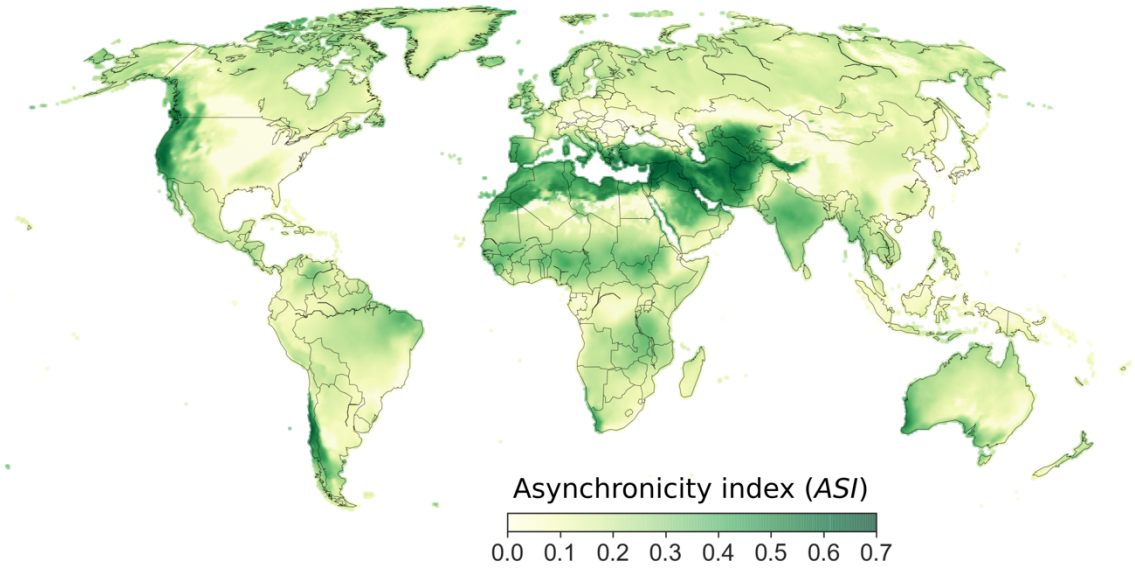

Figure S1: *Global distribution of the asynchronicity index (Table S1) calculated from gridded precipitation and potential evapotranspiration in the CRU TS v.4.03 dataset.*

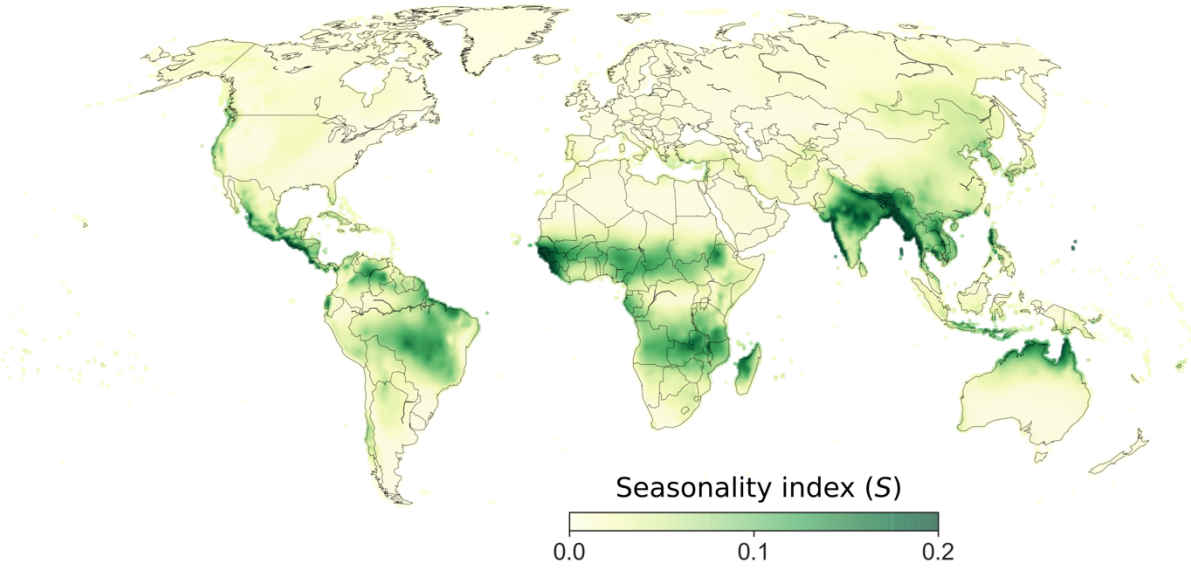

Figure S2: *Global distribution of the seasonality index (Feng et al. 2013, equation 1; Table S1) calculated from gridded precipitation and potential evapotranspiration in the CRU TS v.4.03 dataset.*

