

# Vielsalm, Lonzée, Dorinne

## Three Belgian sites

Marc Aubinet



Wallonie



Service public  
de Wallonie



Lonzée (LTO)



La Robinette (RTO)



Dorinne (DTO)



Vielsalm (VTO)



Gembloux Agro-Bio Tech  
Université de Liège



# Vielsalm



1996

2000

2004

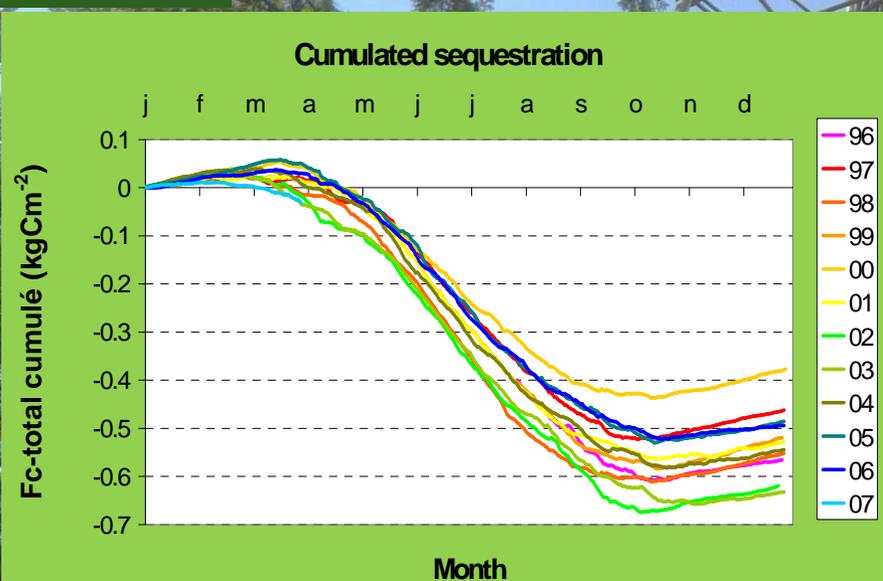
2008 2009

2013 → 2021...

Start  
Euroflux  
Standards

Tower  
Height  
change

Upgrade  
to ICOS  
standards



In average :  
sink 400-600 gC m<sup>-2</sup> yr<sup>-1</sup>

Bernard  
Heinesch



# Vielsalm



1996

2000

2004

2008 2009

2013 → 2021...

Start  
Euroflux  
Standards

Tower  
Height  
change

Upgrade  
to ICOS  
standards

Biomass  
inventories

Advection

Soil CO<sub>2</sub>  
profiles

Sap flow  
Evapo-  
transpiration

Soil respiration

VOC fluxes  
(eddy covariance)

