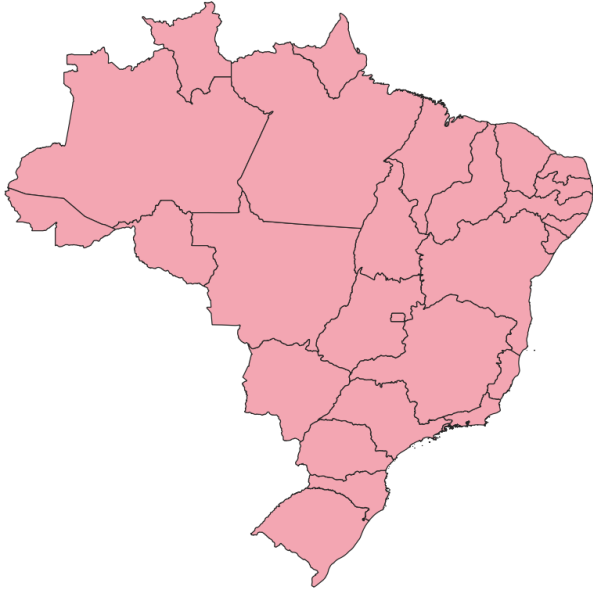


Nome: Débora Joana Dutra

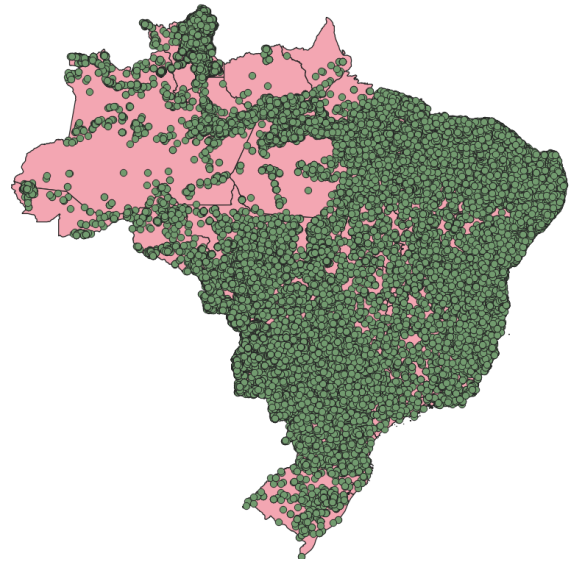
Introdução ao Geoprocessamento

Tarefa de Banco de Dados - PostGIS

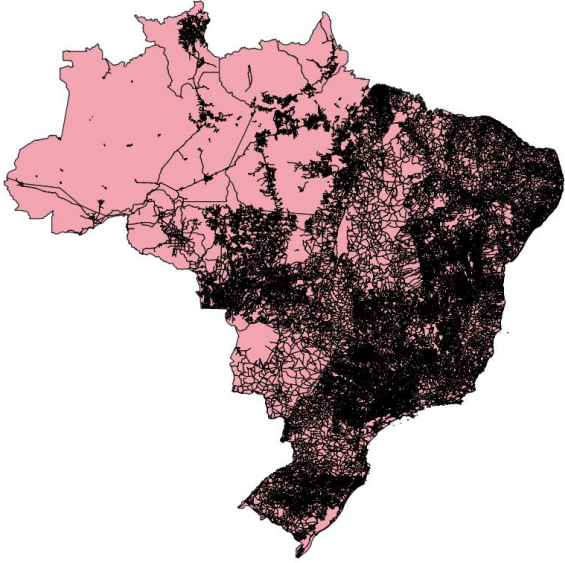
Mapa dos estados do Brasil

	Unidades Federativas do Brasil <ul style="list-style-type: none">uf_2018.cpguf_2018.dbfuf_2018.prjuf_2018.shpuf_2018.shx
	Tipo Geométrico: MultiPolygon
	Número de Feições: 27
	CRS: Lat/Long SIRGAS 2000
	SRID: 4674
	Codificação Caracteres: UTF-8
	Nome Tabela: uf

Mapa de Focos de Calor

	Focos de Queimada – Jan 2024 <ul style="list-style-type: none">focos_jan2024.dbffocos_jan2024.prjfocos_jan2024.shpfocos_jan2024.shx
	Tipo Geométrico: Point
	Número de Feições: 152700
	CRS: Lat/Long WGS84
	SRID: 4326
	Codificação Caracteres: UTF-8
	Nome Tabela: focos_jan2024

