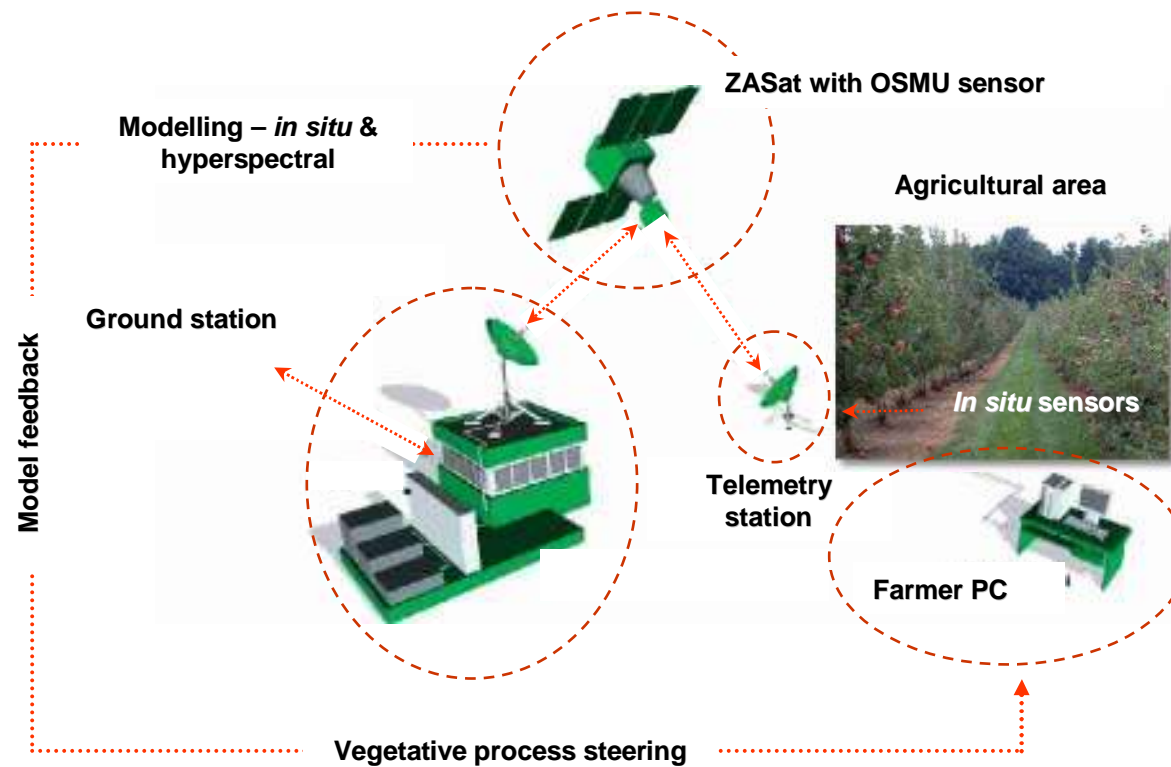


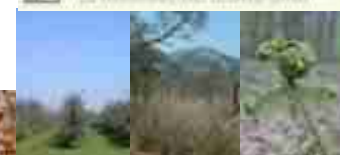


# The IS-HS Project Vegetative System Modelling



Model, Monitor, and  
Manage Bioresponses  
(M3-BIORES)

KATHOLIEKE UNIVERSITEIT  
**LEUVEN**



Prof. Pol Coppin  
(Pol.Coppin@biw.kuleuven.be)

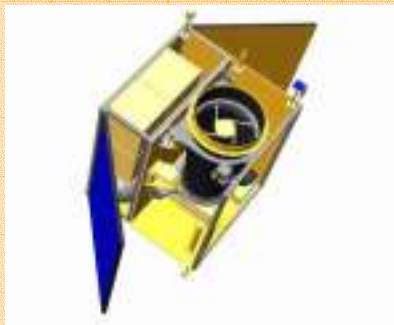
Dr. Jan van Aardt  
(Jan.vanAardt@biw.kuleuven.be)



# IS-HS Project

Integration of *In Situ* data and HyperSpectral remote sensing for monitoring and modeling plant production

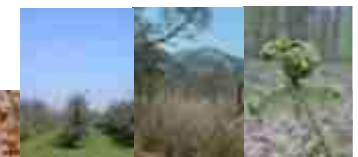
Hyperspectral  
ZASat II



*Vegetative  
process*



*In situ data*





# IS-HS Goals

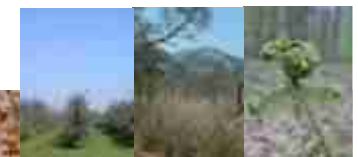
The IS-HS project was developed to

- study vegetative production processes
- using an integration of in-situ and hyperspectral satellite data as model inputs
- to deepen our understanding of such vegetative processes
- and aid in the management of vegetative systems

Project outcomes have significant implications since

- accurate modeling enables us to monitor abiotic and biotic stresses in
- production-oriented systems and
- monitor vegetative accretion and current system state

**Provide resource managers with up-to-date information necessary to pro-actively manage vegetative systems**

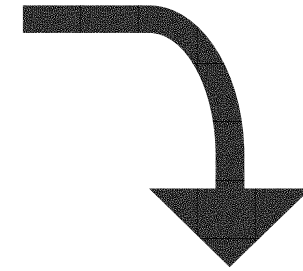
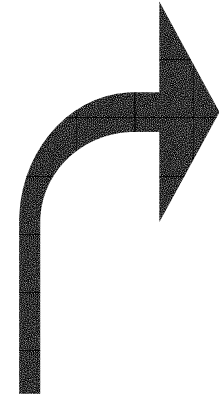


