Supplementary material
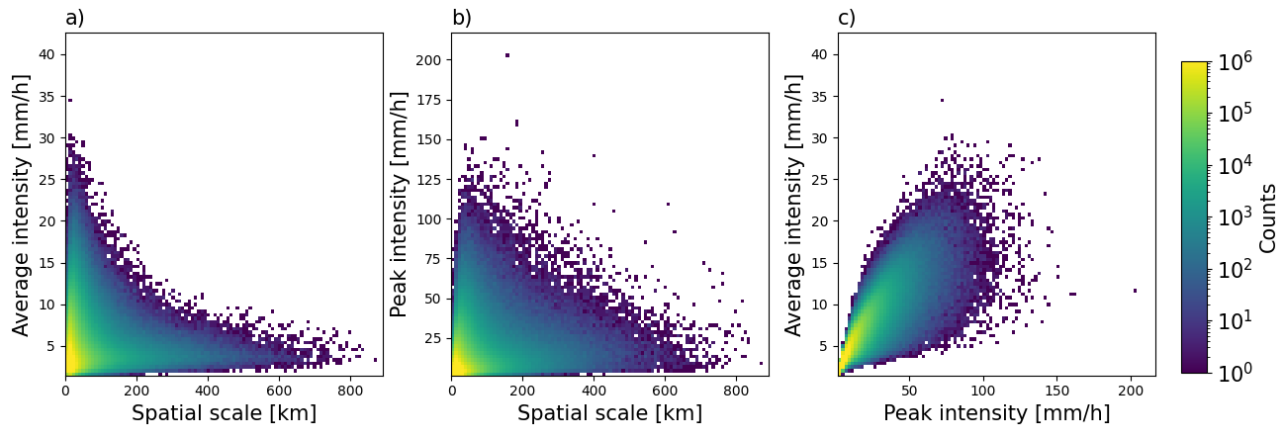
Figure S1: Scatter density plots showing the joint distribution of individual precipitation event characteristics over the entire study period. (a) Average intensity (tot_tp/area) vs. spatial scale (axis_maj); (b) Peak intensity (tp_max) vs. spatial scale (axis_maj); (c) Peak intensity (tp_max) vs. average intensity (tot_tp/area). Color scale indicates number of occurrences at each point.
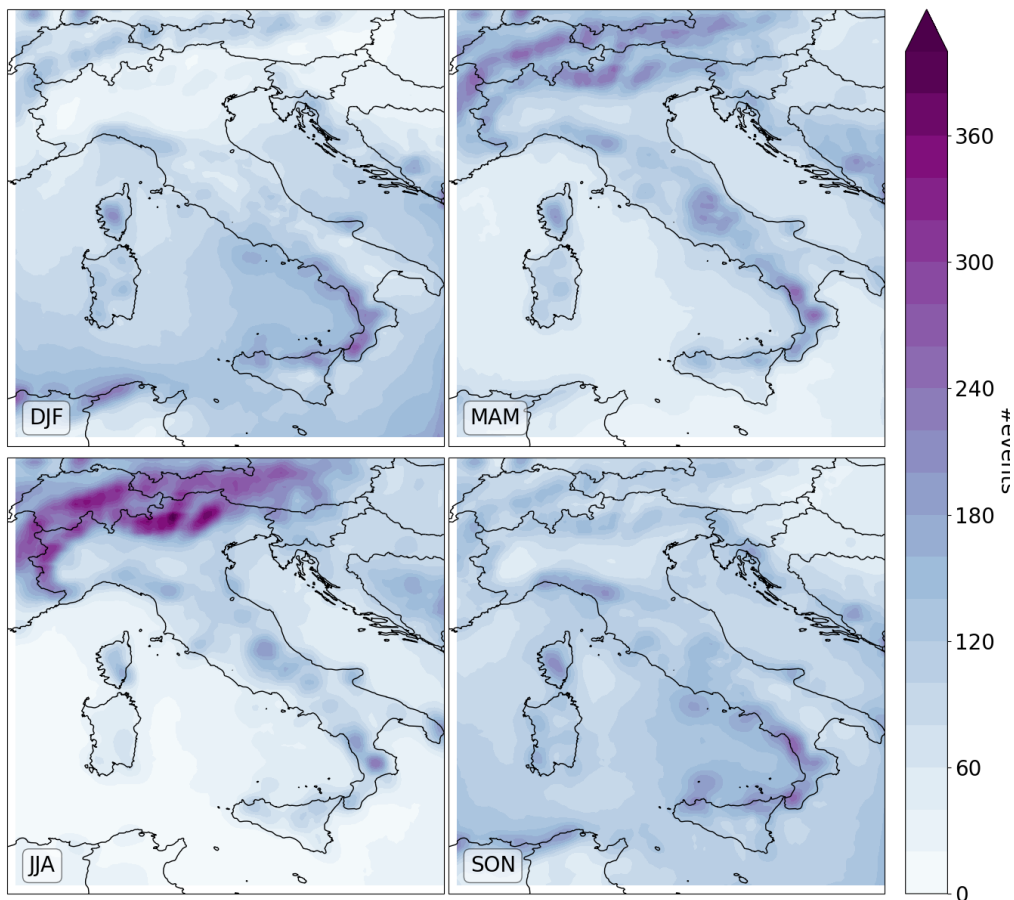
