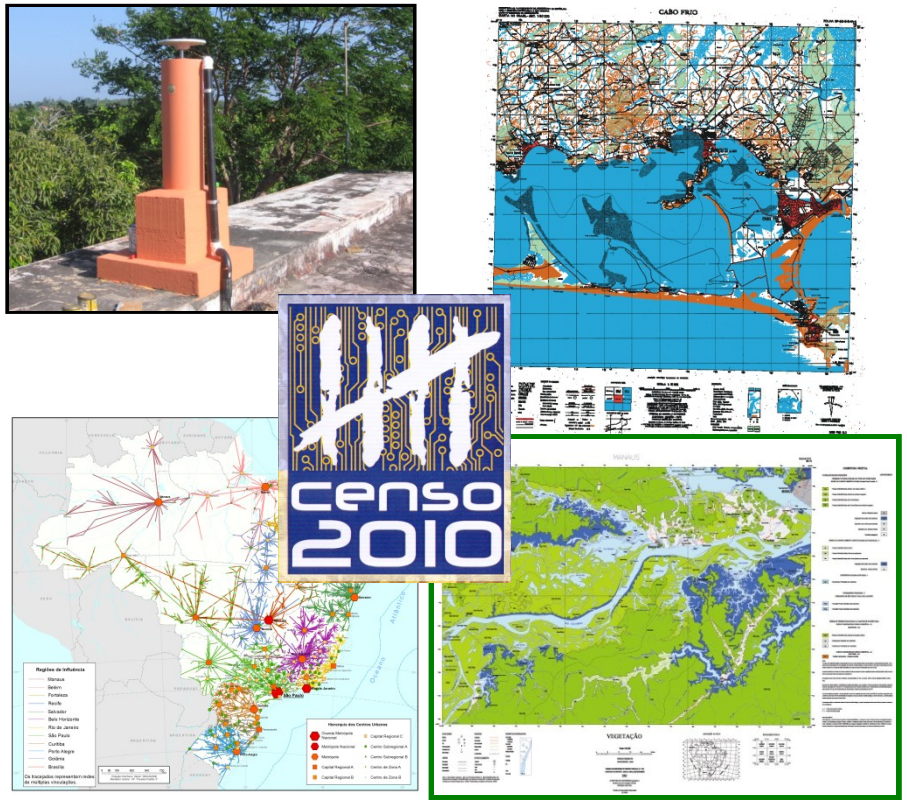
IBGE
Instituto Brasileiro de Geografia e Estatística



