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MSR-FAPESP Institute Workshop: revisiting the past and
planning the future

17 de março de 2011 - Espaço APAS - São Paulo

e-phenology

*e-phenology: The application
of new technologies to
monitor plant phenology and
track climate changes in the
tropics*

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PHENOLOGY

“Phainestai”, the ancient Greek word meaning *to show or to appear*.

“The scientific study of periodic biological phenomena, such as flowering, breeding, and migration, in relation to climatic conditions.”

The American Heritage Dictionary

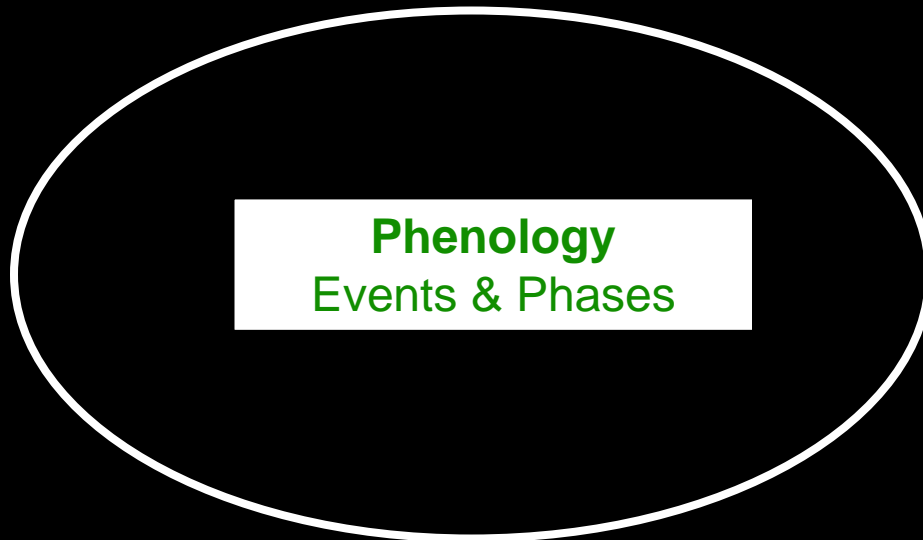


Models

- Mechanistic models
- Prognostic phenology
- Statistical models

Measurements

- Remote sensing
- Near-surface remote sensing
- Leaf Area Index
- Flux measurements
- Environmental parameters



Observations

- Phenology Networks
- Legacy data sets
- Experimental sites

Remote phenology





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e-phenology: The application of new technologies to monitor plant phenology and track climate changes in the tropics

- (a) use of new technologies of environmental monitoring - remote phenology monitoring systems;
- (b) provide models, methods and algorithms to support management, integration and analysis of remote phenology data.
- (c) create a protocol for a future Brazilian Network - long term phenology monitoring program;



