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**Viçosa, MG**

**23 de Fevereiro de 2010**

**Organização de dados para  
calibração do modelo de  
superfície**

**Instituto de Astronomia, Geofísica e Ciências Atmosféricas**  
**Departamento de Ciências Atmosféricas**



**Universidade de São Paulo**  
B R A S I L



# Roteiro

- 1. Metas
- 2. Banco de dados
  - Sítios experimentais
  - Variáveis
- 3. Séries temporais

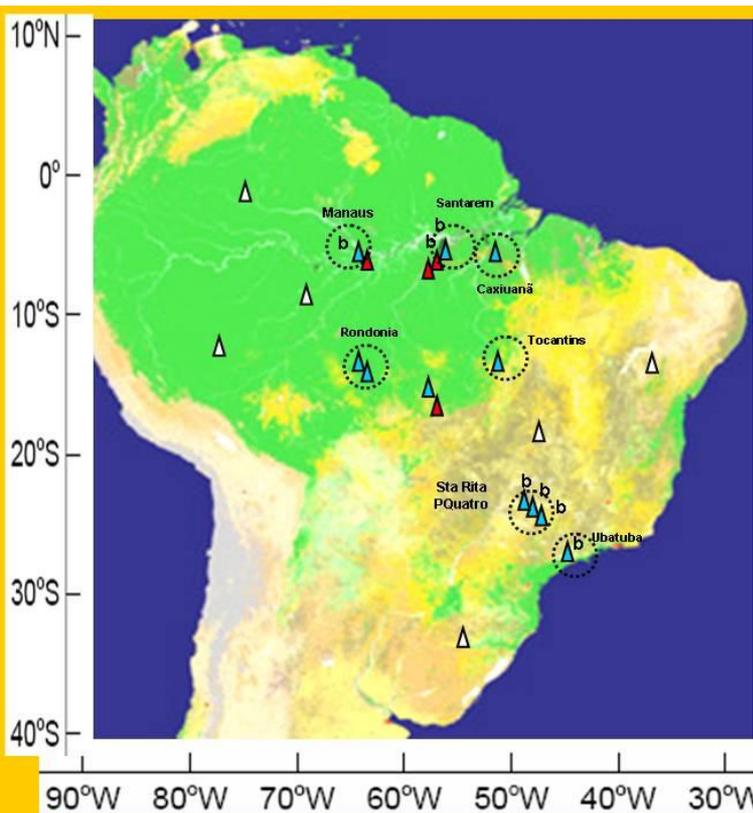
- 1. Metas
- Organizar um banco de dados micrometeorológicos para prover a calibração do modelo de superfície

# Roteiro

- 2. Banco de dados
  - Sitios experimentais
  - Variáveis

## Sítios experimentais

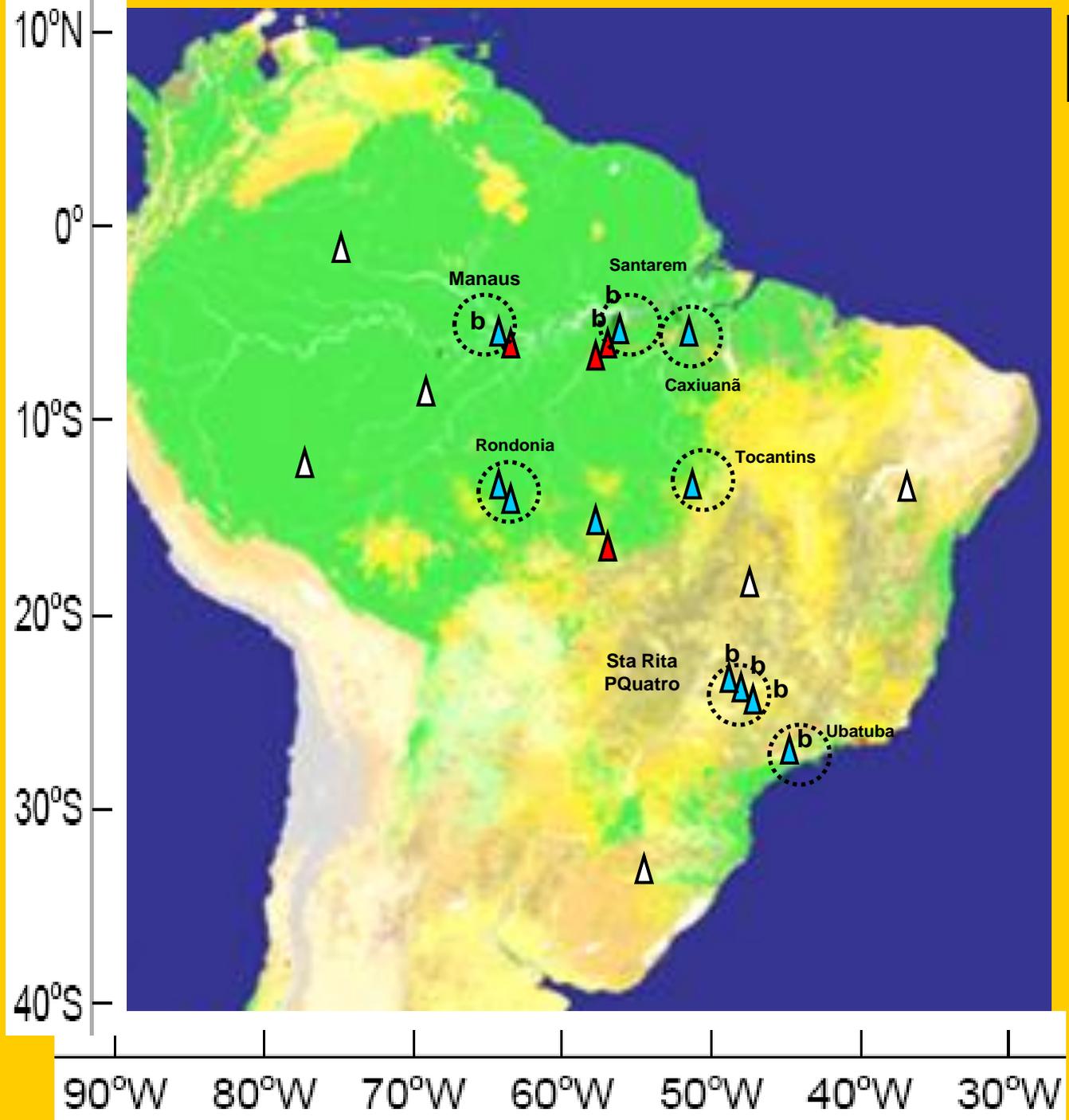
- ▲ disponíveis
- △ outros não disponíveis
- umidade do solo
- b** biometria



Sítios	Coords	Cidade	Período	Vegetação
1. MAN_K34	2° 36.5' S / 60° 12.5' W	Manaus	6/1999 a 9/2006	Floresta tropical ombrófila densa
2. STM_K67	2°51' S / 54° 58' W	Santarém	1/2002 a 1/2006	Floresta tropical ombrófila densa
3. STM_K83	3° 3' S / 54° 56' W	Santarém	7/2000 a 12/2004	Floresta tropical ombrófila densa
4. STM_K77	3.012° S / 54.537° W	Santarém	1/2000 a 12/2005	Pastagem
5. PA_CAX	1°43.06' S / 51° 27.60' W		6/1999 a 7/2003	Floresta tropical ombrófila densa
6. RON_RJA	10° 4.7' S / 62° 21.5' W	Rondônia	4/1999 a 10/2002	Floresta tropical semidecídua
7. RON_FNS	10° 45.7' / 62° 21.5' W	Rondônia	3/1999 a 10/2002	Pastagem
8. TOC_BAN	9° 49' 16.1" S / 50° 08' 55.3" W		10/2003 a 12/2006	Cerrado sazonalmente alagável
9. SP_PEG	21° 37' 9" S / 47° 37' 58" W	Sta Rita Passa Quatro	1/2005 a 12/2005	Cerrado
10. SP_FCP	21° 35' 0.6" S / 47° 36' 8.3" W	Idem	1/2005 a 12/2005	Eucalipto
11. SP_USR	21° 38' 13.4" S / 47° 47' 24.9" W	Idem	01/2005 a 12/2005	Cana-de-açúcar
12. SP_SVG	23° 19' 42.5" S / 45° 05' 35.2" W	Ubatuba	01/2008 a 12/2008	Mata Atlântica

# Sítios experimentais

-  disponíveis
-  outros não disponíveis
-  umidade do solo
- b** biometria



# Variáveis disponíveis: médias 30 min

## 1. Estação meteorológica

Temperatura e umidade do ar

Velocidade do vento e pressão atmosférica

Precipitação

Irradiância solar e RFA (incidente e refletida)

Temperatura, umidade e fluxo de calor no solo

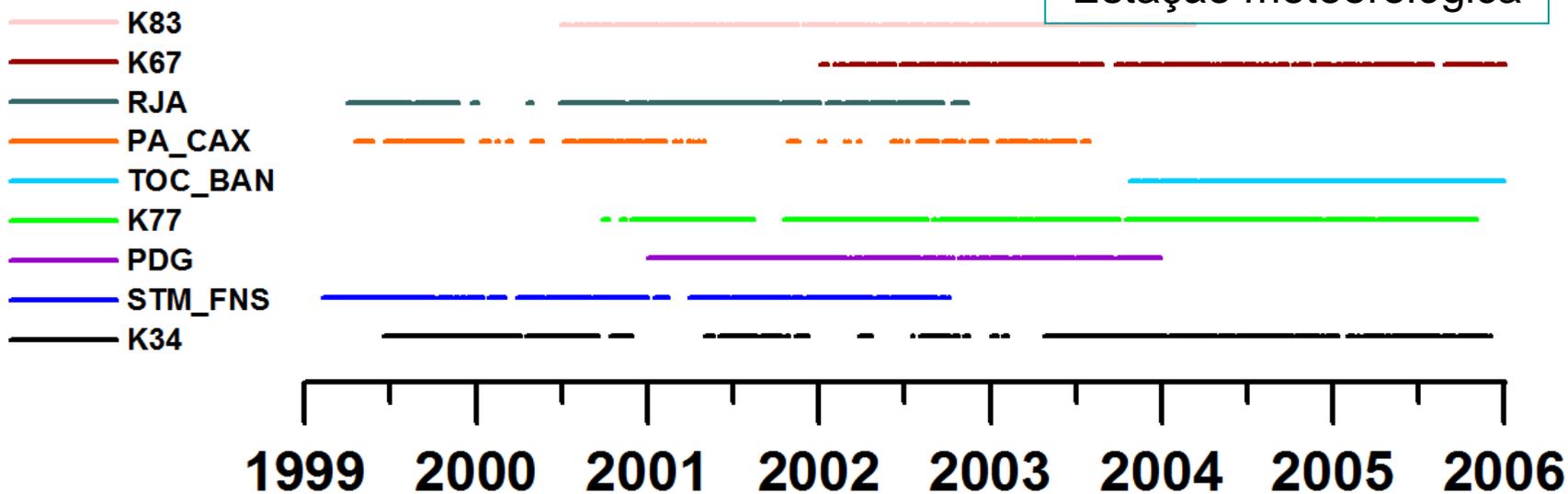
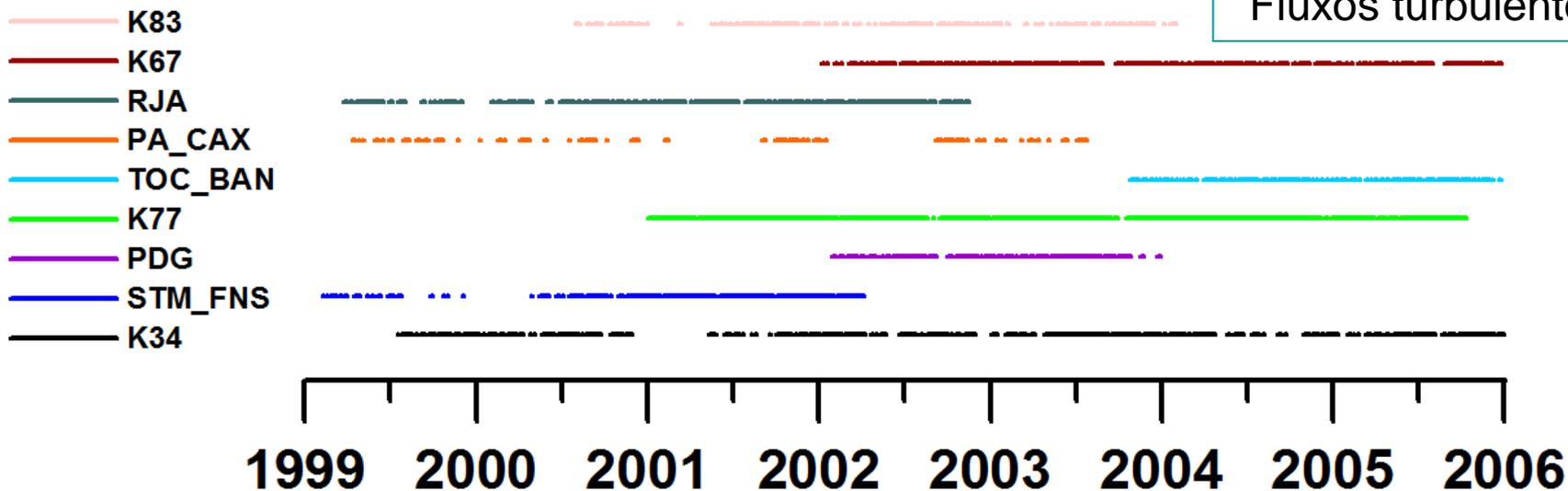
## 2. Fluxos verticais turbulentos

