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*Supplement of*

## **Precipitation response to aerosol–radiation and aerosol–cloud interactions in regional climate simulations over Europe**

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# Supplement

This document contains a number of figures for the experiments BASE ARI and ARCI and their differences. Figures related to aerosols (1-5) show annual and seasonal means as well as the differences between ARCI and ARI experiments. The rest of figures (6-22) show mean annual and seasonal differences of surface variables (Precipitation, days of precipitation, cloudiness, temperature and radiation and sea level pressure (7-17) and upper air variables as temperature and geopotential height (18-22) at several pressure levels. The statistical significance of the differences ( $p < 0.05$ ) is marked by squares in figures presenting differences.

## List of Figures

S1	Annual and seasonal mean AOD ( $550nm$ ) and relative differences between ARI and ARCI. The Aerosol Optical Depth has been calculated from the extinction coefficient at $550\mu m$ .	3
S2	Annual and seasonal mean for PM10 ( $\mu g/m^3$ ) and relative differences between ARI and ARCI.	4
S3	Annual and seasonal mean for PM2.5 ( $\mu g/m^3$ ) and relative differences between ARI and ARCI.	5
S4	Annual and seasonal mean for PMratio (unitless) and relative differences between ARI and ARCI.	6
S5	Annual and seasonal mean for hydrophilic Black Carbon (BC2) ( $10^2\mu g/kg - dryair$ ) at level 7 of model mesh (1000m) and relative differences between ARI and ARCI.	7
S6	Mean annual and seasonal differences of precipitation (mm/month) of ARI-Base ARCI-Base and ARCI-ARI.	8
S7	Mean annual and seasonal differences (%) of precipitation (mm/month) of ARI-Base ARCI-Base and ARCI-ARI.	9
S8	Mean annual and seasonal differences of number of days per year with precipitation greater than 0.1mm of ARI-Base ARCI-Base and ARCI-ARI.	10
S9	Mean annual and seasonal differences of number of days (%) with precipitation greater than 0.1mm of ARI-Base ARCI-Base and ARCI-ARI.	11
S10	Mean annual and seasonal differences of Low Cloud Cover of ARI-Base ARCI-Base and ARCI-ARI. Low cloud cover is given in point percentage.	12
S11	Mean annual and seasonal differences (%) of Low Cloud Cover of ARI-Base ARCI-Base and ARCI-ARI.	13
S12	Mean annual and seasonal differences of surface solar downward radiation ( $W/m^2$ ) for ARI-Base, ARCI-Base and ARCI-ARI.	14
S13	Mean annual and seasonal relative differences of surface solar downward radiation (%) for ARI-Base, ARCI-Base and ARCI-ARI.	15
S14	Mean annual and seasonal differences of dayly maximum temperature (K) for ARI-Base, ARCI-Base and ARCI-ARI.	16
S15	Mean annual and seasonal differences of dayly minimum temperature (K) for ARI-Base, ARCI-Base and ARCI-ARI.	17
S16	Mean annual and seasonal differences of dayly temperature range (K) DTR, for ARI-Base, ARCI-Base and ARCI-ARI.	18
S17	Mean annual and seasonal differences of sea level pressure (Pa) for ARI-Base, ARCI-Base and ARCI-ARI.	19
S18	Mean annual and seasonal differences of geopotential heighth (m) at 1000mb for ARI-Base, ARCI-Base and ARCI-ARI.	20
S19	Mean annual and seasonal differences of geopotential heighth (m) at 850mb for ARI-Base, ARCI-Base and ARCI-ARI.	21
S20	Mean annual and seasonal differences of geopotential heighth (m) at 500mb for ARI-Base, ARCI-Base and ARCI-ARI.	22
S21	Mean annual and seasonal differences of temperature (Kx10) at 850mb for ARI-Base, ARCI-Base and ARCI-ARI.	23
S22	Mean annual and seasonal differences of temperature (Kx10) at 500mb for ARI-Base, ARCI-Base and ARCI-ARI.	24

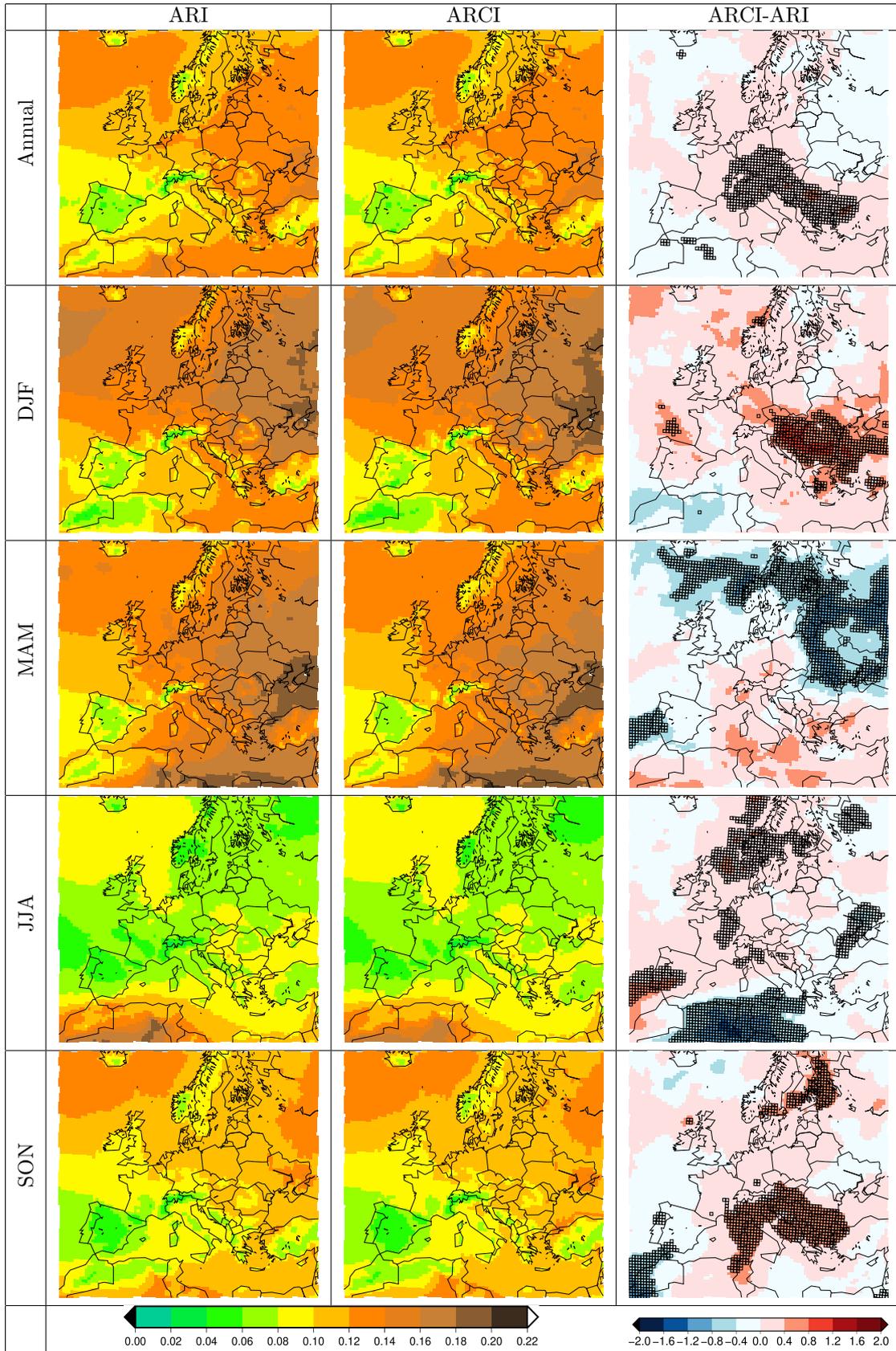


Figure S1: Annual and seasonal mean AOD (550nm) and relative differences between ARI and ARCI. The Aerosol Optical Depth has been calculated from the extinction coefficient at  $550\mu\text{m}$ .

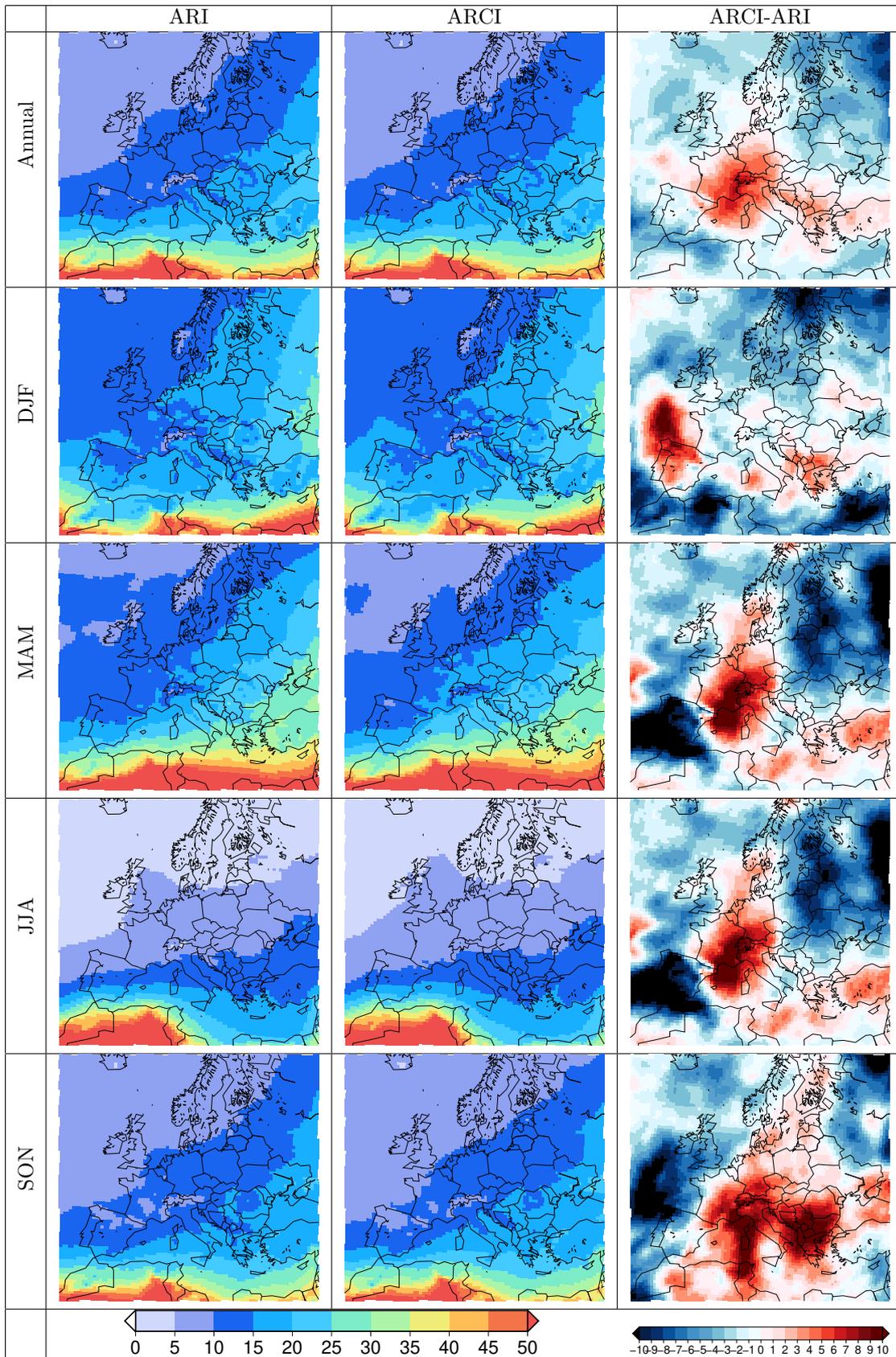


Figure S2: Annual and seasonal mean for PM10 ( $\mu\text{g}/\text{m}^3$ ) and relative differences between ARI and ARCI.

