OSCARS
Open Science Clusters' Action for Research & Society

Funded Project

Open and FAIR Integrated Phenology Monitoring System

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Implemented by

Università degli Studi della Tuscia

Universiteit Antwerpen

TERRASYSTEM s.r.l.

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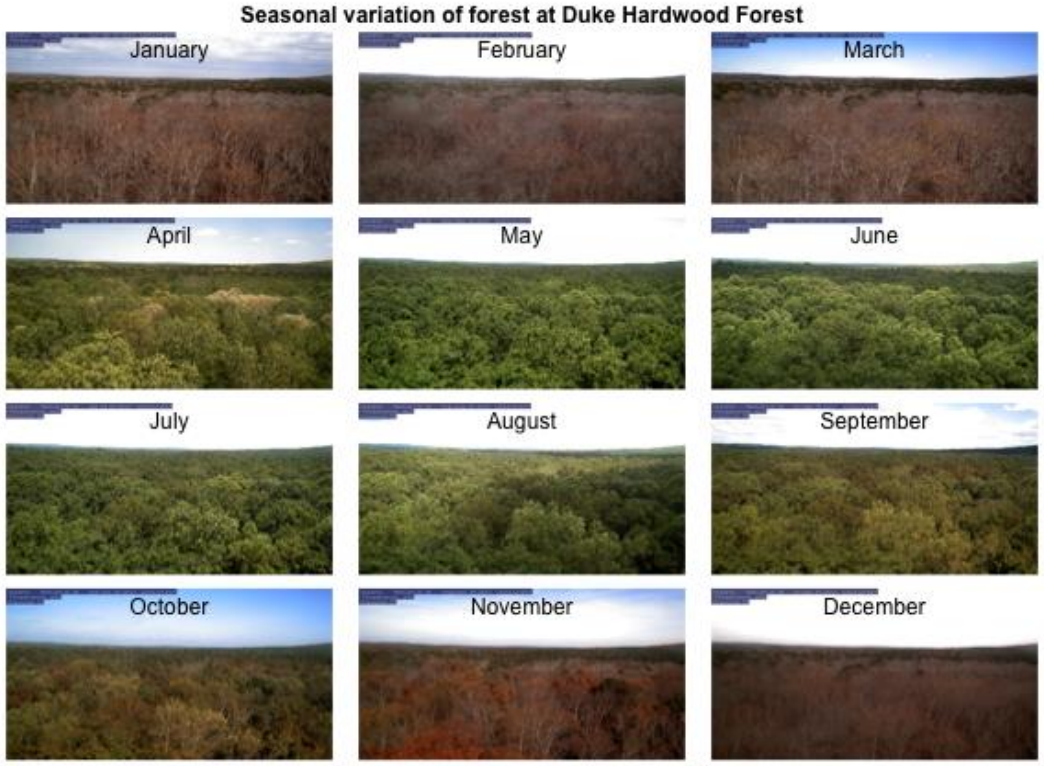
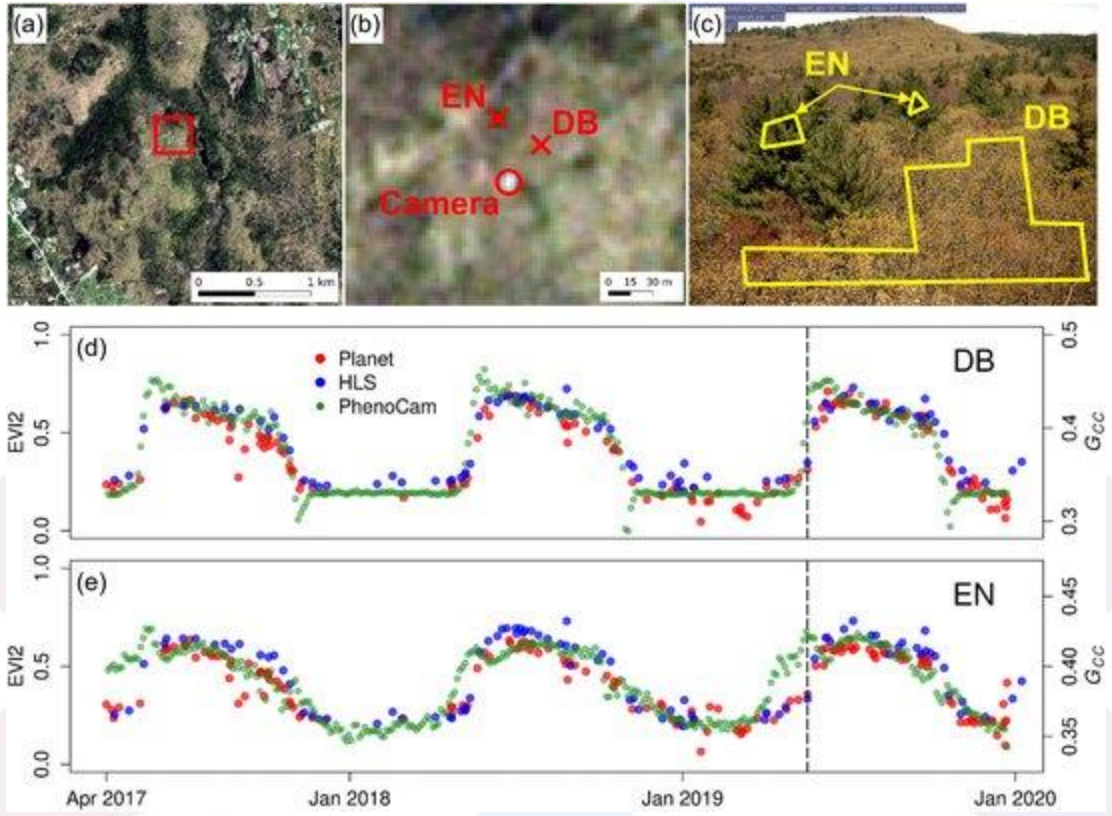
What problem(s) are you going to solve?

