

UC Berkeley LI7700 testing

The LI7700 was tested in four locations in the Sacramento/San Joaquin River Delta during June and July, 2010. Two locations on Twitchell Island included a rice paddy (Rice Project) and a 10-year-old restored wetland (DWR Wetland). Two locations on Sherman Island included a cow pasture approximately 18 years and a location on a levee directly down wind from natural wetlands.



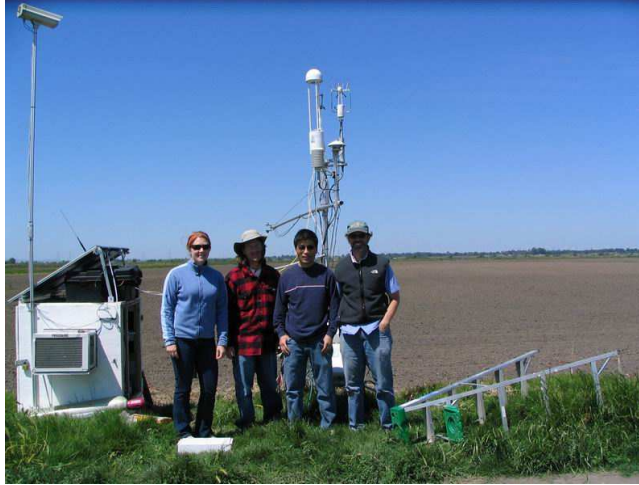
The locations on Twitchell Island: Dominant wind is from the west



Rice Project ($38^{\circ} 6' 19.92''\text{N}$, $121^{\circ} 39' 7.62''\text{W}$, approx. -40ft)

This tower includes a Gill WMP sonic, LI7500 and an LGR FGGA, plus standard micro-met sensors. The measurement height for eddy covariance sensors was 320cm above ground and canopy. The Fetch is rice shoots before (and after) flooding.

Measurement dates: 5/05 to 5/20/2010 (and 7/7/2010 7/21/2010)



DWR Wetland ($38^{\circ} 6' 24.81''\text{N}$, $121^{\circ} 38' 43.21''\text{W}$, approx. -40ft)

This tower includes a Campbell CSAT sonic, LI7500 and an LGR FGGA plus standard micro-met sensors. The measurement height for the eddy covariance sensors was 2.95m above the pond water. The fetch is tule-dominated wetland.

Measurement dates: 6/22 to (7/7/2010)



The Sherman Island locations: Dominant wind is from the west.



Levee ($38^{\circ} 1' 56.02''\text{N}$, $121^{\circ} 46' 19.28''\text{W}$, approx. +20ft)

This tower is only a Gill WMP and LI7500. The sensor height was 690cm above the top of the levee. The fetch includes a small channel and wetlands.