Mapping Brazil in 1:250,000 scale

João Bosco de Azevedo

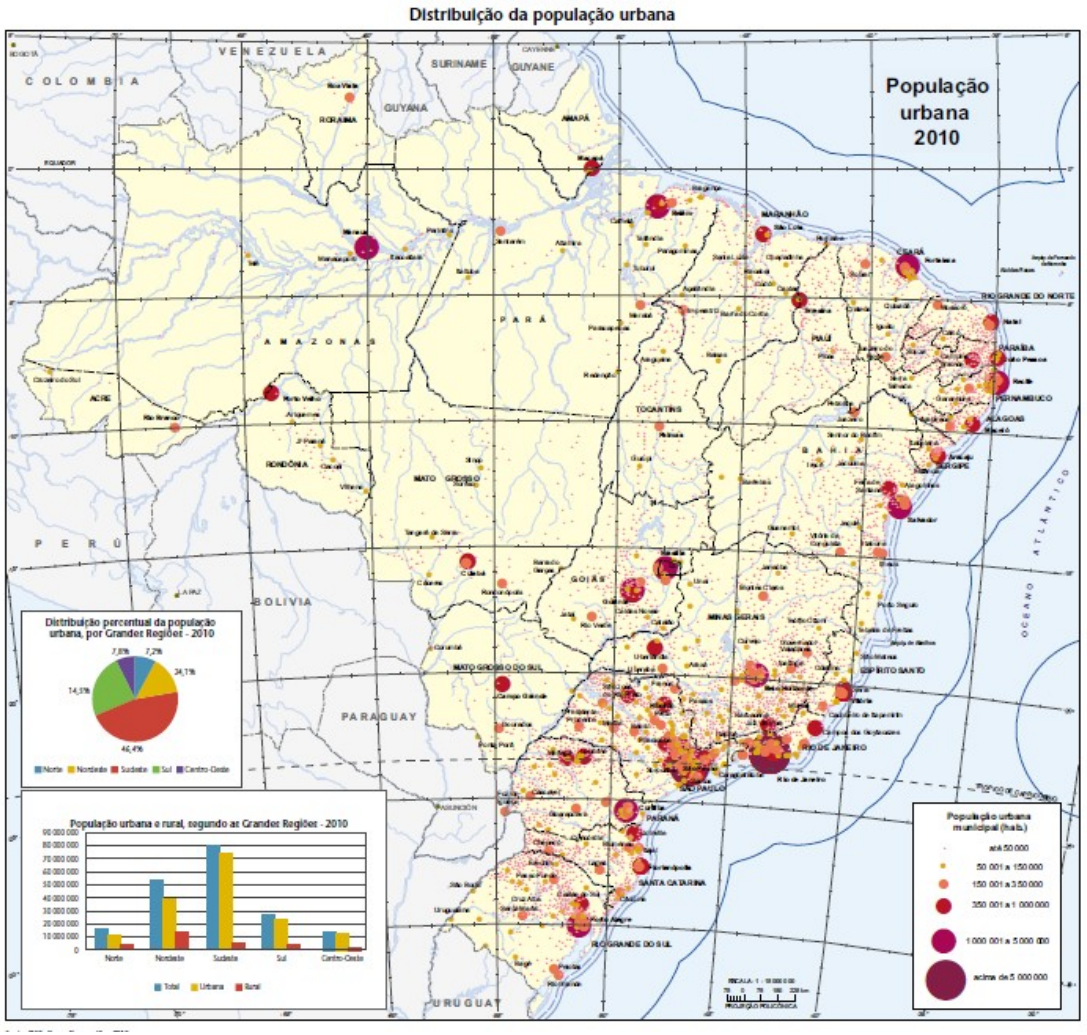
Brazil in figures

The Brazilian territory attracts attention because of its area, the fifth largest area of the world. It comprises **8,514,876,99 km²** that go the equatorial zone until the subtropical zone of South America, occupying half of the continent and bordering most of its countries.

The size, shape and position of the territory provide the country with a long Atlantic border of more than **7,000 km** and more than **15,000 km** of international terrestrial frontier.

Brazil in figures

Brazil is one of the most populous countries in the world, with over **190 millions** people according to Census 2010, and its population density is relatively low, just over **22 per km²** (57 per sq. Mile).



