

IMAGINE...

A NEW GALAXY

EarthLab Programme : A Galaxy of worldwide centres using remote sensing devoted to environmental

Forum Teratec 2014

Technical Workshop: Digital technologies for plant

Paris 02/07/2014

TELESPAZIO

A world leading provider of space applications

Key group figures

- **25** sites over 8 countries
- **4** space centers, with the largest commercial **teleport** in the world
- A turnover of 600 million euros in 2013
- More than **2500** employees
- Over **3000** clients in more than **100** countries

A service portfolio based on 4 expertise





EarthLab

Towards a global geo-information's cluster

Worldwide deployment of Centers of Research & Development for the production of integrated Geo-Information in response to local environmental issues

Partnerships & Local co-investments

Structuring a global R&D eco-system



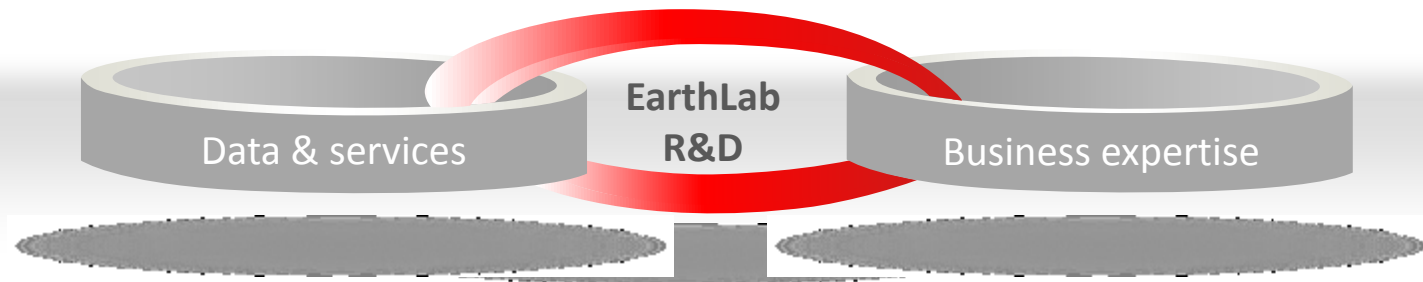
Daily Interface with users to create products and value added services

Combination of data from space-based sensors, unmanned technologies

Local public & private partnerships
governments, local authorities, Big companies, Research centers, start-up

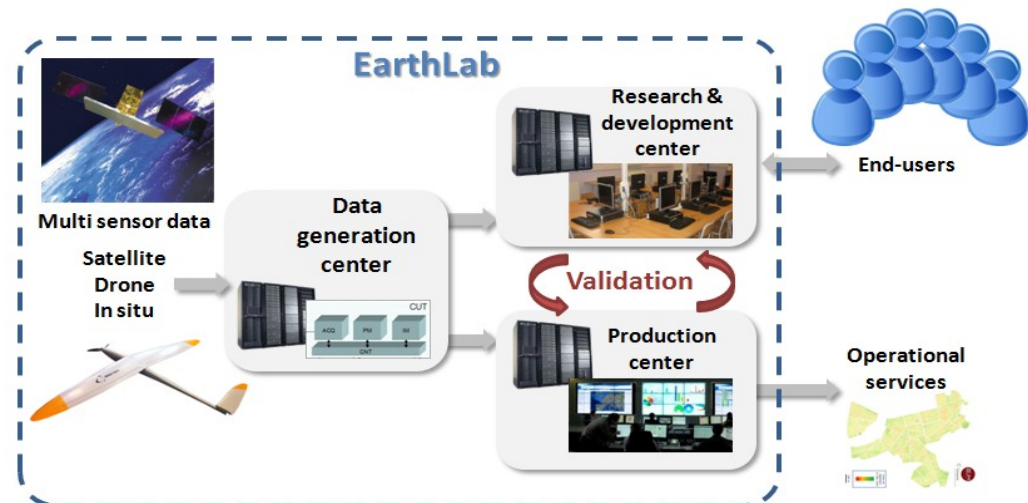


Research and Development as a strategic engine



Combine access to data and satellite expertise services

with land and business expertise on each economic sectors concerned



To meet specific **user needs** by offering comprehensive services economically viable



2014

The catalog "Products & Services" EarthLab rise

■ AGRICULTURE, VINE, FORESTRY AND COASTAL MONITORING

- *in cooperation with the Aquitaine Region =>*



EarthLab
« ORIGINEL »

■ MARITIME SURVEILLANCE AND MAPPING

- *oceans and land in sub-Saharan Africa in cooperation with the Gabonese Republic (and AGEOS, FGIS)*



EarthLab
GABON

■ THE DEPLOYMENT IN PROGRESS

covering additional environmental issues in other parts of the world

-> In Europe (Industrial & environmental Risk)

-> In Asia (water issues)

-> In North America (ice monitoring)