Figure S2: Seasonal map of number of events (N) occurring within the 0.5 x 0.5 window (step size 0.1), averaged annually over the period 1986–2022, from the dataset obtained with a fixed 1 mm threshold.
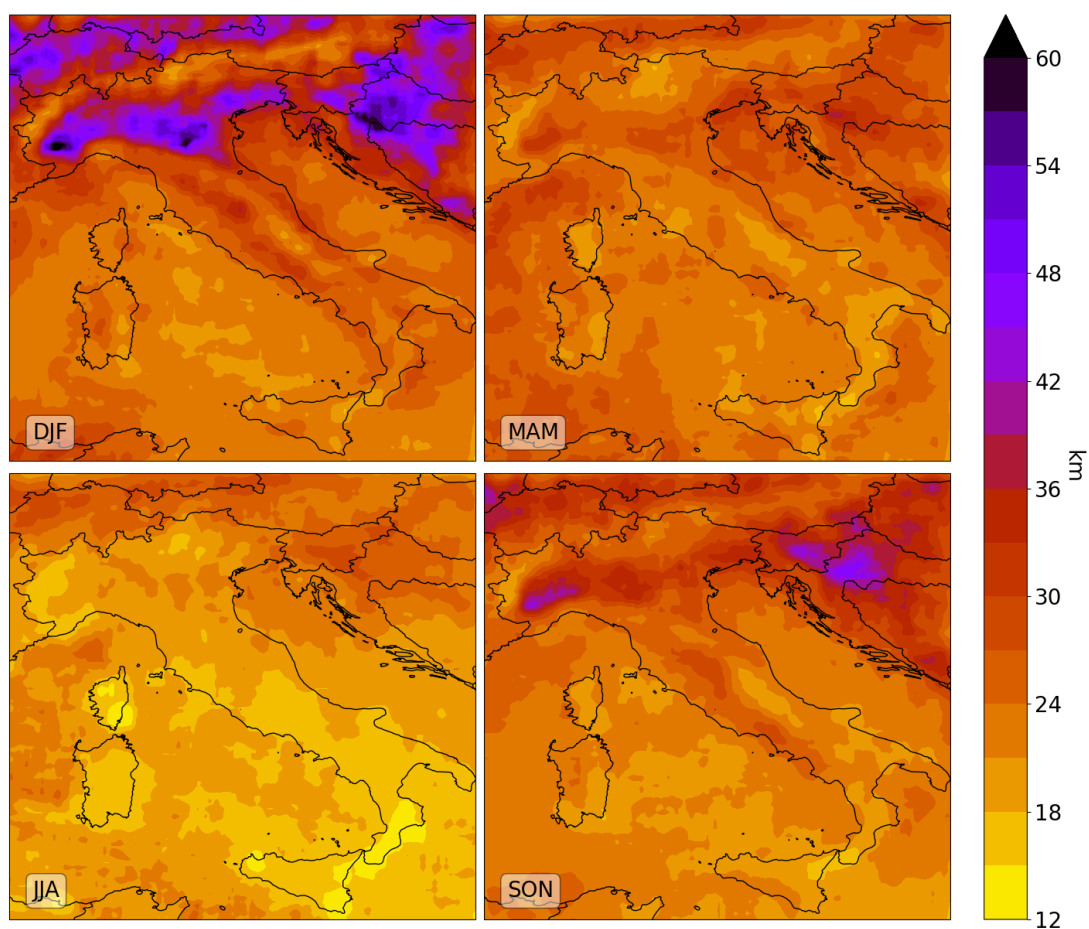
Figure S3: Seasonal map of the mean spatial scale (SpS) of the events occurring within the 0.5 x 0.5 window (step size 0.1), averaged annually over the period 1986–2022, from the dataset obtained with a fixed 1 mm threshold.
