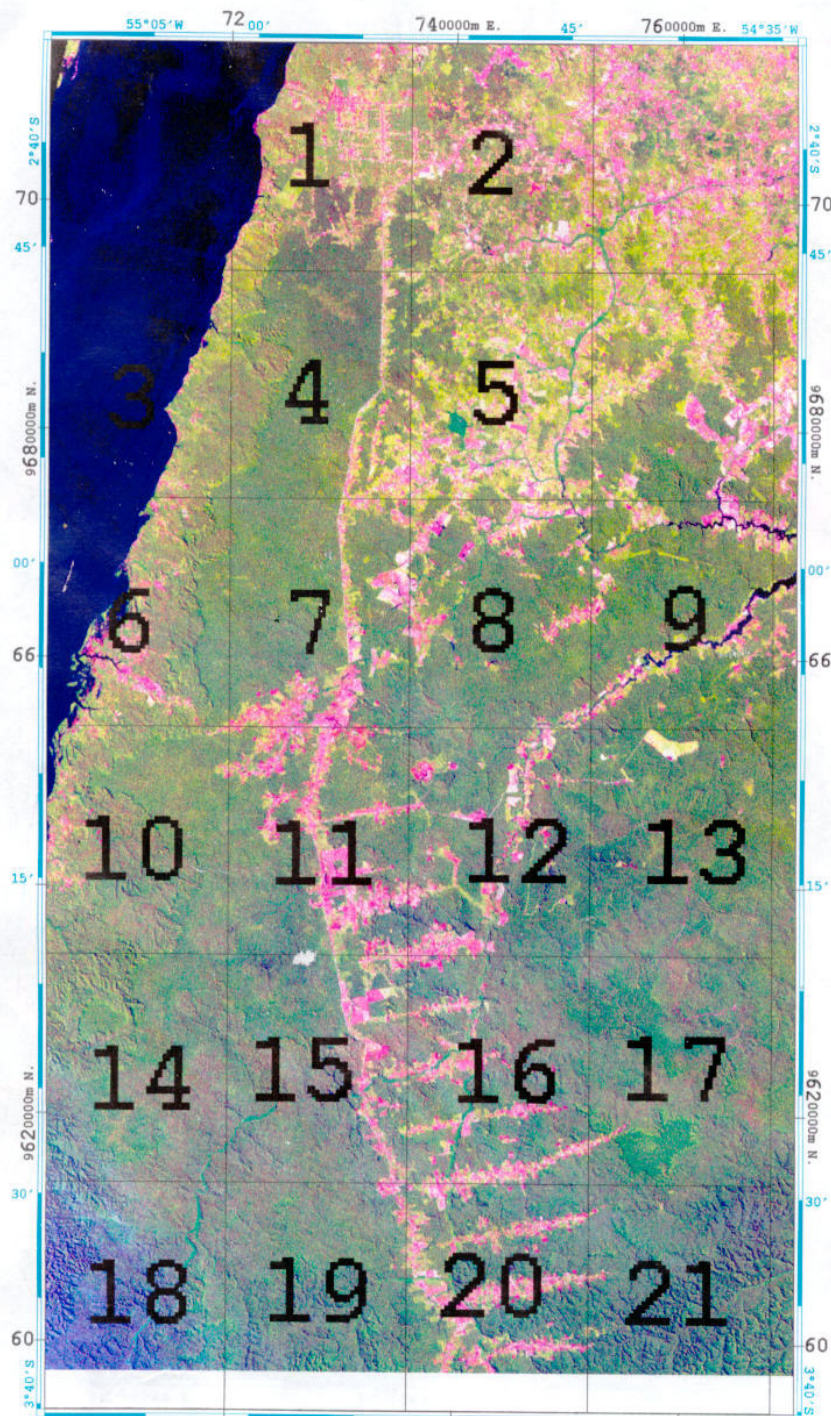


Trace Gas Fluxes From Through-Canopy Measurements in an Upland Forest of the Eastern Brazilian Amazon

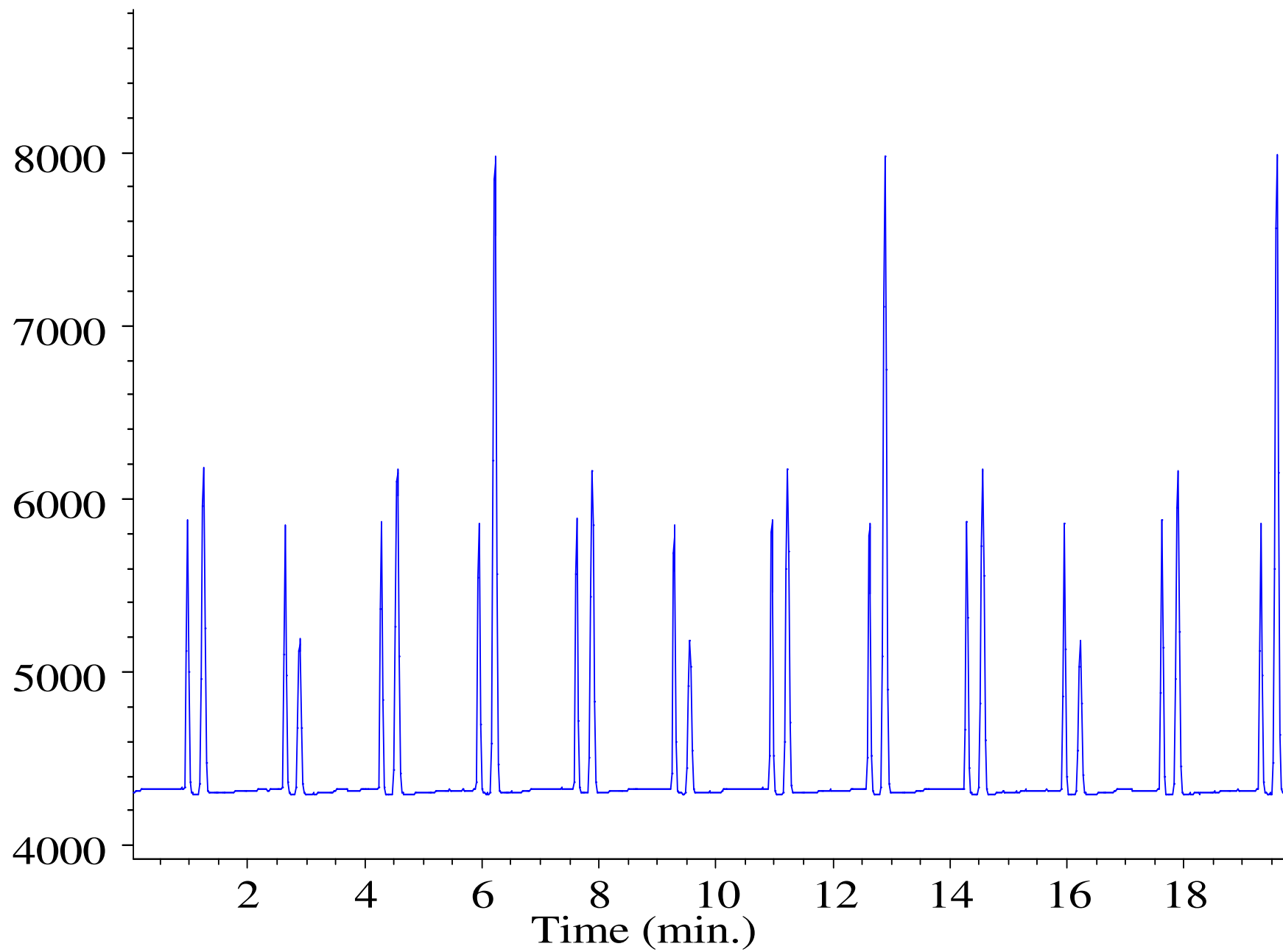
Patrick Crill^{1,5}, Michael Keller^{2,5}, Hudson Silva^{3,5},
Jadson Dizencourt Dias⁴, Sergio Albuquerque⁴,
Peter Czepiel⁵, Raimundo Cosme de Oliveira⁶

