

Spatial assessment of atmosphere-ecosystem exchanges via micrometeorological measurements and footprint modelling

Preliminary results of eddy covariance measurement at Haean, 2010

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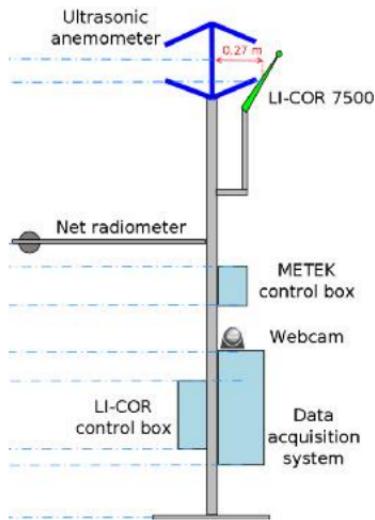
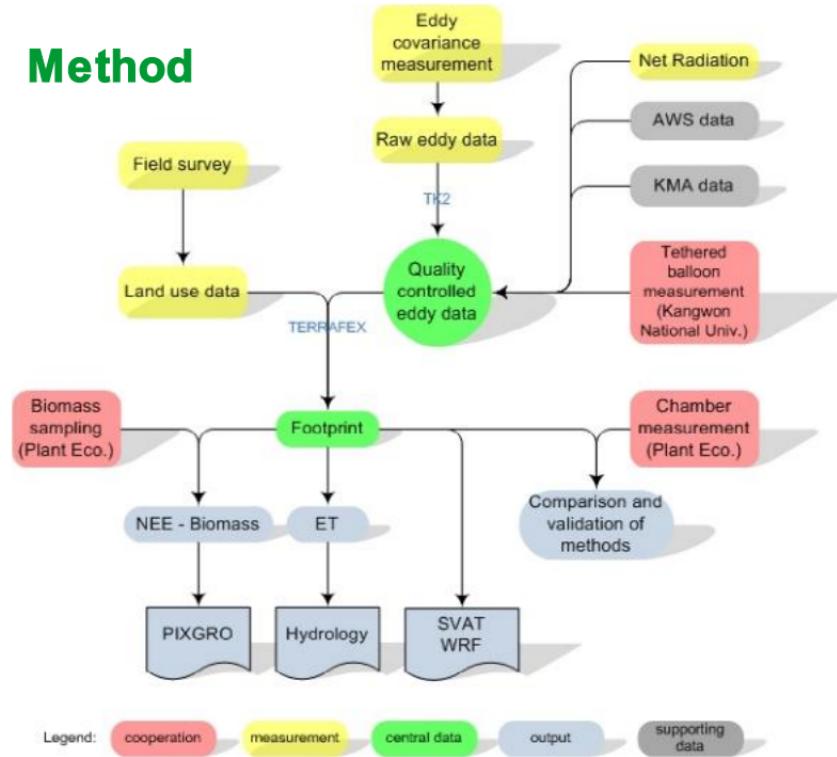
University of Bayreuth, Germany



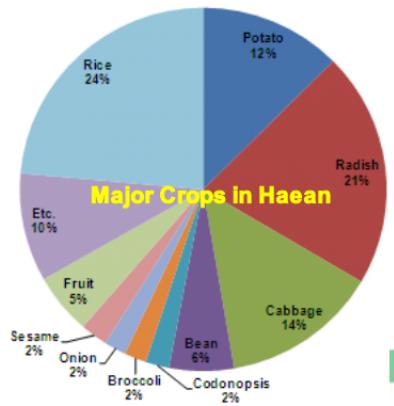
Objectives

- To understand the sensible and latent heat fluxes in such a complex terrain as Haean Basin, South Korea
- To better understand the energy exchange above farmlands (flooded and unflooded fields) during the whole growing period including monsoon seasons in Korea
- To determine reliable evapotranspiration and net ecosystem exchange (NEE) of carbon above farmlands
- To determine reliable information about near surface atmospheric stratification conditions, including convective events in Haean Basin

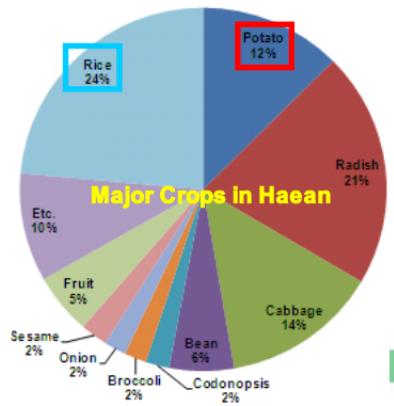
Method



Site Selection



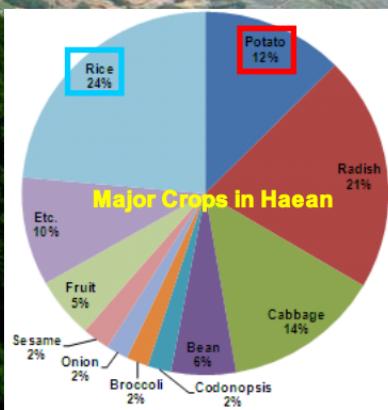
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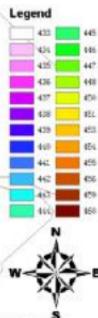
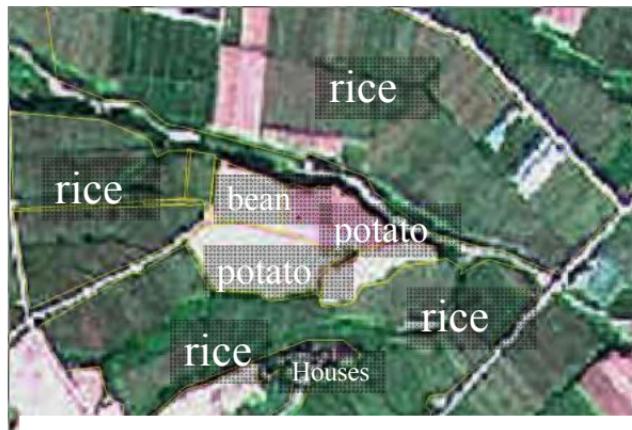
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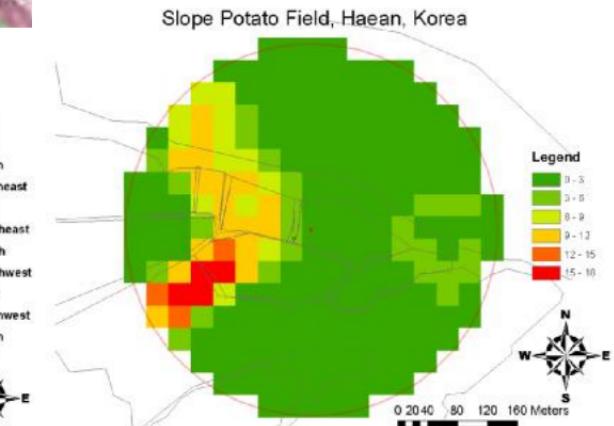
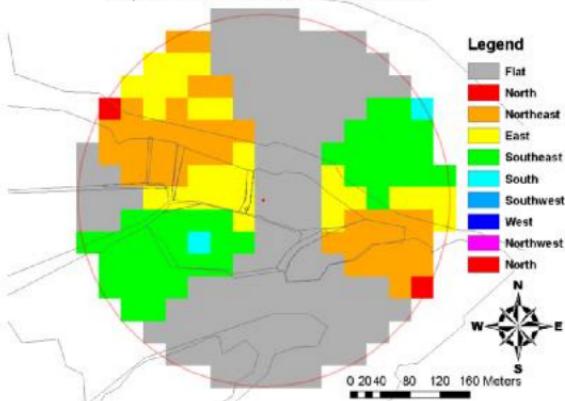
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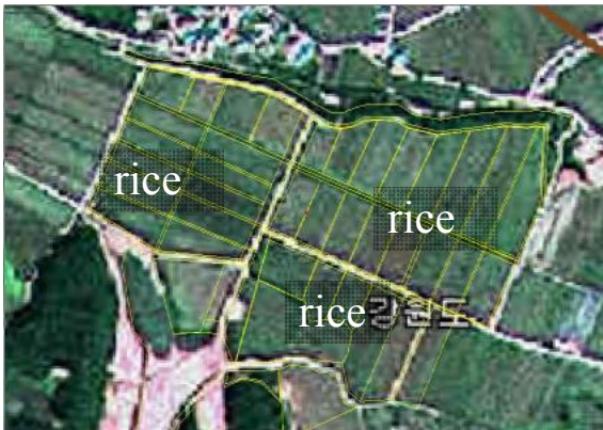