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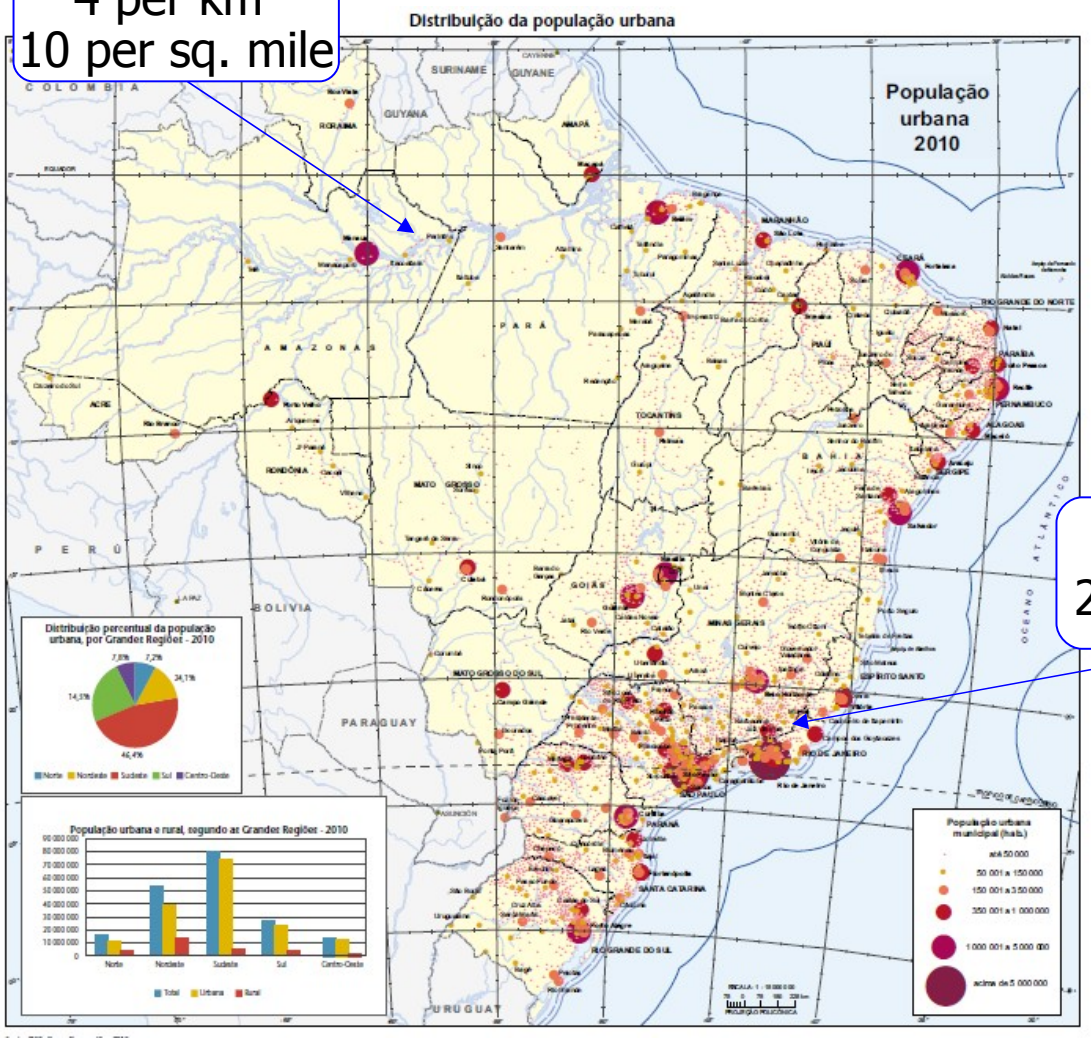
4 per km²
10 per sq. mile