EarthLab key Partners

- Group partner



- Institution



- Laboratory

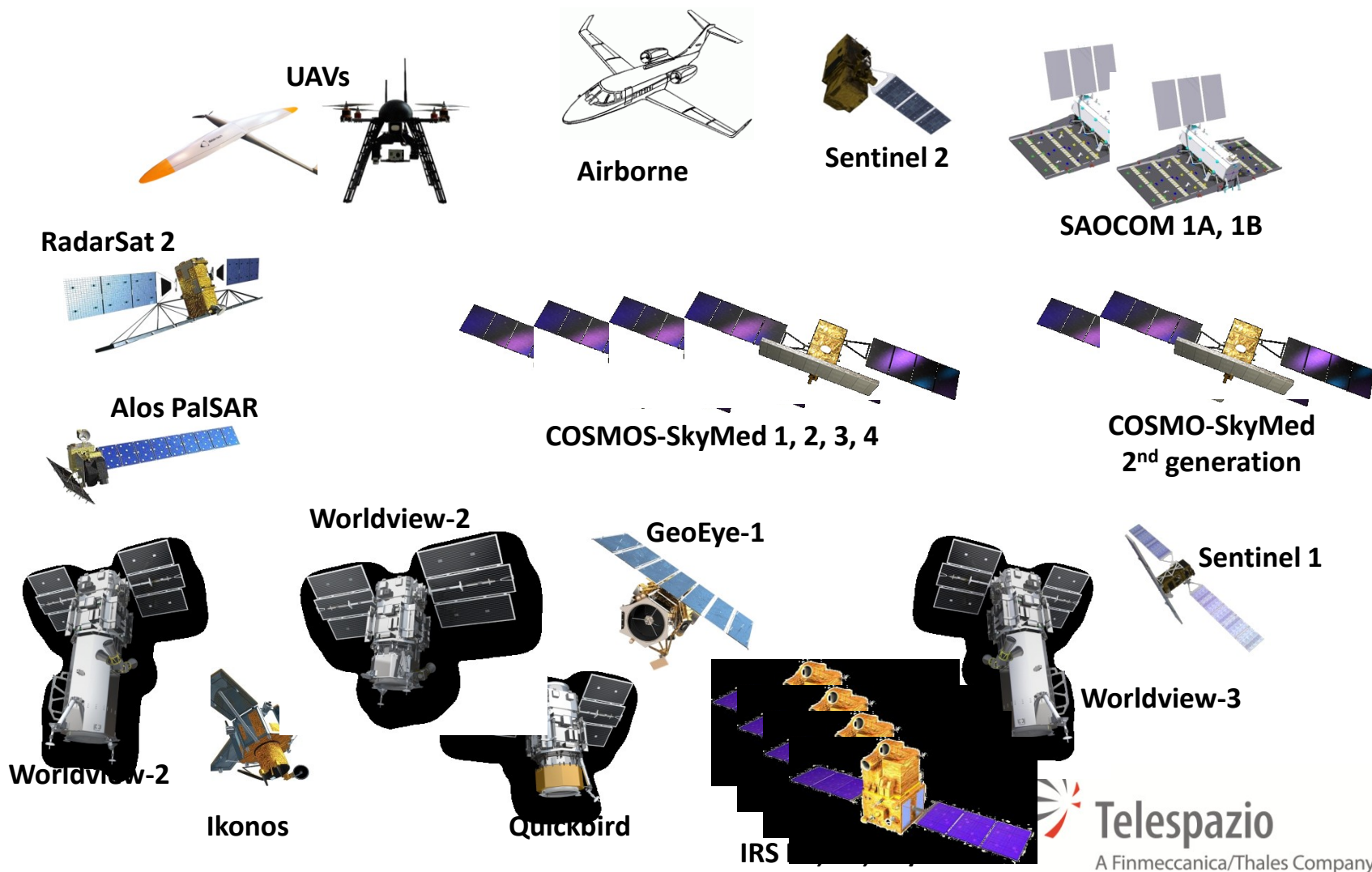


- Small company and final user





EarthLab sensors dedicated to plant



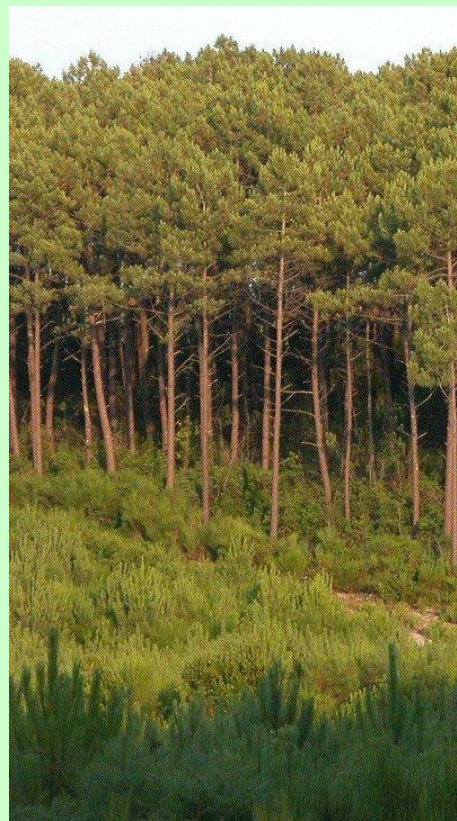


EarthLab applications dedicated to plant

Vines



Forest



Crops





EarthLab applications dedicated to plant

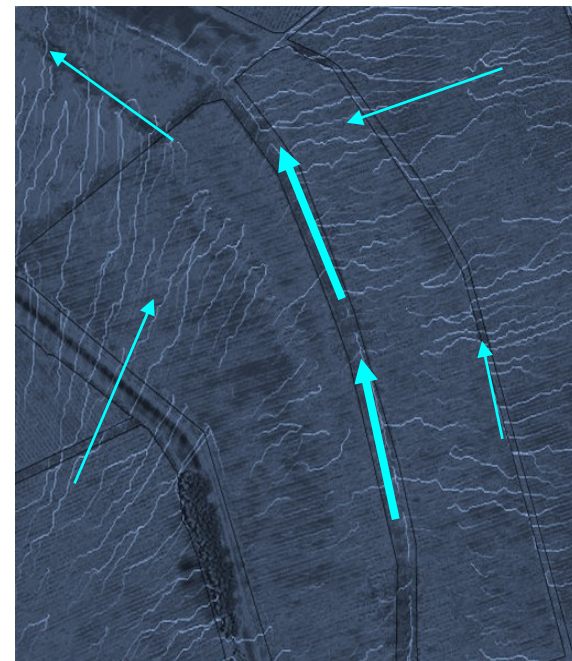
