EOLAB
Earth Observation Laboratory

Field activities in VALENCIA *Anchor Station*, July 2006

Fernando Camacho[1], Beatriz Martínez[1,2], Juan C. Jiménez[1,2], Ernesto López[2]

Presented by Aleixandre Verger [2]

(1) EOLAB
(2) Universitat de València

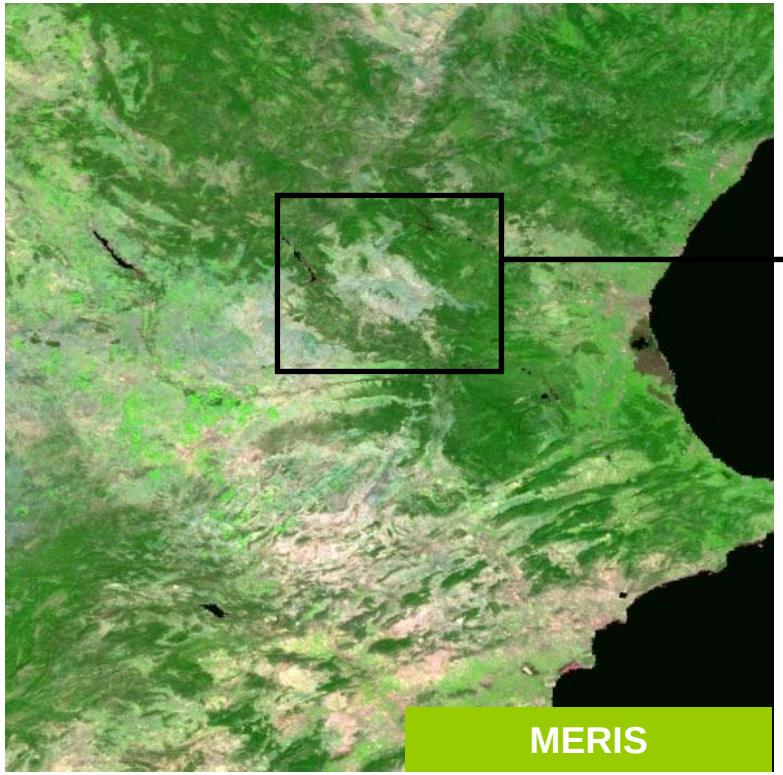
INTRODUCTION

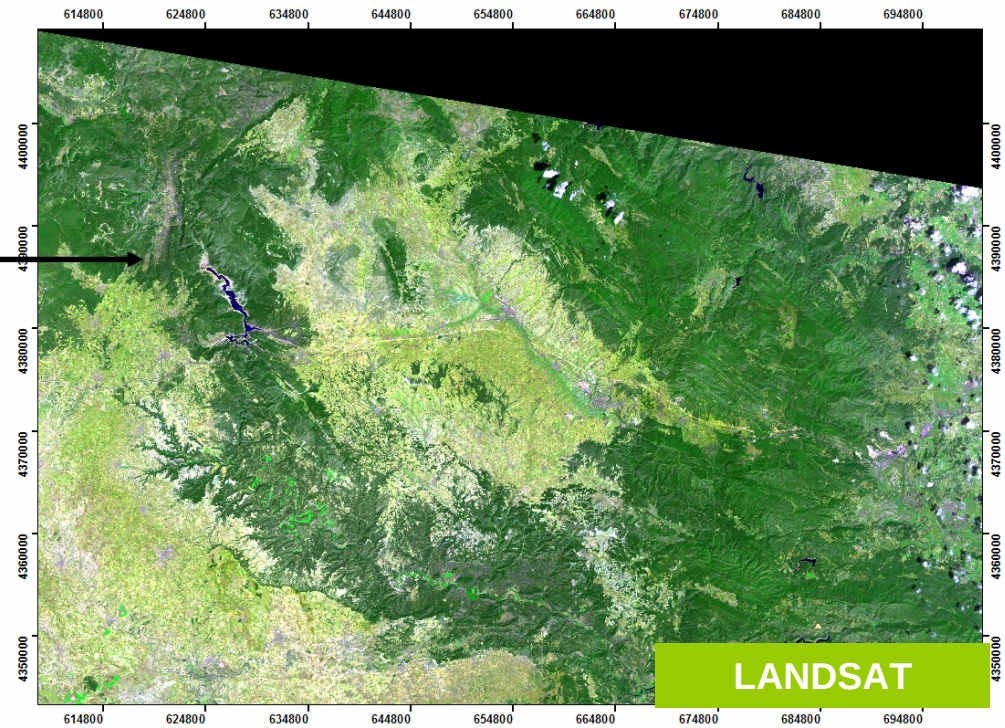
• The University of Valencia has recently set up a meteorological station, **Valencia Anchor Station (http://www.uv.es/anchors/),** located towards the North-West part of Valencia in the Utiel-Requena *plateau* (aprox. 50x50 km), which is mainly occupied by vineyard.

