



**Prof. José-Luis Casanova**

**Remote Sensing Laboratory  
University of Valladolid**

Edificio I+D  
Paseo de Belén, 1  
47011 Valladolid  
latuv@latuv.uva.es

# **REMOTE SENSING LEARNING IN SPAIN**

**4th SCANEX International Conference  
“Earth from Space - the Most Effective  
Solutions”**

**MOSCOW, 3th December 2009**

# *CONGRATULATIONS SCANEX!! 20 YEARS!!*





Population: 47 million people/ 5<sup>th</sup> EU ~ 1/10 EU

Surface: 505.000 sq km/ 2<sup>nd</sup> EU

Gross Domestic Product: 103 % EU

**75 UNIVERSITIES**

**53 Public  
15 Private  
& 7 Catholic Church**

**Remote Sensing:  
30 Universities, all of them  
public universities**

<b>DEGREES</b>	<b>%</b>
<b>Geography</b>	<b>24</b>
<b>Topography, Geodesy or Cartography</b>	<b>12</b>
<b>Environment</b>	<b>11</b>
<b>Physics</b>	<b>11</b>
<b>Agronomy</b>	<b>9</b>
<b>Forest engineering</b>	<b>8</b>
<b>Other engineering: Telecommunications, Mines, Public Works, Informatics..</b>	<b>18</b>
<b>Other Sciences: Ocean, Geology...</b>	<b>7</b>

## SUBJECTS: ~ 100

Pre-Graduate:	50 %
Post-Graduate:	30 %
Master (no RS MS):	15 %
RS Master (2)	~ 5%

Remote Sensing (Fundamentals)	30 %
Remote Sensing & GIS	15 %
Photogrametry	9 %
Environment	7 %
Cartography	5 %
Agriculture	5 %
Other	29 %
Radar, Forestry, Atmosphere, Geology...	

- **THE USUAL COURSE LENGTH IS ONE SEMESTER**
- **ONLY TWO RS MASTER: UNIV OF VALENCIA & BARCELONE (2 YEARS)**
- **THE REMOTE SENSING SUBJECTS ARE USUALLY EMBEDDED INTO COURSES THAT DEAL WITH OTHER TOPICS**
- **MOST OF THEM INCLUDE WORK ON COMPUTER**
- **MANY COURSES INCLUDE A PROJECT WORK AT THE END OF THE COURSE TO BE DEVELOPED BY STUDENTS**
- **MOST OF THE COURSES ARE LINKED TO THE RESEARCH ACTIVITIES OF THE ORGANIZING GROUP**
- **MOST OF THE COURSES ARE FOCUSED TO MARKET DEMANDS**
- **THE GRADUATE AND MASTER COURSES ARE PAID BY STUDENTS**
- **FEW COURSES INCLUDE FIELD WORK**

## - SOFTWARE

- ERDAS-IMAGINE, ILWIS, PCI, ENVI, BILKO...
- IDRISI, ER-MAPPER, MIRAMON, GRASS...
- MATHLAB, ESA, FreeWARE, DIMPLE, HyperCube...
- OWN SOFTWARE

