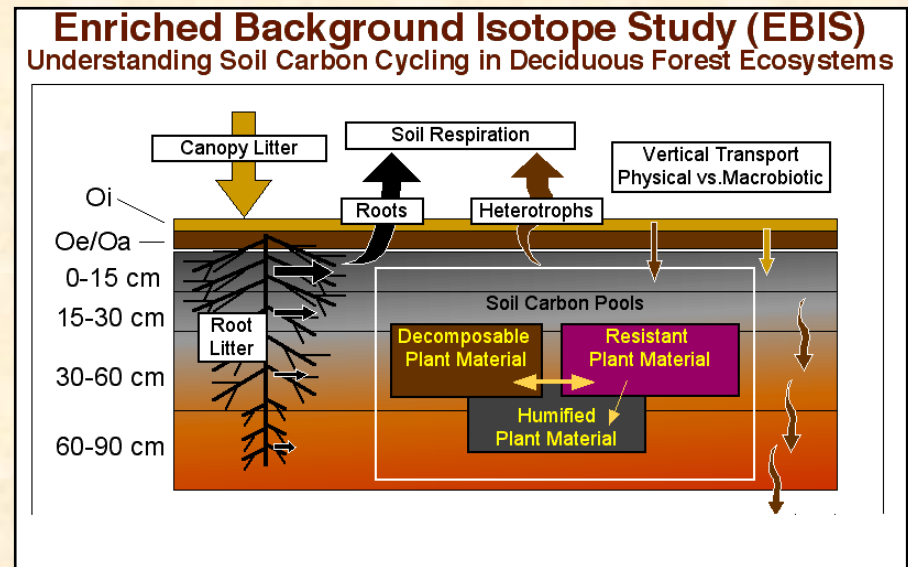


# Enriched Background Isotope Study (EBIS)

Contact: Paul J. Hanson, [hansonpj@ornl.gov](mailto:hansonpj@ornl.gov), 865-574-5361

Sponsor: DOE Office of Science, BER (KP 12 02 02 0)

- ↪ EBIS takes advantage of a low-level 1999  $^{14}\text{C}$ -release to the Oak Ridge Reservation for manipulative studies of soil carbon cycling processes
- ↪ Fantastic opportunity to study whole-ecosystem patterns of natural carbon flux through soils.
- ↪ Driver: Need for data on soil carbon sequestration and terrestrial carbon cycling in intact forest ecosystems
- ↪ One-of-a-kind research opportunity facilitated by multiple agency and institution cooperation



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**Sponsor: DOE Office of Science, Biological & Environmental Research**

Elevated levels of  $^{14}\text{C}$  enriched  $\text{CO}_2$  in the air and soil atmosphere as well as leaf, stem, and root tissues were observed on the Oak Ridge Reservations (ORR) during the summer of 1999, and were attributed to local incinerator activities on and/or near the ORR. The isolated enrichment of the background levels of  $^{14}\text{C}$  in local forest ecosystem represents a unique opportunity to study unresolved carbon cycling processes such as the contribution of leaf versus root litter contributions to soil carbon accumulation, the rate of vertical transport of carbon into deep soil storage pools, and the differential contribution of physicochemical versus faunal driven processes to soil carbon cycling and sequestration. We are conducting a cooperative, multi-institutional study, centered on a field manipulation experiment, which takes advantage of the whole-ecosystem isotopic label generated by this release. We are using the experimental results from this study to parameterize and refine existing carbon dynamics models. Such models will then be used to quantitatively address the long-term fate of ecosystem carbon inputs and the potential for ecosystem carbon sequestration..

Trumbore S, Gaudinski JB, Hanson PJ, Southon JR (2002) A whole-ecosystem carbon-14 label in a temperate forest. EOS 83:265,267-268.