Altitude Potato Field, Haean, Korea

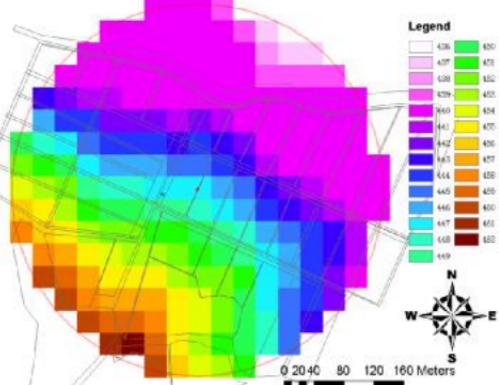


Aspect Potato Field, Haean, Korea

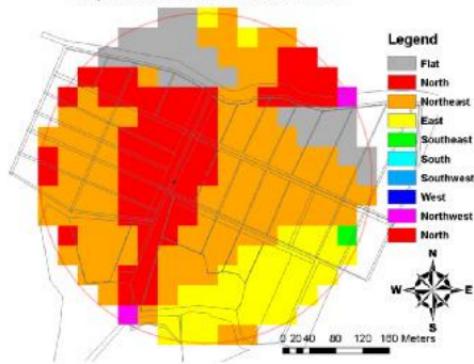




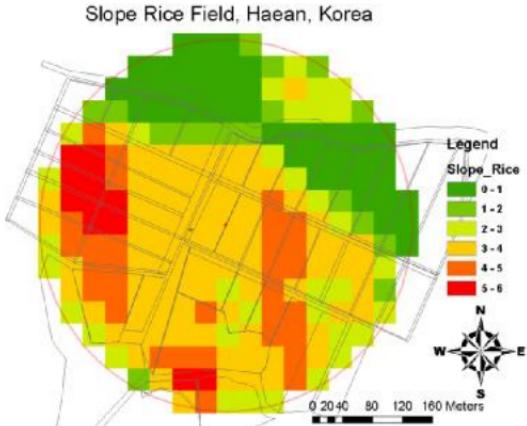
Altitude Rice Field, Haean, Korea



Aspect Rice Field, Haean, Korea



