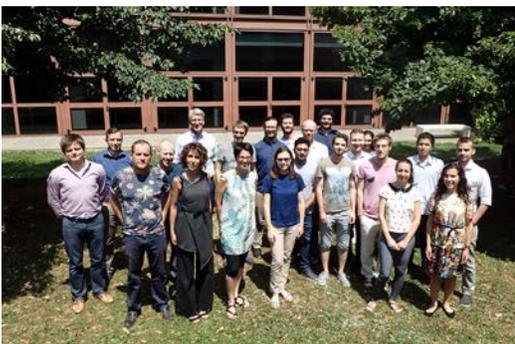


## TRUSTEE TRAINING SUCCESS

The first training school on Remote Sensing for Ecosystem Modeling was successfully held in sunny Italy at the campus of University of Milano-Bicocca. The team of ten early stage researchers were trained to unveil reflectance and chlorophyll fluorescence from vegetation for better understanding ecosystem functioning at local and global scale.



On the right, Dirk Schüttemeyer from ESA shows to the ESRs the actual number of ESA satellite missions around the Earth.

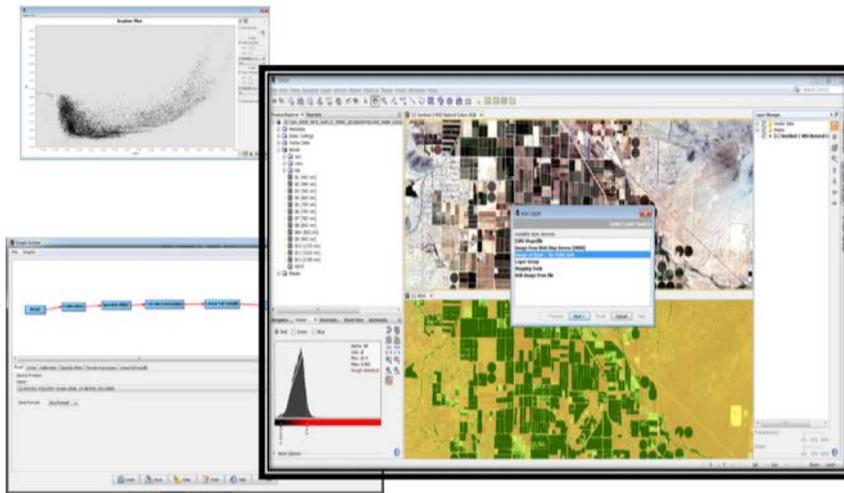
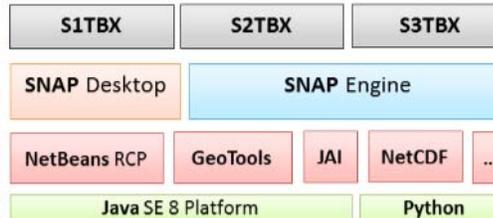
TRUSTEE, a Marie Skłodowska-Curie Innovative Training Networks Action funded by European Union's HORIZON-2020 program, successfully organized its first training school at the campus of University of Milano-Bicocca, Italy. The aim of the TRUSTEE is to train a new generation of scientists with complementary and interdisciplinary skills in remote sensing of vegetation, and to improve the overall knowledge on this field.

During two weeks of this training, ten early stage researchers (ESRs) from highly diverse background and from all around the world (Italy, Switzerland, Greece, India, Spain, Colombia and Russia) were educated on the basics of remote sensing, ecosystem modelling and processing of remote sensing data. The First week training activities were mainly theory based lectures such as *Basics on Remote Sensing*, by [Micol Rossini](#) (UNIMIB); *An introduction to Earth Observations and Campaigns*, by [Dirk Schüttemeyer](#) (ESA); *Modelling approaches* by [Christiaan van der Tol](#) (ITC); *Global Carbon Cycle*, by [Mirco Migliavacca](#) (Max Planck Institute for Biogeochemistry, MPIB); *Introduction to Time Series Analysis in the context of Earth Observations*, by [Sebastian Sippel](#) (MPIB) and *Vegetation Models*, by [Silvia Caldararu](#) (MPIB).



During the second week, the ESRs were exposed to hands on practice for image processing by CS company representatives, provided an opportunity to work with Sentinel-2 images and learnt how to use SNAP, an image processing tool. Two of the ESRs, Dominic Fawcett and Javier Blanco Sacristán, presented a seminar on Google Earth Engine during a practical session and provided a brief overview of time series analysis using Google Earth Engine.