- Plant phenology is the seasonal progression of plant activity through stages (dormancy, active growth, senescence, and back to dormancy)
- It is affected by climate change and for this reason important to monitor
- Monitoring by Remote Sensing is a standard but needs ground CalVal data
- Direct observations are time consuming, heterogeneous and non continuous. Phenological cameras are a good alternative
- The **problem** is the non-availability of a phenological camera designed for the purpose, open and with a standard pipeline available and respecting the FAIR requirements, to be implemented in the ENVRI Cluster


Seasonal variation of forest at Duke Hardwood Forest
January
February
March
April
May
June
July
August
September
October
November
December

What are you planning to do to solve the problem?

- Design and test an open access prototype for a low cost (construction and maintenance) phenocam
- Develop the processing pipeline that includes also all the metadata and FAIR principles requirements
- Implement the processing pipeline in the context of the ENVRI Cluster (ICOS ETC and Carbon Portal)
- Develop a citizen science package for the phenocal construction, installation and connection to ENVRI Cluster
- Discuss with companies for phenocam production and maintenance



Moon et al. 2021

What will be the results and how do you plan to make them available to the broader community?

- Paper on the new phenocam prototype design and validation
- Technical design of the selected prototype for easy reproducibility
- Processing pipeline, products and metadata design and implementation
- «Phenocam box» for Citizen science activities including instructions

What risks could limit the success of the project, and how can they be mitigated

- Difficulties to find the proper component for the new camera. Low risk, we already started to collect different options
- Difficulties to develop the pipeline and implement it in the ENVRI Cluster. Very low, a first draft already existing, the sections to implement should be feasible
- Difficulties to keep the price lower than the current options. Medium risk, we will try to find the right balance or evaluate two levels of quality
- Difficulties to find a company interested in the production and commercialization. Medium-High. The development of an open project will allow in any cases the production by scientists

Who is doing it? (OPTIONAL)

- Dario Papale, University of Tuscia
- Bert Gielen, University of Antwerp
- Beniamino Gioli, CNR
- Koen Hufkens, Bluegreen
- Claudio Belli, Terrasystem
- Luca Cerato, Terrasystem