

WG1 meeting – 20230329 - Lleida

- **Brief overview** of what has been done in WG1
- Discuss the first results of the **WG1 activity on ET-methods intercomparison**
- **Organize data products** for general use:
 - Unified EC fluxes - done
 - Ecophys: LAI, veg-cover, photosynthesis traits, ...
 - Soil moisture
 - Land use map, irrigation data,
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- **Discuss on how to proceed with WG1 in the future**

WG1 meeting - 20220127

- **WHEN:** Thursday 27-January-2022 16:00 CET
- **THEME:** Overview EcoPhysiology and EddyCovariance fluxes
- **TITLES:**
 - Hugo de Boer - Ecophysiological measurements during LIAISE field campaign.
 - Daniel Martínez, Mary-Rose Mangan, Oscar Hartogensis – Eddy Covariance fluxes



EDDY-COVARIANCE:

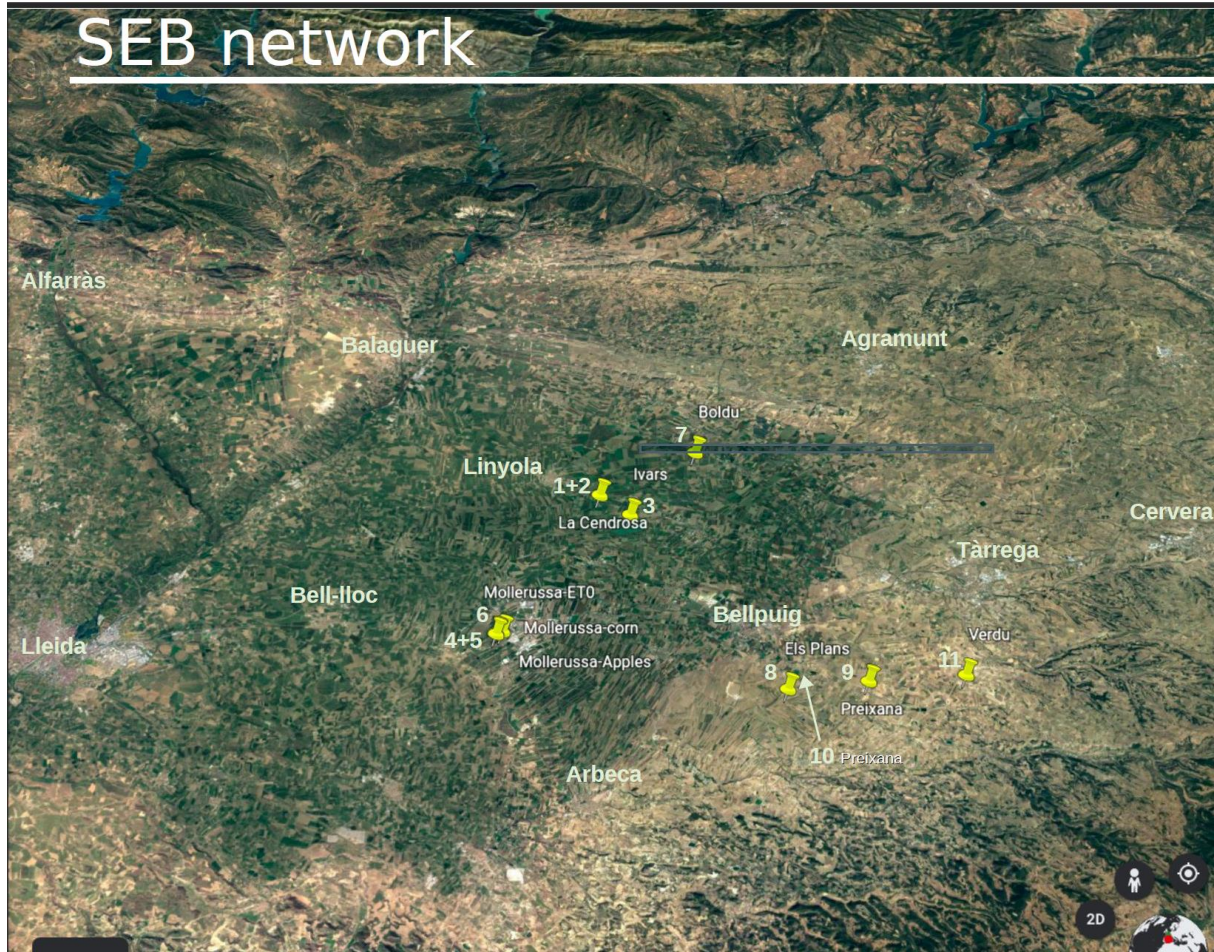
- Unified Processing (Mentimeter) – performed by Mary-Rose
- Fluxmaps: also EB terms, ecophysiology