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400 m × 400 m

Potato field

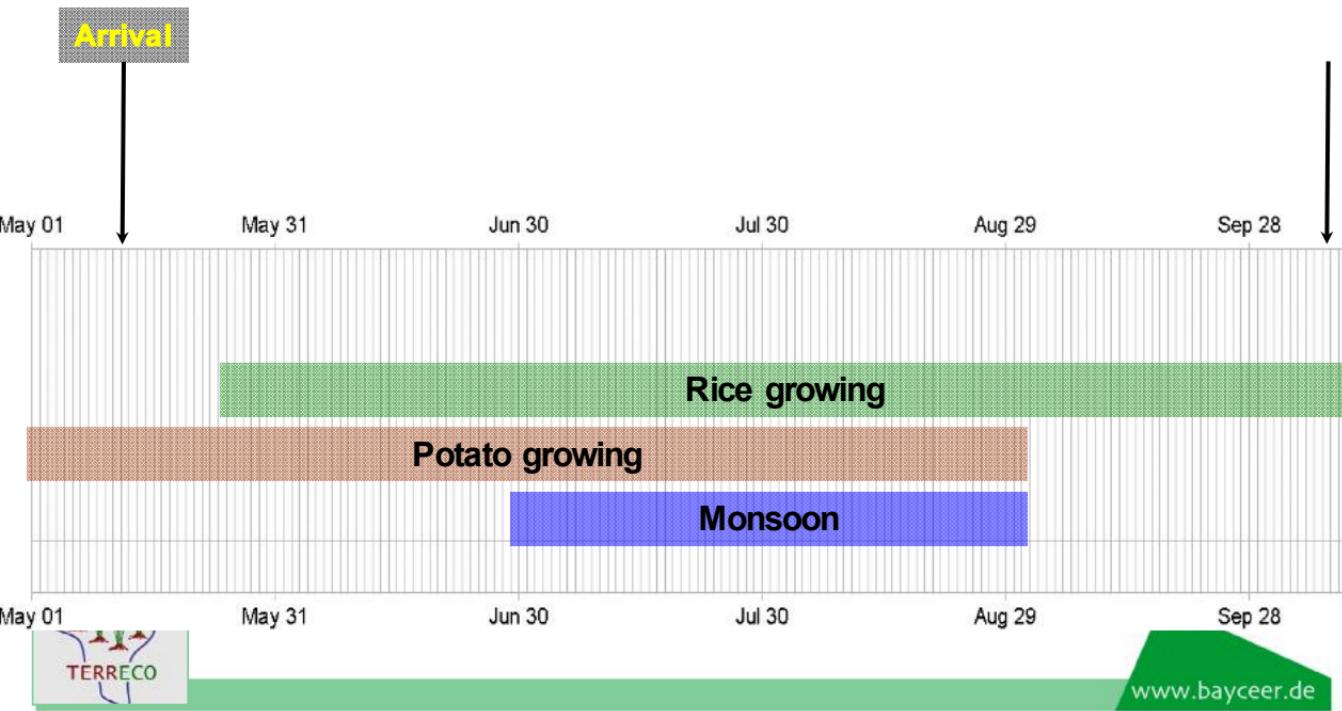


400 m × 400 m

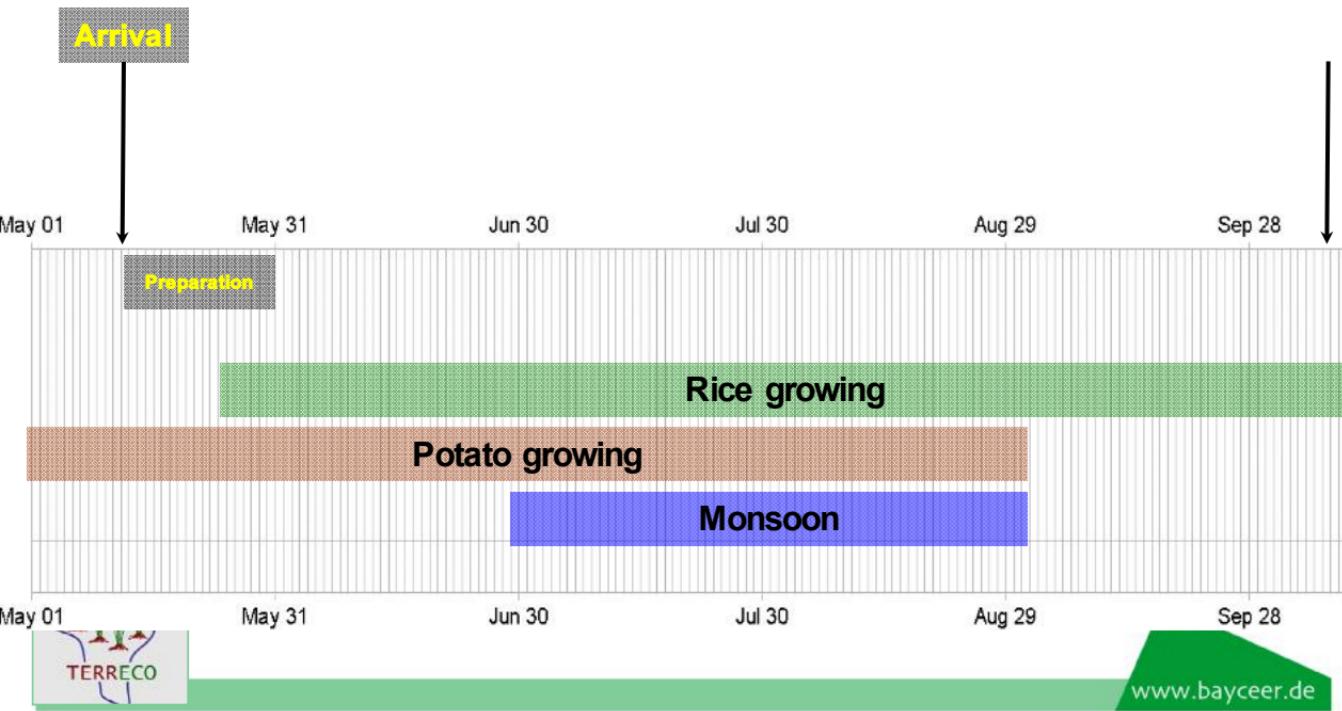
Rice field



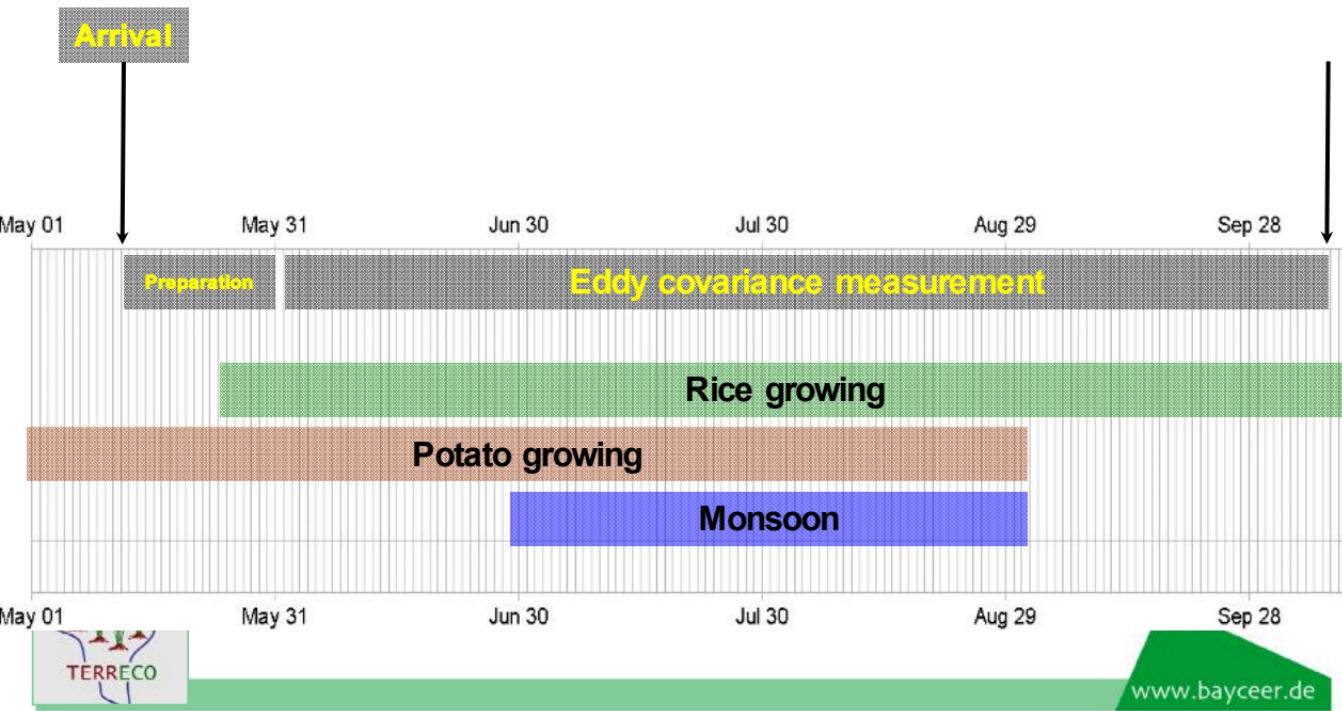