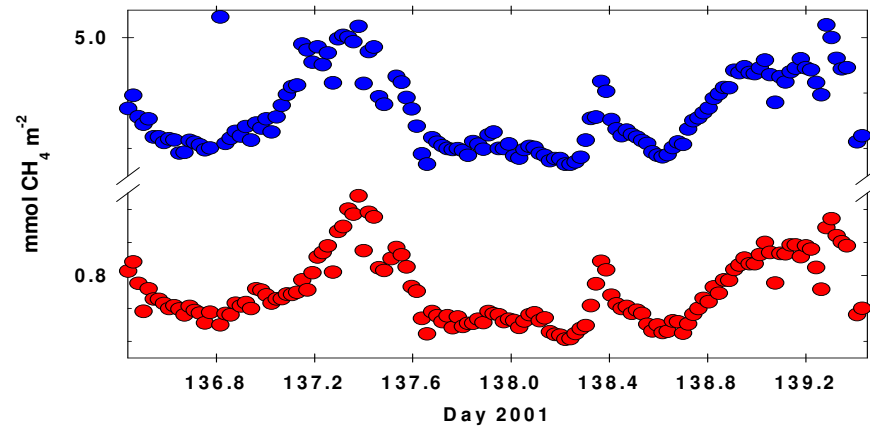
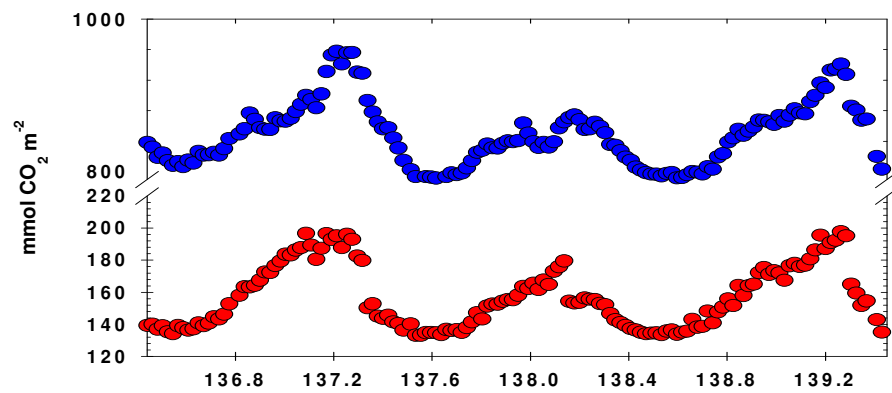
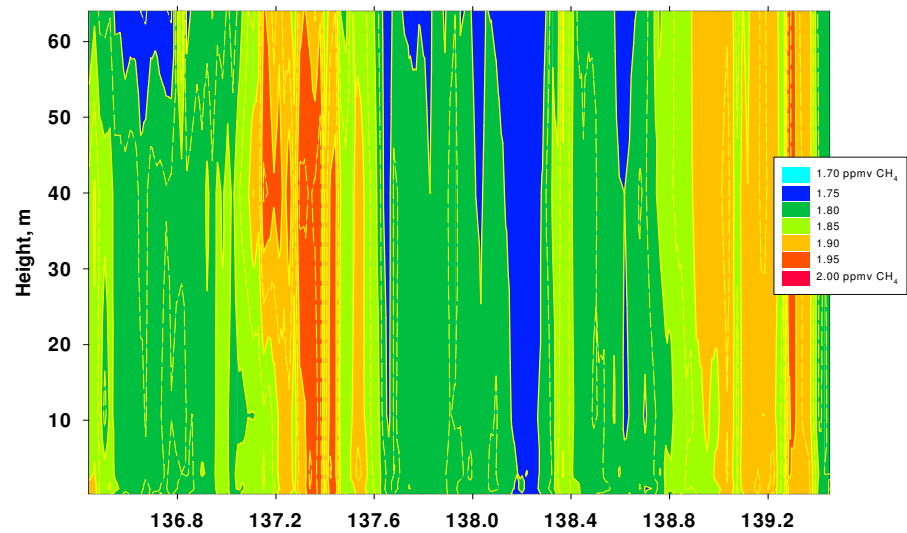
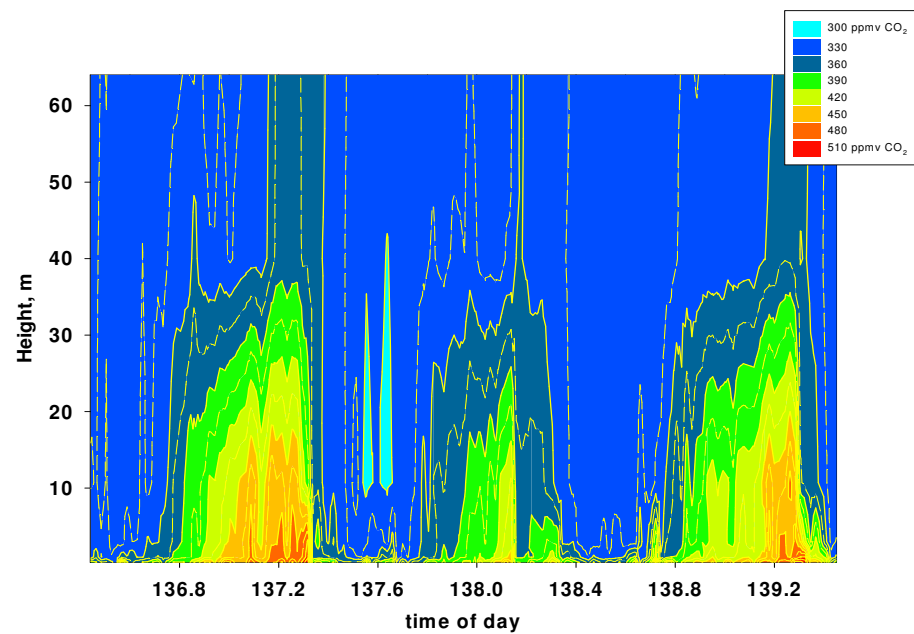
¹Stockholm University, ²IITF USDA Forest Service,
³Universidade Federal do Para, ⁴Fundação Floresta
Tropical, ⁵CSRC University of New Hampshire, ⁶EMBRAPA
Amazônia Oriental

LBA-ECO 11th Science Team Meeting
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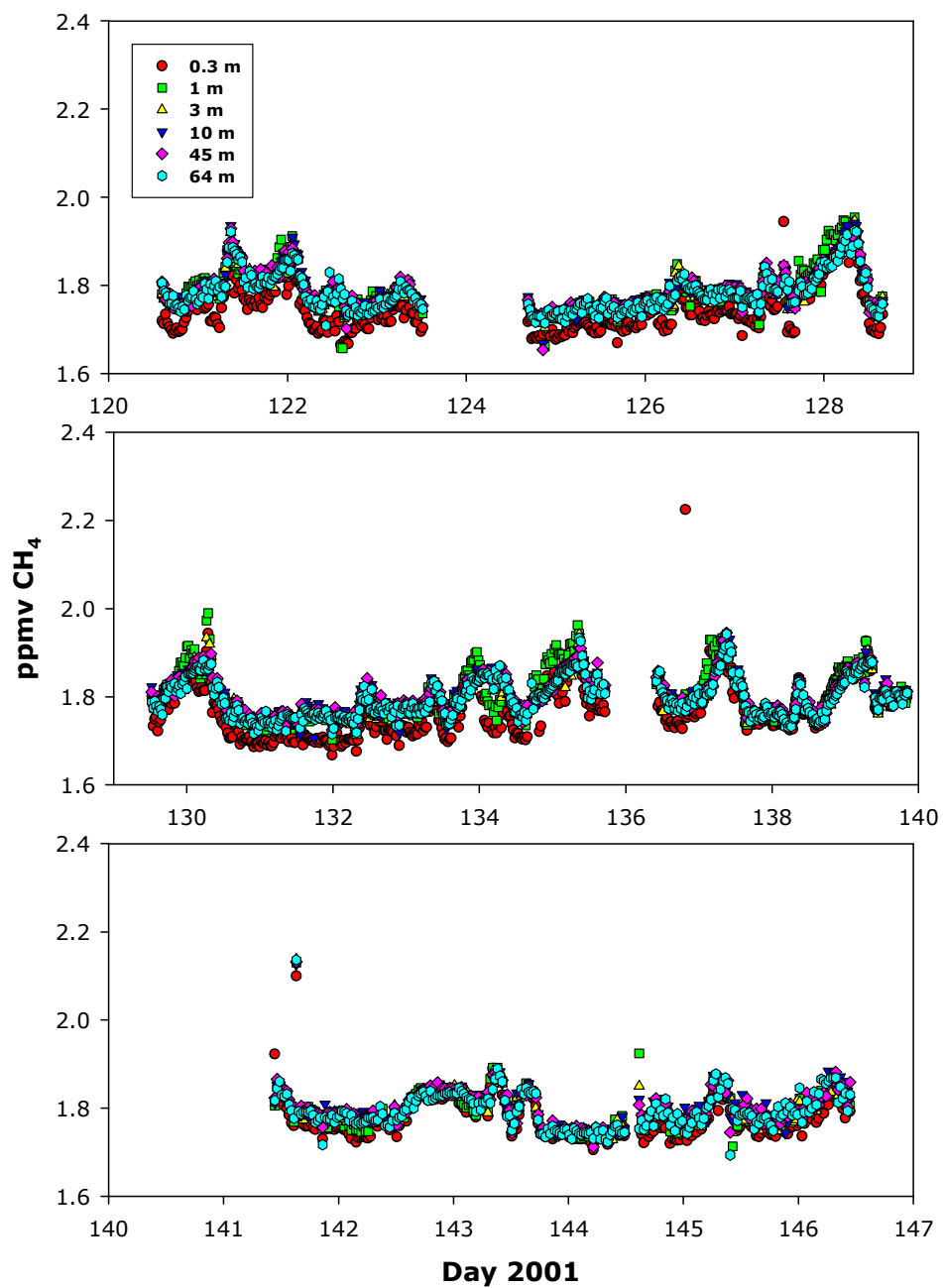