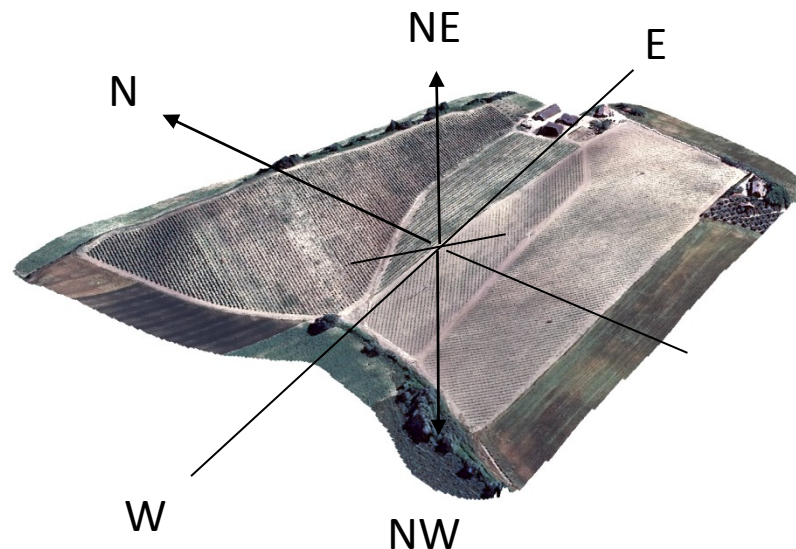
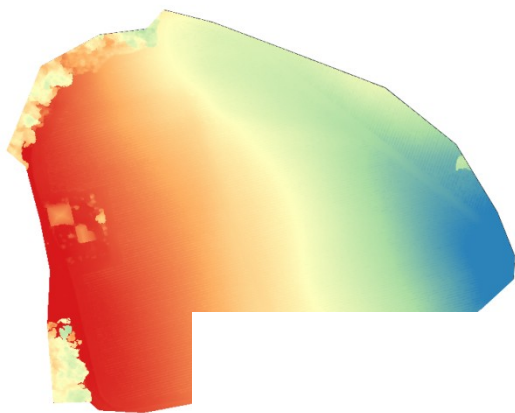
Vines





Vineyard audit

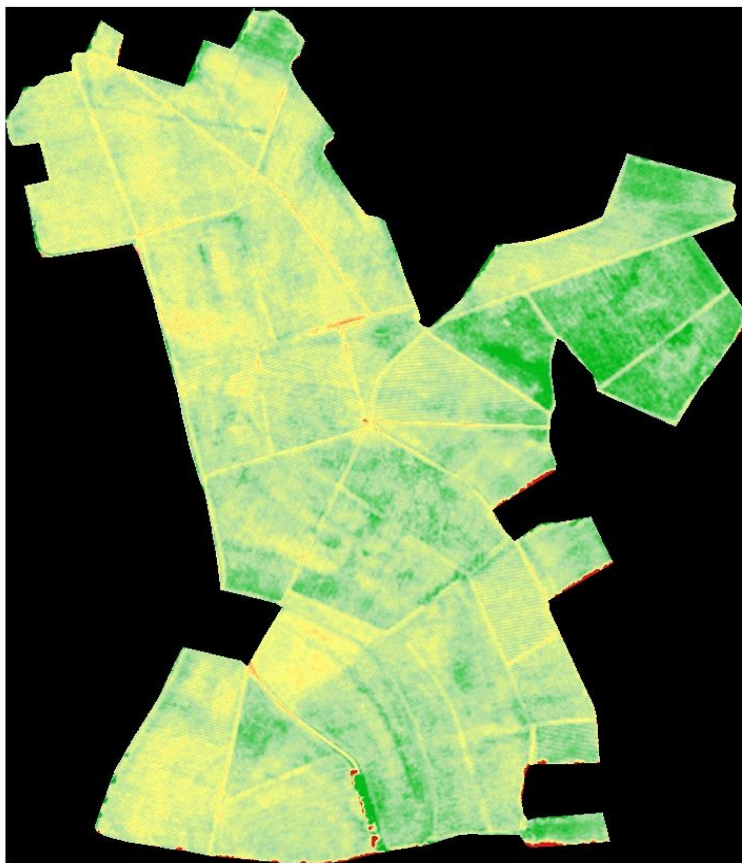
- Mapping slope, exposure.
- Hydrological flow modeling, erosion probability.





Agriculture optimization

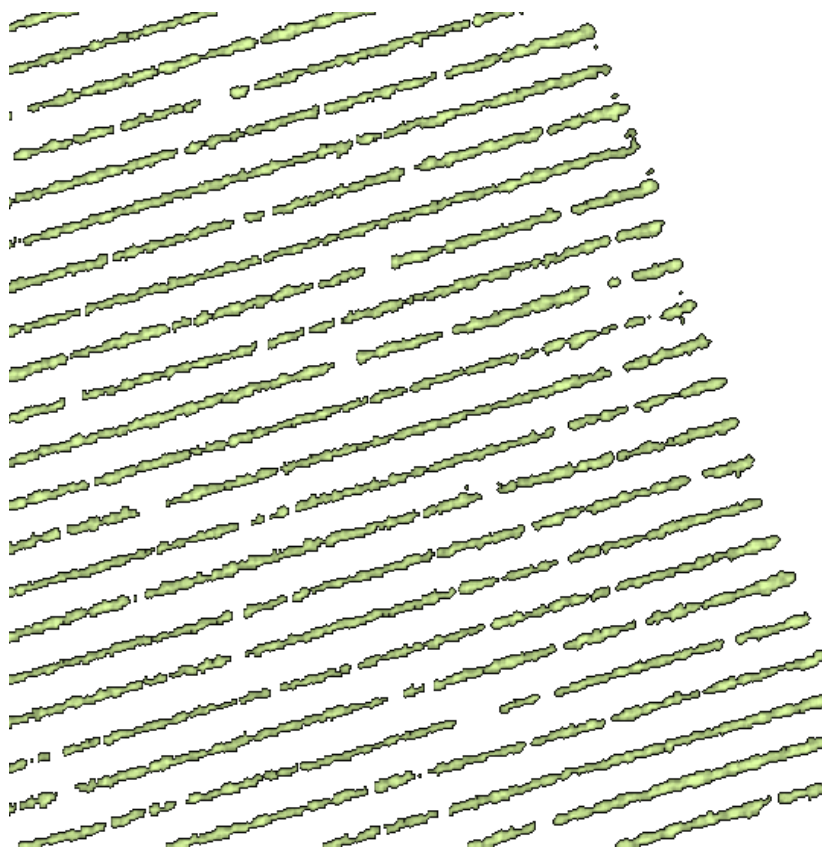
Crop inputs (water, fertilizer...) variable rate application





