# The use of satellite imagery and air-quality monitoring stations for producing selected SDG data

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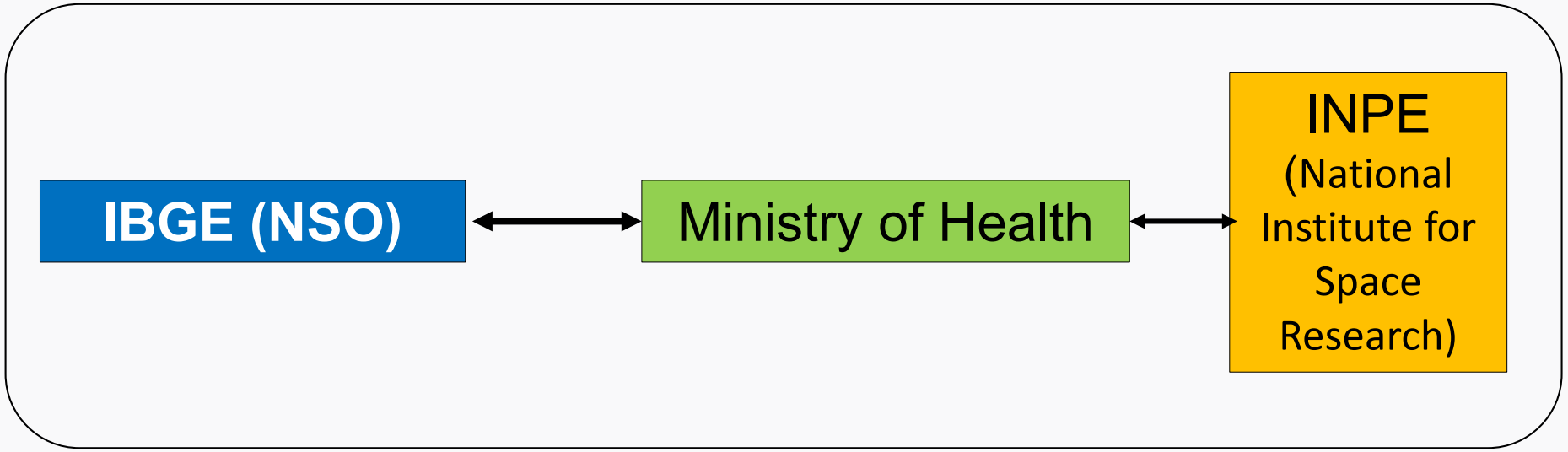
UNESCAP, Bangkok, Thailand, 7-9 November 2022