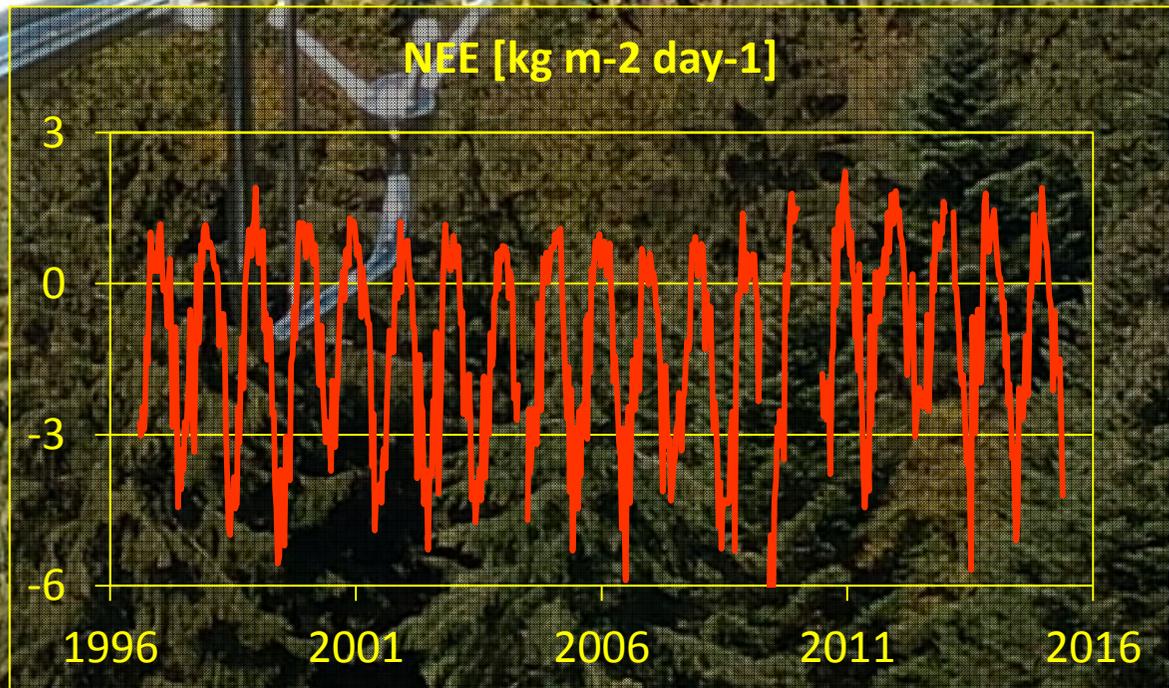
Interannual  
variability

Eddy covariance Methodology

# Vielsalm

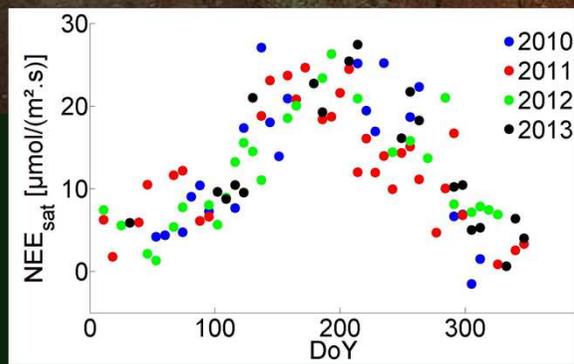
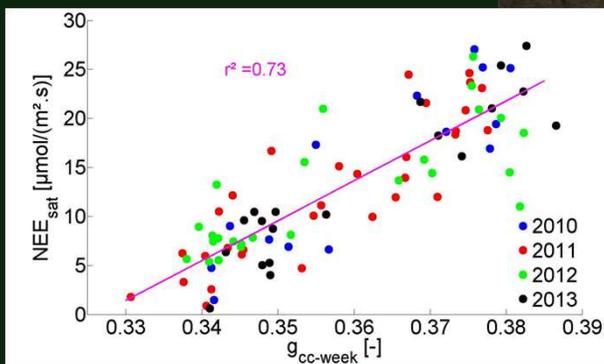
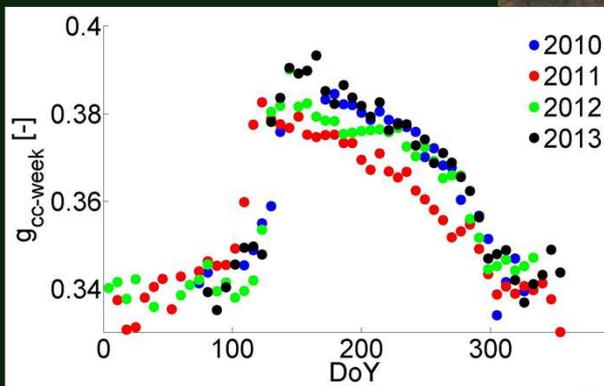
Harmonization of 19 years of eddy flux measurements :  
Actualization of methodology

Anne De Ligne



# Vielsalm

NEE correlates well with green proportion of phenological images. At seasonal scale and at annual scale



