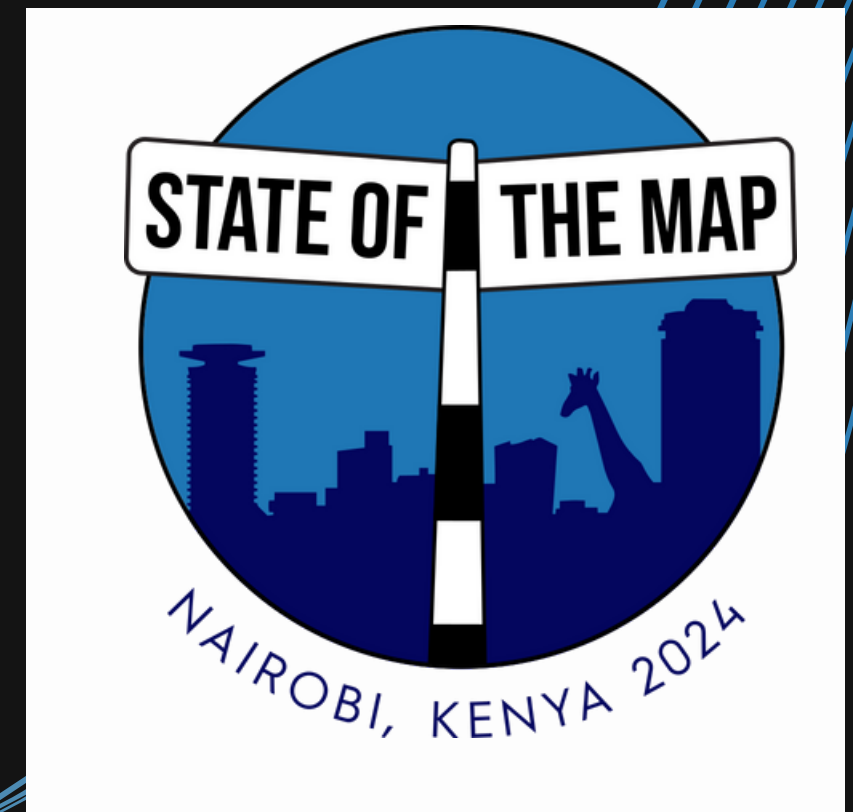
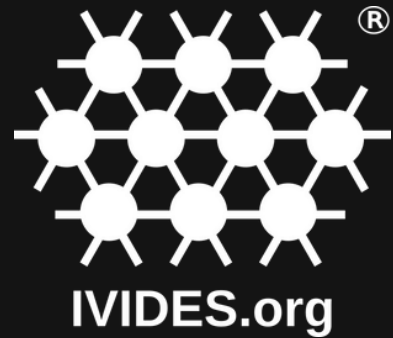
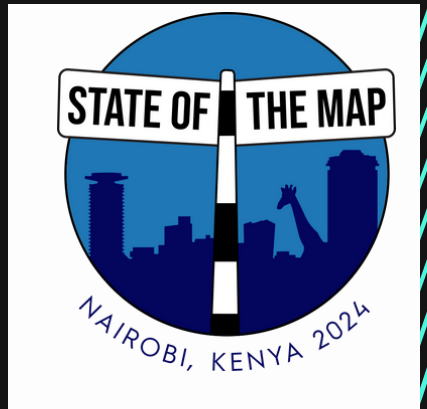
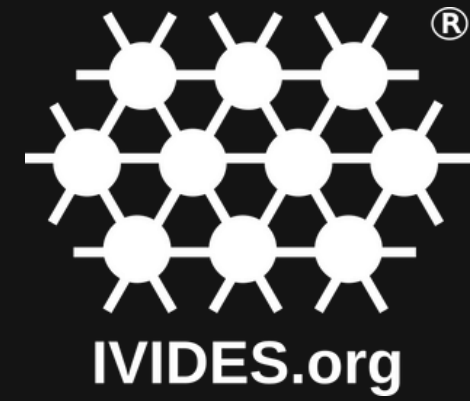


# Mapping the Infrastructure for Disaster Risk Reduction with OpenStreetMap, uMap and Wordpress

Dr. Raquel Dezidério Souto



# Summary

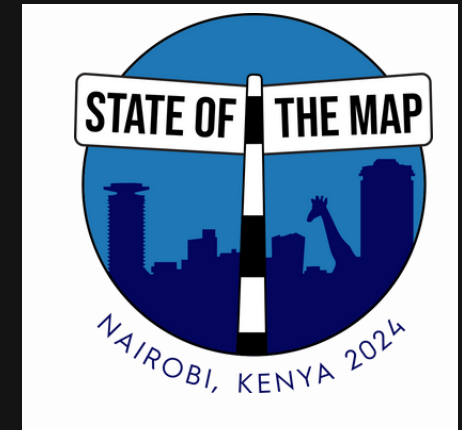
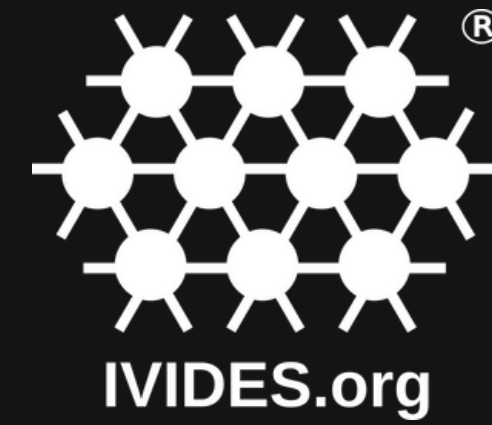


