



# AAG Annual Meeting

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*Evaluating the Influence of Multi-Decadal Oscillations on Central Appalachian Yellow Pine Stands*

**is part of the Paper Session:**

**Forests dynamics in Eastern North America**

**scheduled on Friday, 4/16/10 at 14:40 PM.**

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**Abstract:**

In the eastern United States, the growth and health of trees, as well as the occurrence of fire, has recently been tied to broad-scale climate patterns. These climate patterns, or multi-decadal oscillations, include El Nino-Southern Oscillation (ENSO), Pacific Decadal Oscillation (PDO), Atlantic Multi-decadal Oscillation (AMO), and the North Atlantic Oscillation (NAO). Variations in weather patterns caused by oscillations have a larger influence over continental forests than previously thought, including the initiation of drought events that lead to fires and possible increases in fuel loadings. A yellow pine (*Pinus* spp.) tree-ring chronology was created from four study sites in the Jefferson National Forest, Virginia. Superposed Epoch Analysis (SEA) was used to identify relationships between tree growth and fire events at the study sites and the multi-decadal oscillations. Analyses showed significant relationships between growth and fire occurrence and NAO and ENSO events. Although not always significant at the  $p < 0.05$  or higher level, the pattern of drought occurrence during the year of fire showed up consistently. This suggests that precipitation in preceding years should not be used when trying to predict fire events; in other words, the year of drought is also the year of fire.

**Keywords:**

yellow pine, tree rings, multi-decadal oscillation, Virginia