Quentin Hurdebise



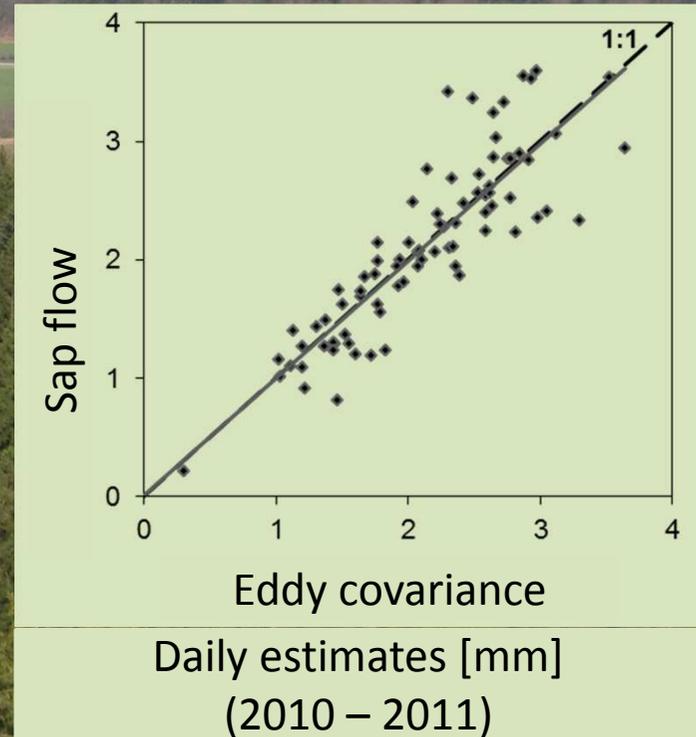
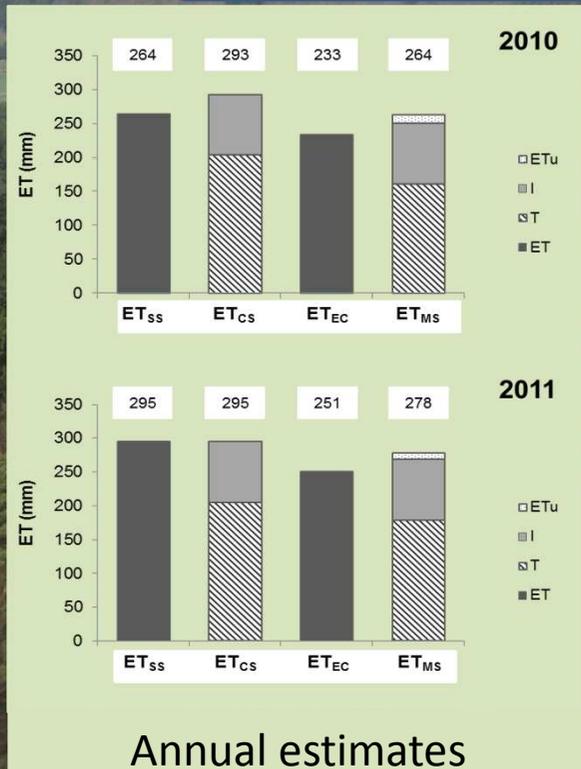
Caroline Vincke

# Vielsalm



Rémy Soubie

## Comparison of Evapotranspiration estimates by independent methods (eddy covariance, sap flow, model, soil water budget)



# Lonzée



2004

Start Euroflux Standards



Upgrade to ICOS standards

2013 → 2021...

Christine Moureaux



Average on a four year rotation: slight carbon source ( $55 \text{ g m}^{-2} \text{ yr}^{-1}$ )

In progress : 12 years budget

# Lonzée



2004

Start  
Euroflux  
Standards

Continuous Biomass  
Follow-up

Impact of  
management

Soil respiration : autotrophic and  
heterotrophic components

Complete Carbon  
balance  
Four year crop rotation

VOC fluxes  
(eddy covariance)

2013 → 2021...

Upgrade  
to ICOS  
standards

N<sub>2</sub>O Fluxes  
(chambers)

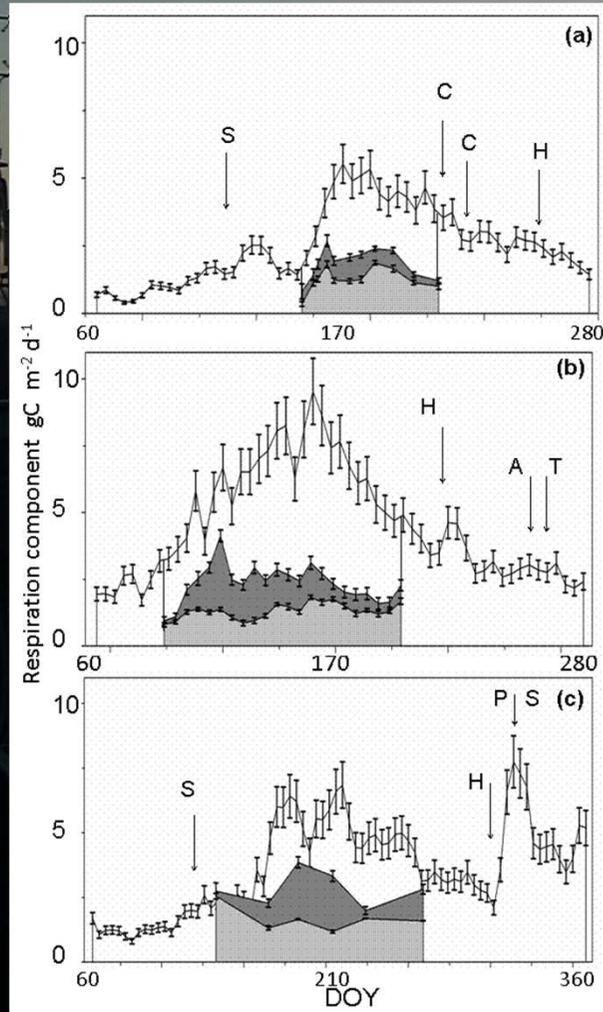
N<sub>2</sub>O Fluxes  
(eddy covariance)

