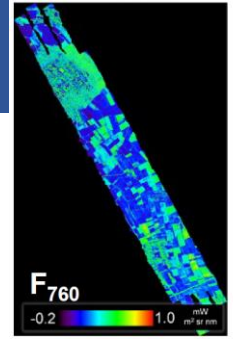
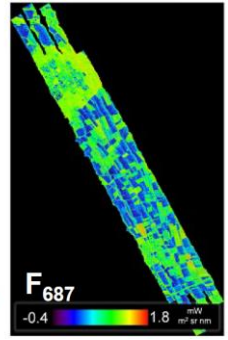
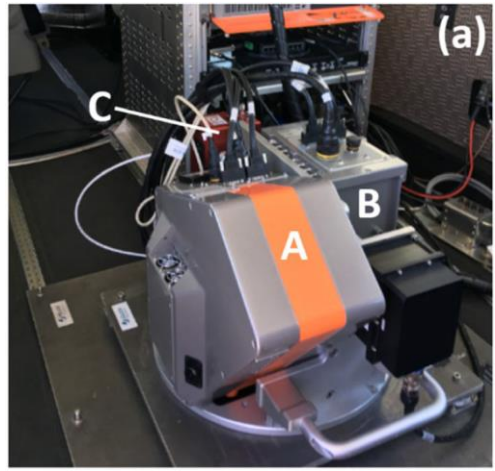
WG1 meeting - 20221124





- **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

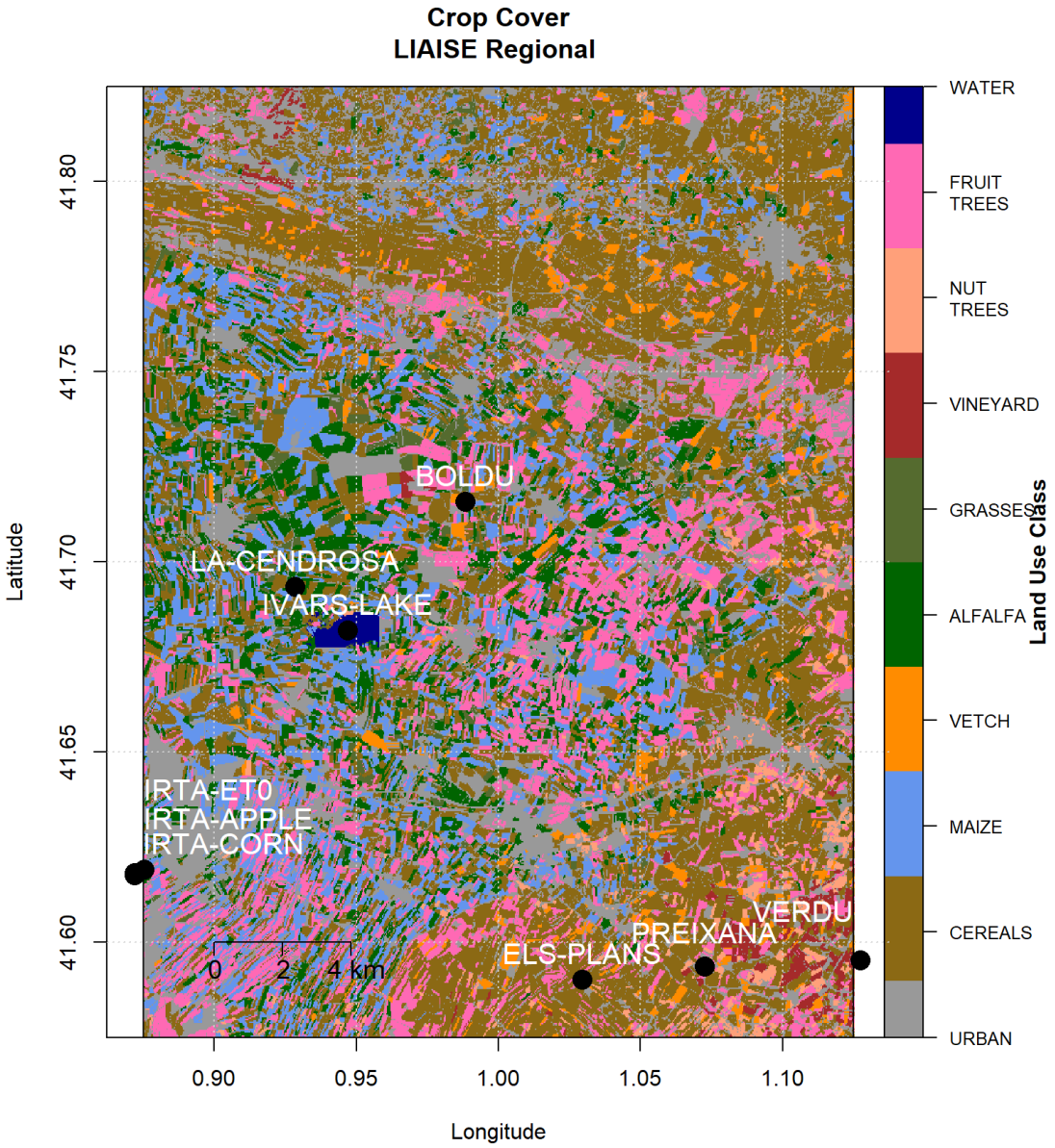


Update on LIAISE Unified EC and Flux Maps

Mary Rose Mangan

24 November 2022

1) Verified Land-Use map



2) Network of EC/EB systems

Irrigated:

- La Cendrosa (Flooded)
  1. Alfalfa (CNRM)
  2. Alfalfa (WUR)
- Lake Ivars
  3. Shallow water (CNRM) ← Not included in L1
- Mollerussa
  4. Natural grass – ETO (SMC)
  5. Apple orchard (UIB)
  6. Corn (UIB, OWL)
- Boldu
  7. Corn (UH)

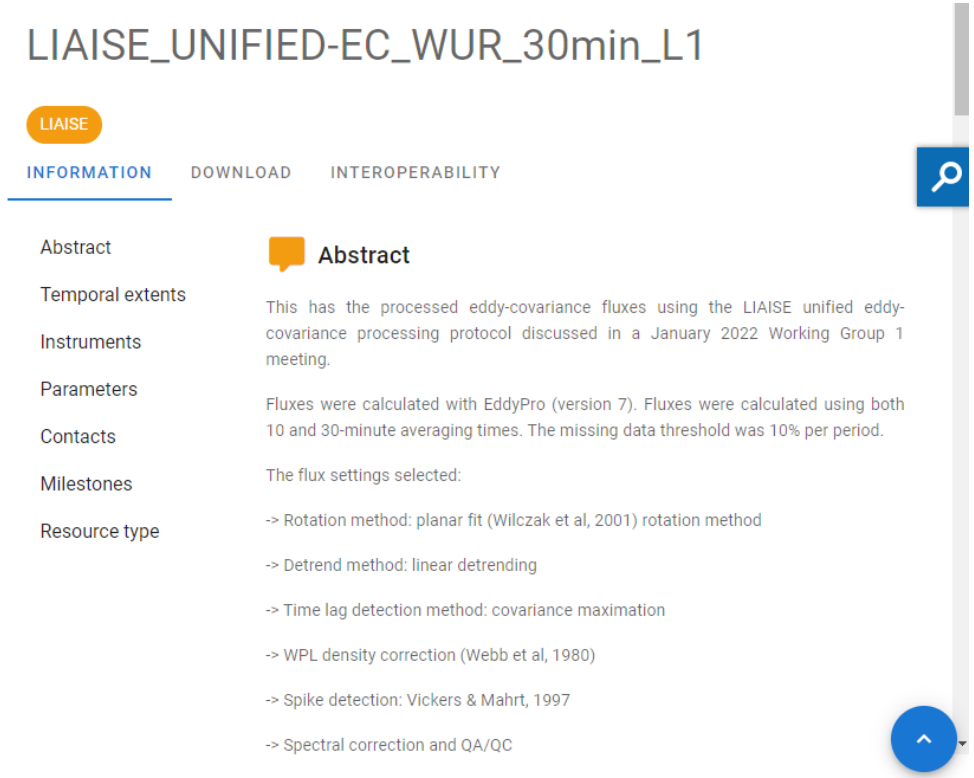
Rain-Fed:

- Els Plans
  8. Natural (UKMO)
- Preixana
  9. Almond orchard (CNRM)
- Verdu (Drip)
  10. Vineyard (CESBIO)