Calor sensível e latente

Momentum

CO<sub>2</sub>

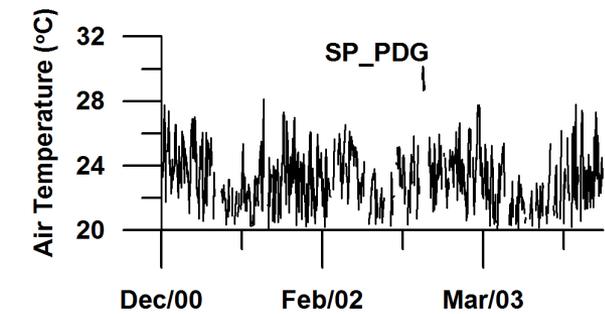
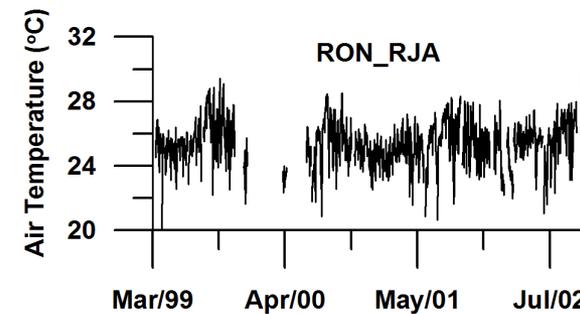
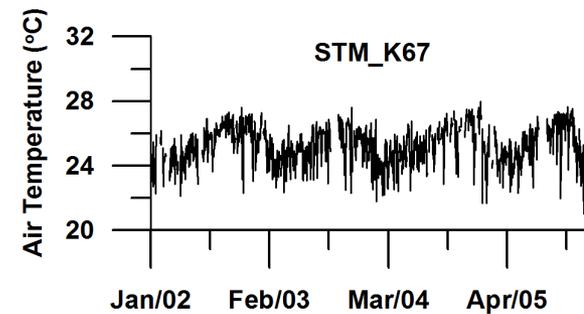
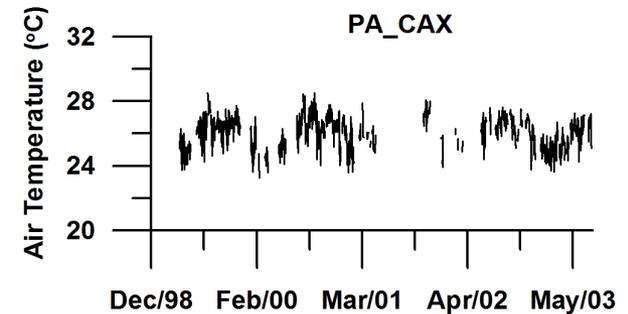
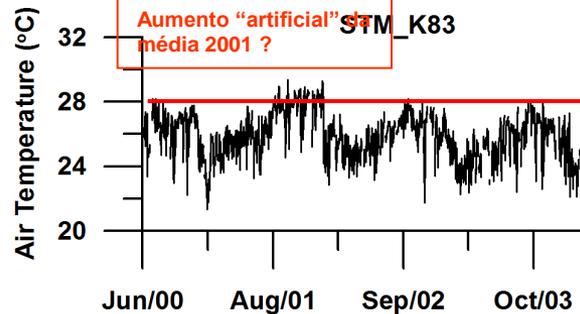
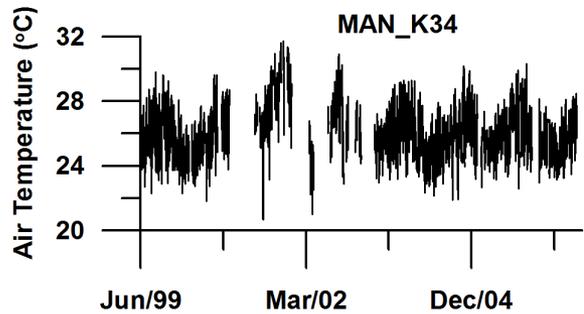
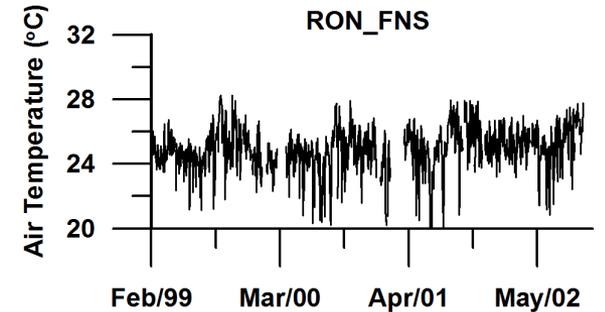
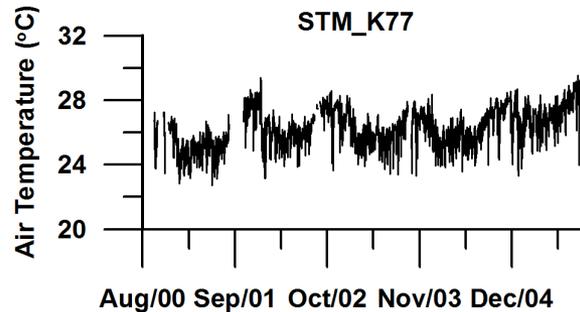
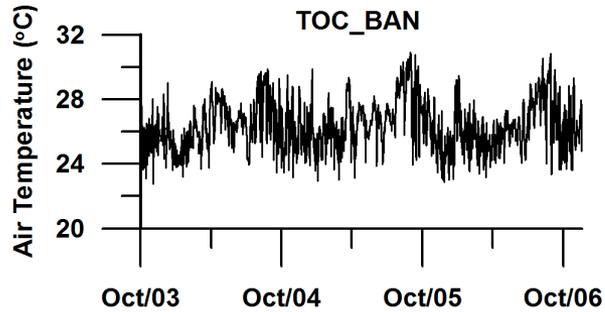
# Período de dados nos sítios experimentais



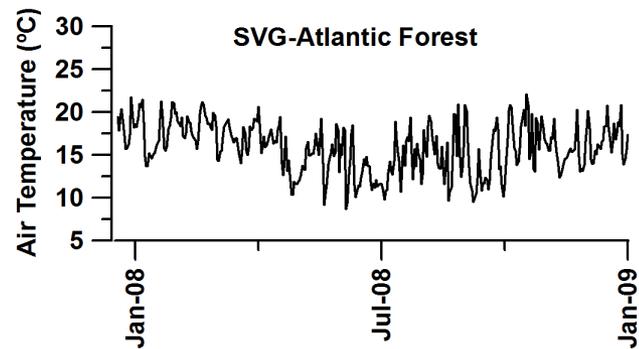
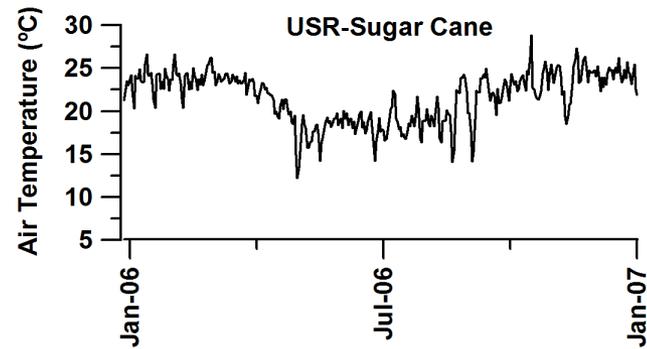
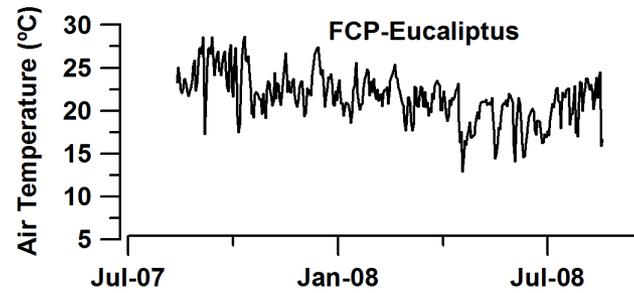
# Roteiro

- 3. Séries temporais (médias diárias)

