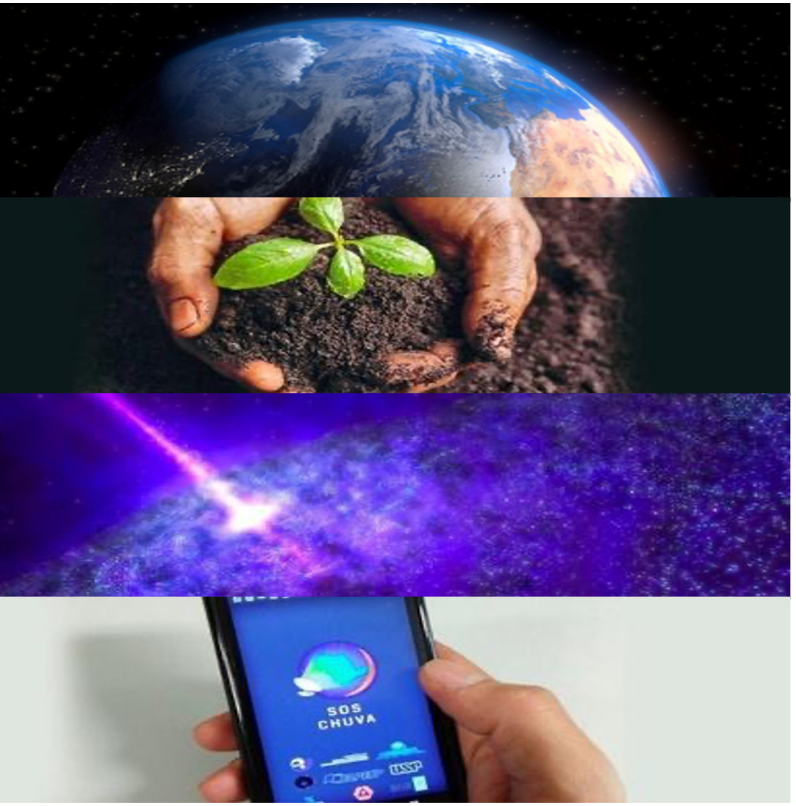
BRAZIL DATA CUBE (BDC)
INPE'S PROJECT

ALESSANDRA RODRIGUES GOMES
COORDINATOR
SPATIAL COORDINATION OF THE AMAZON - COEAM
NATIONAL INSTITUTE FOR SPACE RESEARCH – INPE