Measurement period: 5/20 to 5/28/2010



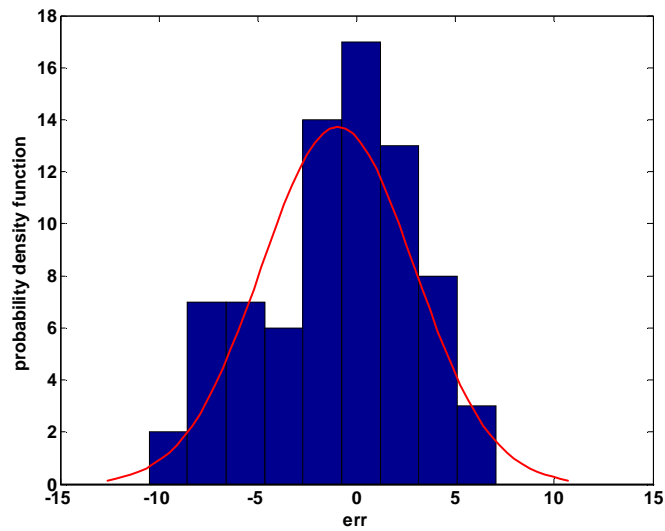
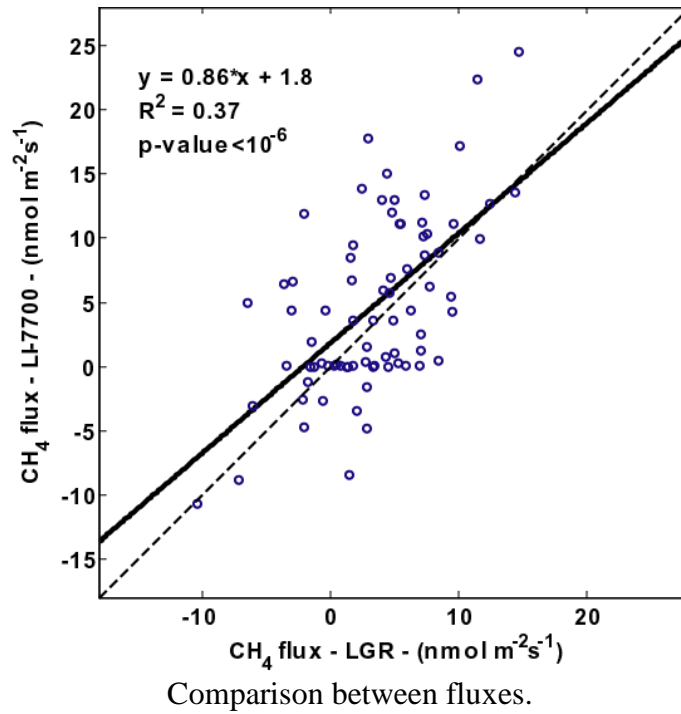
Cow Pasture: (38° 2' 11.80"N, 121° 45' 14.47"W, approx -40ft)

This tower includes a Gill WMP, LI7500 and LGR FMA plus standard micro-met