



The NOAA tall tower observing network: new results and planned expansion

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The Global Monitoring Division, formerly CMDL, of the U.S. National Oceanic and Atmospheric Administration's Earth System Research Laboratory has been working to build a network of tall tower monitoring sites over the U.S. since the early 1990's. Tall tower CO₂ mixing ratio measurements are sensitive to upwind fluxes over scales of hundreds of kilometers. Such measurements therefore place strong constraints on estimates of regional scale carbon budgets. We have used the Stochastic Time Inverted Lagrangian Transport (STILT) model to evaluate the relative contributions of upwind sources and sinks to simulated CO₂ mixing ratios at existing and proposed new tower sites. For example, sampling footprints from STILT have been combined with estimates of hourly ecosystem CO₂ fluxes to investigate the spatiotemporal influence of different biomes on observed CO₂ concentrations at the towers. Contributions of fossil fuel and oceanic CO₂ fluxes can also be quantified using this method. We will also present a description of our high-precision continuous CO₂ and CO measurement system.