INPE: Converting Data to Knowledge



Satellite

Earth Observation, Universe and Communications Missions

Ground Systems

Control, Reception, Processing and Distribution of Spatial Data

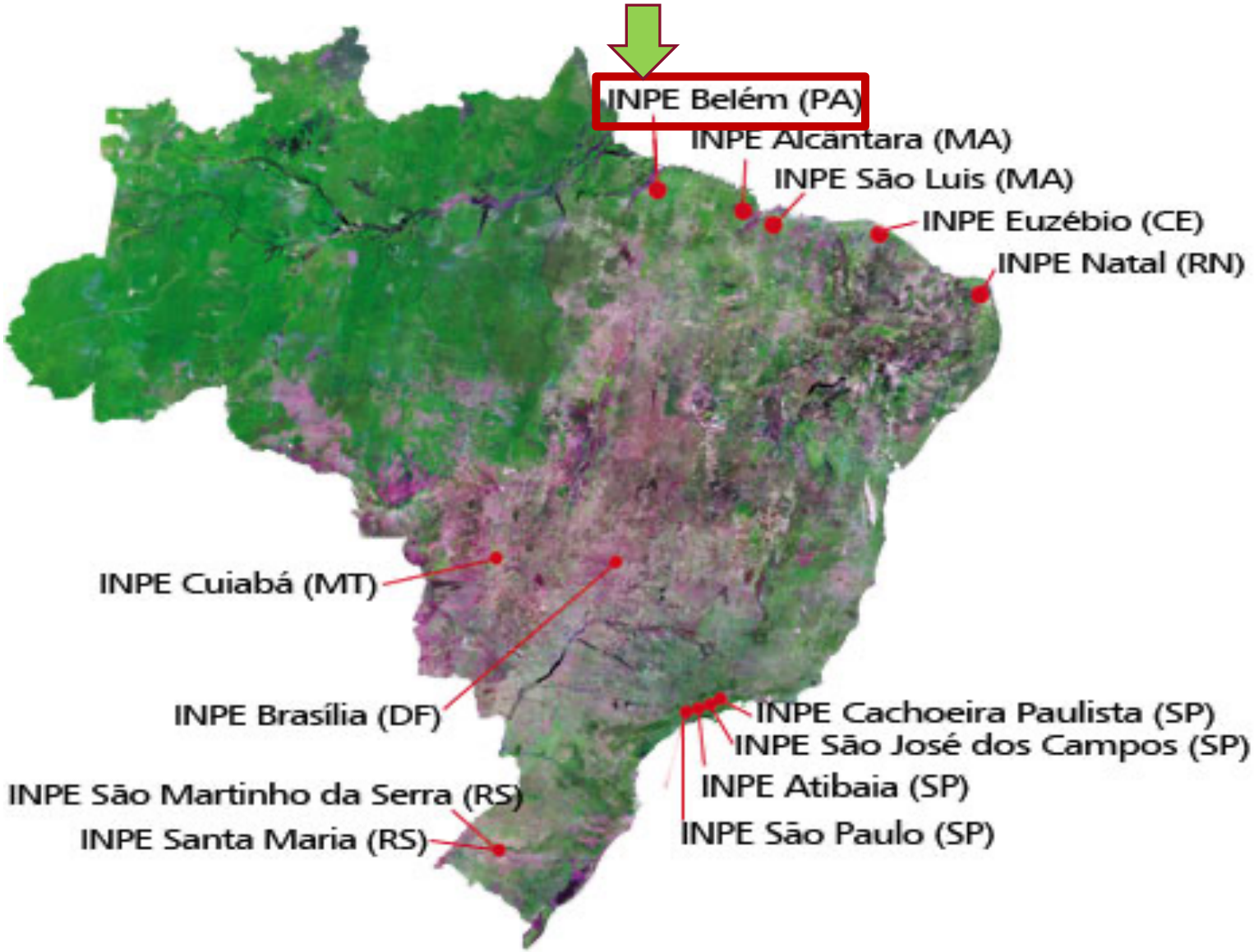
Analysis and Modeling

Space Science and Earth System Science

Access to knowledge

Innovative Products for Society

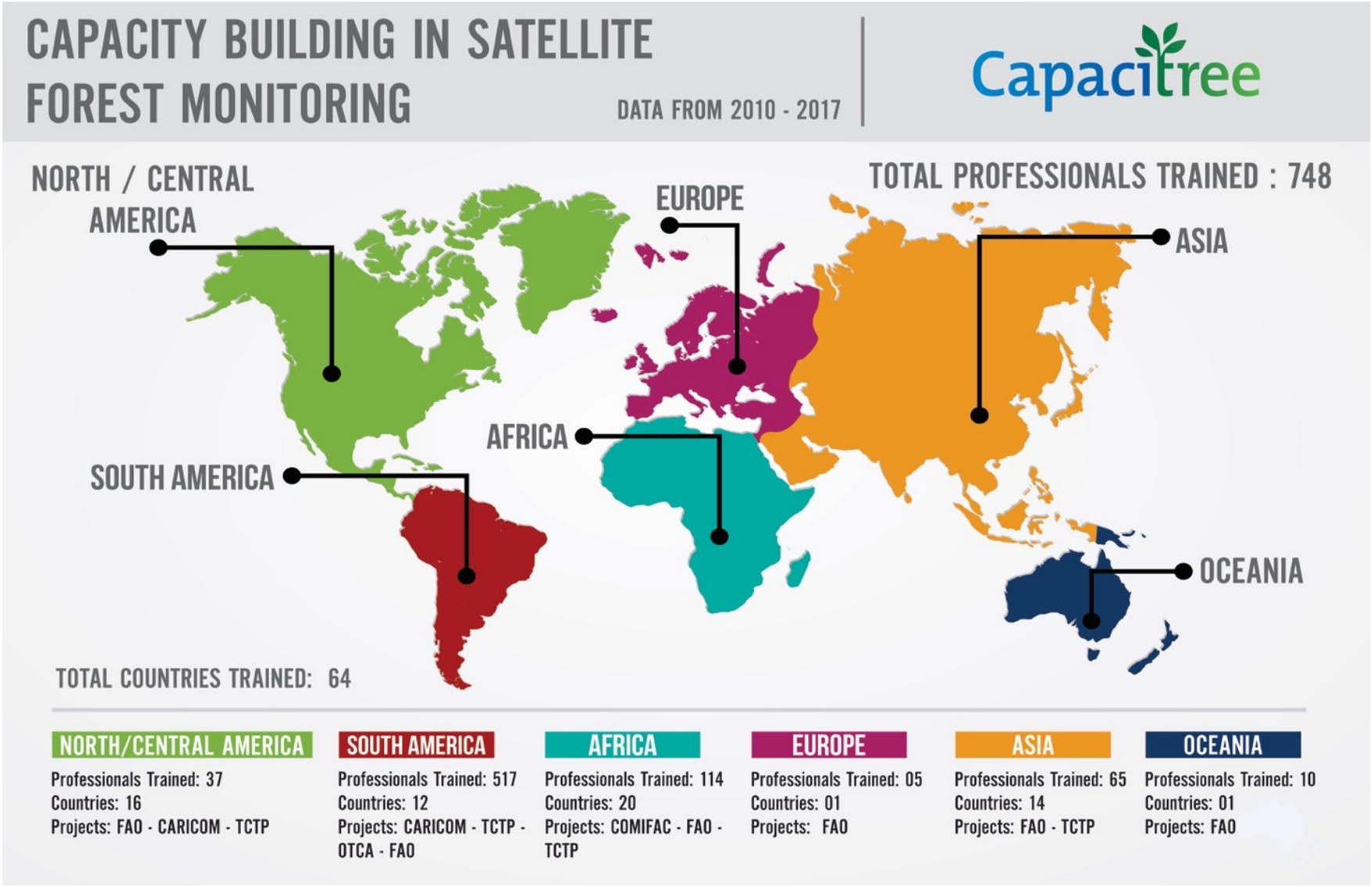
FACILITIES OF INPE (BRAZIL)



WHY COEAM? WHY DATA CUBE? PROGYSAT OBJECTIVES...

