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## **Dating of Piermont Marsh Droughts as Identified from XRF Elemental Data and Plant Macrofossils**

**PIs:** D. Peteet, T. Kenna, and J. Nichols

**Abstract:** This research is focused toward defining the timing of droughts in a 6600-year high-resolution paleorecord of past hydrological oscillations in the Hudson River Valley using AMS C-14 dating. It represents a first step toward understanding the potential of the region to undergo long and sustained droughts in the future. We have selected this wetland for detailed XRF, AMS dating, and paleoclimate investigation that today demonstrates marked seasonal changes in salinity due to the volume of freshwater moving down the Hudson River. Selected elemental grouped data derived using hand held x-ray fluorescence (XRF) are indicative of marine (Ca, Sr, Br) or continental (K, Ti, Rb, Zr) influence. The Medieval Warm Period from 800 – 1300 AD (MWP) as documented in this core is associated with prolonged drought as identified by large increases in charcoal and shifts in forest dominance from pine to hickory (Pederson et al., 2005). The decrease in continental elements and increase in marine elements is consistent with the concept linking drought to reduced freshwater input. We interpret this change as indicative of increased river flow and higher precipitation alternating with intervals of low river flow (more foraminifera, more tidal inundation, higher charcoal, and drought). Our XRF data indicates other major droughts throughout the mid- to late Holocene, which we will precisely date using the identified plant macrofossils in the peat stratigraphy.