BRAZIL DATA CUBE
brazildatacube.org

XX SBSR
Simposio Brasileiro de Sensoriamento Remoto

Data Products

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FUNDO AMAZÔNIA

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BNDES

INPE
UNIDADE DE PESQUISA DO MCTIC

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO

GOVERNO FEDERAL
BRASIL
UNIÃO E RECONSTRUÇÃO

BDC ARD

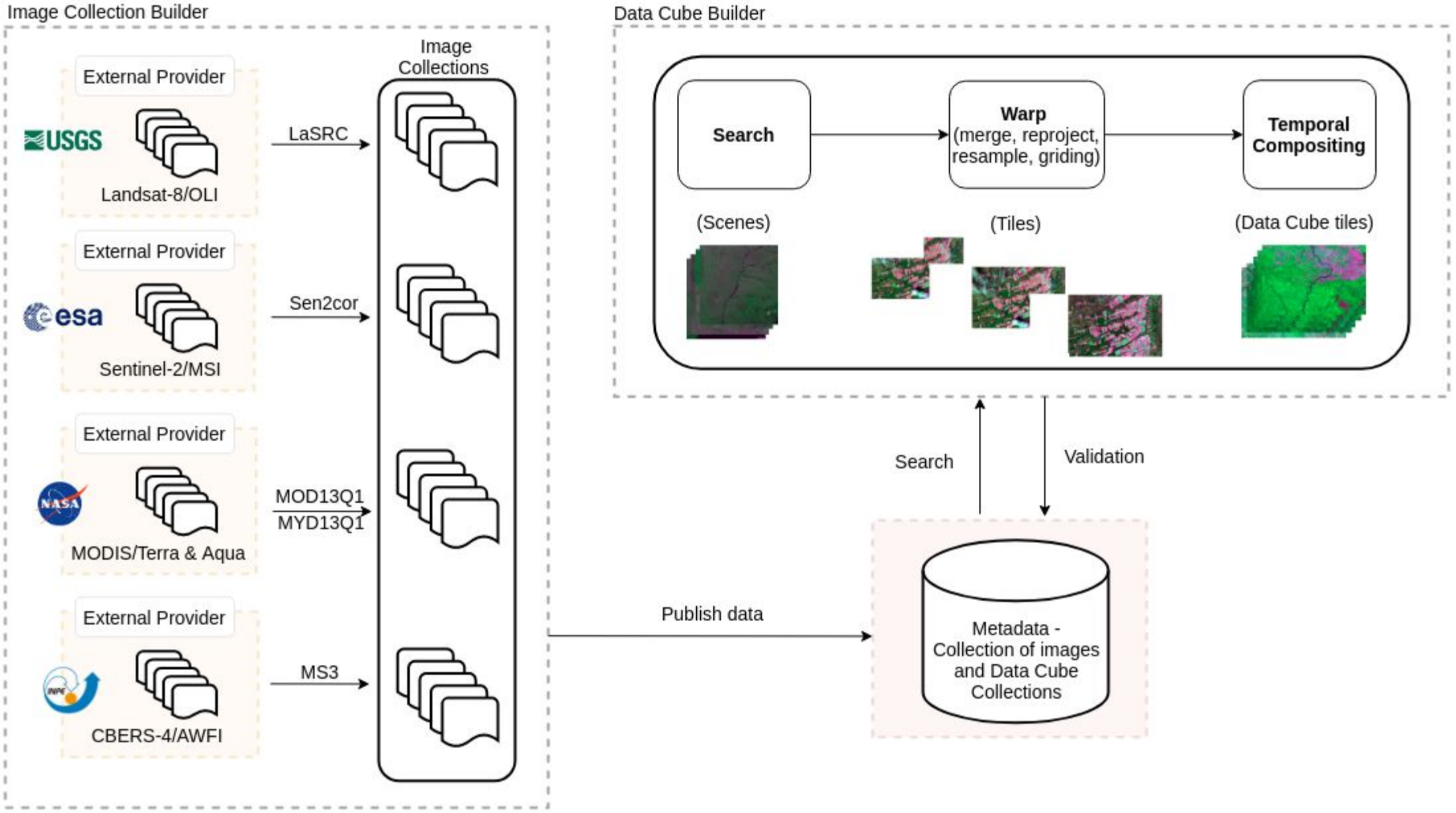
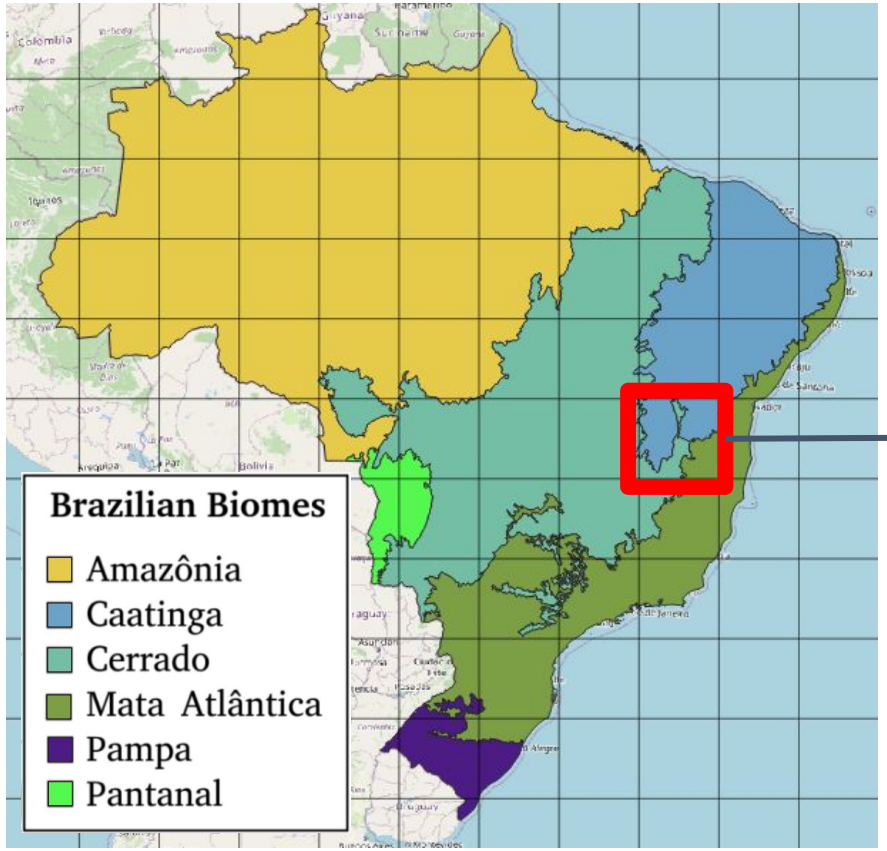
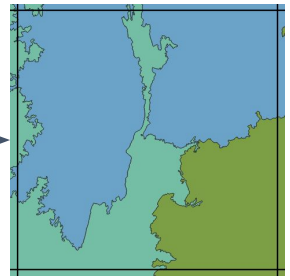


Image Collection Builder
External Provider
USGS
Landsat-8/OLI
LaSRC
Image Collections
External Provider
esa
Sentinel-2/MSI
Sen2cor
External Provider
NASA
MODIS/Terra & Aqua
MOD13Q1
MYD13Q1
External Provider
INPE
CBERS-4/AWFI
MS3
Publish data
Data Cube Builder
Search
Warp
(merge, reproject, resample, griding)
Temporal Compositing
(Scenes)
(Tiles)
(Data Cube tiles)
Search
Validation
Metadata - Collection of images and Data Cube Collections

