

Patterns and drivers of *Araucaria araucana* forest growth along a biophysical gradient in the northern Patagonian Andes: Linking tree rings with satellite observations of soil moisture

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Araucaria araucana (*Araucaria*) is a long-lived conifer growing along a sharp west-east biophysical gradient in the Patagonian Andes. The patterns and climate drivers of *Araucaria* growth have typically been documented on the driest part of the gradient relying on correlations with meteorological records, but the lack of in situ soil moisture observations has precluded an assessment of the growth responses to soil moisture variability. Here, we use a network of 21 tree-ring width chronologies to investigate the spatiotemporal patterns of tree growth through the entire gradient and evaluate their linkages with regional climate and satellite-observed surface soil moisture variability. We found that temporal variations in tree growth are remarkably similar throughout the gradient and largely driven by soil moisture variability. The regional spatiotemporal pattern of tree growth was positively correlated with precipitation ($r=0.35$ for January 1920-1974; $P<0.01$) and predominantly negatively c