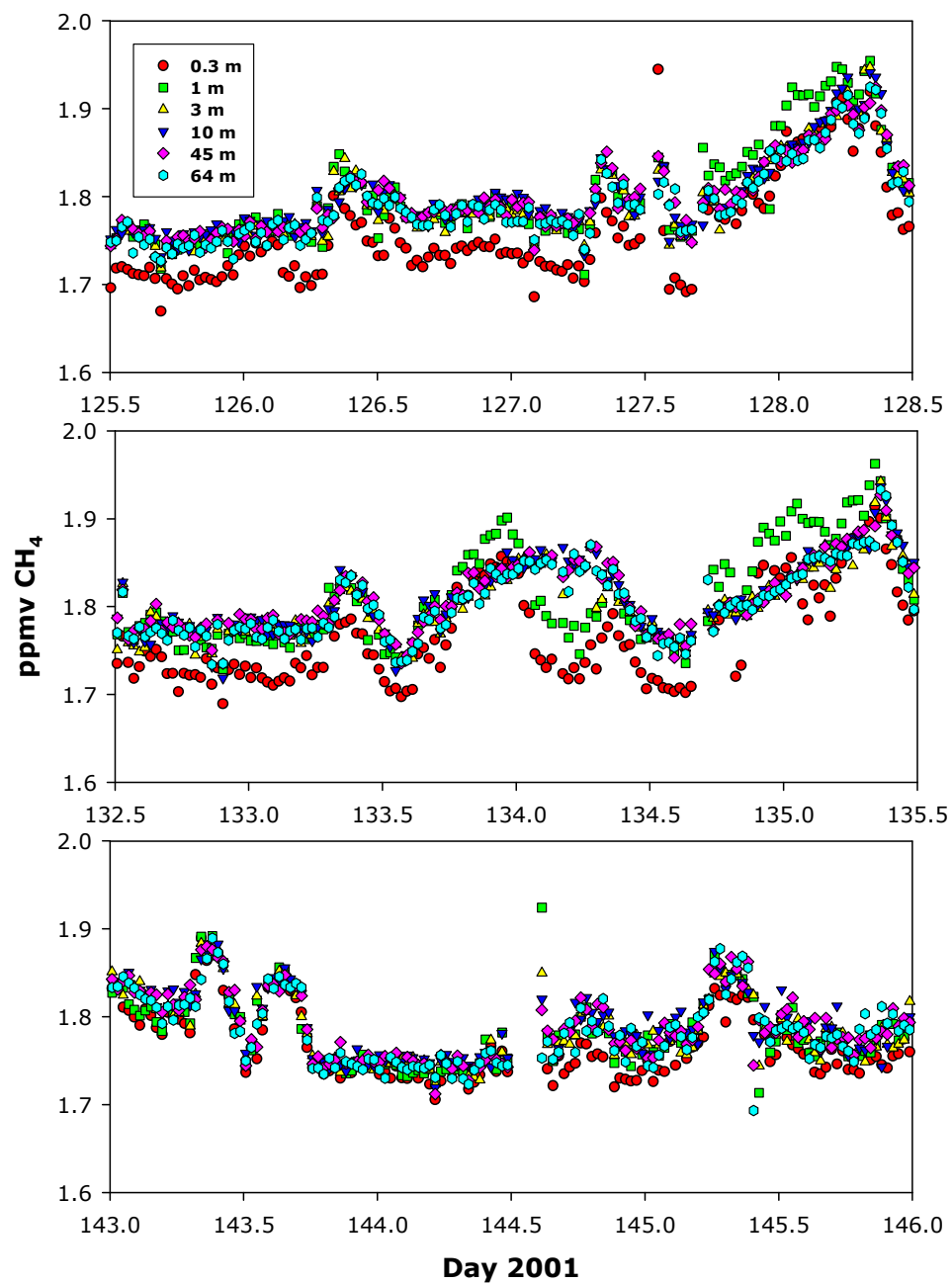




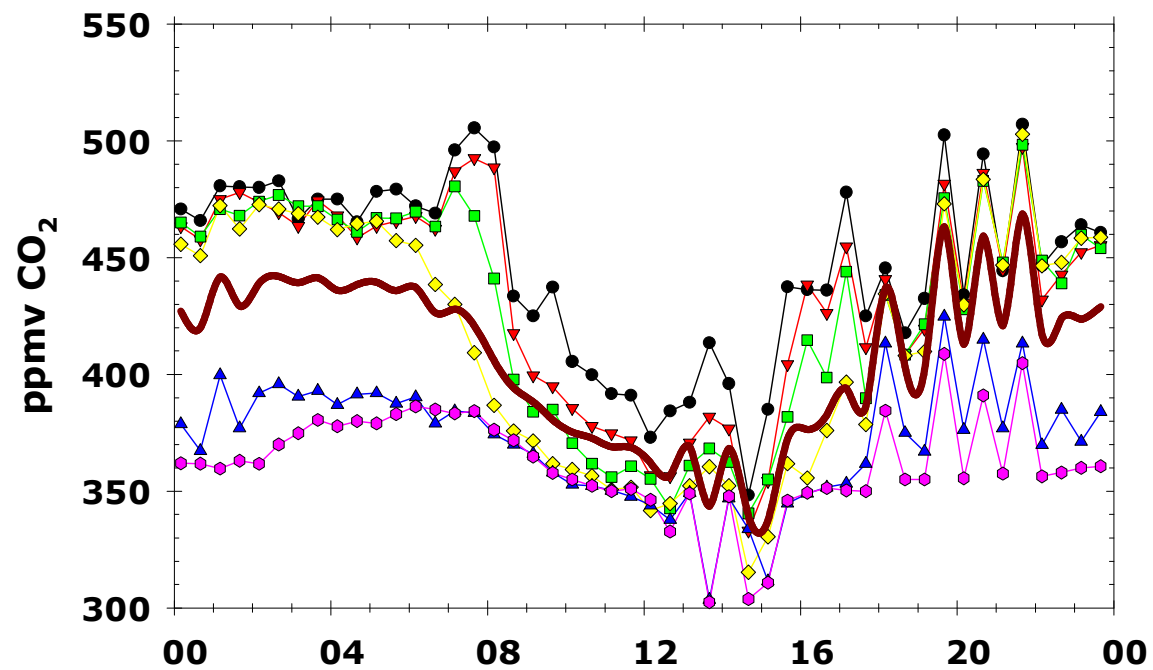
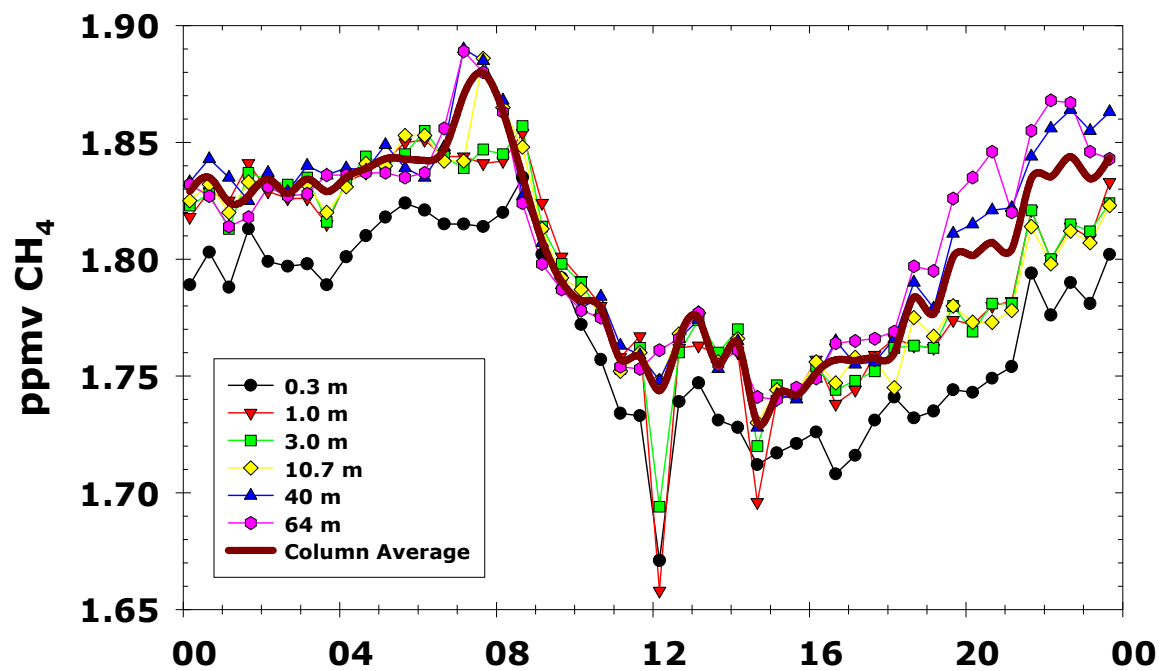
km 67