sensors. The eddy covariance sensors are 308cm above ground and 248-308cm above canopy. The fetch is active cow pasture with knee high invasive pepper weed.

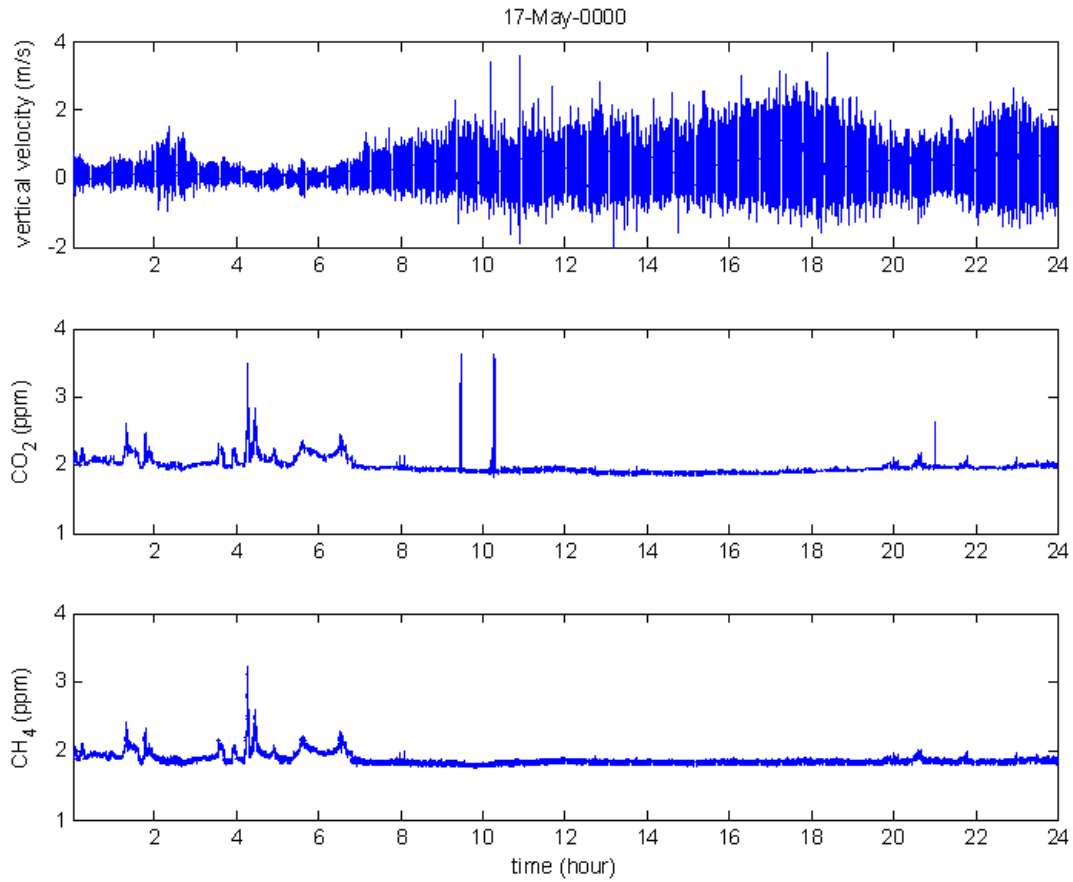
Measurement period: 5/28 to 6/16/2010 (and 7/21 to 8/4/2010)



