Supplementary Material

1 SUPPLEMENTARY FIGURES

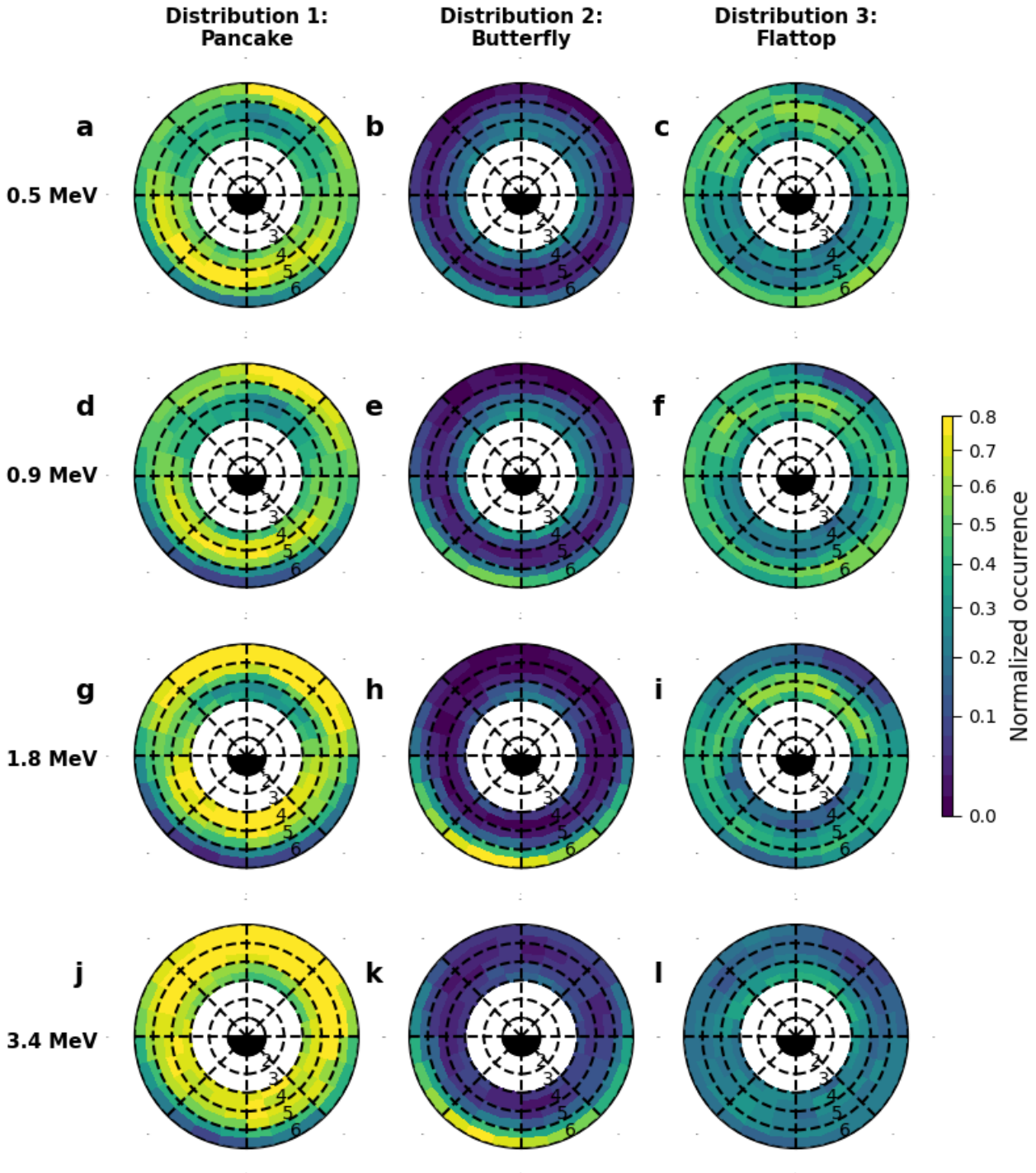

Figure S1. L-MLT distribution of the relative occurrence (normalized by the number of observations in a particular L-MLT bin) of pancake (column 1), butterfly (column 2), and flattop (column 3) pitch angle distributions (PADs) of (a – c) 0.5 MeV, (d – f) 0.9 MeV, (g – i) 1.8 MeV, and (j – l) 3.4 MeV electrons, denoted by the colorbar at the right. The distributions are plotted in bins of size 1 hr in MLT $\times$ 0.5 L. For each panel, the Sun is at the top.