# Lonzée



Marie Suleau

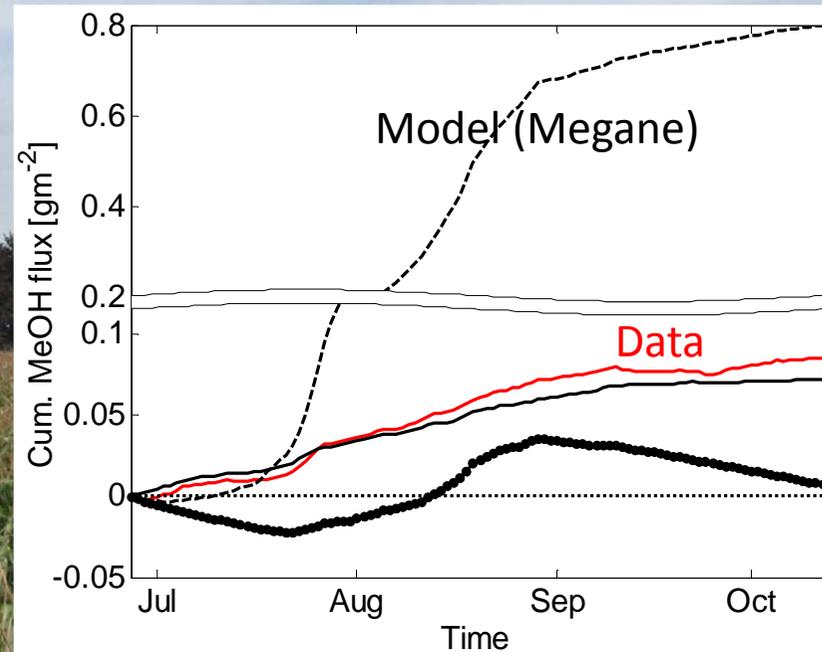
## Discrimination between heterotrophic and autotrophic components of respiration



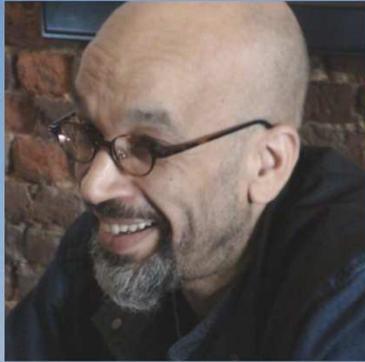


Aurélie Bachy

## Lonzée



Long term measurements of BVOC fluxes shows that classical models and IPCC emission factors overestimate methanol fluxes over maize by a factor > 10



Giovanni Salerno

# Lonzée

In progress : Installation of an eddy covariance system for N<sub>2</sub>O fluxes



Margaux Lognoul

# Dorinne



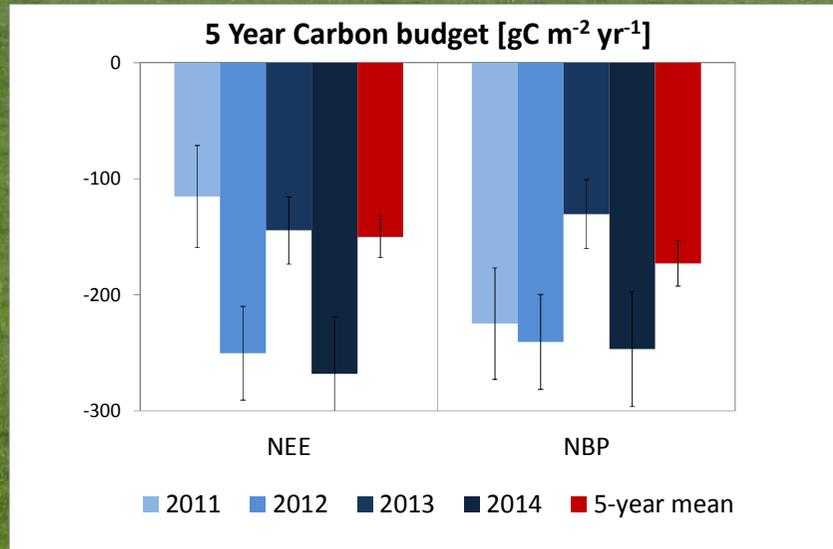
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2010

2015

???