• This area is suitable for calibration and validation of wide FOV sensors and products → It has been recently selected for cal/val activities of the SMOS mission.

• EOLAB was in charge of the characterization of the vegetation cover and leaf area index from in-situ measurements and high-resolution data within the Anchor Station area (10x10 km) → The VALERI methodology was adopted.

STUDY AREA





Location: Utiel-Requena Plateau (Valencia, Spain)

Coordinates: 39º34’15”N, 1º17’18”W, 813m over sea level

Relief: Plain (slope<2%) surrounded by mountains

Land uses: Vinyeard crops, Almond Trees, Pine Forest

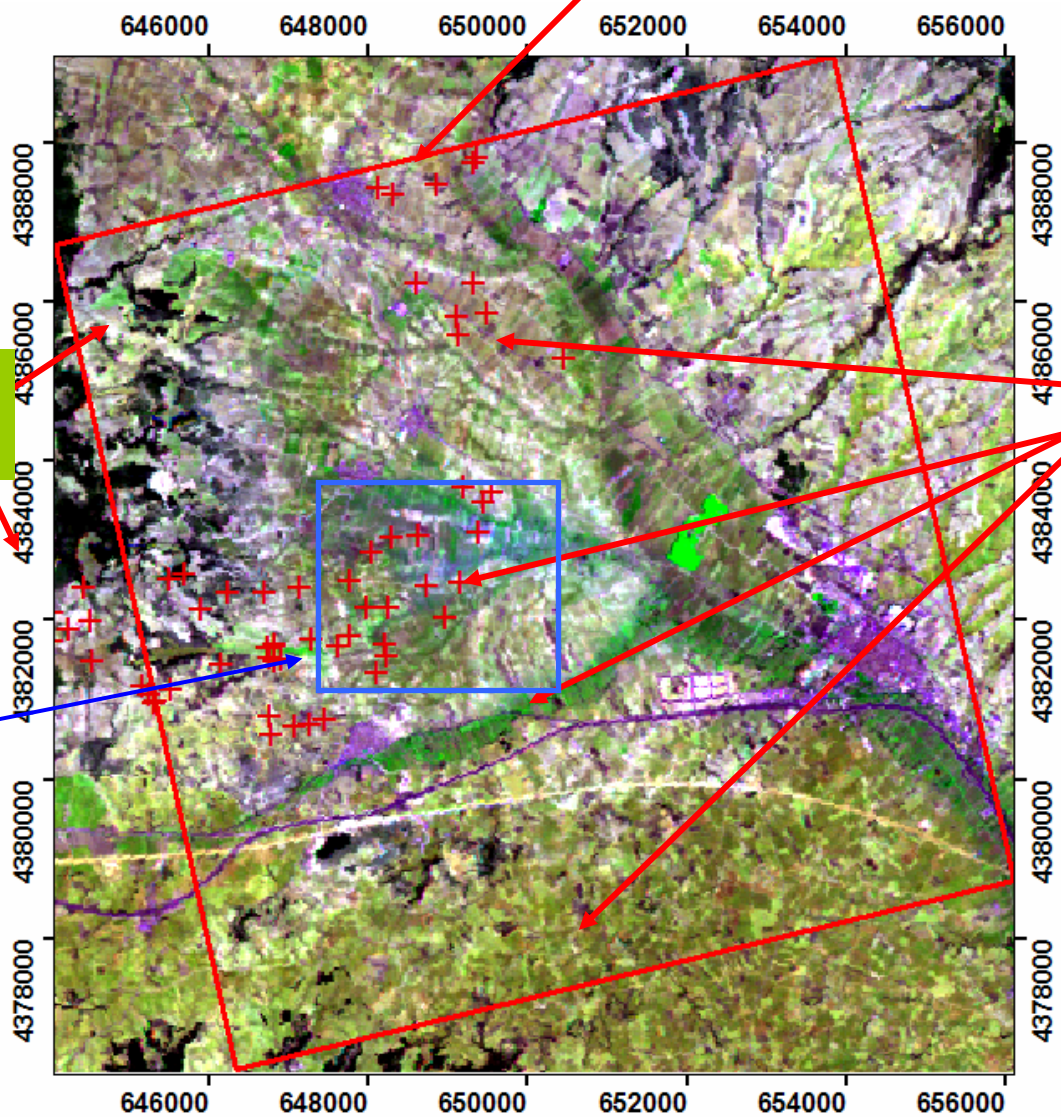
STUDY AREA