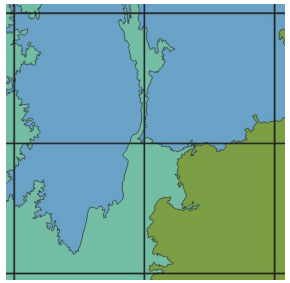
BDC Grid (V2)

3 grids hierarchical system

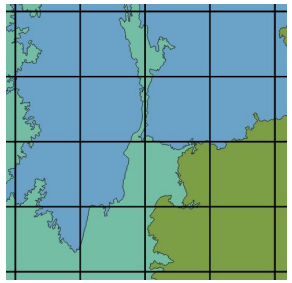




Grid: BDC – Large
Tile size: 422400m x 422400m



Grid: BDC – Medium
Tile size: 211200m x 211200m

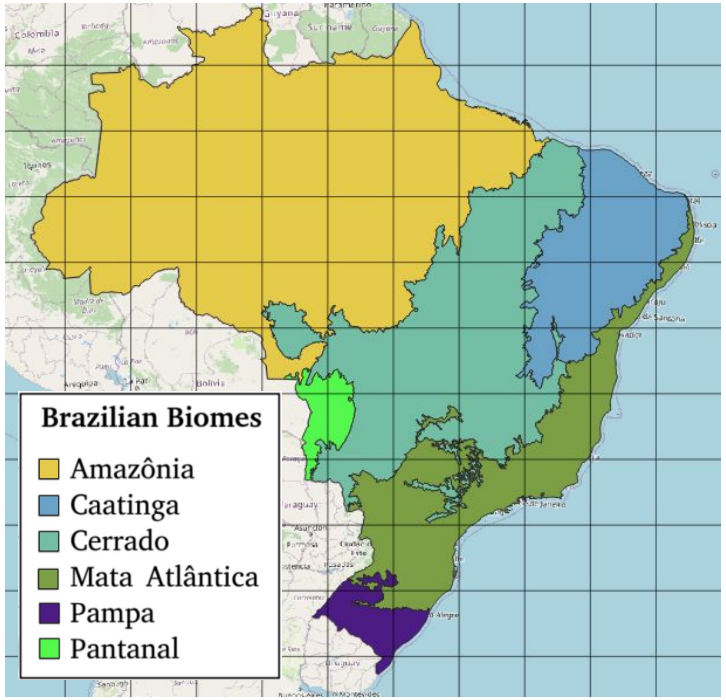


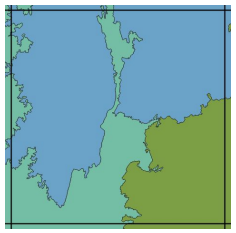
Grid: BDC – Small
Each tile: 105600m x 105600m

Projection: Albers equal area and Datum: SIRGAS 2000

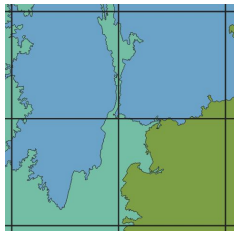
BDC Grid

(V2)

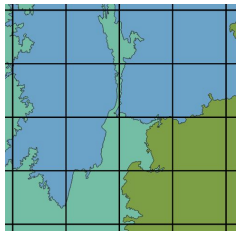




Grid: BDC – Large
Tile size: 422400m x 422400m

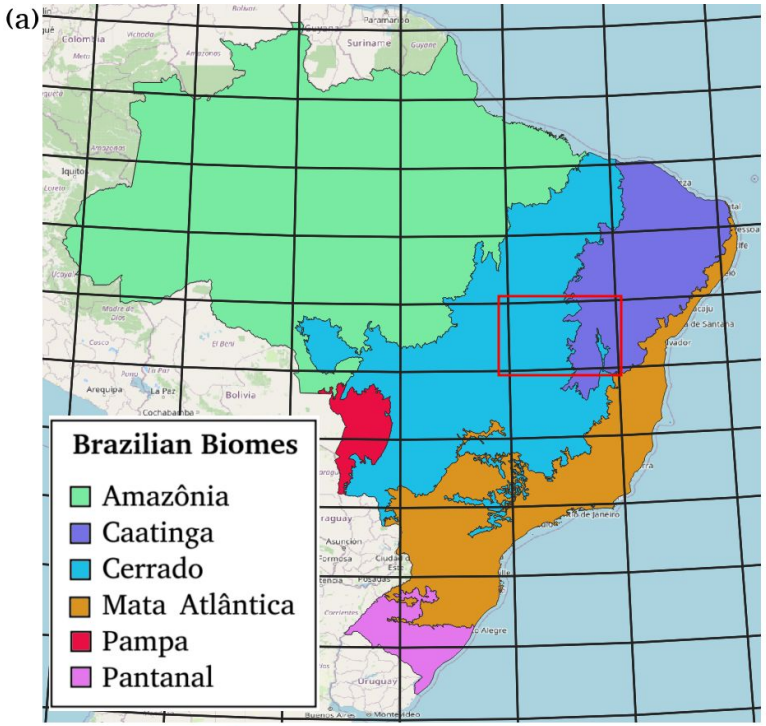


Grid: BDC – Medium
Tile size: 211200m x 211200m

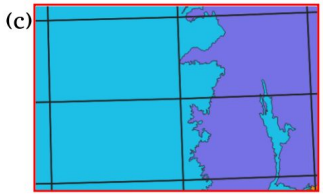


Grid: BDC – Small
Each tile: 105600m x 105600m

(V1)



