Supplementary material Figure S1

Figure 1 A&B in the main article show different growth responses to April SPEI9 for raw and detrended tree-ring data. The differences are likely caused by different long-term trends in the tree-ring as well as in the climate data. For comparison of growth trends we split trees into two groups based on the median NCI (7.9), removed potential age-effect biases with regional curve standardization (RCS) and averaged all trees per group to assess average growth-trends (Figure S1. A). Trees closer to the tundra edge and with a lower NCI show a slightly increasing growth trend ($R^2 = 0.20$, $p < 0.001$, DF = 83). On the contrary, decreasing trends were observed for trees with a higher NCI ($R^2 = 0.34$, $p < 0.001$, DF = 98), as well as for April SPEI9 (Figure S1 A,B). Thus, because both show decreasing trends, non-detrended data showed that trees with a high NCI correlated more strongly with April SPEI9. After the trend is removed, climate-growth analyses only correlates the high frequency signals and most sensitive trees were those at the treeline edge (low NCI). In the method description we thus argued for the detrending of tree-ring as well as climate data, because long term trends are unlikely to be the product of single monthly climate variables.

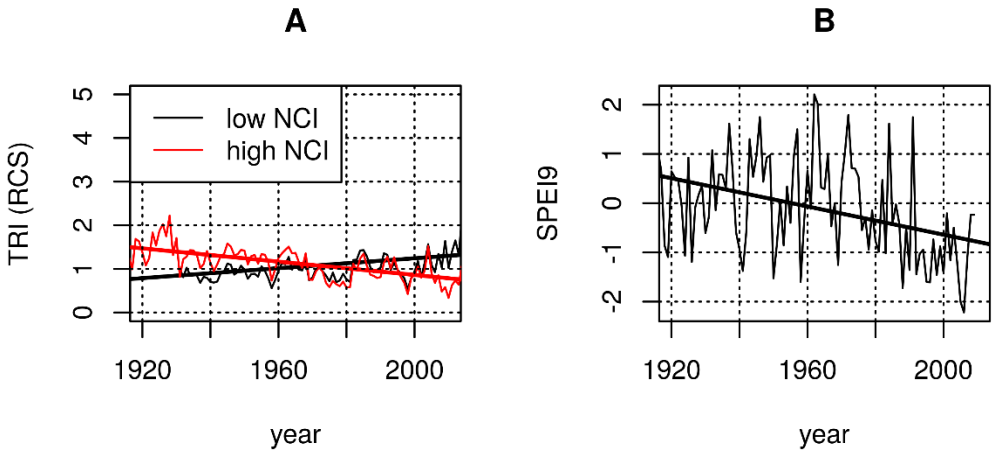

Figure S1. A) Mean annual growth and the respective trend-line for trees with a lower and a higher neighborhood competition index (NCI). **B**) Time-series of the April SPEI9 with its trend-line.