Eddy Covariance fluxes

LIAISE - WG1. Online, 27 Jan 2022

SEB network

3



Irrigated:

- ✓ **La Cendrosa** (Flooded):
 1. Alfalfa (CNRM)
 2. Alfalfa (WUR)
- ✓ **Lake Ivars:**
 3. Shallow water (CNRM)
- ✓ **Mollerussa** (sprinkler-drip-flooded):
 4. Natural grass – ET0 (SMC)
 5. Apple Orchard (UIB)
 6. Corn (UIB, OWL)
- ✓ **Boldú** (Flooded):
 7. Corn (UH)

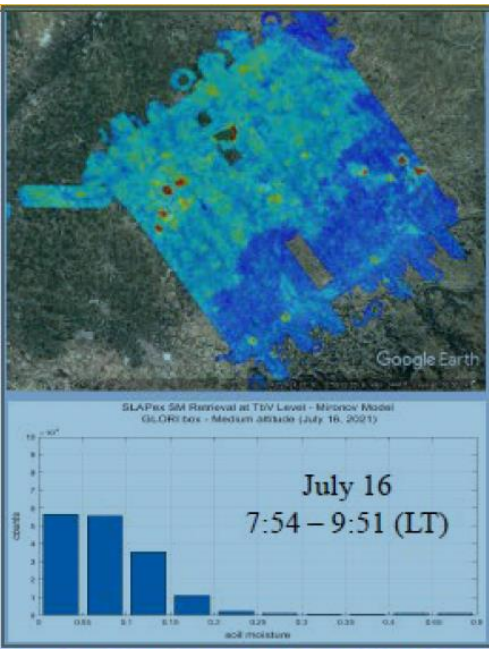
Rain-fed:

- ✓ **Els Plans** (Rain-fed):
 8. Natural (UKMO)
- ✓ **Preixana:**
 9. Almond trees (Drip?, CNRM)
 10. Alfalfa? (Flood?, LMD)
- ✓ **Verdú** (Drip):
 11. Vineyard (CESBIO)

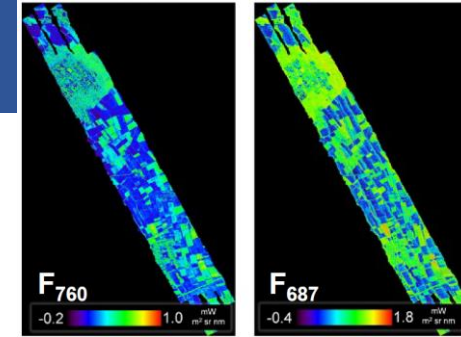
WG1 meeting - 20220428



- **WHEN:** Thursday 28-April-2022 16:00 CET
- **THEME:** Airborne and Satellite Remote Sensing of Surface Parameters
- **TITLES (tentative):**
 - Jordi Cristobal - Remote sensing products for crop evapotranspiration and water status estimation. Preliminary results in an apple orchard.
 - Ed Kim & Mehrez Zribi – Airborne SLAP/GLORI measurements for soil moisture estimation