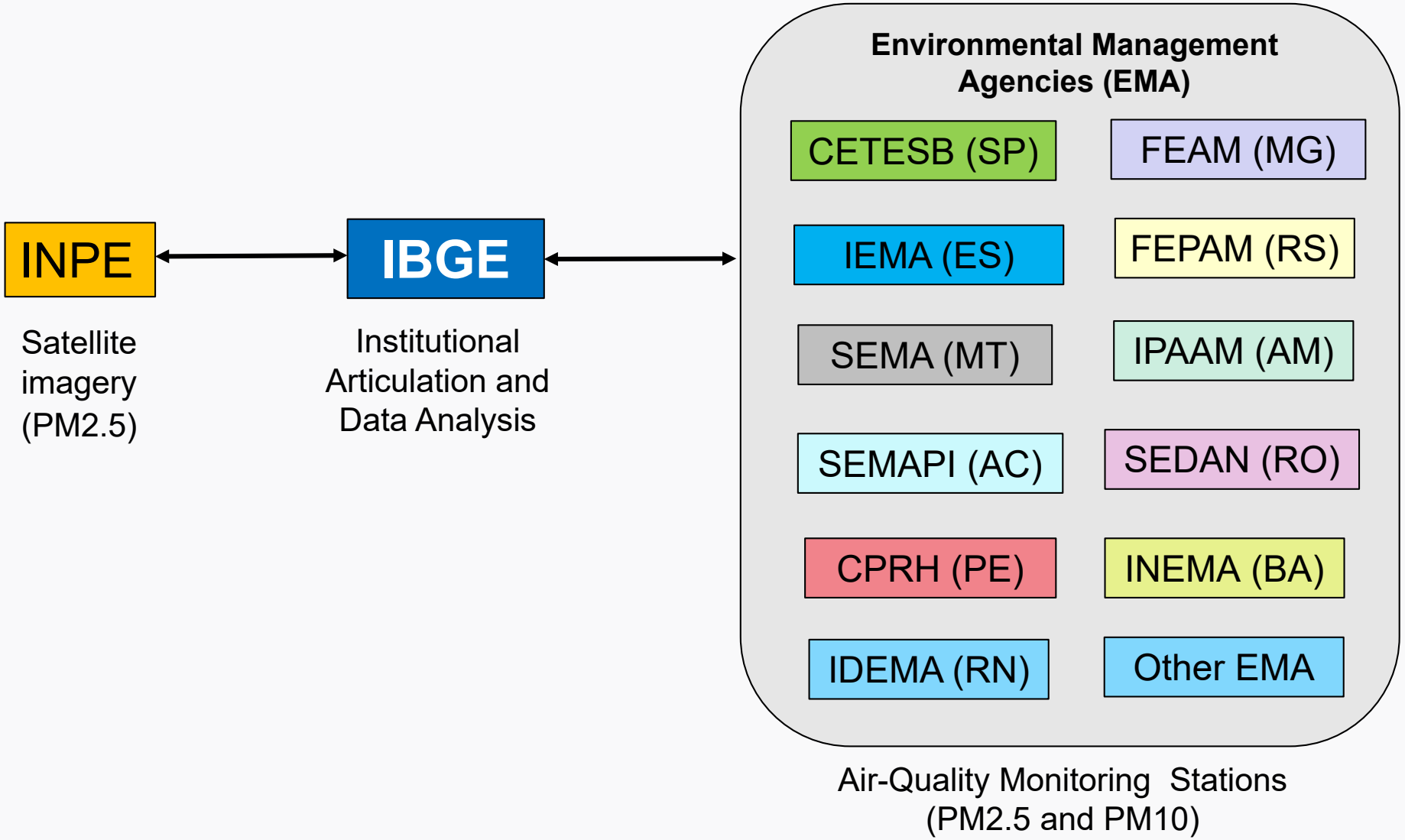
# SDG Indicator 3.9.1. Mortality rate attributed to household and ambient air pollution

The necessary articulation



# SDG Indicator 11.6.2. Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)

## The necessary articulation



SISAM
Sistema de Informações Ambientais Integrado à Saúde

INPE Programa Queimadas
Organização Pan-Americana da Saúde
MINISTÉRIO DA SAÚDE
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÕES

# Integrated Environmental Information System for Health

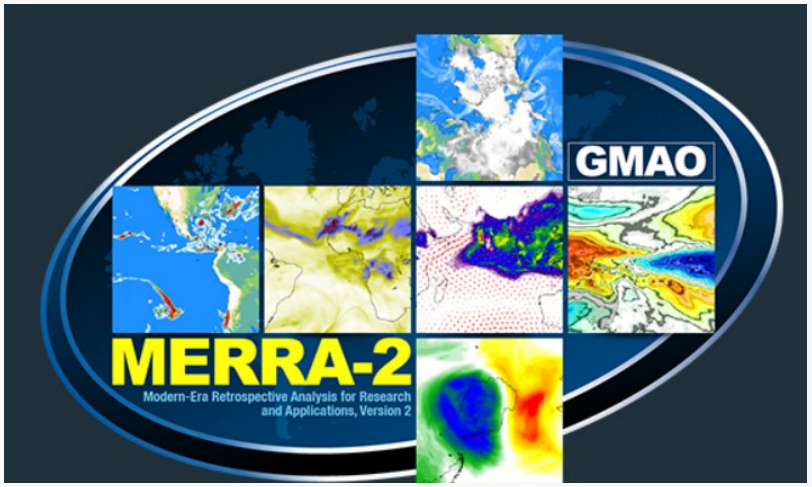
## National Institute for Space Research (INPE)

- ✓ Tool for analyzing punctual and spatial data that combines information on pollutant concentrations from estimates of emissions from burning and urban/industrial emissions, and data from monitoring fires.