87 per km²
226 per sq. mile

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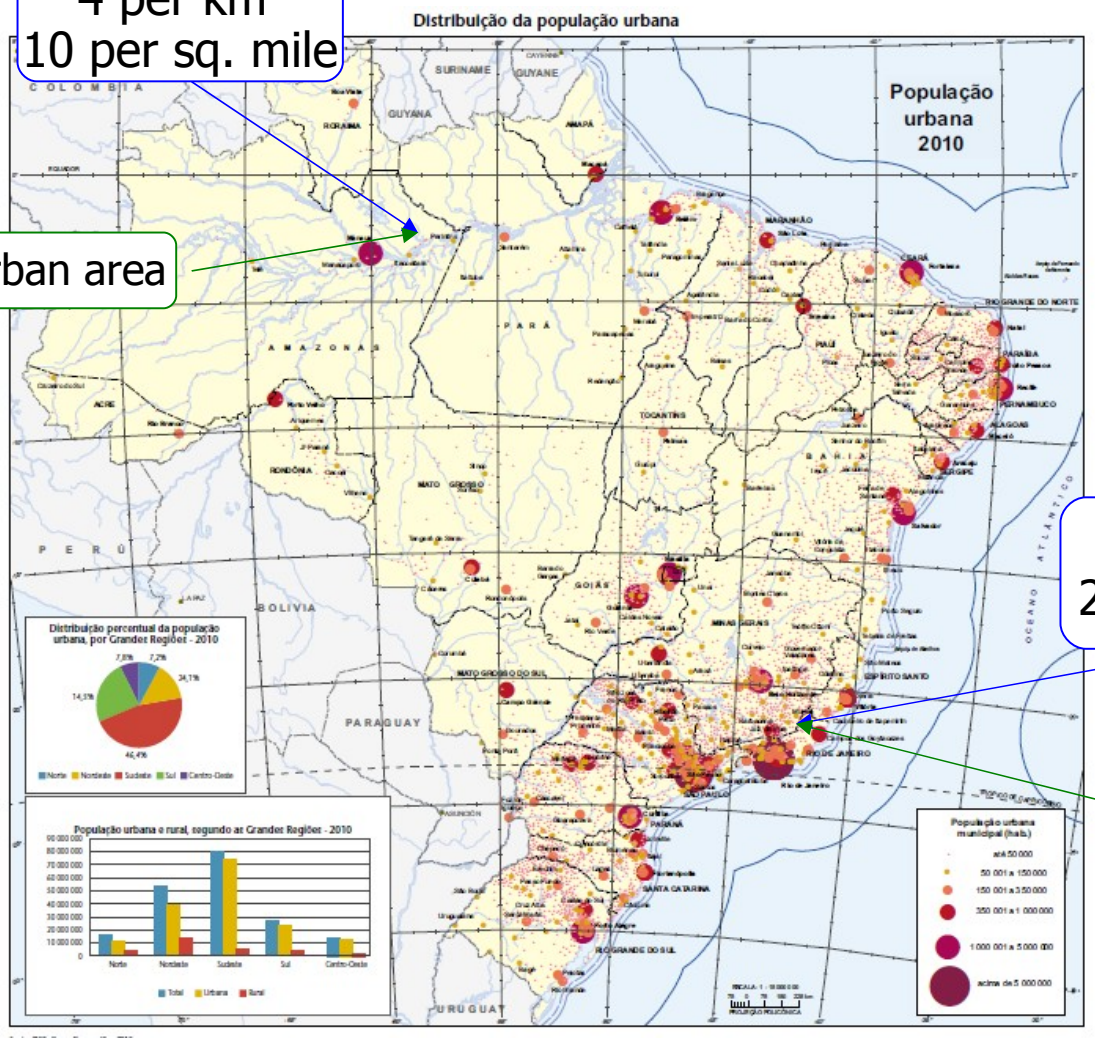
4 per km²
10 per sq. mile

70% urban area



87 per km²
226 per sq. mile

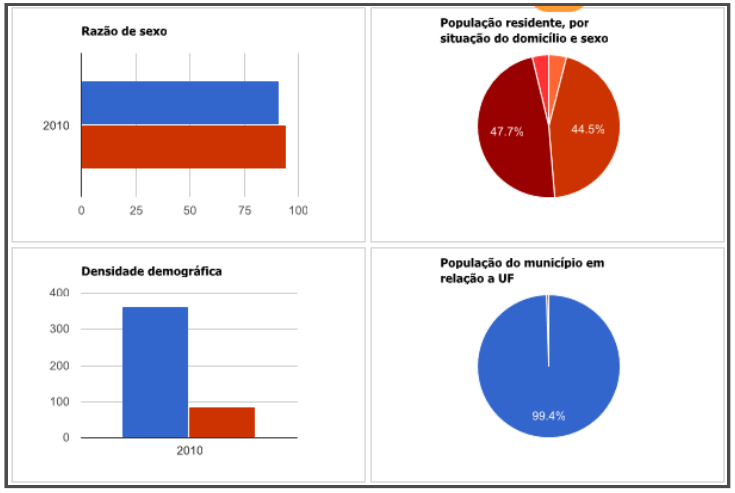
90% urban area

“To portray Brazil by providing the information required to the understanding of its reality and the exercise of citizenship”