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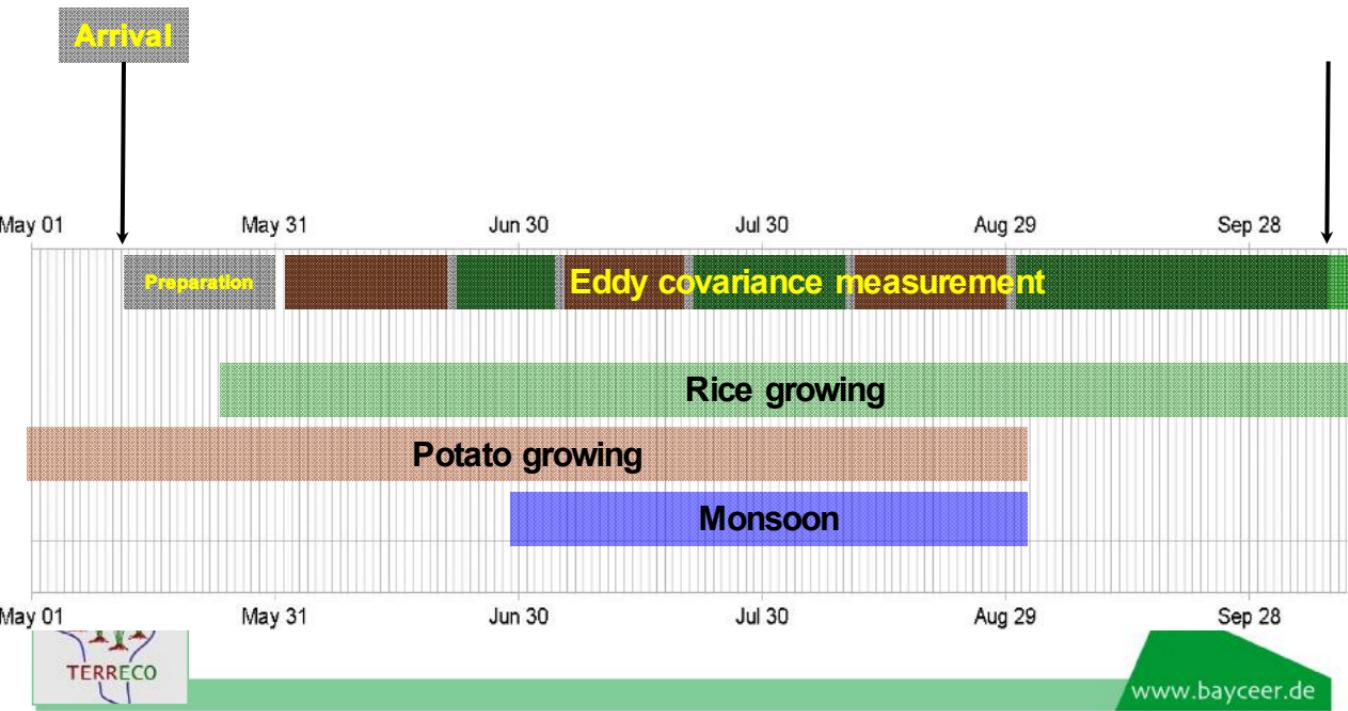
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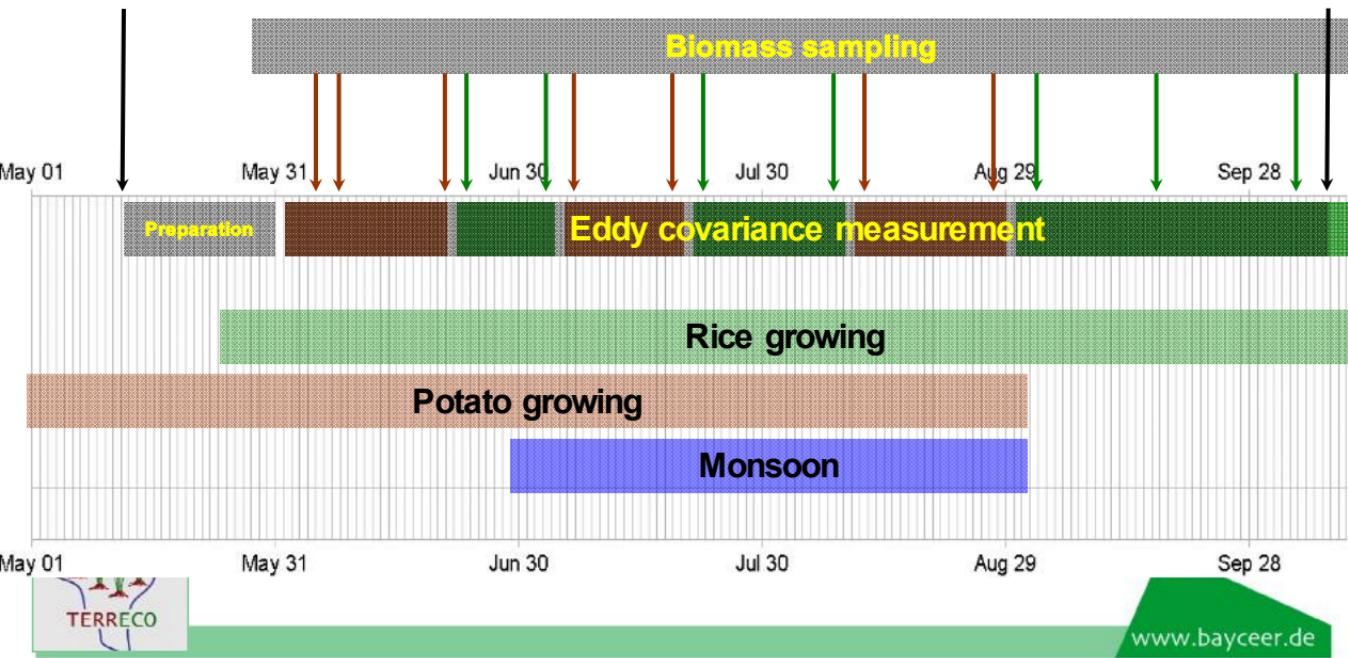
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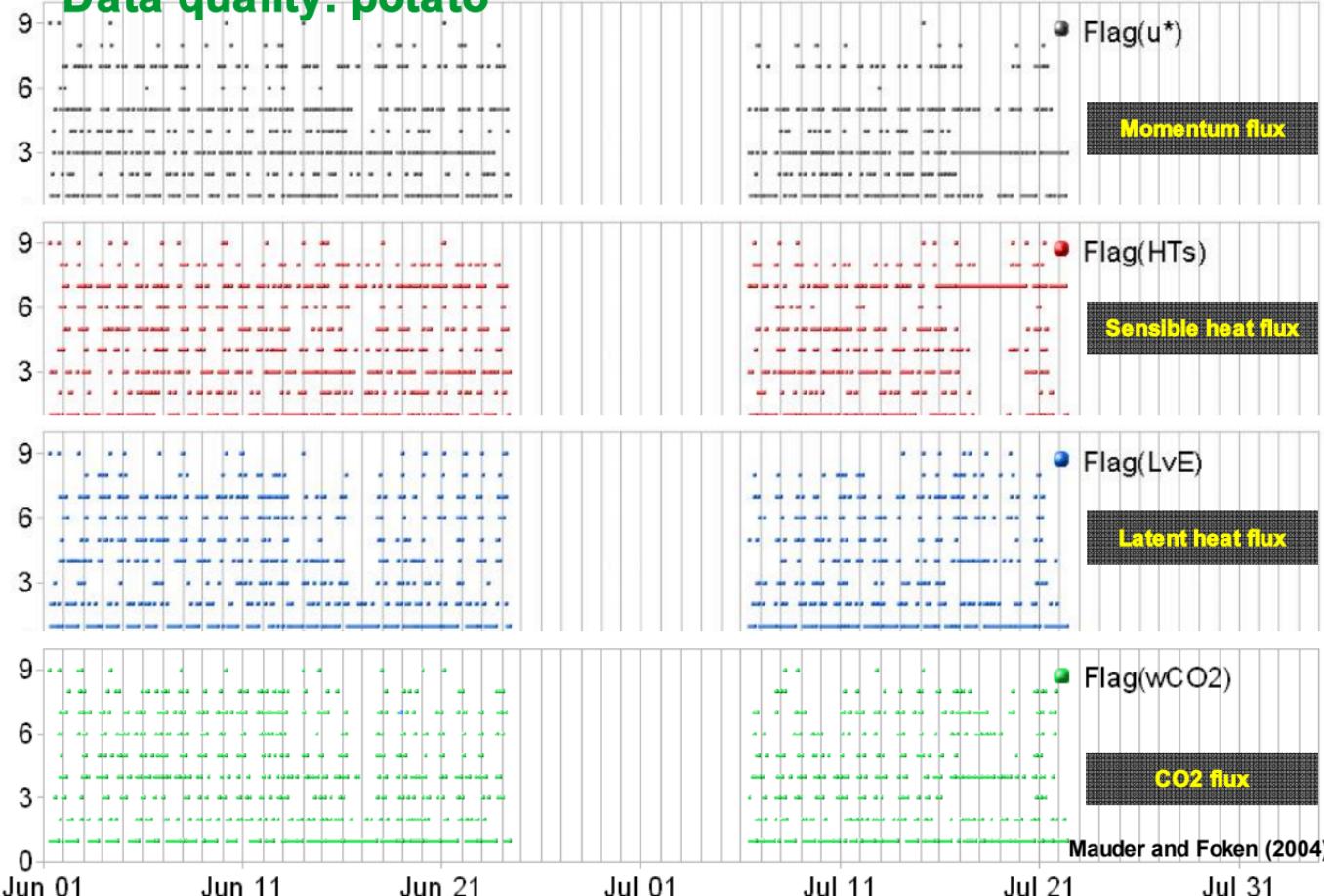
Schedule