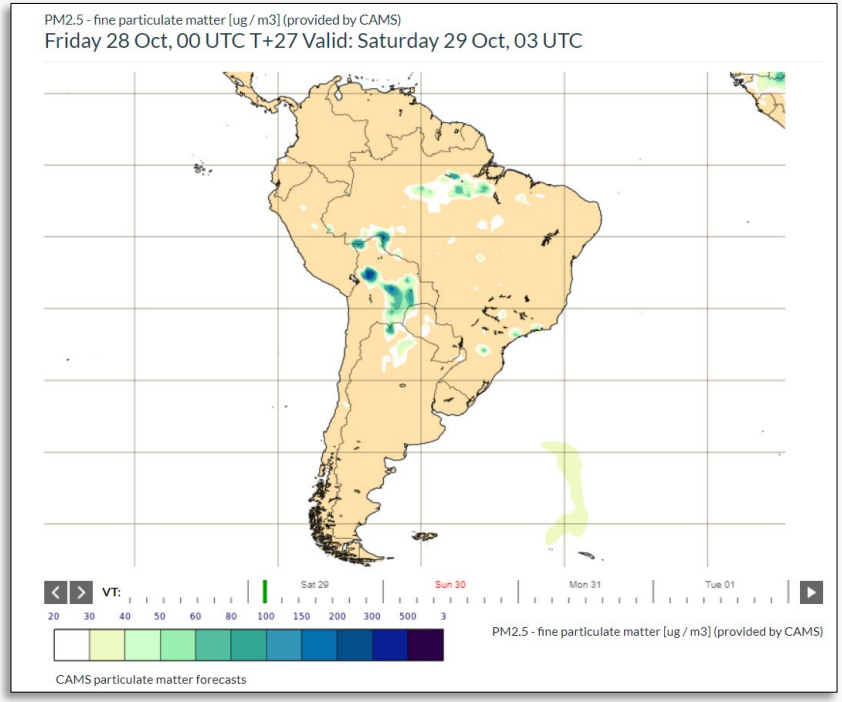
# SISAM Data Sources

- ✓ The SISAM database is composed of variables obtained from satellite images and numerical analyses.

- ✓ Temporal series for PM2.5: 2000-2019




- ✓ MERRA-2 Model – NASA (2000-2002)
- ✓ CAMS-Reanalysis Model (2003-2017)
- ✓ CAMS-Nrealtime (2018-2019)