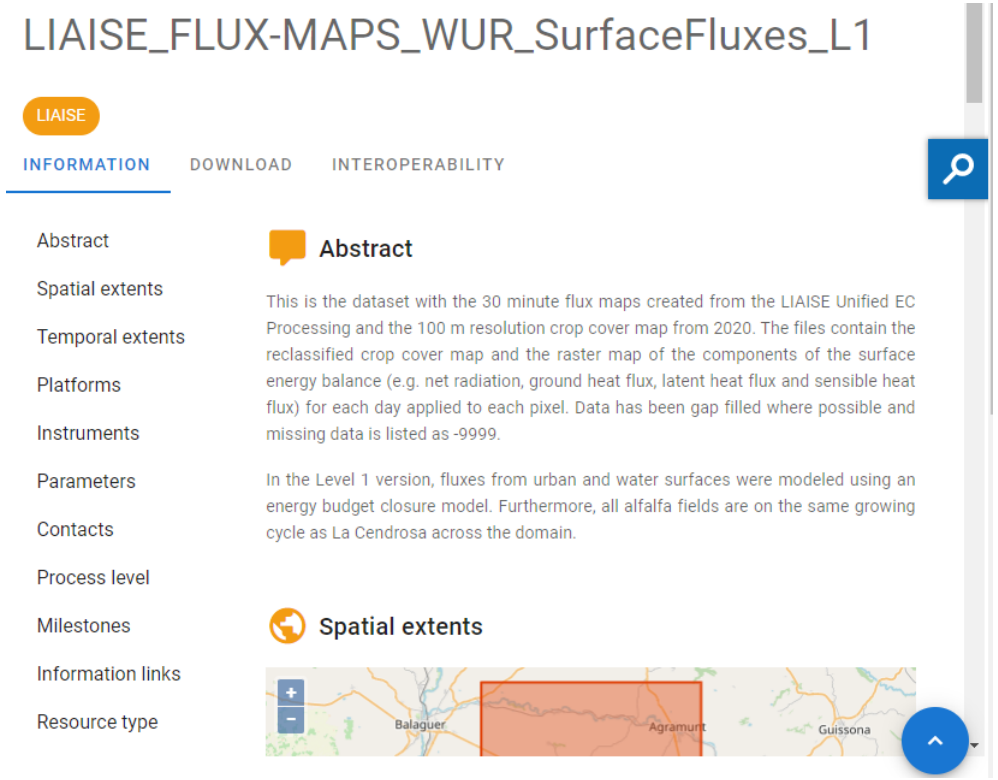
Krypton Problems

Level 1 Uploaded onto the AERIES Database

Unified EC Processing

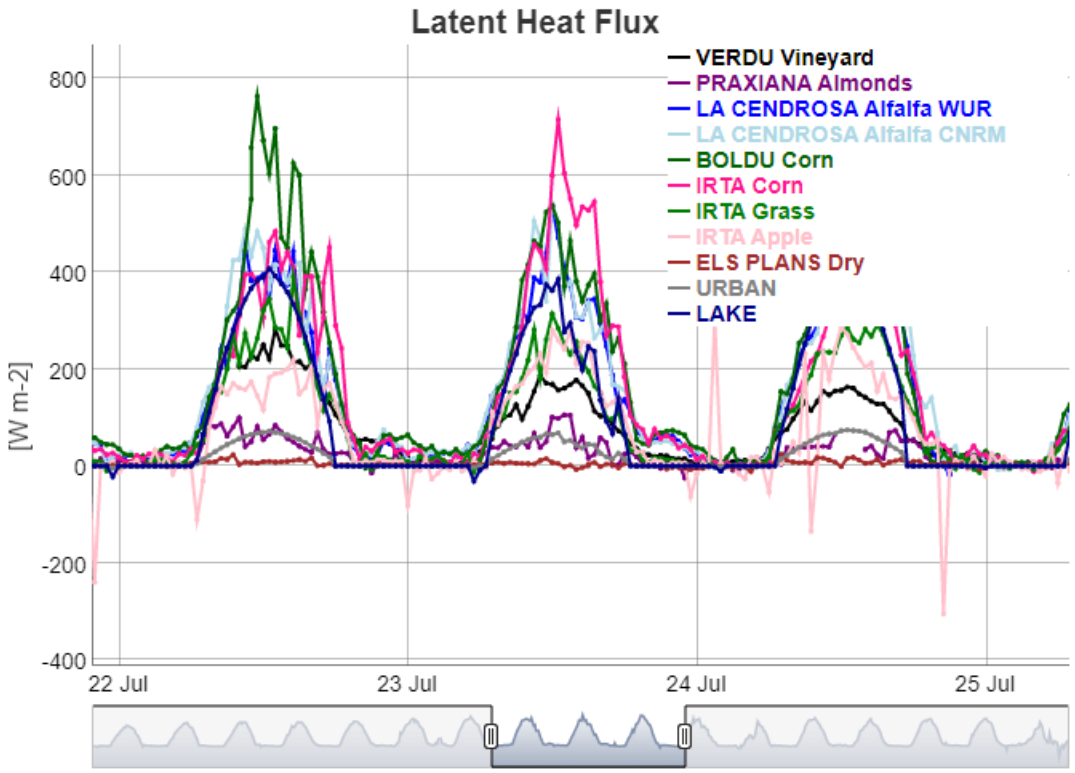


Flux Maps



LIAISE Unified Eddy-Covariance

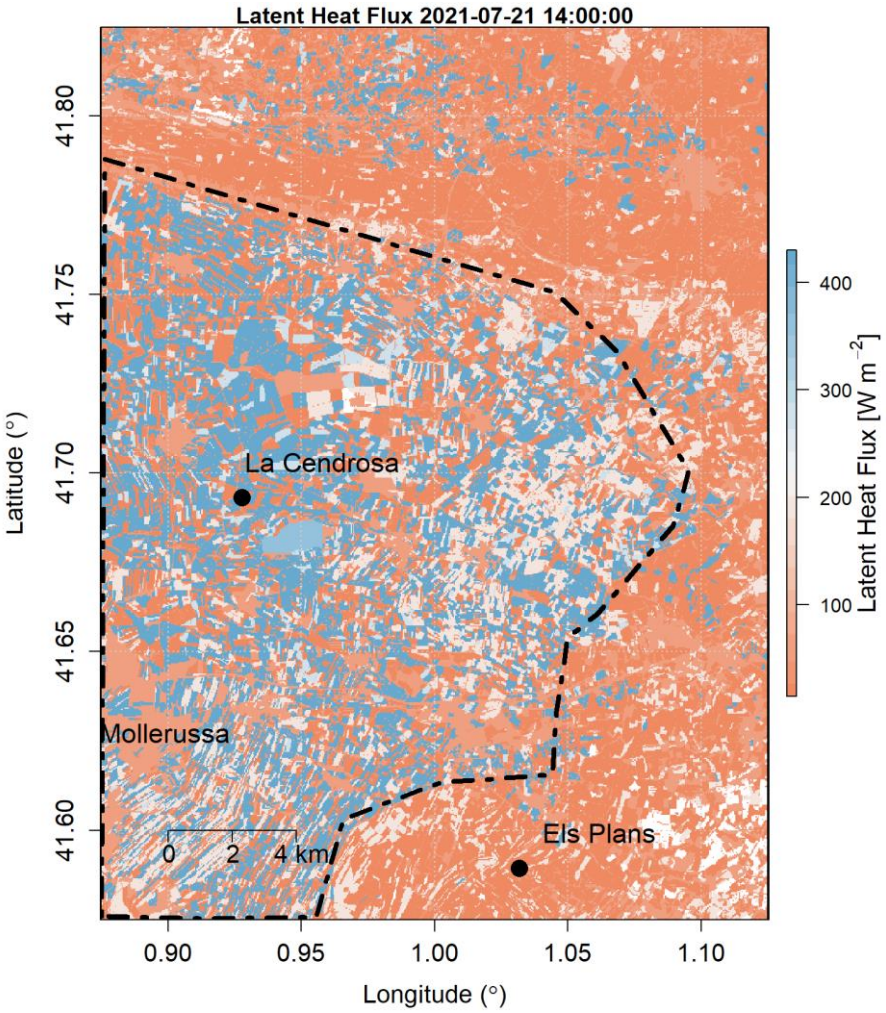
- Data in csv format
- 10-minute and 30-minute fluxes for all stations
- Eddy-Pro metadata files
- A composite product with fluxes and select met variables for all stations (csv)
- H, LE, fCO2, Rn, G, general met data



