Web Service for extracting Phenological Metrics for Agriculture using time series of satellite images

BRAZIL DATA CUBE

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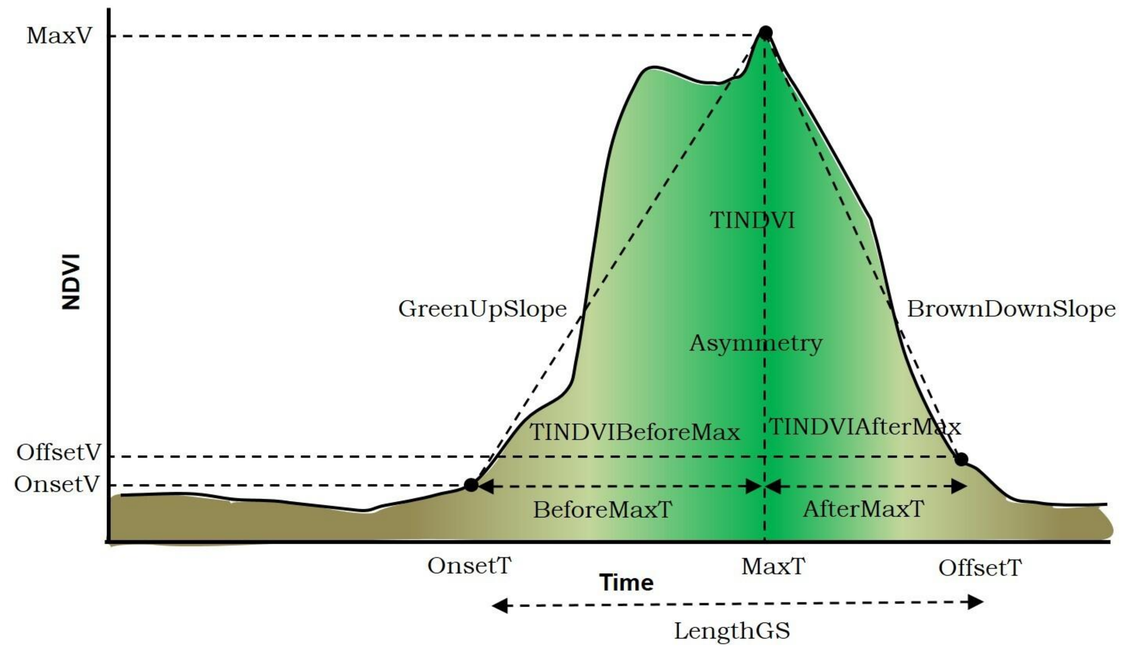
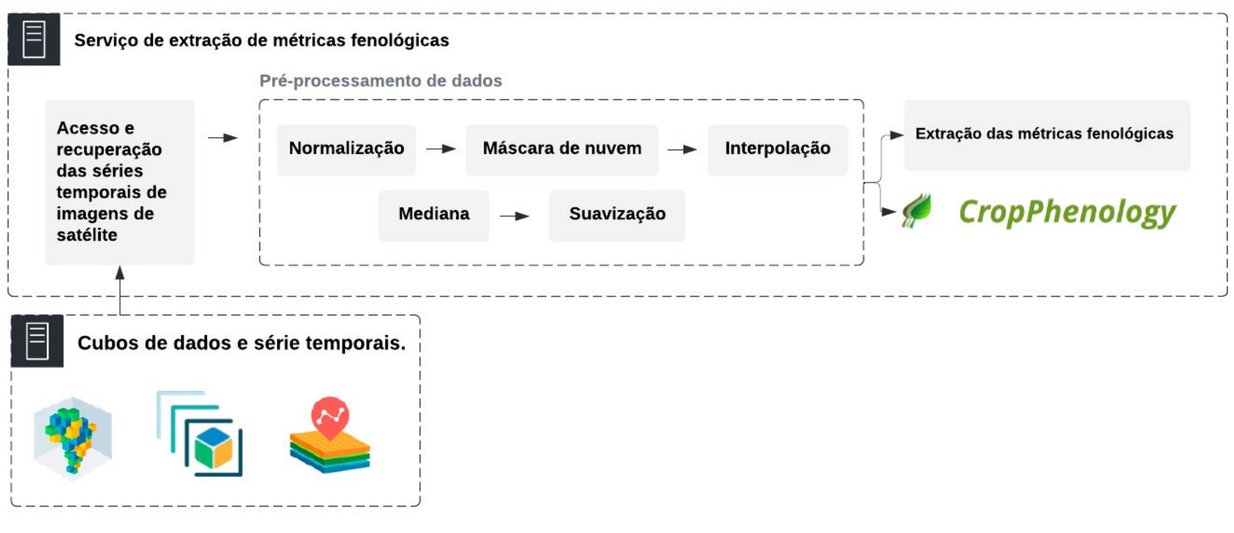
GEOINFO 2022
XXIII Brazilian Symposium on GeoInformatics
November 28th to 30th , São José dos Campos, SP, Brazil