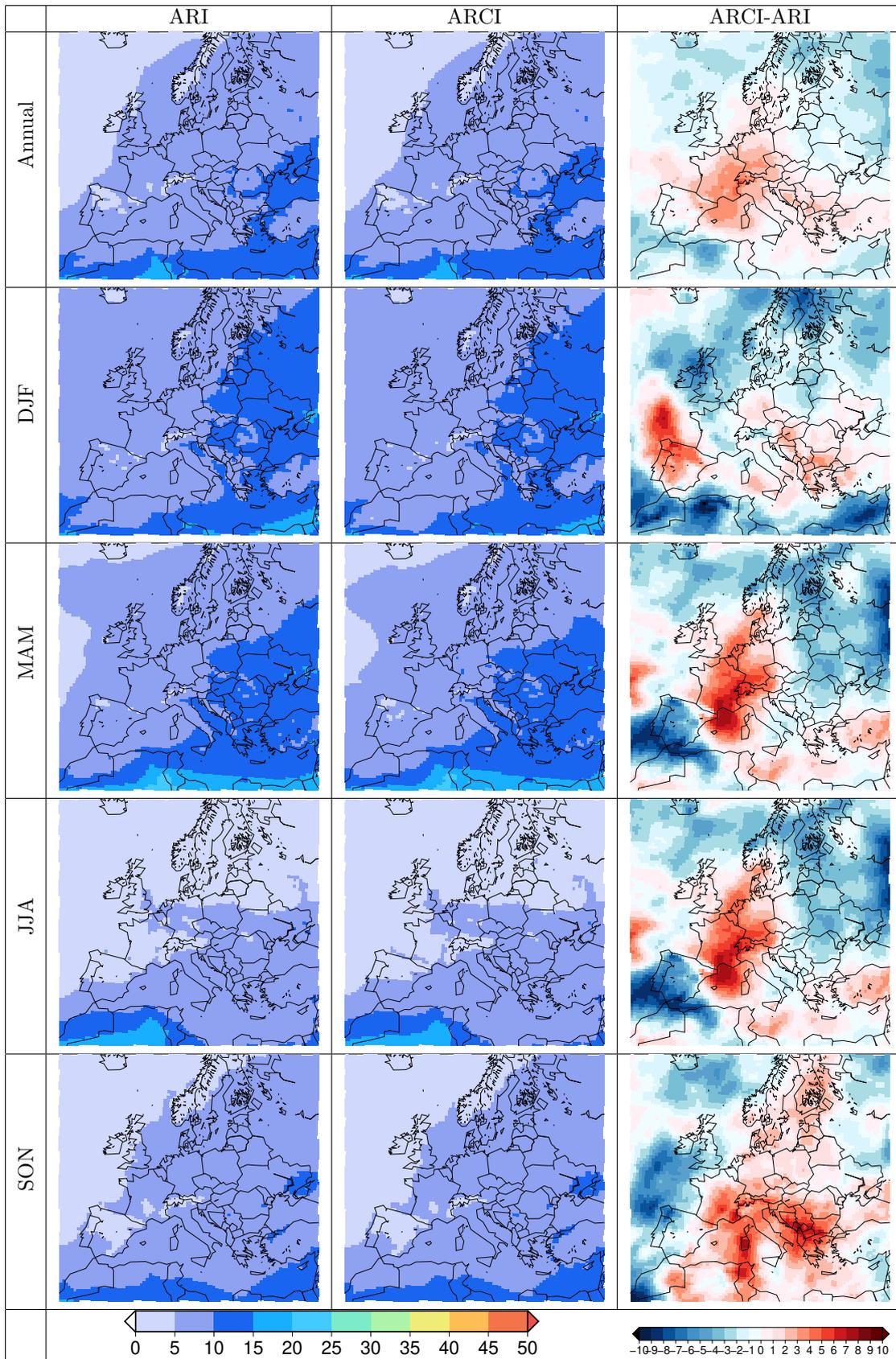


Figure S3: Annual and seasonal mean for PM<sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ ) and relative differences between ARI and ARCI.

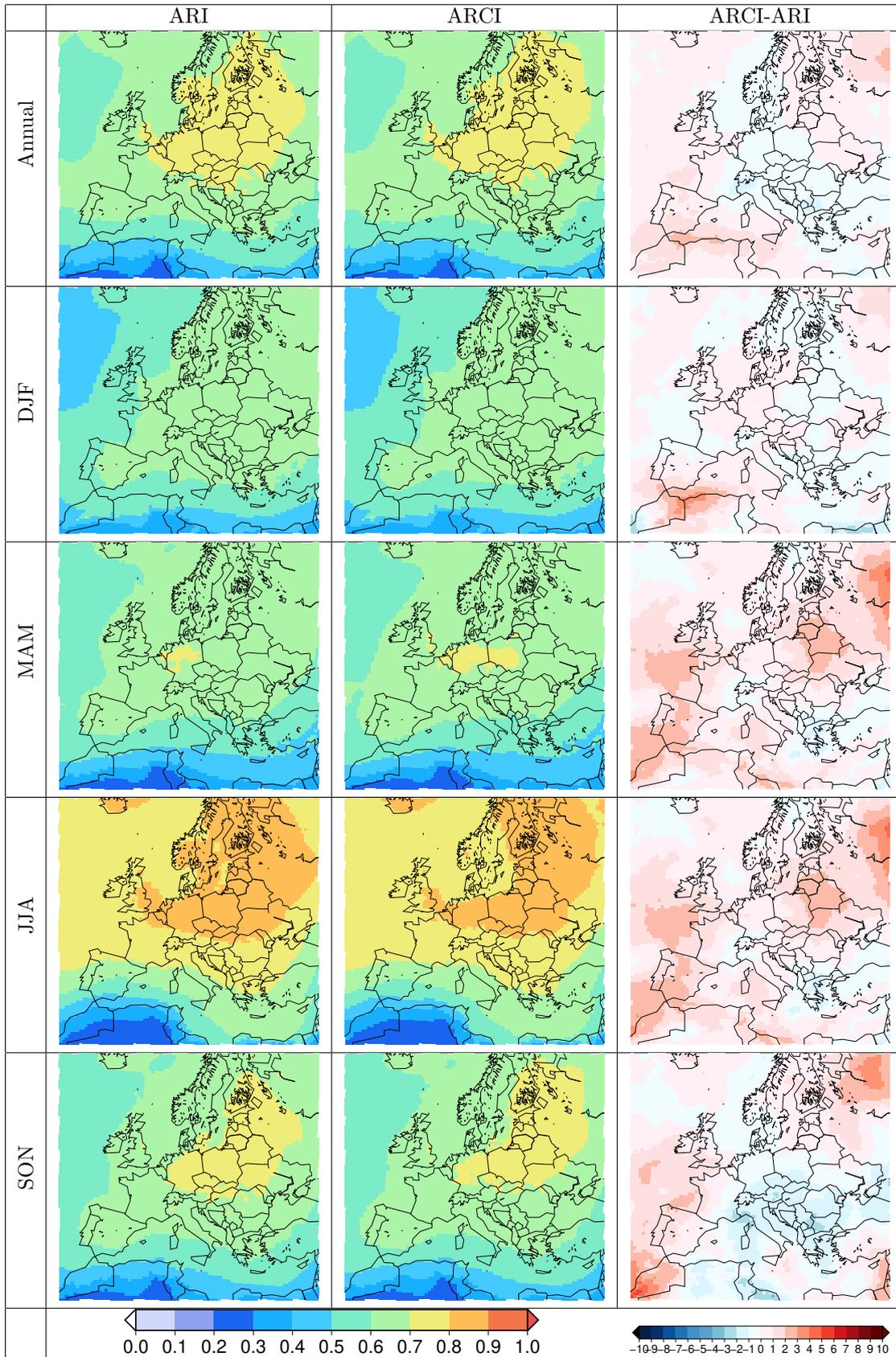


Figure S4: Annual and seasonal mean for PMratio (unitless) and relative differences between ARI and ARCI.

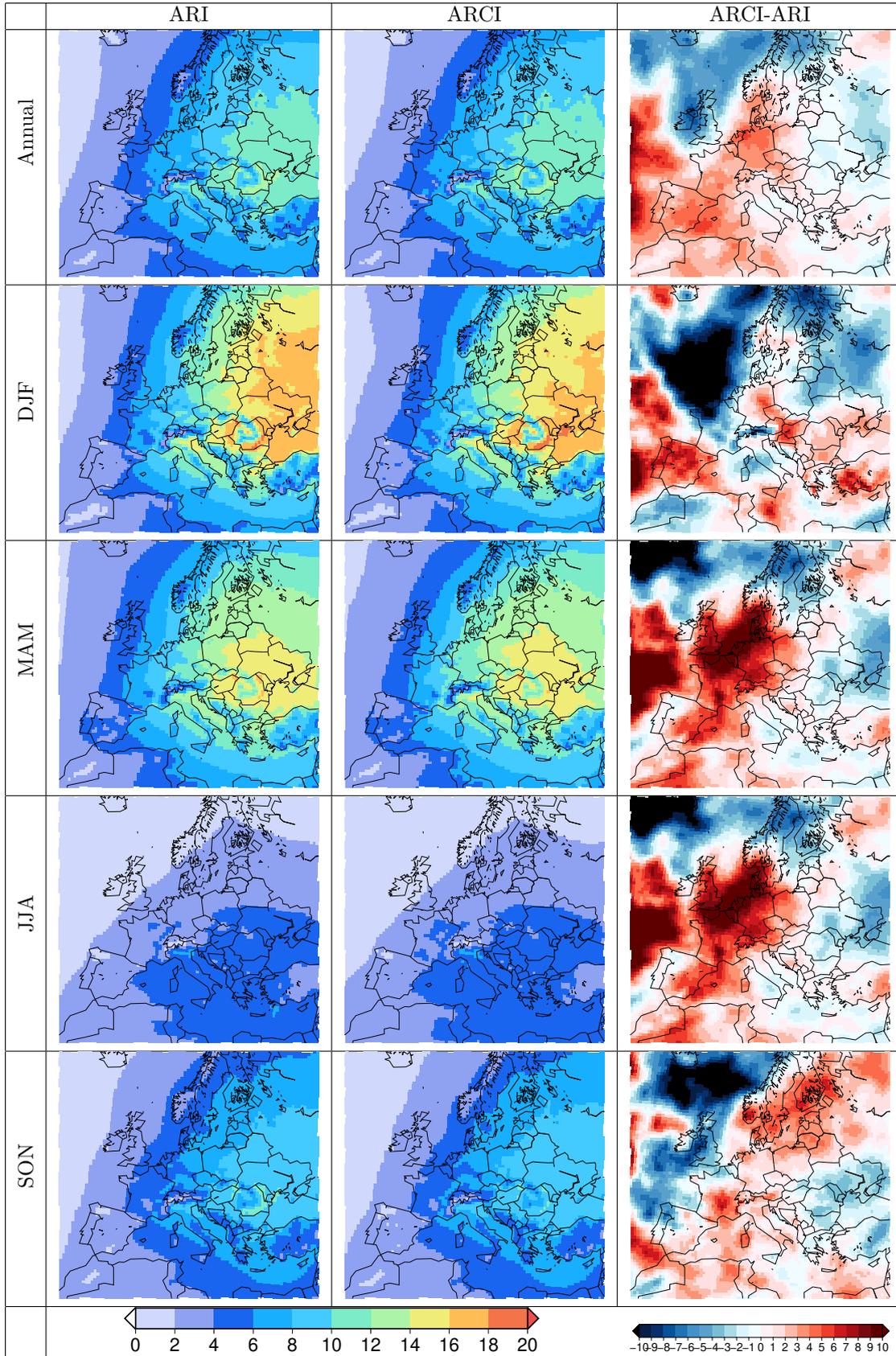


Figure S5: Annual and seasonal mean for hydrophilic Black Carbon (BC2) ( $10^2 \mu\text{g}/\text{kg} - \text{dryair}$ ) at level 7 of model mesh ( 1000m) and relative differences between ARI and ARCI.