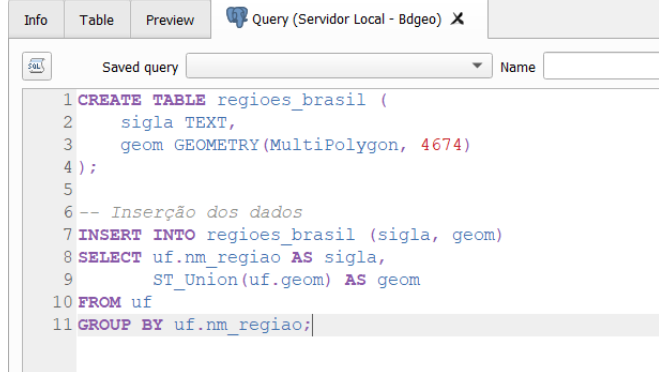

Mapa de Rodovia

	Trechos Rodoviários – 2019 <ul style="list-style-type: none">• rod_trecho_rodoviario_1.cpg• rod_trecho_rodoviario_1.dbf• rod_trecho_rodoviario_1.prj• rod_trecho_rodoviario_1.shp• rod_trecho_rodoviario_1.shx
	Tipo Geométrico: MultiLineString
	Número de Feições: 153.177
	CRS: Lat/Long SIRGAS 2000
	SRID: 4674
	Codificação Caracteres: UTF-8
	Nome Tabela: rodovia

Perguntas

Quantos focos de calor foram identificados na região norte em janeiro de 2024?

Primeiramente, é necessário criar um dado referente as regiões do Brasil. Para isso, utilizamos os seguintes comandos SQL:

 <pre>1 CREATE TABLE regioes_brasil (2 sigla TEXT, 3 geom GEOMETRY(MultiPolygon, 4674) 4); 5 6 -- Inserção dos dados 7 INSERT INTO regioes_brasil (sigla, geom) 8 SELECT uf.nm_regiao AS sigla, 9 ST_Union(uf.geom) AS geom 10 FROM uf 11 GROUP BY uf.nm_regiao;</pre>	<pre>CREATE TABLE regioes_brasil (sigla TEXT, geom GEOMETRY(MultiPolygon, 4674)); -- Inserção dos dados INSERT INTO regioes_brasil (sigla, geom) SELECT uf.nm_regiao AS sigla, ST_Union(uf.geom) AS geom FROM uf GROUP BY uf.nm_regiao;</pre>
	

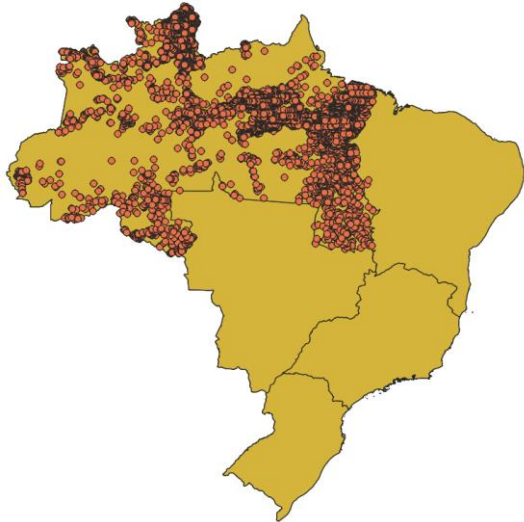
Após esse processo, selecionaremos os focos presentes na região norte

```
1 SELECT focos.*
2 FROM focos_jan2024 AS focos, regioes_brasil AS regioes
3 WHERE ST_Within(focos.geom, (
4 SELECT geom FROM regioes_brasil
5 WHERE sigla = 'NORTE'
6 LIMIT 1));
```

Execute 530720 rows, 21.160 seconds Create a view Clear Query History

	id	geom	datahora	satelite	pais	estado	municipio	Am
46	86	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA	Am
47	87	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA	Am
48	88	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA	Am
49	89	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA	Am
50	90	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA	Am
51	91	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA	Am

Load as new layer



```
SELECT focos.*
FROM focos_jan2024 AS focos, regioes_brasil
AS regioes
WHERE ST_Within(focos.geom, (
SELECT geom FROM regioes_brasil
WHERE sigla = 'NORTE'
LIMIT 1));
```

Agora contaremos os focos:

```
1 SELECT COUNT(*) AS total_focos
2 FROM focos_jan2024 AS focos, regioes_brasil AS regioes
3 WHERE ST_Within(focos.geom, (
4 SELECT geom FROM regioes_brasil
5 WHERE sigla = 'NORTE'
6 LIMIT 1));
```

Execute 1 rows, 0.185 seconds Create a view Clear Query History

total_focos
530720

```
SELECT COUNT(*) AS total_focos
FROM focos_jan2024 AS focos, regioes_brasil AS regioes
WHERE ST_Within(focos.geom, (
SELECT geom FROM regioes_brasil
WHERE sigla = 'NORTE'
LIMIT 1));
```

Quantos focos de calor foram identificados nas proximidades das estradas (buffer de 1000m) presentes na região norte em janeiro de 2024?