Vineyard upkeep

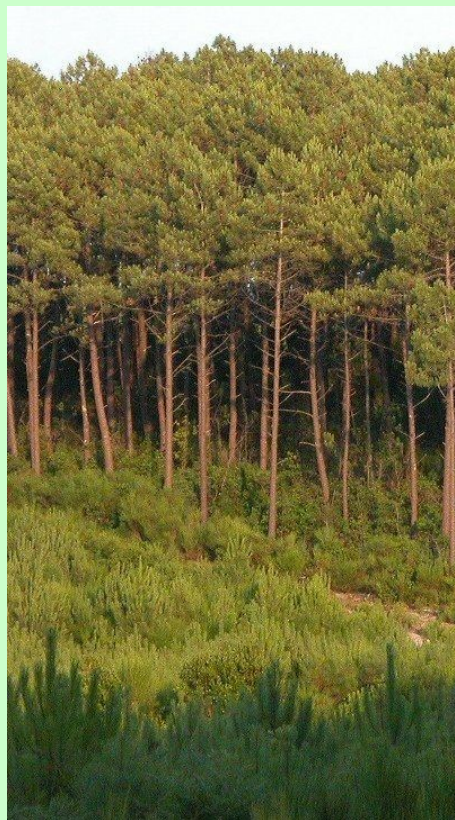
Missing vines detection





EarthLab applications dedicated to plant

Forest





Ressource management

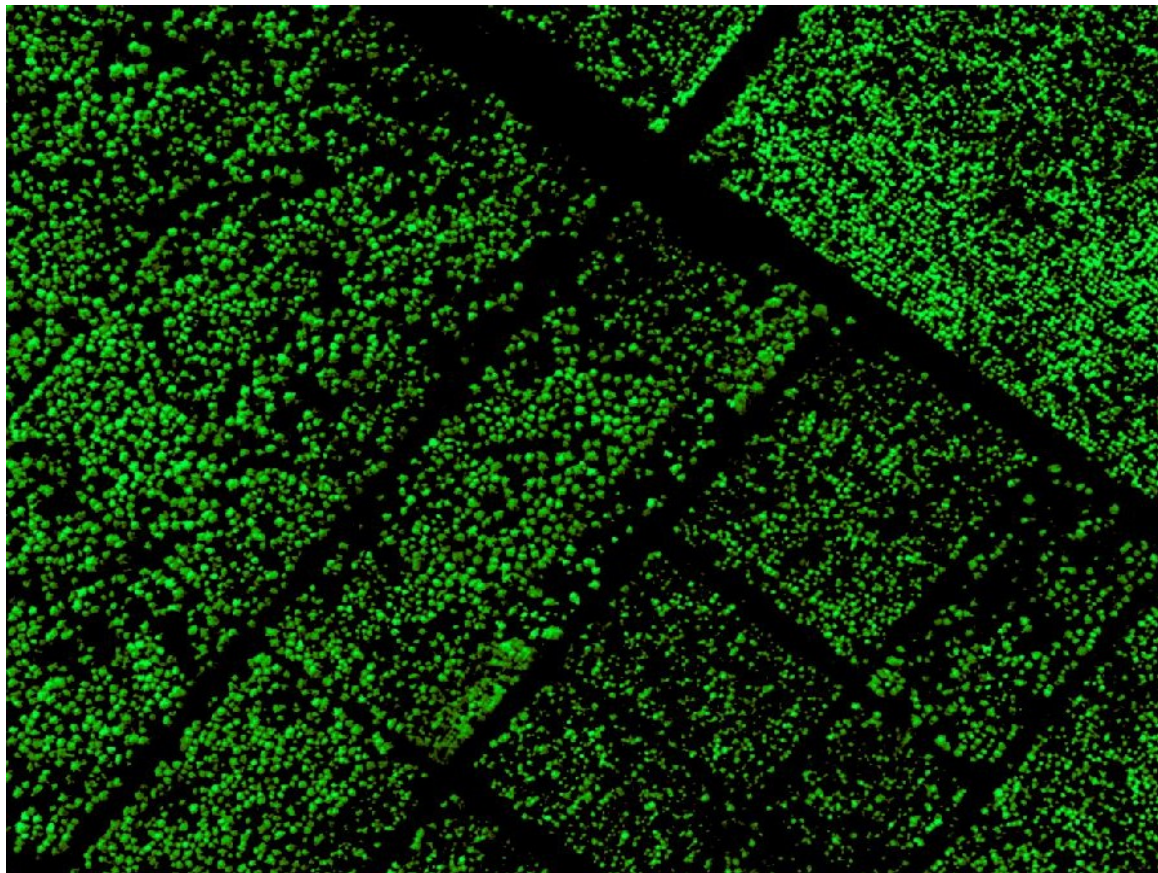
- Density classes based on satellite images for forest management