Grid: BDC – Large
Each tile: 6 x 4°

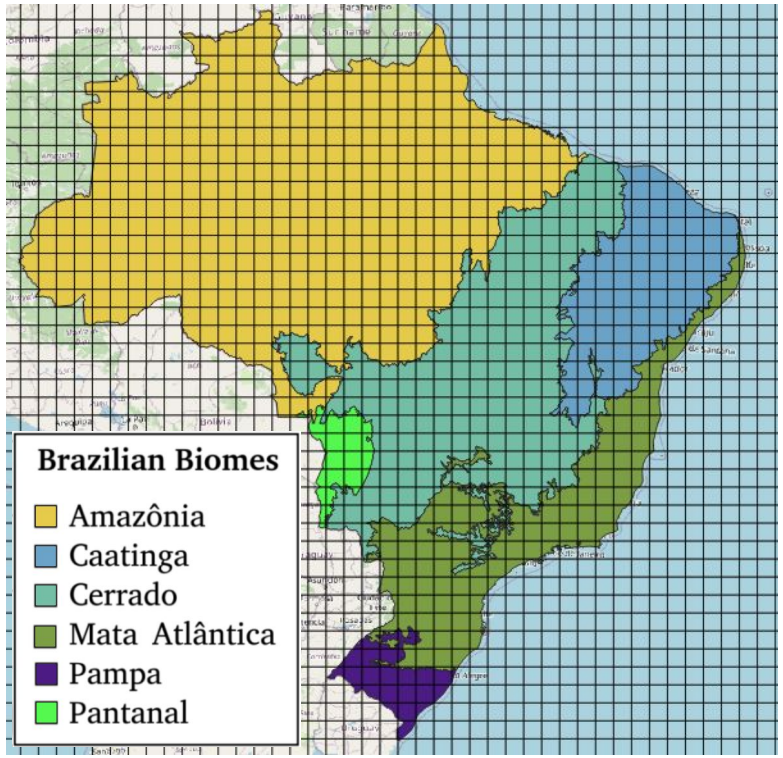


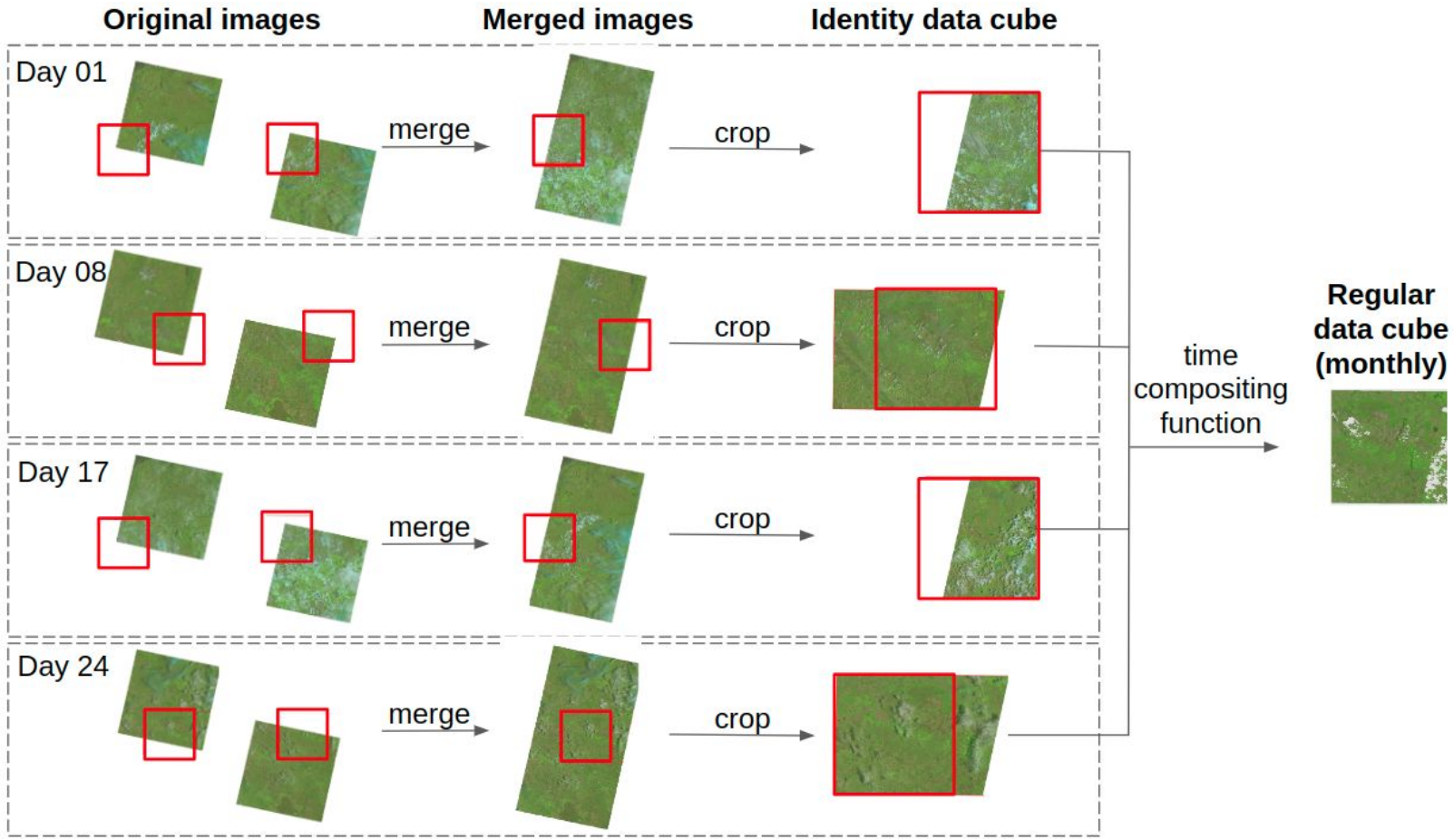
Grid: BDC – Medium
Each tile: 3 x 2°

Grid: BDC – Small
Each tile: 1.5 x 1°

Projection: Albers equal area and Datum: SIRGAS 2000

Data Cube Generation

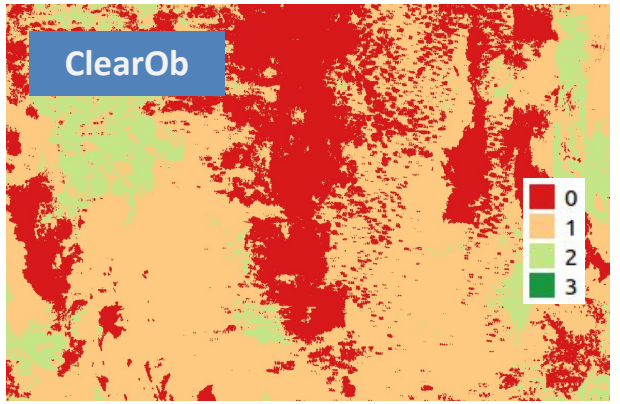




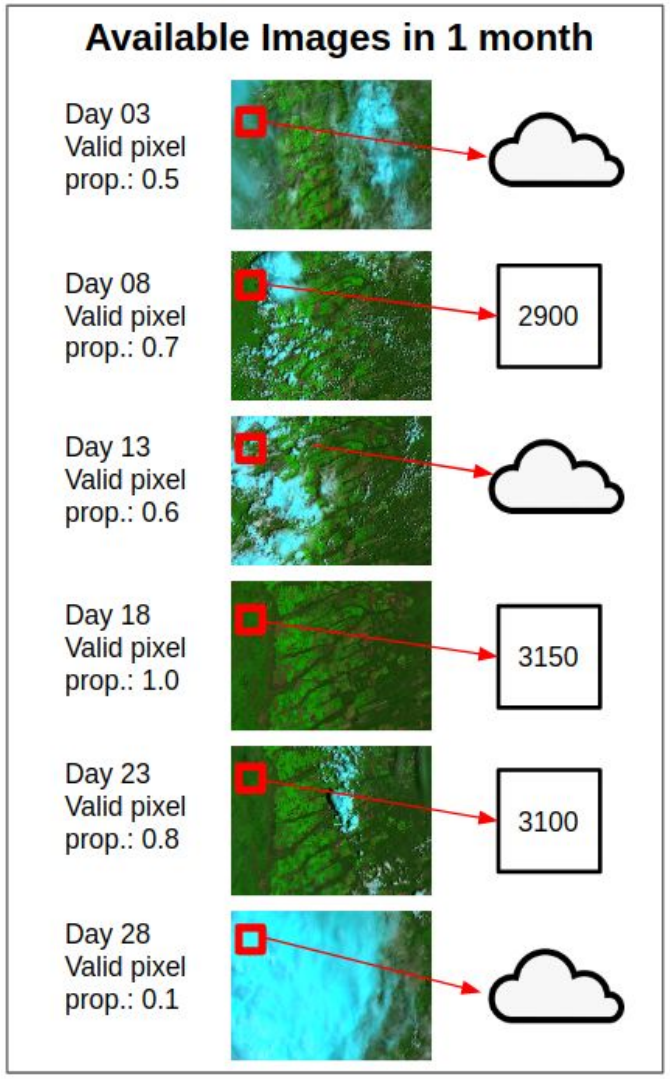
Bandas dos Cubos de Dados

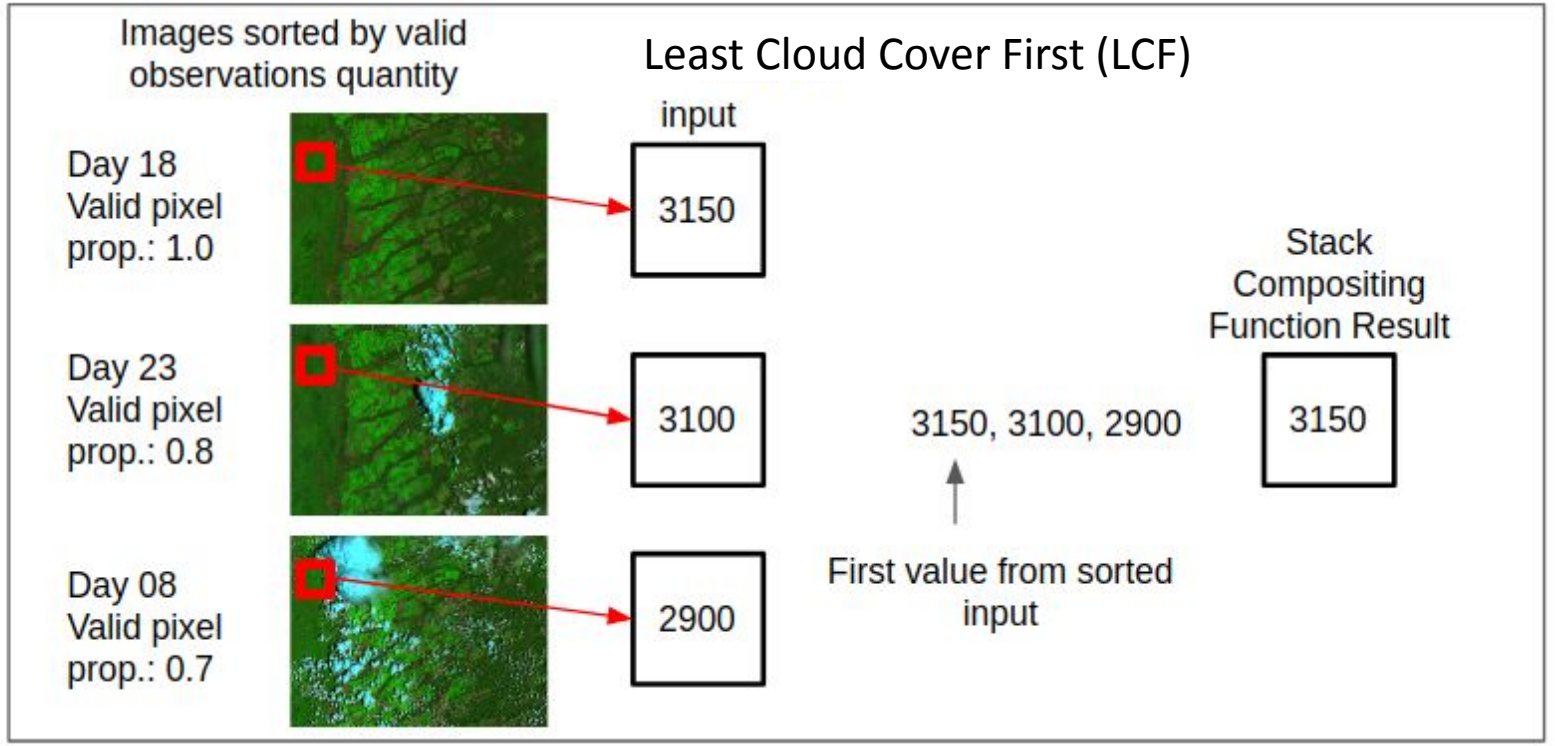
	Atributos	Descrição
Bandas Espectrais	Banda em Reflectância de Superfície	Imagens processadas para Reflectância de Superfície
Bandas Extras	Provenance	Dia juliano indicando data de imageamento da imagem de origem do pixel
	ClearOb	Número de observações livre de nuvem e sombras de nuvem no período composto
	TotalOb	Número total de observações no período composto
	Qualidade (CMask, Fmask)	Identificação da qualidade dos pixels no período (nuvem, sombra de nuvem, etc)
Índices Espectrais	NDVI	Normalized Difference Vegetation Index
	EVI	Enhanced Vegetation Index

FMASK	CMask	Descrição
0	0	clear land pixel
1	-	clear water pixel
2	-	cloud shadow
3	-	snow
4	4	cloud
255	255	no observation



Temporal Compositing





* Formerly known as Stack (STK)