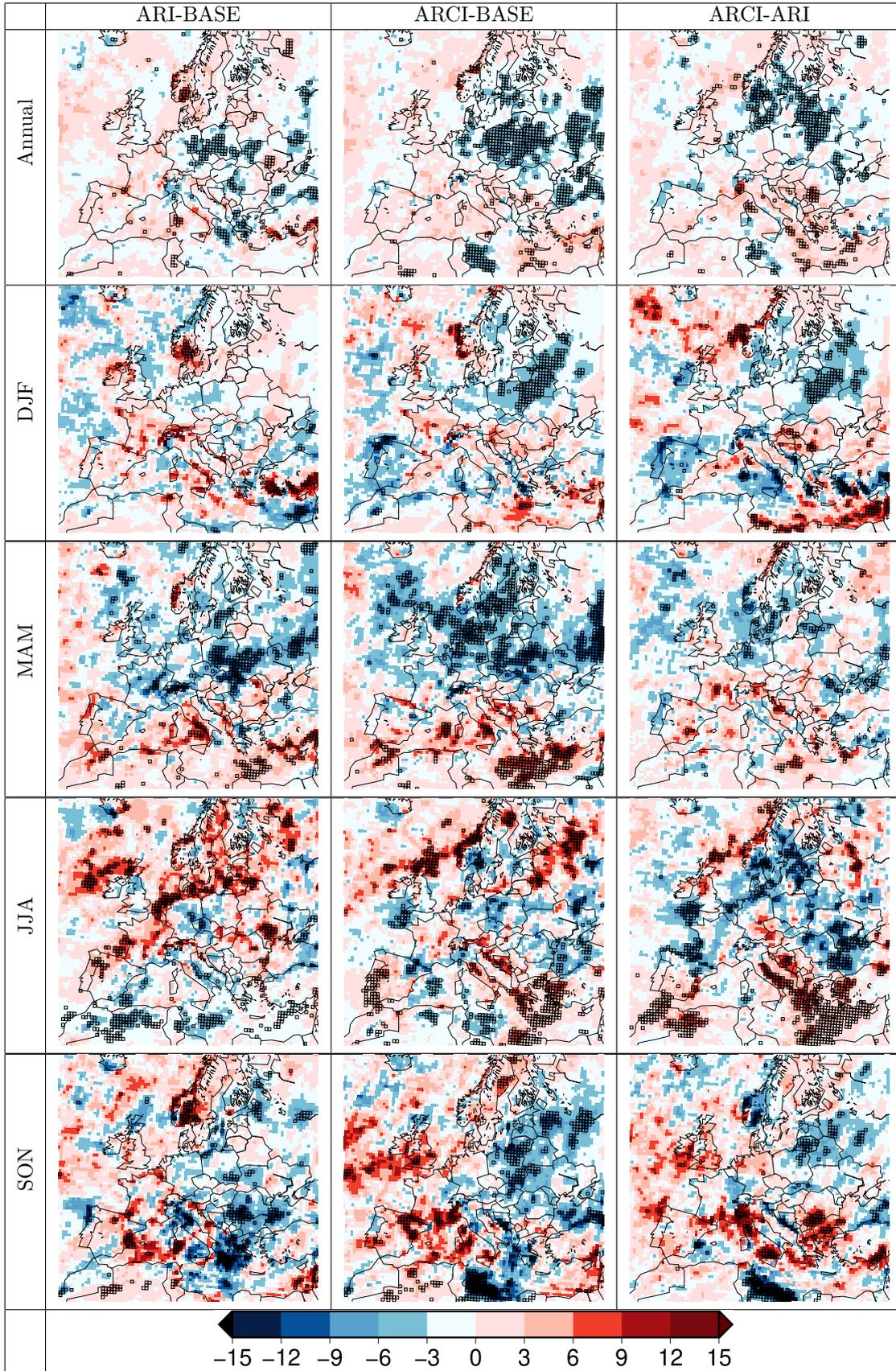


Figure S6: Mean annual and seasonal differences of precipitation (mm/month) of ARI-Base ARCI-Base and ARCI-ARI.

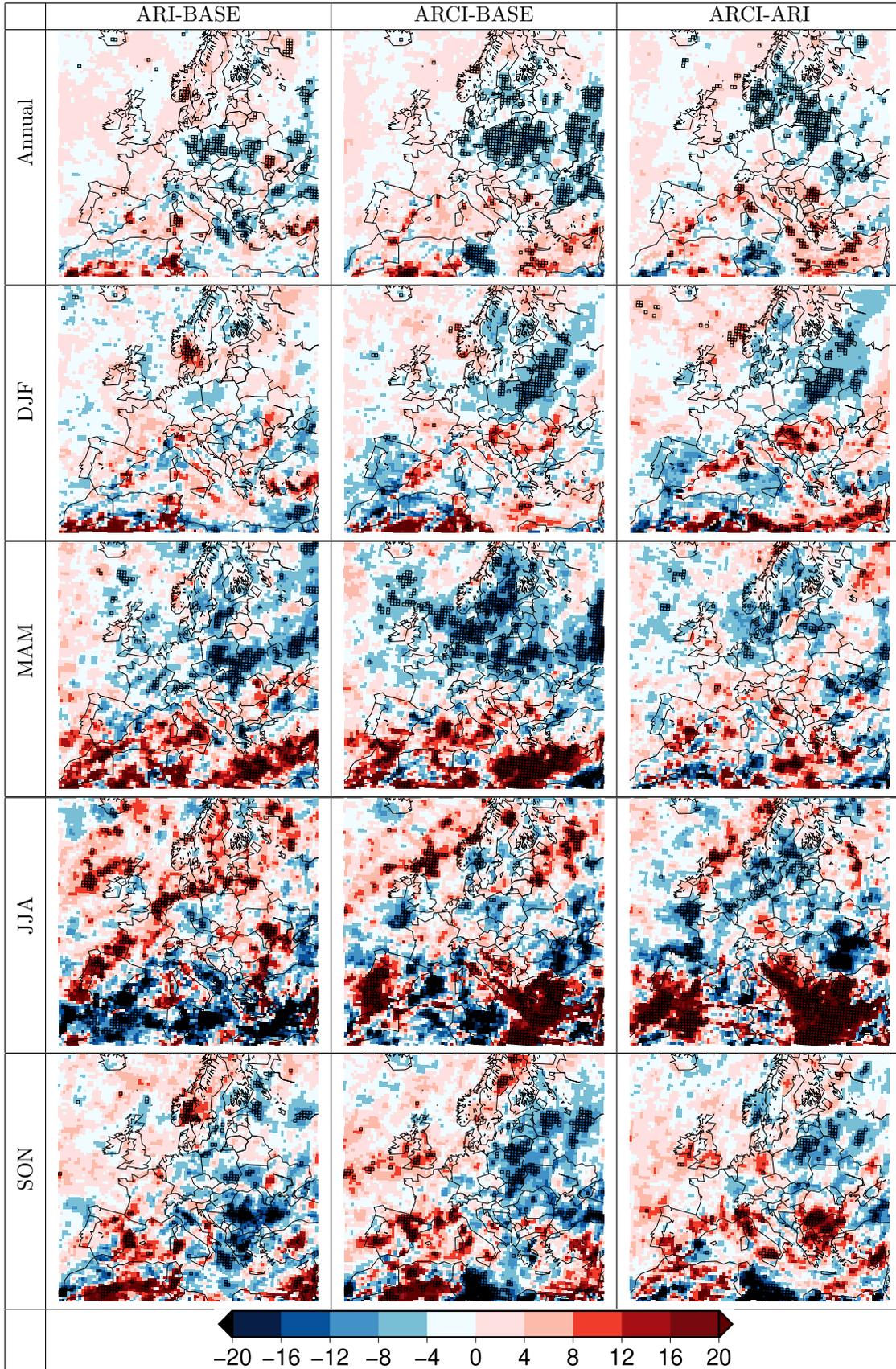


Figure S7: Mean annual and seasonal differences (%) of precipitation (mm/month) of ARI-Base ARCI-Base and ARCI-ARI.

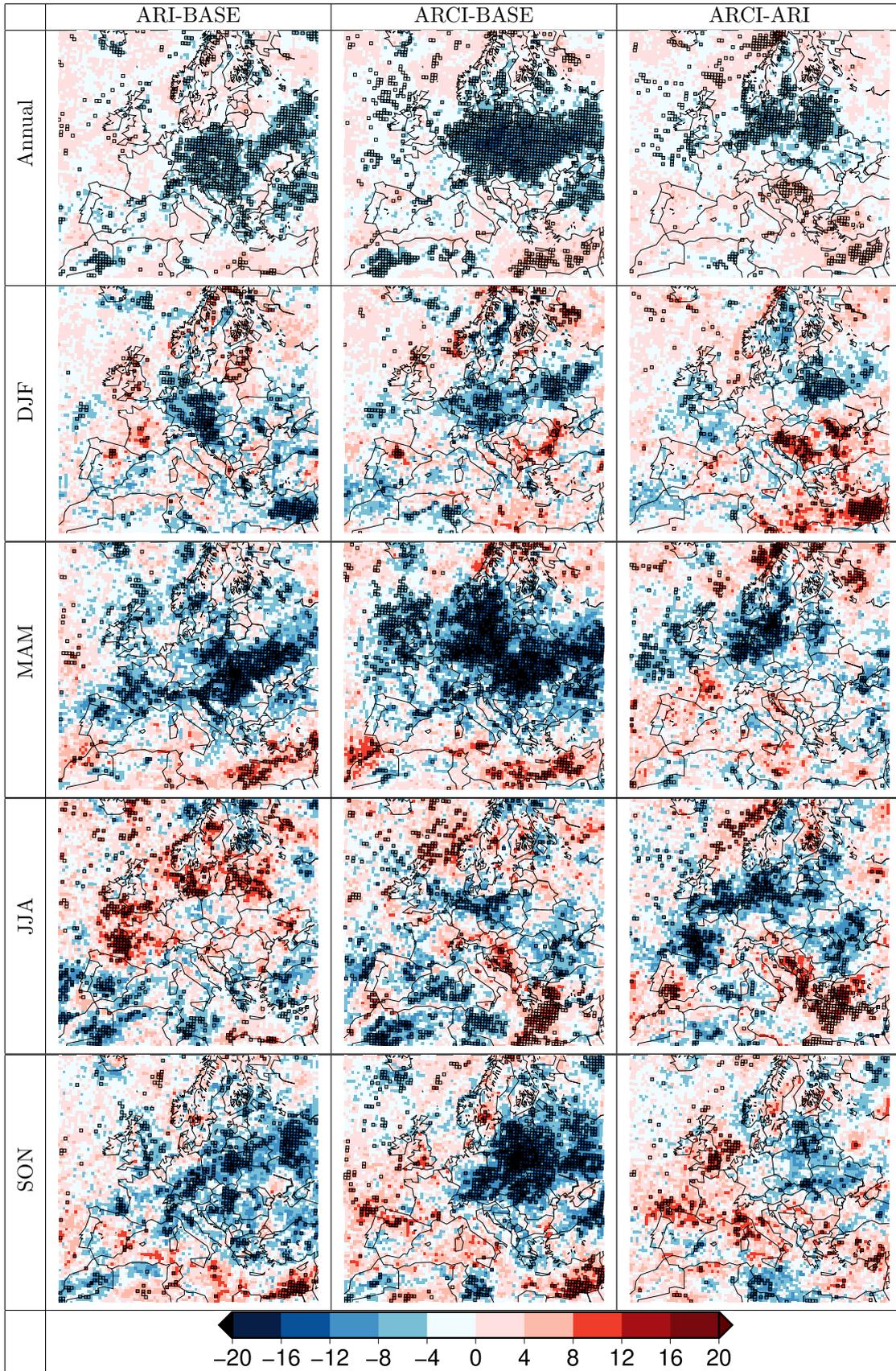


Figure S8: Mean annual and seasonal differences of number of days per year with precipitation greater than 0.1mm of ARI-Base ARCI-Base and ARCI-ARI.

