Unique ^{14}C-Tracer Was Used To Evaluate and Improve A Model of Subsurface Dissolved Organic Matter (DOM) Transport

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Objective

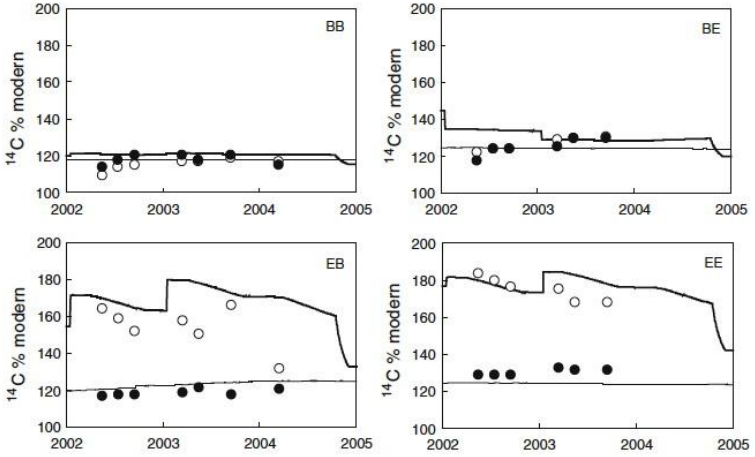
- Apply EBIS-Oak Ridge data to DyDOC model evaluation and testing to verify transport mechanisms within soils.

New Science

- The DyDOC model simulated the soil carbon cycle of a deciduous forest using extensive EBIS data
- Model data analysis showed that soil C turnover within organic horizons produce DOM (46 gC m^{-2} y^{-1}) that was predominantly hydrophobic. The DOM was nearly all adsorbed in the A- and B-horizons.
- Sorbed DOM was mineralized quickly, but a fraction (11 gC m^{-2} y^{-1}) produced mineral-associated stable SOM pools with mean residence times of 100–200 years.

Significance

- Combined model-data analysis provided a powerful approach for defining and resolving important soil carbon cycling mechanisms.



Example data (points) model (lines) agreement for a range of soil horizons (i.e., soil depths).