AREA OF INTEREST

MOTIVATION

MAPPING PHASES

WEB MAPS

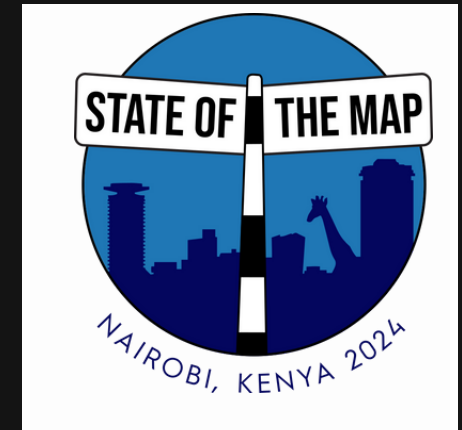


# **AREA OF INTEREST**

**Maricá City**

**State of Rio de Janeiro**

**Brazil**



# AREA OF INTEREST

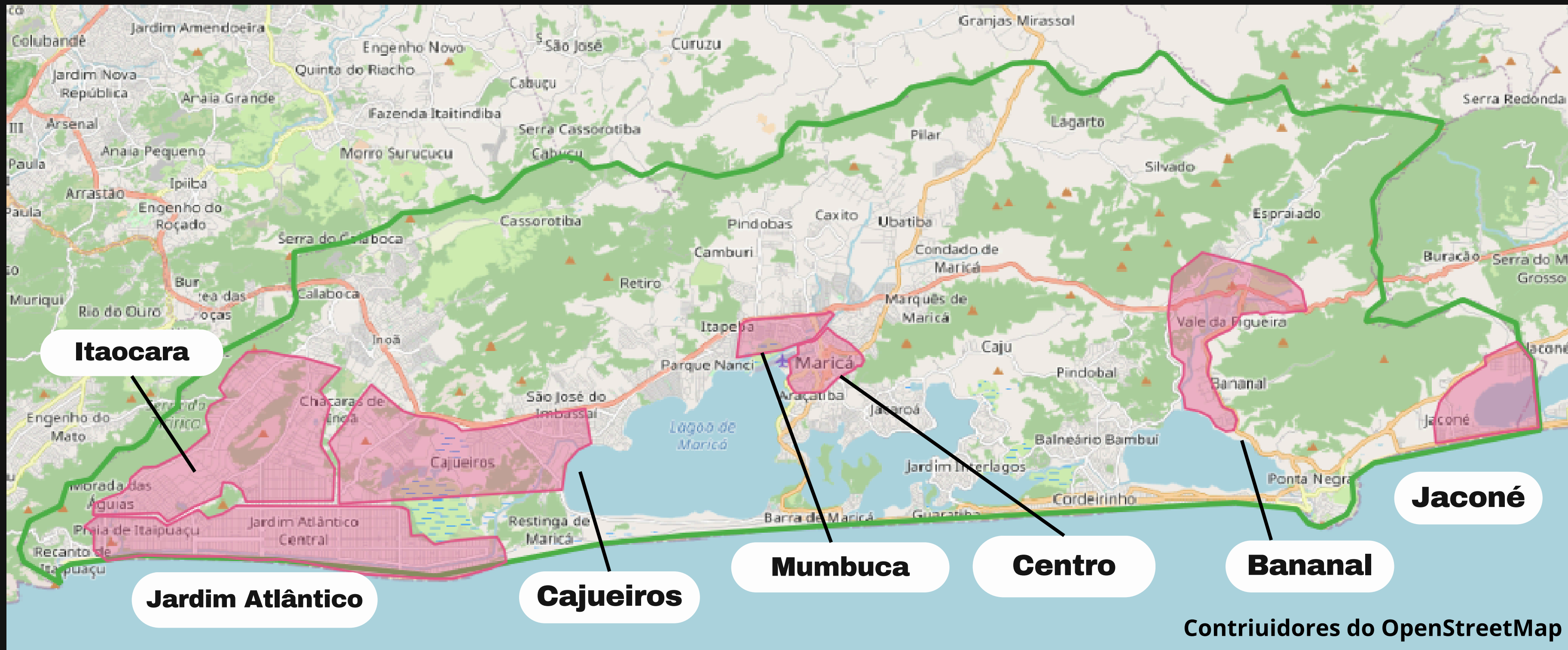
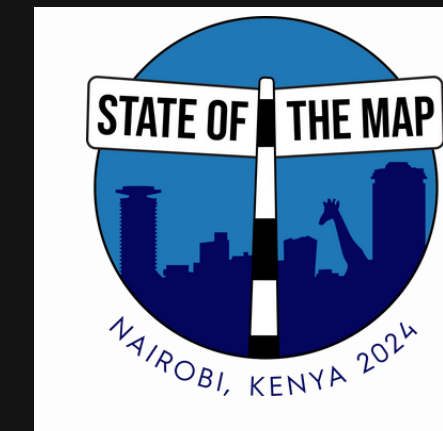
Maricá City