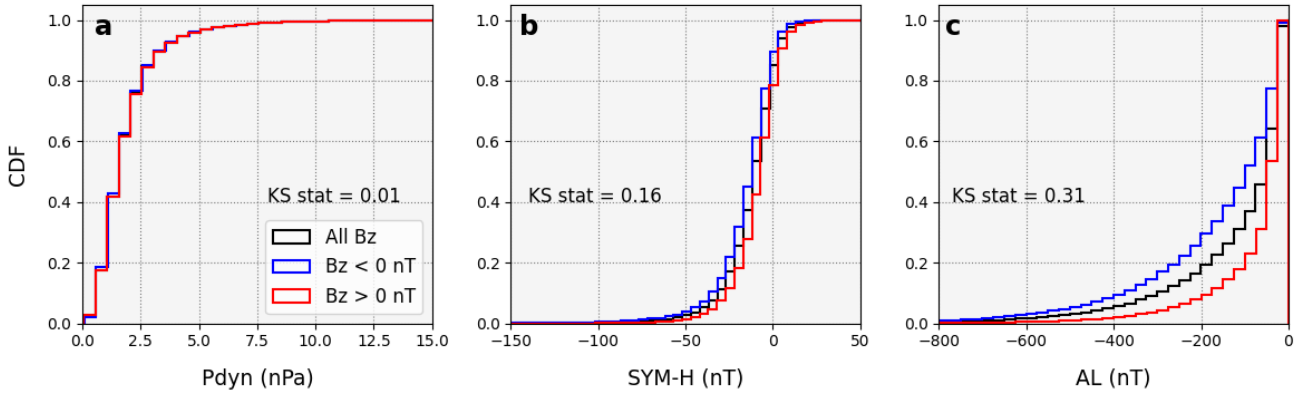

Figure S2. Distribution of (a) solar wind dynamic pressure (P_{dyn}), (b) SYM-H, and (c) AL index under all Bz (black curves; Bz - the z-component of the interplanetary magnetic field), Bz $<$ 0 nT (blue curves), and Bz $>$ 0 nT (red curves). For each panel, the parameters are plotted along the x-axis, and the cumulative distribution function (CDF) is plotted along the y-axis. Kolmogorov-Smirnov test is performed for each parameter to check how different the two distributions are corresponding to the two chosen Bz ranges (Bz $<$ 0 nT and Bz $>$ 0 nT). The test results are provided in each panel.