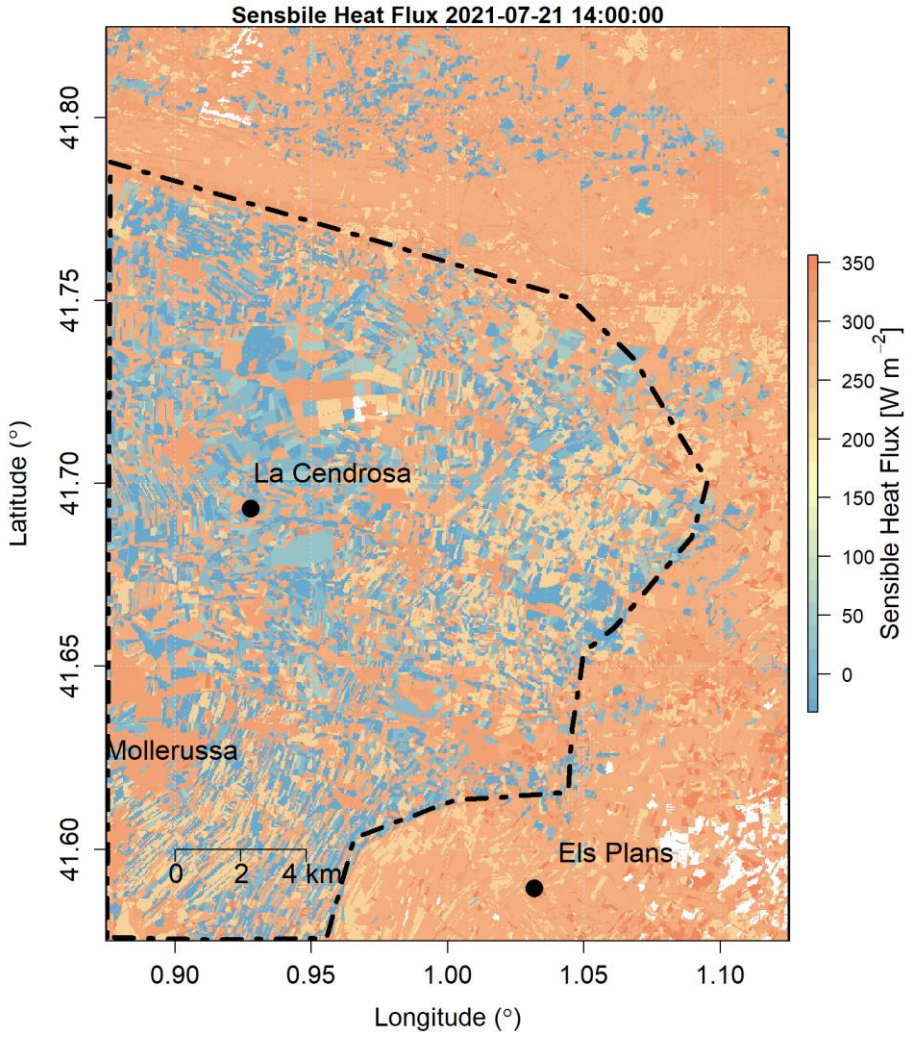
Flux & Eco-physiological Maps

- Files – netcdf
  - Raster Form
  - Extent: ERA5 0.25° cell around LIAISE domain
- 30-minute EC/EB terms mapped according to land use
- Static Eco-physiological variables
  - Leaf Area Index
  - Vegetative Fraction