"To portray Brazil by providing the information required to the understanding of its reality and the exercise of citizenship"

Responsible for surveys and statistical works related to the demographic, social, environmental, economic and administrative status of the country

	URBANA (absoluto)	RURAL (absoluto)	URBANA (percentual)	RURAL (percentual)
Brasil	160.879.708	29.852.986	84,35	15,65
Região Norte	11.663.184	4.202.494	73,51	26,49
Região Nordeste	38.816.895	14.261.242	73,13	26,87
Região Sudeste	74.661.877	5.691.847	92,92	7,08
Região Sul	23.257.880	4.126.935	84,93	15,07
Região Centro-Oeste	12.479.872	1.570.468	88,82	11,18



IBGE

"To portray Brazil by providing the information required to the understanding of its reality and the exercise of citizenship"

Responsible for surveys and statistical works related to the demographic, social, environmental, economic and administrative status of the country

Responsible for the production and systematization of information related to cartography, geodesy, geography, natural resources and environmental affairs

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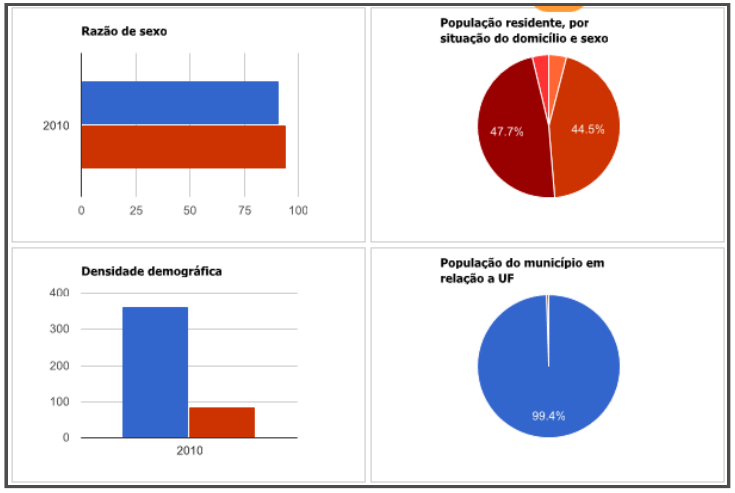


Statistical and Geographic Information

The close integration of geographic information in statistical applications yields large benefits to NSOs as it reduces the cost and time required to collect, compile and distribute statistical information, and leads to a greater number of services and a much wider use of statistical information, thereby considerably increasing the return on investment in data collection.

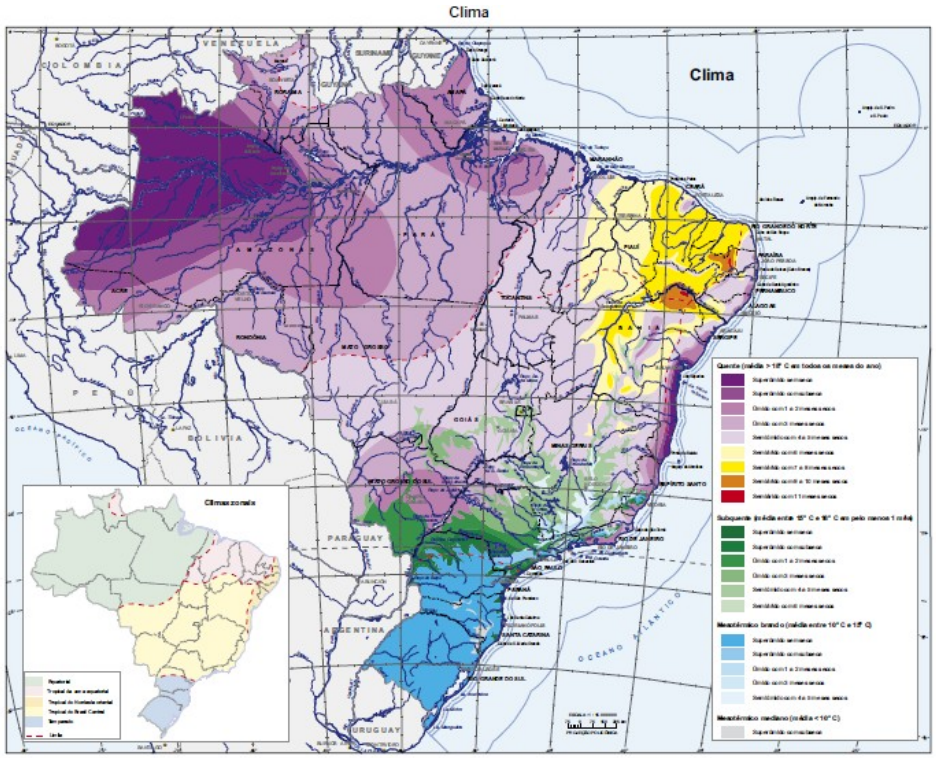
IBGE = Geographic Information + Statistical Information