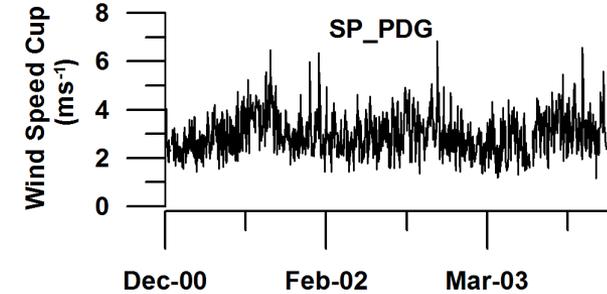
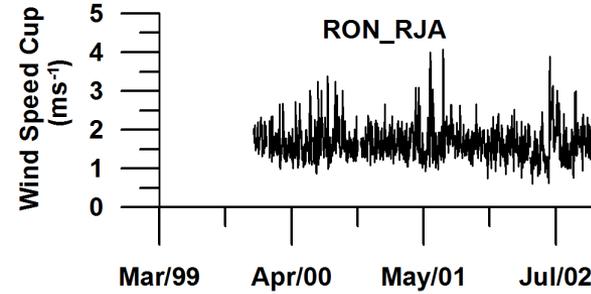
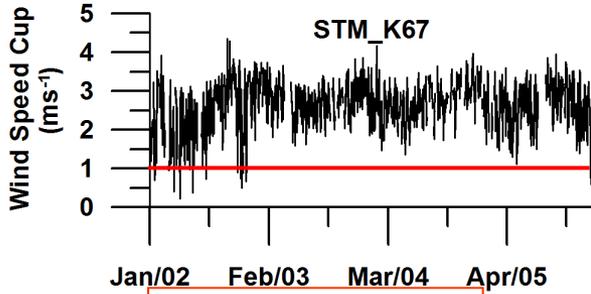
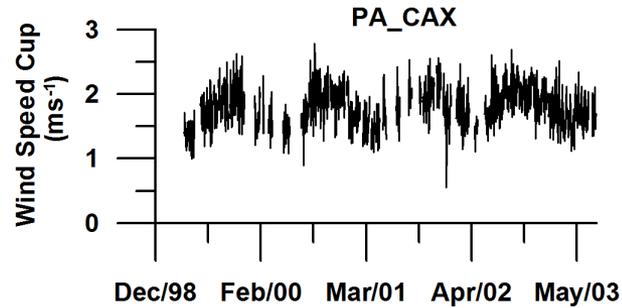
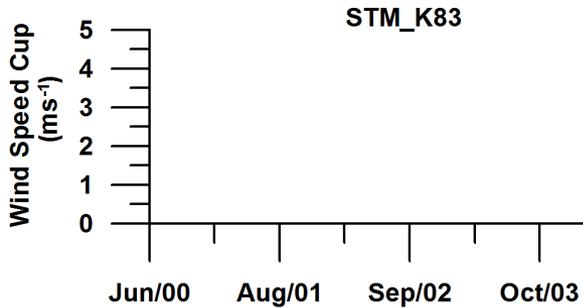
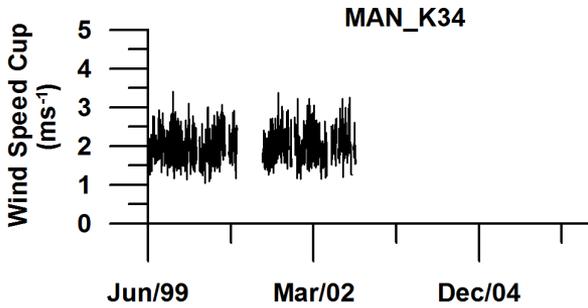
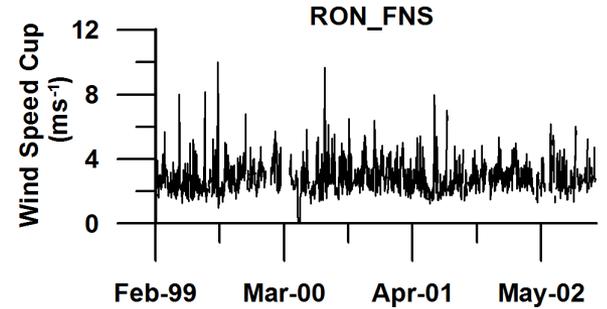
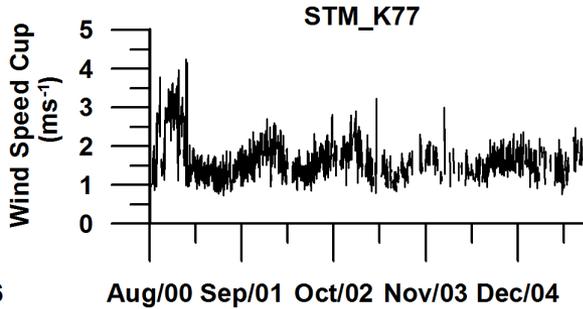
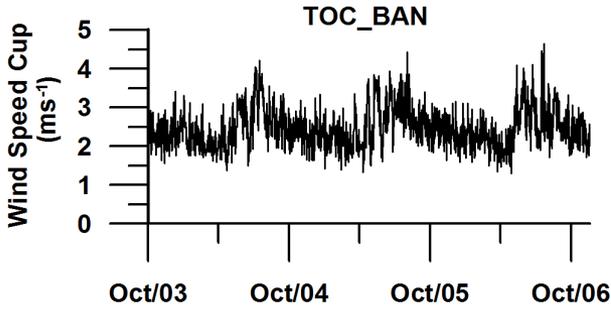
# Air Temperature (°C)



## Air Temperature (°C)

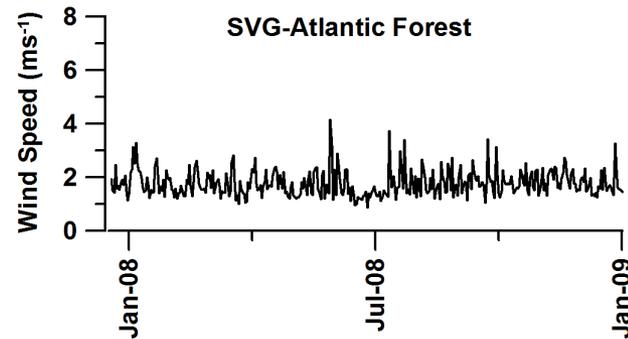
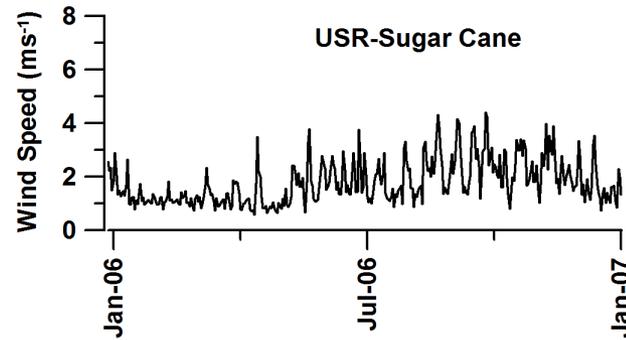
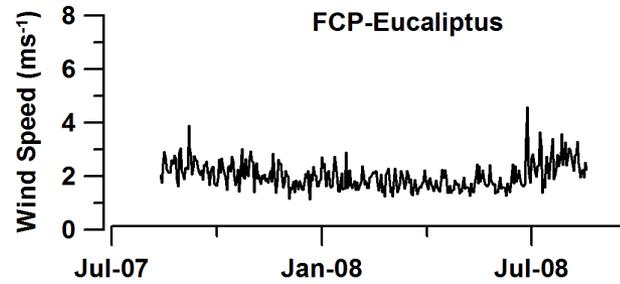


# Wind Speed Cup (m s<sup>-1</sup>)



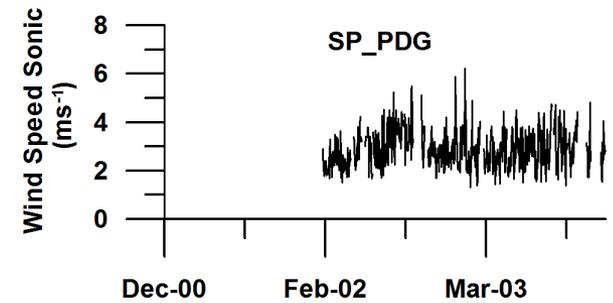
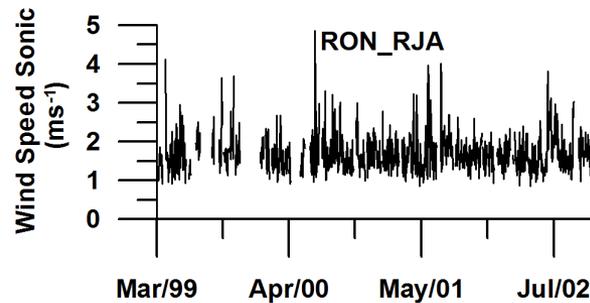
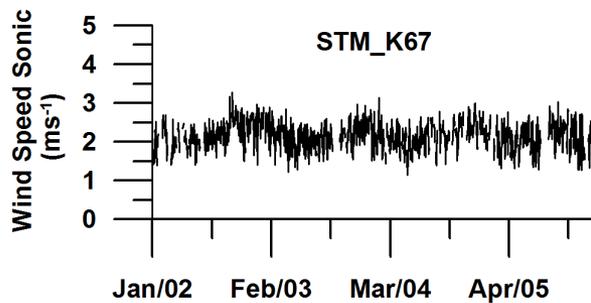
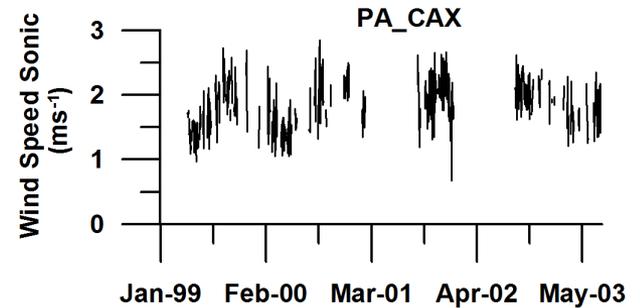
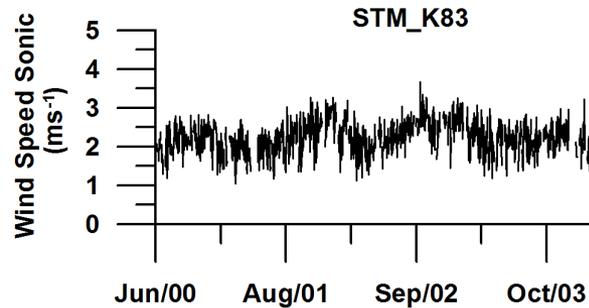
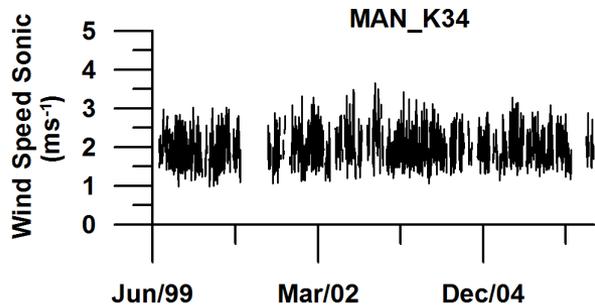
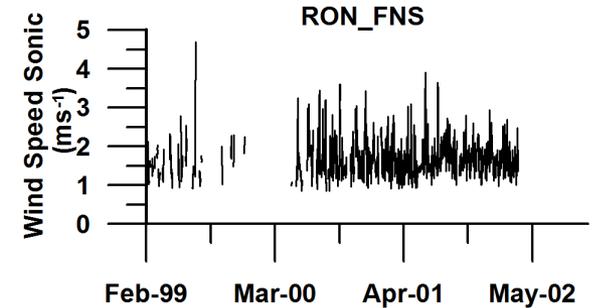
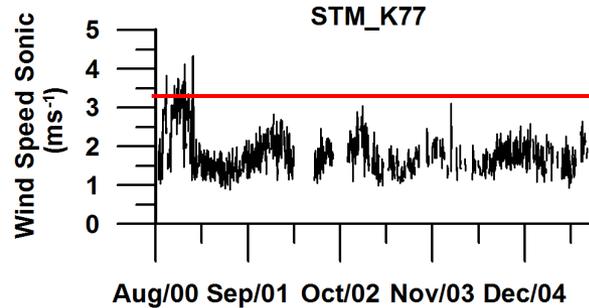
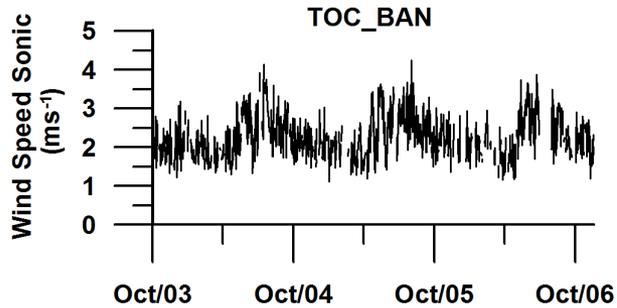
Picos de mínimo acentuados 2002 ?