Example Flux Maps

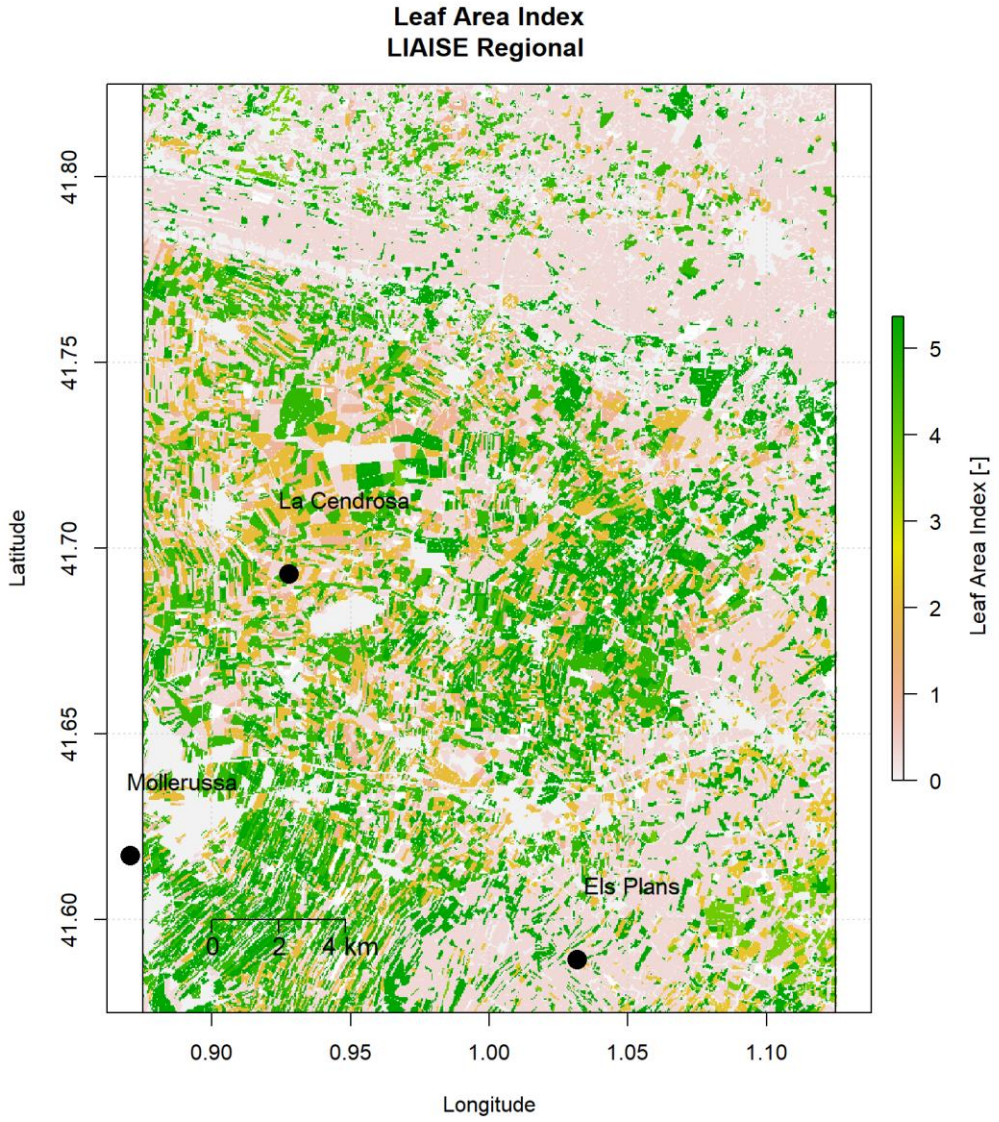


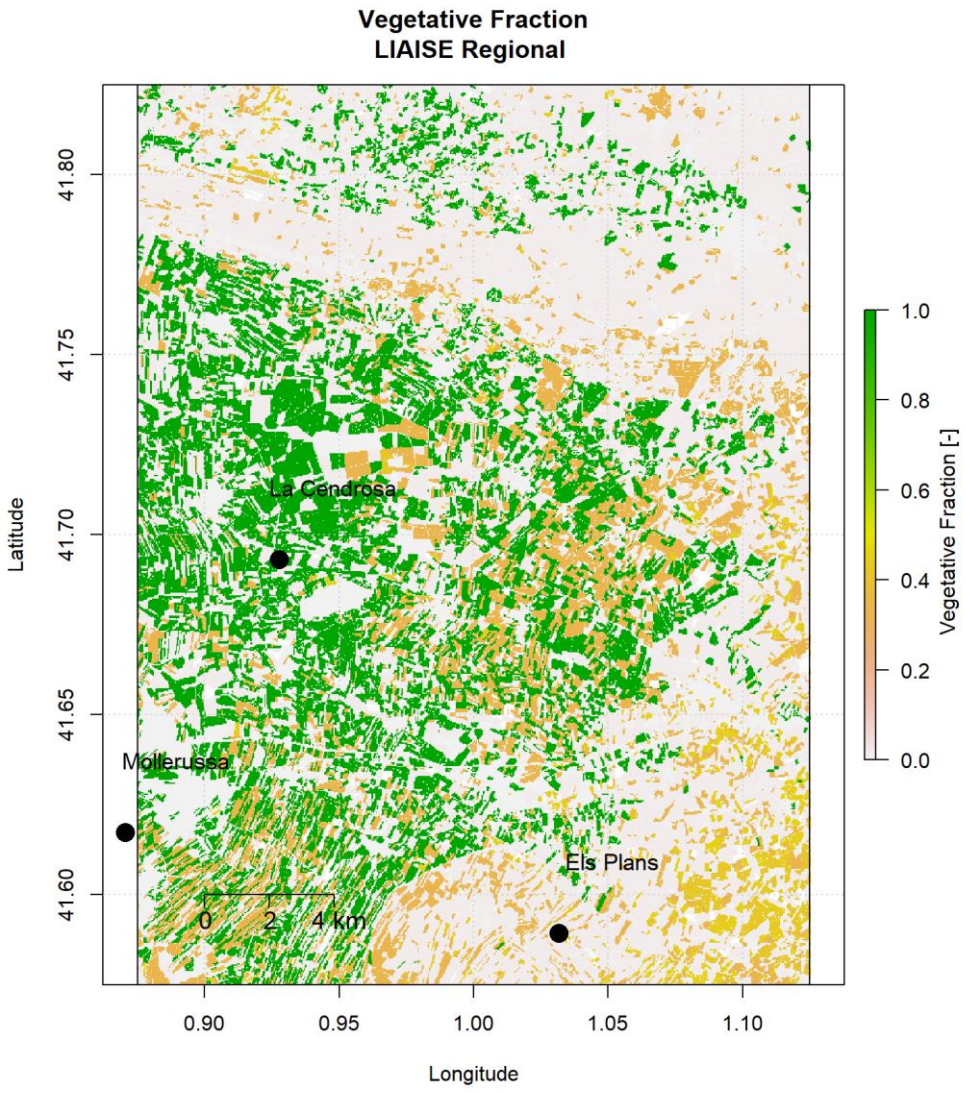
Latent heat flux for 21 July at 14:00 UTC.



Sensible heat flux for 21 July at 14:00 UTC.

Example Eco-physiology Maps





More Details on the Flux Maps

The surface-boundary layer connection across spatial scales of thermal heterogeneity

Mary Rose Mangan[1]*, Oscar Hartogensis[1], Aaron Boone[2],