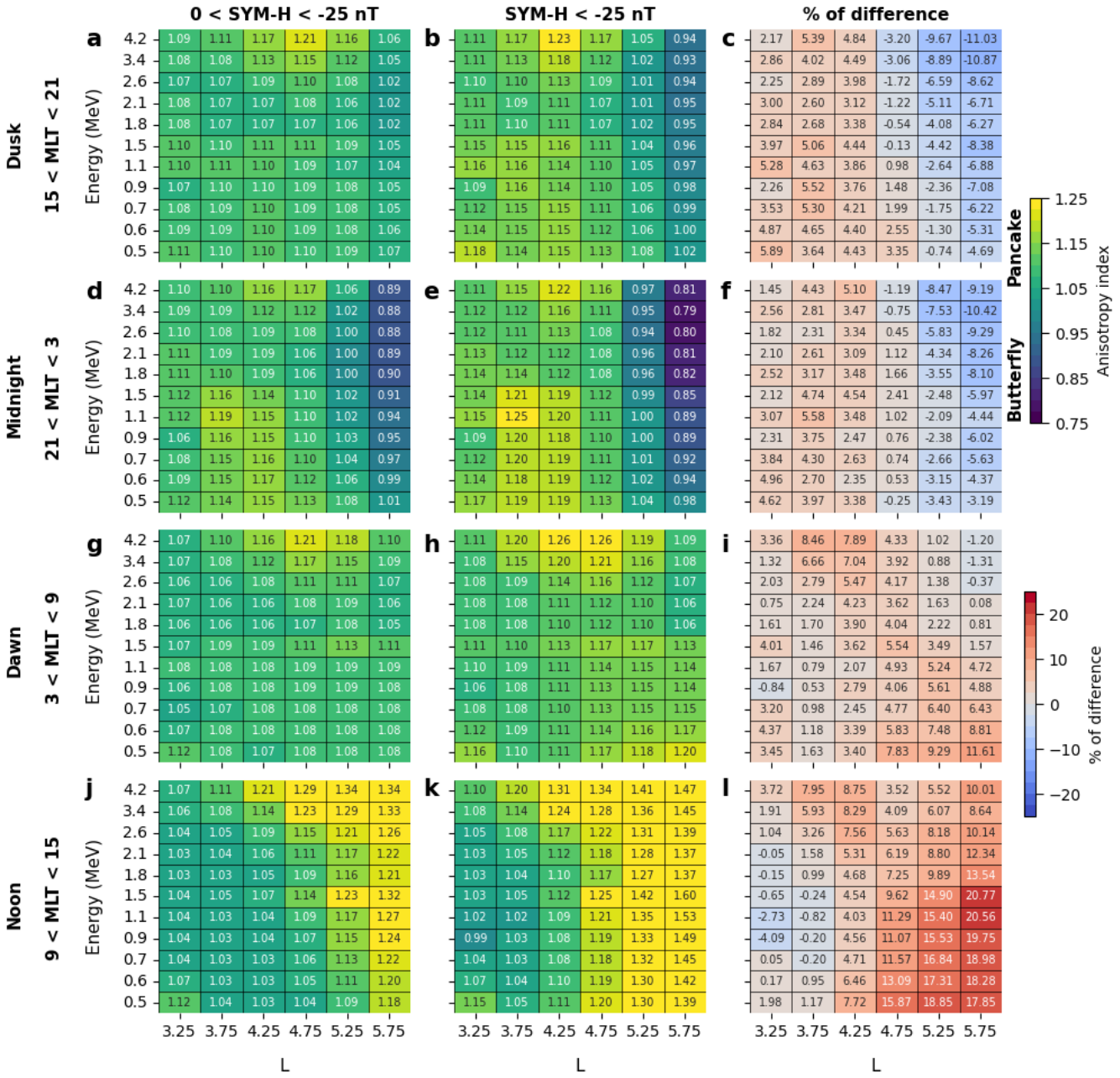

Figure S3. Median pitch angle anisotropy index as a function of electron energy and L averaged over four MLT sectors: (a – c) dusk (MLT = 15 – 21), (d – f) midnight (MLT = 21 – 3), (g – i) dawn (MLT = 3 – 9), and (j – l) noon (MLT = 9 – 15) for low geomagnetic activity (first column) and high geomagnetic activity (second column), and the percentage of difference in the median anisotropy index between the two activity levels (third column). For each panel, L is along the x-axis, and electron energy (in MeV) is along the y-axis. A low level of geomagnetic activity corresponds to SYM-H values within the range of 0 to -25 nT and a high level of geomagnetic activity corresponds to SYM-H values less than -25 nT, as indicated on the top of the panels (a) and (b) respectively.