Aplications: Censuses/Spatial Data Infrastructures

Natural Resources and Enviromental Studies

IBGE holds a significant amount of data on natural resources, stored in a database configured to allow the generation of derived data which can be valuable to the management of such resources and the evaluation of environmental quality.

Systematization of natural resources informations encompasses permanent activities aimed at updating the thematics maps in the fields of Geology, Geomorphology, Soils, Vegetation, Water Resources and Climate, building integration of georreferenced databases on natural resources.



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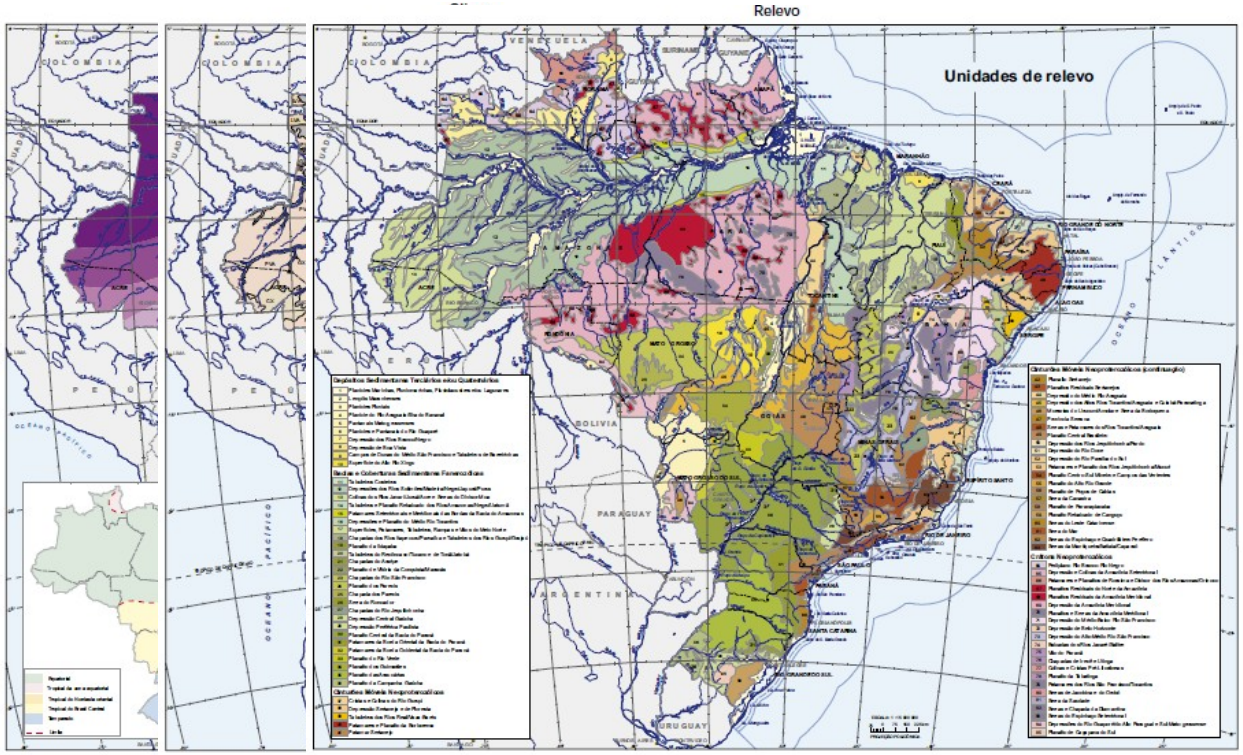

