

Boglands: The Hidden Carbon Vault

Why peatlands matter more than you think for climate resilience.

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THE DATA

30%

Global soil carbon stored

Peatlands cover just 3% of Earth’s land but hold a disproportionately large share of carbon.

Despite occupying only 3% of the planet’s land area, peatlands store approximately 30% of global soil carbon. This makes them one of the most critical natural carbon sinks on Earth, far outpacing their physical footprint. Their ability to sequester carbon over millennia is now under threat from drainage, agriculture, and climate change.



Source: Nature · Published November 27, 2026
https://www.nature.com/articles/d41586-026-03885-4

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Carbon sequestration at scale

Peatlands are nature’s most efficient carbon storage systems, accumulating organic matter in waterlogged, oxygen-poor conditions. Their slow decomposition over centuries creates thick peat layers that lock away carbon for millennia. This natural process offers a model for long-term carbon management that AI-driven land-use models can now begin to emulate in precision agriculture and land-use planning.



02

AI can map hidden carbon reservoirs

While peatlands are often invisible from satellite imagery due to their wet, vegetated surfaces, machine learning models trained on hyperspectral and LiDAR data are beginning to detect subsurface peat depth and carbon density. Research institutions like the USDA NASS and land-grant universities are integrating these tools into agroecological monitoring systems to identify high-carbon landscapes and prioritize conservation—turning overlooked ecosystems into strategic climate assets.

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