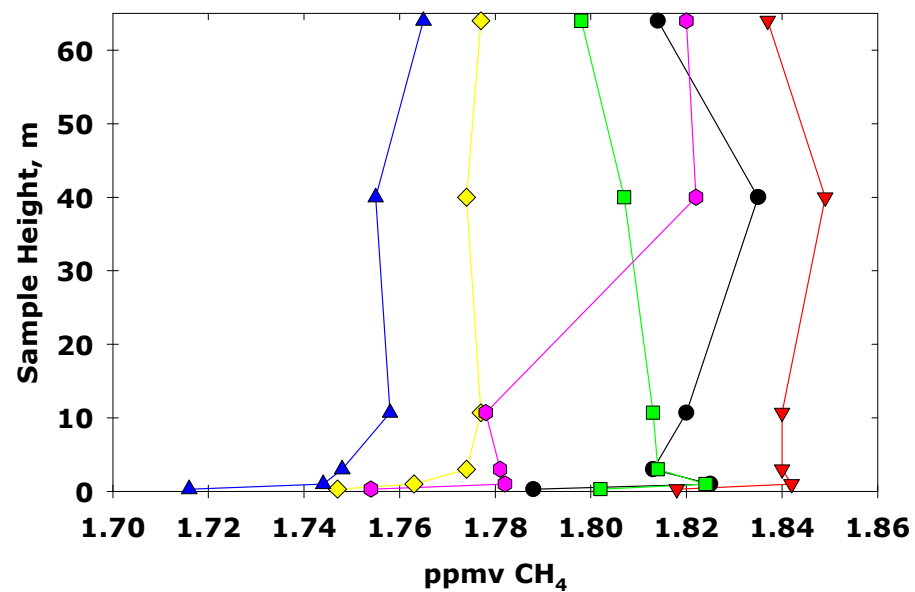
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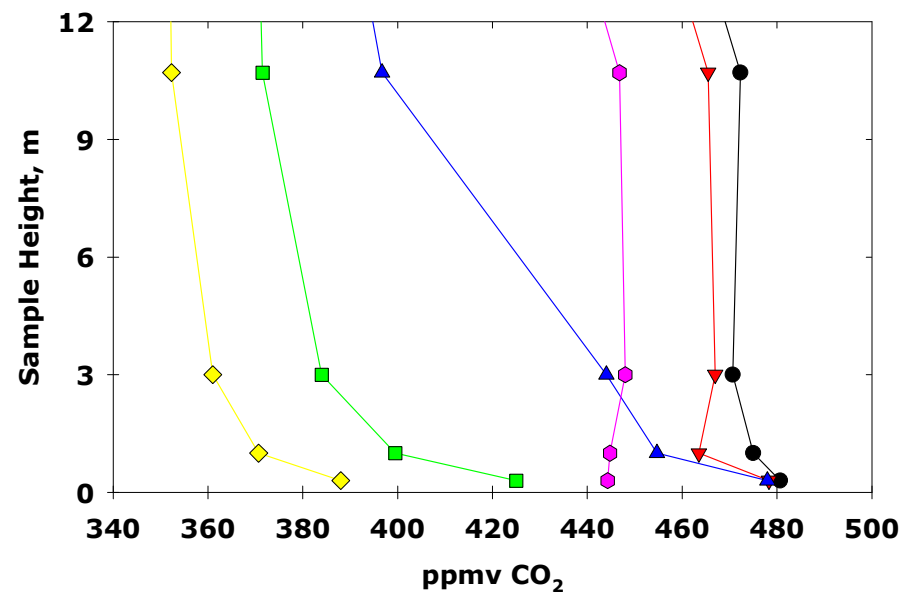
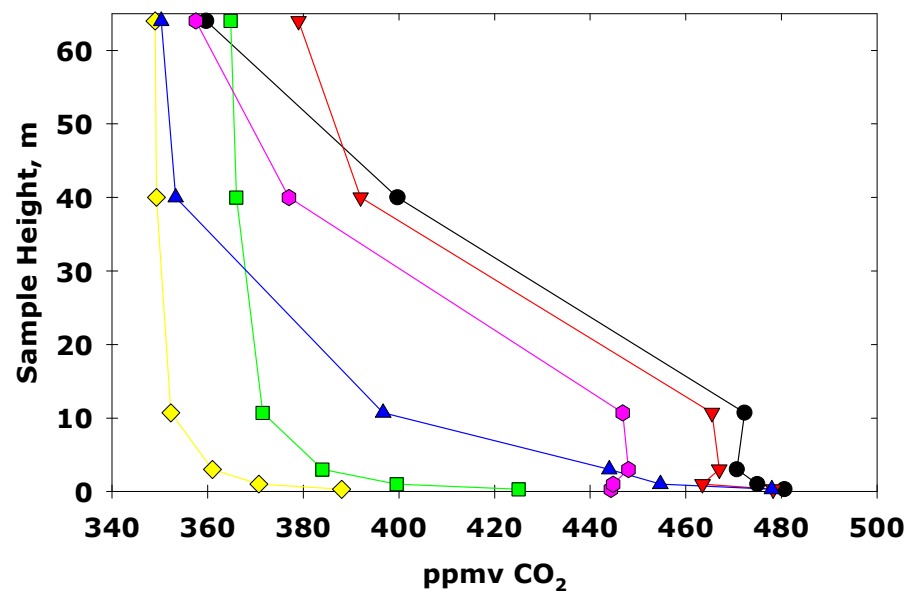
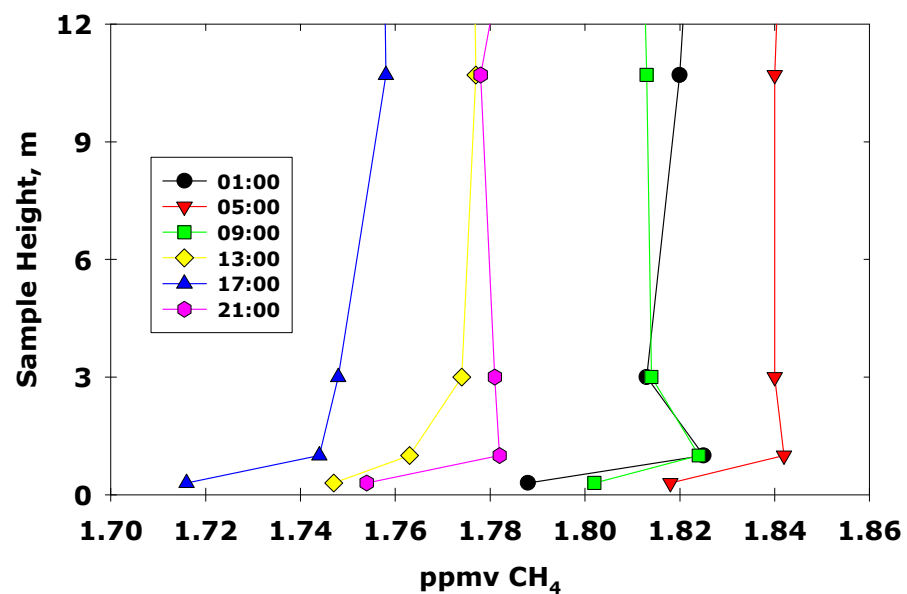
Santarem km 83, Half Hourly Averages