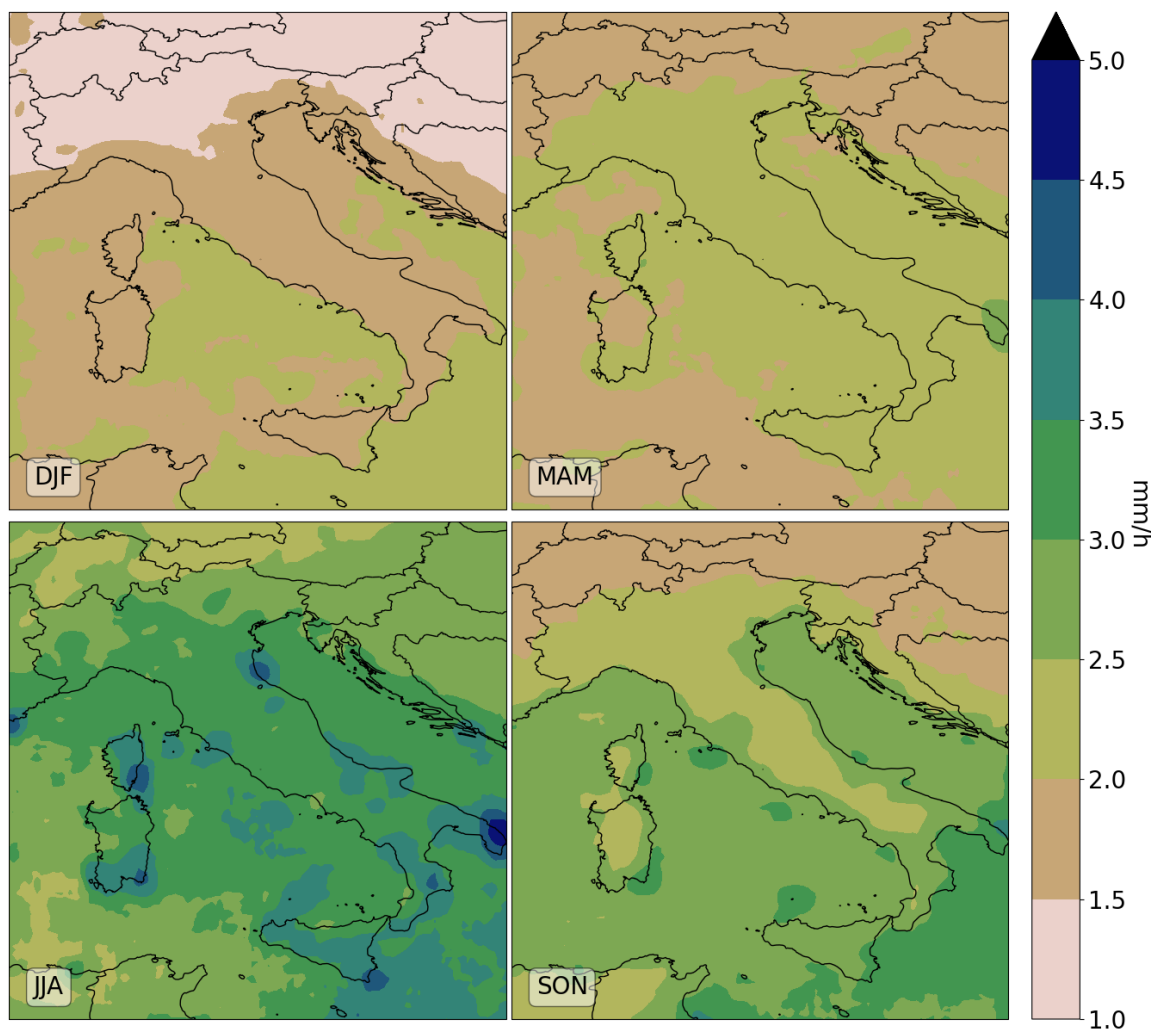
Figure S4: Seasonal map of the mean average intensity (AvIn) of the events occurring within the 0.5 x 0.5 window (step size 0.1), averaged annually over the period 1986–2022, from the dataset obtained with a fixed 1 mm threshold.
