The e-phenology is a multidisciplinary project combining research in Computer Science and Phenology. Its goal is to attack theoretical and practical problems involving the use of new technologies for remote phenological observation aiming to detect local environmental changes. It is geared towards three objectives: a) use of new technologies of environmental monitoring based on remote phenology monitoring systems; b) creation of a protocol for a Brazilian long term phenology monitoring program and for the integration across disciplines, advancing our knowledge of seasonal responses within tropics to climate change; and c) provide models, methods and algorithms to support management, integration and analysis of data of remote phenology systems. The research team is composed of computer scientists and researchers in phenology.
MAIN RESULTS

**Phenology tower:** We set up the first phenology tower in the main cerrado-savanna study area. The tower received a complete climatic station and a digital camera. The data from climatic station and digital camera are sent by 3G technology to our servers and can be accessed online in real time.

**Remote phenology:** We performed the first analyses of the vegetation digital images, using the green color channel. We analyzed the daily sequence of images (from 6 am to 6 pm) and also the color changes from a two-month set of images. Our results are innovative and indicate a diversity of responses for tropical trees.

**Phenology database:** We finished the proposal and database modeling for phenology studies. The next step is the database’s validation and its implementation for the cerrado-savanna phenology study area.

![Diagram](image)

**PRODUCTS/PUBLICATIONS**

**PRESENTATIONS IN EVENTS**

*Microsoft RESEARCH Faculty Summit 2011*  
July 18-20, 2011, Redmond, Washington, United States  
e-phenology: The application of new technologies to monitor and track climate changes in the tropics

*Workshop FAPESP-ABC about Collaborative Research University-Enterprise*  
November 07-08, 2011, São Paulo, Brazil  
e-phenology: The application of new technologies to monitor plant phenology and track climate changes in the tropics

*Microsoft at Institute of Computing, Unicamp*  
February 28, 2012, Campinas, São Paulo, Brazil  
eScience projects at IC/Unicamp: a long-term cooperation with Microsoft

**Site e-phenology**  
http://www.redoc.ic.unicamp.br/epheno

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Leonor Patrícia Cerdeira Morellato

Instituto de Biosciências de Rio Claro  
Universidade Estadual Paulista (Unesp)  
Av. 24A, 1515  
13506-900 – Rio Claro, SP – Brazil  
pmorella@rc.unesp.br  
55.19.3526-4205