Olive & Almond Trees

Mediterranean Forest

Vineyard

VALERI selected area



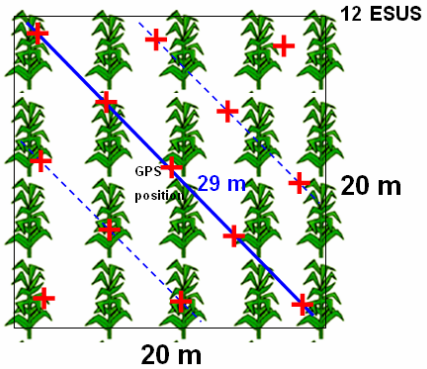
Field acquisition

22-25 July, 2007

30 ESUs
24 Vineyard
6 Olive & Almond Trees

Processed with

STUDY AREA

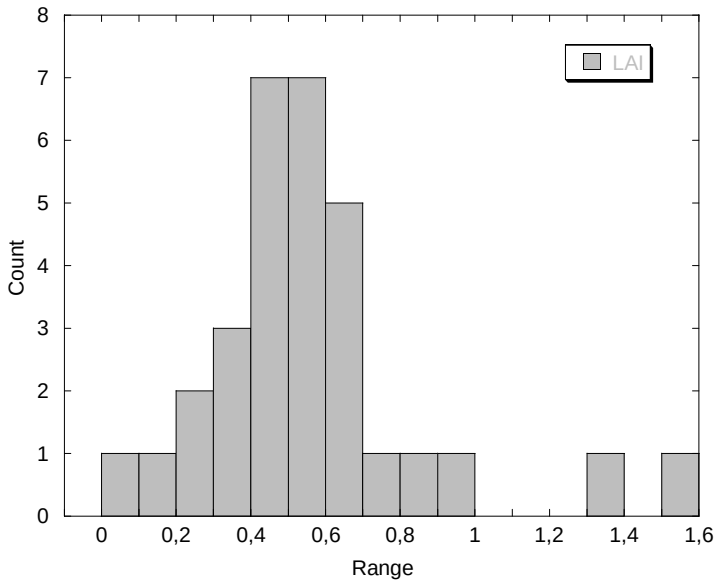


Spatial Sampling strategy inside the ESU

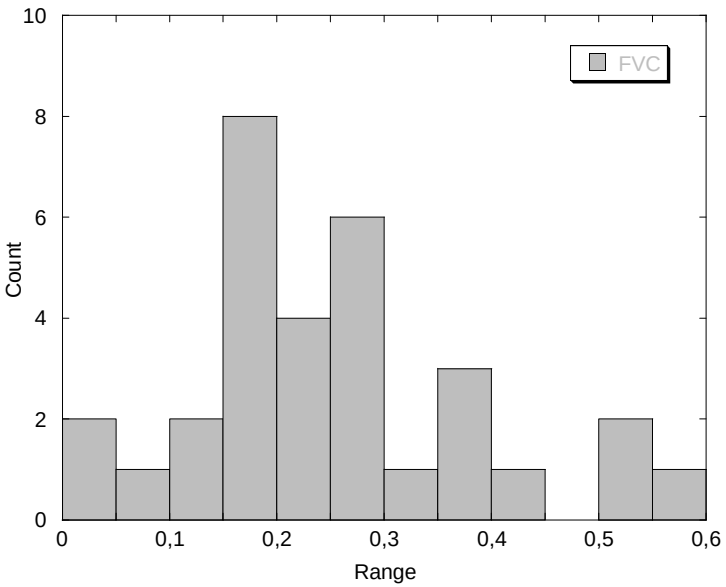
- 20 × 20 m^2
- Sampling diagonal to the row direction
- Minimum 12 DHP

FIELD MEASUREMENTS

LAI



FVC



	LAI	FVC
Mean	0.49	0.24
Maximum	1.55	0.63
STDV	0.30	0.14
CV(%)	62.9	58.1

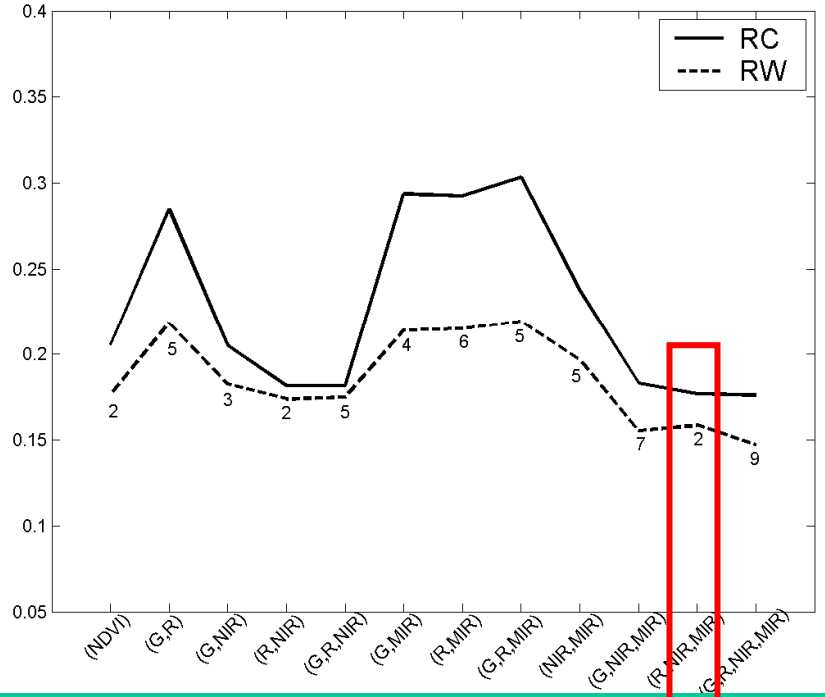
TRANSFER FUNCTION

INPUT BANDS: Surface Reflectance G (TM2), R (TM3), NIR (TM4), MIR (TM5)