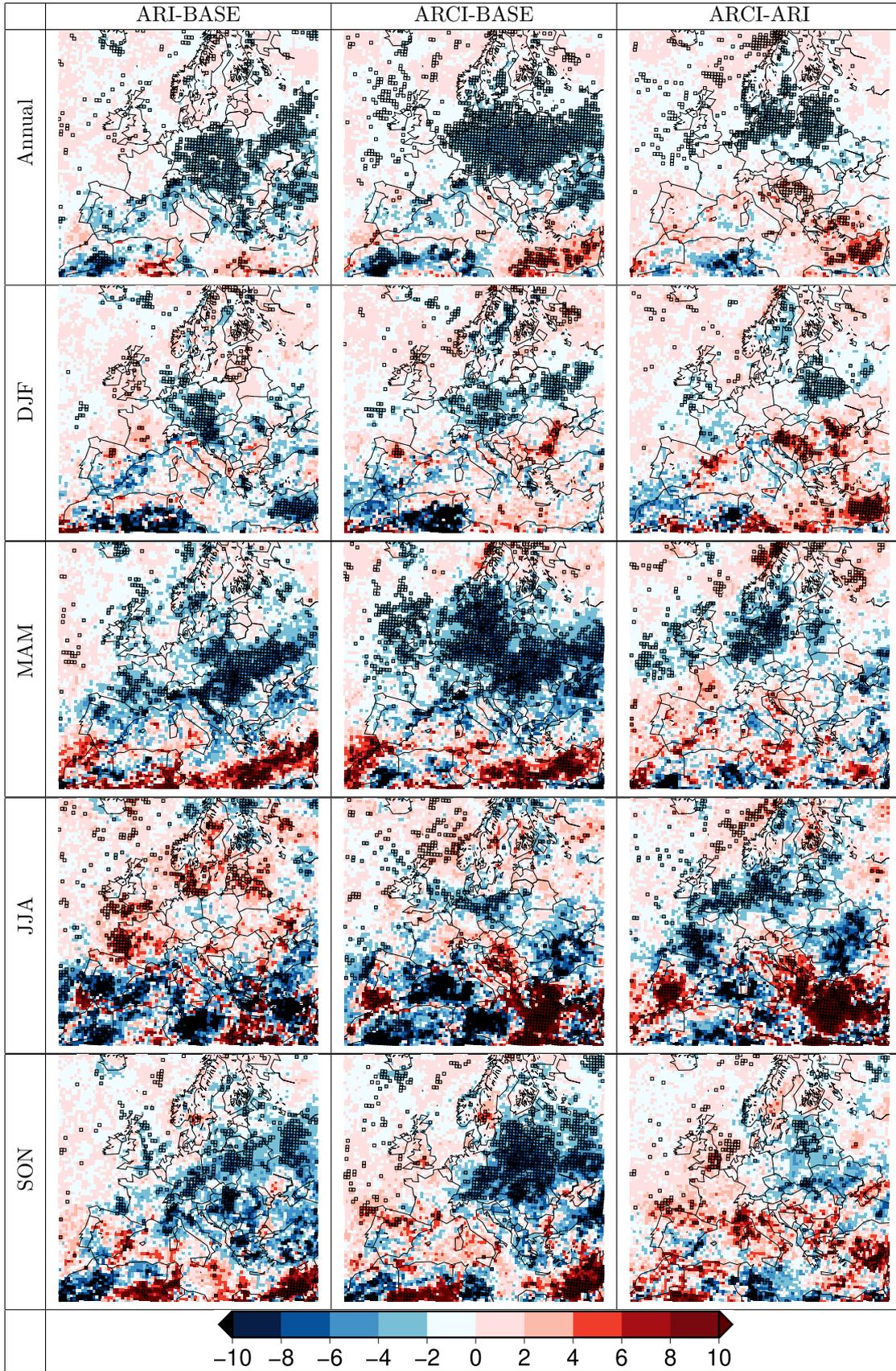


Figure S9: Mean annual and seasonal differences of number of days (%) with precipitation greater than 0.1mm of ARI-Base ARCI-Base and ARCI-ARI.

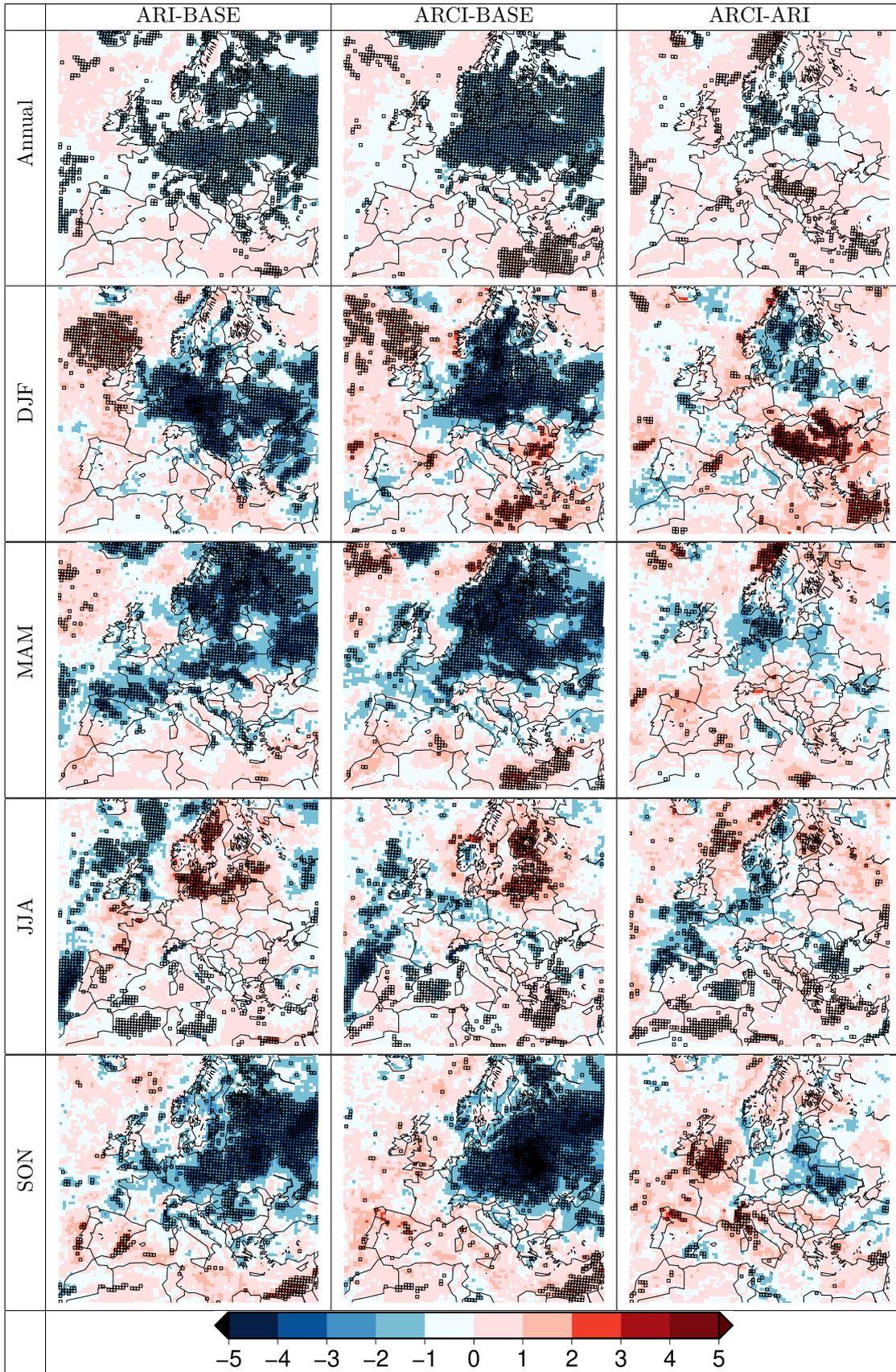


Figure S10: Mean annual and seasonal differences of Low Cloud Cover of ARI-Base ARCI-Base and ARCI-ARI. Low cloud cover is given in point percentage.