## - IMAGES

- LANDSAT, SPOT, MODIS, NOAA, MSG, ERS-1/2..
- AERIAL PHOTOGRAPHIES

## - BOOKS & NOTES

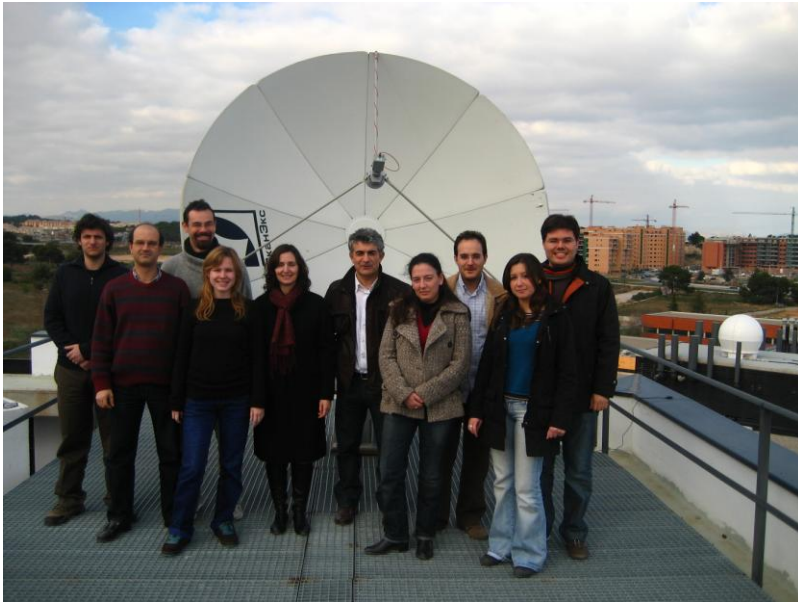
## - RECEIVERS

**Univ. of Valladolid**



**Univ. of Valencia**

## - RECEIVERS



SCANEX RECEIVER AT THE  
UNIVERSITY OF VALENCIA  
(SPAIN)

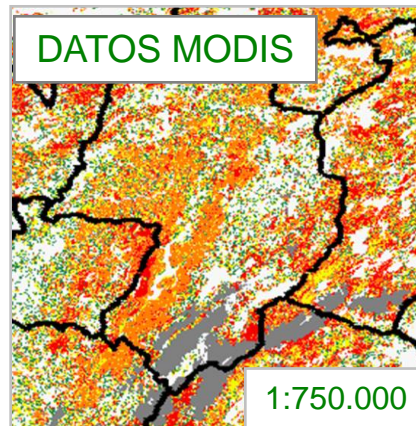
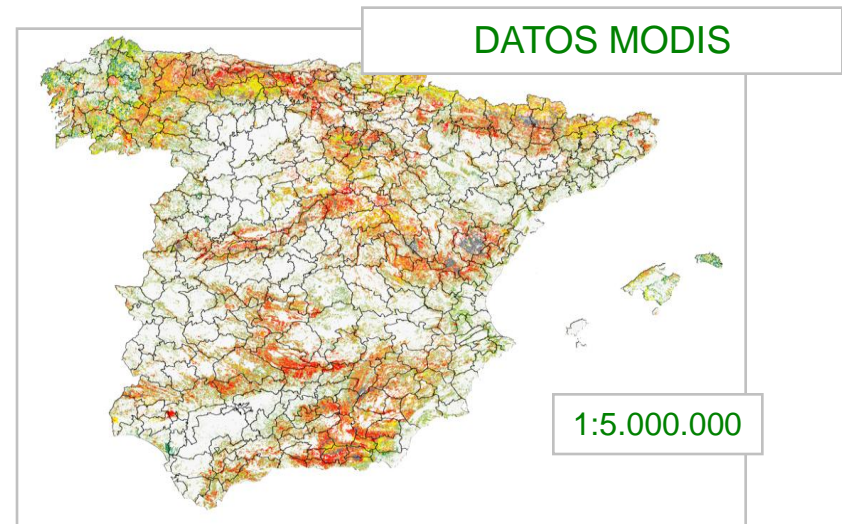
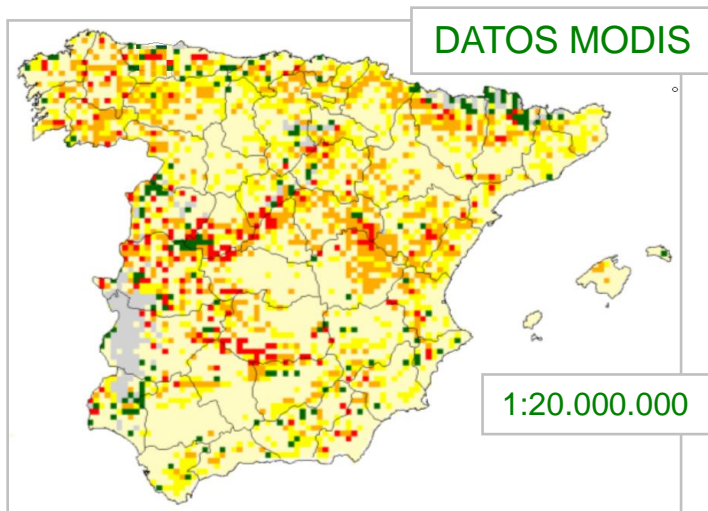