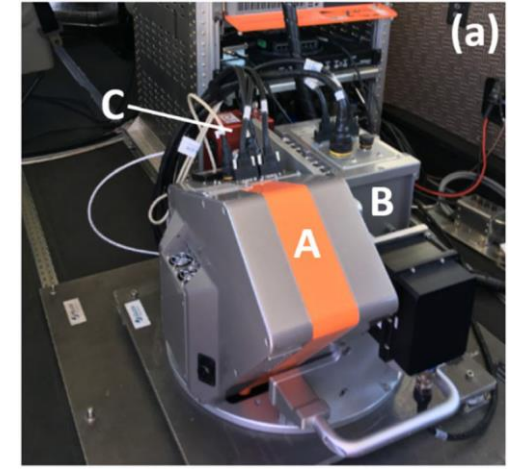
WG1 meeting - 20221124



- **THEME:** Chlorophyll Fluorescence measurements

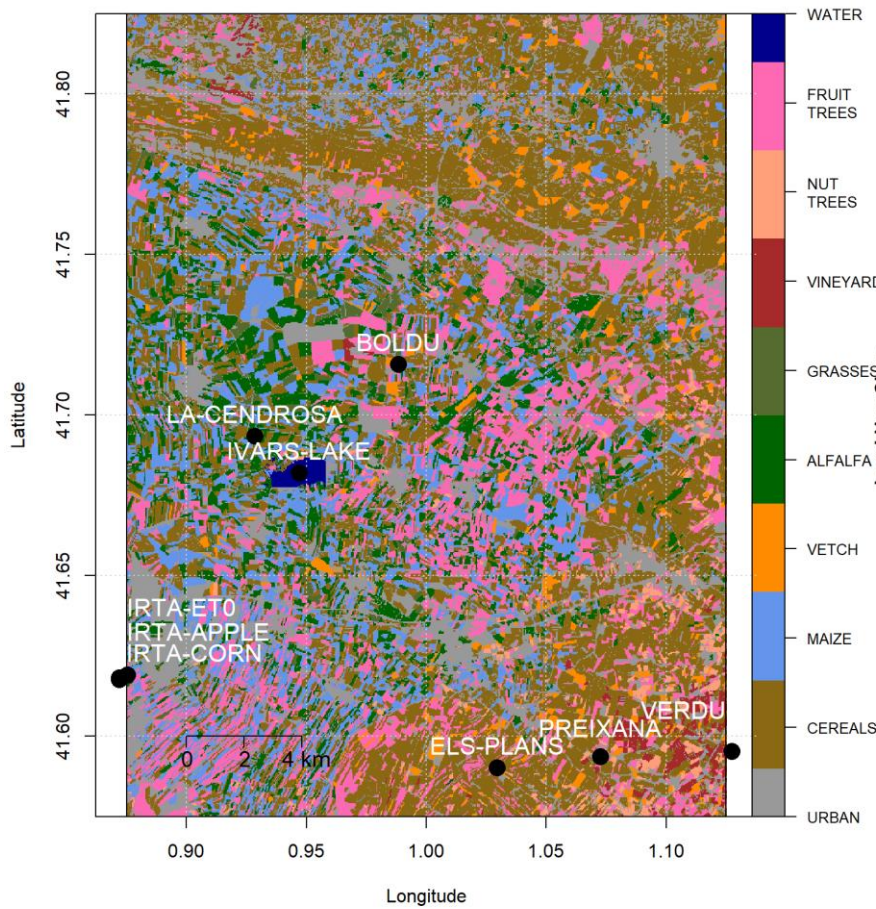
- **Program:**

- 16:05 - Mary-Rose Mangan: Update on Unified Eddy Covariance Fluxes and Flux Maps
- 16:10 – Bastian Siegmann and Uwe Rascher: SIF measurements across spatial scales
- 16:30 – Yves Goulas, Gabriel Hmimina, Valerie Dantec: Active and passive fluorescence measurements at La Cendrosa
- 16:45 – Discussion on inter-comparisons measurement techniques (ET,...)
- 17:00 - Closure