## Wind Speed Cup (m s<sup>-1</sup>)

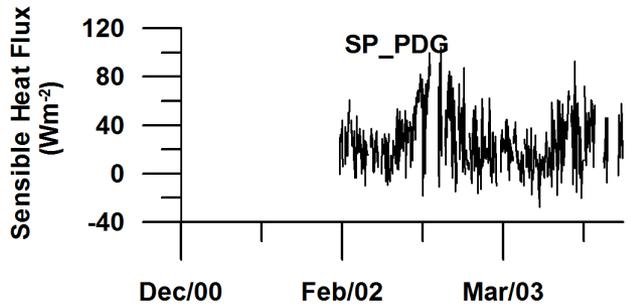
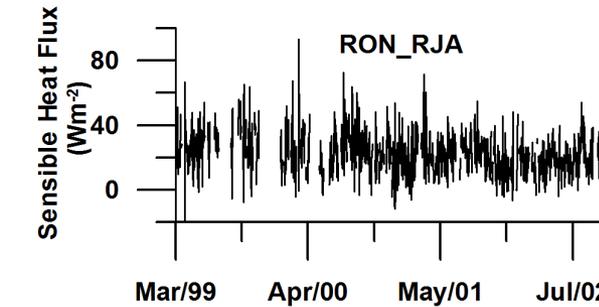
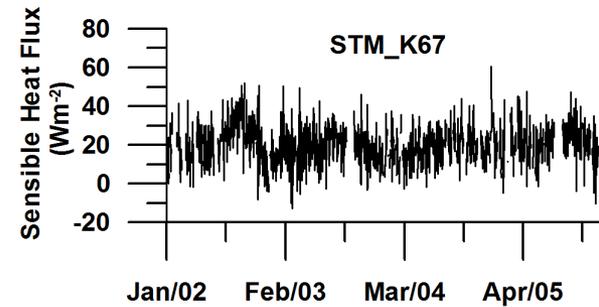
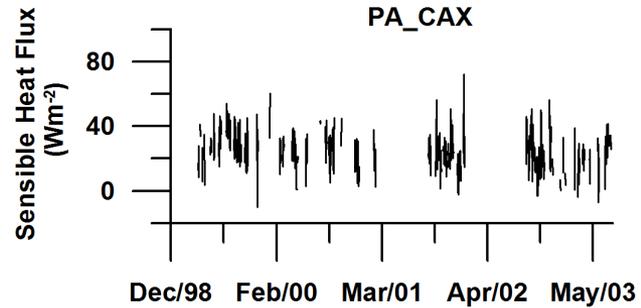
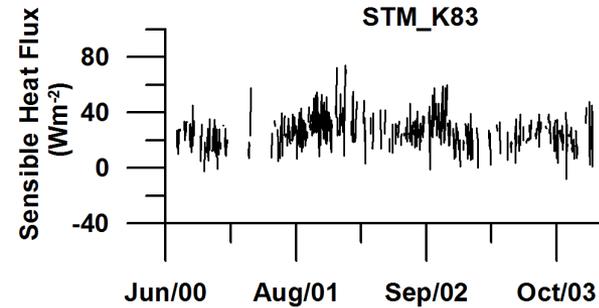
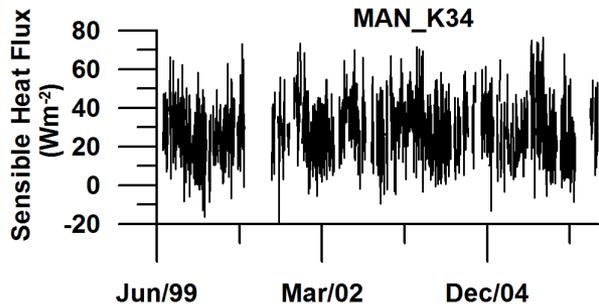
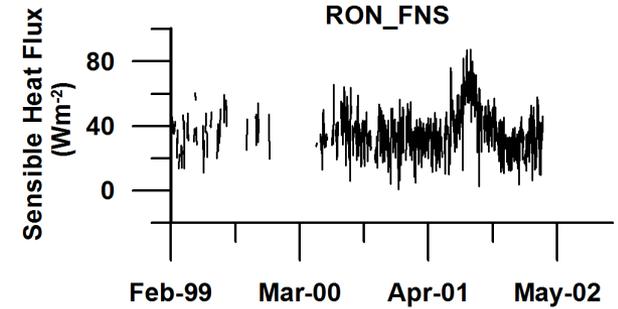
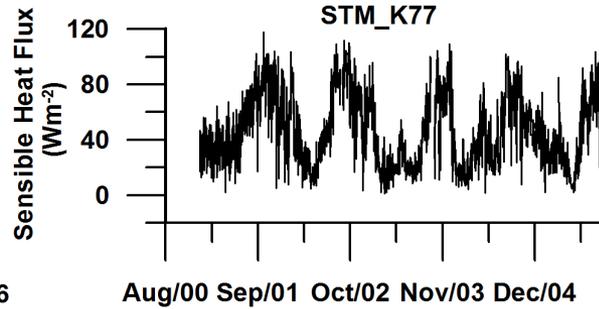
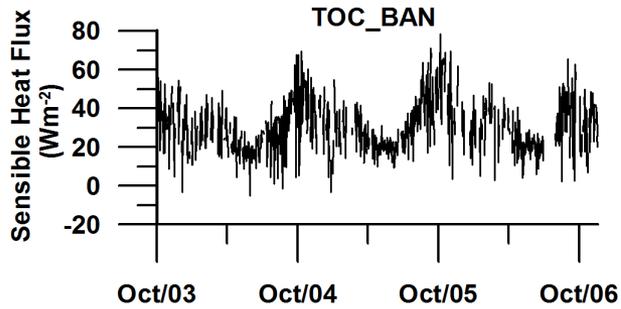


# Wind Speed Sonic (m s<sup>-1</sup>)

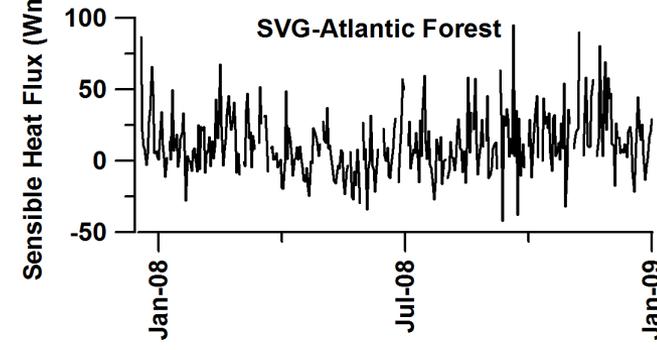
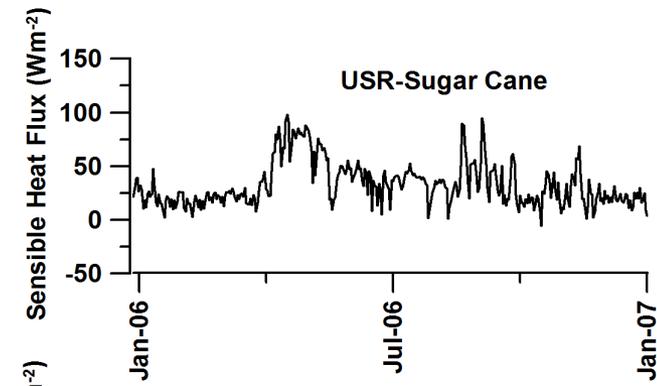
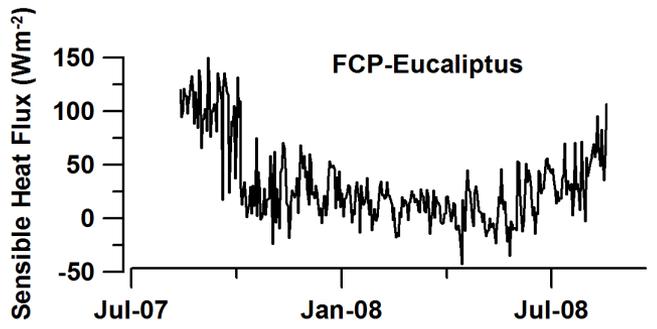
Picos de máximo em 2000 ?



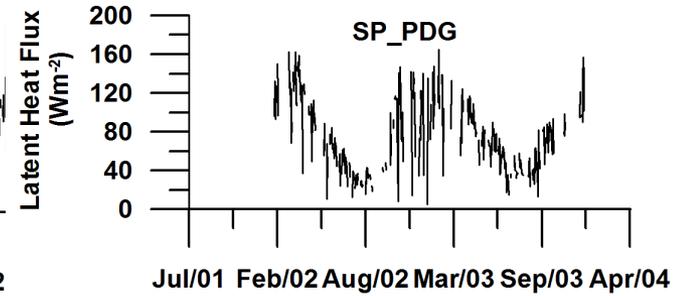
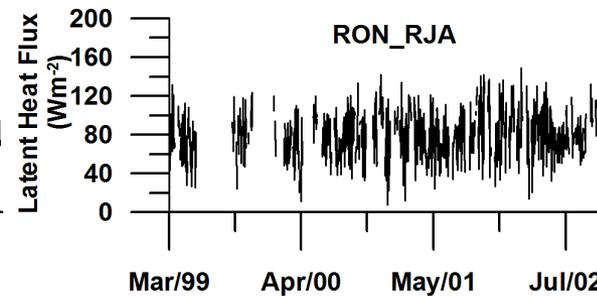
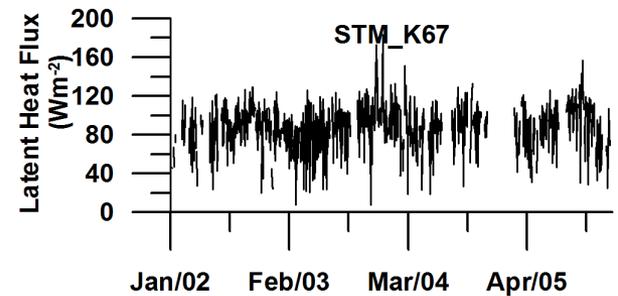
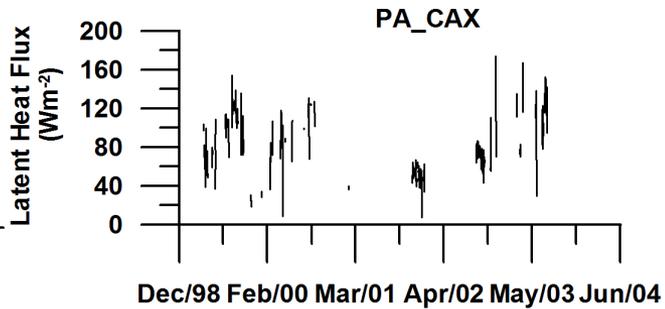
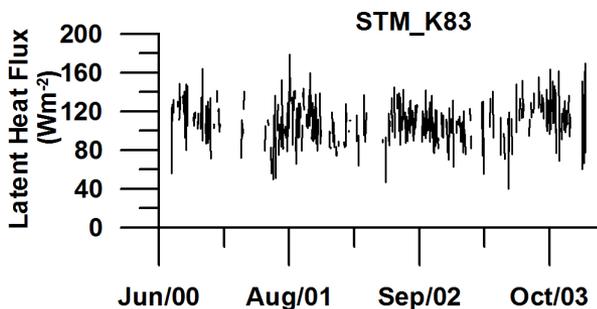
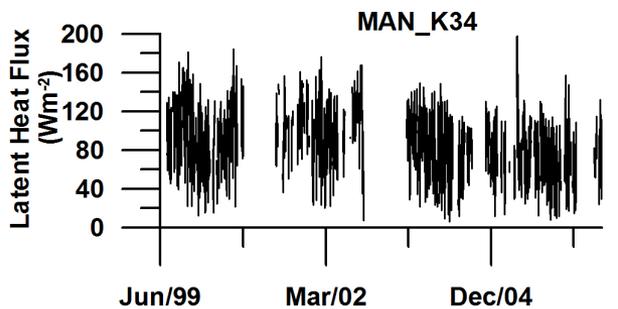
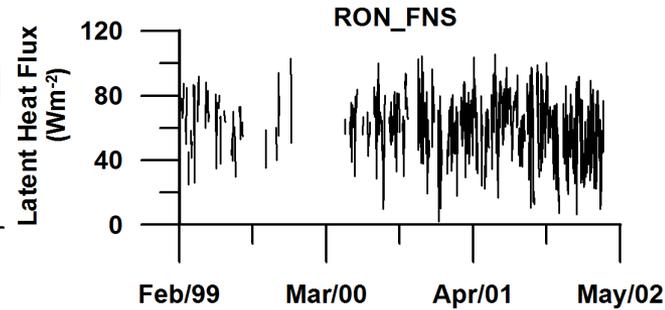
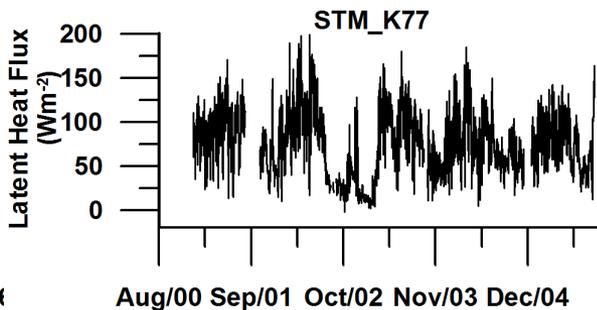
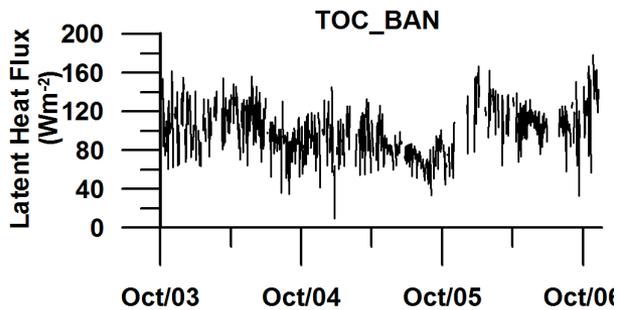
# Sensible Heat Flux ( $\text{W m}^{-2}$ )