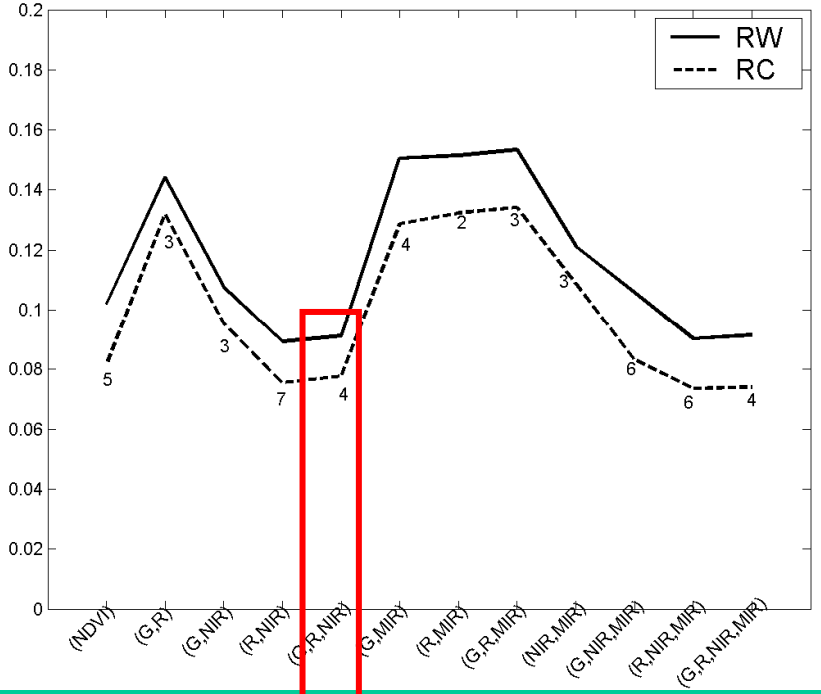
TRANSFER FUNCTION: Weighted Multiple linear regressions were computed with the considered Landsat bands combinations.

The band combination was selected based on the lowest **RW** (Weighted Root Mean Square Error), **RC** (Cross Validation RMSE) and ESUs with weights lower than 0.7, following the methodology proposed by Weiss,(2004)