State of Rio de Janeiro

Brazil

# AREA OF INTEREST

## 7 PRIORITY AREAS



**Itaocara**

**Jardim Atlântico**

**Cajueiros**

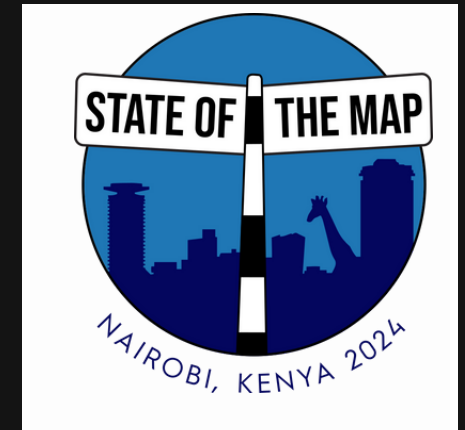
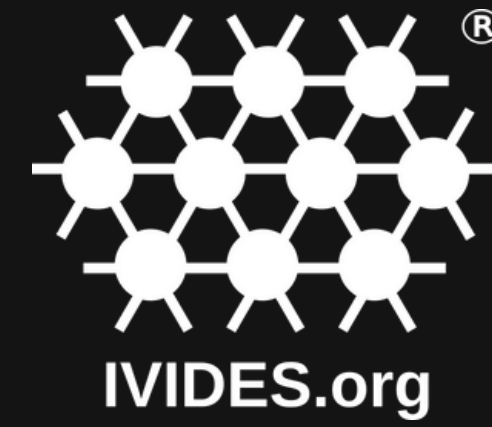
**Mumbuca**

**Centro**

**Bananal**

**Jaconé**

Contriuidores do OpenStreetMap

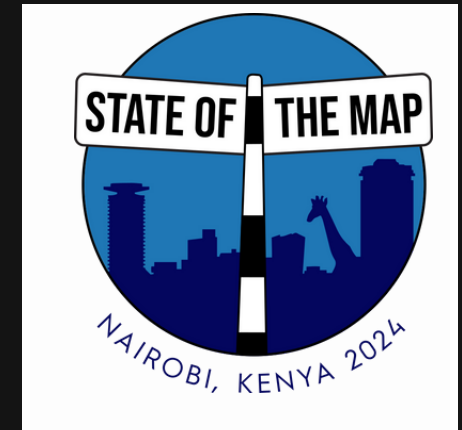
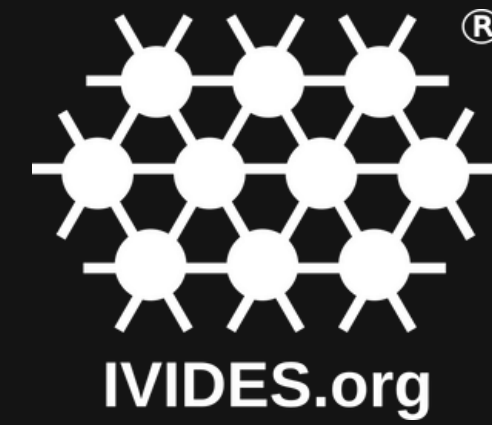


# MOTIVATION

Floodings

Maricá

January 2020

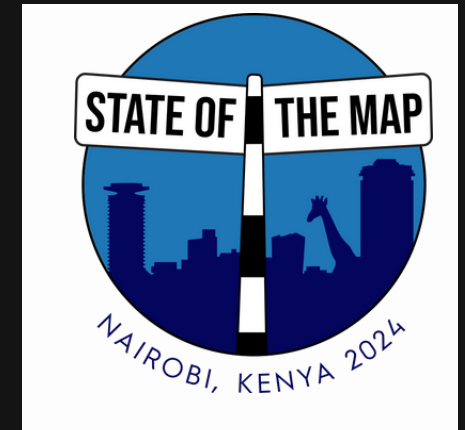
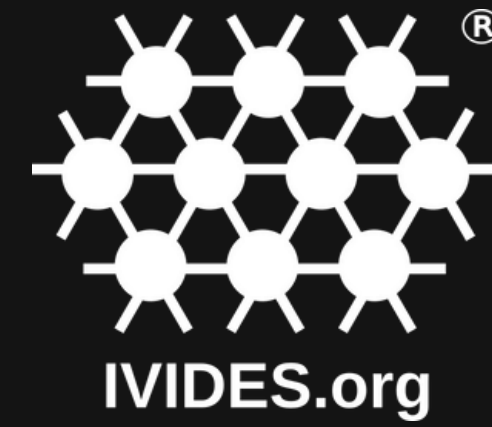