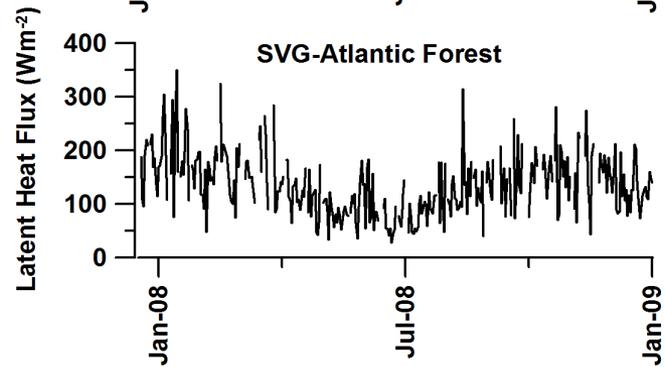
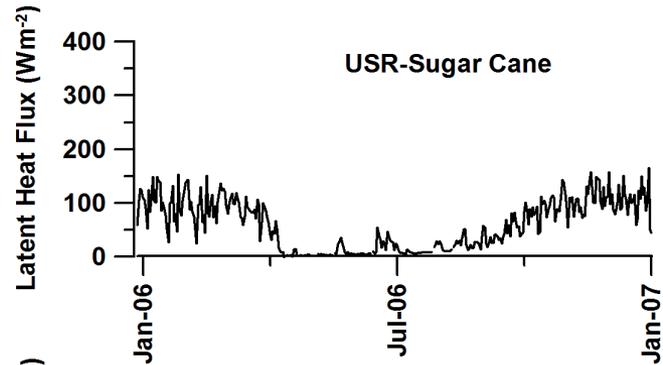
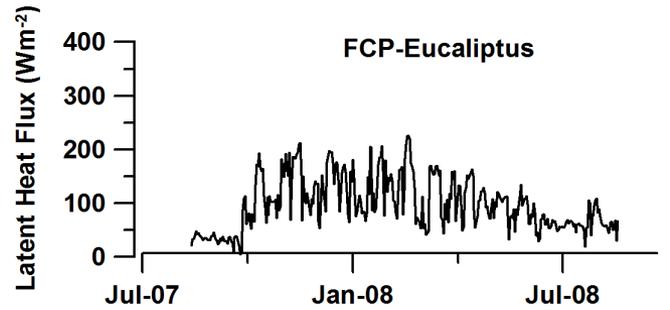
# Sensible Heat Flux ( $W m^{-2}$ )



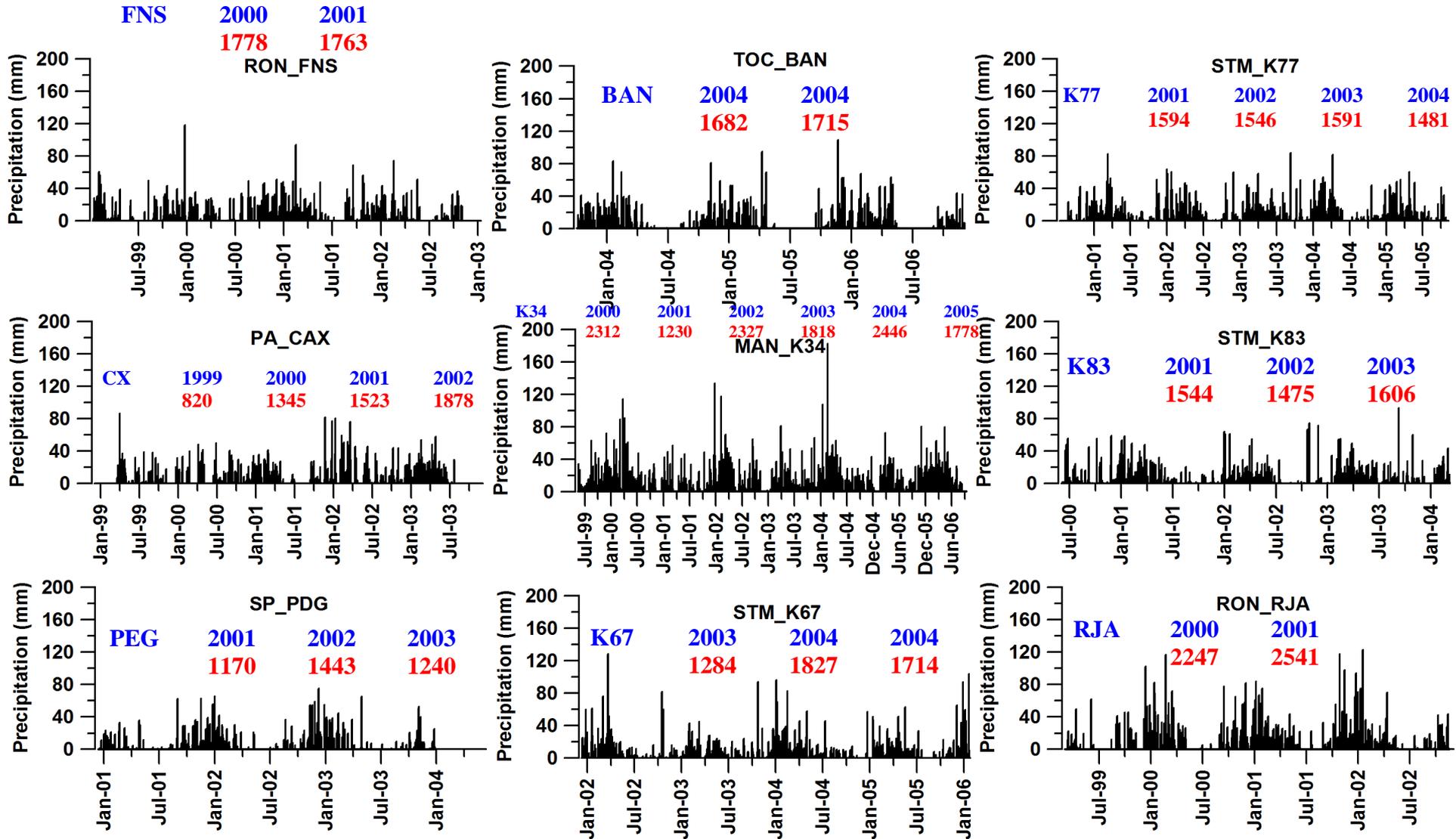
# Latent Heat Flux ( $\text{W m}^{-2}$ )



## Latent Heat Flux ( $\text{W m}^{-2}$ )

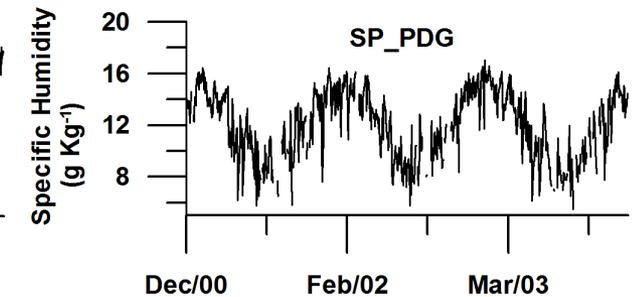
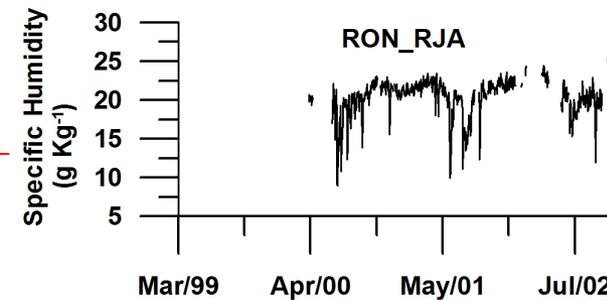
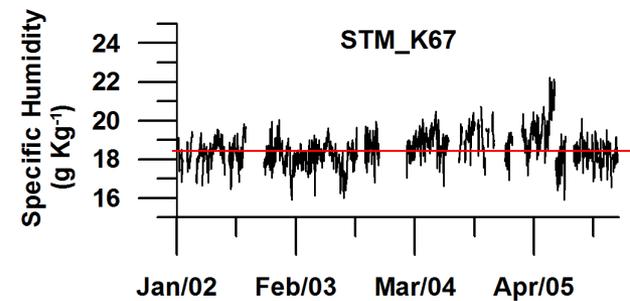
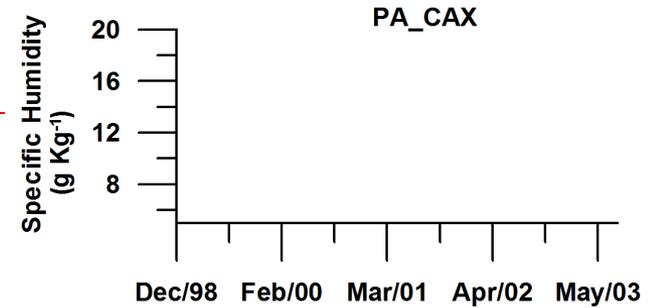
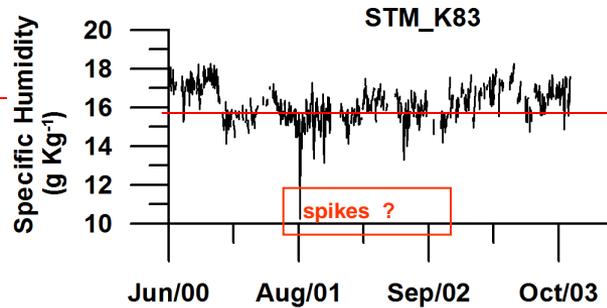
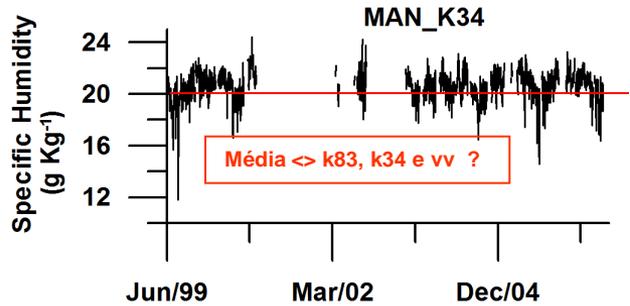
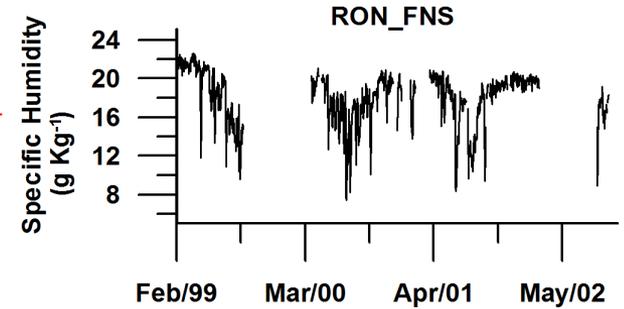
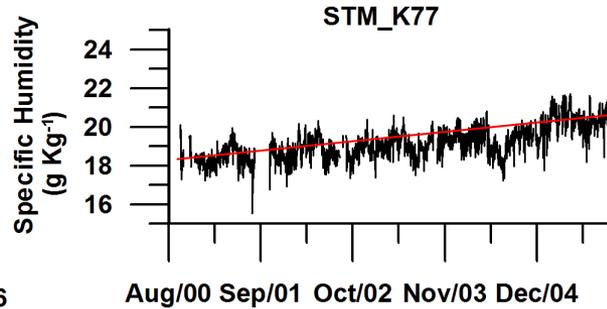
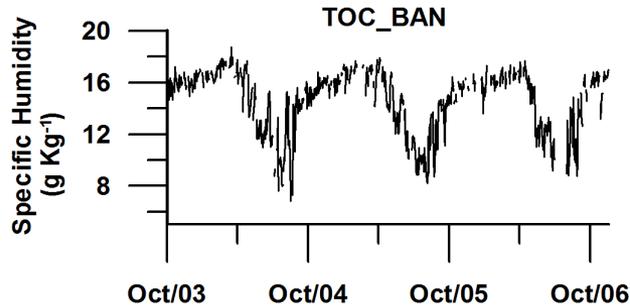