LAI

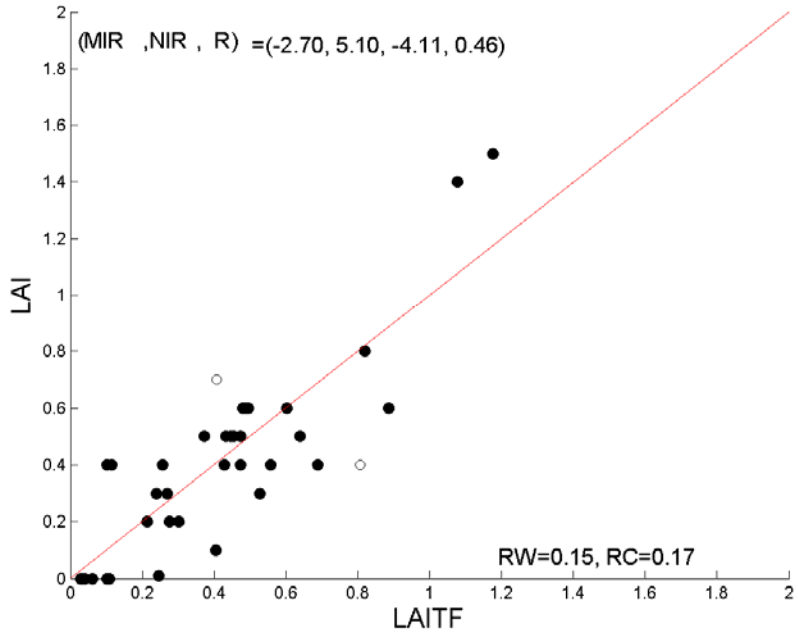


FVC

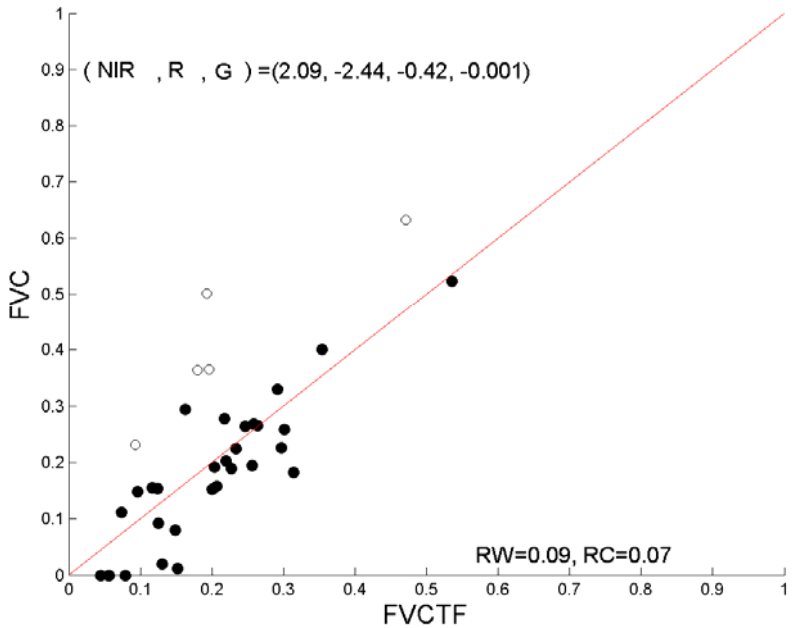


TRANSFER FUNCTION

LAI



FVC



- Black dots show ESUs with weights greater than 0.7.
- Intercept close to zero for the FVC.