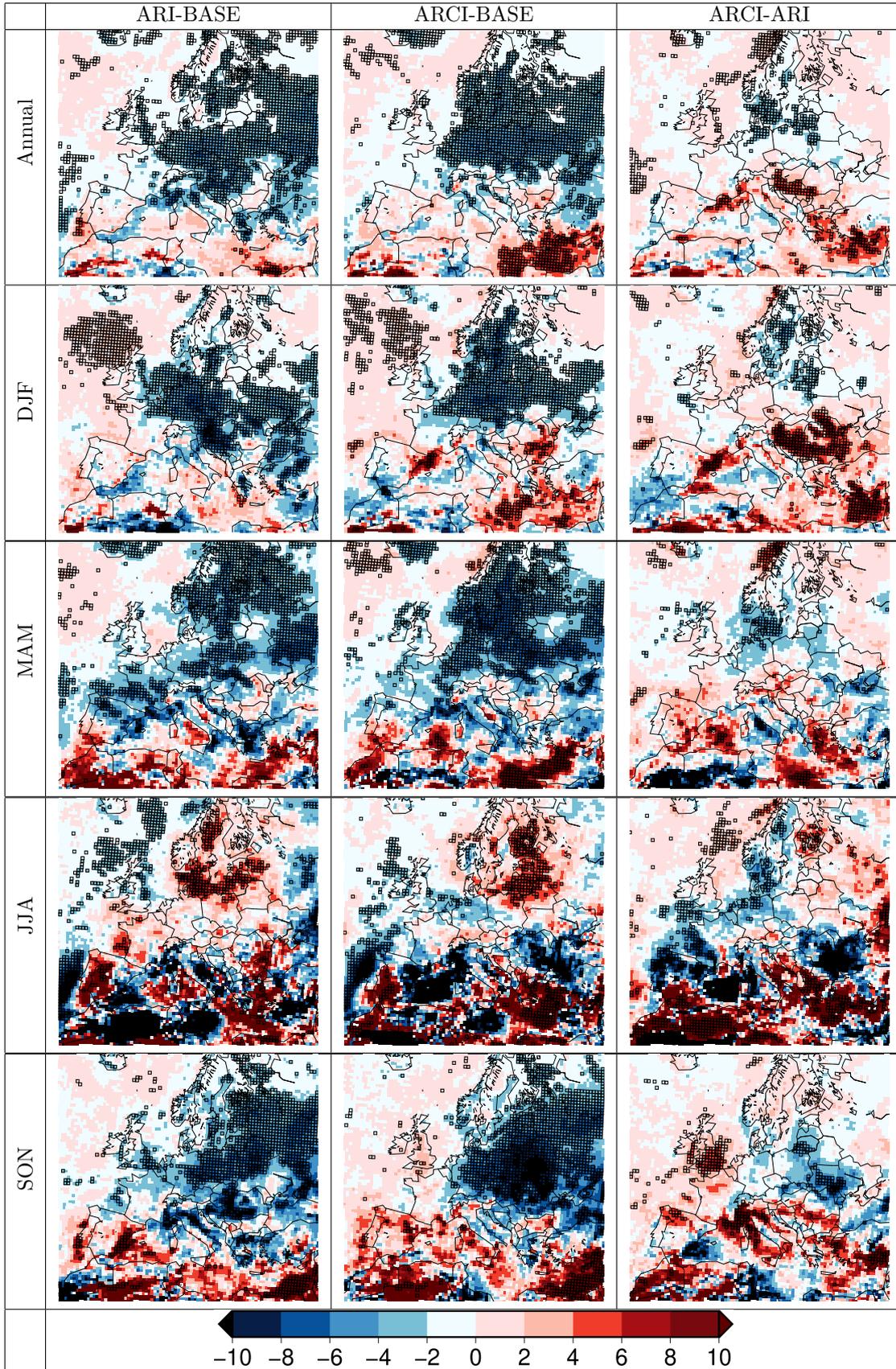


Figure S11: Mean annual and seasonal differences (%) of Low Cloud Cover of ARI-Base ARCI-Base and ARCI-ARI.

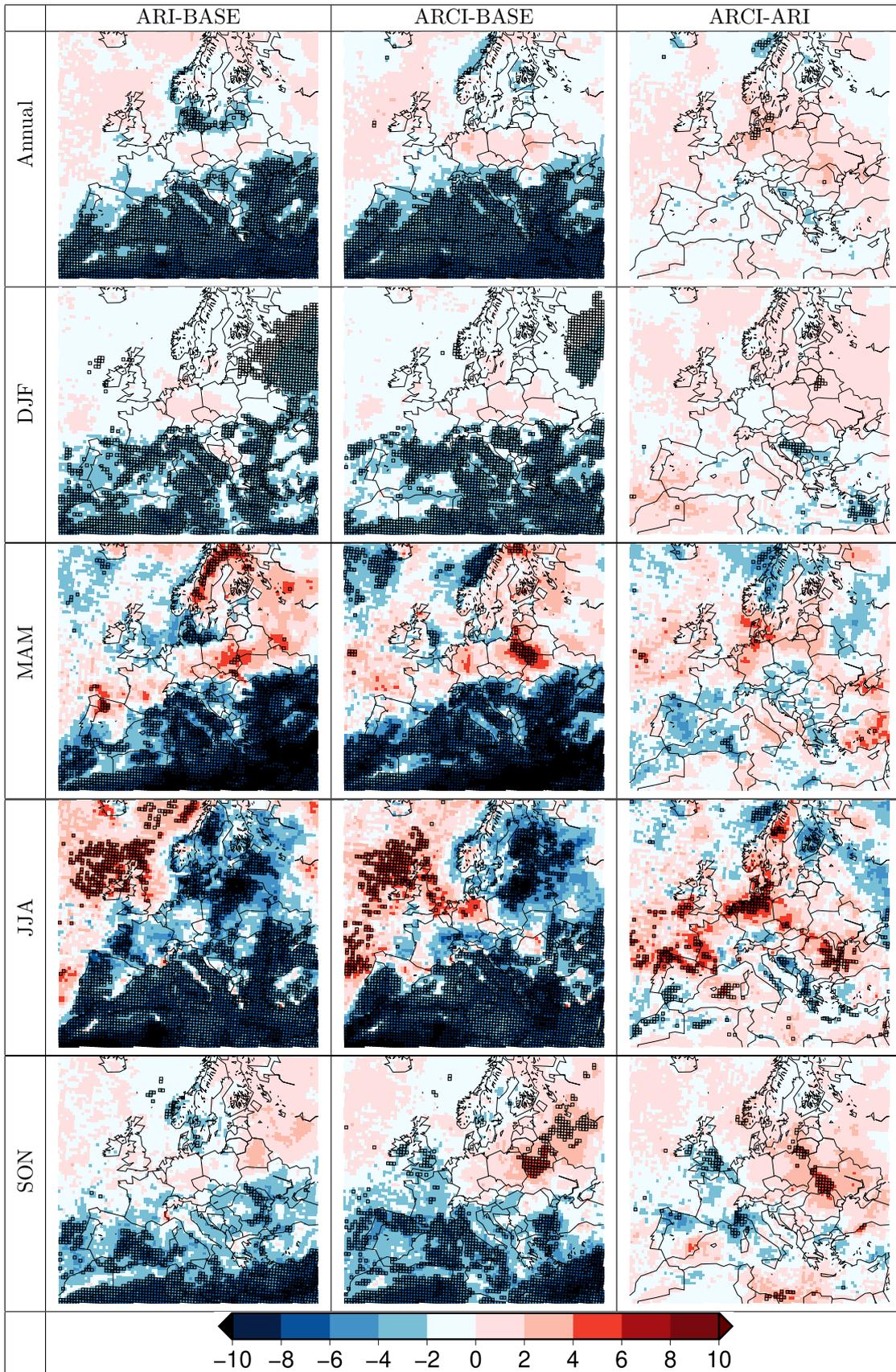


Figure S12: Mean annual and seasonal differences of surface solar downward radiation ( $W/m^2$ ) for ARI-Base, ARCI-Base and ARCI-ARI

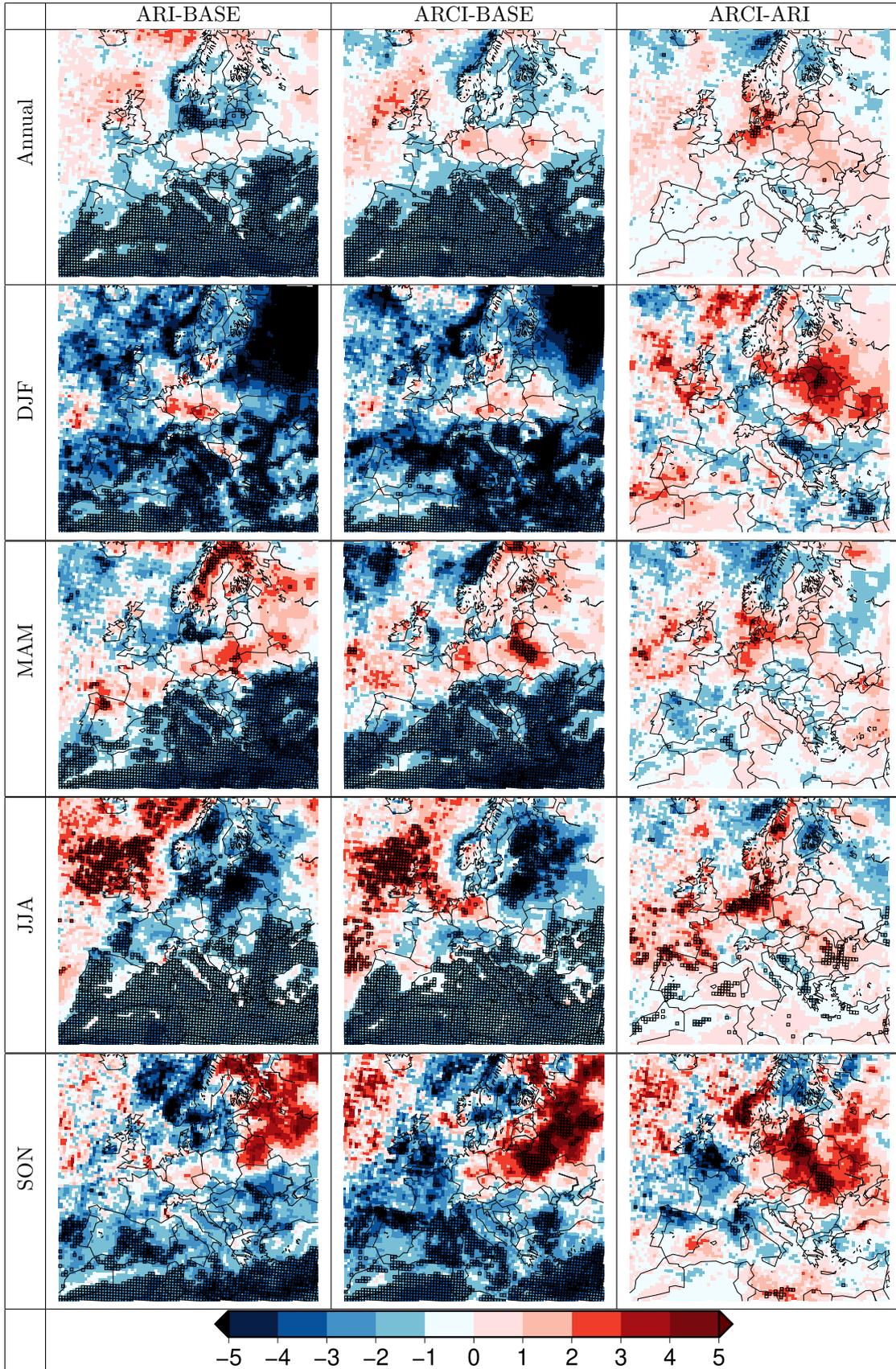


Figure S13: Mean annual and seasonal relative differences of surface solar downward radiation (%) for ARI-Base, ARCI-Base and ARCI-ARI