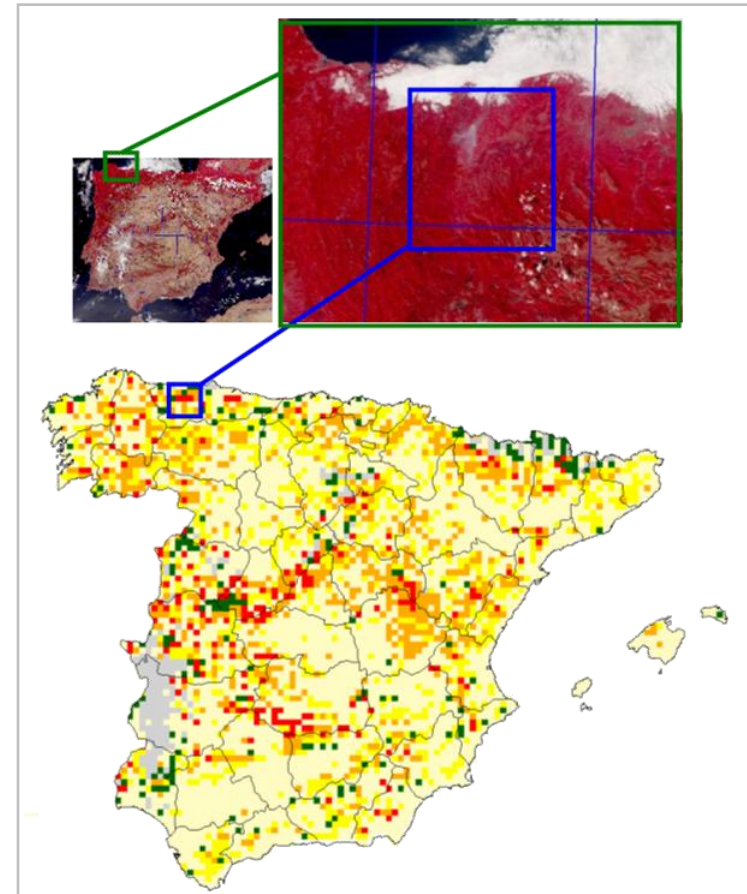
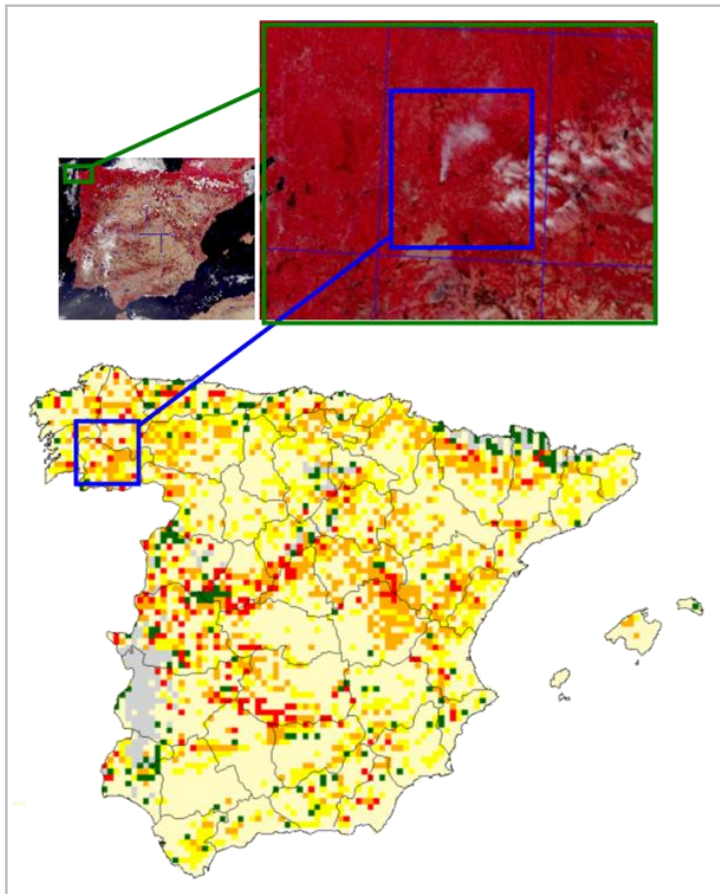
SCANEX RECEIVER AT THE  
UNIVERSITY OF VALLADOLID  
(SPAIN)

