**Observed carbon-water interactions in three north-temperate wetlands**

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**Introduction**: Future terrestrial carbon fluxes are a major source of uncertainty in climate predictions. Temperate and boreal wetlands contain a significant proportion of the world’s carbon reserves, and are sensitive to changes in both temperature and hydrology. Future climate simulations predict a net drying of temperate and boreal regions. We present eddy-covariance measurements of carbon flux at three wetlands in northern Wisconsin, one with a long-term trend of declining water table.

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**Lost Creek**

Shrub fen, dominated by alder and willow with an under-story dominated by sedges.

Located in the Northern Highlands State Forest in north-central Wisconsin, USA

The site was established in 2000, and seven years of eddy covariance flux data are available. The water table has declined by an average of 9 cm/yr over the record. Shrub biomass has increased significantly over the record.

**Wilson Flowage**

Wet meadow/marsh, dominated by sedges and wetland grasses

Located in Chequamegon-Nicolet National Forest, Medford-Park Falls District, North-Central Wisconsin


**South Fork**

Sphagnum bog with Labrador tea and leatherleaf, with invading black spruce around the edges

Located in Chequamegon-Nicolet National Forest, Medford-Park Falls District, North-Central Wisconsin


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**Methods**: Turbulent fluxes were calculated as half-hourly intervals from 10 for measurements of wind and CO2. Scalar measurements were detrended and wind measurements were rotated into the direction of mean wind using a long-term fit. Fluxes were screened for low turbulence conditions using a friction velocity criterion for each site.

**Figure 3**: Time series of monthly total precipitation measured at the National Climate Data Center Minocqua station.