# MOTIVATION

## Coastal Erosion

Maricá

January 2020



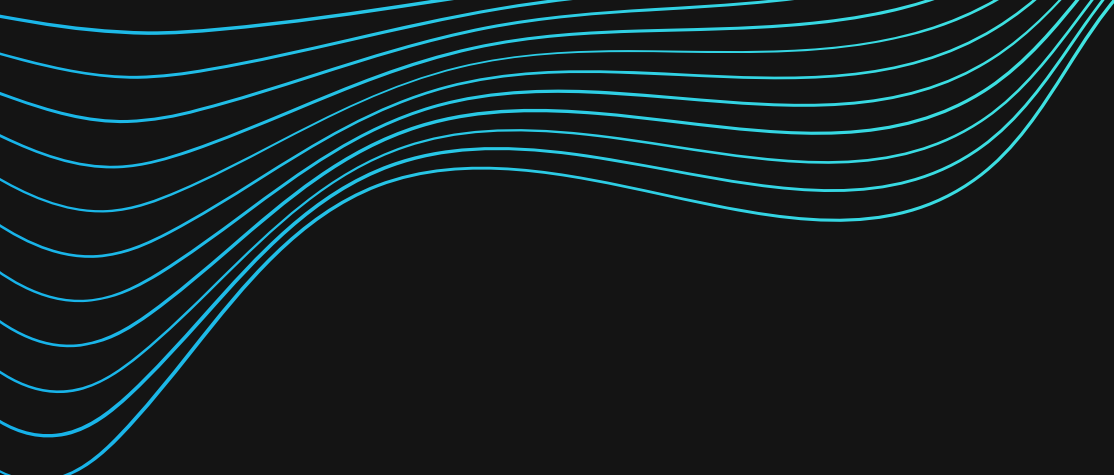
# MOTIVATION

**Landslides**

**Maricá**

**December 2022**





# MAPPING PHASES

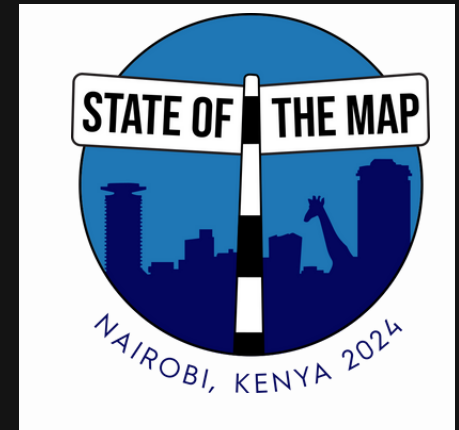
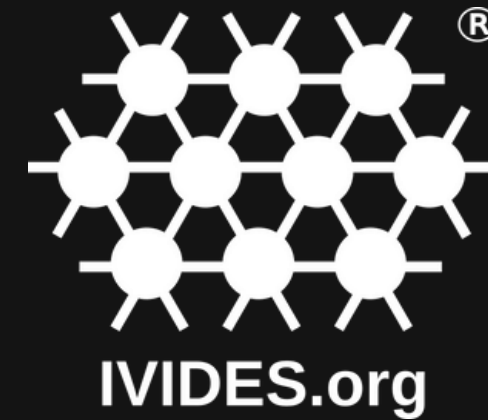