Oliver Branch[3], Guylaine Canut[4], Joan Cuxart[5], Hugo J. de Boer[6],
Michel Le Page[7], Daniel Martínez-Villagrasa[5], Josep Ramon Miró[8],
Jeremy Price[9], Jordi Vilà Guerau de Arellano[1]

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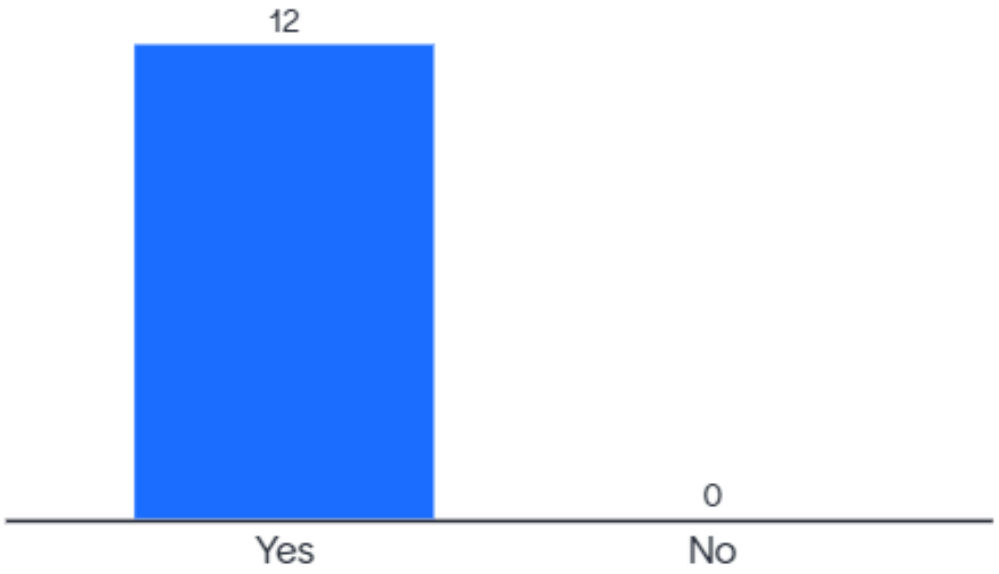
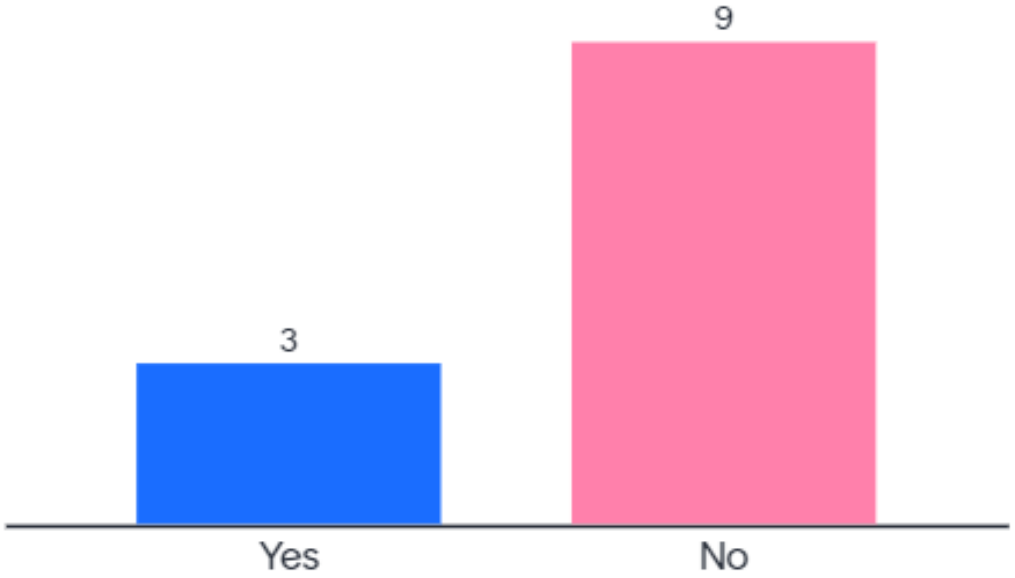
Under Review , *Agricultural and Forest Meteorology.*