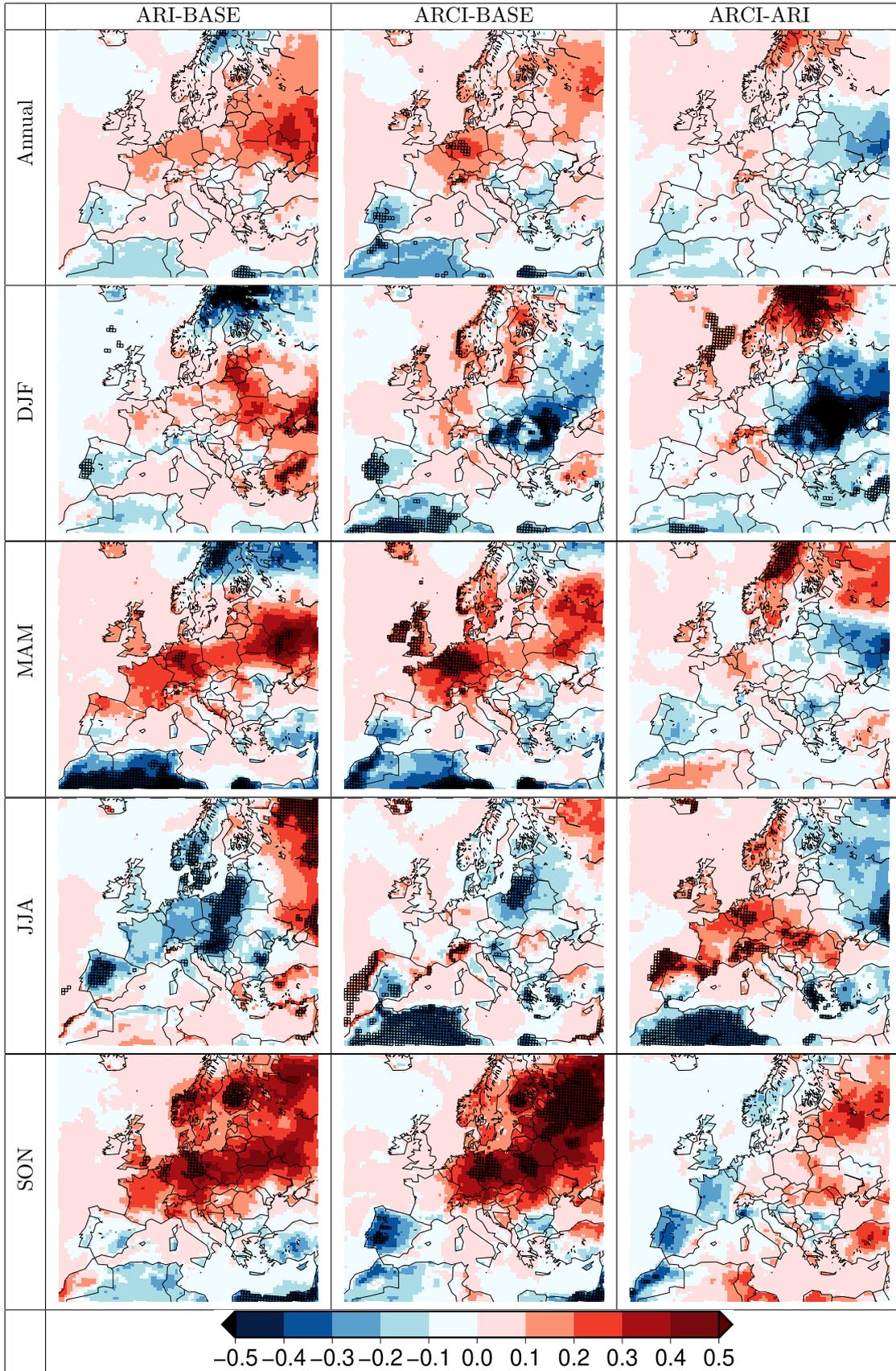


Figure S14: Mean annual and seasonal differences of daily maximum temperature (K) for ARI-Base, ARCI-Base and ARCI-ARI

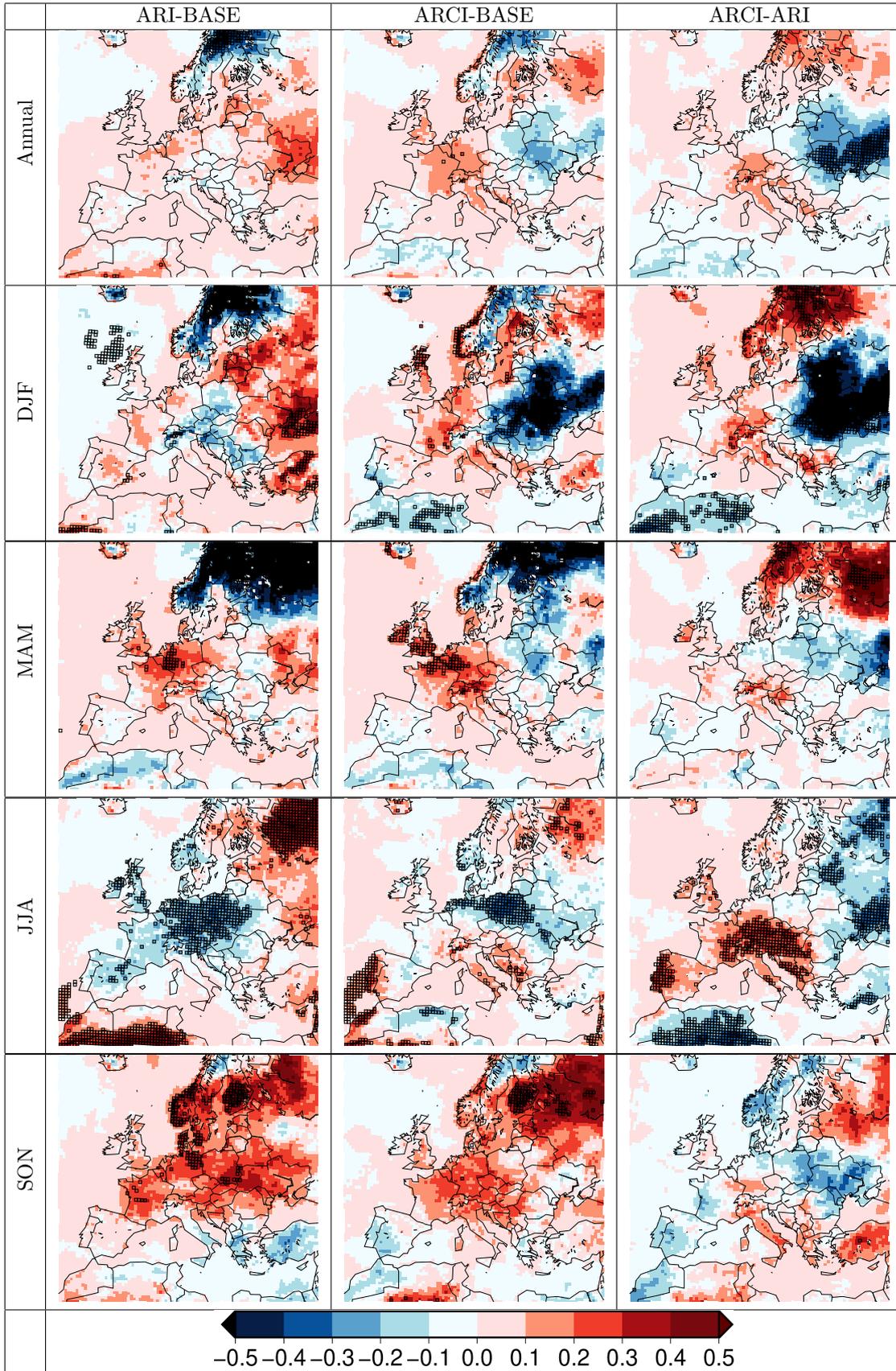


Figure S15: Mean annual and seasonal differences of daily minimum temperature (K) for ARI-Base, ARCI-Base and ARCI-ARI

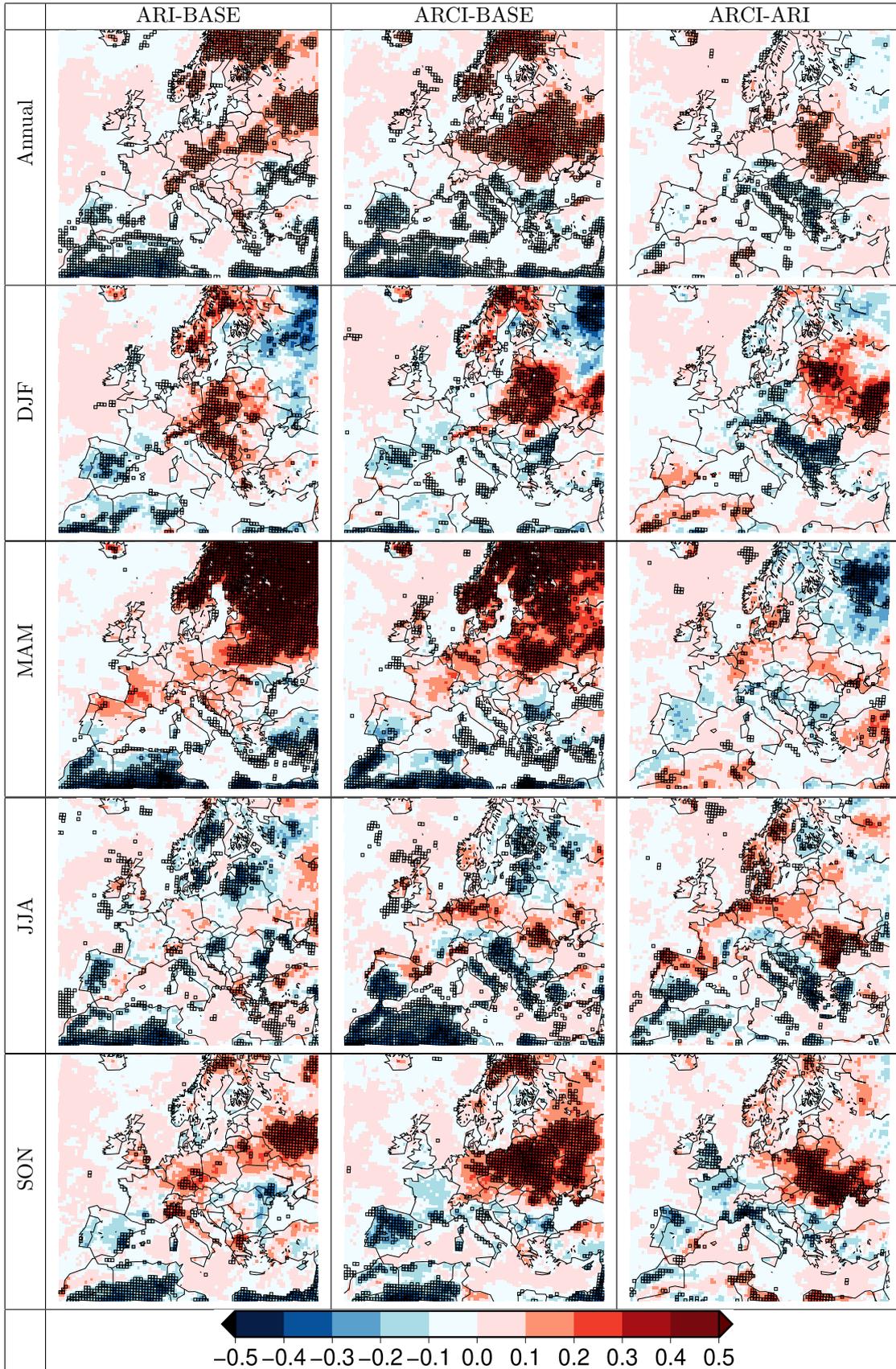


Figure S16: Mean annual and seasonal differences of daily temperature range (K) DTR, for ARI-Base, ARCI-Base and ARCI-ARI