ACQUIRING DATA

DATA VALIDATIONS

MAKING DATA AVAILABLE WITH ODBL  
COMPATIBLE LICENSES

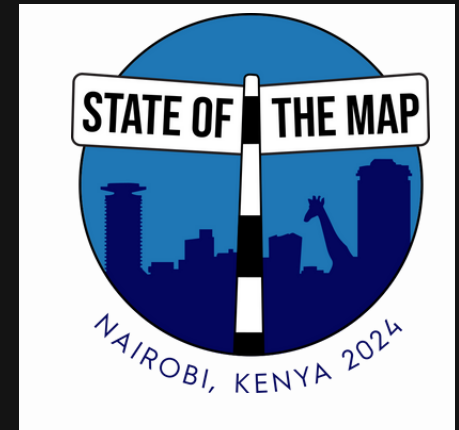
MAKING INFORMATION AVAILABLE ON A  
VIRTUAL AND COLLABORATIVE PLATFORM



# MAPPING PHASES

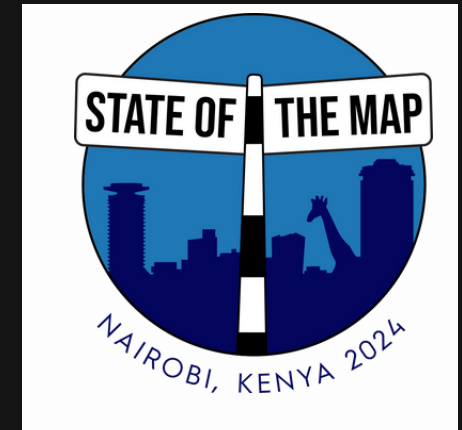
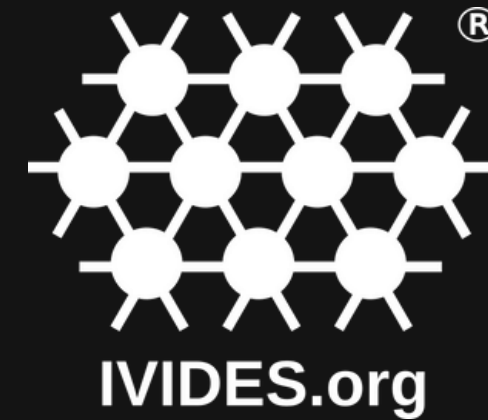
## ACQUIRING DATA

Data is being prospected from the following sources: OpenStreetMap, Municipality of Maricá (related municipal departments), The Brazilian Institute of Geography and Statistics (2022 Population Census), Military Firefighters Corps of the State of Rio de Janeiro (CBMERJ) and other official sources; and data from researchers who has interest in the same AOI.



# MAPPING PHASES

## DATA VALIDATIONS

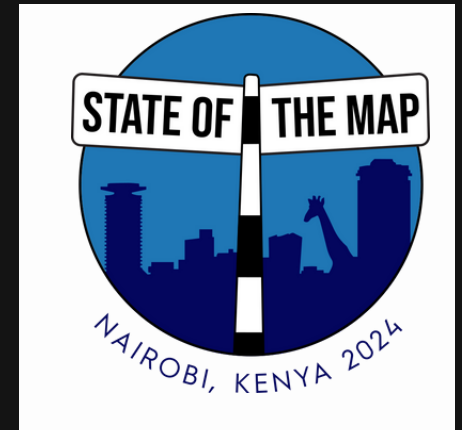


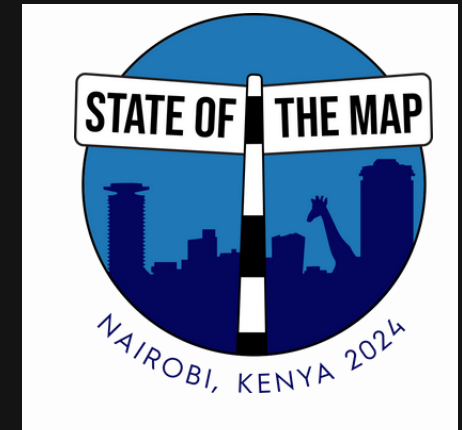
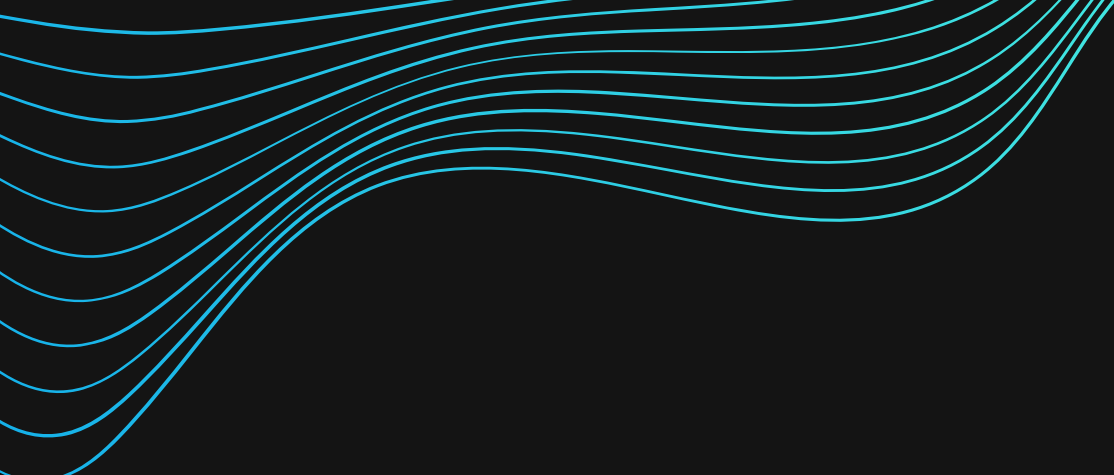
- Checking the **geometry of features** - JOSM
- **Data duplicity identification and data integrity check** - JOSM, iD, Osmium, OSMCha, Osmose eand OSM Inspector
- **Checking the adequacy of the tags** - Osmium, OSMCha, Osmose and OSM Inspector.