Capacitree

BRAZIL DATA CUBE



BRAZIL DATA CUBE

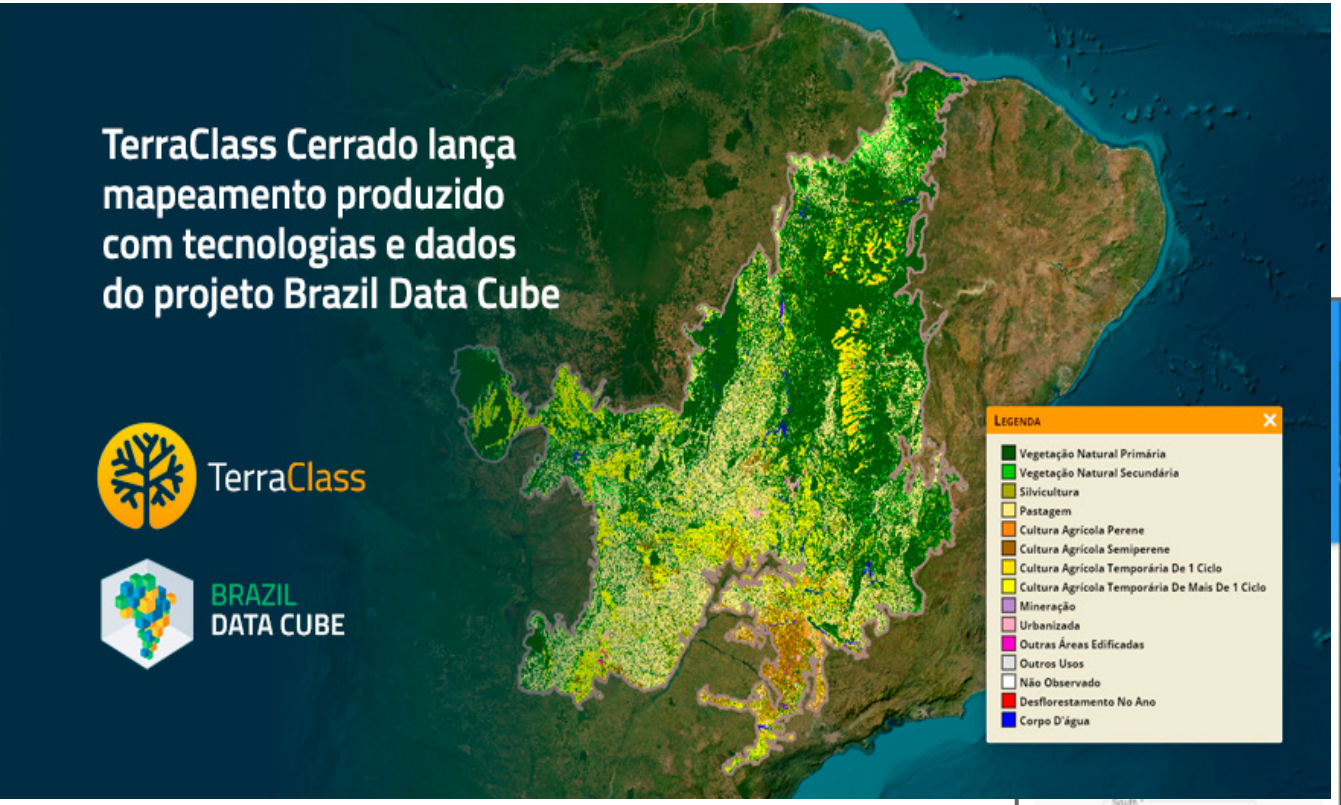
Speaker: Alessandra R. Gomes

Coordinator – Amazon Spatial Coordination (COEAM)

INPE's Team: Karine Ferreira, Gilberto Queiroz, Gilberto Câmara

Researchers from Geoinformatic and Earth Observation Division (DIOTG)