Average on four years :  
sink of ~ 200 g m<sup>-2</sup> yr<sup>-1</sup>

In progress : budget  
consolidation of  
(uncertainty analysis)



Louis Gourlez  
de la Motte



Ossénatou  
Mamadou



Elisabeth  
Jérôme

# Dorinne



Gembloux Agro-Bio Tech  
Université de Liège



2010

2015

???

Continuous  
Biomass  
Follow-up

Eddy covariance  
Methodology :  
Uncertainties on carbon  
balance

N<sub>2</sub>O Fluxes  
(chambers)

Soil respiration

Methane fluxes  
(eddy covariance)

VOC fluxes  
(eddy covariance)

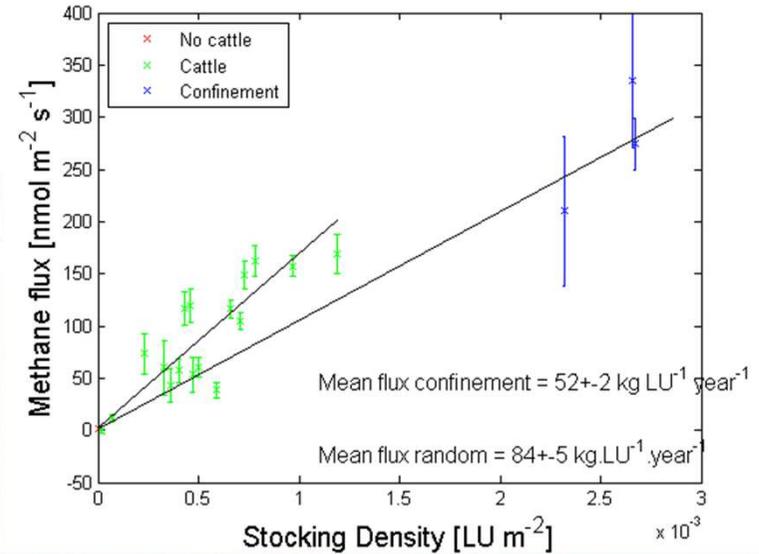
Impact of  
grazing

Rotational vs  
continuous  
grazing

Animal  
Geolocalisation

Dorinne

First estimate of methane emission based on eddy covariance :  $52 - 84 \text{ kg LU}^{-1} \text{ yr}^{-1}$



In progress : refinement using cattle geolocalisation system

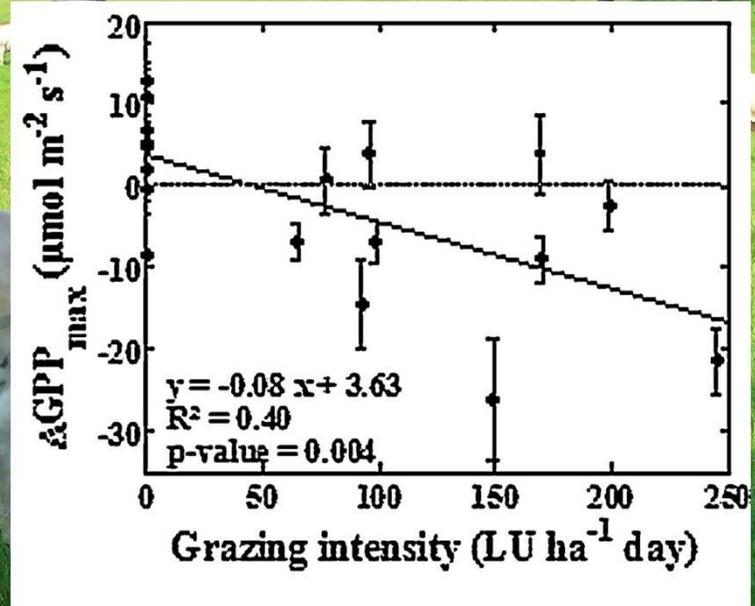
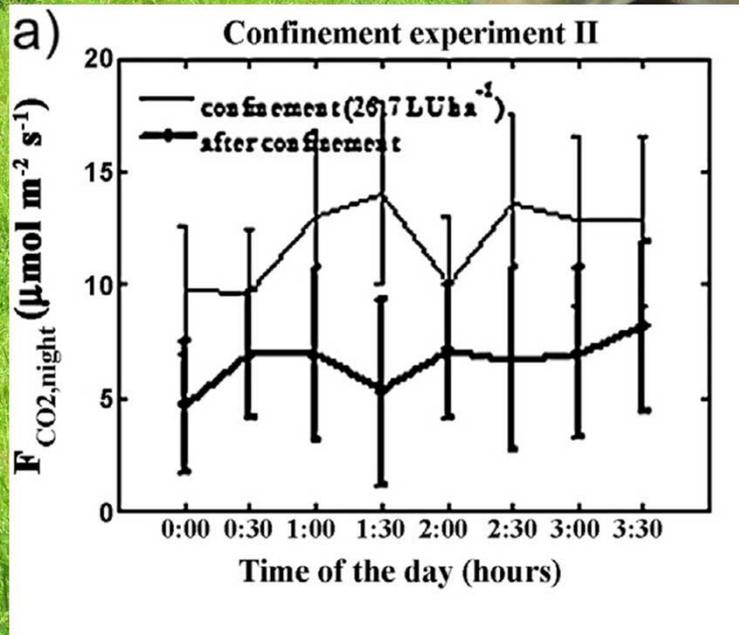