# Precipitation (mm)

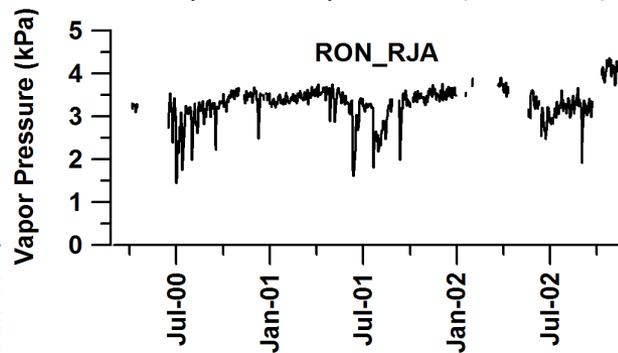
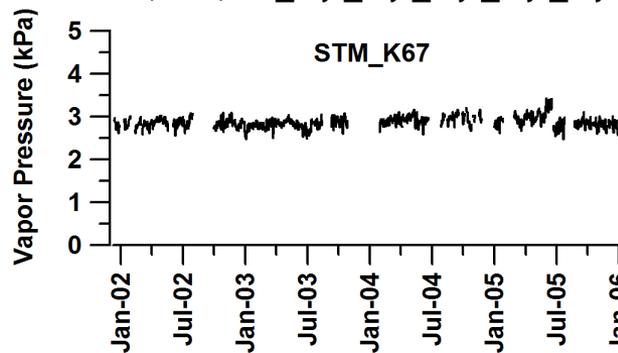
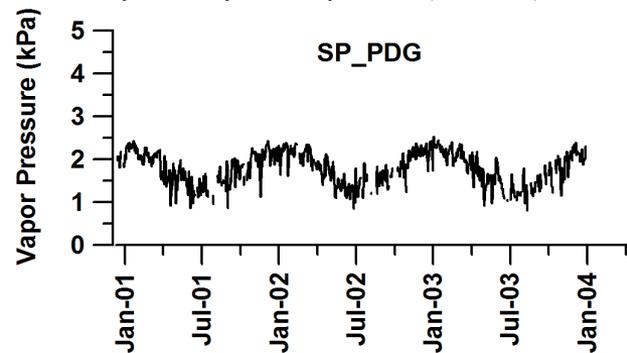
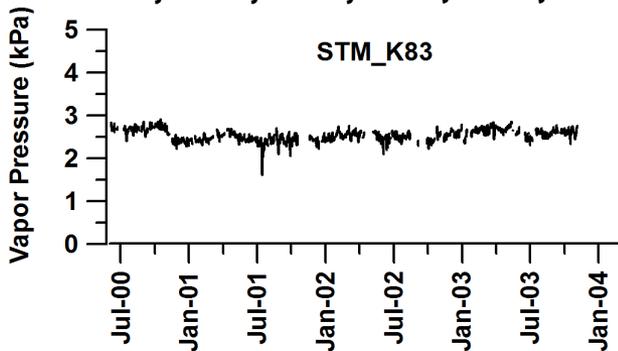
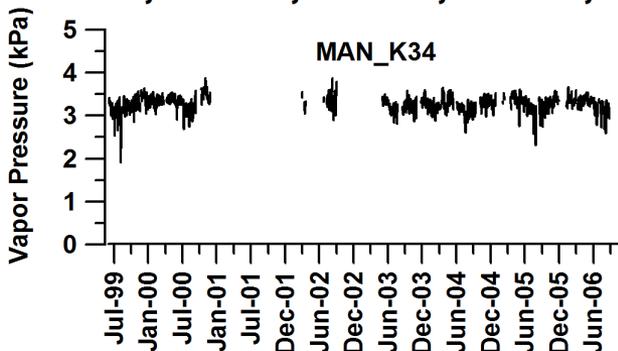
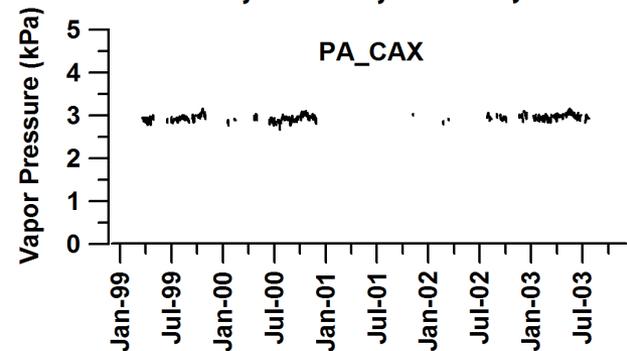
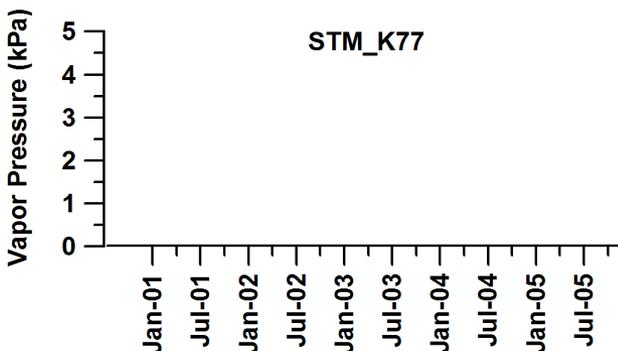
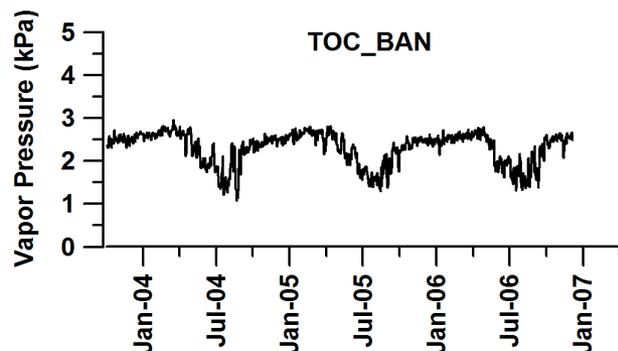
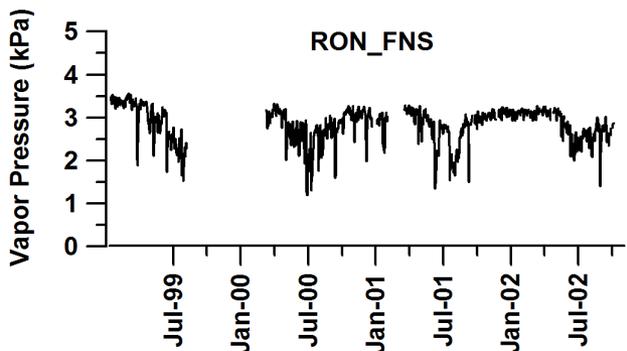


# Specific Humidity (mm)

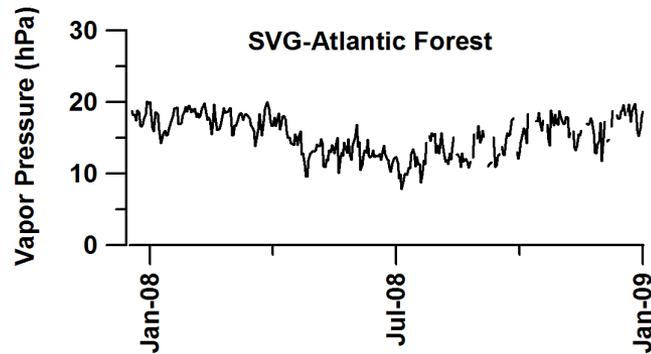
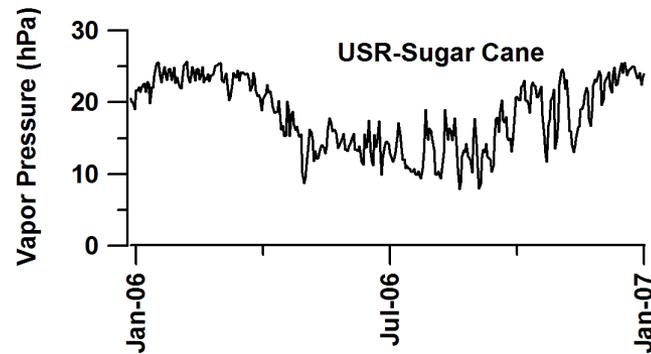
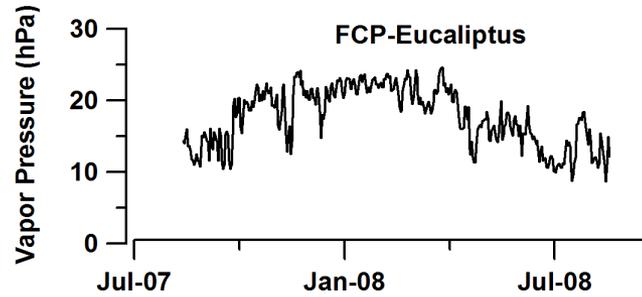
Há tendência temporal ?