Schedule

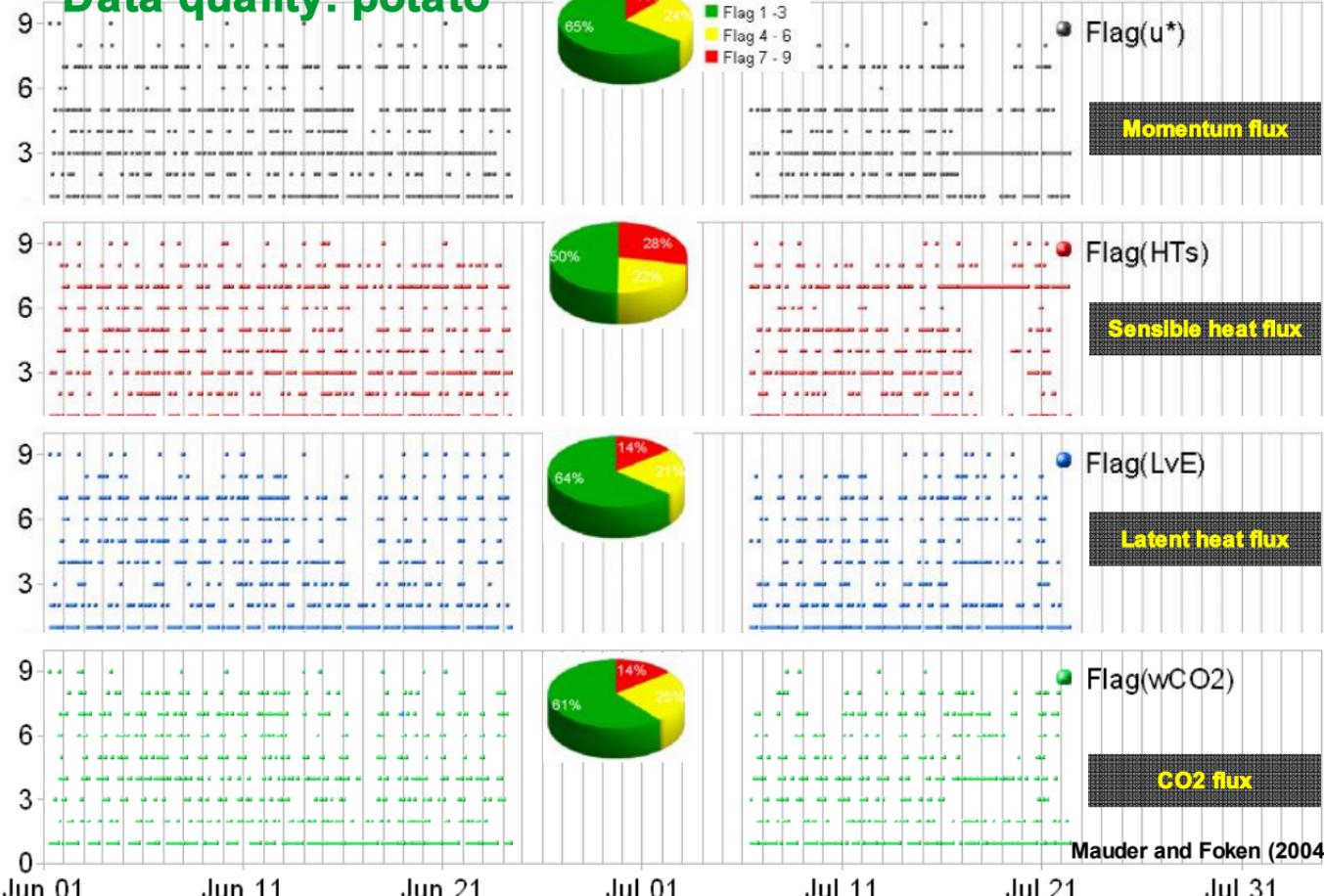


Data quality: potato

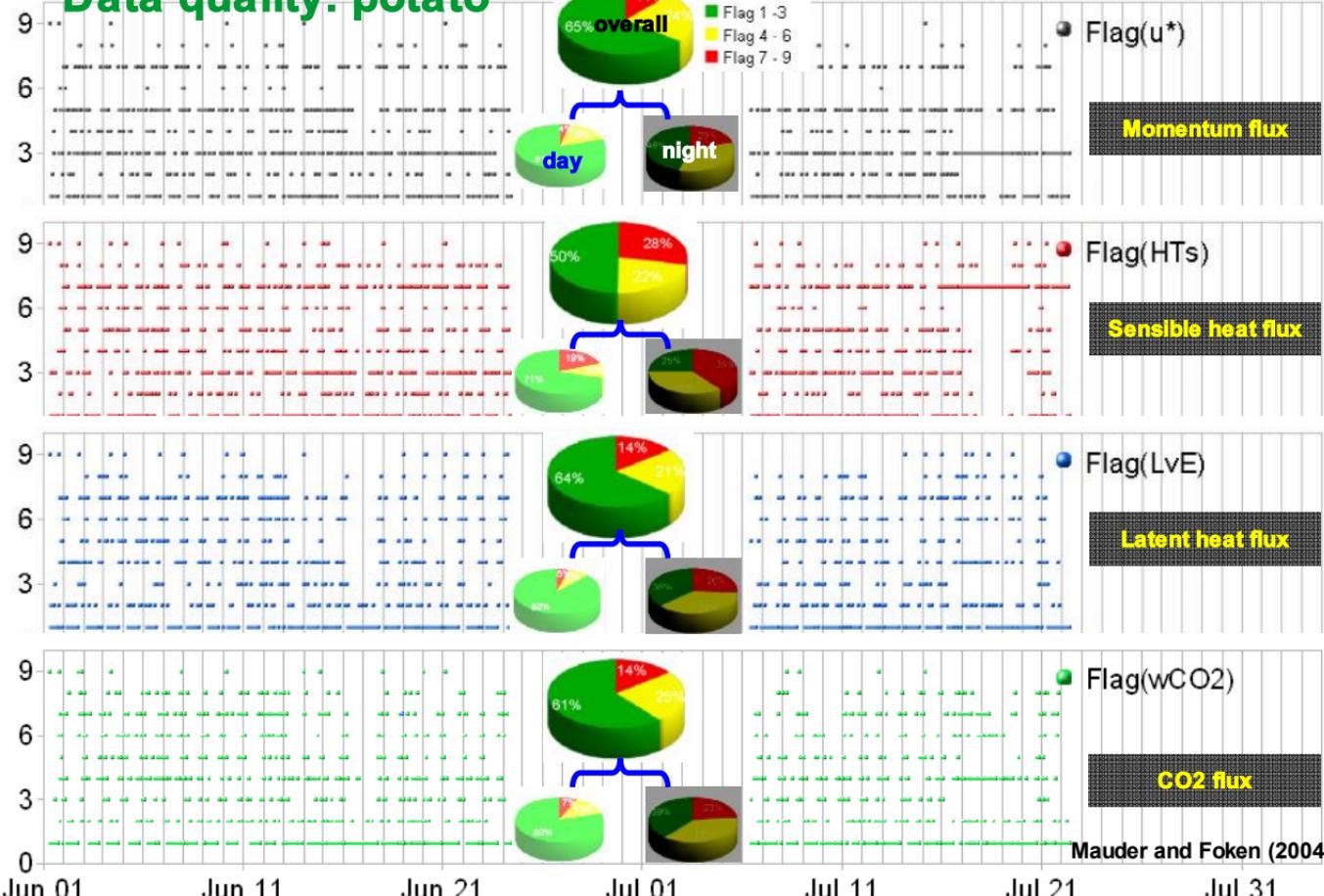


Mauder and Foken (2004)