Ressource management

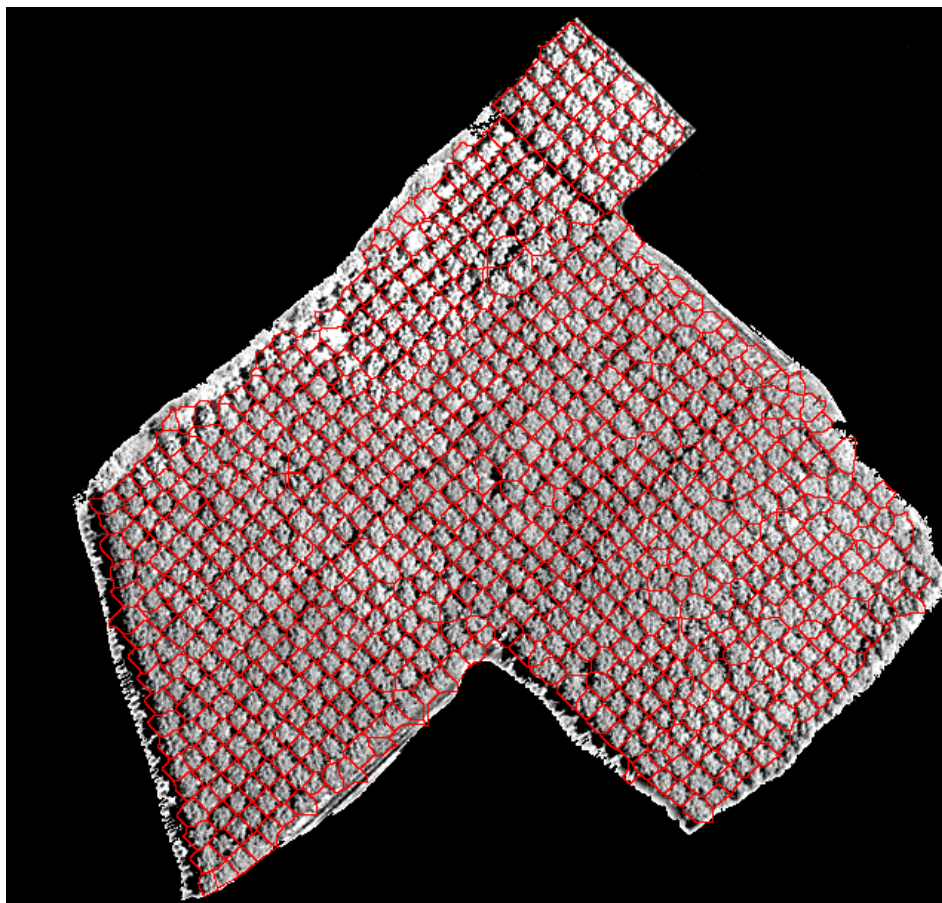
- Tree crown detection and counting based on optical VHR imagery