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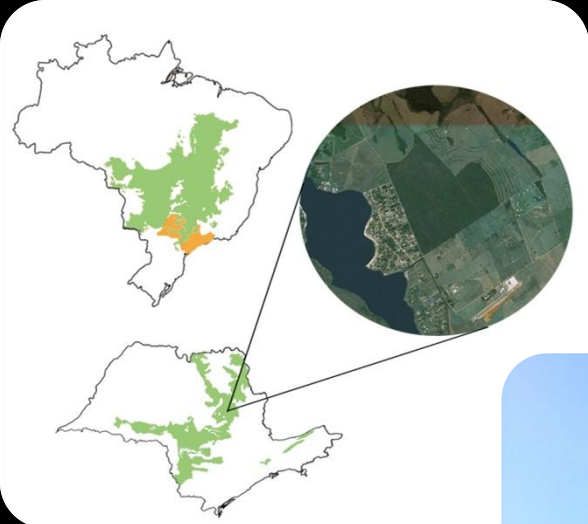
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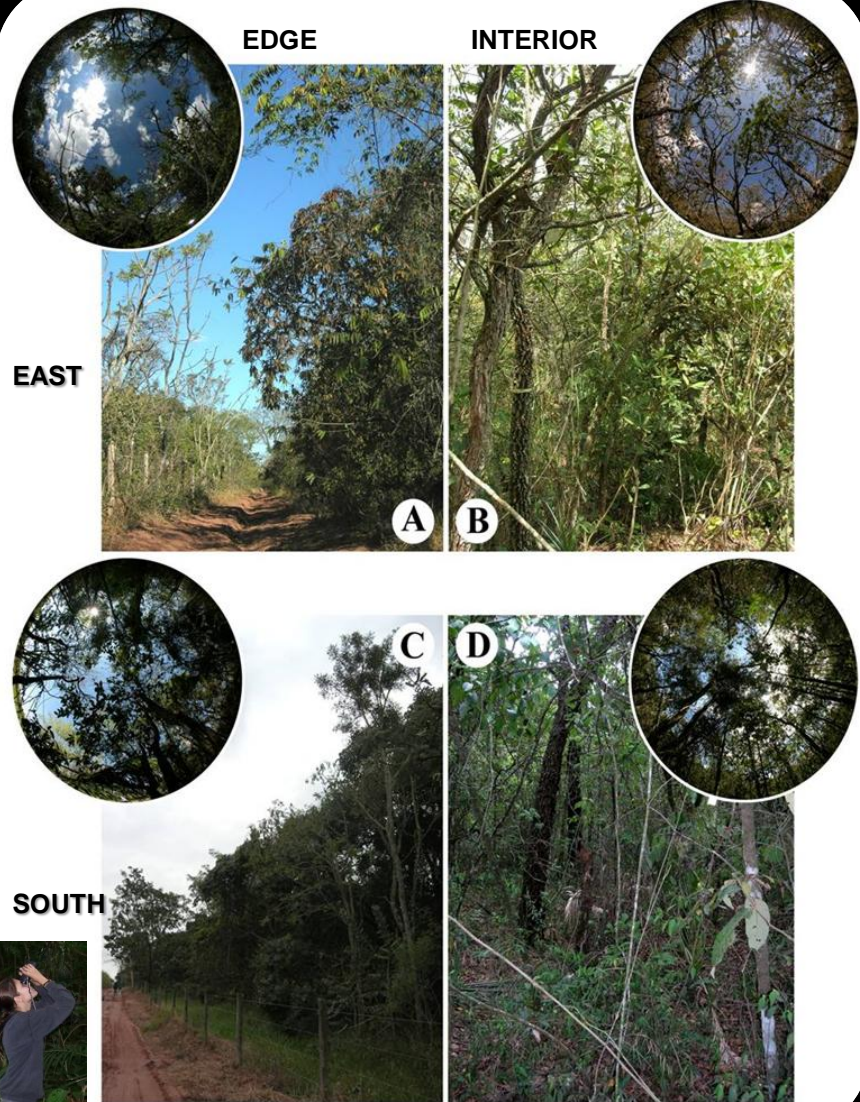
Contributions

- Phenology
 - models and methodologies for climate change analysis based on the exploration of new remote phenology indices
- Computer Science: models, tools and techniques concerning:
 - Image Processing
 - extract and index image content descriptors associated to different seasons and types of vegetation
 - Databases
 - concentrating on scientific data management
 - data mining and fusion
 - time series processing
 - data annotation

Study Site



Cerrado





Phenology Station #1 Feb 09 08:37 2011
Internal Temp. 34.5



Remote Phenology

Monitoring phenology with a network of webcams



Quantify temporal (seasonal, annual) and spatial patterns of variation in phenology

- Interannual variation
- Across different ecosystems
- Correlate to environmental factors

Tower mounted webcams offer great potential for quantifying patterns of canopy phenology across sites, without the need for intensive field monitoring by an observer.



extract and index image content descriptors associated to different seasons

unesp 



THANKS!

