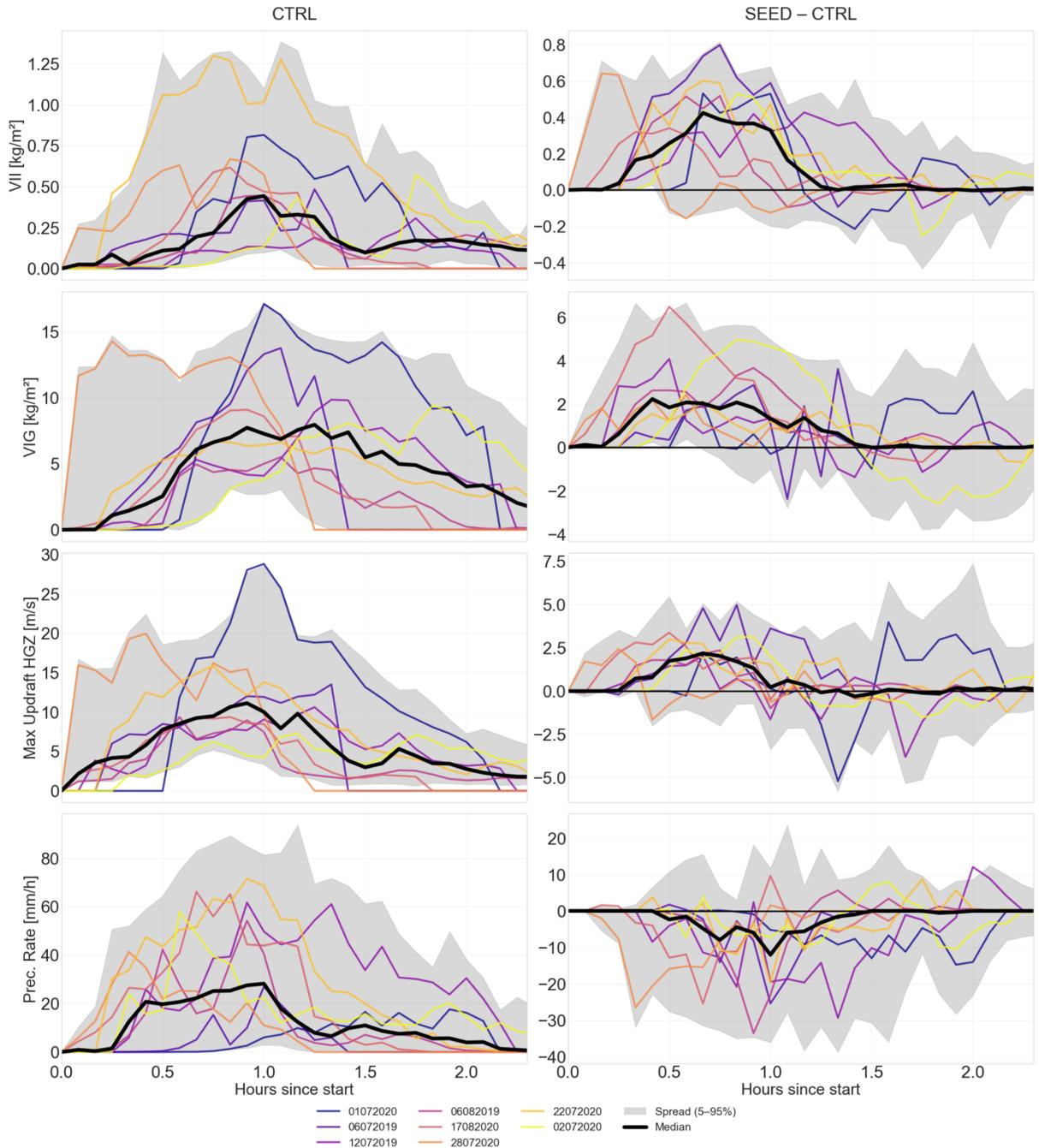
Figure S6) Time evolution of the 99th spatial percentile values for (top to bottom): vertically integrated ice (VII), vertically integrated graupel (VIG), maximum updraft velocity in the hail growth zone (-10°C to -30°C), and precipitation rate. The left column shows results from the CTRL simulations, while the right column shows the difference between SEED and CTRL simulations (SEED–CTRL). Colored lines represent ensemble means for individual cases, the black line denotes the median, and the shaded area indicates the 5th–95th percentile range among the 80 simulations in each category (CTRL or SEED). Tracking is based on AgI concentrations in the convective cloud greater than 150 L^{-1} and maximum updraft speeds within the grid column greater than 1 m s^{-1}.
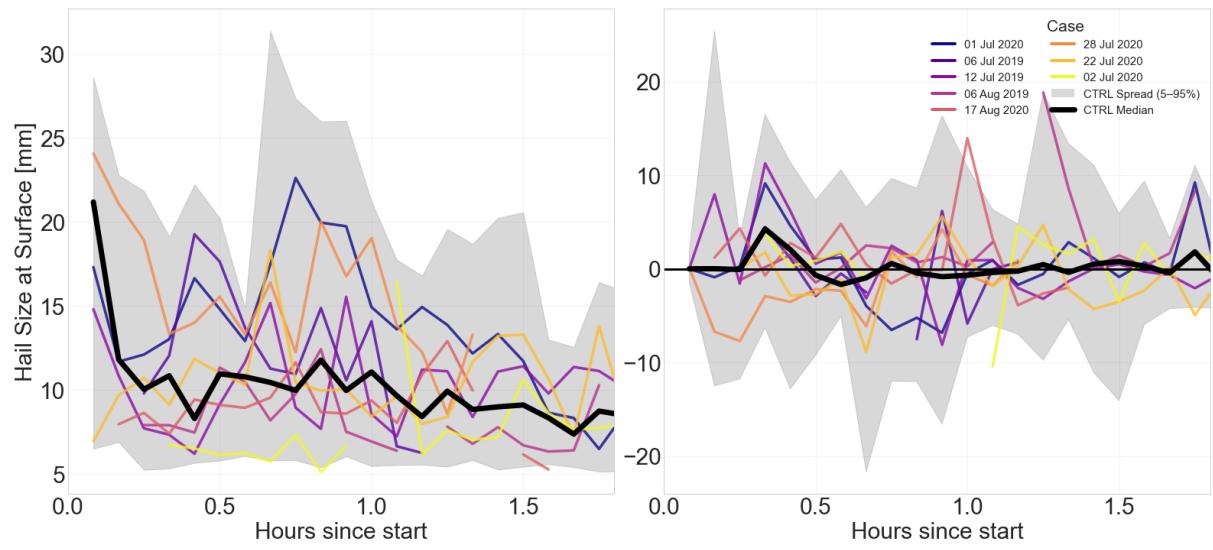
Figure S7) Same as the previous Figure, but showing the 99th spatial percentile of hail sizes at the surface.