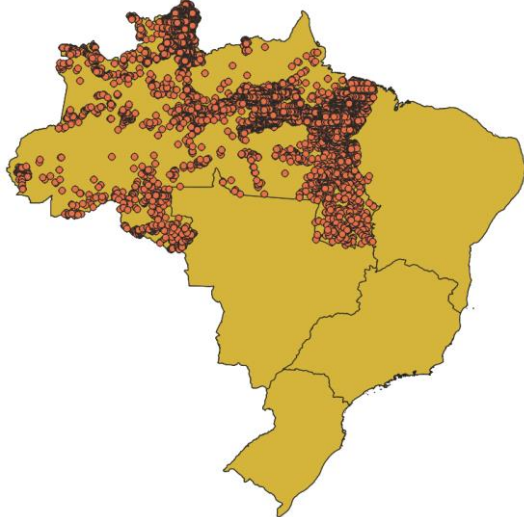
Selecione os focos de calor da região norte do Brasil

```
1 SELECT focos.*
2 FROM focos_jan2024 AS focos, regioes_brasil AS regioes
3 WHERE ST_Within(focos.geom, (
4 SELECT geom FROM regioes_brasil
5 WHERE sigla = 'NORTE'
6 LIMIT 1));
```

id	geom	datahora	satelite	pais	estado	municipio	
46	86	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA
47	87	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA
48	88	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA
49	89	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA
50	90	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA
51	91	0101000020421...	2024/01/02 ...	NPP-375	Brasil	RORAIMA	NORMANDIA

Execute 530720 rows, 21.160 seconds

Load as new layer

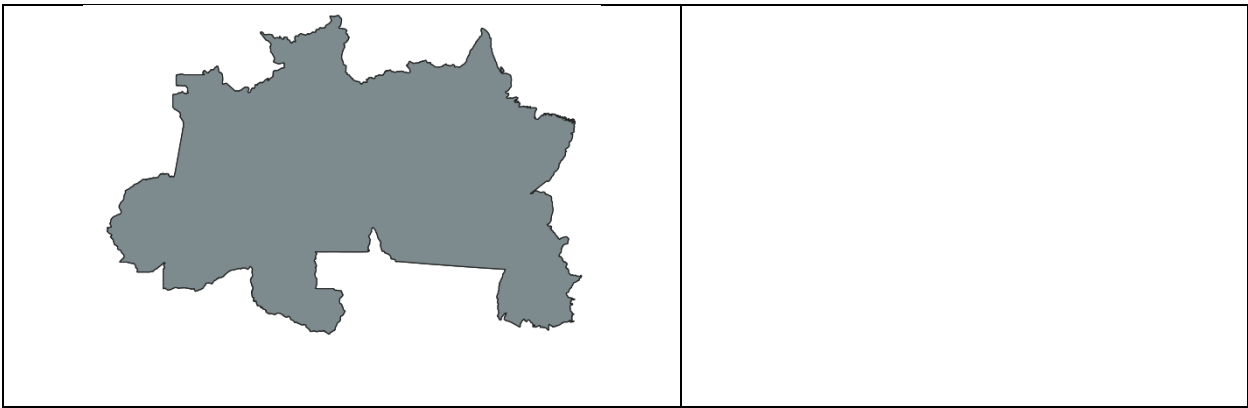


```
SELECT focos.*
FROM focos_jan2024 AS focos,
regioes_brasil AS regioes
WHERE ST_Within(focos.geom,
(
SELECT geom FROM
regioes_brasil
WHERE sigla = 'NORTE'
LIMIT 1));
```

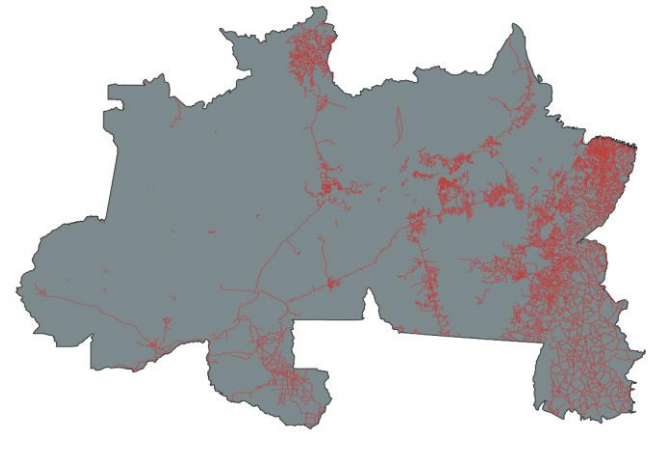
Crie um shapefile para região norte

```
1 -- Crie uma nova tabela repres
2 CREATE TABLE regio_norte AS
3 SELECT geom
4 FROM regioes_brasil
5 WHERE sigla = 'NORTE';
```

