

**Table S1.** Overview of climate variables and their correlation with the environmental principal components (PCs)

Climate variable	PC1	PC2	PC3
Soil moisture at 10 cm below surface	<b>-0.77</b>	<b>-0.29</b>	0.23
Air temperature 10 cm above surface within the ground vegetation layer	<b>0.90</b>	-0.02	0.10
Air temperature at 2 m above ground (Ta_200)	<b>0.94</b>	0.01	-0.03
Cold days (Tmin < 0 °C of Ta_200)	<b>-0.75</b>	<b>-0.31</b>	<b>0.29</b>
Cool days (Tmax < 10 °C of Ta_200)	<b>-0.81</b>	0.14	-0.27
DTR (Diurnal Temperature Range) of Ta_200	<b>0.45</b>	<b>-0.46</b>	<b>0.61</b>
GDD (Growing Degree Days) ([mean of Ta_200_min and Ta_200_max] - 10 °C, with Ta_200_min and Ta_200_max capped to range of 10 °C to 30 °C)	<b>0.95</b>	-0.13	0.12
Heat index based on Ta_200 and rH_200	<b>0.62</b>	<b>0.41</b>	0.26
Humidex based on Ta_200 and rH_200	<b>0.63</b>	<b>0.48</b>	0.25
Ice days Tmax < 0 °C of Ta_200	<b>-0.76</b>	-0.09	-0.04
Maximum value of Ta_200	<b>0.75</b>	<b>-0.45</b>	<b>0.29</b>
Minimum value of Ta_200	<b>0.77</b>	0.21	<b>-0.30</b>
Summer-Simmer-Index based on Ta_200 and rH_200	<b>0.60</b>	<b>0.44</b>	0.23
Summer days Tmax >= 25 °C of Ta_200	<b>0.81</b>	<b>-0.29</b>	0.25
Tropical days Tmax >= 30 °C of Ta_200	<b>0.78</b>	-0.27	<b>0.30</b>
Tropical nights Tmin >= 20 °C of Ta_200	<b>0.59</b>	-0.16	<b>-0.43</b>
Vapor pressure (Arden Buck equation)	<b>0.96</b>	-0.03	0.00
Warm days Tmax >= 20 °C of Ta_200	<b>0.88</b>	-0.21	0.22
Soil temperature at 5 cm below surface	<b>0.86</b>	-0.14	-0.05
Soil temperature at 10 cm below surface	<b>0.87</b>	-0.13	-0.06
Soil temperature at 20 cm below surface	<b>0.83</b>	-0.04	-0.01
Soil temperature at 50 cm below surface	<b>0.75</b>	-0.20	-0.09
Relative air humidity at 2 m above ground (rH_200)	-0.08	<b>0.65</b>	<b>0.31</b>
Precipitation based on RADOLAN product	<b>-0.59</b>	<b>-0.54</b>	0.15
Soil moisture at 10 cm below surface (vegetation period)	<b>-0.79</b>	-0.25	0.23
Air temperature 10 cm above surface within the ground vegetation layer (vegetation period)	<b>0.91</b>	0.06	0.00

Climate variable	PC1	PC2	PC3
Air temperature at 2 m above ground (Ta_200) (vegetation period)	<b>0.93</b>	0.04	-0.13
Vapour pressure (Arden Buck equation) (vegetation period)	<b>0.93</b>	0.00	-0.09
Relative air humidity at 2 m above ground (rH_200) (vegetation period)	-0.14	<b>0.67</b>	<b>0.46</b>
Precipitation based on RADOLAN product (vegetation period)	<b>-0.63</b>	<b>-0.54</b>	0.14

Vegetation period: mean values over the vegetation period (April to September in each year); in bold: significant correlation after correction for multiple testing