Discussion - WG1 Intercomparison Studies

- Would you be interested in participating in an intercomparison study?



- Would you be interested in leading an intercomparison study?

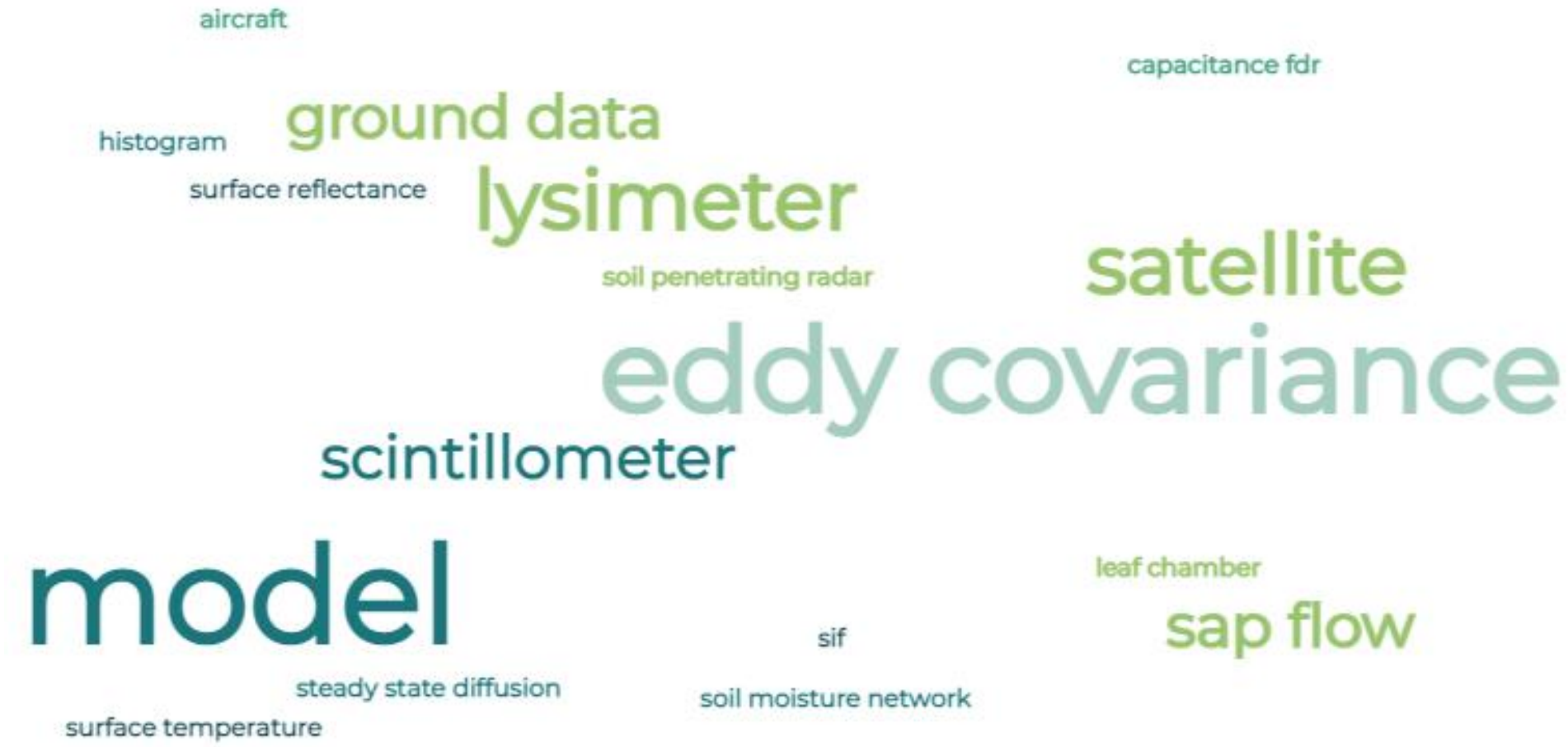


Discussion - WG1 Intercomparison Studies

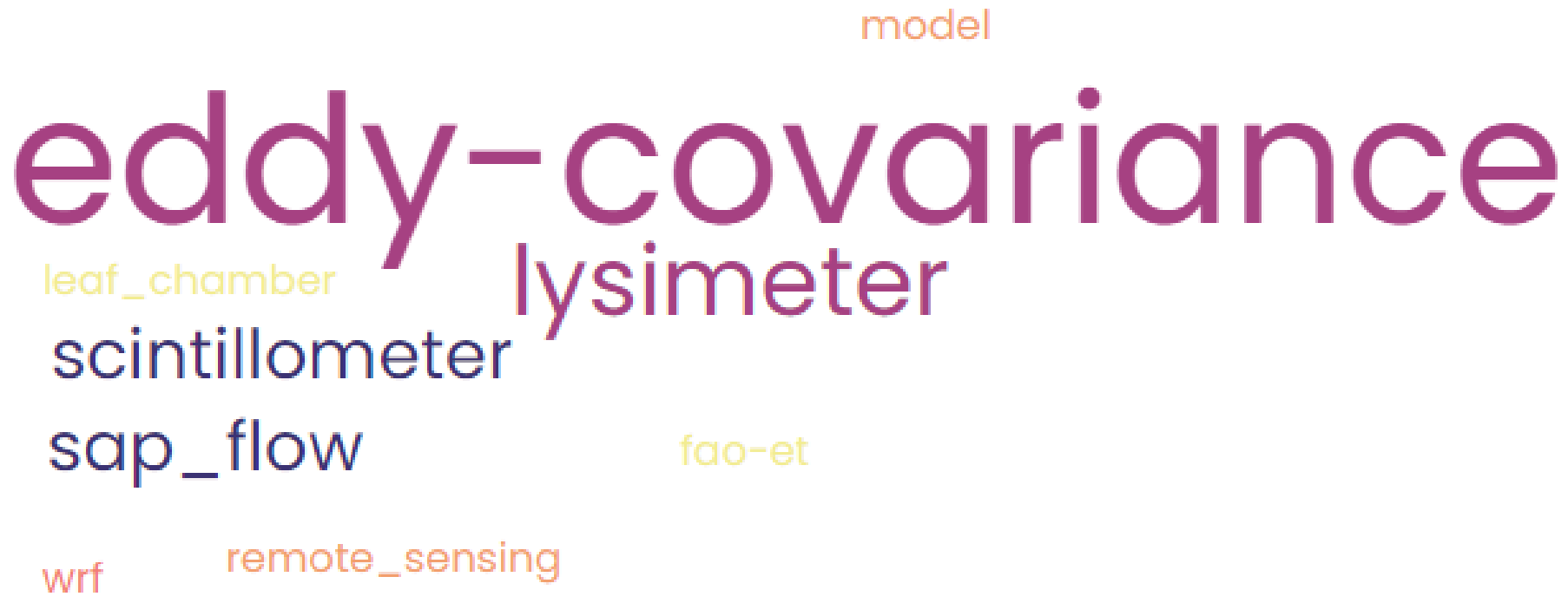