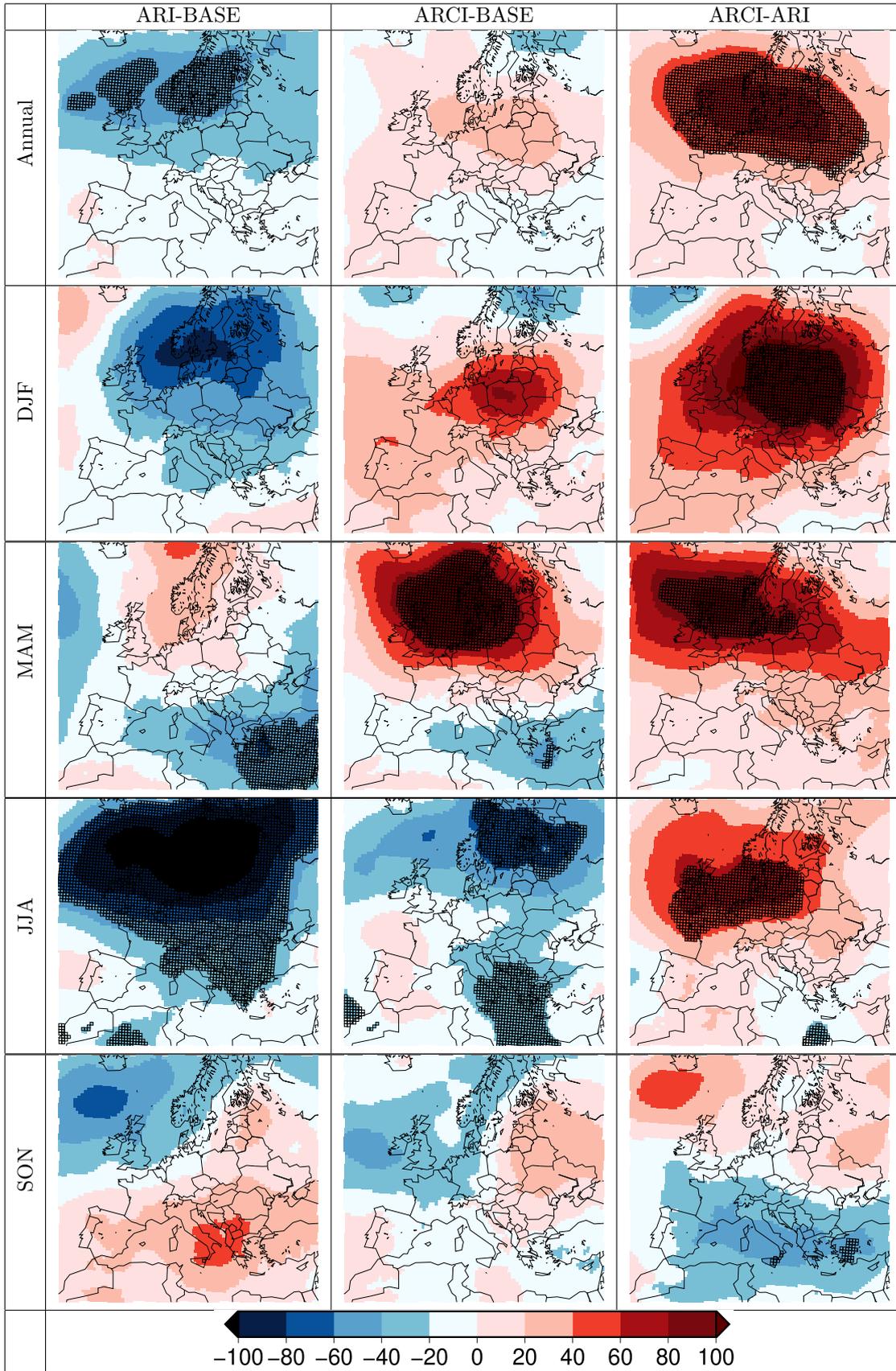


Figure S17: Mean annual and seasonal differences of sea level pressure (Pa) for ARI-Base, ARCI-Base and ARCI-ARI

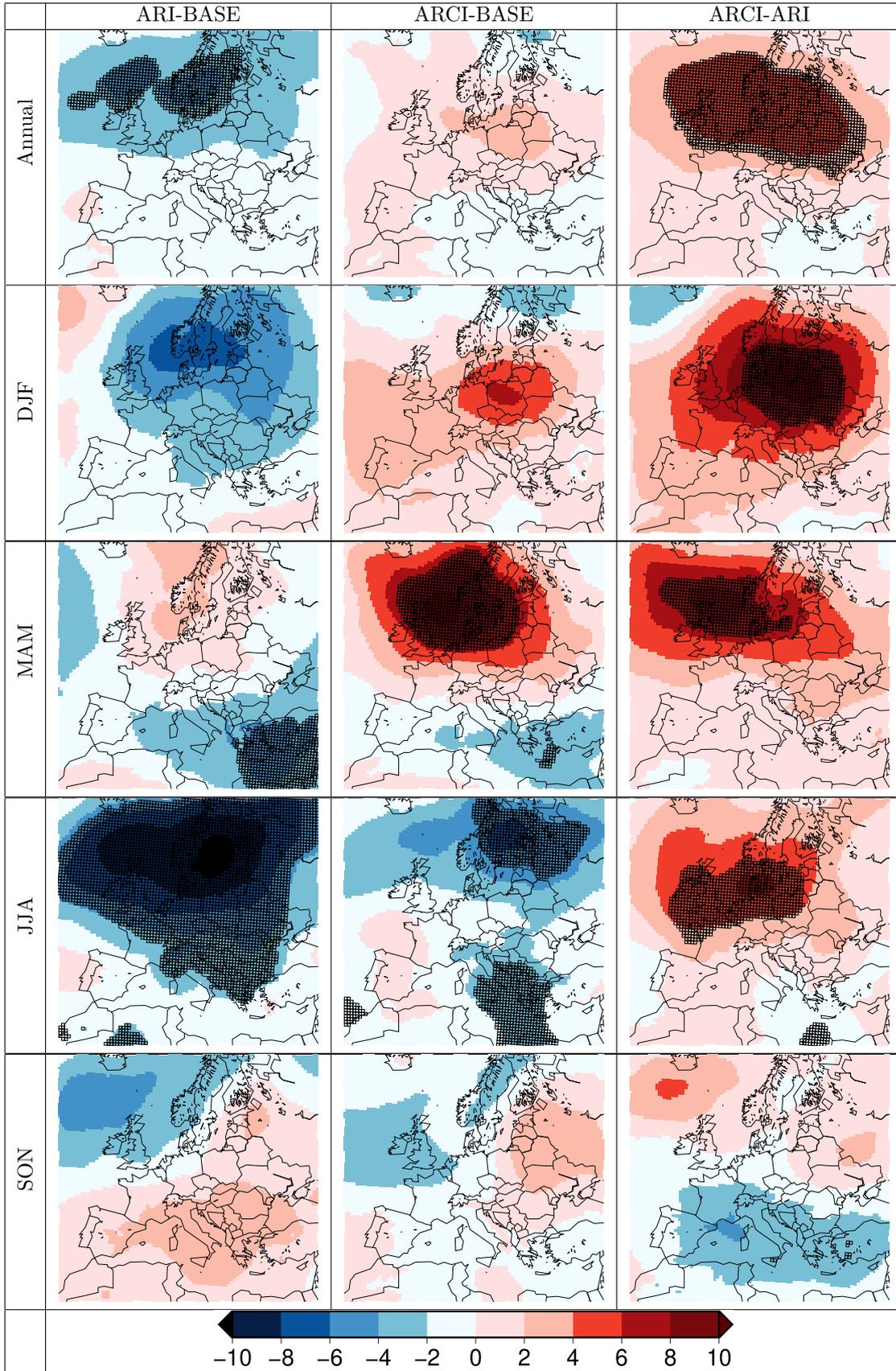


Figure S18: Mean annual and seasonal differences of geopotential height (m) at 1000mb for ARI-Base, ARCI-Base and ARCI-ARI.

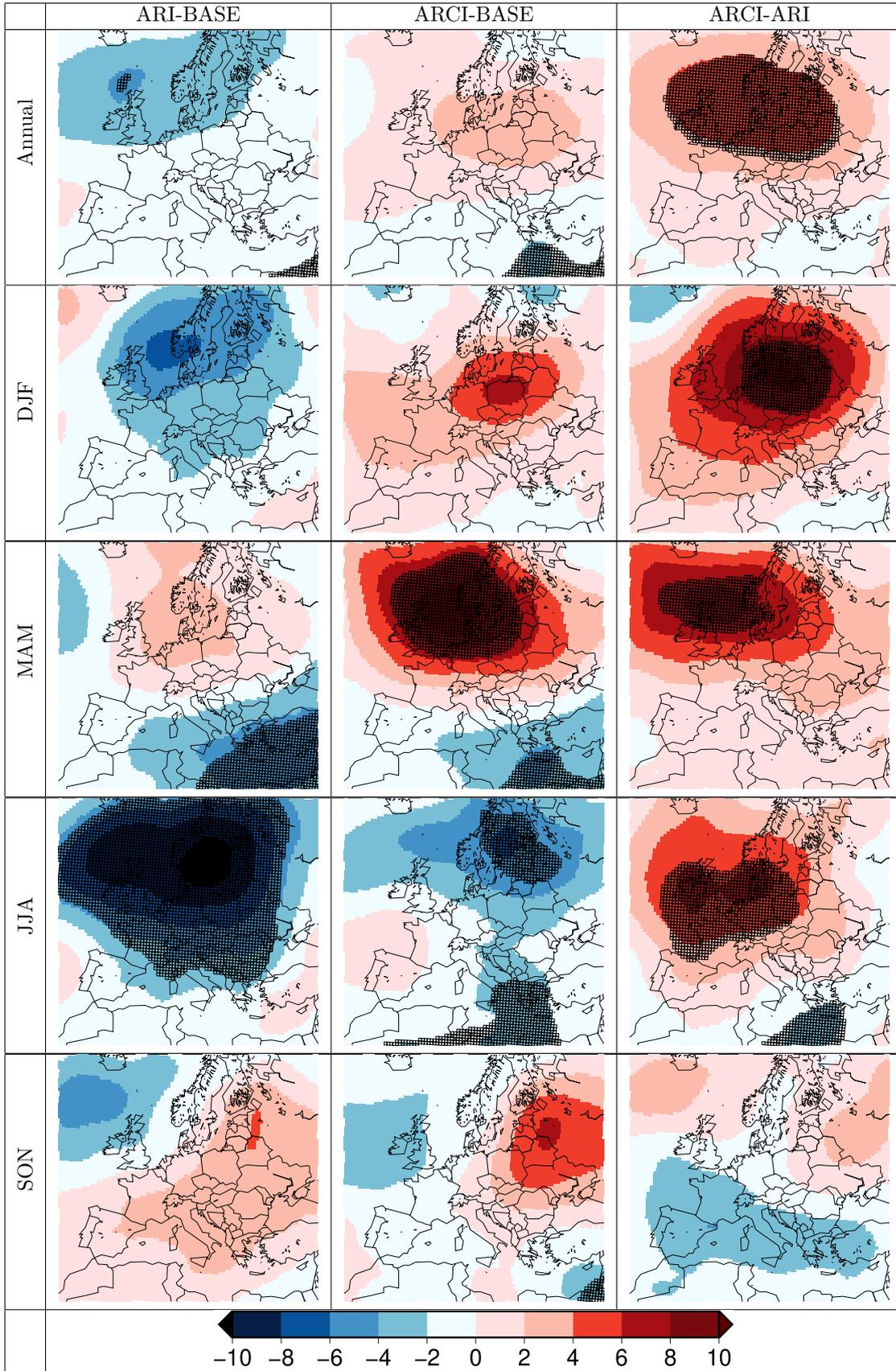


Figure S19: Mean annual and seasonal differences of geopotential height (m) at 850mb for ARI-Base, ARCI-Base and ARCI-ARI