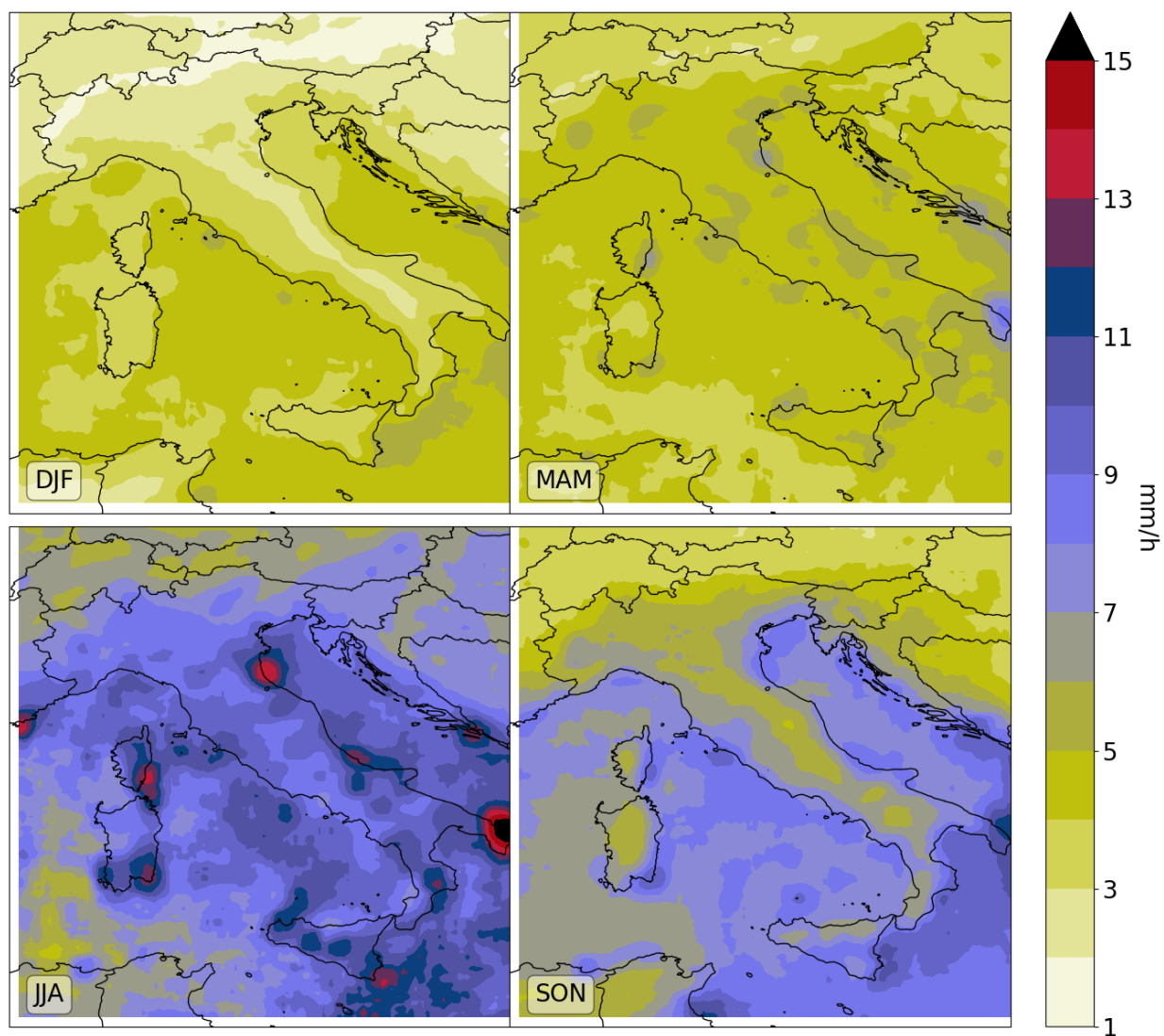
Figure S5: Seasonal map of the mean peak intensity (PkInI of the events occurring within the 0.5 x 0.5 window (step size 0.1), averaged annually over the period 1986–2022, from the dataset obtained with a fixed 1 mm threshold.