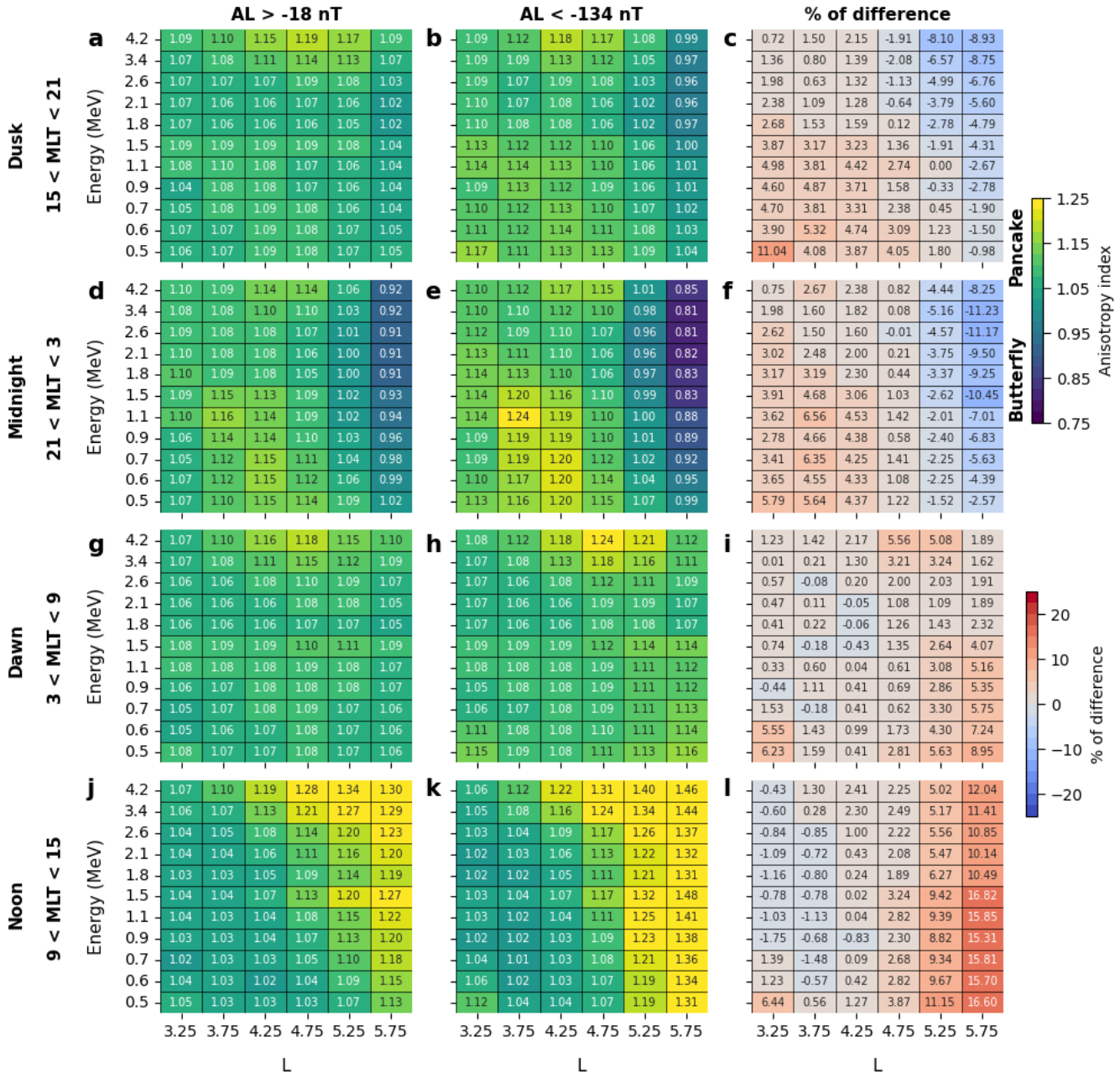

Figure S4. Same as in Figure S2, but for AL index. A low level of geomagnetic activity corresponds to AL values greater than the 75th percentile (AL > -18 nT) and a high level of geomagnetic activity corresponds to AL values less than the 25th percentile (AL < -134 nT), as indicated on the top of the panels (a) and (b), respectively. The percentage difference in the median anisotropy index between the two activity levels are shown in the third column.