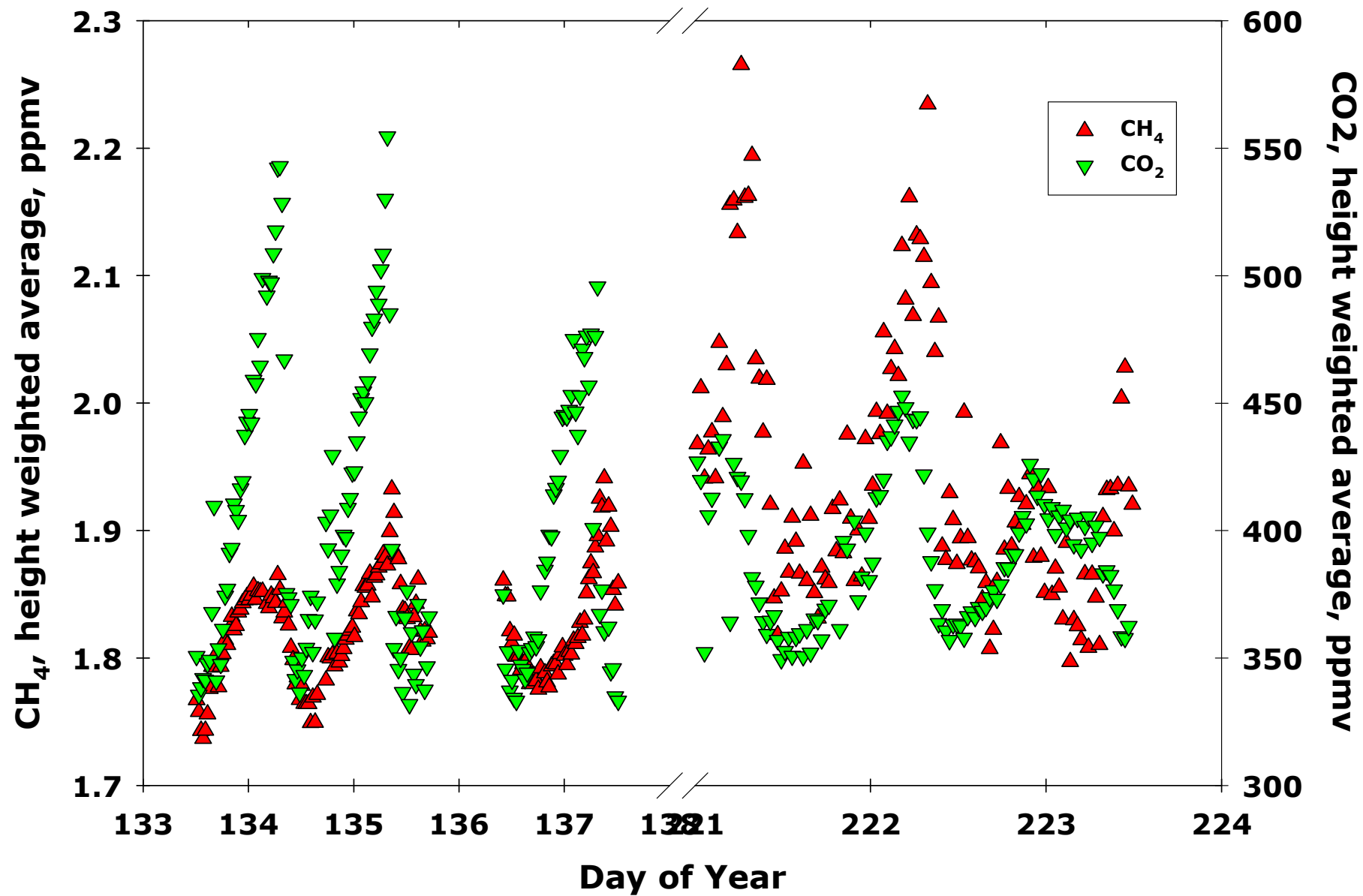
Santarem, km 83 Half Hourly Averages



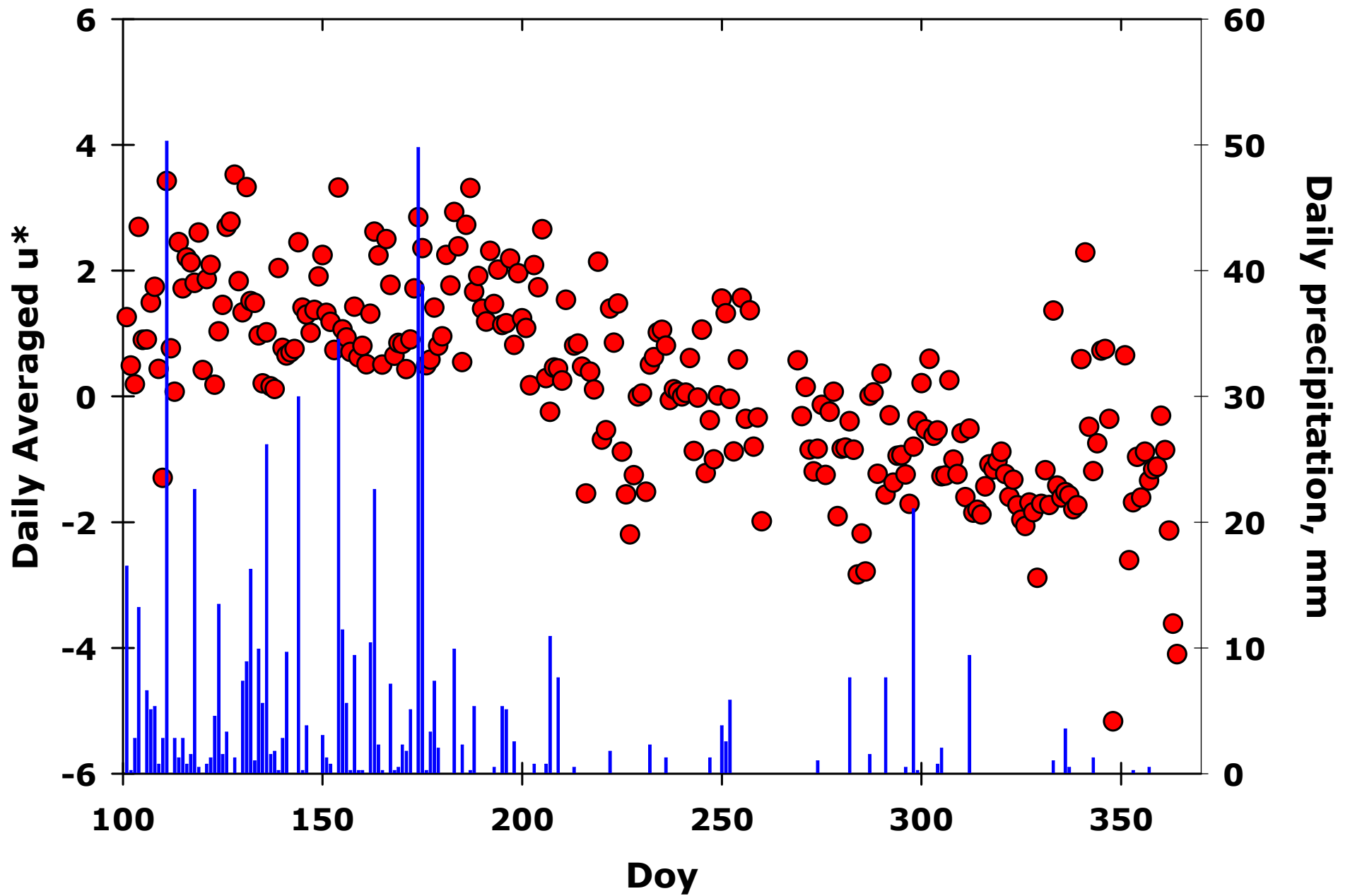
Santarem, km 83 Half Hourly Averages



Km 67



Km 67



Some equations:

$$\frac{dC}{dt} = P - k(C - C_t)$$

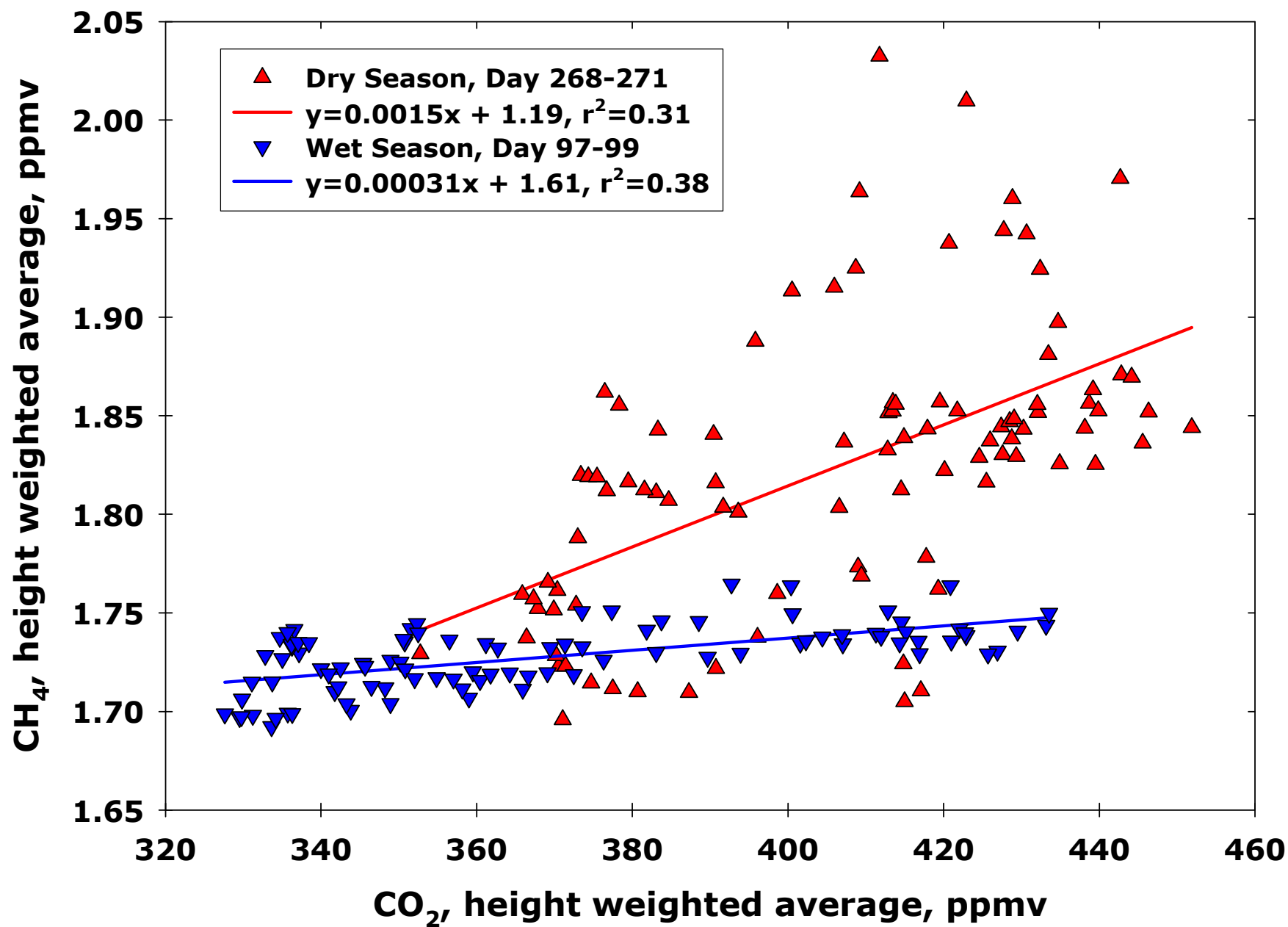
$$\frac{d[CH_4]}{d[CO_2]} = \frac{P_{CH_4} - k([CH_4] - [CH_4]_t)}{P_{CO_2} - k([CO_2] - [CO_2]_t)}$$