Copernicus Europe's eyes on Earth

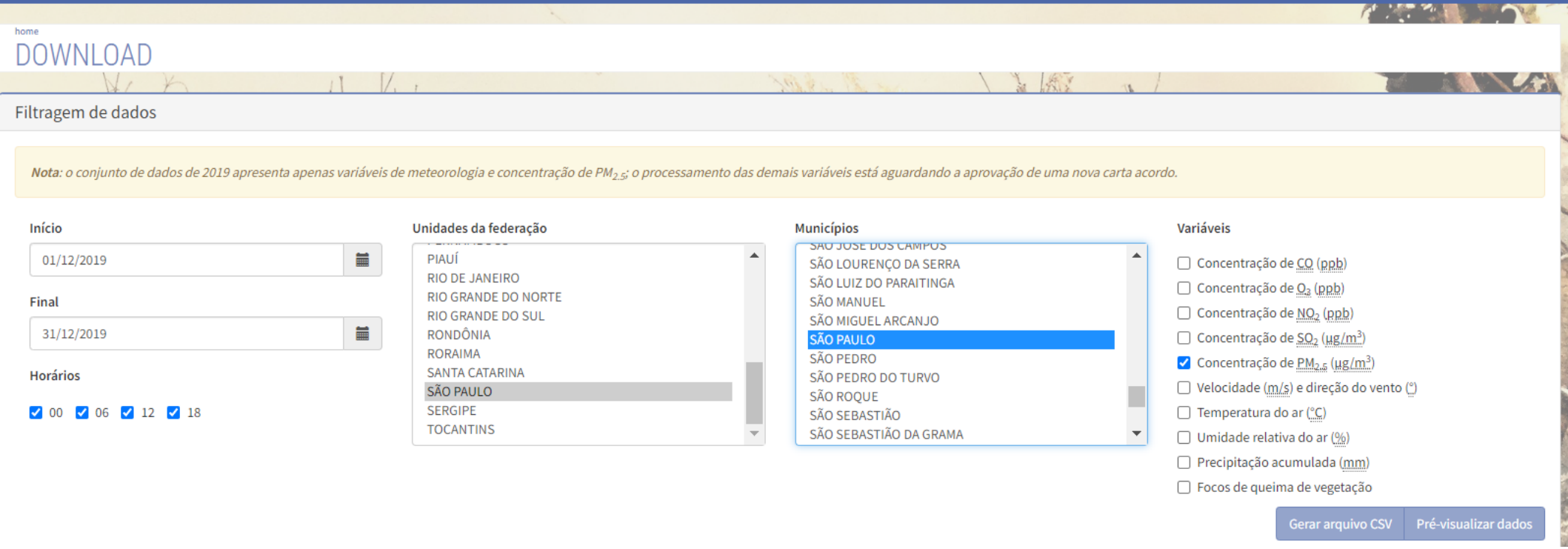
Atmosphere Monitoring Service

IMPLEMENTED BY ECMWF

# Integrated Environmental Information System for Health

Information for all brazilian cities

SISAM
Sistema de Informações Ambientais Integrado à Saúde



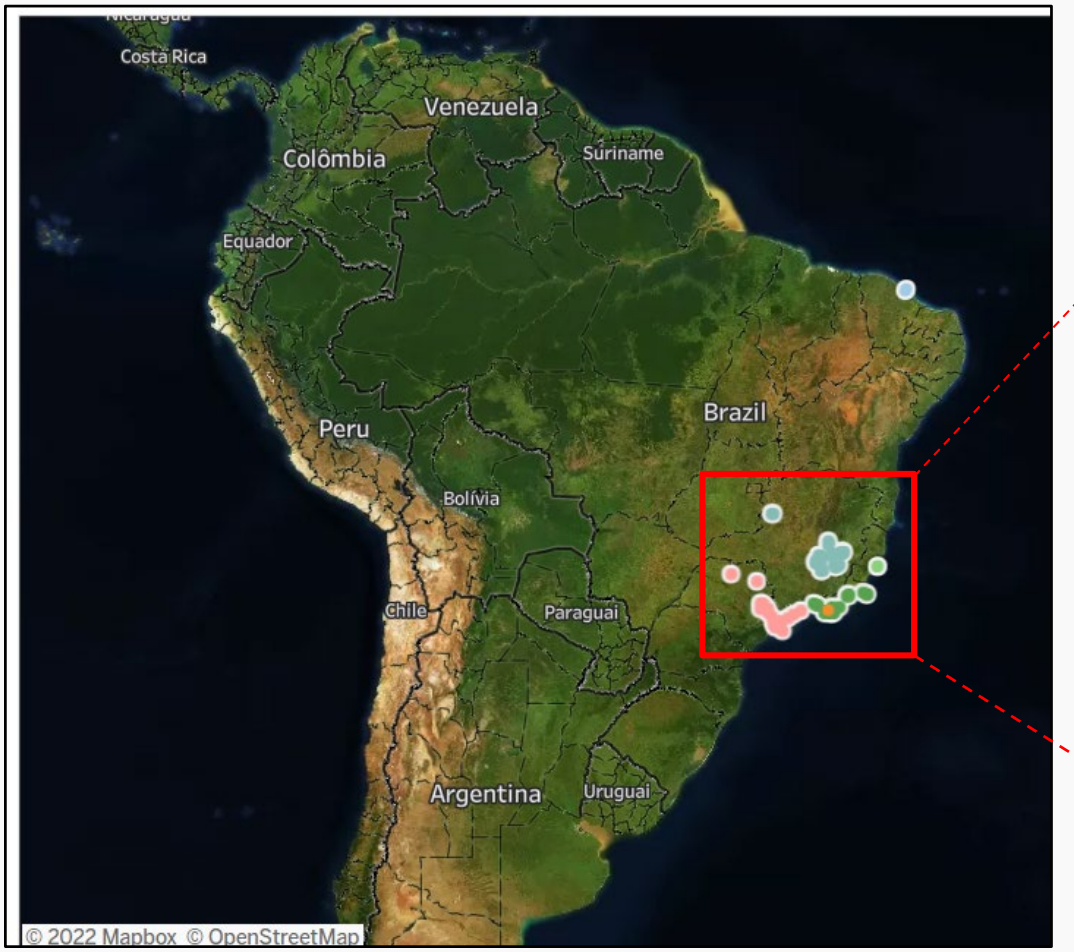

https://queimadas.dgi.inpe.br/queimadas/sisam/v2/dados/download/

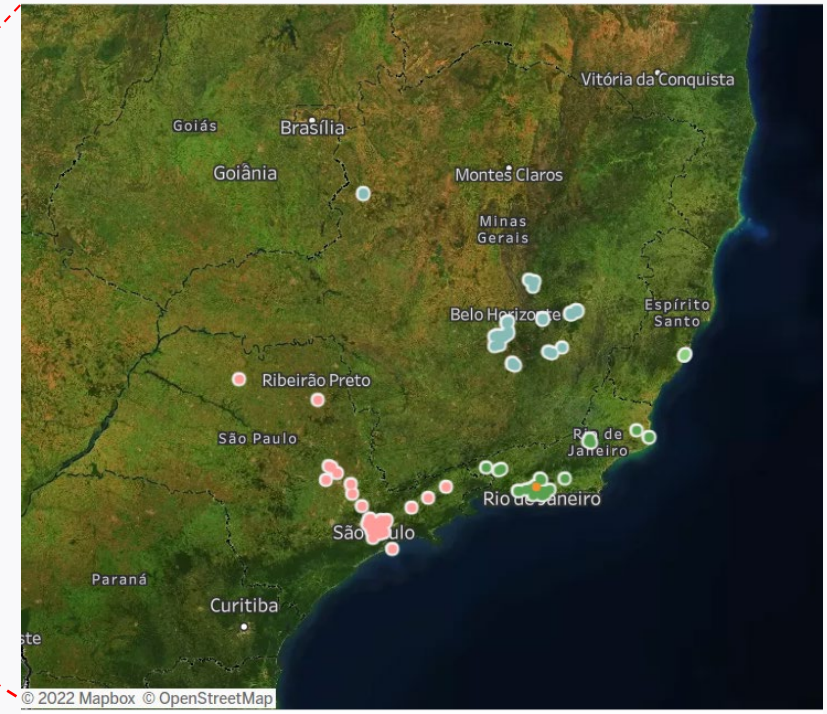