# MAPPING PHASES

## MAKING DATA AVAILABLE WITH ODBL COMPATIBLE LICENSES

Since the data is being mapped, as far as possible, with the OpenStreetMap, it is necessary that data license are compatible with the ODbL license. Data from the Brazilian producers of official statistics (e.g. IBGE) are public and we are investigating about the availability of other kind of data (from the researchers and research institutions) with ODbL compatible licenses.





# MAPPING PHASES



MAKING INFORMATION AVAILABLE ON A VIRTUAL AND COLLABORATIVE PLATFORM

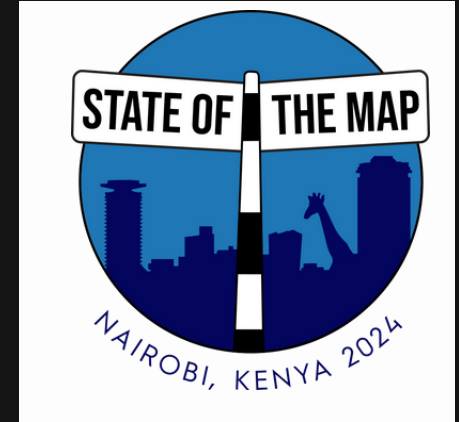
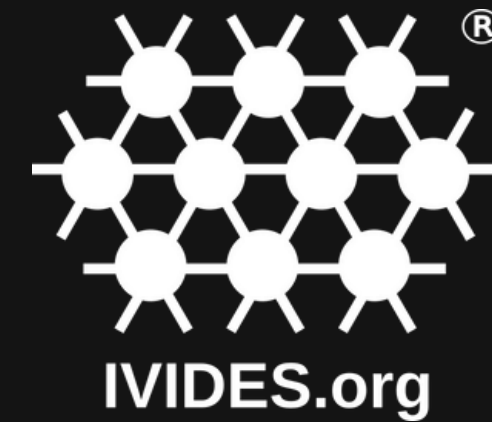
**uMap** - data entry + visualization of primary data

**Wordpress/plugin OSM** - visualization of validated data

# Web maps

<http://u.osmfr.org/m/1013950/>

uMmap



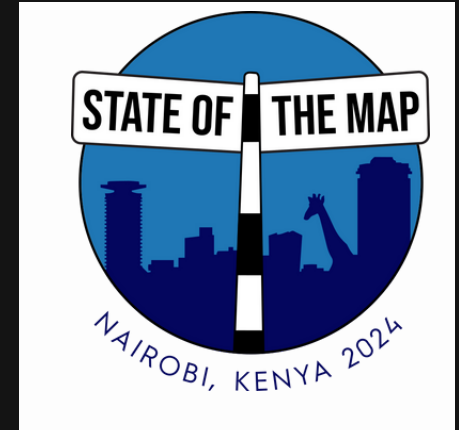
The screenshot shows a web map interface with a map of Maricá, Brazil. The map is overlaid with various infrastructure layers, including roads, buildings, and green spaces. Several locations are marked with numbered orange circles (1, 2, 3, 4, 7, 8, 11) and blue location pins. A sidebar on the right contains the following information:

- Infraestrutura para RRD**
- by [RaquelDeziderioSouto](#)
- Mapa interativo da infraestrutura para redução de riscos e desastres, tendo o município de Maricá como piloto. O web map foi elaborado pela Dra. Raquel Dezidério Souto (IVIDES.org e GeoCart-UFRJ), a partir de dados oficiais e de contribuidores do OpenStreetMap.
- BBOX: -43.0201,-22.9793,-42.5813,-22.8708
- Osmosis: left=-43.0201 bottom=-22.9793 right=-42.5813 top=-22.8708
- `<bbox-query e=-42.5813 n=-22.8708 s=-22.9793 w=-43.0201/>`
- 1. Camadas dinâmicas**
- Prédios públicos, escolas, clínicas e postos de saúde, hospitais, igrejas e templos, hotéis e pousadas, localidades, vilas e povoados** - Dados de contribuidores do OpenStreetMap e dados de domínio pública, fornecidos pelas secretarias municipais.
- 2. Camadas estáticas**