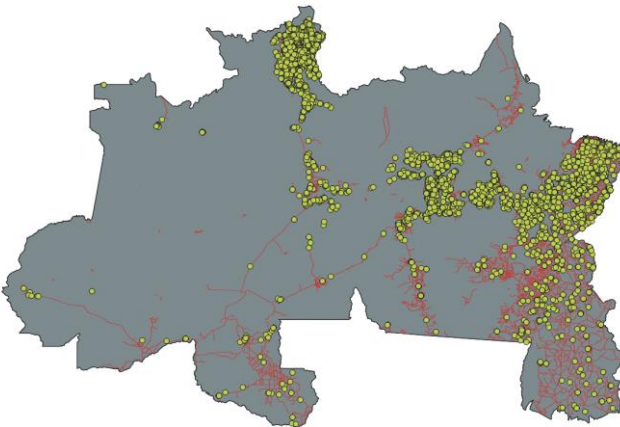
```
CREATE TABLE regio_norte AS
SELECT geom
FROM regioes_brasil
WHERE sigla = 'NORTE';
```



Crie o buffer de 1000 metros em torno das rodovias na região Norte (Obs. Os dados precisam ser reprojatados para um DATUM com informações métricas para usar como referência 1000m)

<pre> 1 CREATE TABLE rodovia_albers AS 2 SELECT ST_Transform(geom, 54009) AS geom_albers 3 FROM rodovia 4 WHERE ST_SRID(geom) = 4674; 5 6 </pre>	<pre> CREATE TABLE rodovia_albers AS SELECT ST_Transform(geom, 54009) AS geom_albers FROM rodovia WHERE ST_SRID(geom) = 4674; </pre>
<pre> 1 CREATE TABLE regioao_norte_albers AS 2 SELECT ST_Transform(geom, 54009) AS geom_albers 3 FROM regioao_norte 4 WHERE ST_SRID(geom) = 4674; 5 6 </pre>	<pre> CREATE TABLE regioao_norte_albers AS SELECT ST_Transform(geom, 54009) AS geom_albers FROM regioao_norte WHERE ST_SRID(geom) = 4674; </pre>
<pre> 1 CREATE TABLE buffer_estradas AS 2 SELECT ST_Buffer(estradas.geom_albers, 1000) AS geom 3 FROM rodovia_albers AS estradas 4 JOIN regioao_norte_albers AS regioao 5 ON ST_Within(estradas.geom_albers, regioao.geom_albers); 6 </pre> 	<pre> CREATE TABLE buffer_estradas AS SELECT ST_Buffer(estradas.geom_albers, 1000) AS geom FROM rodovia_albers AS estradas JOIN regioao_norte_albers AS regioao ON ST_Within(estradas.geom_albers, regiao.geom_albers); </pre>

Selecione os focos que caem dentro das áreas do buffer de 1000m da estrada

<pre>1 CREATE TABLE buffer_estradas_4674 AS 2 SELECT ST_Transform(geom, 4674) AS geom_4674 3 FROM buffer_estradas 4 WHERE ST_SRID(geom) = 54009; 5</pre> <pre>1 CREATE TABLE focos_dentro_buffer AS 2 SELECT focos.* 3 FROM focos_jan2024 AS focos 4 JOIN buffer_estradas_4674 AS buffer ON ST_Within(focos.geom, buffer.geom_4674);</pre> 	<pre>CREATE TABLE buffer_estradas_4674 AS SELECT ST_Transform(geom, 4674) AS geom_4674 FROM buffer_estradas WHERE ST_SRID(geom) = 54009;</pre> <pre>CREATE TABLE focos_dentro_buffer AS SELECT focos.* FROM focos_jan2024 AS focos JOIN buffer_estradas_4674 AS buffer ON ST_Within(focos.geom, buffer.geom_4674);</pre>
--	---

Agora vamos contar quantos focos caem no buffer de 1000m

<pre>1 SELECT COUNT(focos.*) AS quantidade_focos 2 FROM focos_jan2024 AS focos 3 JOIN buffer_estradas_4674 AS buffer ON ST_Within(focos.geom, buffer.geom_4674);</pre> <p>Execute 1 rows, 1.599 seconds Create a view Clear</p> <table border="1"><thead><tr><th>quantidade_focos</th></tr></thead><tbody><tr><td>1 34228</td></tr></tbody></table>	quantidade_focos	1 34228	<pre>SELECT COUNT(focos.*) AS quantidade_focos FROM focos_jan2024 AS focos JOIN buffer_estradas_4674 AS buffer ON ST_Within(focos.geom, buffer.geom_4674);</pre>
quantidade_focos			
1 34228			