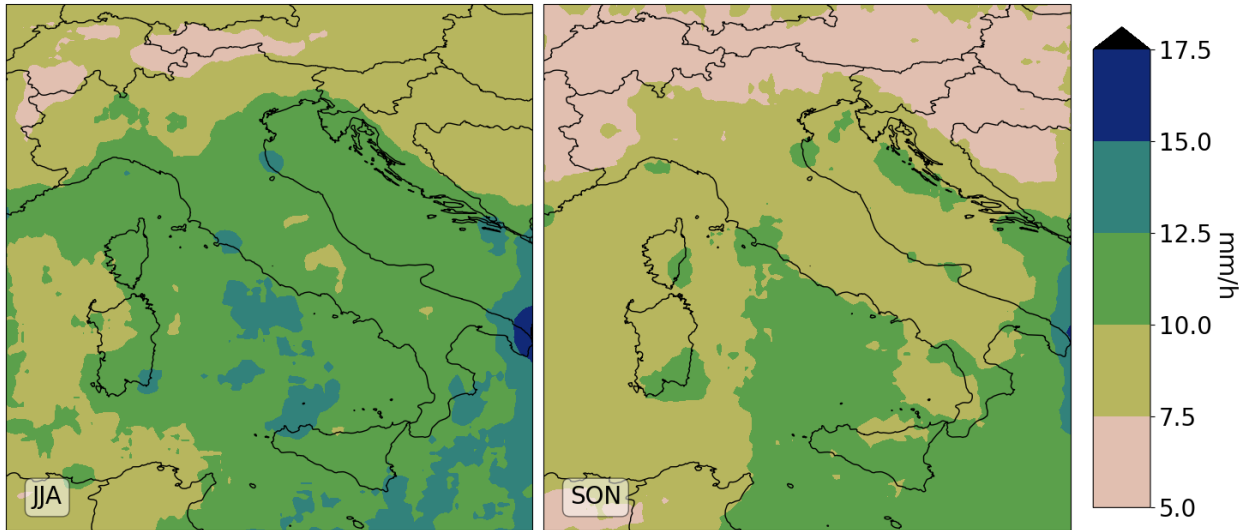
Figure S6: JJA and SON maps of the mean average intensity (AvIn) of EPEs occurring within the 0.5 x 0.5 window (step size 0.1), averaged annually over the period 1986–2022.
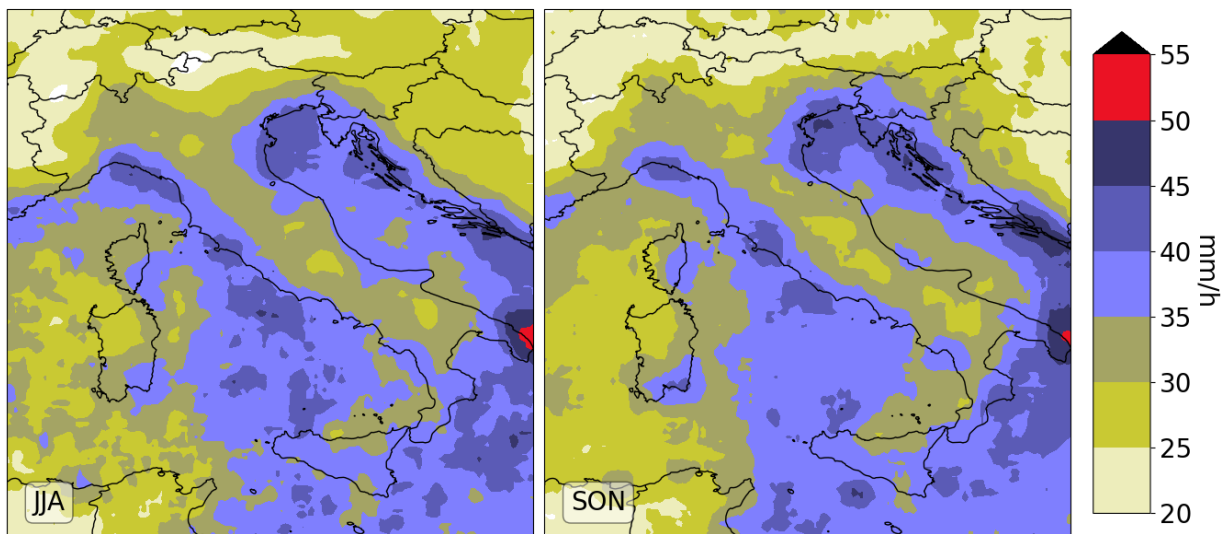
Figure S7: JJA and SON maps of the mean peak intensity (PkIn) of EPEs occurring within the 0.5 x 0.5 window (step size 0.1), averaged annually over the period 1986–2022.