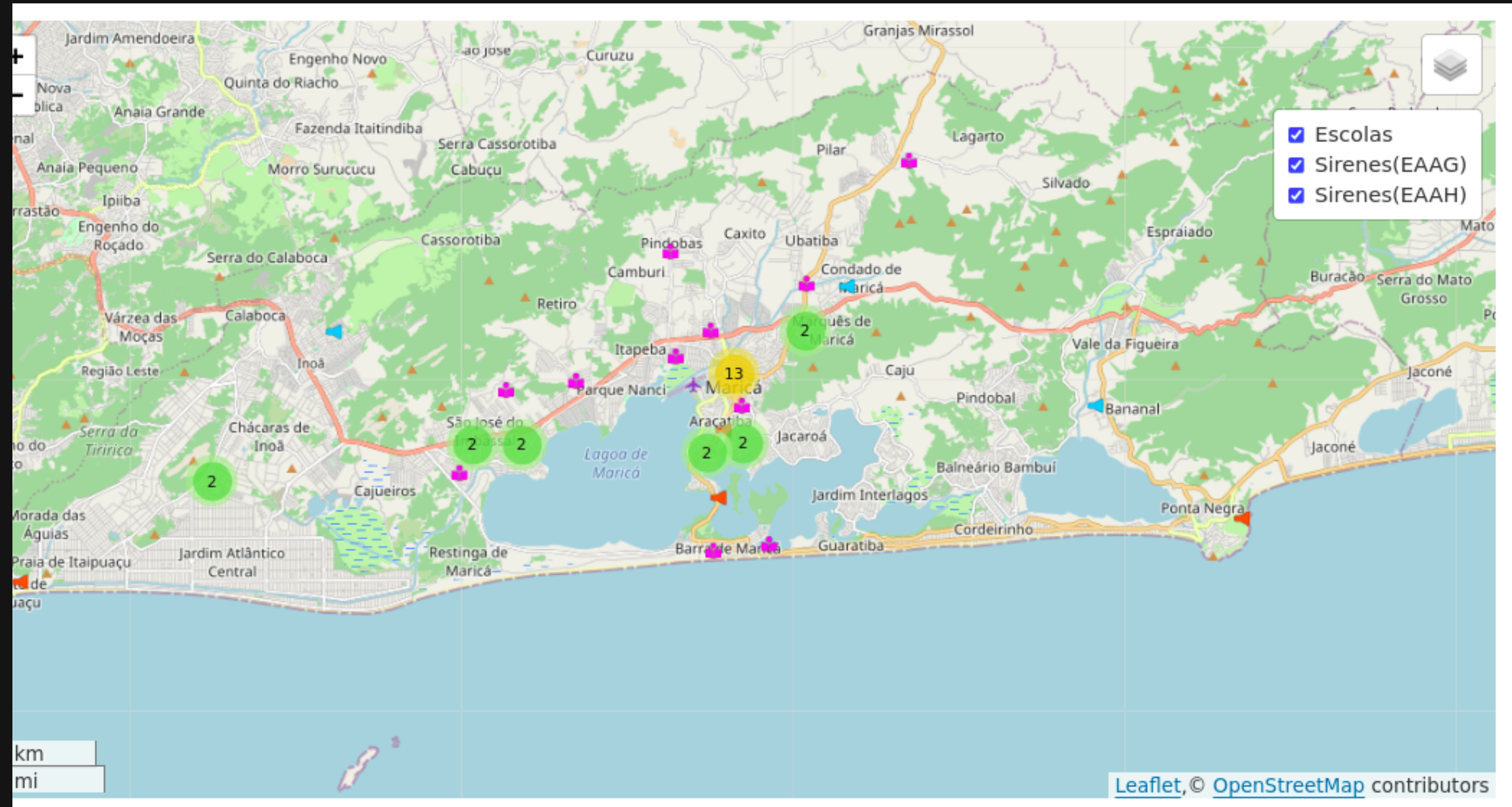
Map data © OpenStreetMap contributors — About — Powered by uMap

# Web maps

<http://ivides.org/infomarica>

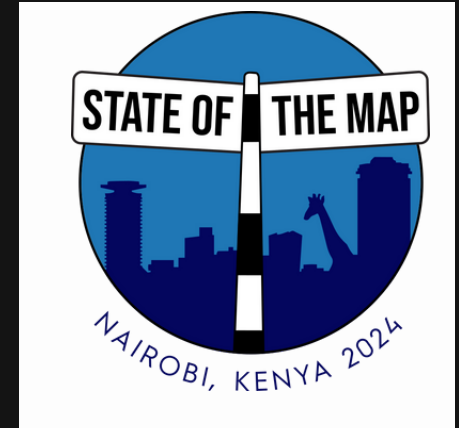
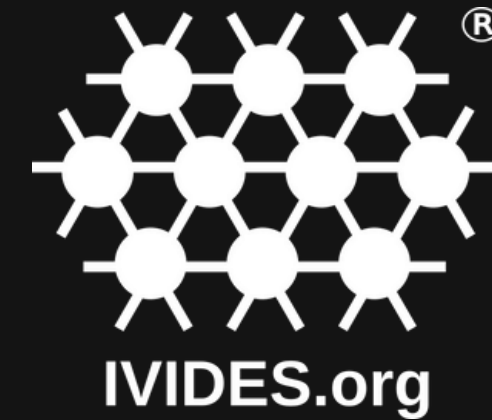


