

Using X-Ray Fluorescence (XRF) Scanner for Rapid Dendrochemical Analyses: a complement to ring width and density chronologies for studying climate variability?

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The uptake and storage of nutrients and other chemicals in trees are processes that are highly dependent on environmental conditions, primarily climate. Annual variability in climate is responsible for the year-to-year variability in tree-ring width or density records that allows for the matching of patterns through time, or “crossdating.” Recent improvements in dendrochemistry techniques further afford the opportunity to search for linkages between variability in wood chemistry and climate, but the exploitation of new technologies for this purpose is in its infancy. The aim of this proposed study is to collect preliminary chemistry data on a group of existing tree ring samples using high spatial resolution multi-element X-Ray Fluorescence (XRF) scanning instrument. These trees have been previously processed for ring width or density, shown to have linkages to climate, and are archived at the Tree Ring Laboratory at LDEO.