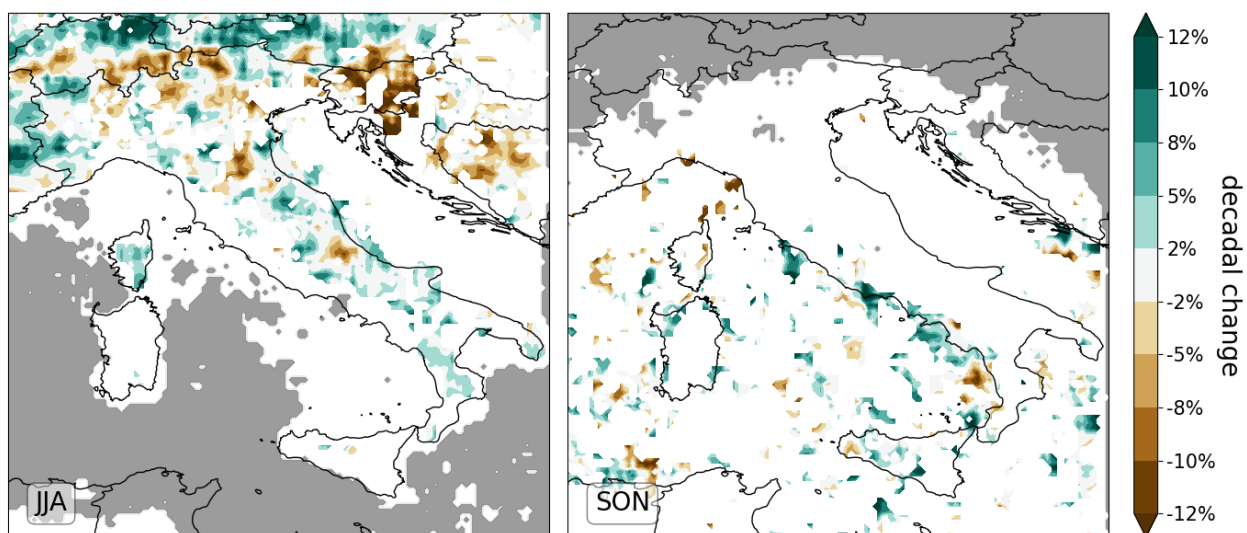
Figure S8: Maps of the decadal relative trends in the Spatial Scale (SpS) of EPEs occurring within each 0.5° × 0.5° window (sliding step: 0.1°) for summer (JJA) and autumn (SON). Areas with more than 10 years without EPEs are masked in grey.