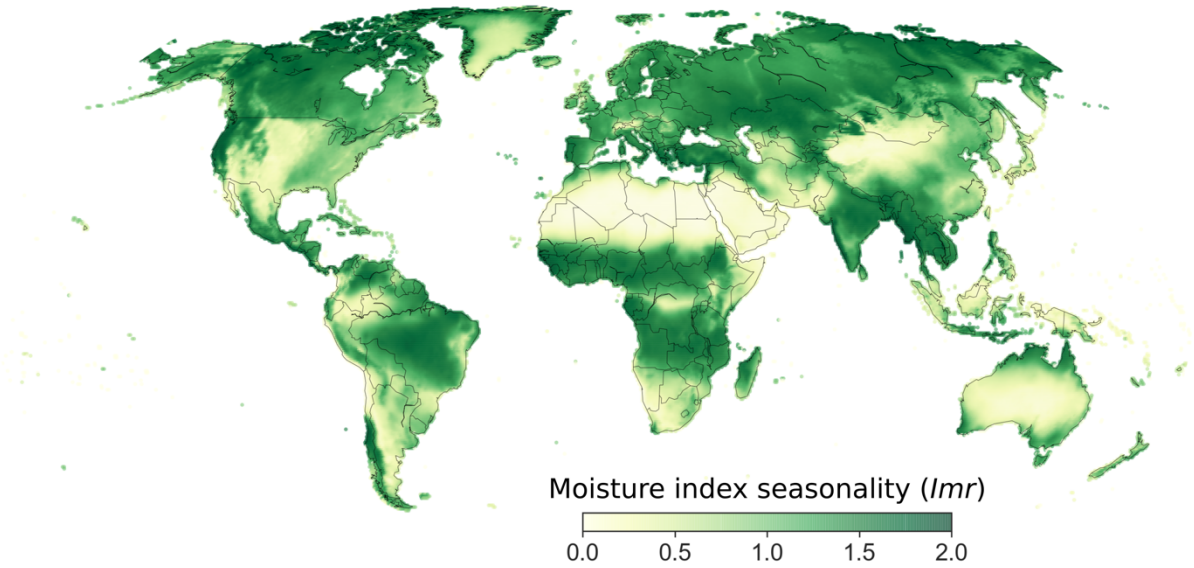

Figure S3: *Global distribution of the moisture index seasonality (Knoben et al. 2018, equations 1 and 3; Table S1) calculated from gridded precipitation and potential evapotranspiration in the CRU TS v.4.03 dataset. A value of 0 indicates no intra-annual changes in the water/energy budget, and 2 indicates the climate switches between fully arid and fully saturated within a single year*