## HAVING A RECEIVER....

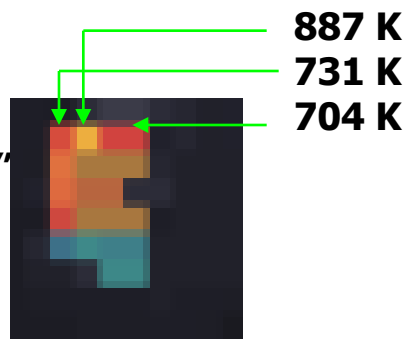
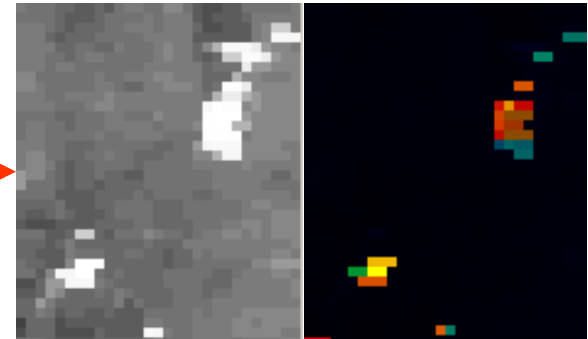
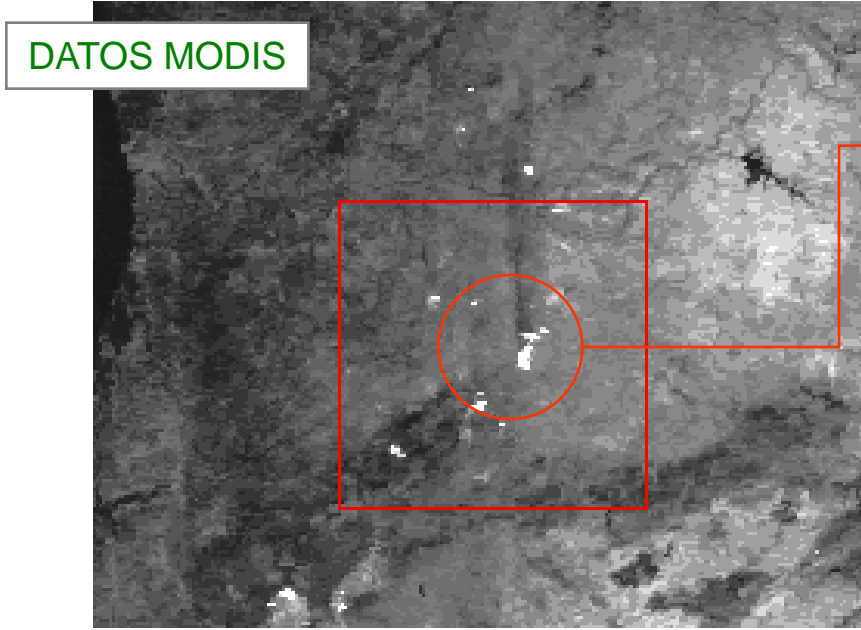
- Students can do TRUE remote sensing in real time
  - ...getting information in real time...
- To program their own captures
  - ... choosing and neglecting orbits...
  - ... selecting ROI's....
- To see images coming during capturing time
  - ... seeing clouds, sea, land...
- To overtake “static” RS doing “dynamic” RS
- To feel emotions when capturing images from far countries