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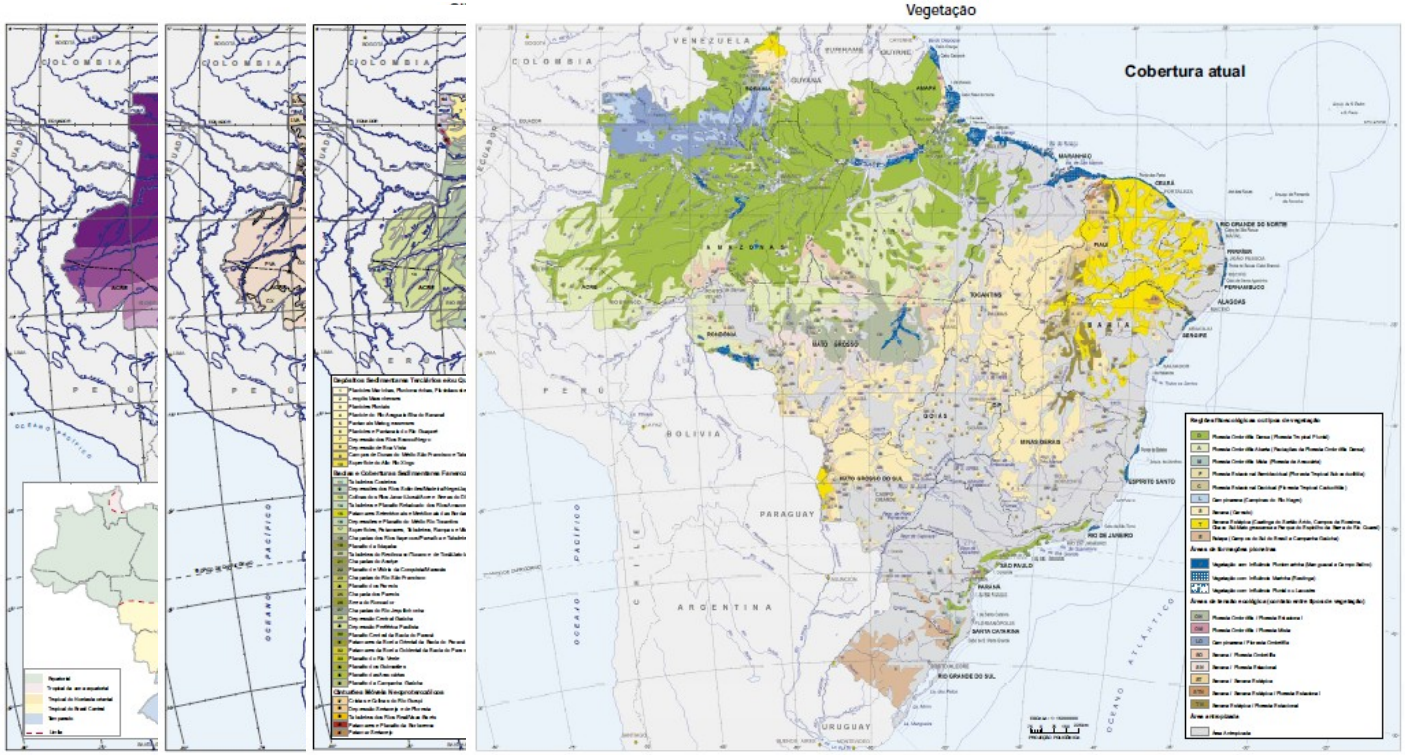