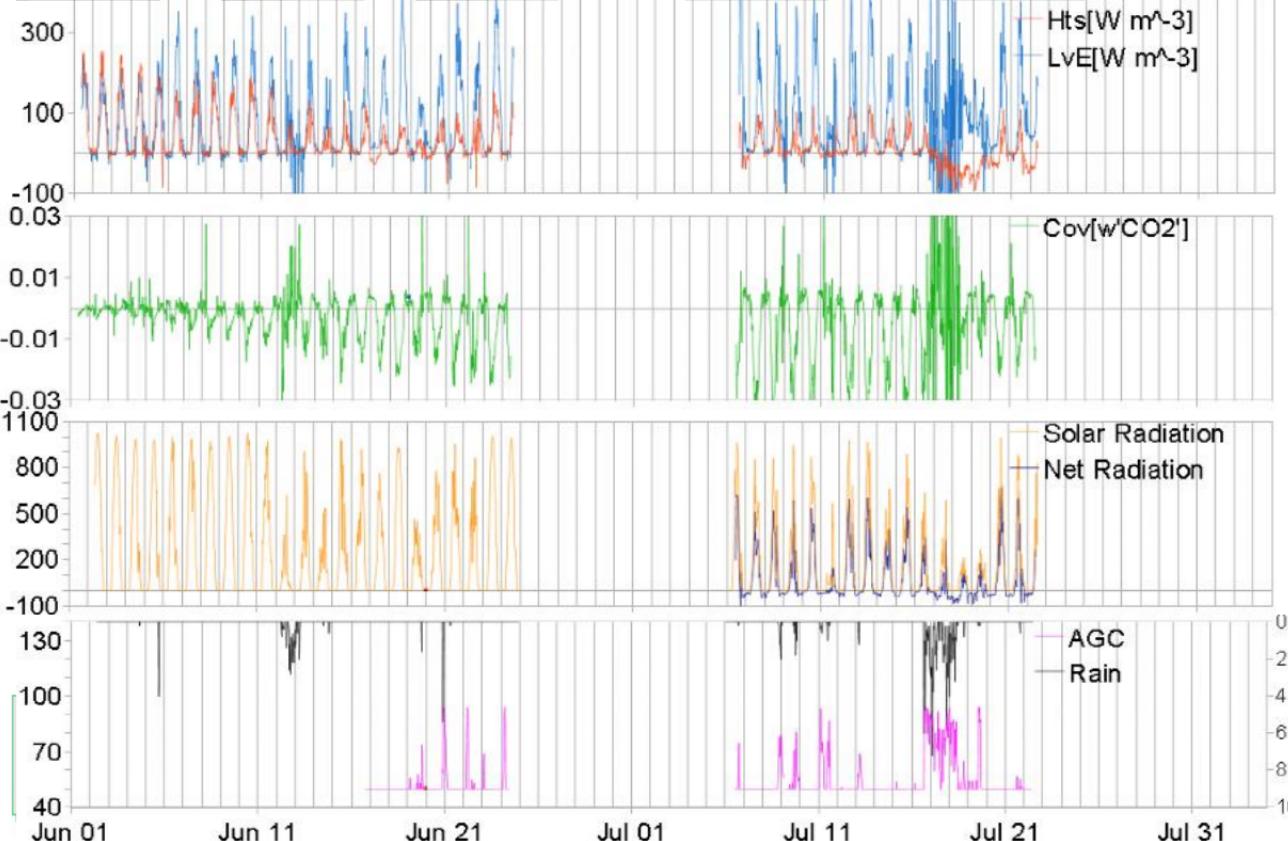
Data quality: potato



Data quality: potato



Potato field





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Potato field

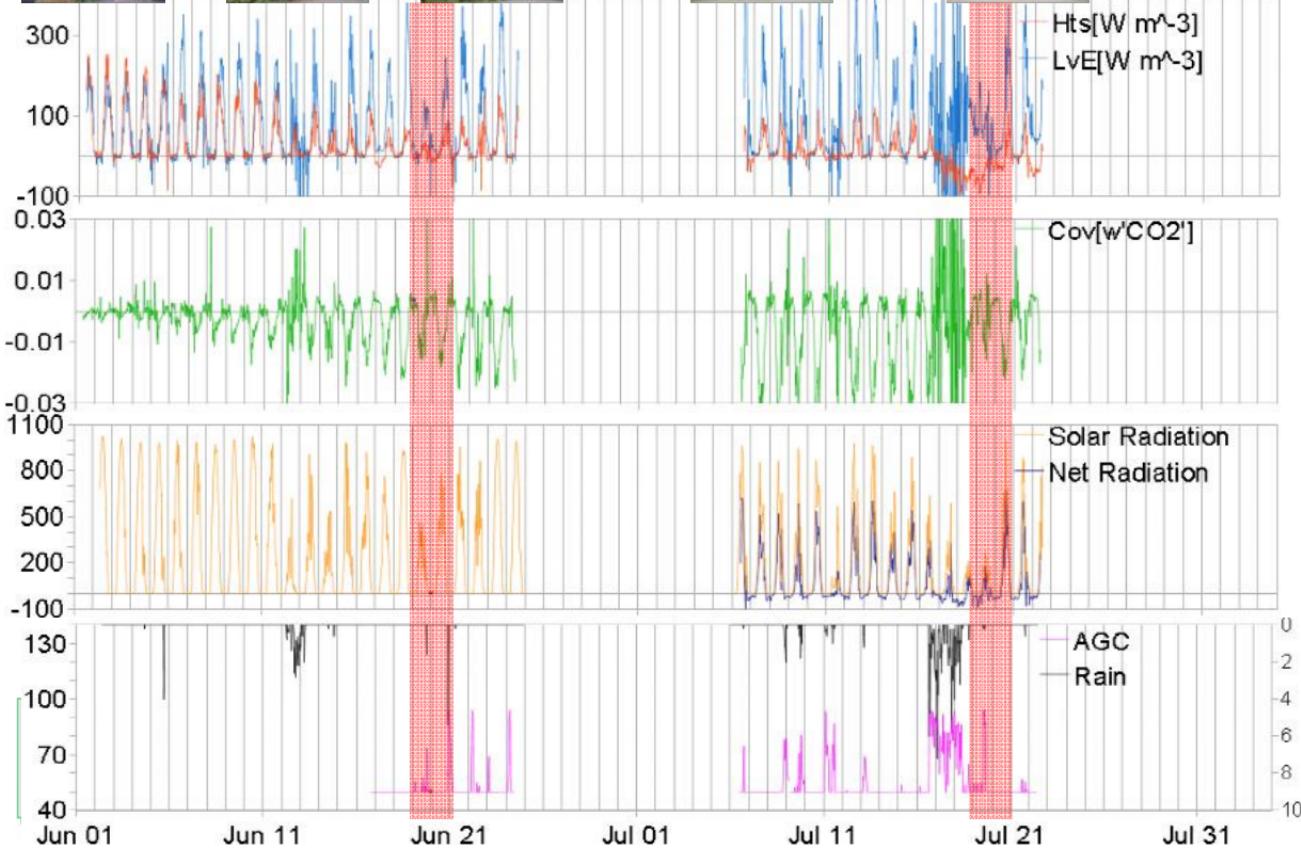