BIG DATA ANALYTICS FOR ENVIRONMENTAL POLICY IN BRAZIL



LUCC mapping

Real-time monitoring

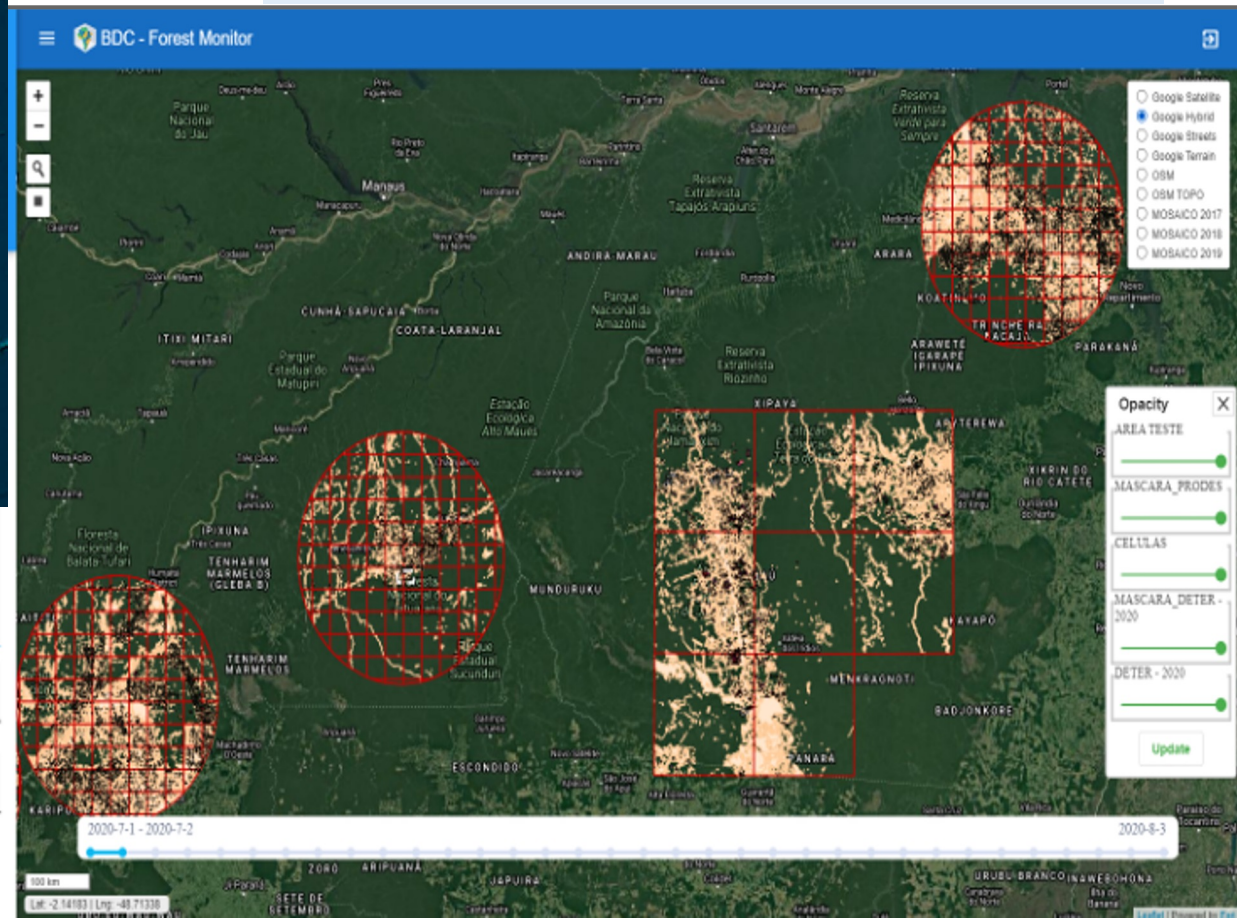


IMAGE COLLECTION - AVAILABLES