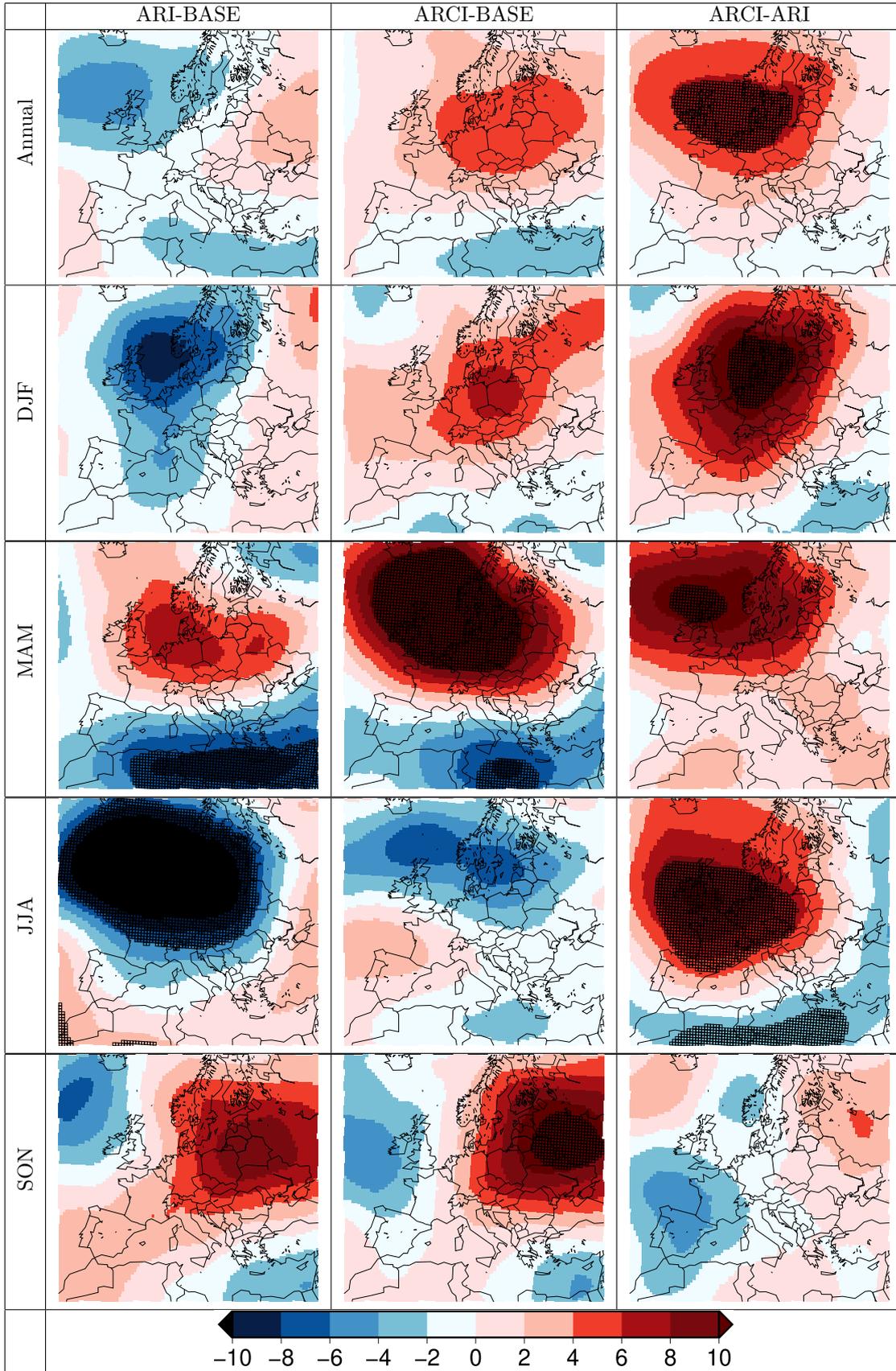


Figure S20: Mean annual and seasonal differences of geopotential height (m) at 500mb for ARI-Base, ARCI-Base and ARCI-ARI

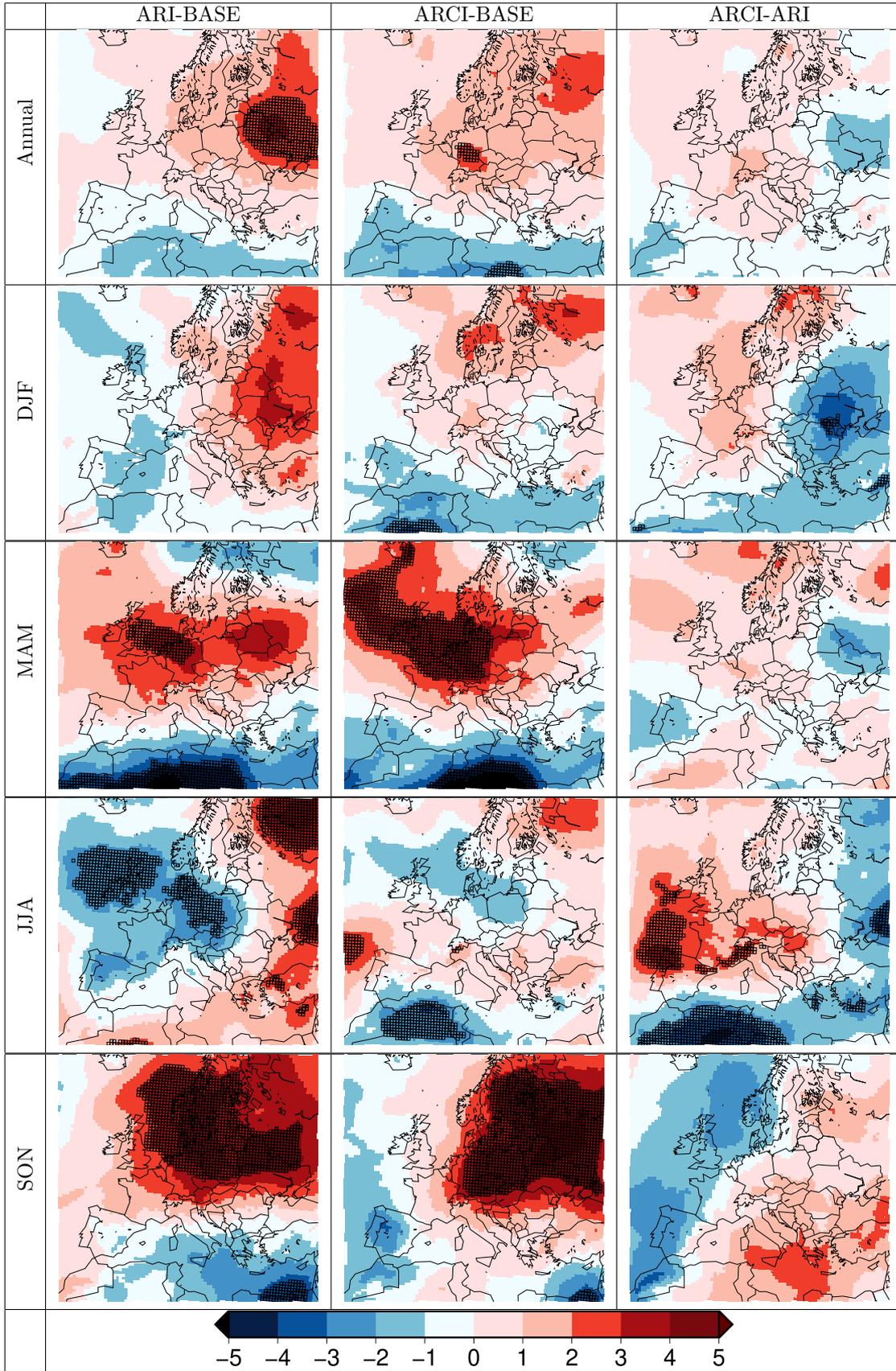


Figure S21: Mean annual and seasonal differences of temperature (Kx10) at 850mb for ARI-Base, ARCI-Base and ARCI-ARI

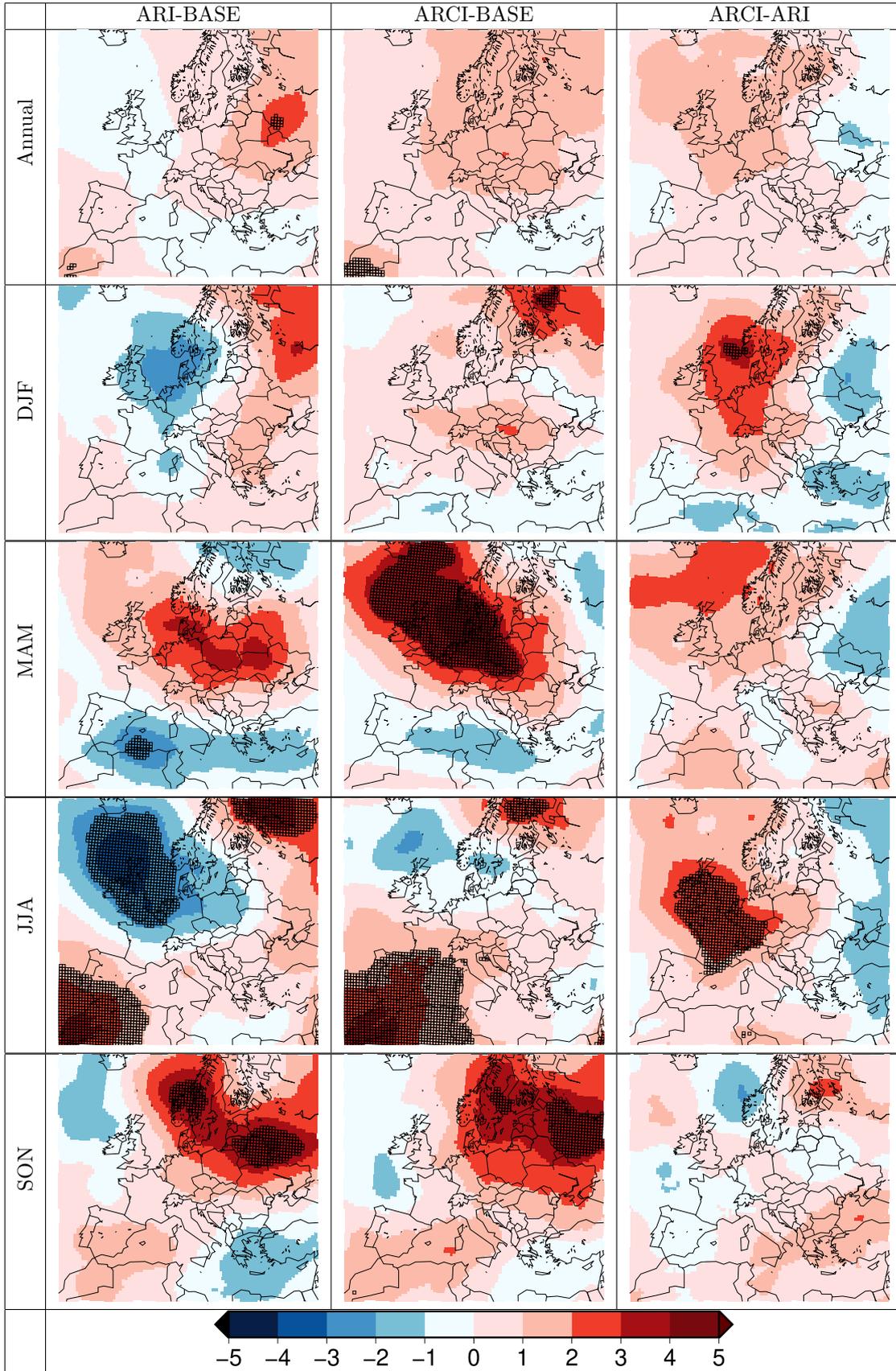


Figure S22: Mean annual and seasonal differences of temperature (Kx10) at 500mb for ARI-Base, ARCI-Base and ARCI-ARI.