If exchange ($k(C - C_t)$) is small relative to the trace gas emission then

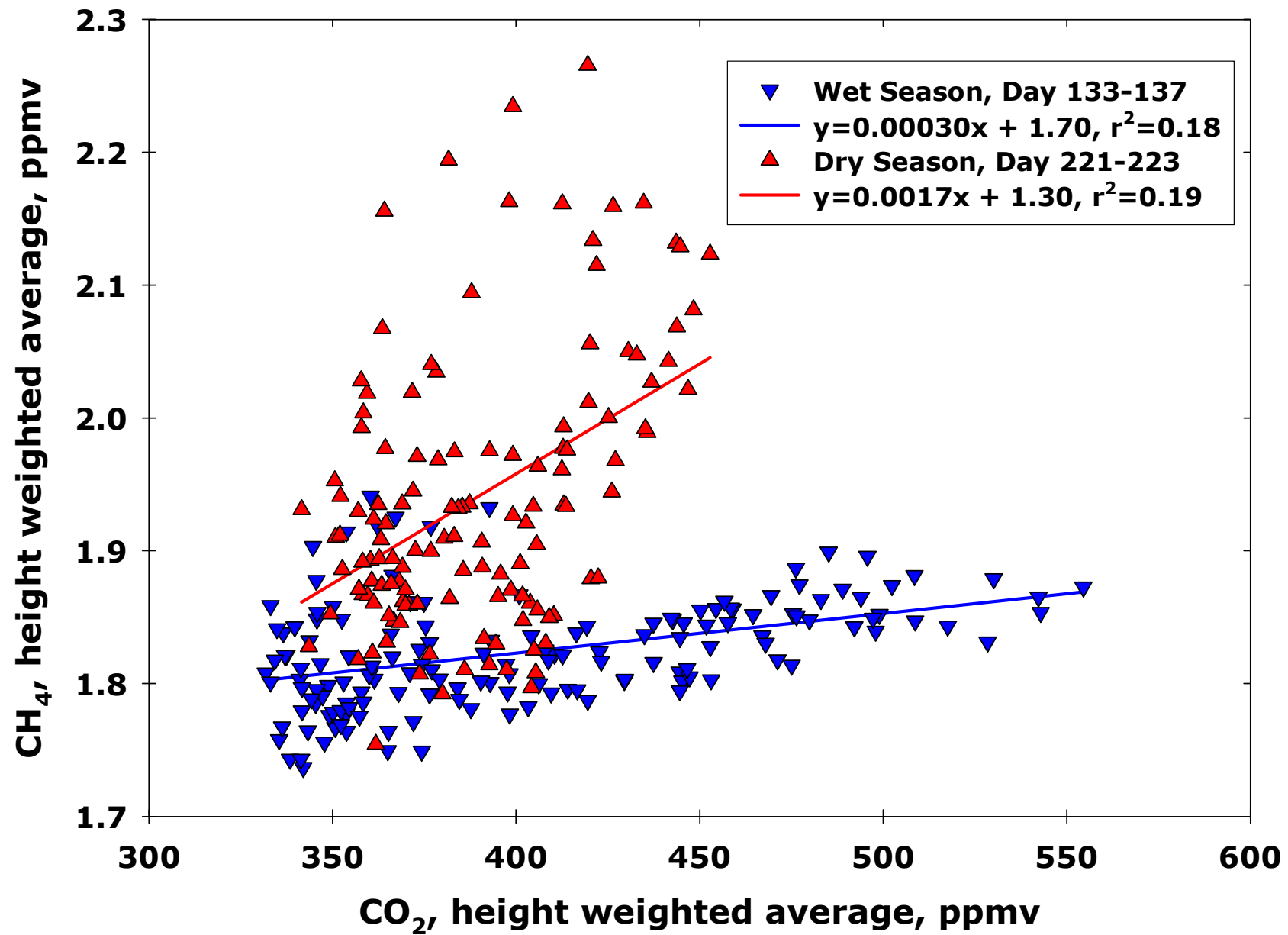
$$\frac{d[CH_4]}{d[CO_2]} \approx \frac{P_{CH_4}}{P_{CO_2}}$$

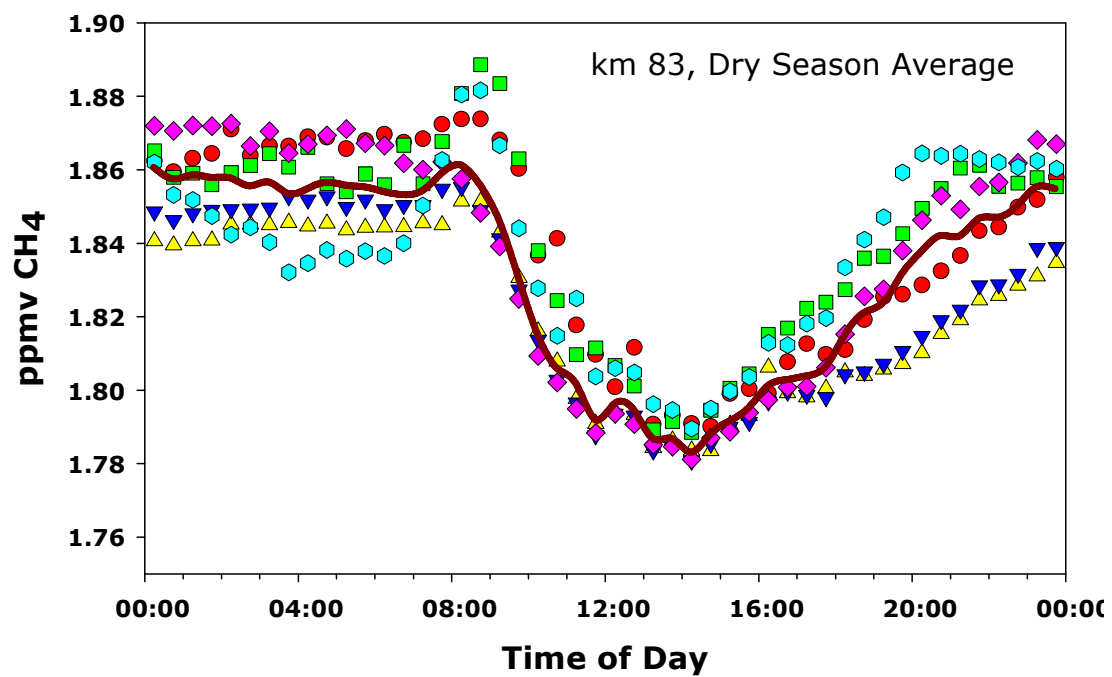
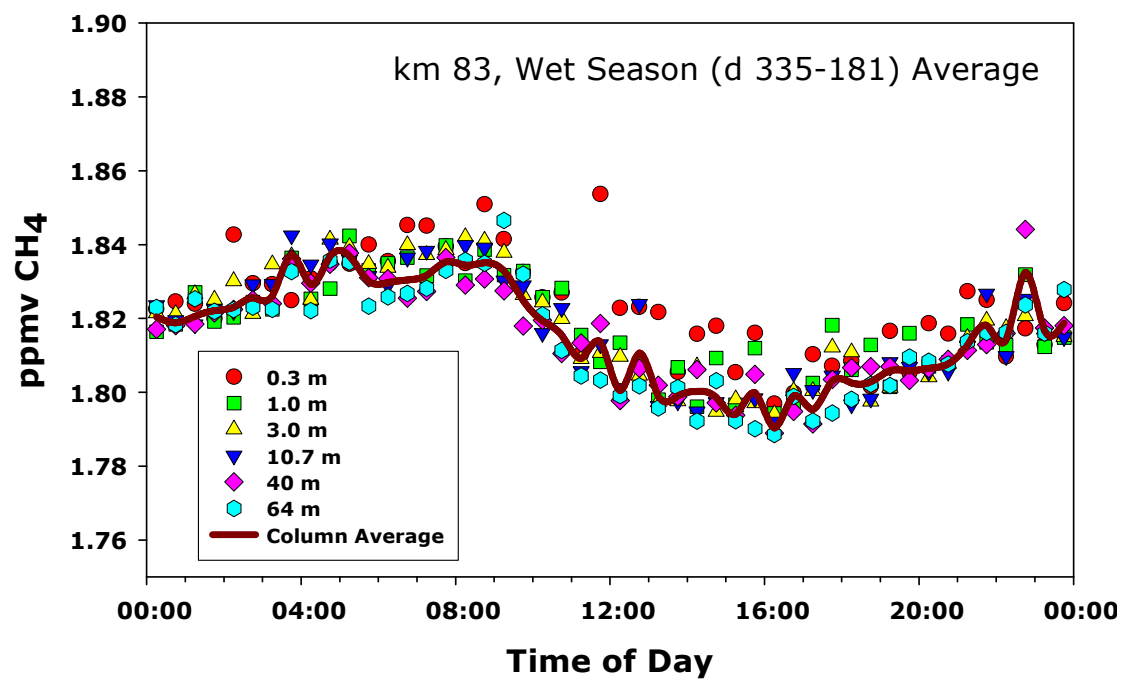
$$P_{CH_4} \approx \rho J_{CO_2} \frac{d[CH_4]}{d[CO_2]}$$