What variables should be included in a WG1 intercomparison study?

Discussion - WG1 Intercomparison Studies

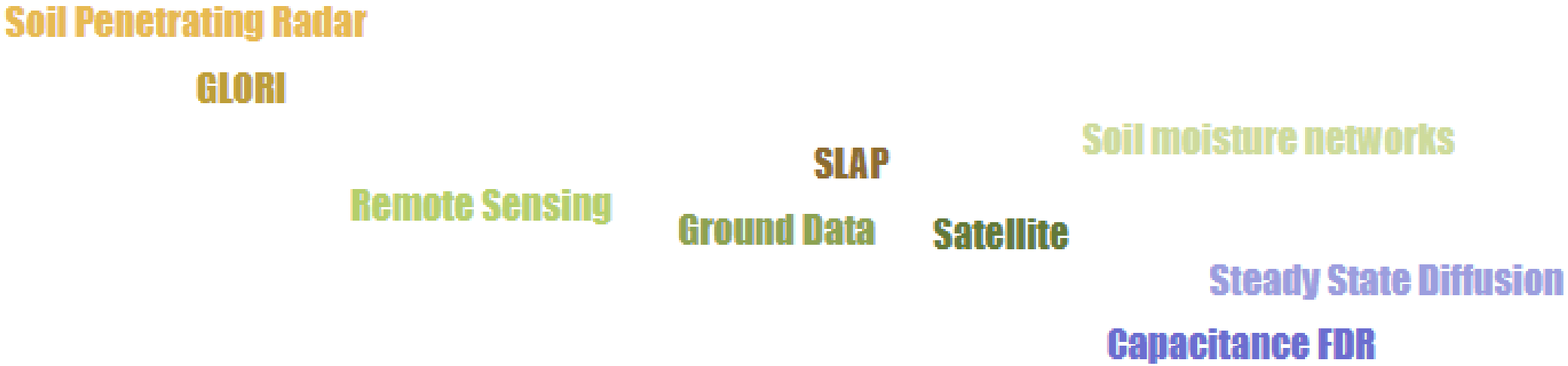
What methods should be included for your proposed variables?



Suggested Methods for ET intercomparison



Suggested Methods for Soil Moisture Intercomparison



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