# Annual mean levels of PM2.5, Brazil, 2019

Source of map:
https://queimadas.dgi.inpe.br/queimadas/sisam/v2/dados/visualizacao/

Source of image:
https://atmosphere.copernicus.eu/

# Monitoring Stations Map (PM2.5), Brazil, 2019




Source: https://energiaeambiente.org.br/qualidadedoar

# Monitoring Stations Map (PM10), Brazil, 2019

Source: https://energiaeambiente.org.br/qualidadedoar

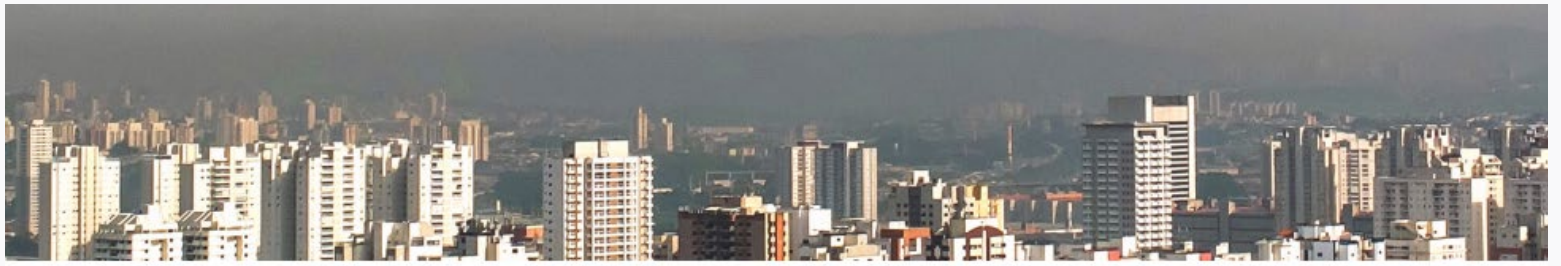
IBGE | Instituto Brasileiro de Geografia e Estatística