Landsat-8 - OLI - Brazil

CBERS-4 WFI - Brazil

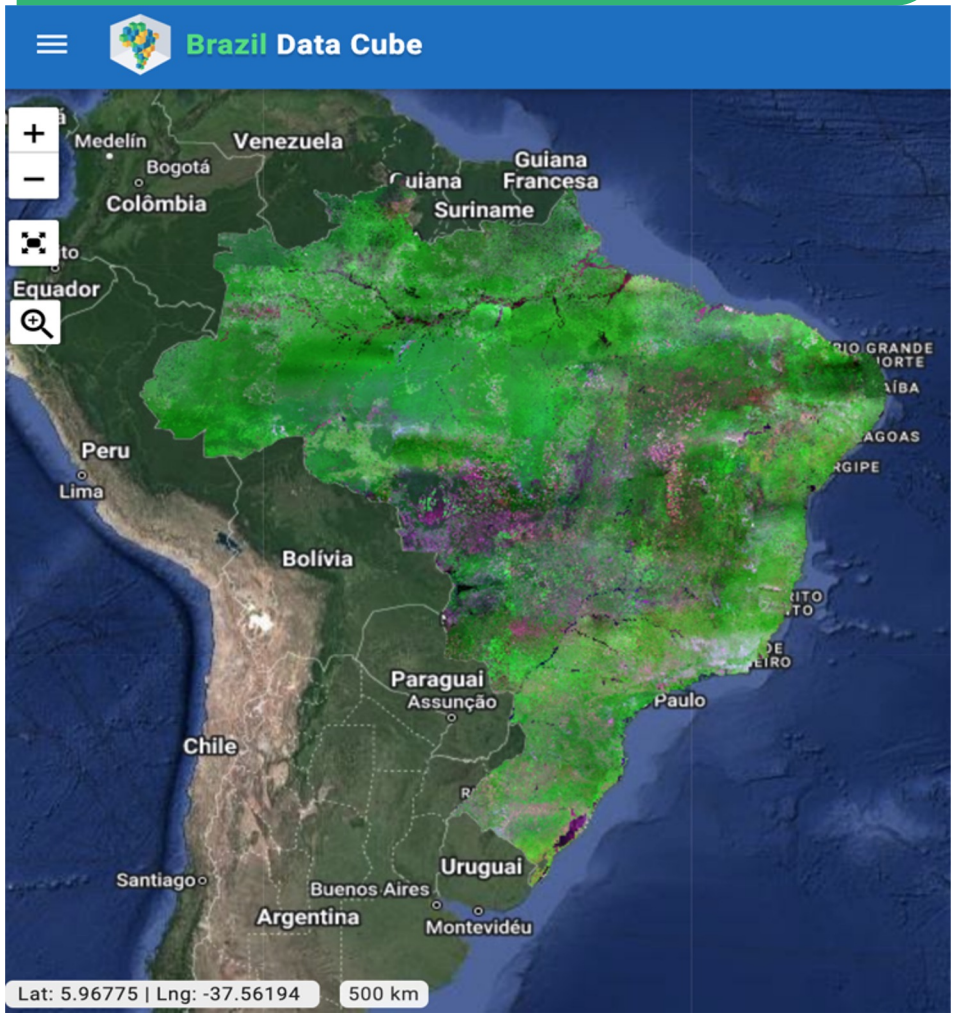
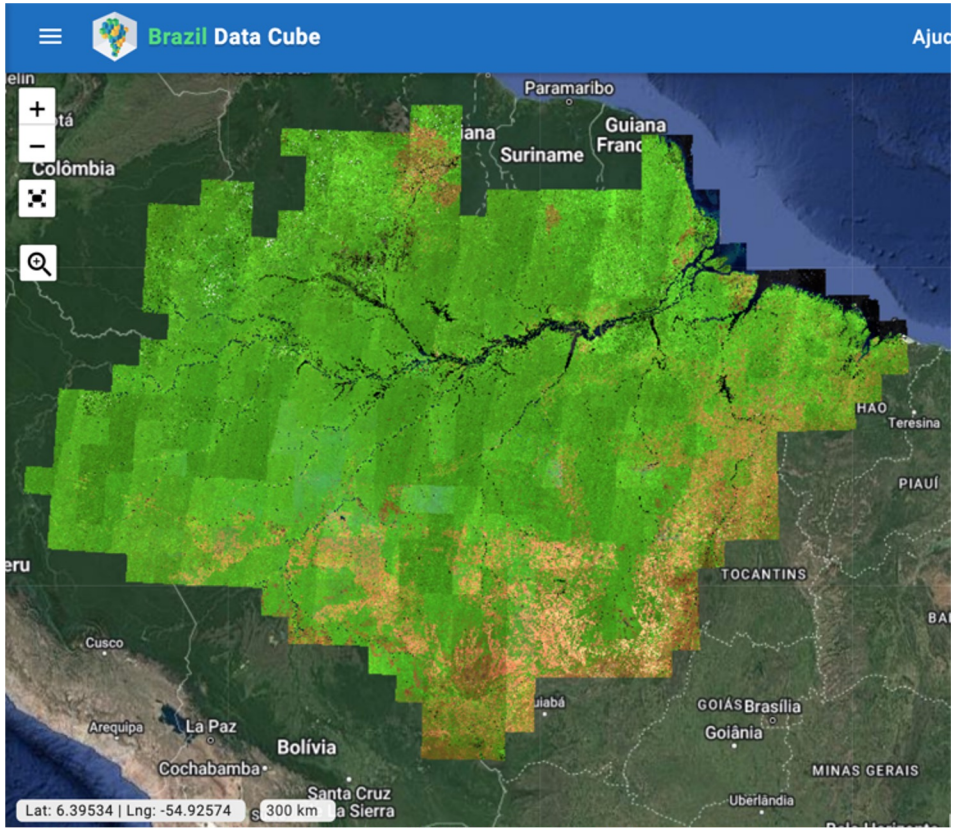
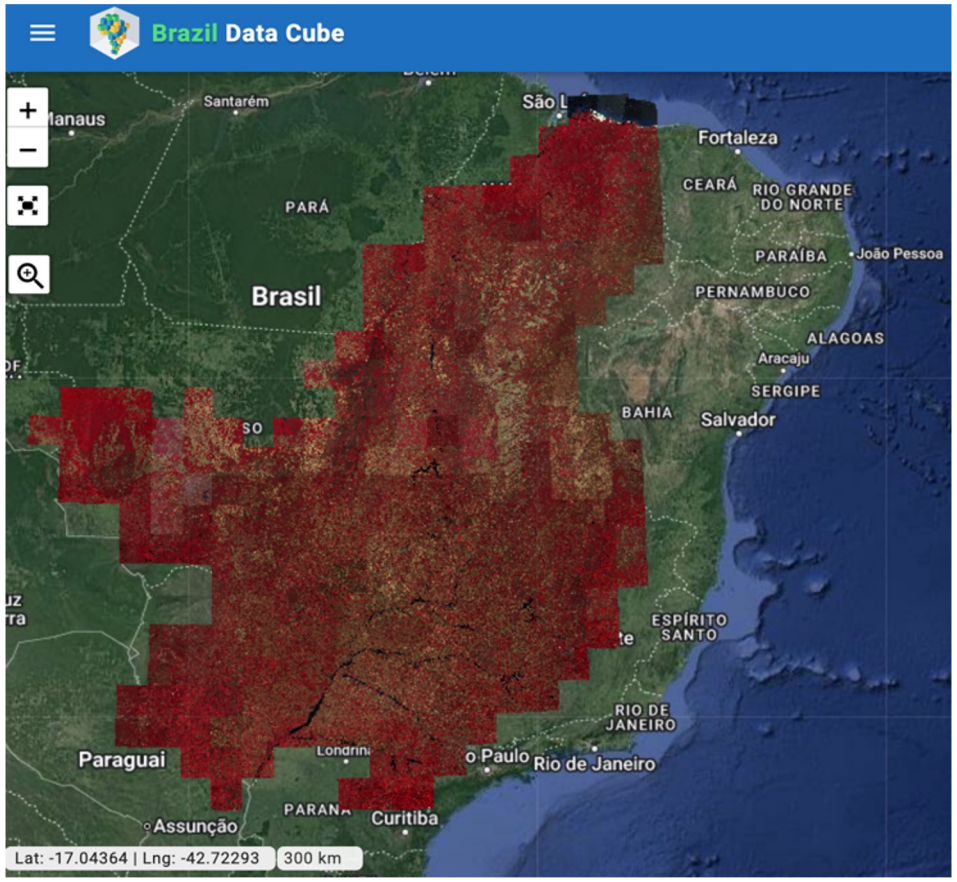