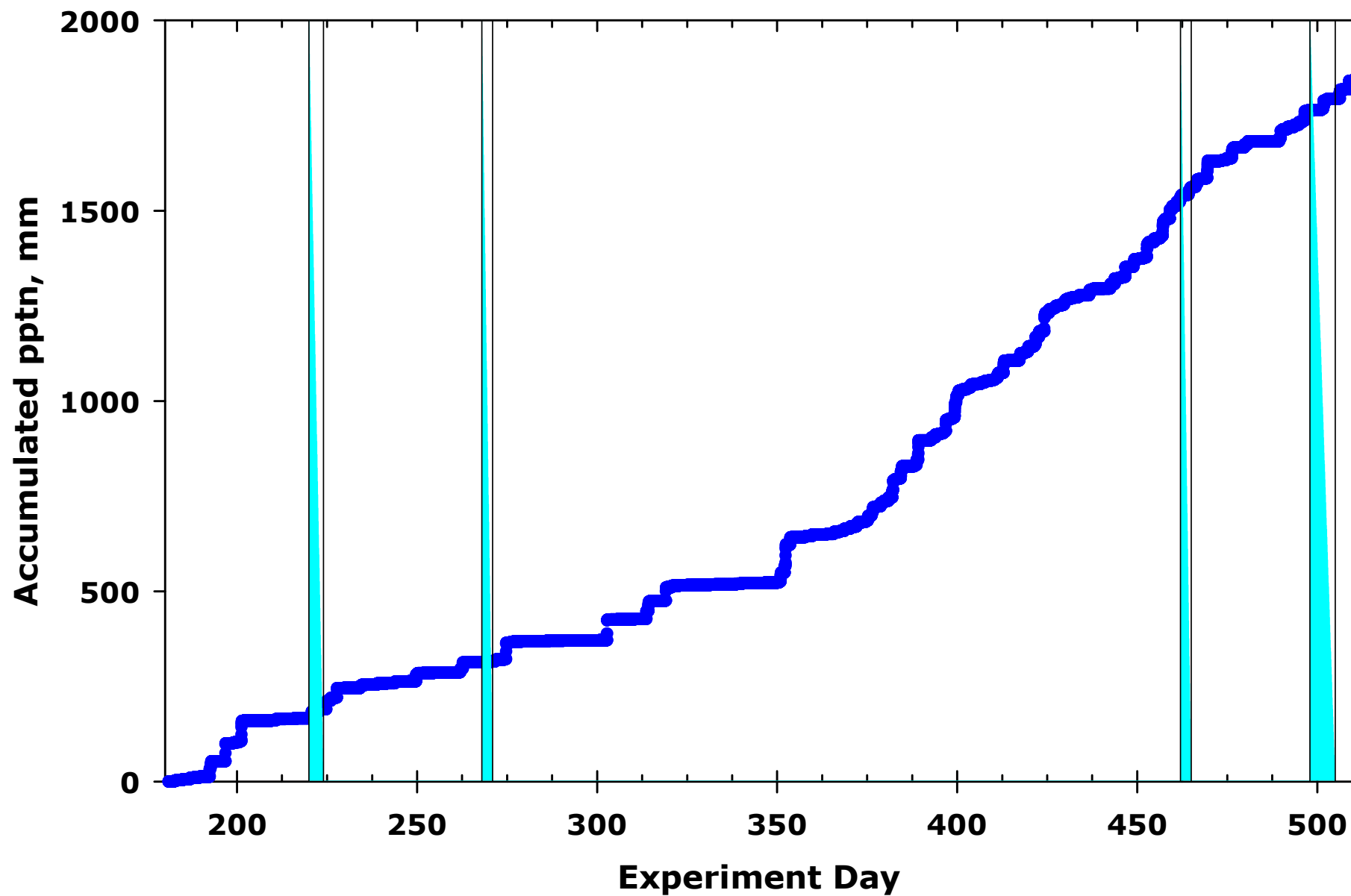
km 83



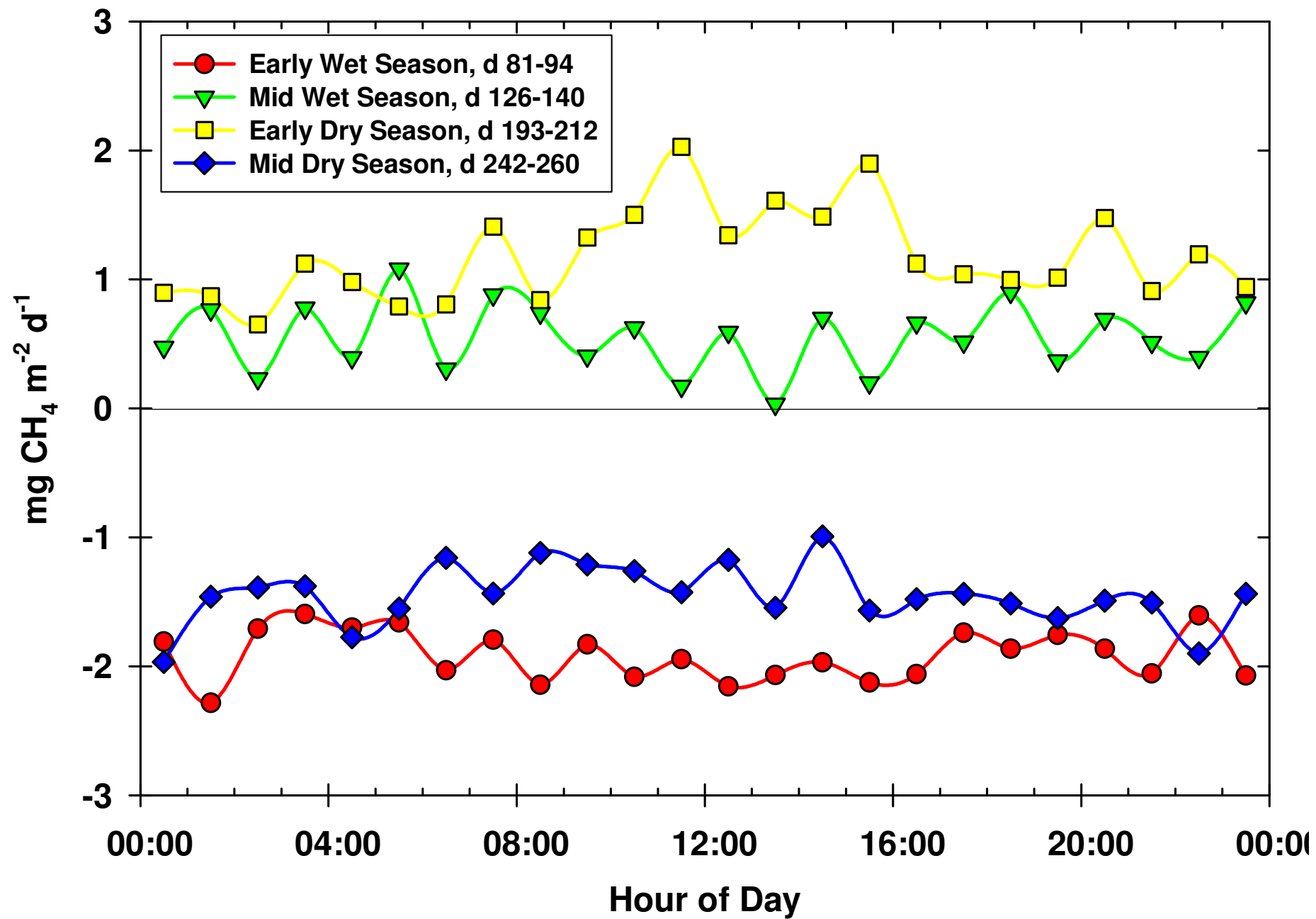
km 67







Seasonal Hourly Average Fluxes



			Soil CO ₂ Flux		CH ₄ Flux	CH ₄ Flux
Site		dCH ₄ /dCO ₂	μmol m ⁻² s ⁻¹	Factor ρ	μmol m ⁻² s ⁻¹	mg m ⁻² d ⁻¹
km67	Dry	0.0017	2.8	2.8	0.0131	18.1
km67	Wet	0.0003	1.9	2.8	0.0016	2.2
km67	Dry	0.0017	3.6	2.8	0.0168	23.3
km67	Wet	0.0003	2.7	2.8	0.0022	3.1
km83	Wet	0.0003	2.8	2.8	0.0024	3.3
km83	Dry	0.0015	1.9	2.8	0.0078	10.8
km83	Wet	0.0003	3.6	2.8	0.0031	4.2
km83	Dry	0.0015	2.7	2.8	0.0111	15.4
					Average	10.0
Factor ρ from km67 autochambers = 2.75						