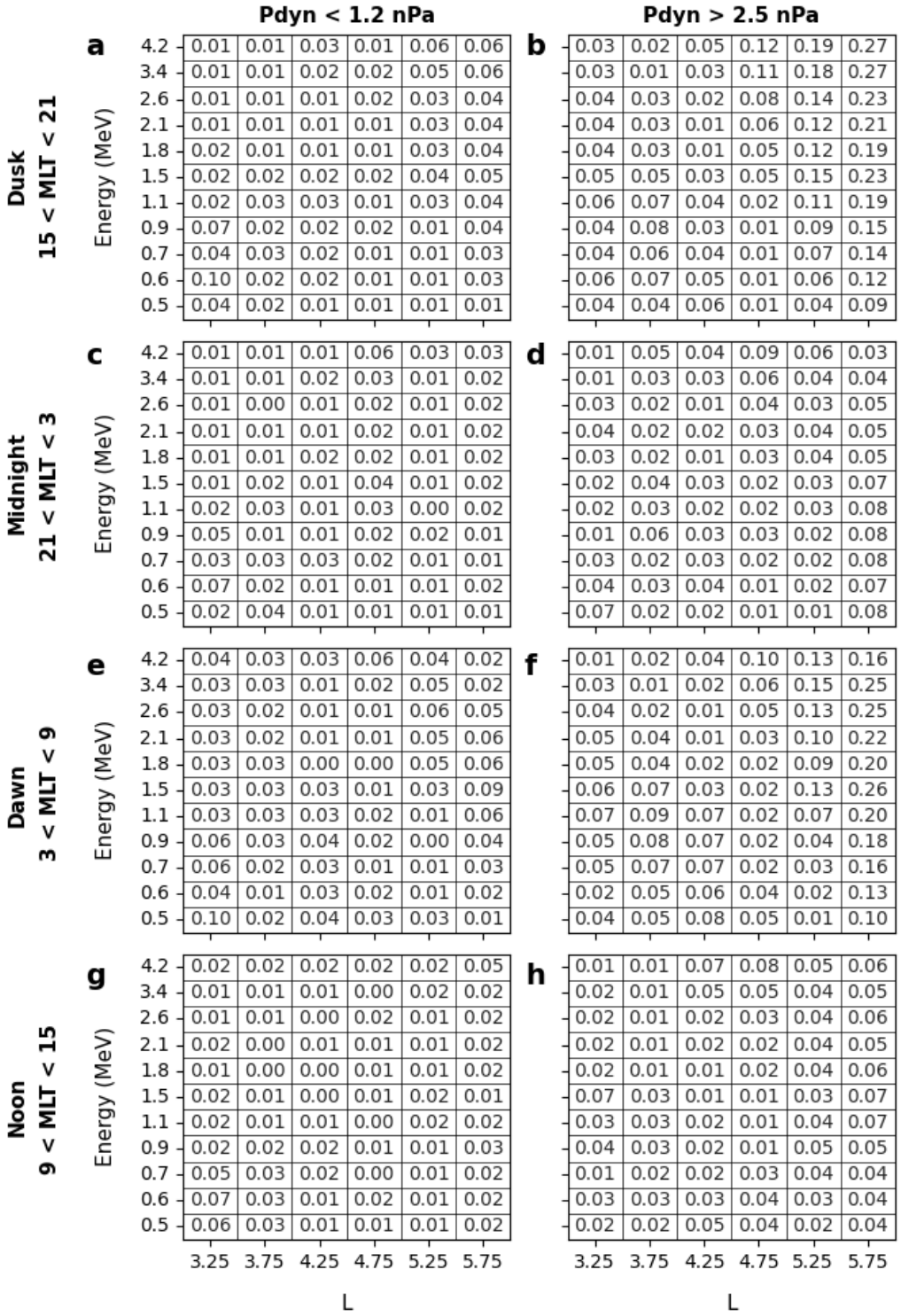

Figure S5. Interquartile range of pitch angle anisotropy index as a function of electron energy and L averaged over four MLT sectors: (a – c) dusk (MLT = 15 – 21), (d – f) midnight (MLT = 21 – 3), (g – i) dawn (MLT = 3 – 9), and (j – l) noon (MLT = 9 – 15) for low geomagnetic activity (left column) and high geomagnetic activity (right column). For each panel, L is along the x-axis, and electron energy (in MeV) is along the y-axis. A low level of geomagnetic activity corresponds to P_{dyn} values less than 1.2 nPa and a high level of geomagnetic activity corresponds to P_{dyn} values greater than 2.5 nPa, as indicated on the top of the panels (a) and (b) respectively.