IMAGE COLLECTION - AVAILABLES

Sentinel-2 - MSI - Amazonia



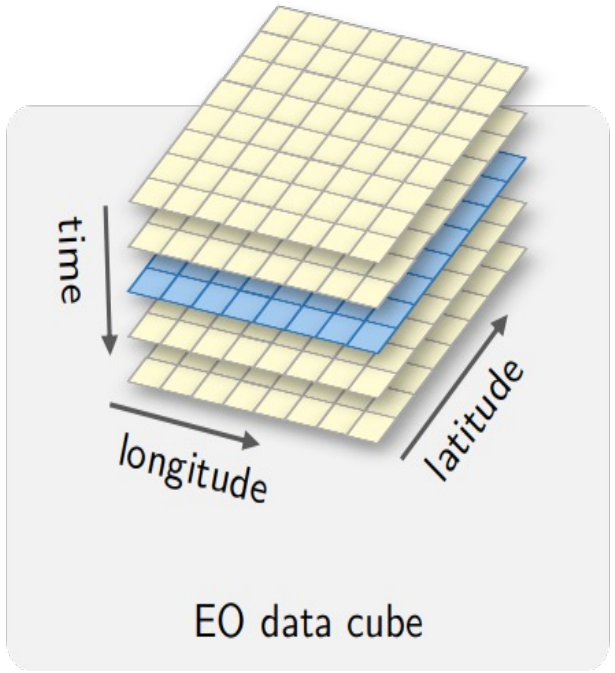
Sentinel-2 - MSI - Cerrado



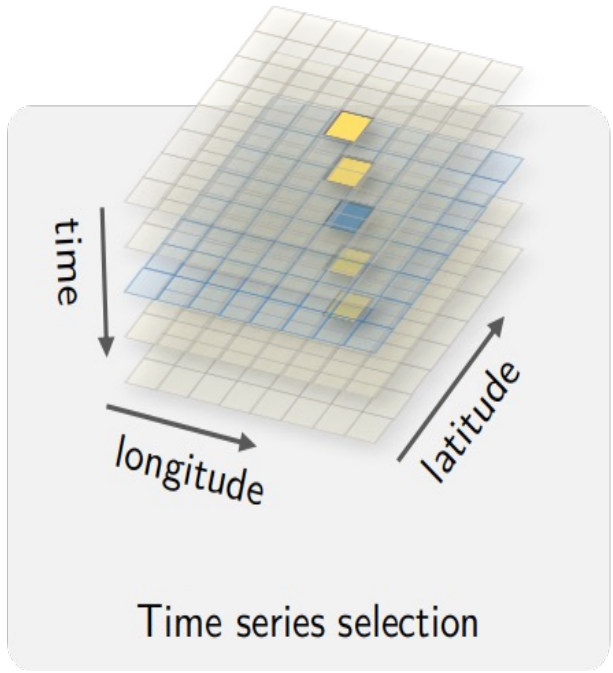
WHAT IS AN EARTH OBSERVATION DATA CUBE?

BRAZIL DATA CUBE

EO image collection



EO data cube



Time series selection

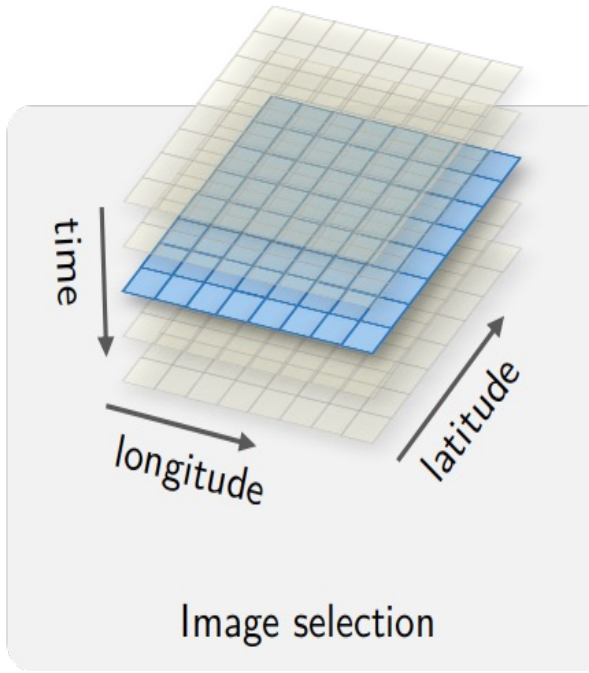


Image selection

Data cube = regular partitions of space and time

BIG EARTH OBSERVATION DATA ANALYSIS IN PRACTICE

Obtain and harmonise ARD

↓

Put ARD in a cloud collection

↓

Build a data cube

Select ML method

Collect training data (in-situ)