Design and develop a **web service for extracting phenological metrics** from large volumes of images modeled as Earth observation data cubes and time series of vegetation indices, **focusing on agricultural applications**. This service follows a "client-server" architecture that allows data to be processed on the server side without the client needing to download this data on his personal machine.

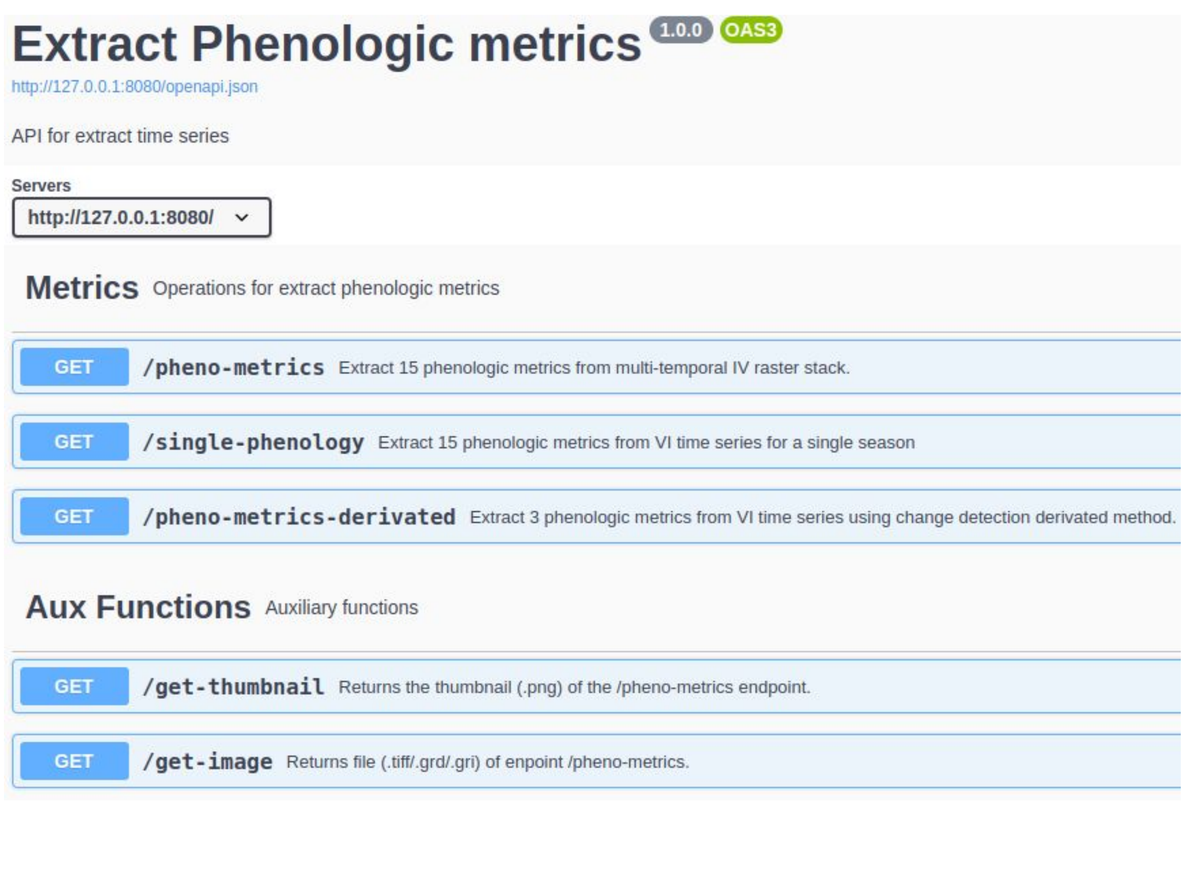


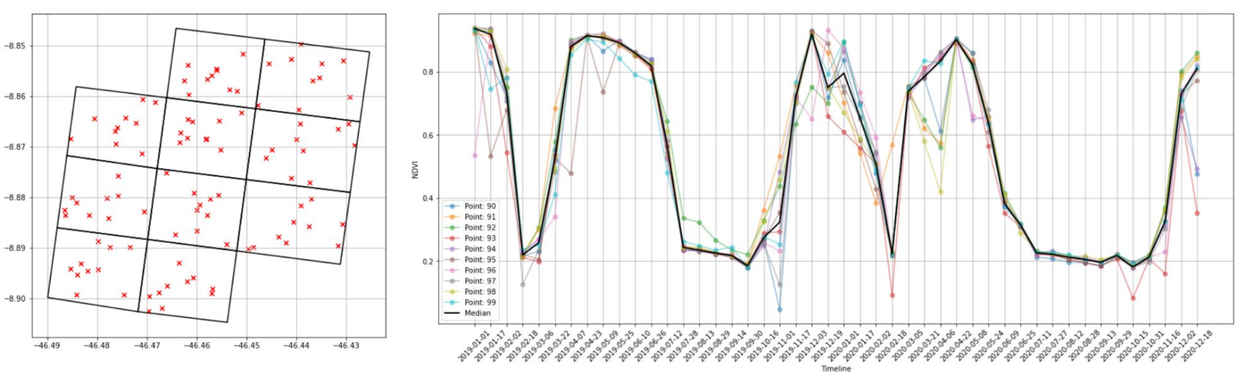
The API is based on the R **CropPhenology** package that extracts **15 phenological metrics** from time series and satellite raster images.



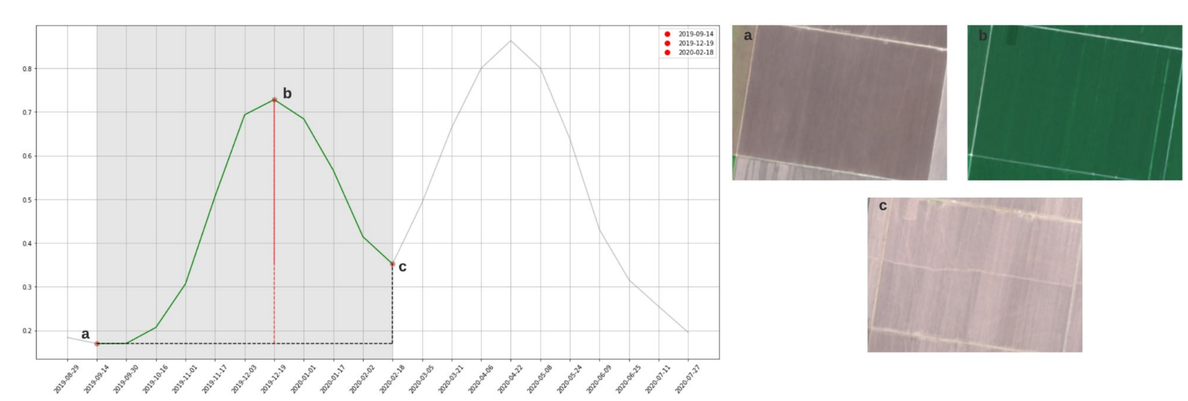
One of the main advantages of this service is its ease of use and server-side processing. An expert can extract metrics from large volumes of images without worrying about processing limitations and installing packages and systems on his personal computer.

The access and retrieval of satellite data is done through the technologies of the Brazil Data Cube project. It has pre-processing steps for data normalization and integration with programming languages to ensure greater interoperability between systems





From obtaining the time series and calculating their median, it was possible to carry out a case study in different areas with the objective of testing some methods proposed in the work and extracting some phenological metrics and NDVI time series of satellite images.



Phenological metrics **SOS (a)**, **PEAK (b)** and **EOS (c)** detected by the ***pheno-metrics-derivated*** function of the service that uses the **Change Detection Derivated** method and their respective images on the right.

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