Pierre Dumortier

# Dorinne



Elisabeth Jérôme

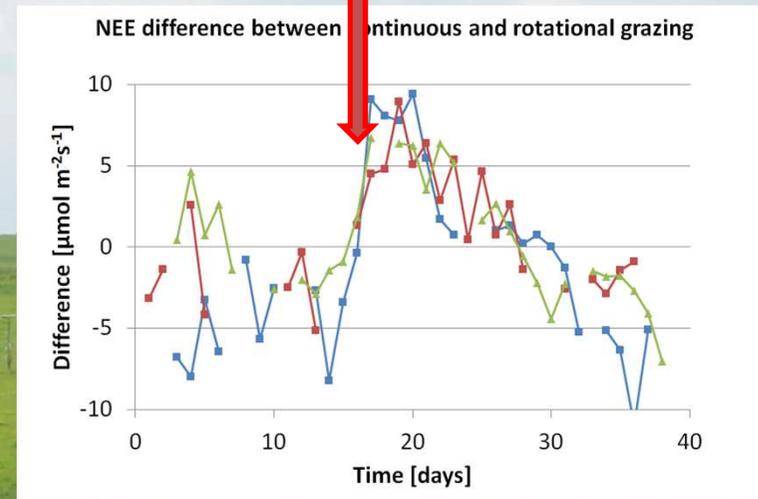
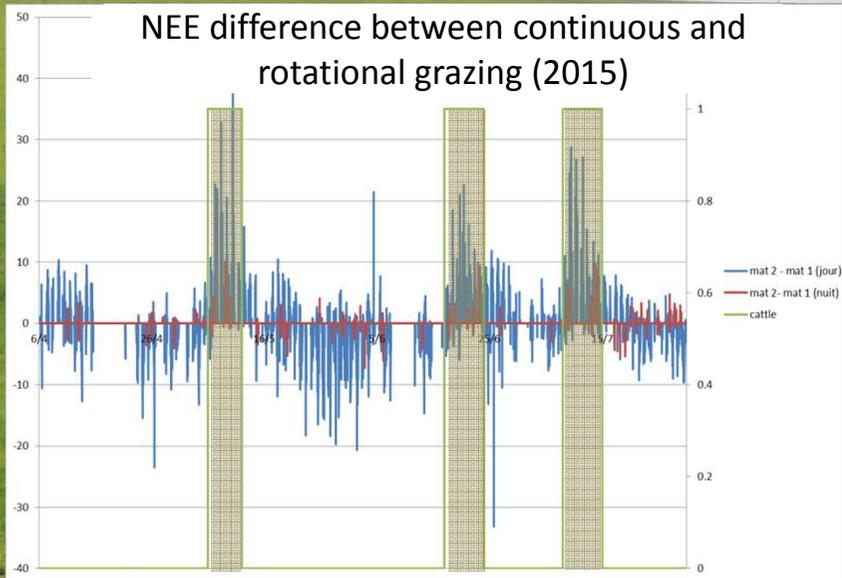


Direct ( $\leftarrow$ ) and indirect ( $\uparrow$ ) impacts of grazing on NEE



Louis Gourlez  
de la Motte

# Dorinne



**Grazing management  
directly impacts NEE**



Ossénatou  
Mamadou

**Thank you !**