↓

Quality control on training data

↓

Train data set

BRAZIL DATA CUBE

Classify data

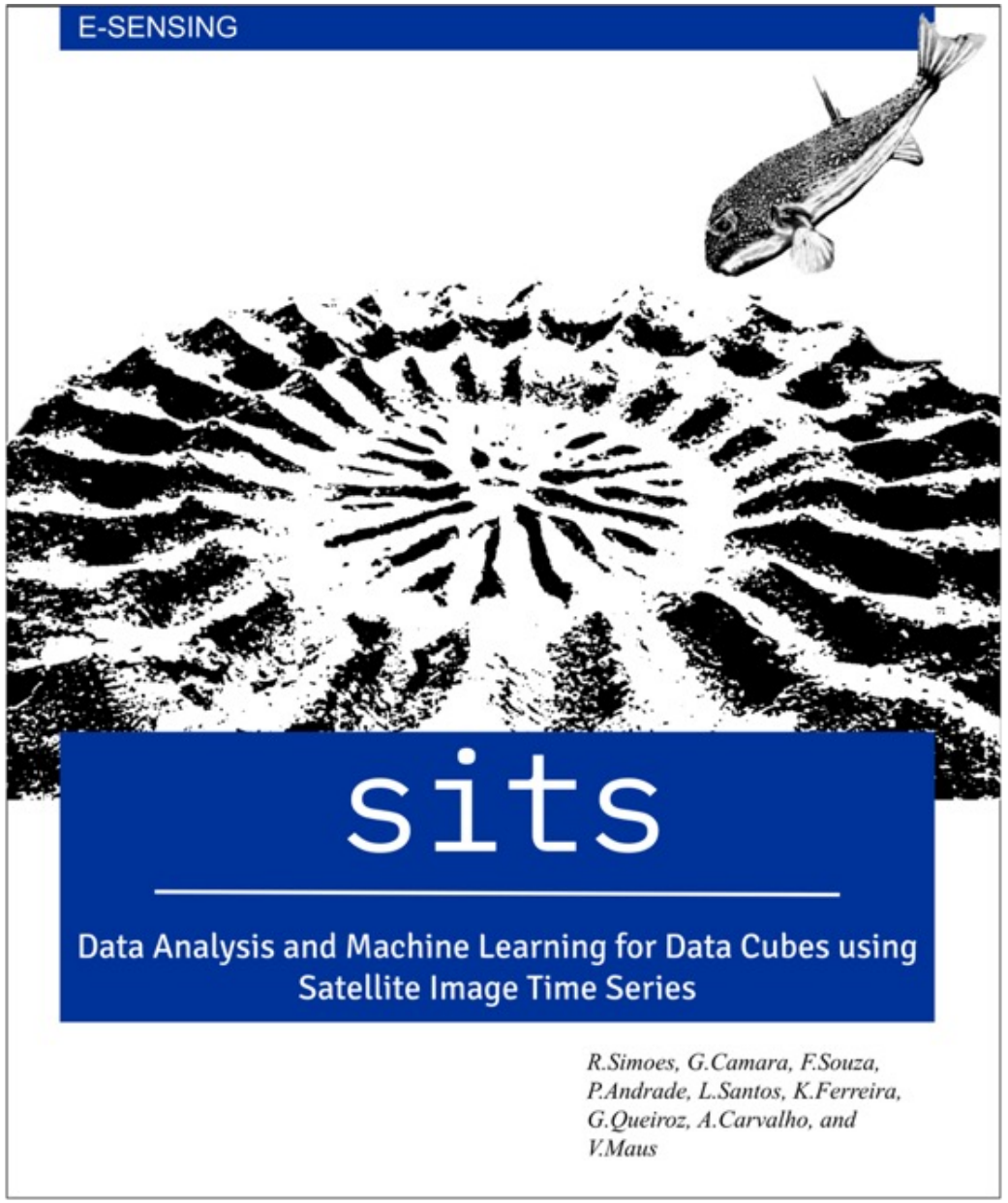
↓

Smoothen data

↓

Post-processing

sits

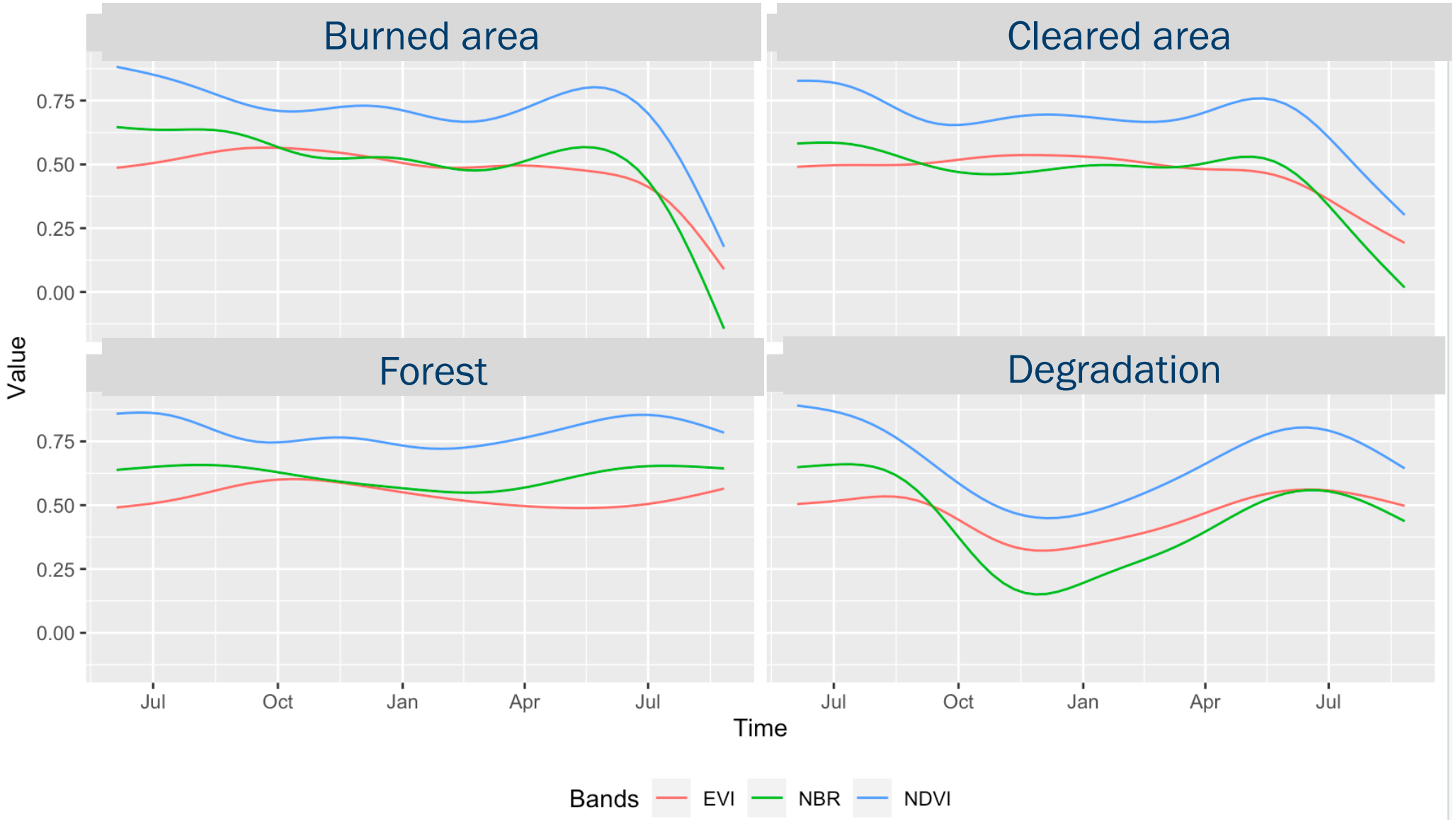


https://e-sensing.github.io/sitsbook/

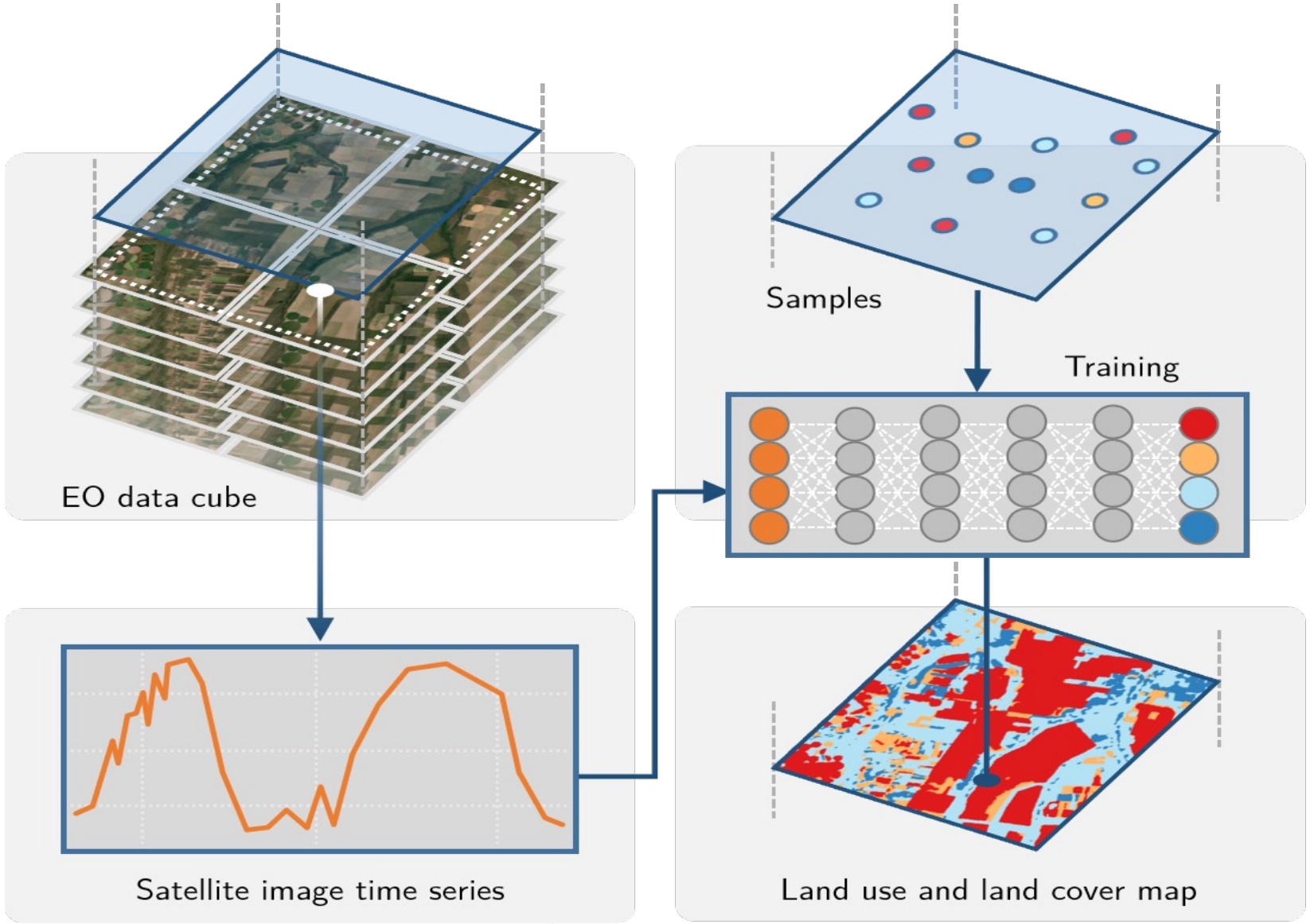
DEFORESTATION AS A SERIES OF EVENTS

images: Alamy, INPE

Event-based samples (model estimates)



SITS WORKFLOW



SITS DESIGN PRINCIPLES

- Regular data cube = basis for all operations
- SpatioTemporal Asset Catalog (STAC) collections converted to regular data cubes
- Spatial organization of data cube (e.g, tiles) inherited from collections
- ML/DL methods are decoupled from classification
- Parallel processing is built-in
- Easy extensibility