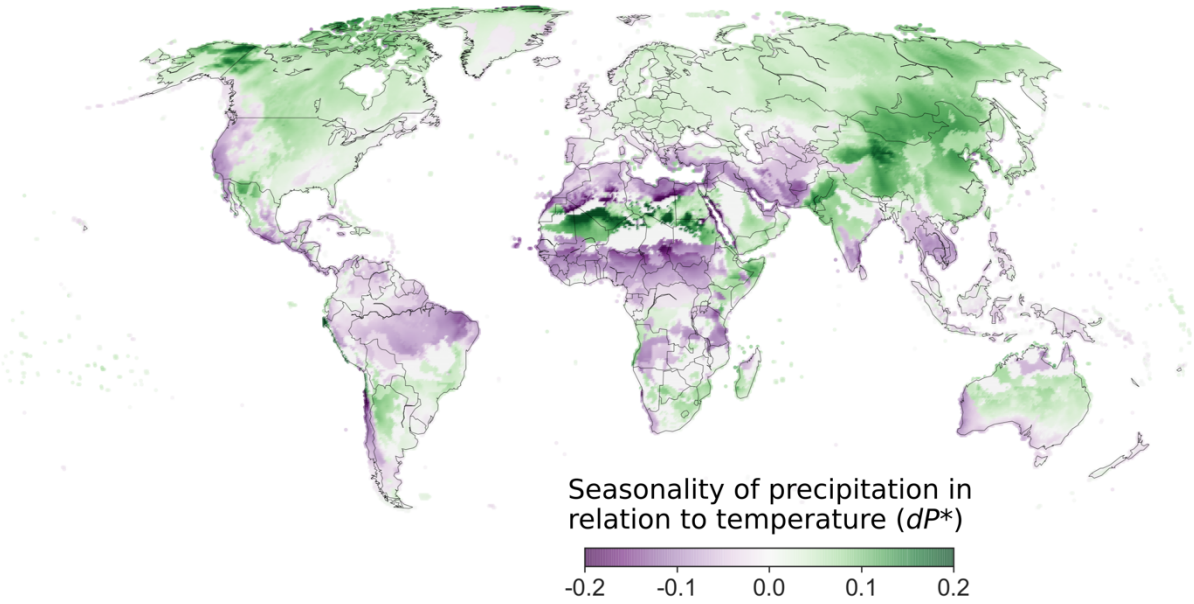

Figure S4: *Global distribution of the index for seasonality of precipitation in relation to seasonality of temperature (Woods 2009; Table S1) calculated from gridded precipitation and potential evapotranspiration in the CRU TS v.4.03 dataset, using the normalized amplitude of precipitation and the phases of precipitation and PET. The amplitudes and phases are approximated using the maximum and minimum values of monthly climatologies (Table S1) to avoid assumptions of sinusoidality. Values range from 1 (winter dominant precipitation) through 0 (uniform) to 1 (summer dominant precipitation).*

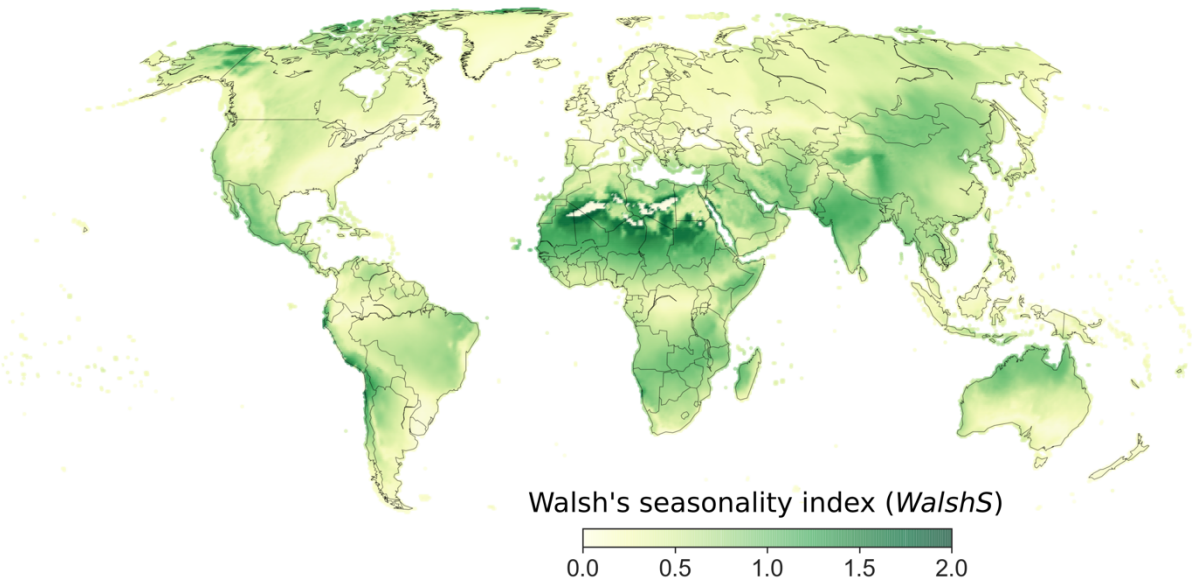

Figure S5: *Global distribution of Walsh's seasonality index (Walsh & Lawler, 1981; Table S1) calculated from gridded precipitation and potential evapotranspiration in the CRU TS v.4.03 dataset.*