- Positive intercept for the LAI which indicates an overestimation by the model.

QUALITY ASSESSMENT IMAGE

CONVEX HULLS: Band combination (NIR, R, G)

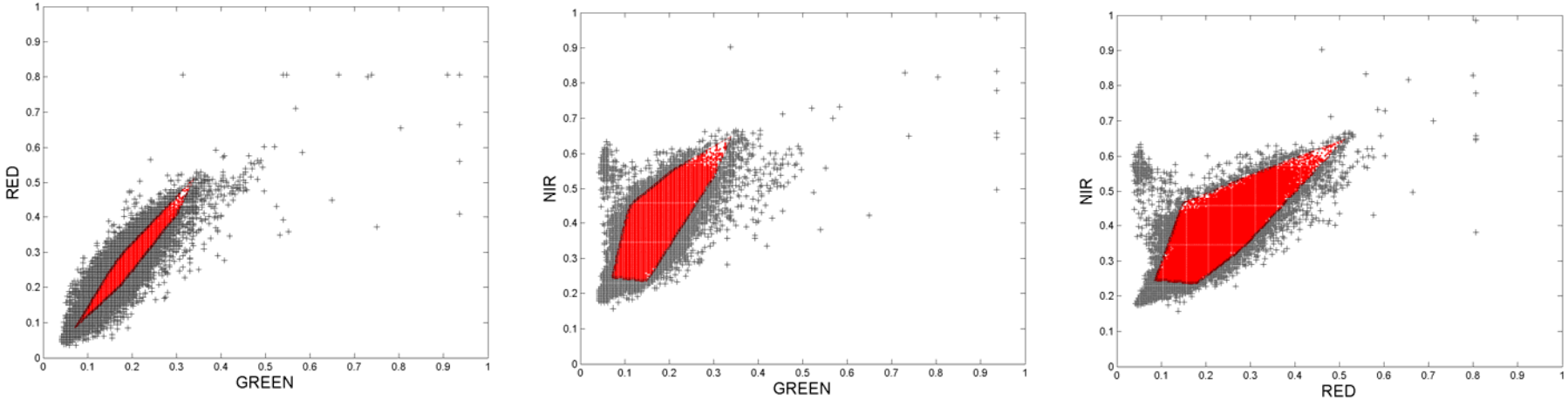
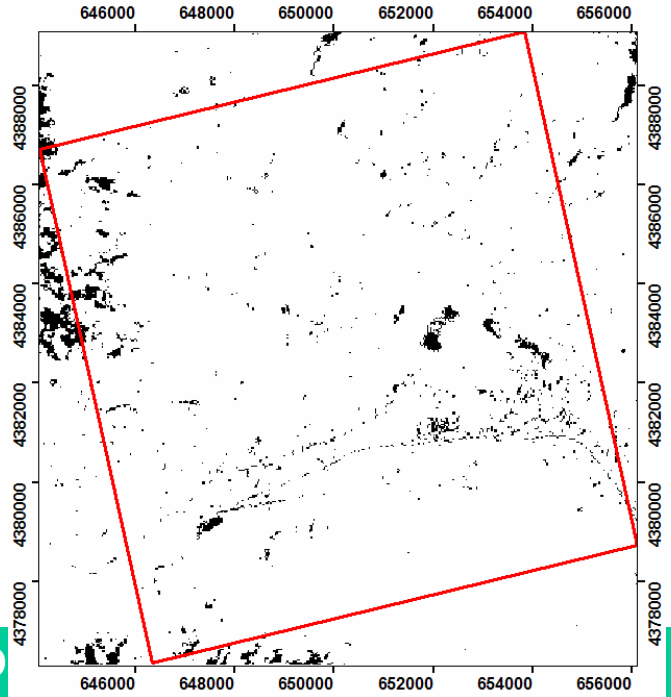