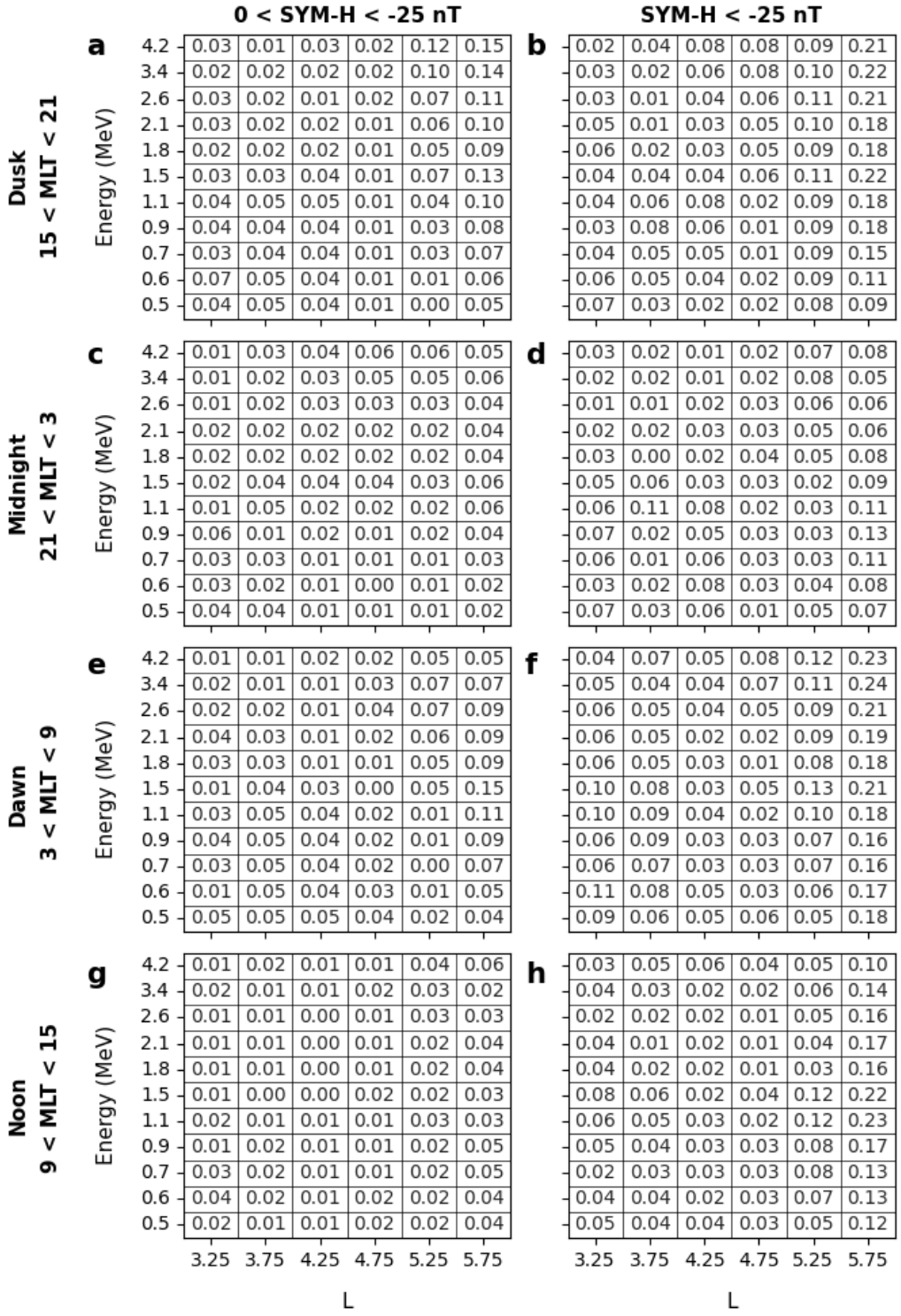

Figure S6. Same as in Figure S5, but for SYM-H index.