# Air Quality Platform

Instituto Brasileiro de Geografia e Estatística | IBGE

PLATAFORMA DA QUALIDADE DO AR

iema Instituto de Energia e Meio Ambiente



Source: https://energiaeambiente.org.br/qualidadedoar

# Challenges

- ✓ Gather information from several sources (considering air-quality stations).
- ✓ There are no monitoring stations for all Brazilian territory and few observational data for validation.
- ✓ Data from air-quality monitoring stations in different Federation Units are not comparable.
- ✓ The data series with national coverage is limited (until the end of 2019).
- ✓ SDG Indicador 3.9.1: there is a need for WHO to make updated parameters available to countries to be used (integrated exposure-response functions and the minimum exposure level to consider).

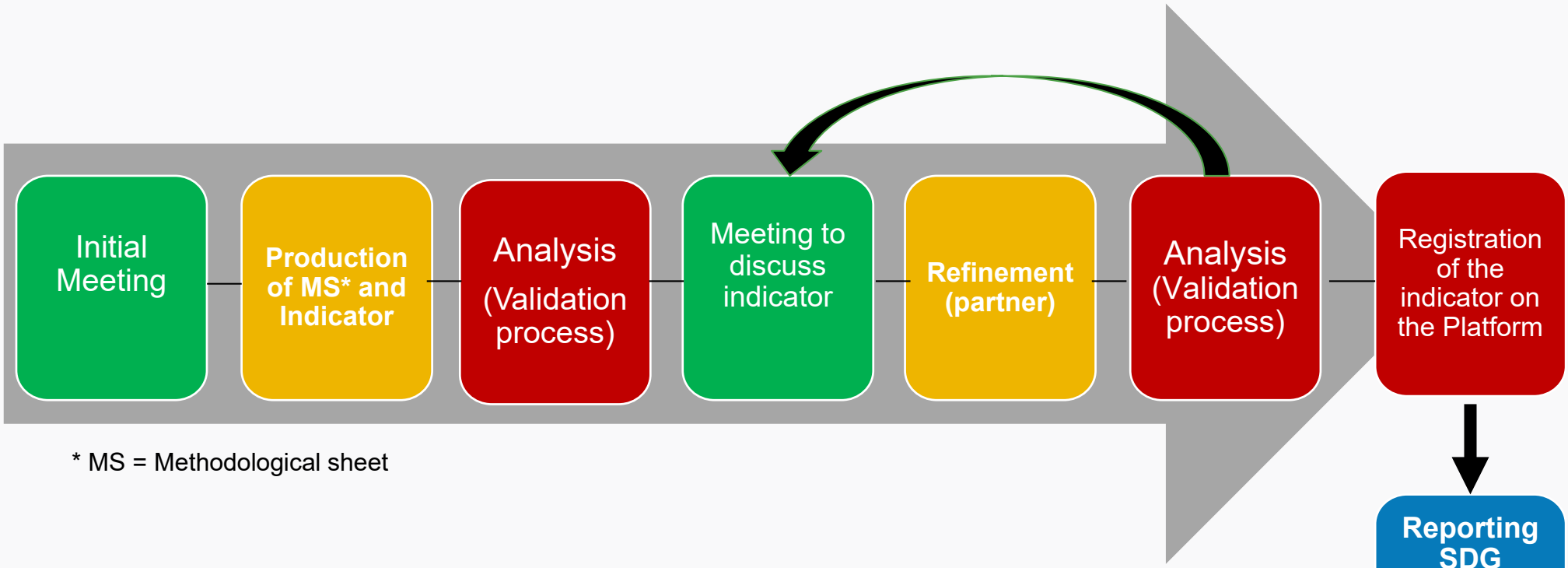
# Next Steps

- ✓ Host a meeting with environmental management agencies
- ✓ Collect data from them (PM2,5 and PM10)
- ✓ Data analysis - Linking data from satellite images andair-quality monitoring stations
- ✓ Produce the indicators
- ✓ Validate the indicators