Ressource management

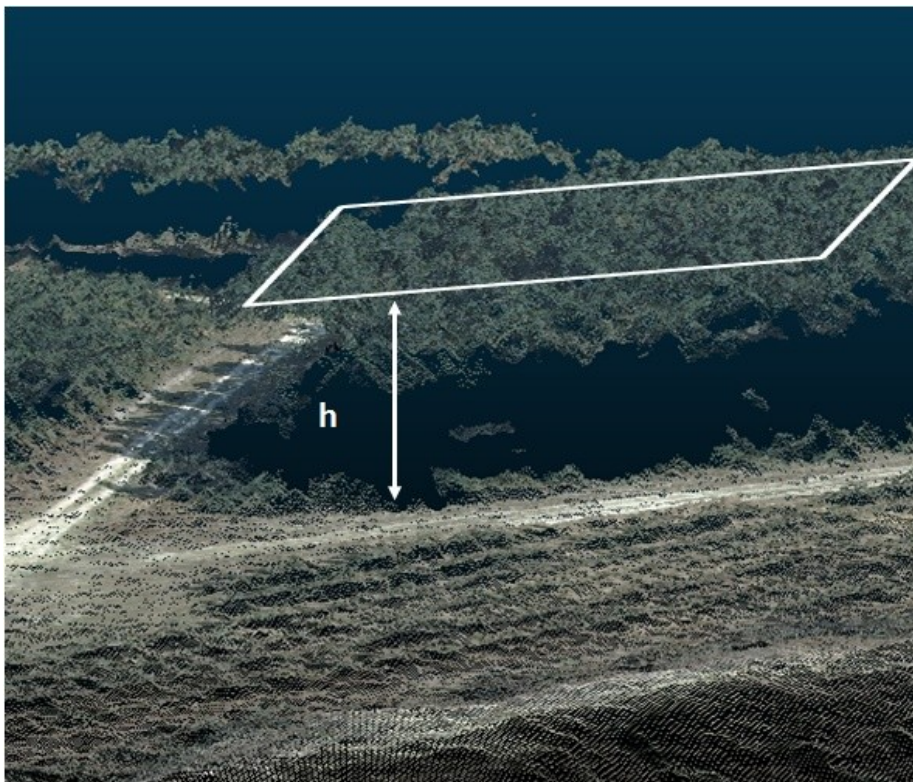
- Automatic timming trees





Ressource management

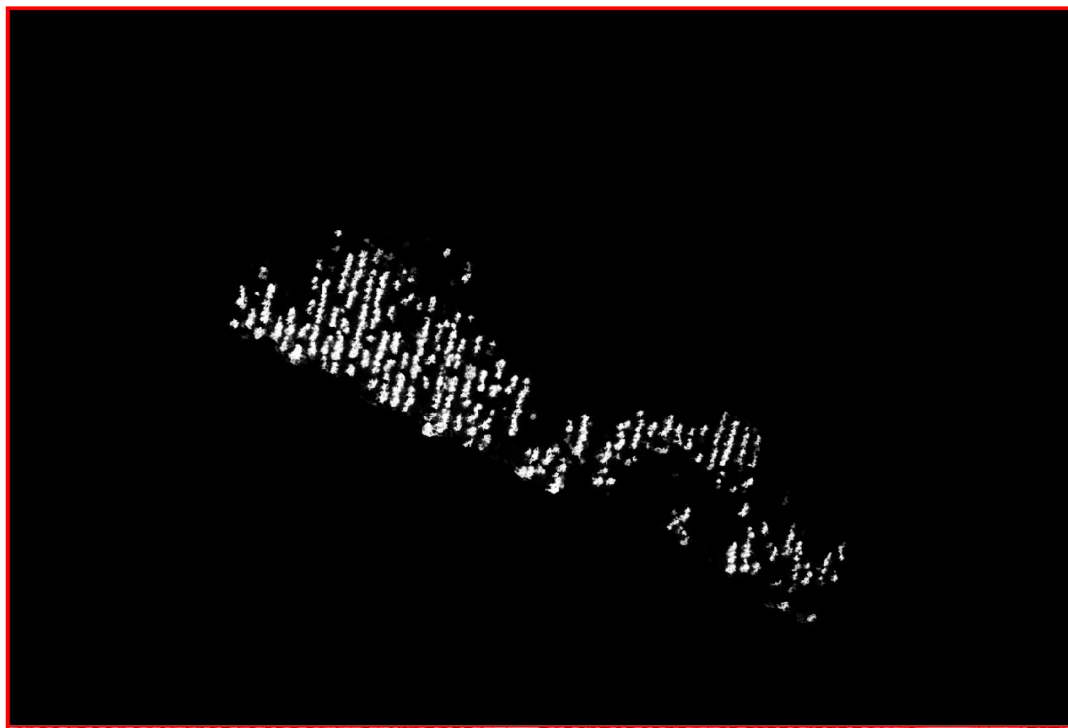
- Conapy height measurement





Forest health management

Health monitoring : chablis, defoliations and mortality





EarthLab applications dedicated to plant

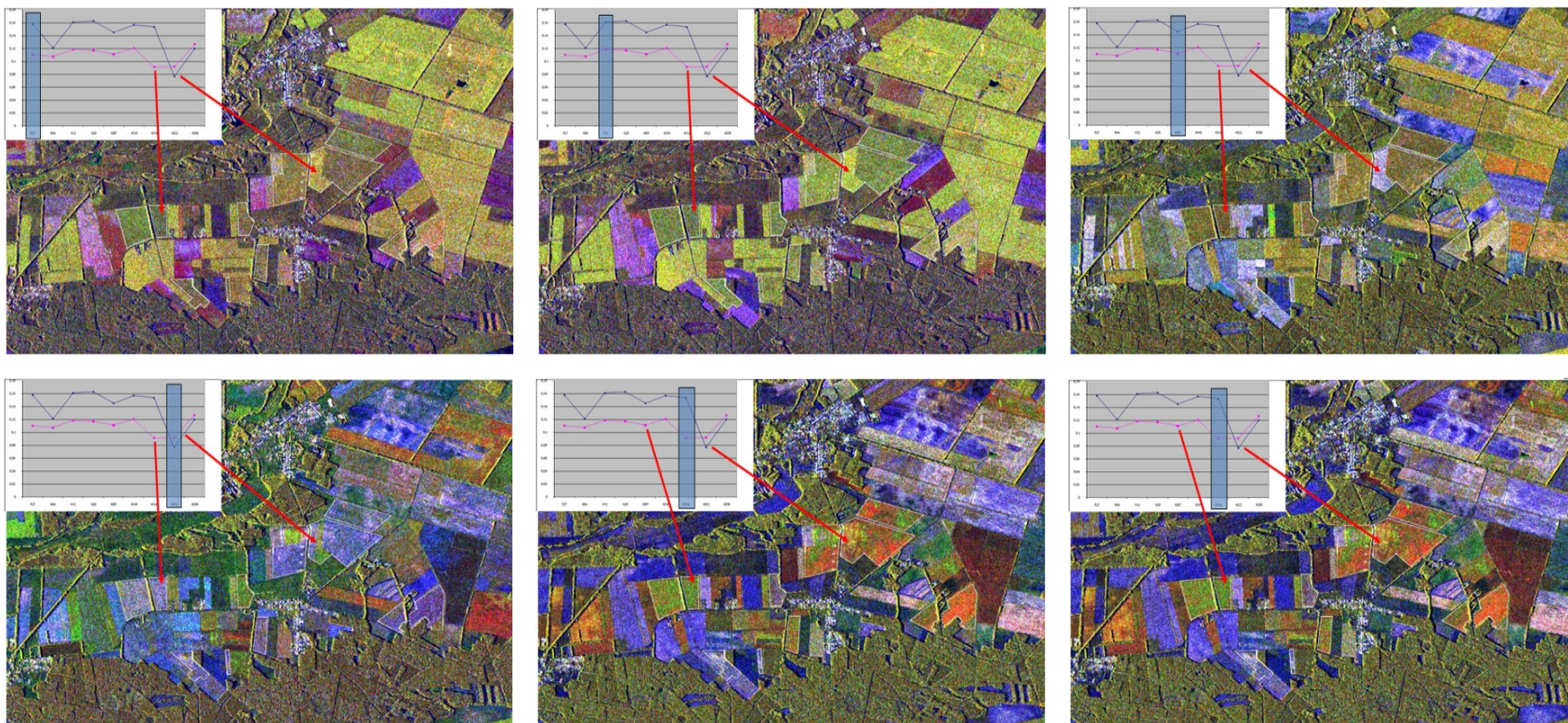
Crops