Wordpress  
+  
Plugin OSM



# Web maps

<http://ivides.org/infomarica>



Thematic  
static and  
dynamic (OSM)  
layers

-  **Áreas sujeitas a inundações e alagamentos** – Freitas & Freitas (2022) – em andamento
-  **Áreas sujeitas a movimentos de massa** – Freitas & Freitas (2022) – em andamento
-  **Classificação da costa quanto à vulnerabilidade à erosão costeira** – Lins-de-Barros (2005) – em andamento
-  **Clínicas e postos de saúde** – IBGE (Censo Demográfico 2022); Secretaria Municipal de Saúde de Maricá (2024); OpenStreetMap – em andamento
-  **Escolas (públicas e privadas)** – IBGE (Censo Demográfico 2022); Secretaria Municipal de Educação de Maricá (2024); OpenStreetMap – em andamento
-  **Estações de alerta e alarme geológicos (EAAG)** – Secretaria de Proteção e Defesa Civil de Maricá (2024) – **COMPLETO** (07 fev. 2024)
-  **Estações de alerta e alarme hidrológicos (EAAH)** – Secretaria de Proteção e Defesa Civil de Maricá (2024) – **COMPLETO** (07 fev. 2024)
-  **Estações hidrológicas** – Secretaria de Proteção e Defesa Civil de Maricá (2024) – em andamento
-  **Estações meteorológicas** – Secretaria de Proteção e Defesa Civil de Maricá (2024) – em andamento
-  **Hidrantes** – Corpo de Bombeiros do Estado do Rio de Janeiro (2024) – em andamento
-  **Hospitais** – IBGE (Censo Demográfico 2022); Secretaria Municipal de Saúde de Maricá (2024); OpenStreetMap – em andamento
-  **Hotéis e pousadas** – IBGE (Censo Demográfico 2022); OpenStreetMap – em andamento
-  **Igrejas** – IBGE (Censo Demográfico 2022); OpenStreetMap – em andamento
-  **Pluviômetros** – Rede de Monitoramento – Secretaria de Proteção e Defesa Civil de Maricá (2024) – em andamento
-  **Vilas e povoados; Localidades** – OpenStreetMap – em andamento



# References of photos

slide 3 - Wikipedia - Maricá City

<https://pt.wikipedia.org/w/index.php?title=Maric%C3%A1&oldid=67888043>

slide 6 - Flooding in Maricá City

<https://leisecamarica.com.br/noticia/32199/em-marica-grupo-de-amigos-arrecadam-doacoes-para-ajudar-vitimas-das-chuvas>

slide 7 - Coastal erosion in Maricá City

<https://maricainfo.com/2020/01/22/marica-marinha-do-brasil-emite-alerta-de-possivel-ciclone-subtropical-na-costa-sudeste.html>

slide 8 - Landslides in Maricá City

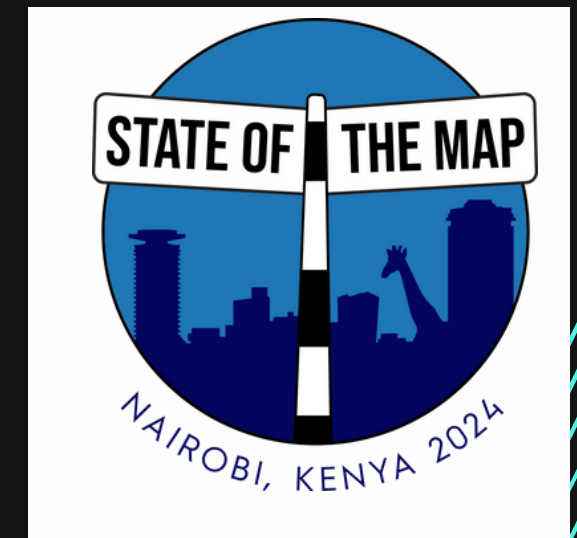
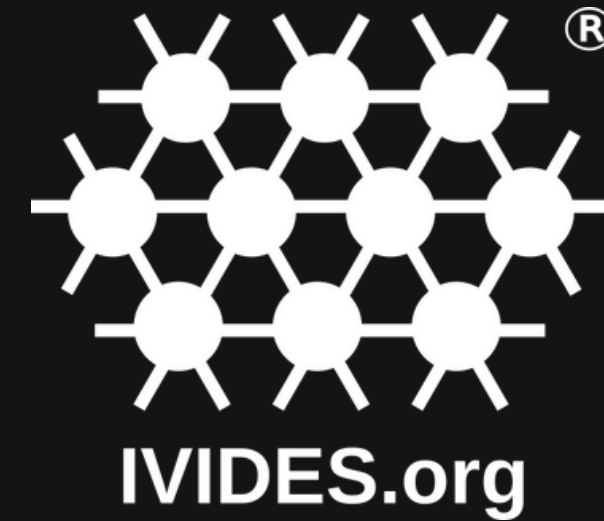
<https://maricainfo.com/2022/12/20/deslizamento-de-terra-atinge-casa-em-marica.html>

Other figures

The author.



# Thank you!



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**[ivides@ivides.org](mailto:ivides@ivides.org)**

**Partners**

**YouthMappers UFRJ (Brazil)**

**YouthMappers**

**Research under development\***

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