Advancing the use of minirhizotrons in wetlands

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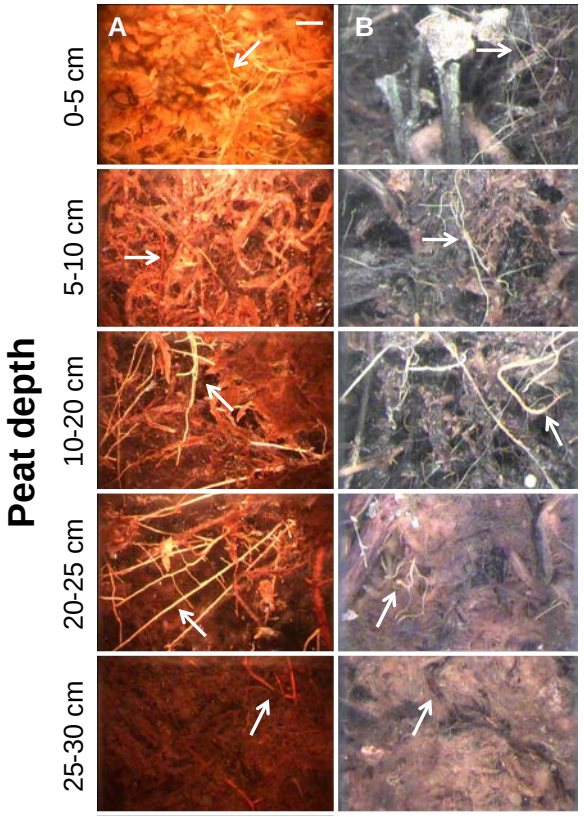
- Fine roots are important to biogeochemical cycling in nutrient-limited wetlands that store a substantial amount of carbon in deep soil organic matter deposits.
- Fine-root dynamics in wetlands are rarely quantified, and methodology has generally been limited to destructive approaches.
- ORNL hosted an international panel of experts for a workshop to develop a consensus on the appropriate use of non-destructive minirhizotron technology in wetlands.
- Solutions were developed to deal with unique wetland challenges including minirhizotron installation and anchorage, capture and analysis of images, and upscaling of data for biogeochemical analyses and model parameterization.
- Appropriate use of minirhizotron technology in wetlands will advance our knowledge of carbon and nutrient cycling in globally-important, high-carbon ecosystems.

Iversen CM, Murphy MT, Allen MF, Childs J, Eissenstat DM, Lilleskov EA, Sarjala TM, Sloan VL, Sullivan PF (2011) Advancing the use of minirhizotrons in wetlands. *Plant and Soil* DOI 10.1007/s11104-011-0953-1.



Minirhizotron images taken in: (A) a black spruce bog at Marcell Experimental Forest, northern MN, USA (associated with the SPRUCE experiment), and (B) an open bog at Mer Bleue Conservation Area in Ontario, Canada. Arrows in each image indicate a fine root (most images contain multiple fine roots); scale bar is 2 mm.

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