# IS-HS Context



## Vegetative system

- Forestry
- Agriculture
- Horticulture
- Viticulture



### Inputs

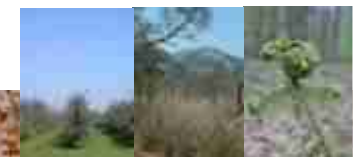
- Hyperspectral sensing
- In-situ data
- Auxiliary inputs

### Model

- ...deviation from optimal processes
- ...stress situations
- ...real-time process steering

### Output Models

- Health
- Production
- Operational steering

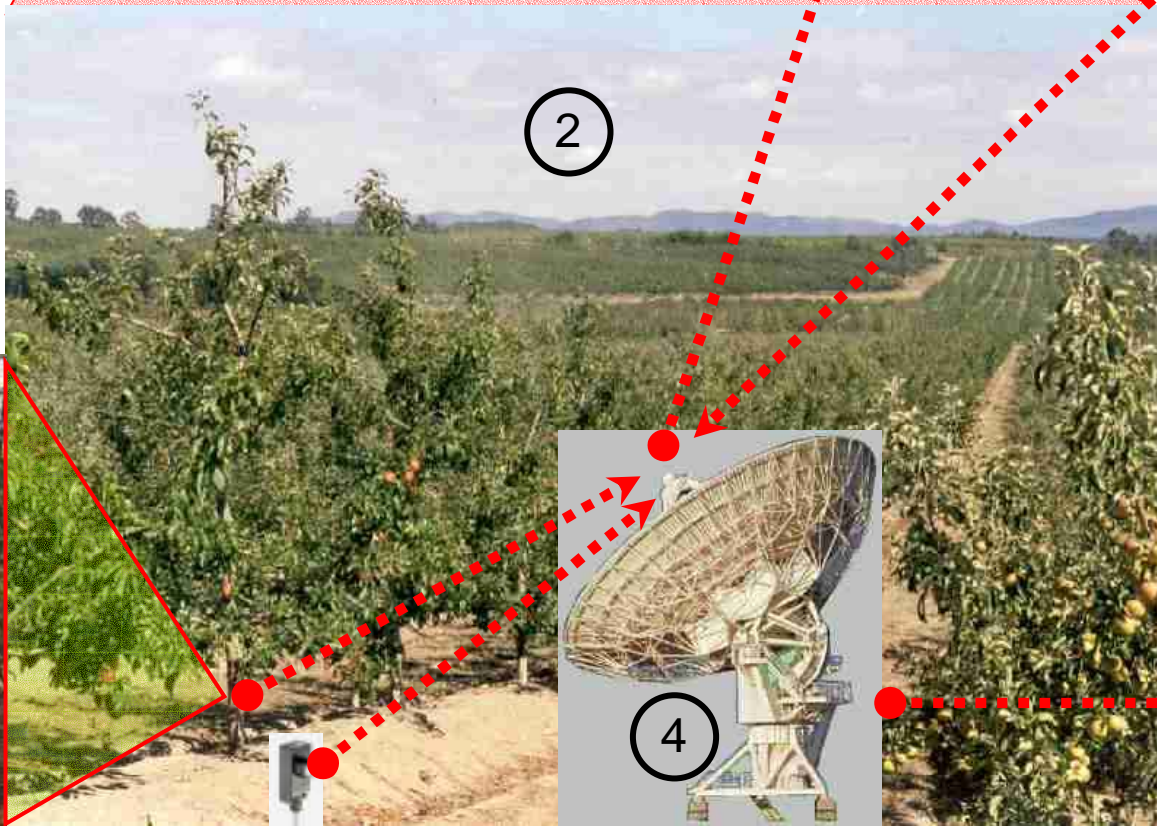


# IS-... onents:

1. Satellite with OSMU sensor (data processing) Modelling...
2. Agricultural area (e.g., orchard)
3. In-situ sensors (e.g., sap-flow, soil moisture)
4. Ground telemetry station Image acquisition
5. User computer management system (analysis & steering)



1



2



3



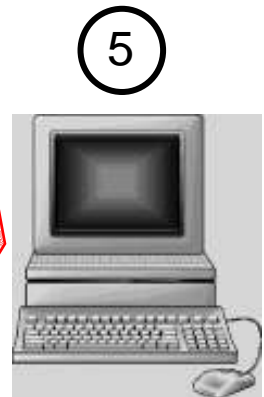
4



In situ data collection & telemetry



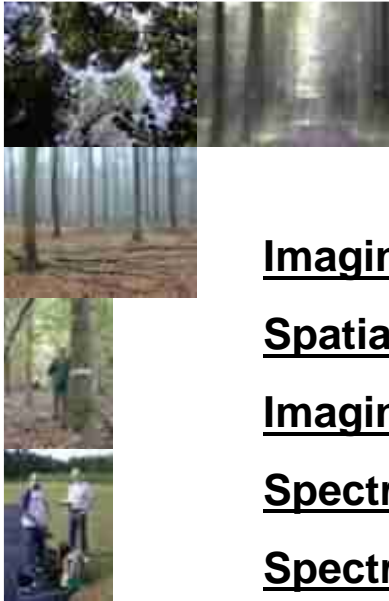
...modelling results telemetry



5

Process Steering

# OSMU Hyperspectral Sensor onboard ZASat II



<u>Imaging Mode</u>	<i>Hyperspectral</i>	<u>Image Area</u>	<i>15 km</i>
<u>Spatial Resolution</u>	<i>15 meter</i>	<u>Altitude</u>	<i>705 km</i>
<u>Imaging Channels</u>	<i>200 channels</i>		
<u>Spectral Range</u>	<i>400-2350 nm</i>		
<u>Spectral Resolution</u>	<i>10 nm</i>		

