

# *SUP'COM Contributions ALTOS/PRIMA*

Riadh Abdelfattah

*COSIM Lab  
Ecole supérieure des Communications de Tunis  
Université de Carthage*

## Technopolitan environment

Located in the heart of a technopolitan environment conducting many synergies between training, production and R & D .



80 High-tech companies  
A dozen of multinationales  
4000 top executives



## Laboratories

MEDIATRON

Mobile Networks and Multimedia

CN&S

Network Security

GRES'COM

Innovative and Green Communication Systems

COSIM

Communication, Signals et Imag

INNOV'COM

Innovation of Communicant and Cooperative Mobiles

## Les Unités de Recherches

URSN

Cyber-security

# Skills in RDI Techniques

Content: Signal, image, speech

Services developement

Signal processing  
Image processing  
Audio processing  
Wireless communication

Telecommunication networks

Digital communication

Sup'  
Com

Wireless networks  
Mobile networks  
Réseaux de capteurs sans fil  
All-Optical Routers  
Switched Optical Networks

Optical communication  
Radiocommunication  
Micro-wave techniques  
Architectures of digital processing embedded systems

Radiocommunications

# Outline

- The ALTOS Team ....
- Contribution in WP1
- Contribution in WP2



# The Team

- Riadh ABDELFAH (SAR image processing : Interfero & Polar) WP1 & WP2
  - ✓ Meriem BARBOUCHI (Postdoc)
  - ✓ Chayma CHAABANI (PhD)
  - ✓ Master (to be hired)
  
- Sadok EL ASMI (Stochastic modeling) WP1
  - ✓ Julie CARREAU (LISAH & IRD)
  - ✓ Nesrine FARHANI (PhD student)
  - ✓ Hela HAMMAMI (PhD student)

# Contribution in WP1

## Task 1.1: object geometries and landscape structures (leader: IRTA).

- Climate variability.
  - Targets: climate spatiotemporal structures.
  - Methodological innovations: disaggregation of climate model simulations using multivariate statistics on various data (in-situ, remote sensing, high resolution meteorological model simulations) using stochastic weather generator with SAR images.
  - Study areas: Cap Bon, Merguellil.

## Collaborations with Mediterranean partner : LISAH, CESBIO

- Spatial variability in soil infiltrability (Pre-processing and integration of SAR Sentinel-1 data)

# Contribution in WP1

## Task 1.2: landscaping features, agricultural practices and connectivities (leader: LARI).

- Crop biomass.
  - Targets: times series of biophysical variables along with final yield.
  - Methodological innovations: joint use of remote sensing data Sentinel-1 & 2 satellite data and TerraSAR-X satellite data along with statistical analysis.
  - Partners: SUPCOM, INRGREF.
  - Study areas: Cap Bon

## Collaborations with Mediterranean partner UCAM

- Land use. (times series of Sentinel satellite data long with object-oriented classification methods,)



# Contribution in WP2

## Task 2.1: water and chemical fluxes (leader: CERTE)

- Evapotranspiration, soil moisture and crop growth.
  - Targets: vegetation water status across growth cycle, yield, water use efficiency.
  - Methodological innovations: joint use of eddy covariance / sap flow / isotopic measurements and optical / radar / thermal infrared remote sensing data, joint use of times series from in situ and remote sensing data.
  - Partners: INRGREF, SUPCOM, CESBIO, LISAH, UCAM, UNICA, IRTA.
  - Study areas: Cap Bon, Merguellil, Tensift, Segre, Orroli.

## Collaborations with Mediterranean partner UCAM, LISAH, CESBIO

- Validation on the test site in Morocco,
- Integration of SAR data within the Evapo. Model developed by CESBIO

# Contribution in WP2

## Task 2.2: characterization of spatial heterogeneities (leader: CESBIO).

- Landscape scale heterogeneities induced by soil, topography and canopies.
  - Targets: water fluxes in heterogeneous landscapes.
  - Methodological innovations: joint use of eddy covariance data at sub-catchment scales (few tenths of hectares), of scintillometry data across field transects, and of remote sensing data with embedded metric to kilometeric resolutions à analysis of spatiotemporal dynamics.
  - Partners: INRGREF, SUPCOM, CESBIO, LISAH, UCAM , UNICA, IRTA.
  - Study areas: Cap Bon, Merguellil, Tensift, Segre, Orroli.

## Collaborations with Mediterranean partner UNICA, IRTA, CESBIO

- Multi-scale analysis (wavelet discrete transform)
- joint use of sap flow sensors (installed in both tree roots and trunks),