Cube Builder

- Software to generate data cubes in large scale

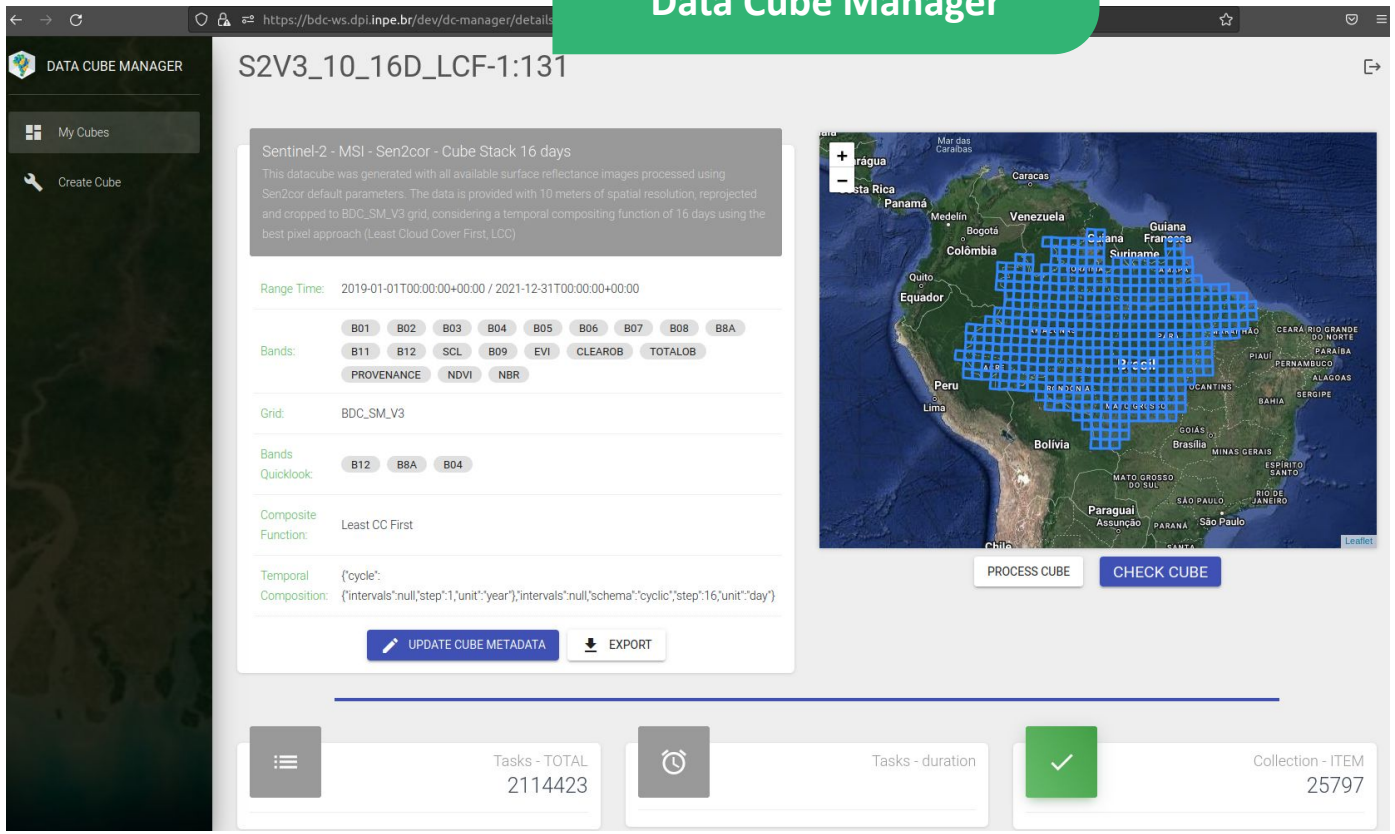
Builder Local

Builder on AWS

- Open Source Software, free and available on GitHub

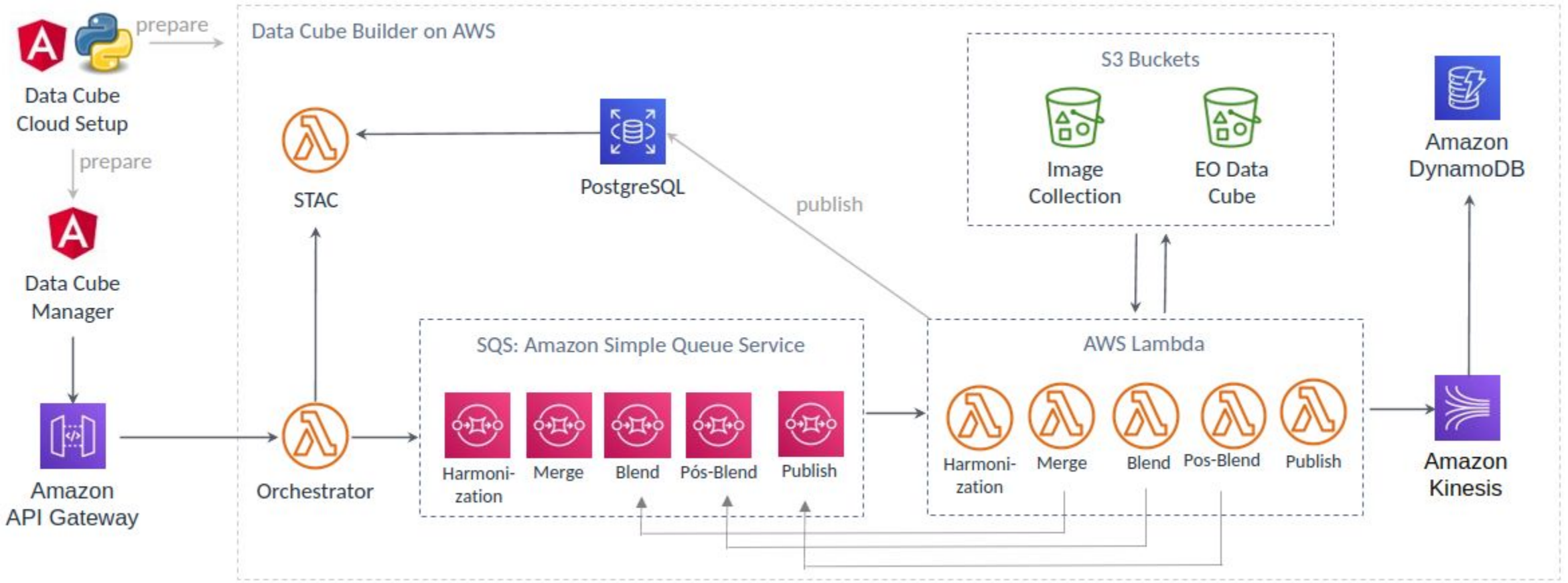
https://github.com/brazil-data-cube/cube-builder

Data Cube Manager



https://github.com/brazil-data-cube/dc-manager

Builder on AWS



Products Sentinel-2

Sentinel-2/MSI (10 meters)

(V1)

Data cubes stack – 16 days

[2017, 2020]

Grid: BDC – Small

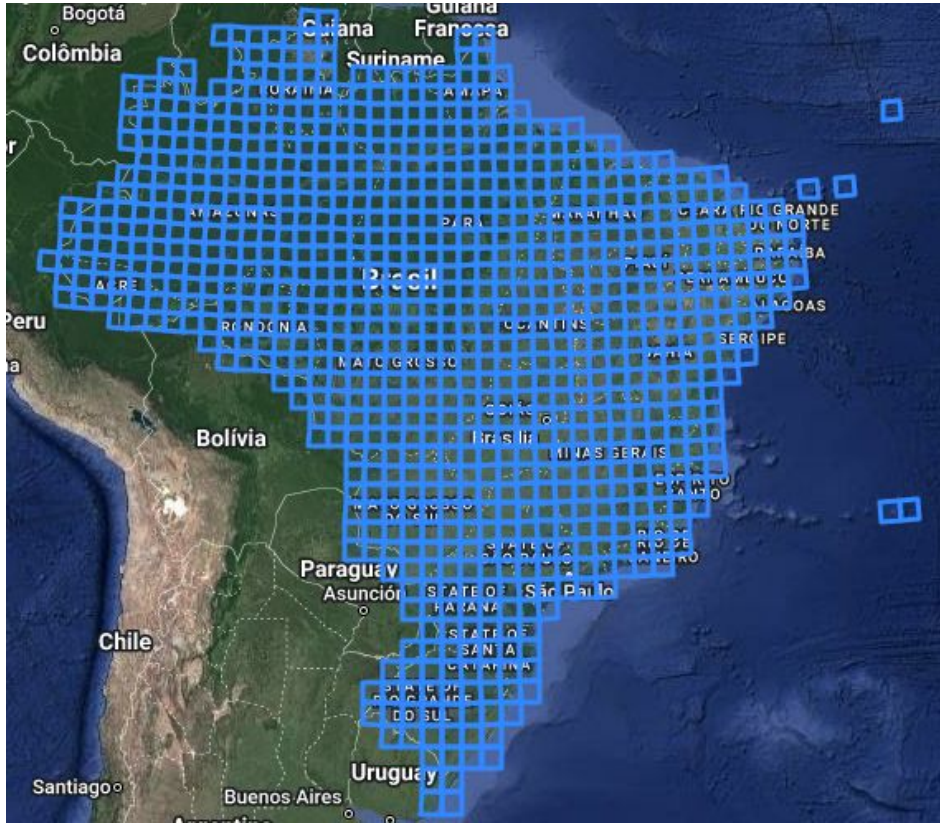
Each tile: 1.5 x 1 degree

Sentinel-2/MSI (10 meters)