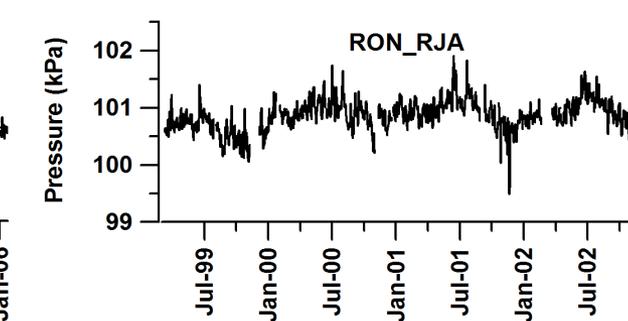
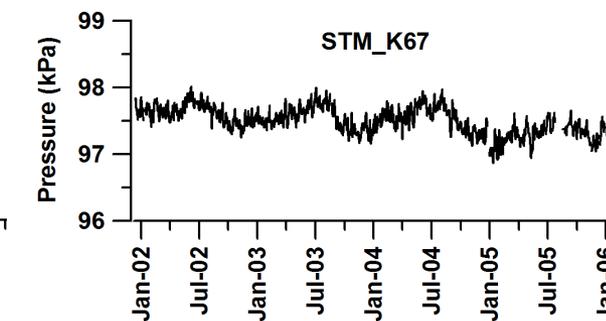
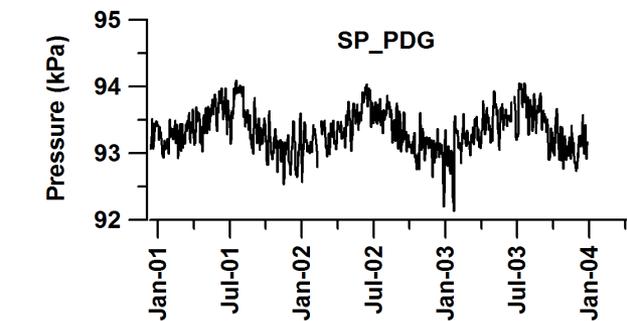
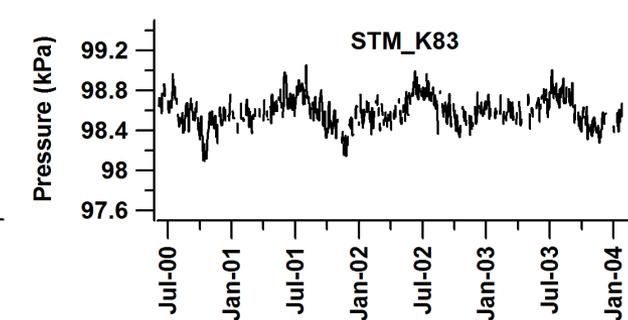
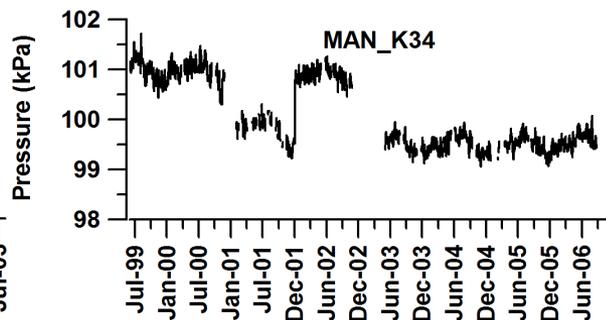
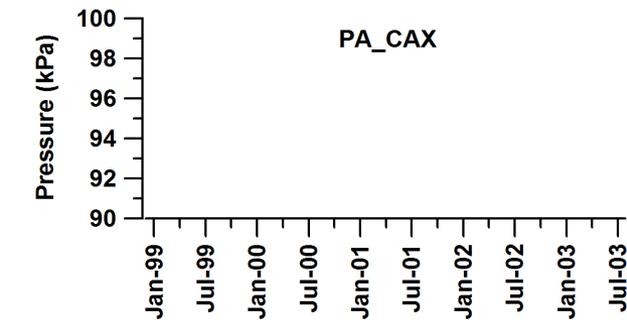
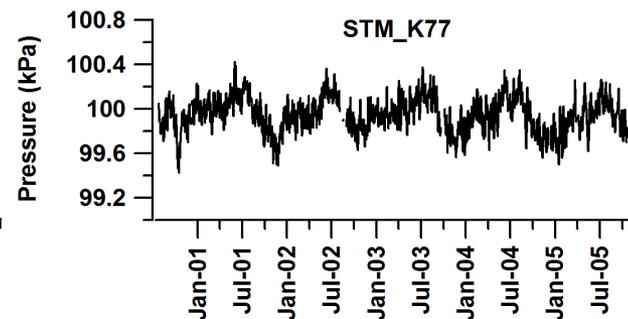
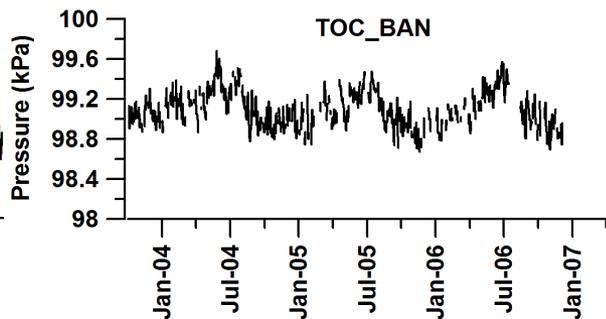
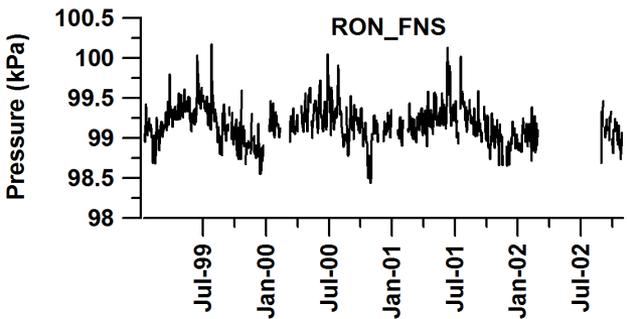
# Vapor pressure (kPa)



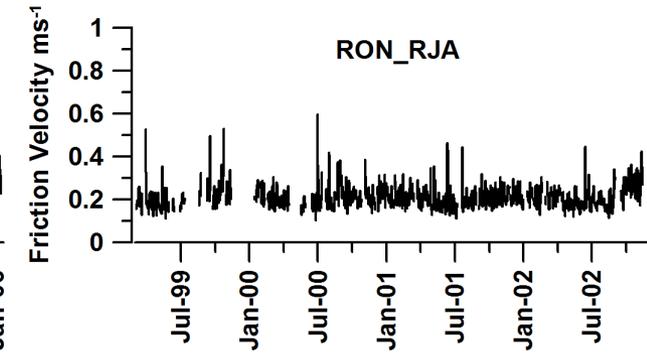
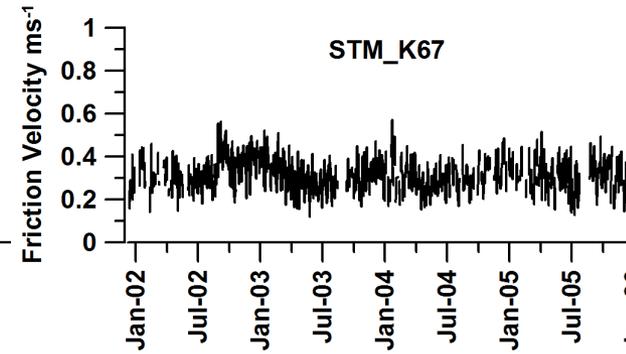
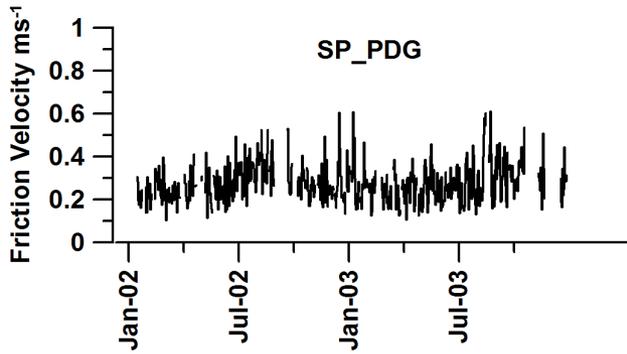
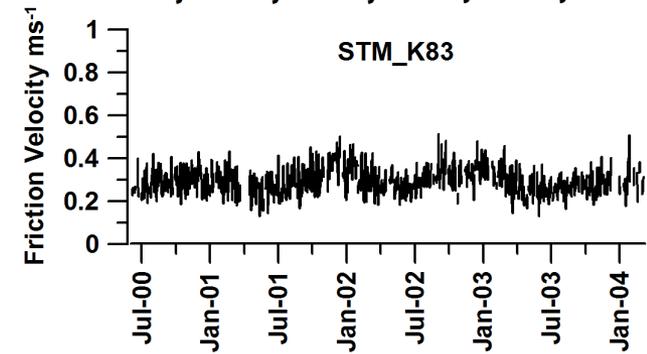
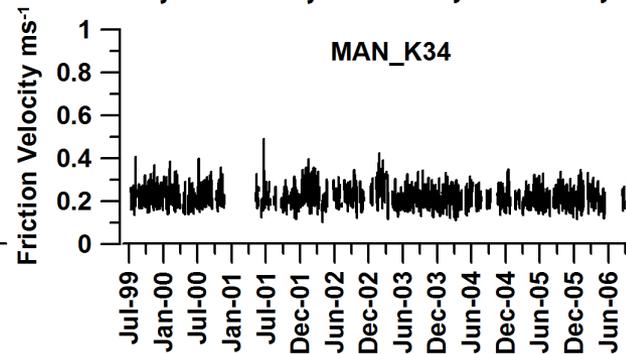
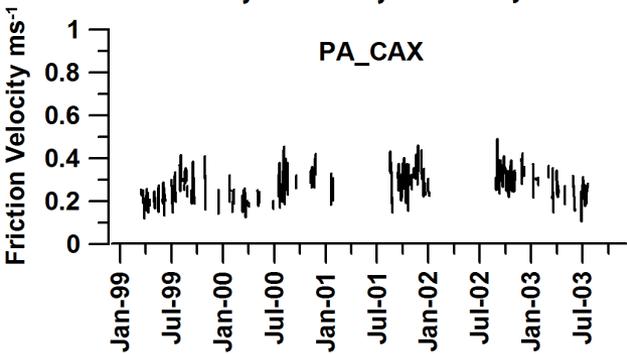
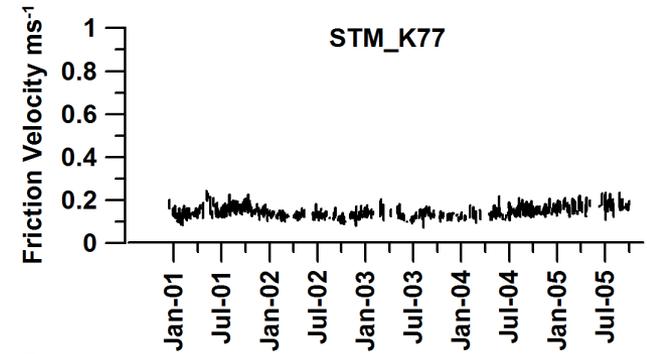
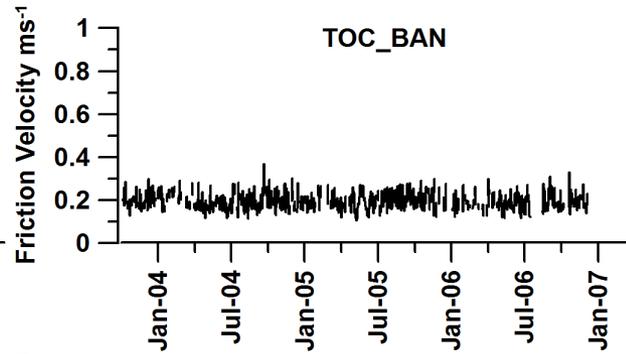
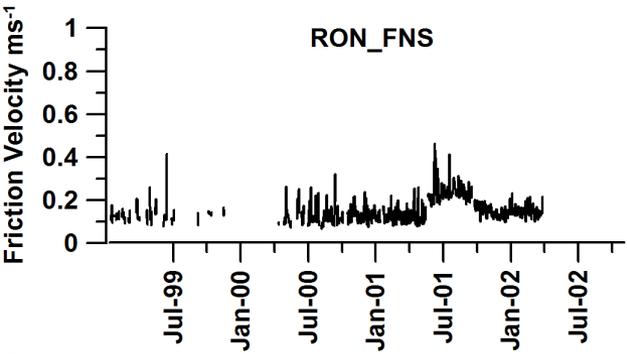
# Vapor pressure (KPa)