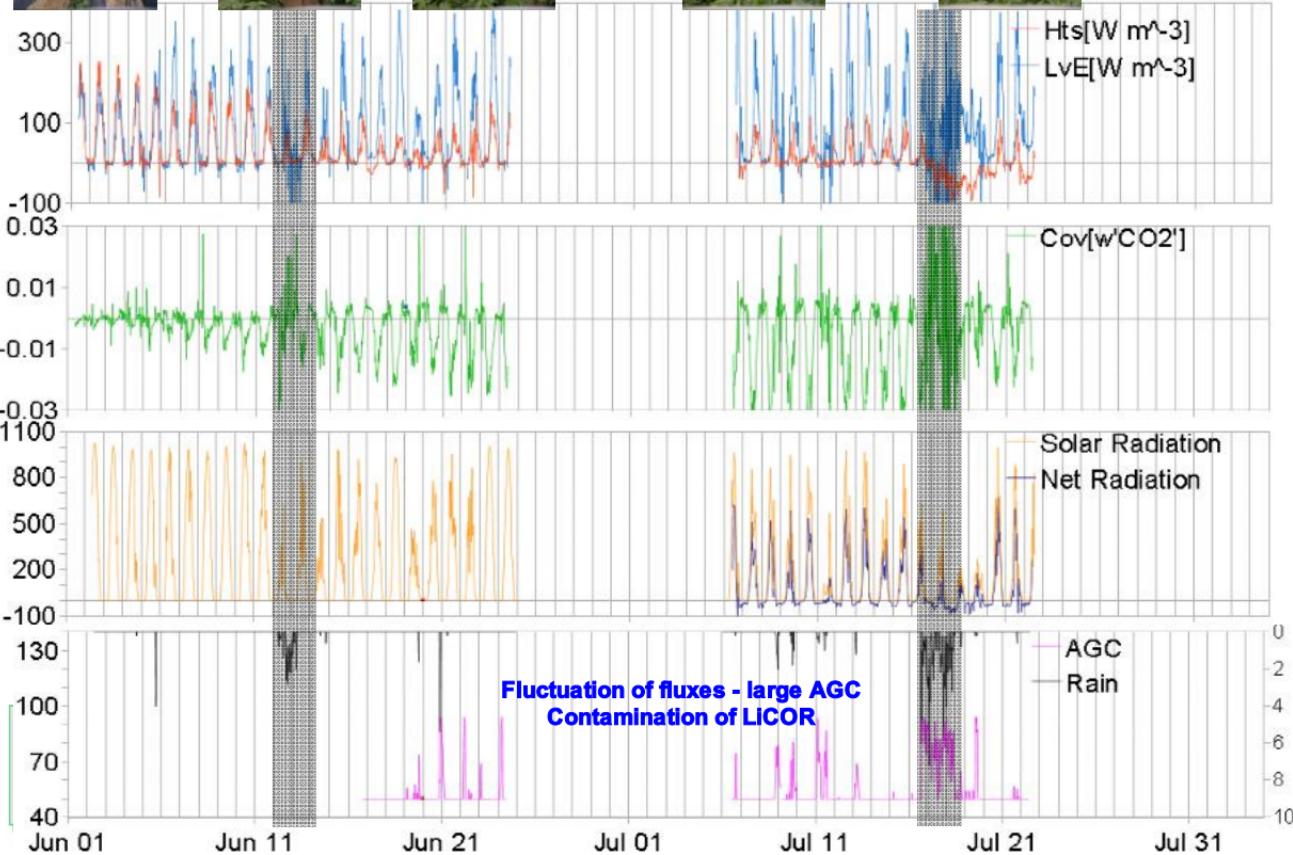
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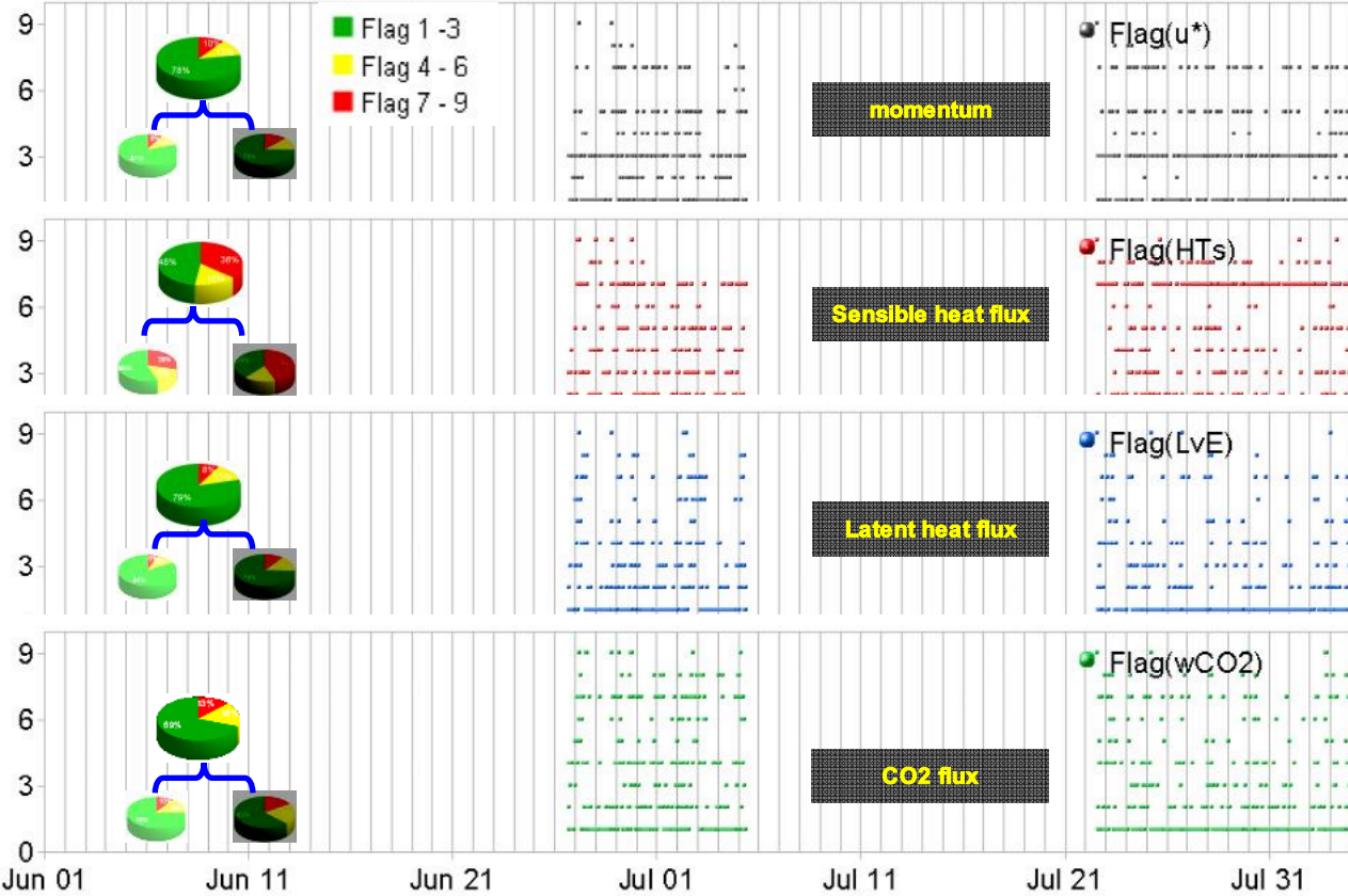
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Bayreuth Center of Ecology
and Environmental Research