Cereal: Biomass estimation

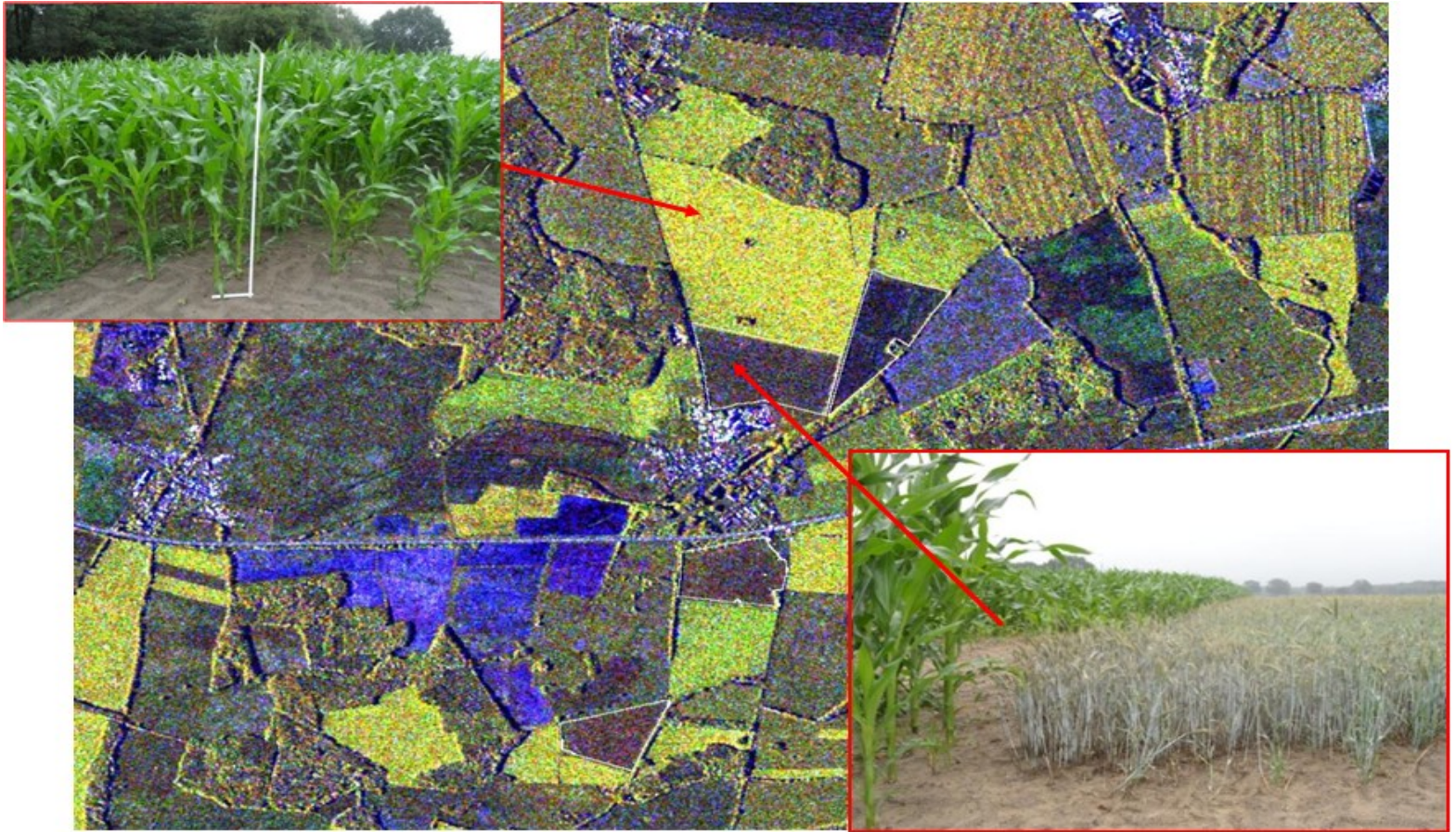
- Combination of SAR images to extract biomass information

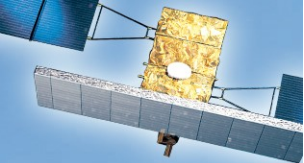




Biomasse estimation

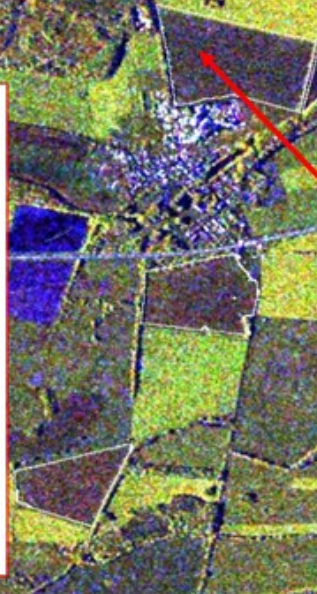
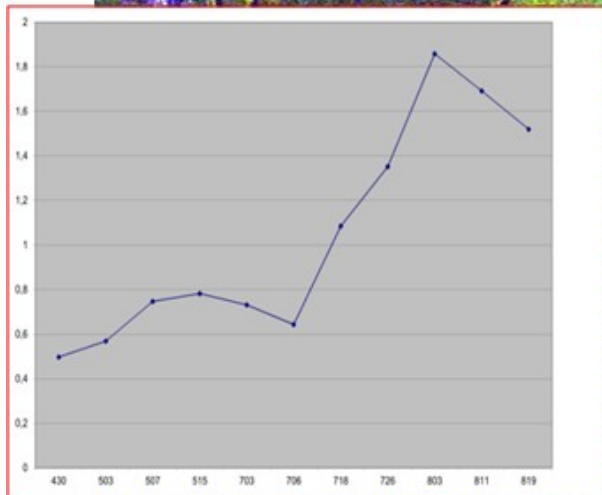
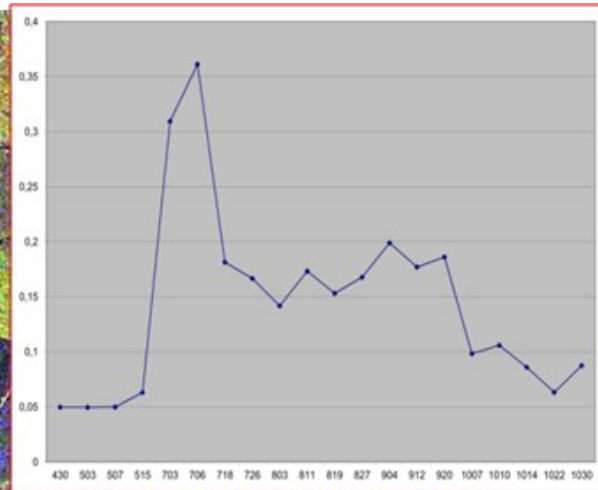
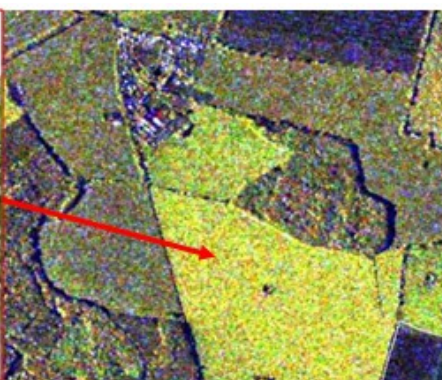
Corn vs Rye: growth evolution