# Collaborative Process to Produce SDG Indicators

IBGE: 50 people

17 SDG working groups




* MS = Methodological sheet

Legend

- IBGE and other data producer
- Data producer
- IBGE
- Outcome

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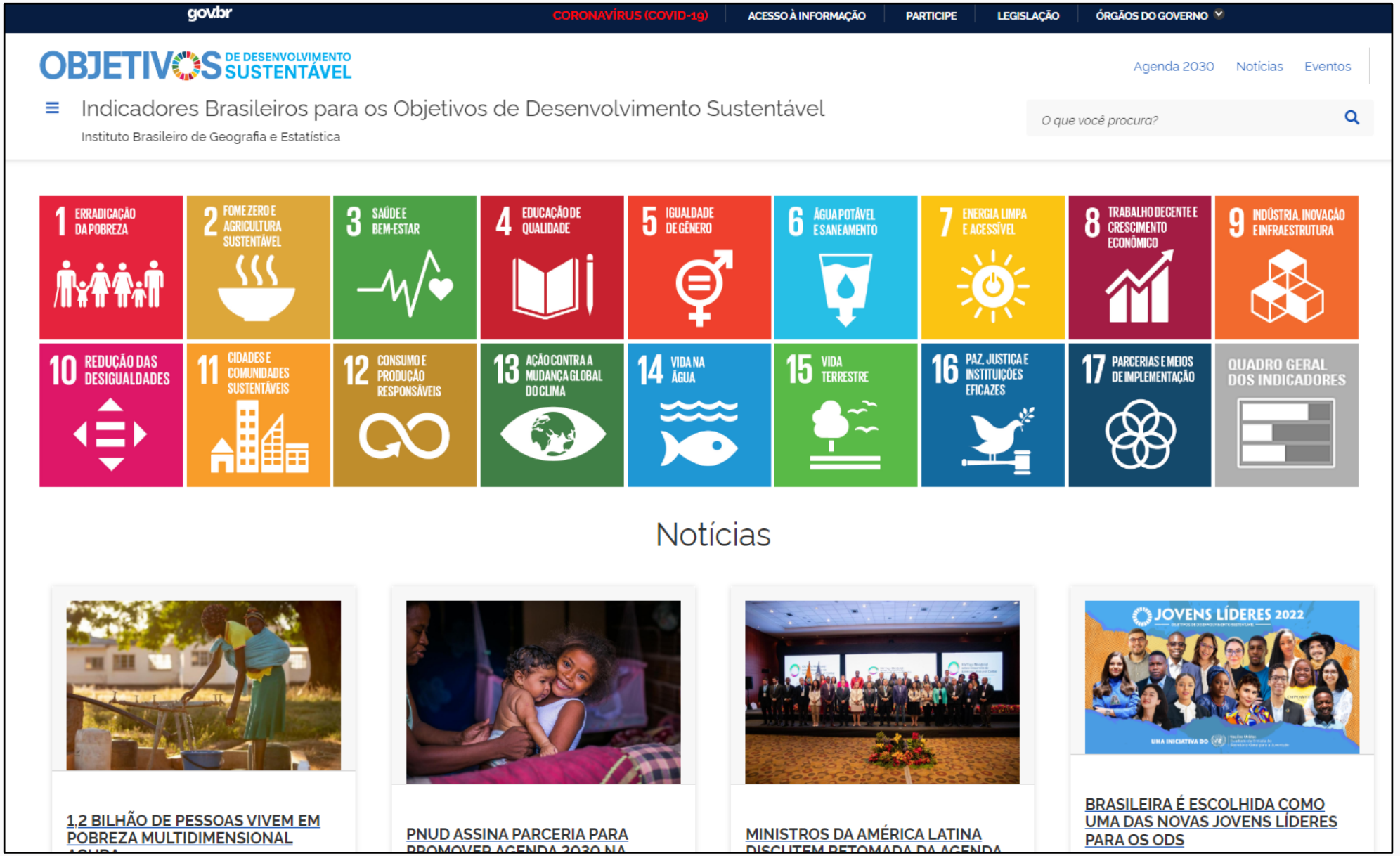
# Brazilian SDG Platform

## https://odsbrasil.gov.br



# Thanks for your attention!

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