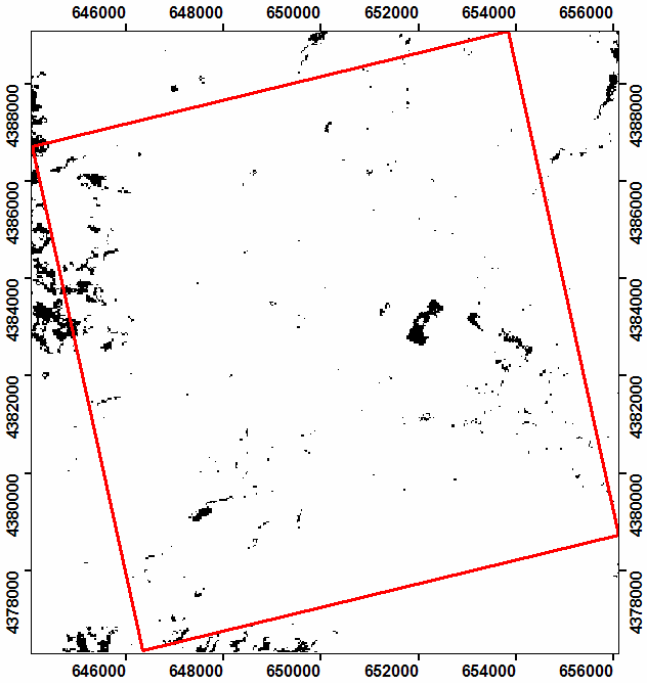
Image QA

LAI

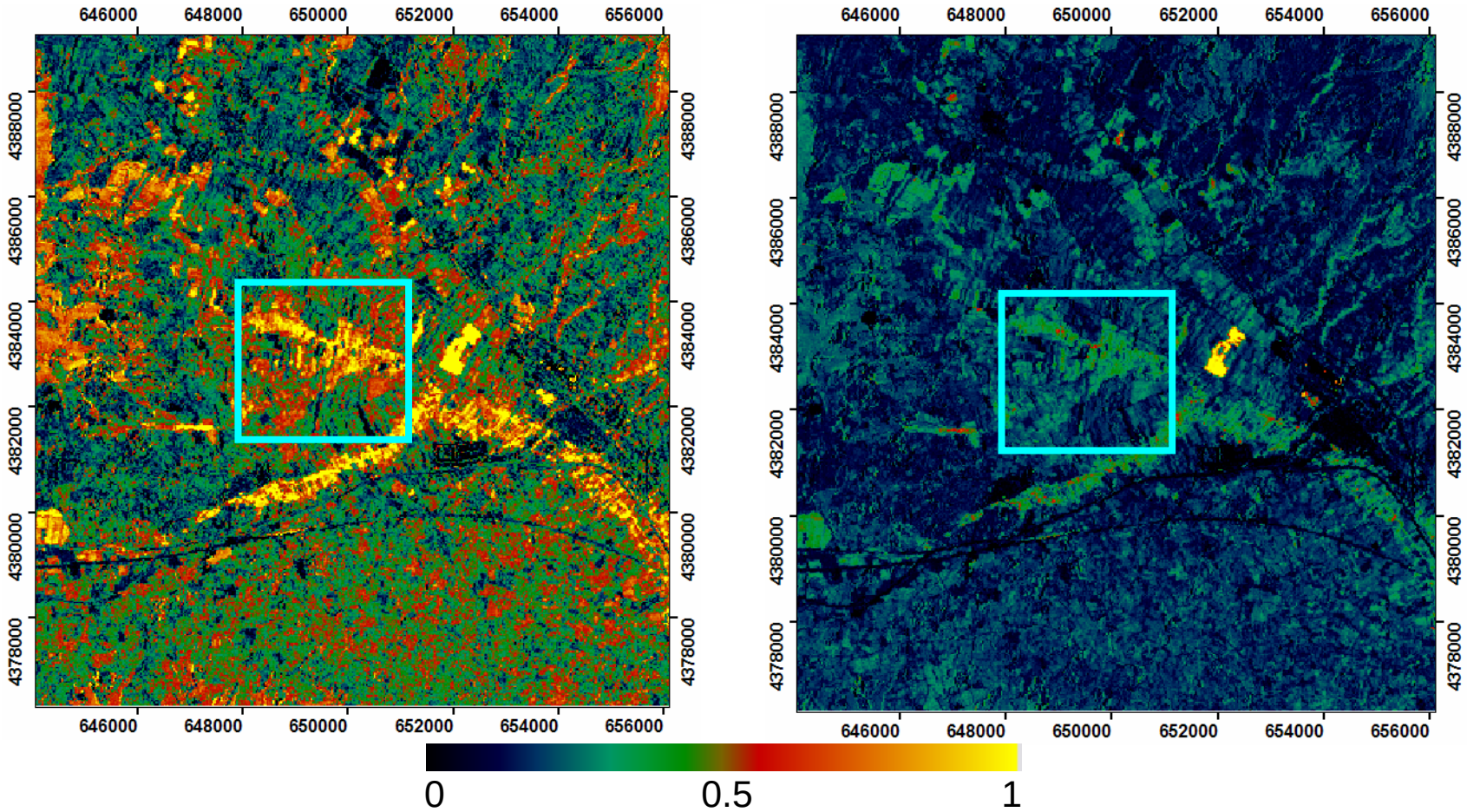


Black pixels ➔ Extrapolated pixels

FVC



DERIVED MAPS



	LAI 3km	FVC 3km
Mean	0.50	0.21
Maximum	1.76	0.73
STDV	0.22	0.09

UTM, Zone 30 North, Datum ED50

(39.583N, -1.258E)

Zone VALERI (3X3)

CONCLUSIONS & PERSPECTIVES

- High-resolution FVC and LAI maps (10x10 km) have been derived in the Valencia Anchor Station site in July 2006.
- The site is mainly covered by vinyeard. In-situ measurements in vinyeard crops (ESUs) provides values lower than 1 for LAI and 0.5 for FVC, with some exception.
- A 3x3 km area covered by vinyeard was selected for validation (VALERI). Mean FVC and LAI values are 0.2 and 0.5 respectively.
- New field campaigs will be done in 2007 at the maximum development of the vineyard (end of August) and 2008 in coincidence with the SMOS cal/val campaigns.
- New campaigns will include also the characterization of natural vegetation (pine forest & shrubs) and a detailed land use map.
- These maps will be available for the validation community

More information:

Fernando.Camacho@eolab.es (vegetation maps)

Ernesto.Lopez@uv.es (*Anchor station*)