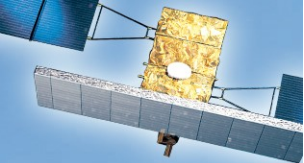




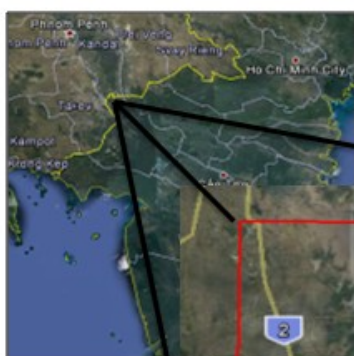
Biomasse estimation

Corn vs Rye: growth evolution





RICE MONITORING



Vietnam test site: South An Giang province - Sites of Thoi Son (yellow on the image)

Cosmo SkyMed data:

StripMap Pingpong: HHVV
20m, 30km swath
Incidence >40°
3 images : 19 Aug, 4 & 20 Sep, 2013 (10 expected)

An Giang (Thoi Son & Chau Thanh): 40 *In-situ* data collect



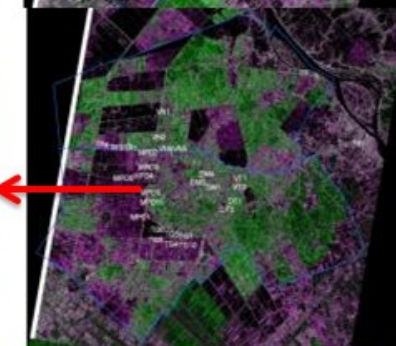
19 Aug 2013



4 Sep 2013

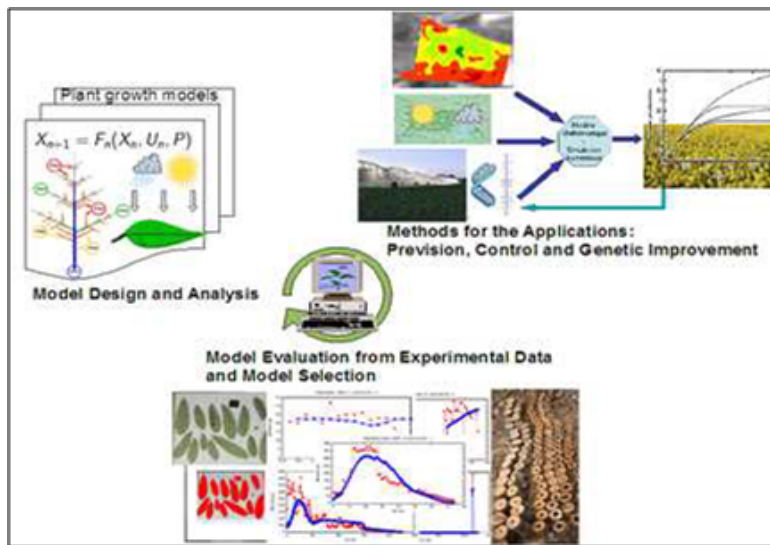


13 Sep 2013

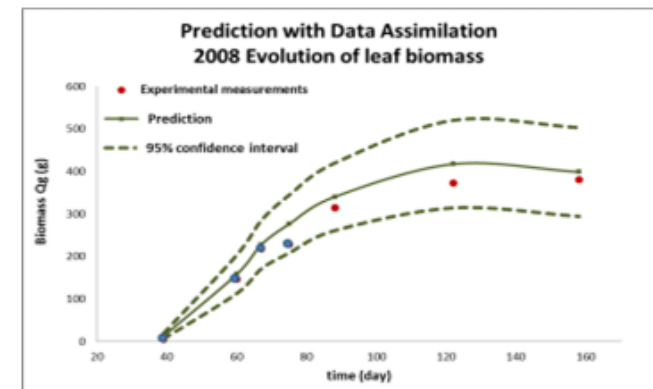


RICE MONITORING

- Biomass estimation and yield forecast



Plant growth model: parametrization and calibration for rice crop



Application for yield production

(results obtained at the experimental farm of China National Hybrid Rice R&D Center, Changsha, China)

Earthlab derived services

- Yield forecast and risk assessment
- Biomass estimation and annual assessment report on crops production
- Decision-aid tool for farming practices (irrigation, fertilization, pest and disease control)
- Green House Gas (GHG) rejection assessment



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