and comparison to windy night (u*>0.2) NEE at km 67 and km 83						
	Martens et al. 2004; Goulden et al. 2004; Saleska et al. 2003					

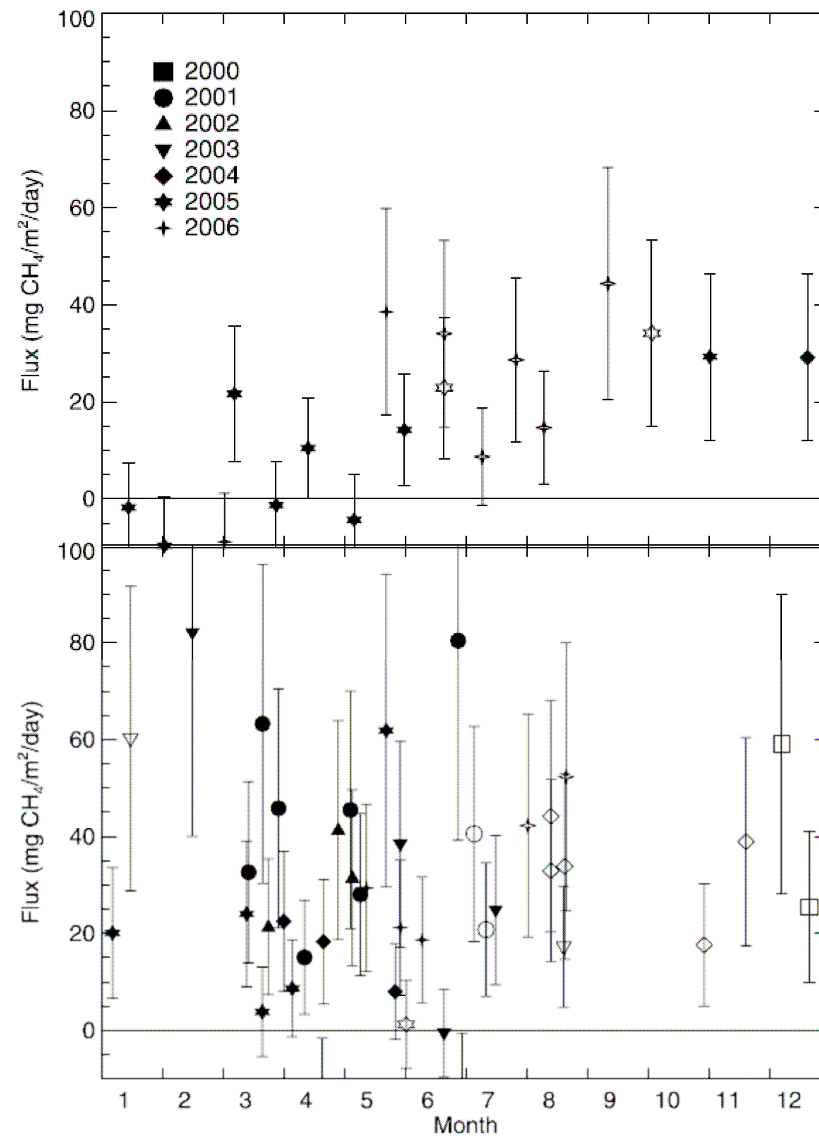


Figure 4. Estimated methane fluxes at (top) MAN and (bottom) SAN for all years. Uncertainties are one standard deviation derived by propagating uncertainty in all terms of equations 1, 2, and 3. Filled symbols are fluxes during months of greater than 100 mm rainfall and open symbols less than 100 mm.

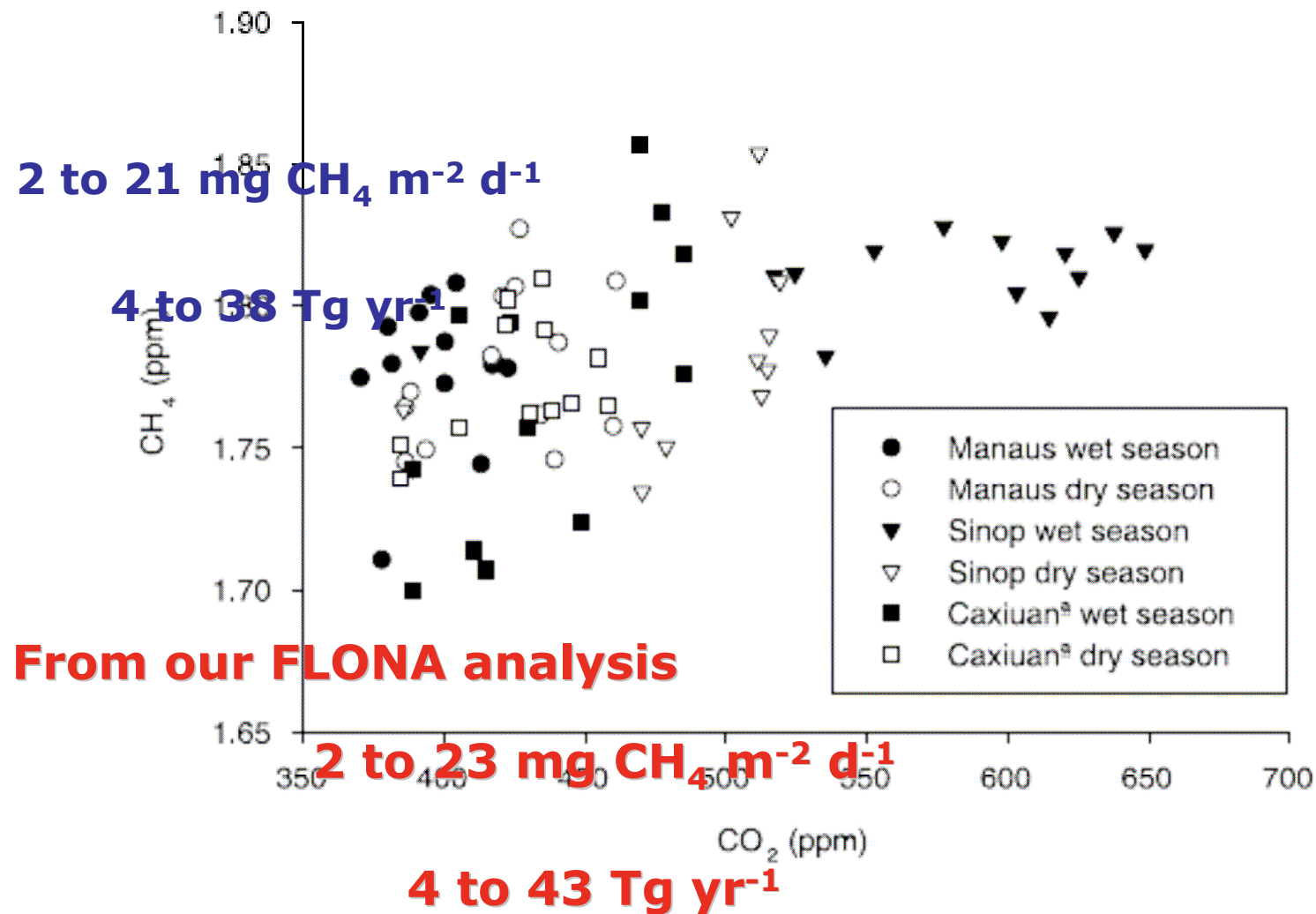


Figure 2. Height-averaged canopy layer mixing ratios of CH_4 versus CO_2 for all profiles.

Muito Obrigado!