(V2)

Data cubes Least Cloud First – 16 days

[2018*, 2022]



Grid: BDC V2 – Small

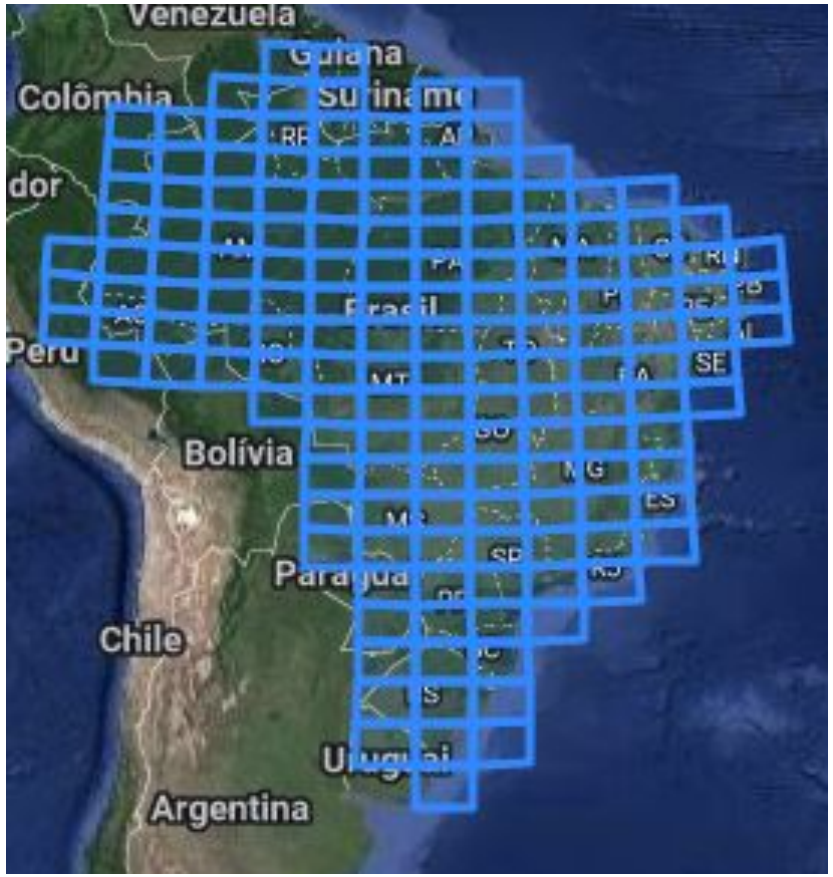
Tile size: 105600m x 105600m

* In AWS (https://registry.opendata.aws/brazil-data-cubes/)

Products Landsat

Landsat-8/OLI (30 meters)

Data cubes stack – 16 days
[08/2016 to 10/2021]



Grid: BDC – Medium
Each tile: 3 x 2 degrees

Landsat-8/OLI (30 meters) + Landsat-9/OLI2 (30 meters)

Will be reprocessed using Collection-2

* In AWS (https://registry.opendata.aws/brazil-data-cubes/)

Products MODIS

TERRA/MODIS (MOD13Q1) (250 meters)

Data cubes – 16 days
[2000, 2023]

Grid: STG (MODIS)

AQUA/MODIS (MYD13Q1) (250 meters)

Data cubes – 16 days
[2002, 2023]

Grid: STG (MODIS)

Products CBERS-4 (v2)

CBERS-4/MUX (20 meters)

Data cubes stack – 2 Months
[2016, 2023]

Grid: BDC – Medium
Each tile: 211.200m x 211.200m

CBERS-4/AWFI (64 meters)

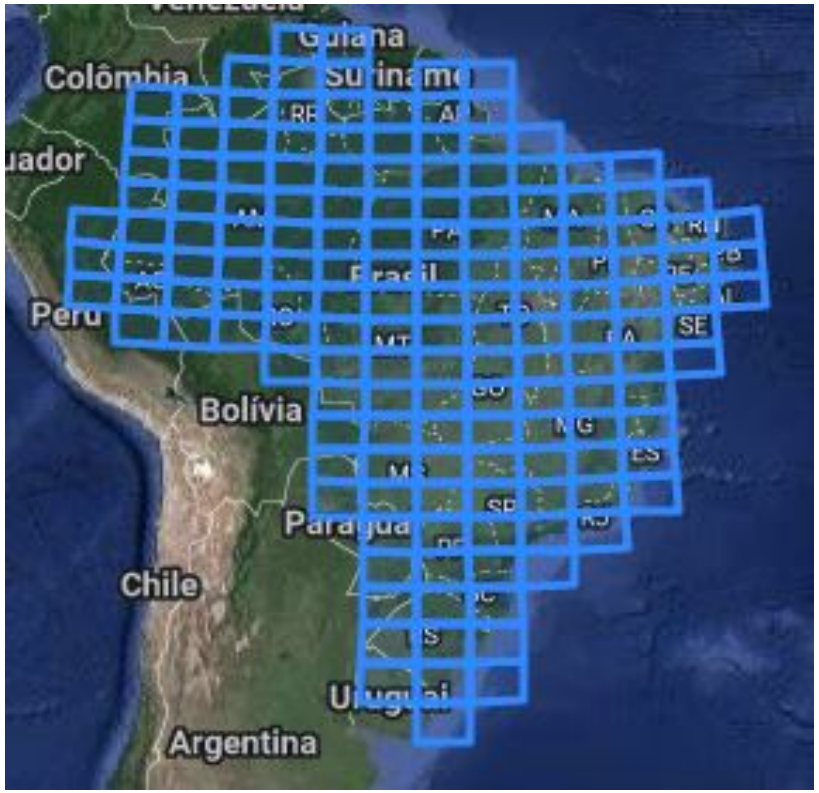
Data cubes stack – 16 days
[2016, 2023]

Grid: BDC – Large
Each tile: 422.400m x 422.400m

Products CBERS-4 (v1)

CBERS-4/MUX (20 meters)

Data cubes stack – 1 Month
[2016, 2022]



Grid: BDC – Medium
Each tile: 3 x 2 degrees

CBERS-4/AWFI (64 meters)