## SNAP & THE SENTINEL TOOLBOXES



- Common architecture and data model
- Very fast image display and navigation
- Graph Processing Framework
- Generic Operators:
  - Band Maths
  - Reprojection
  - Resampling
  - Subset
  - Resample
  - Subset
  - Multithreading and Multi-core processor support
- **S1TBX**: SAR readers & operators
- **S2TBX**: Optical high resolution readers & operators
- **S3TBX**: Optical medium resolution readers & operators
- **SNAPPY**: Python API

*Scheme showing the SNAP and Sentinel toolboxes configurations. These toolboxes can be used by users for free to process Sentinel imagery. During the CS course, the ESRs had the chance to learn how to use them.*

The ESRs also had the opportunity to learn more about the intricate structure and the management of the project and the potential collaborations between each other in a lecture given by [Cinzia Panigada](#) and [Tommaso Julitta](#) (UNIMIB), both in charge of the administration of the TRUSTEE project. The training event was coordinated by Micol Rossini with the support of Cinzia Panigada and Tommaso Julitta from the University of Milano Bicocca, giving best opportunities for the ESRs to learn and share their experiences with each other and come up with new ideas to use the potential that remote sensing has for environmental sciences.



ESRs profiles:



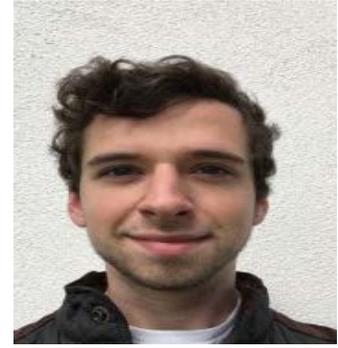
**Khelvi Biriukova** (Russia)  
*University of Milano-Bicocca,  
Italy*

She will characterize the temporal variability of plant traits and functional properties using optical signals.



**Javier Blanco** (Spain)  
*University of Milano-Bicocca,  
Italy*

He will investigate the topographic control on essential biodiversity variables, plant traits, and ecosystem functional properties.



**Dominic Fawcett** (Switzerland)  
*University of Exeter,  
UK*

He will use drone-based sensing techniques to study vegetation structure and function measurement, and modelling.

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“We have distinct backgrounds but in collaboration

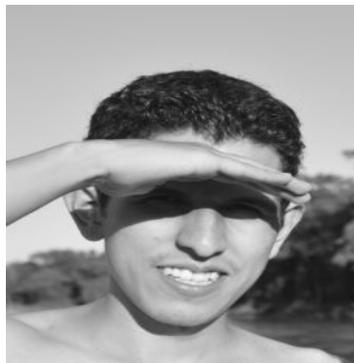
we are stubborn enough to elicit secrets from nature” - ESRs

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**David Martini** (Italy)  
*Max Planck Institute for  
Biogeochemistry,  
Germany*

He will study the factors controlling the relationship between ecosystem functional properties and sun-induced fluorescence, and canopy reflectance in time and under different nutrient conditions. under different nutrient conditions.



**Daniel Pabón** (Colombia)  
*Max Planck Institute for  
Biogeochemistry,  
Germany*

He will develop machine learning methods to derive ecosystem functional properties.



**Vikas Pingle** (India)  
*Jülich Research Centre,  
Germany*

He will study sun-induced and laser-induced fluorescence as indicators of vegetations stress and resource use efficiency.



**Egor Prikaziuk** (Russia)  
*University of Twente,  
Netherlands*

He will develop operational radiative transfer models for plant traits and ecosystem functional properties estimation.



**Georgios Ntakos** (Greece)  
*Aerovision,  
Netherlands*

He will use operational application of ecosystem functional properties maps to diagnose anomalies in crop production due to vegetation stress.



**Laura Paladini** (Italy)  
*Vito,  
Belgium*

She will apply multi-temporal and multi-source assessment of plant traits and ecosystem functional properties in agriculture.

(If you want to learn more about the ESRs and their personal projects, visit: <http://www.trusteenetwork.eu/esr-projects>)

In the series of TRUSTEE events, the next training will be held in the University of Exeter, during the 30. October to 2. November 2017. On this occasion, the ESRs will have the opportunity to learn about UAV-based techniques, learning from the experienced DroneLab group, headed by Dr. [Karen Anderson](#). Stay tuned!

### **SOMETHING TO READ**

[See our seasons change from space](#)

### **DATES FOR YOUR DIARY**

[RSPSoc2017 Conference \(5-8 September 2017\)](#)

[POSTDAM GHG FLUX WORKSHOP: From Photosystem to Ecosystem \(24-26 October 2017\)](#)

[Workshop on Advanced RF Sensors and Remote Sensing Instruments \(12-14 September 2017\)](#)

[International Symposium on Recent Advances in Quantitative Remote Sensing \(18-22 September 2017\)](#)

[Earth Observation Open Science Conference 2017\(25-28 September 2017\)](#)

[Conference on Big Data from Space - BiDS'17 \(28-30 November 2017\)](#)