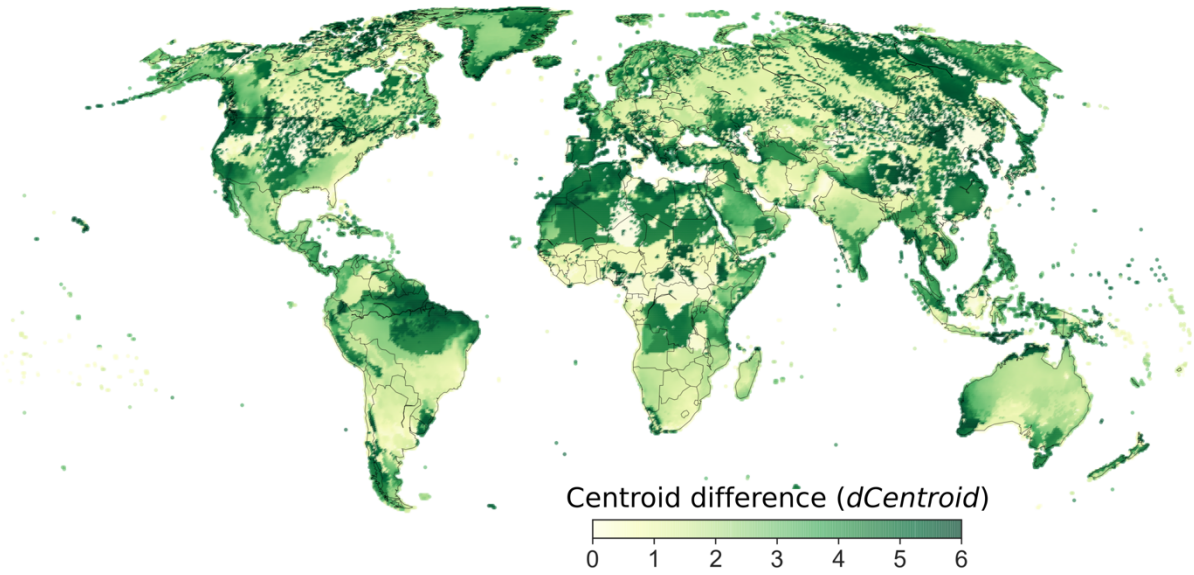

Figure S6: *Global distribution of the difference in centroids (Table S1) calculated from gridded precipitation and potential evapotranspiration in the CRU TS v.4.03 dataset. The centroids are calculated based on the first moments of the annual climatologies (Table S1) and can be sensitive to small variations in place without pronounced seasonality in both precipitation and potential evapotranspiration.*

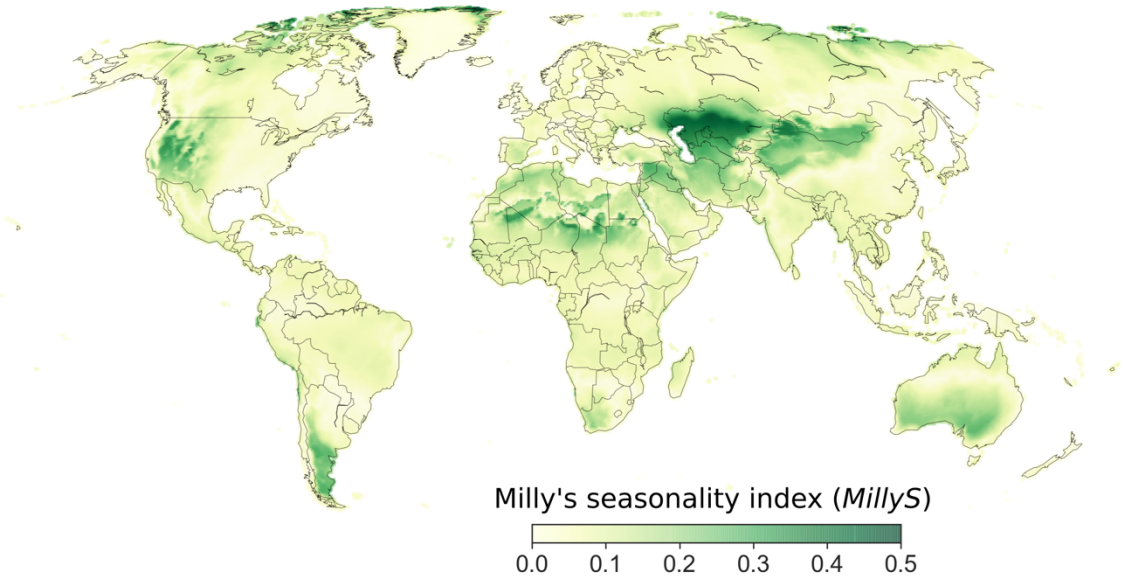

Figure S7: *Global distribution of Milly's seasonality index (Milly 1994; Table S1) calculated from gridded precipitation and potential evapotranspiration in the CRU TS v.4.03 dataset, using the amplitudes of the monthly climatologies. To avoid having to fit a sinusoidal function for the monthly climatologies, the amplitudes are approximated using their monthly ranges (Table S1).*