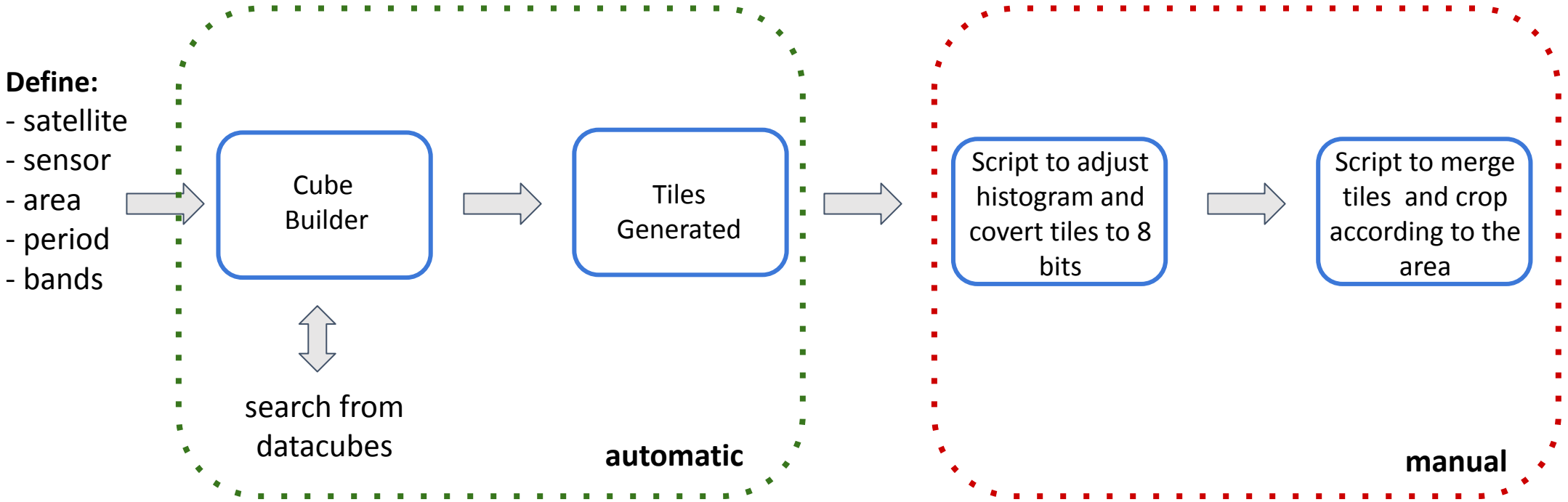
Data cubes stack – 16 days
[2016, 2022]

Grid: BDC – Large
Each tile: 6 x 4 degrees

* In AWS (https://registry.opendata.aws/brazil-data-cubes/)

Institutional demands to create mosaics

- Create free cloud mosaics
- Use of BDC Cube-Builder to accomplish this task
- Capacity to create the product quickly



Products
Mosaics

Landsat-8 - OLI - Brazil

6 months
[from July to December - 2017]

RGB: B6 -B5 -B4
Resolution: 30m

CBERS-4 WFI - Brazil

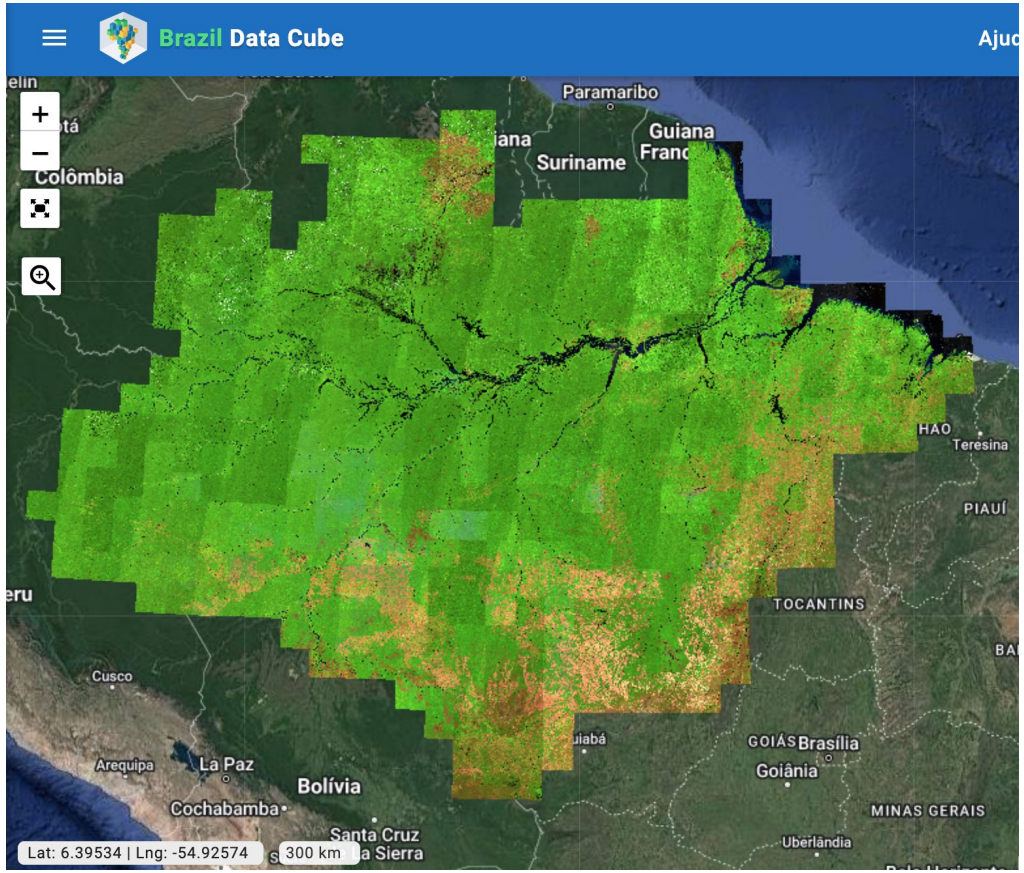
3 months
[from May to June - 2020]

RGB: B15 - B16 - B13
Resolution: 64m

Products Mosaics

Sentinel-2 - MSI - Amazonia

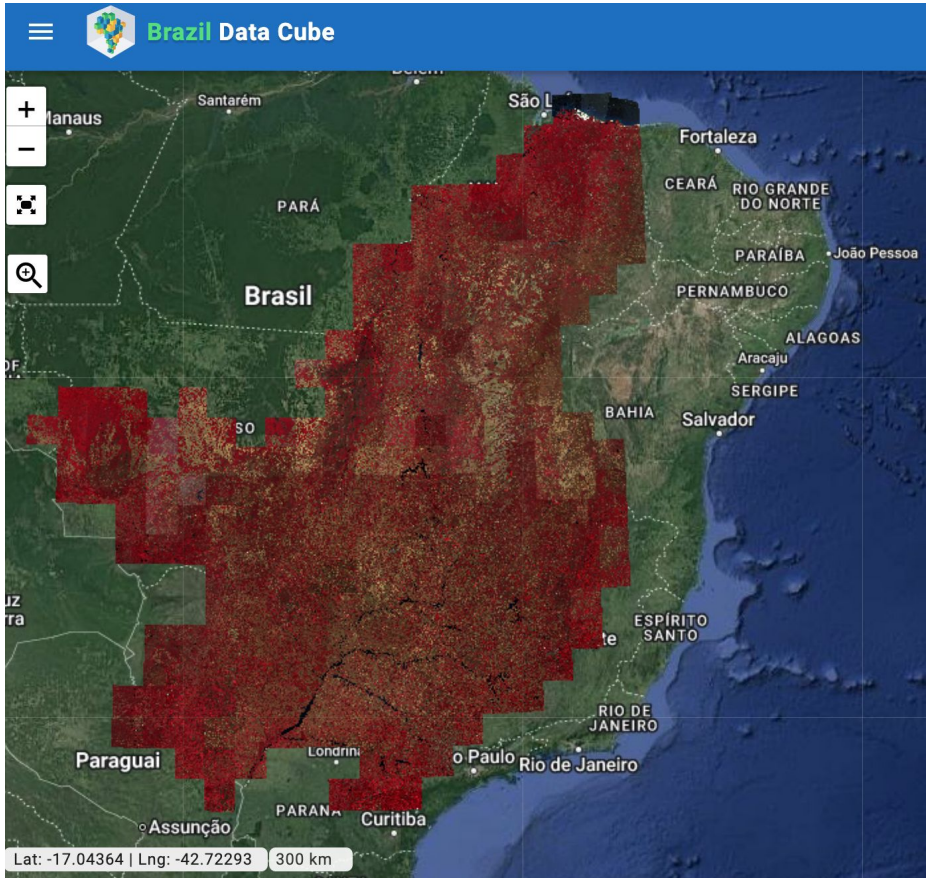
3 months
[from June to August - 2022]



