Stable Isotopic Indicators of Plant Community Change in Everglades Wetland Soils. (S10-inglett162721-Oral)

Authors:

- P.W.Inglett* University of Florida
- K.R.Reddy University of Florida
- T.Z.Osborne University of Florida

Abstract:

Natural abundance levels of stable C and N isotopes of soil and plants have demonstrated their potential use in detecting impacts to the Everglades ecosystem. To gain insight into these processes, we conducted a study to assess stable isotopic patterns as they relate to Everglades peat accretion. Core profiles of both impacted and unimpacted Everglades soils were analyzed for total C and N and Delta 13-C and Delta 15-N ratios. The unimpacted site profile showed no discernable vertical changes in either C or N isotopic content. At the impacted site, both Delta 13-C and Delta 15-N values showed distinct changes at a depth of 13 cm, with the surface peat being depleted by 1.5 permil in 13-C and 4 permil enriched in 15-N. The isotopic patterns were not the result of changes in either C or N content which remained consistent throughout the profile. Isotopic variation did, however, correlate with data for total phosphorus. Comparison of the isotope data with 137-Cs profiles and pollen analyses indicates that the shift in isotopic composition coincides closely with the onset of nutrient enrichment (~1953) and subsequent dominance of the macrophyte Typha (~1970).

Corresponding Author Information:

Patrick Inglett University of Florida 106 Newell Hall Gainesville, FL 32601-0510 phone: 352-392-1804 ext. 323 e-mail: pinglett@ufl.edu

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