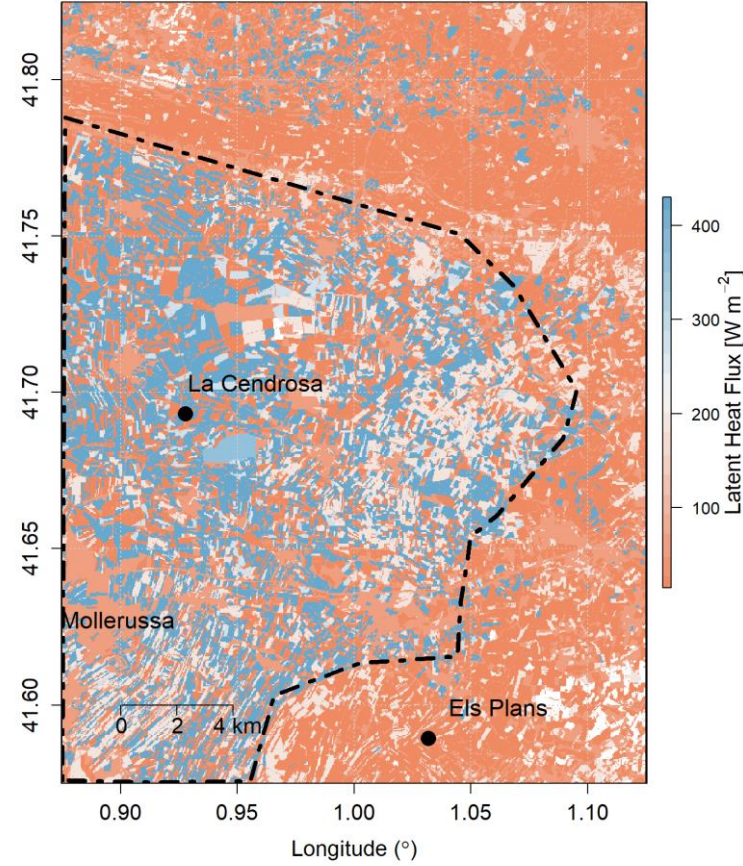
Verified Land-Use map

Crop Cover
LIAISE Regional



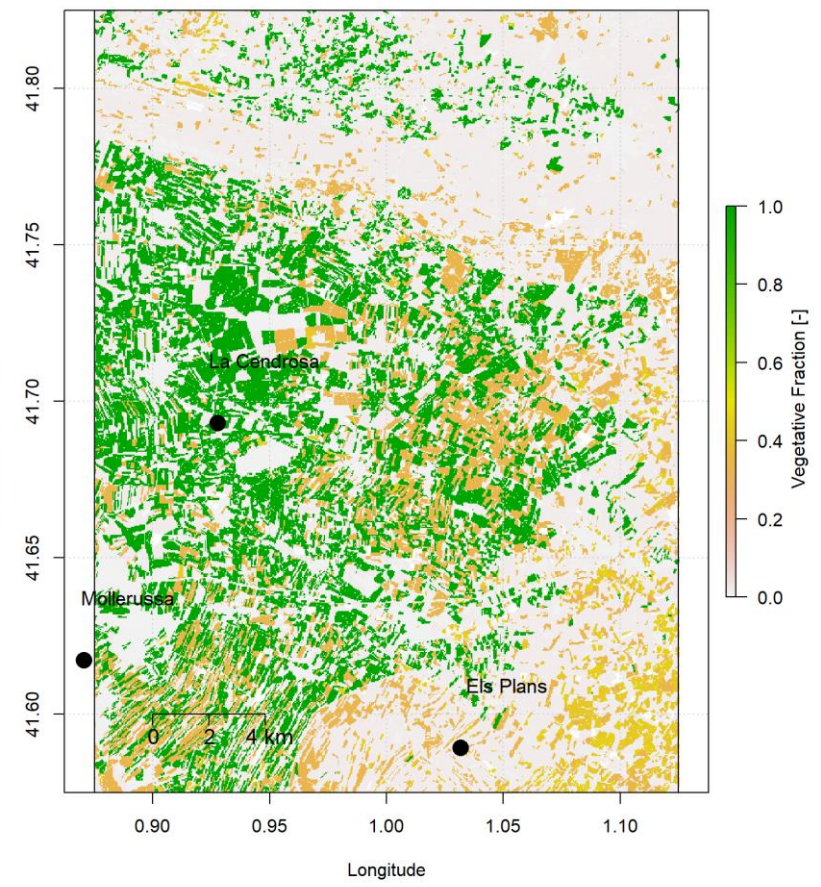
Flux maps

Latent Heat Flux 2021-07-21 14:00:00



Ecophys maps

Vegetative Fraction
LIAISE Regional



Unified processed fluxes & flux/ecophys maps in Aeries database

Discussion - WG1 Intercomparison Studies

- **ET methods at Mollerussa:**
 - EC
 - Flux Profile (MOST)
 - Lysimeter (100% and 60% irrigation)
 - FAO station
 - Remote Sensing? (satellite, aircraft, drones)
 - Leaf transpiration
 - Soil evaporation
 - Modelled ET data based (e.g. Penman Monteith)
 - Modelled ET



Discussion - WG1 Intercomparison Studies



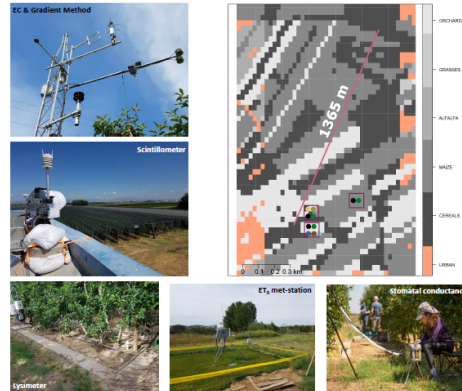
Evapotranspiration Methods Inter-Comparison at LIAISE

Hartogensis, Oscar - Mangan, Mary Rose - Cuxart, Joan - Martinez Villagrasa, Daniel - Martí, Belén - Bellvert, Joaquim - Cristóbal, Jordi Girona, Joan - Sobrino, Jose Antonio - Skokovic, Drazen - Llorens, Rafael - Groh, Jannis - Siegmann, Bastian - Rascher, Uwe - De Boer, Hugo - Gonzalez Armas, Raquel - Goulas, Yves - Miró, Josep Ramon - Mercader Carbó, Jordi - Boone, Aaron

Goal

Compare ET methods gathered at the Mollerussa site (IRTA) during the LIAISE campaign (LIAISE WG1 activity).