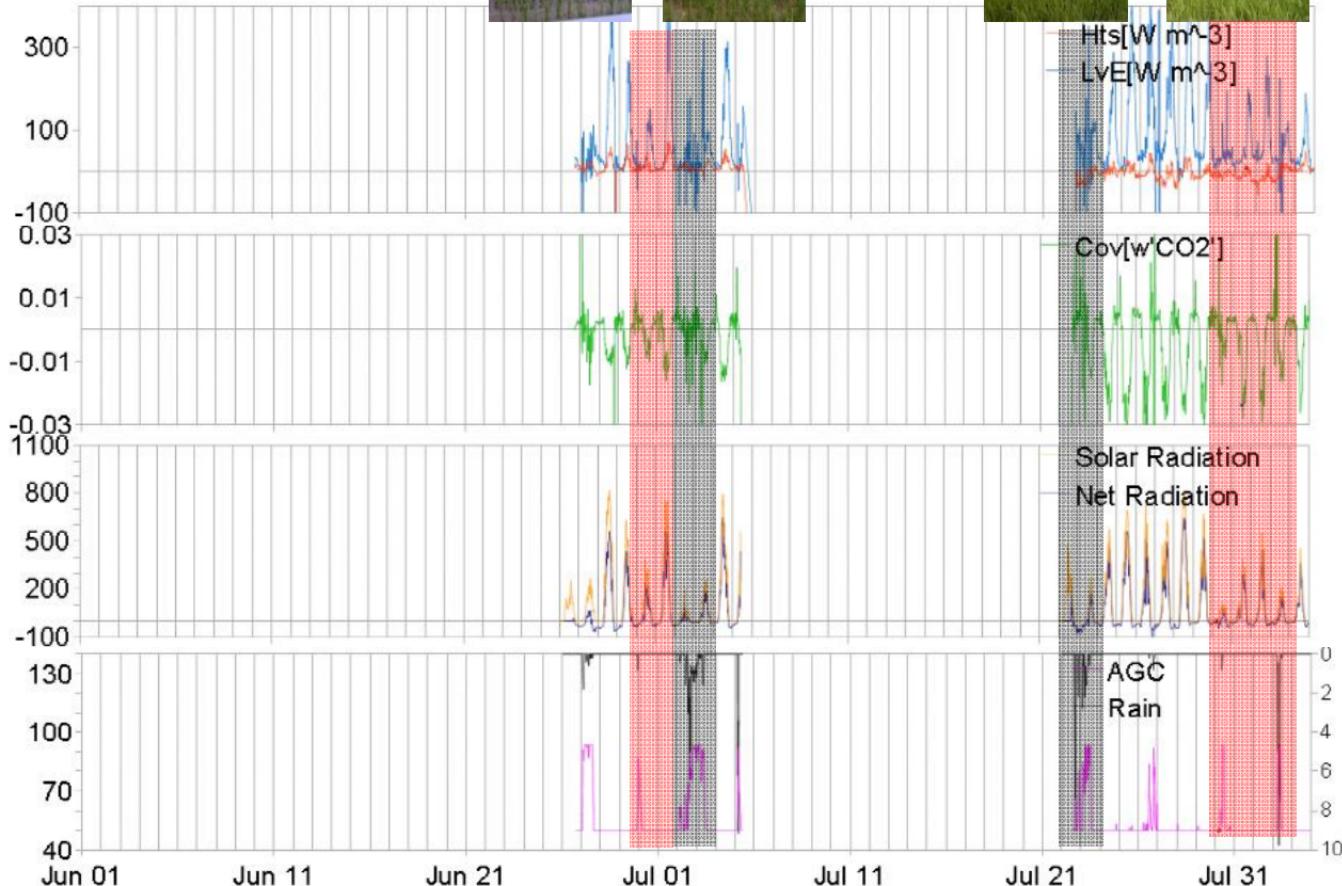




Data quality: rice

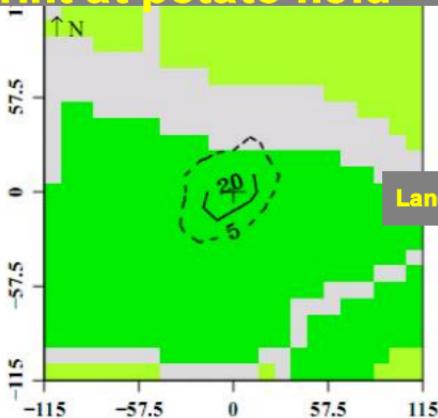


Rice field

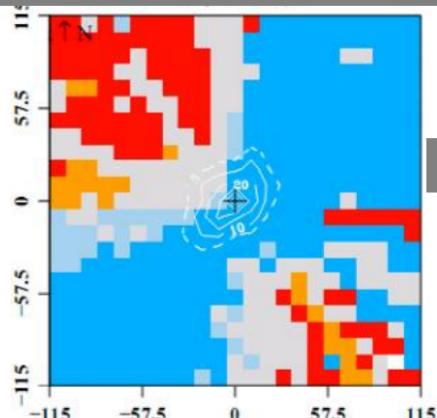


Footprint at potato field

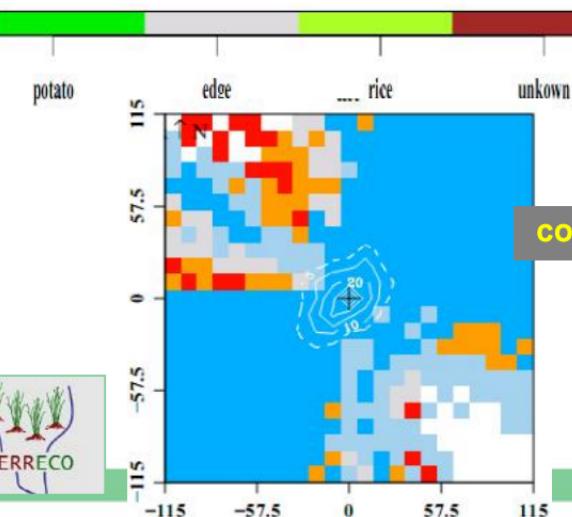
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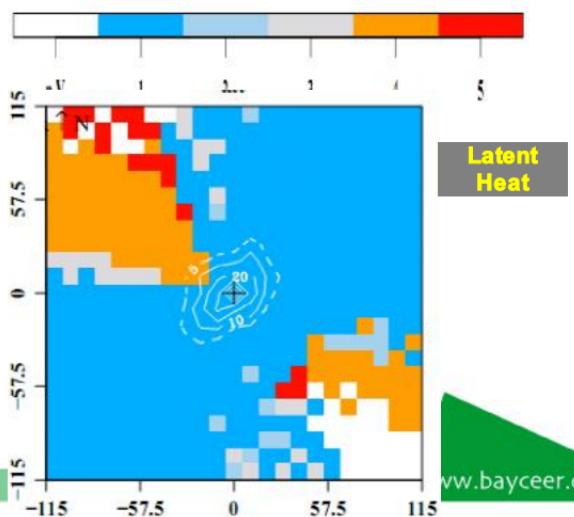
Land use



Sensible Heat

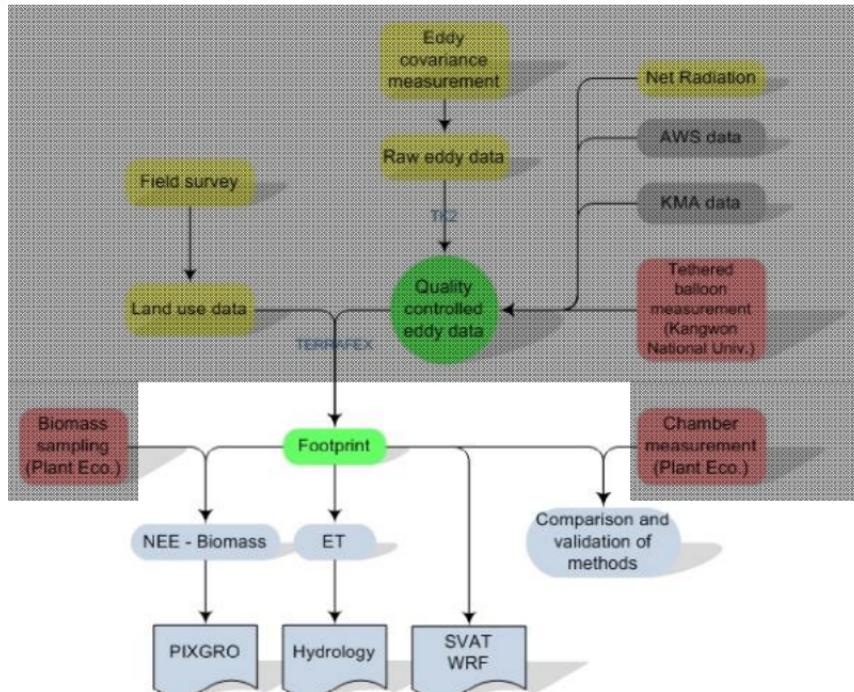


CO₂



Latent Heat

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Future work

Legend:

cooperation

measurement

central data

output

supporting data





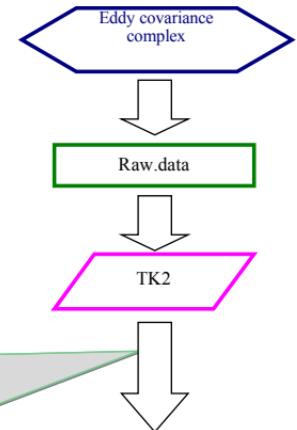
Thank You



Data processing

Flux corrections

- Coordinate rotation (Planar fit)
- Buoyancy correction (Schotanus/Liu)
- Density correction (WPL)
- Spectral correction (Moore)



(Mauder and Foken, 2005)