RGB: B11,B8A,B04
Resolution: 10m

Sentinel-2 - MSI - Cerrado

4 months
[from June to September - 2022]

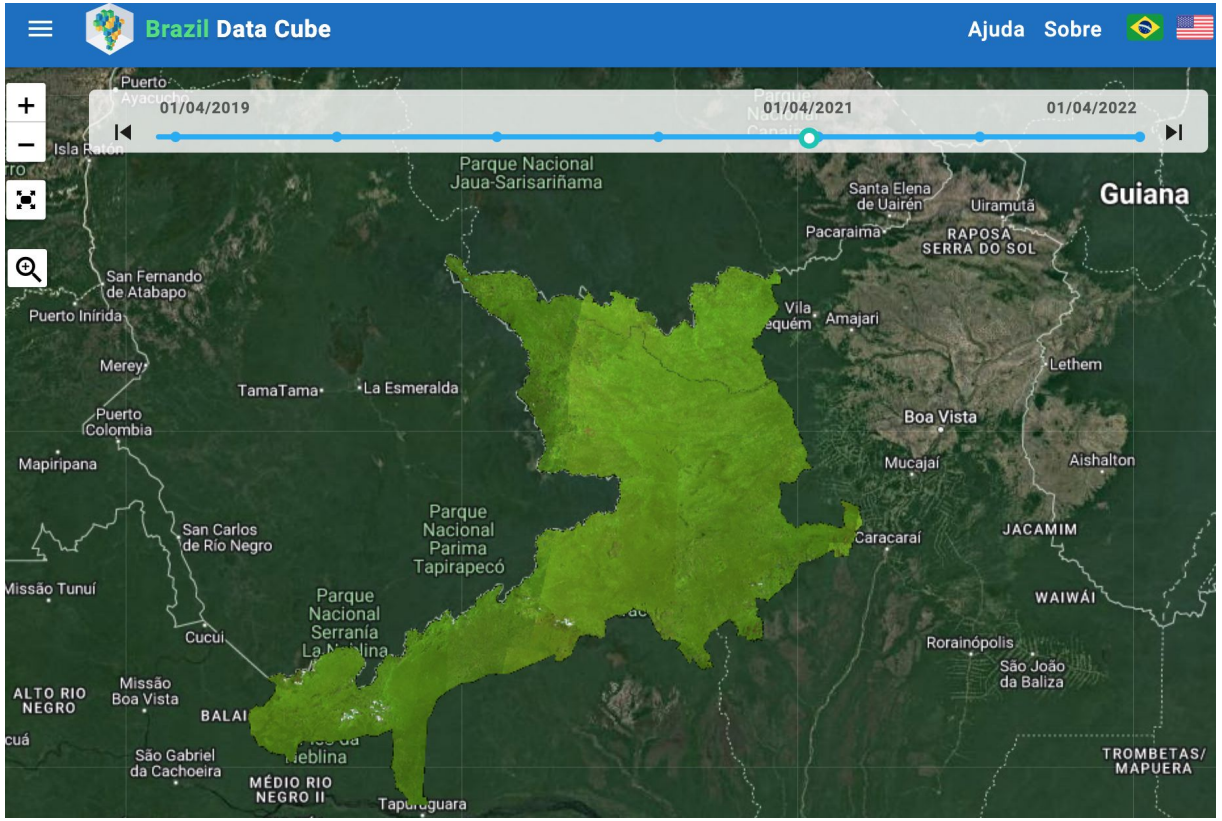


RGB: B08,B04,B03
Resolution: 10m

Products
Mosaics

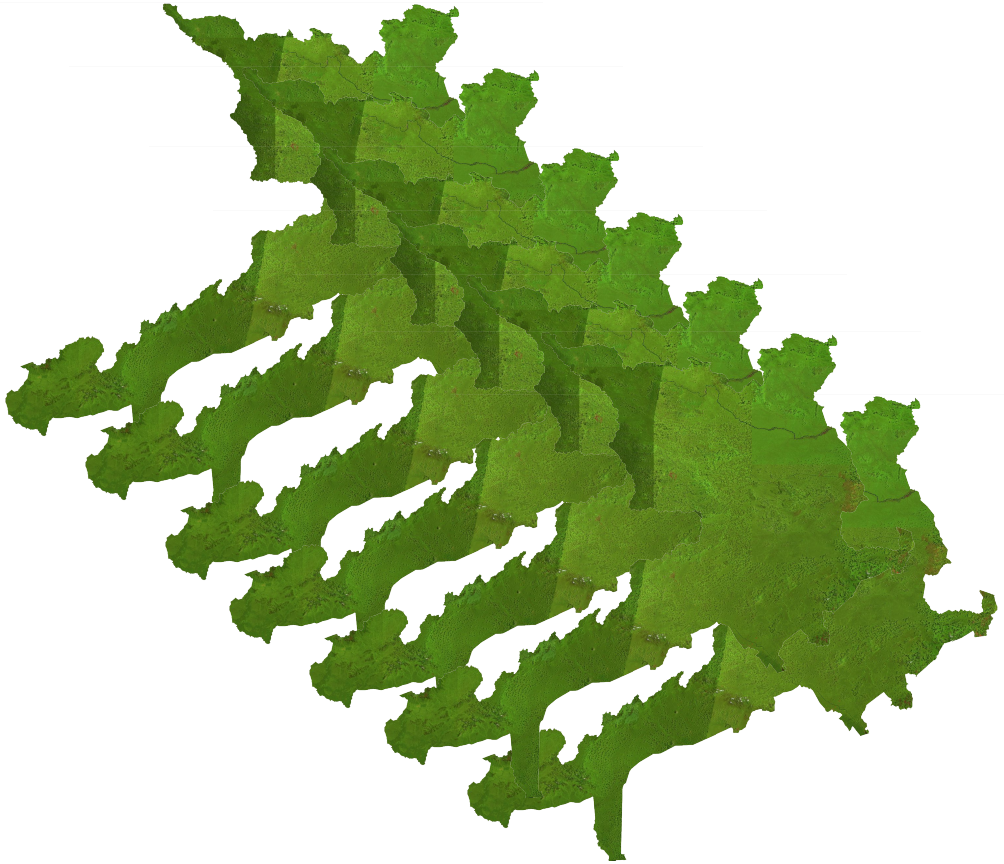
Sentinel-2 - MSI - Yanomami Reserve

6 months
[from April - 2019 to April - 2022]



RGB: B11,B08,B04
Resolution: 10m

7 mosaics with 6 months of step



BRAZIL DATA CUBE
brazildatacube.org

brazildatacube.org

brazildatacube.dpi.inpe.br/portal/explore

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Simposio Brasileiro de Sensoriamento Remoto

Thank you!

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