Methods



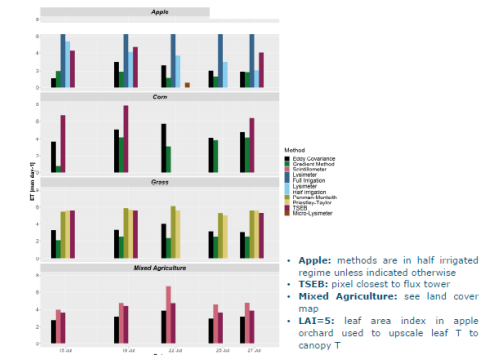
Method	ET E/T	Land Cover	Footprint (Scale)	Meas. Principle	PI
01 Eddy Covariance	ET	Apple*	~10 m	Turbulence	Daniel Martínez
		Corn	~10 m	Turbulence	Daniel Martínez
		Grass	~10 m	Turbulence	Josep Ramon Miró
		Mixed agriculture	~1 km	Turbulence	Mary Rose Mangan
02 Gradient Method	ET	Apple	~10 m	MOST	Daniel Martínez
		Grass	~10 m	MOST	Daniel Martínez
03 Optical-Microwave Scintillometer	ET	Mixed agriculture	~1 km	MOST	Oscar Hartogensis
04 Lysimeter	ET	Apple fully-irrigated	~1 m	Weighing	Joan Girona
		Apple half-irrigated	~1 m	Weighing	Joan Girona
06 Penman-Monteith	ET ₀	Grass	~10 m	EB/MOST	Josep Ramon Miró, Joan Cuxart
07 Priestley-Taylor	ET ₀	Grass	~10 m	EB	Joan Cuxart
08 TSEB (Priestley-Taylor)	ET	Apple*	~20 m	Satellite	Joaquim Bellvert, Jordi Cristóbal
		Grass	~20 m	Sensing	Joaquim Bellvert, Jordi Cristóbal
09 TASI/CASI (s-SEBI Method)	ET	Mixed agriculture (not around IRTA)	~1 m	Airborne Remote Sensing	José Sobrino
10 Micro-lysimeter	E	Apple half-irrigated	~0.5 m	Weighing	Jannis Groh
		Apple fully-irrigated	~0.5 m	Weighing	Jannis Groh
11 Stomatal Conductance	T	Apple fully-irrigated	~0.1 m	Chamber	Jannis Groh, Hugo de Boer
		Apple half-irrigated	~0.1 m	Chamber	Jannis Groh, Hugo de Boer

Conclusions (based on very preliminary results)

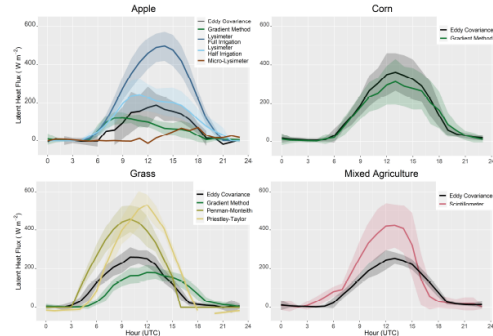
- Differences methods > differences land cover
- Lysimeter ET > Atmospheric ET methods
- Half-irrigated apple: unique data of E (~0.6. mm/day) and T (~6.4 mm/day)

Results

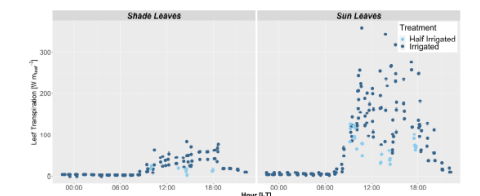
1. Daily Evapotranspiration



2. Latent Heat Flux: mean Diurnal Cycle (15-30 July 2021)



3. Leaf Transpiration (from stomatal conductance): 22 July 2021



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 - Ecophys: LAI, veg-cover, photosynthesis traits, ... (Hugo de Boer)
 - Soil moisture (Nadia Ouaadi?)
 - Land use map, irrigation data, (Quim Bellvert?, Pere Quintana)
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- **Discuss on how to proceed with WG1 in the future**