Some results from the Rice Project site 5/5 to 5/20/2010 - Nearly bare un-flooded field.

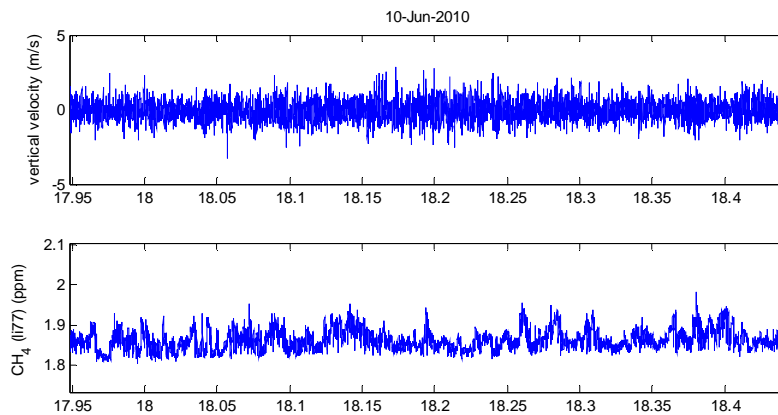


Probability density function of the flux uncertainty estimated using the two systems

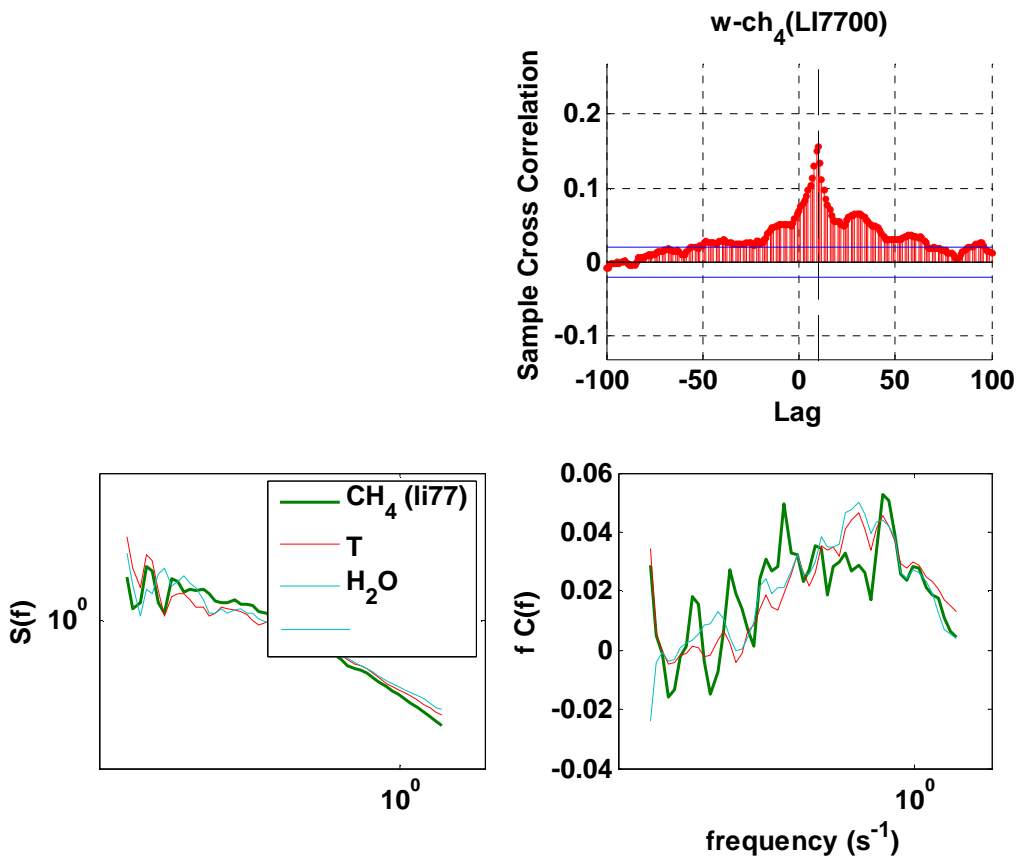


Example of high frequency measurements of vertical velocity (top panel), methane concentrations from LI7700 (middle panel) and methane concentration from LGR (bottom panel).

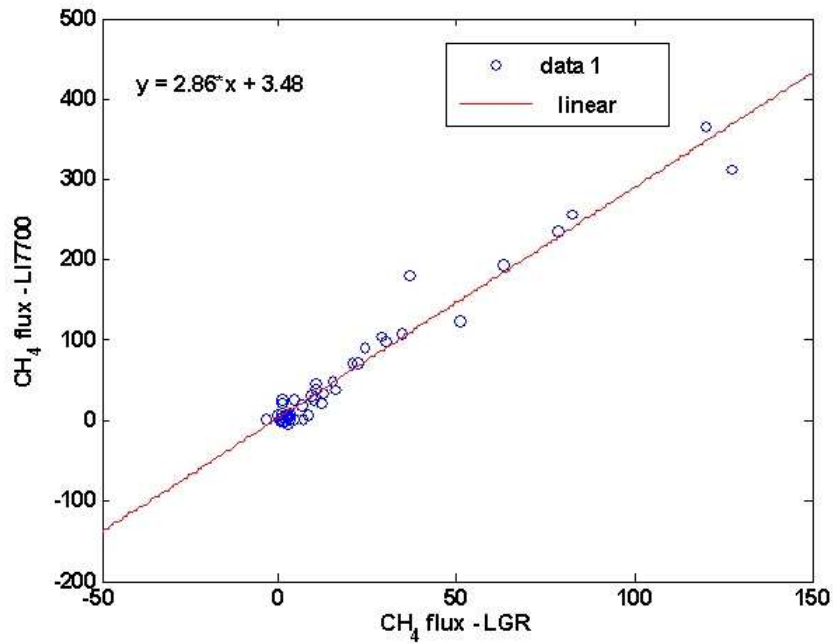
Some results from the Sherman cow pasture site 5/28 to 6/16/2010 – active cow pasture with cow coming and going from area near the tower.



Vertical velocity and CH₄ concentrations during a passage of cows.



Spectral analysis.



Comparison of LGR vs LI7700 CH₄ flux – there might have been a problem in the LGR plumbing that suppressed its fluxes.