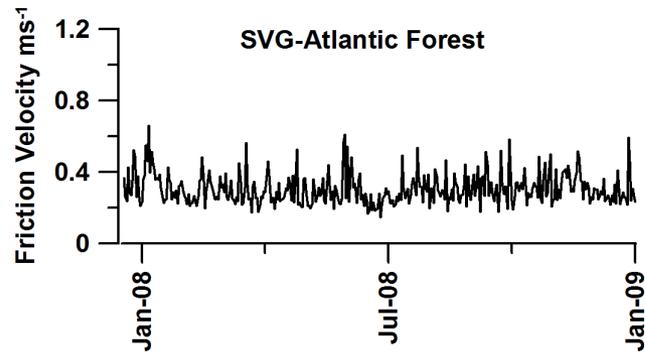
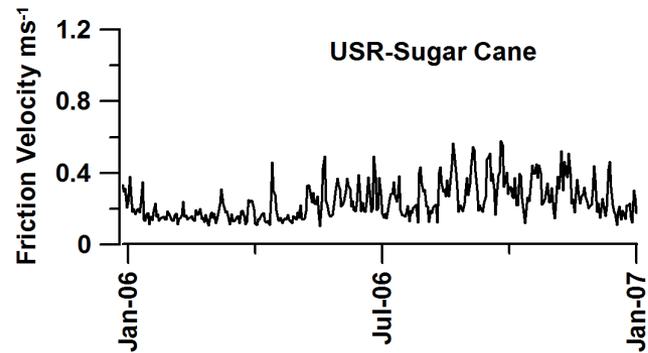
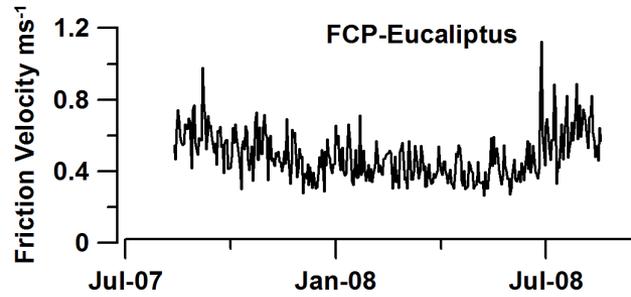
# Pressure (kPa)



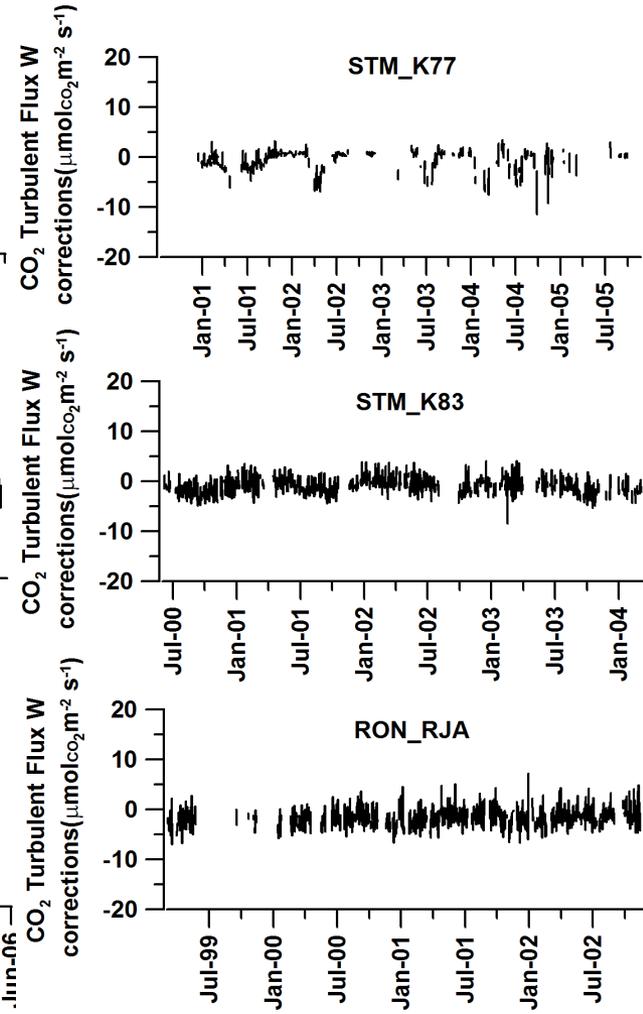
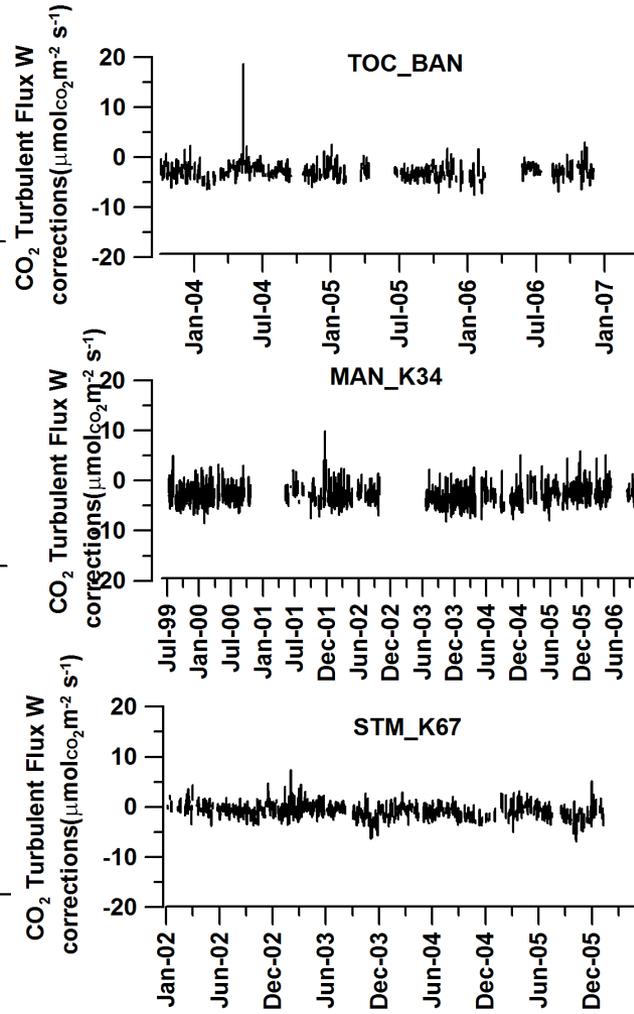
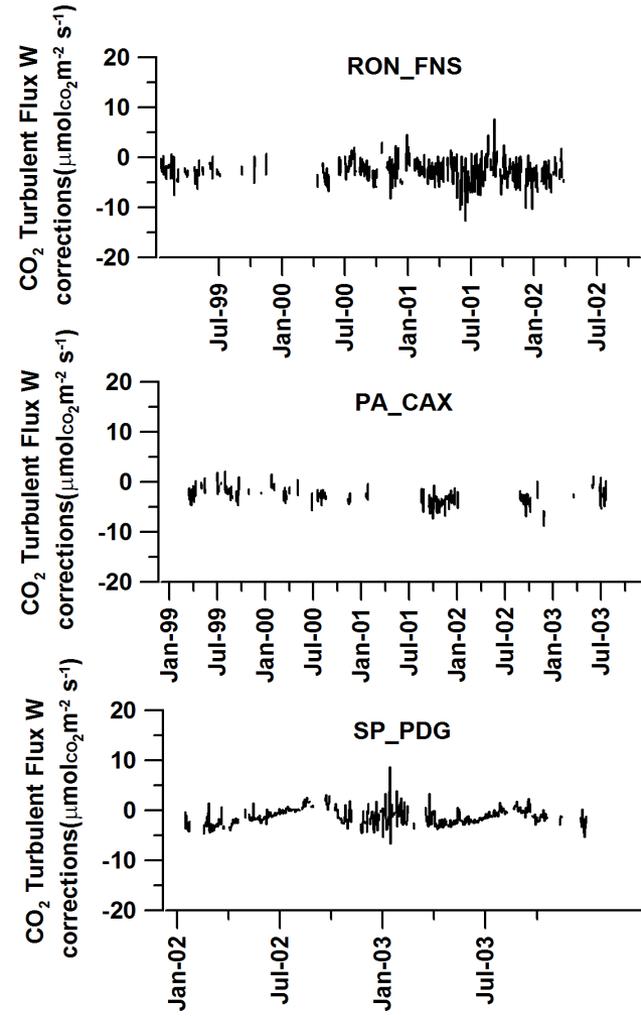
# Friction Velocity ( $\text{ms}^{-1}$ )



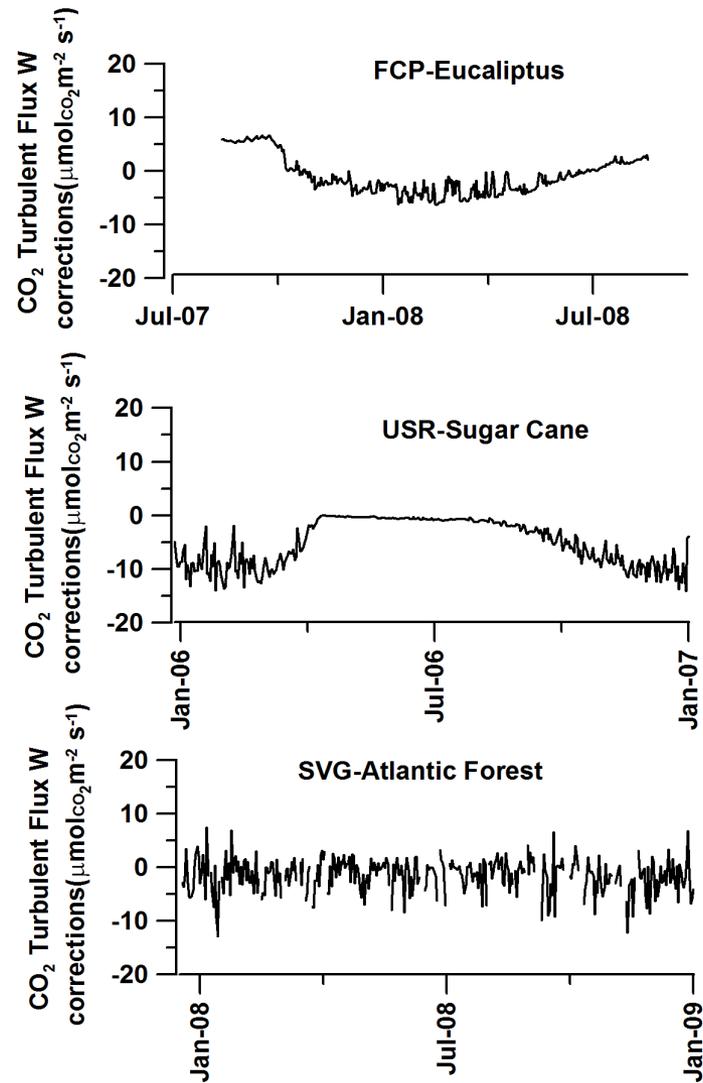
# Friction Velocity ( $\text{ms}^{-1}$ )



# Co2 Turbulent Flux ( $\mu\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$ )



# Co2 Turbulent Flux ( $\mu\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$ )



# Relative Humidity (%)