**IN SUM, A RECEIVER IMPROVES RS LEARNING  
AND HELPS RS TEACHING**

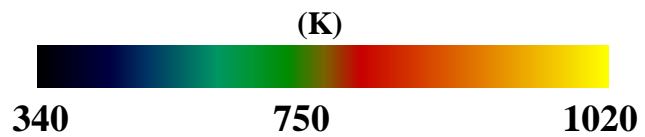


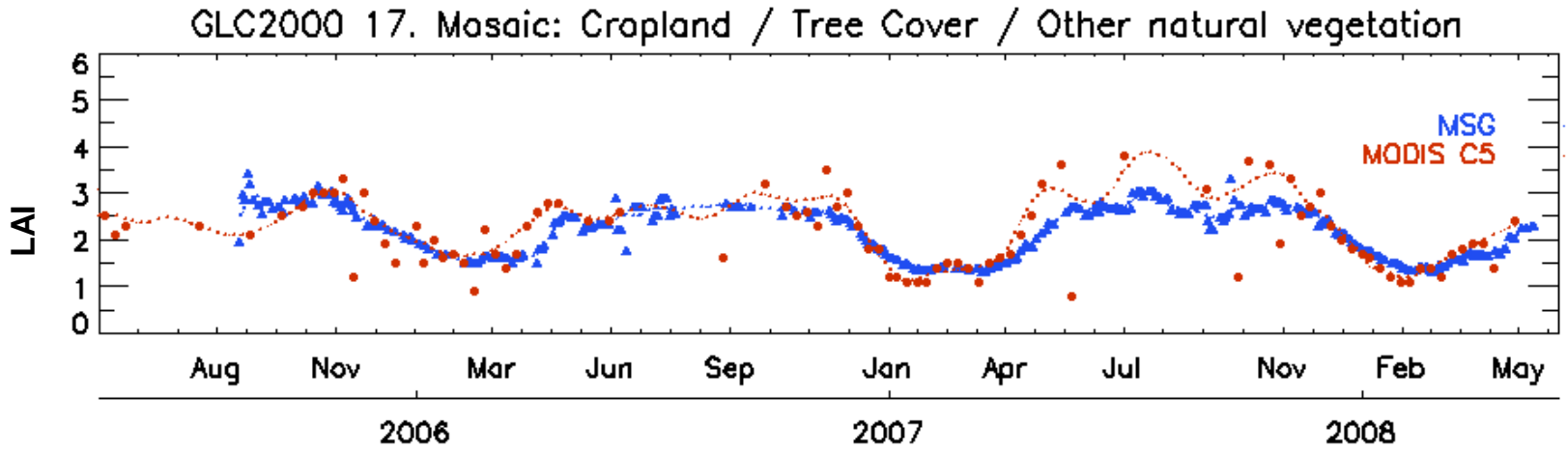
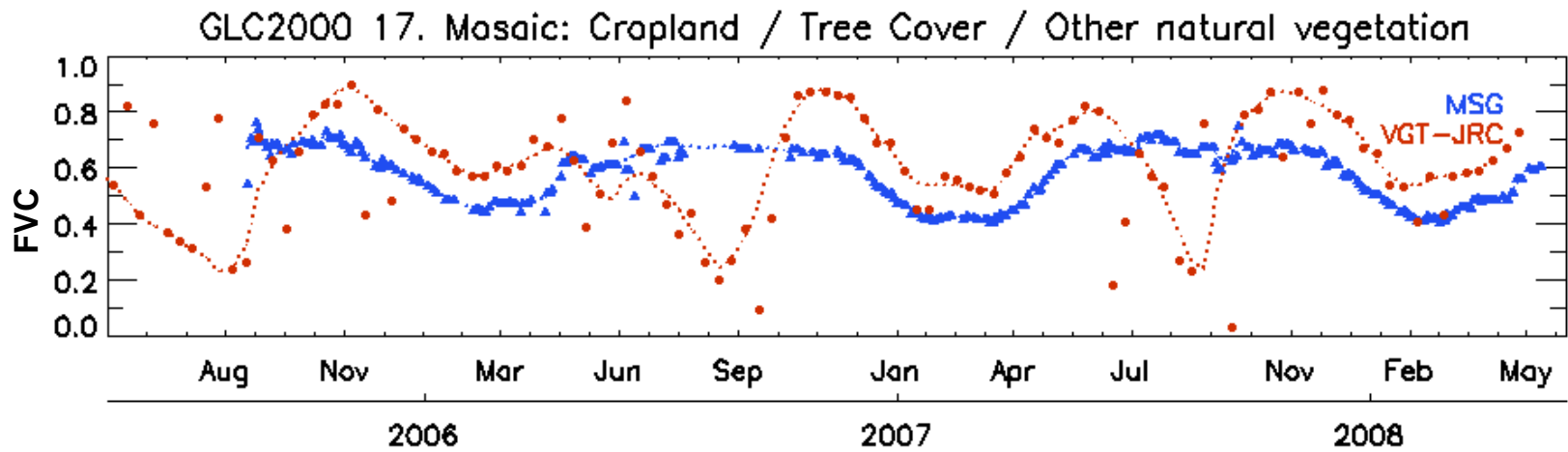


- Composiciones en falso color con datos MODIS-TERRA y mapa de riesgos de incendio a escala 1:20.000.000. Se pueden observar los penachos de humo en zonas previamente cartografiadas como de alto o riesgo extremo en las regiones de Galicia y Asturias (03/09/2005).



- > Detección de "Hot Spots"
- > Frente de llama





- High diversity of subjects both in number and in content. This variety has some advantages, but it also has some disadvantages
- Diversity of supply both in educational levels as in-depth because many of them are specifically focused to market needs.
- Many highly diversified subjects that limits cooperation between teachers and the development of common materials.
- This survey shows that many teachers have homemade material, but there is no a common repository where the tasks are managed for improvement or distribute them among colleagues.

СПАСИБО ЗА ВНИМАНИЕ