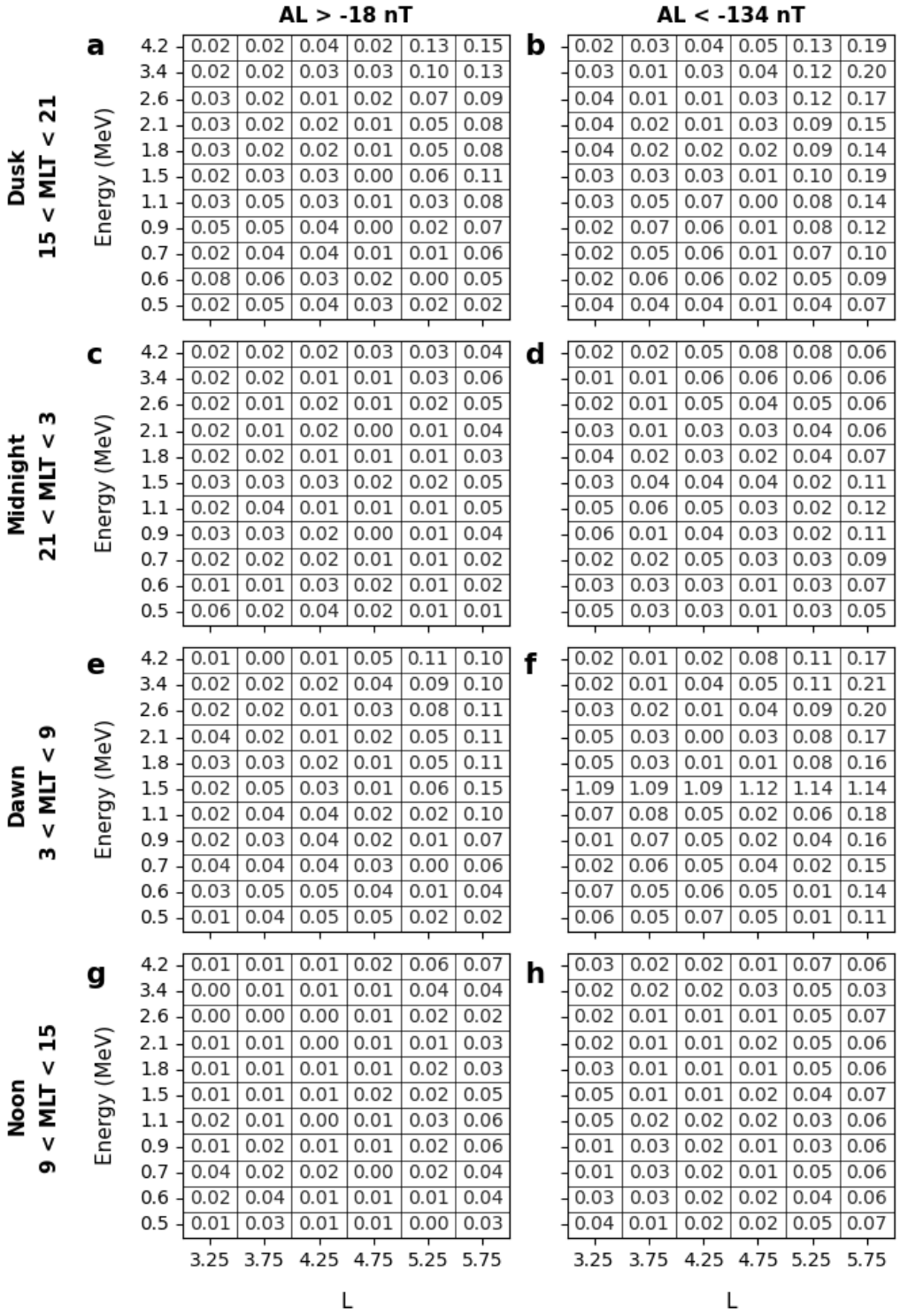

Figure S7. Same as in Figures S5 and Figure S6, but for AL index.