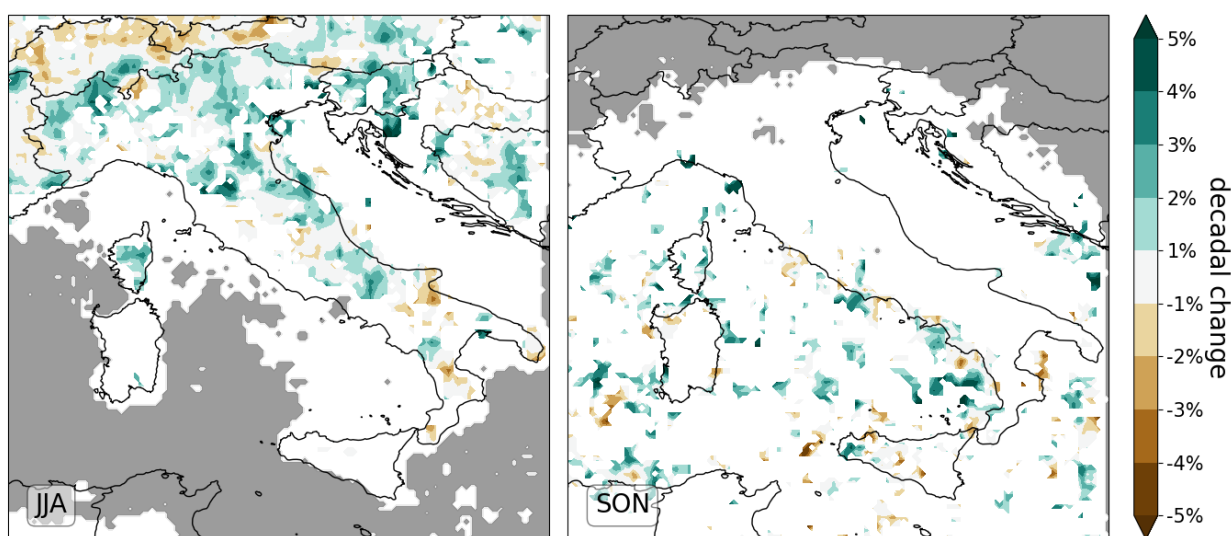
Figure S9: Maps of the decadal relative trends in the Average Intensities (AvIn) of EPEs occurring within each 0.5° × 0.5° window (sliding step: 0.1°) for summer (JJA) and autumn (SON). Areas with more than 10 years without EPEs are masked in grey.
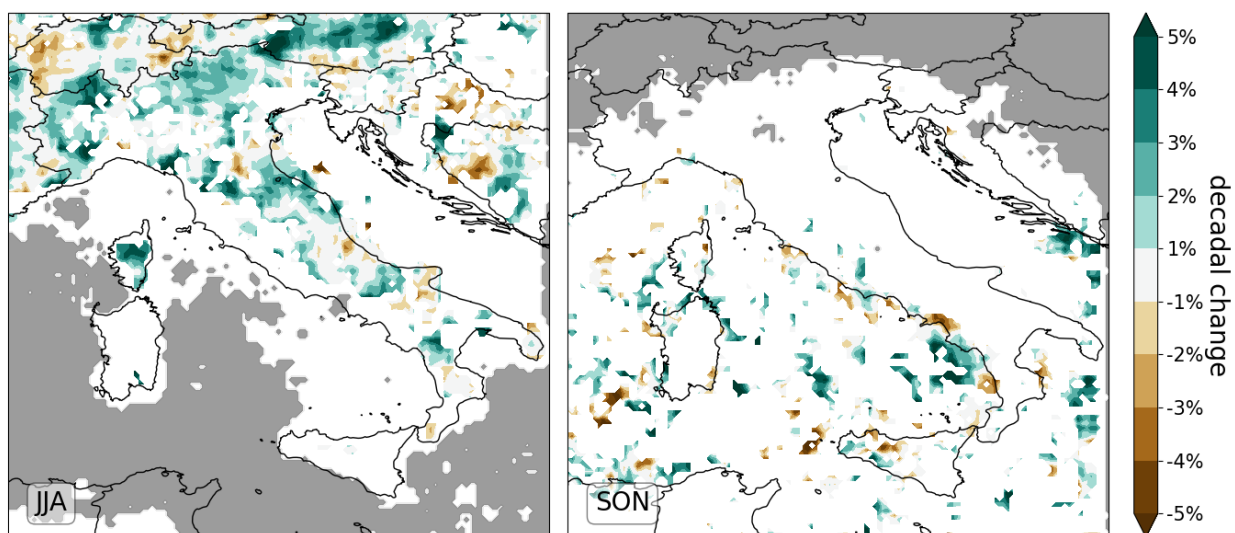
Figure S10: Maps of the decadal relative trends in the Peak Intensities (PkIn) of EPEs occurring within each 0.5° × 0.5° window (sliding step: 0.1°) for summer (JJA) and autumn (SON). Areas with more than 10 years without EPEs are masked in grey.