DATA CUBE WORKSHOP – FRIDAY, 9AM - 12PM

- **Introduction to Data Cube**
- **Data cube around the world**
- **Brazil Data Cube**
- **Data Cube Platforms**
- **Applications with data cube (projects, researchs)**
- **How to start a data cube Project?**

Breno Silva / Mateus Andrade – Data Cube Project

Alessandra Gomes – INPE – Amazon region

Diego Silva – IRD consultant (Progysat Project)

BRAZIL DATA CUBE TEAM - INPE

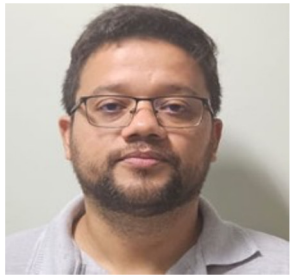
Diego **Silva**

Breno **Alves**

Mateus **Barbosa**

Alessandra **Gomes**

Luis **Sadeck**



Arlesson **Souza**

Lucas **Cortinhas**

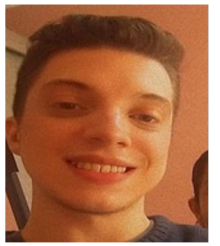
Renan **Sena**

Gilberto **Câmara**

Karine **Ferreira**

Gilberto **Queiroz**

Rolf **Simoes**



Felipe **Carvalho**