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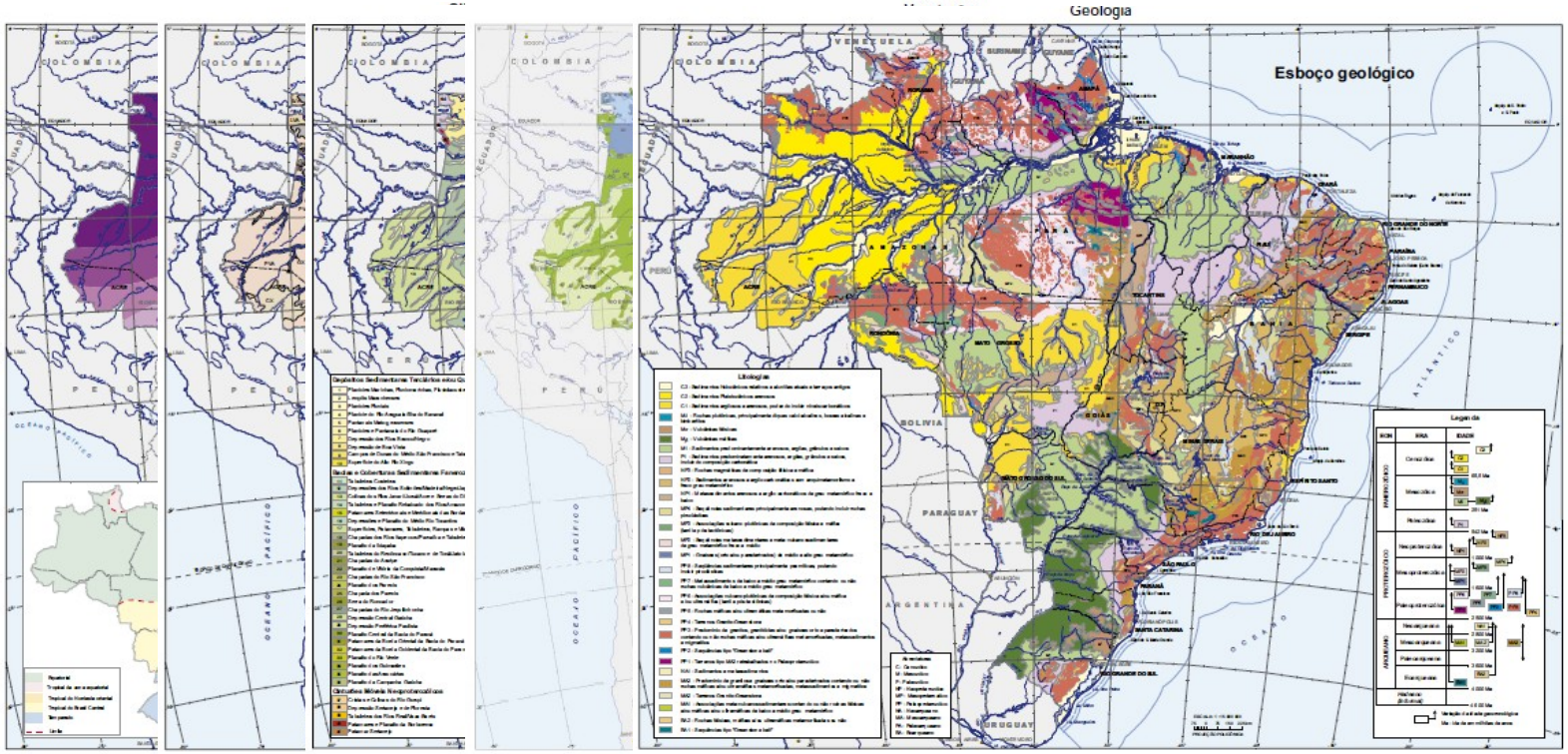

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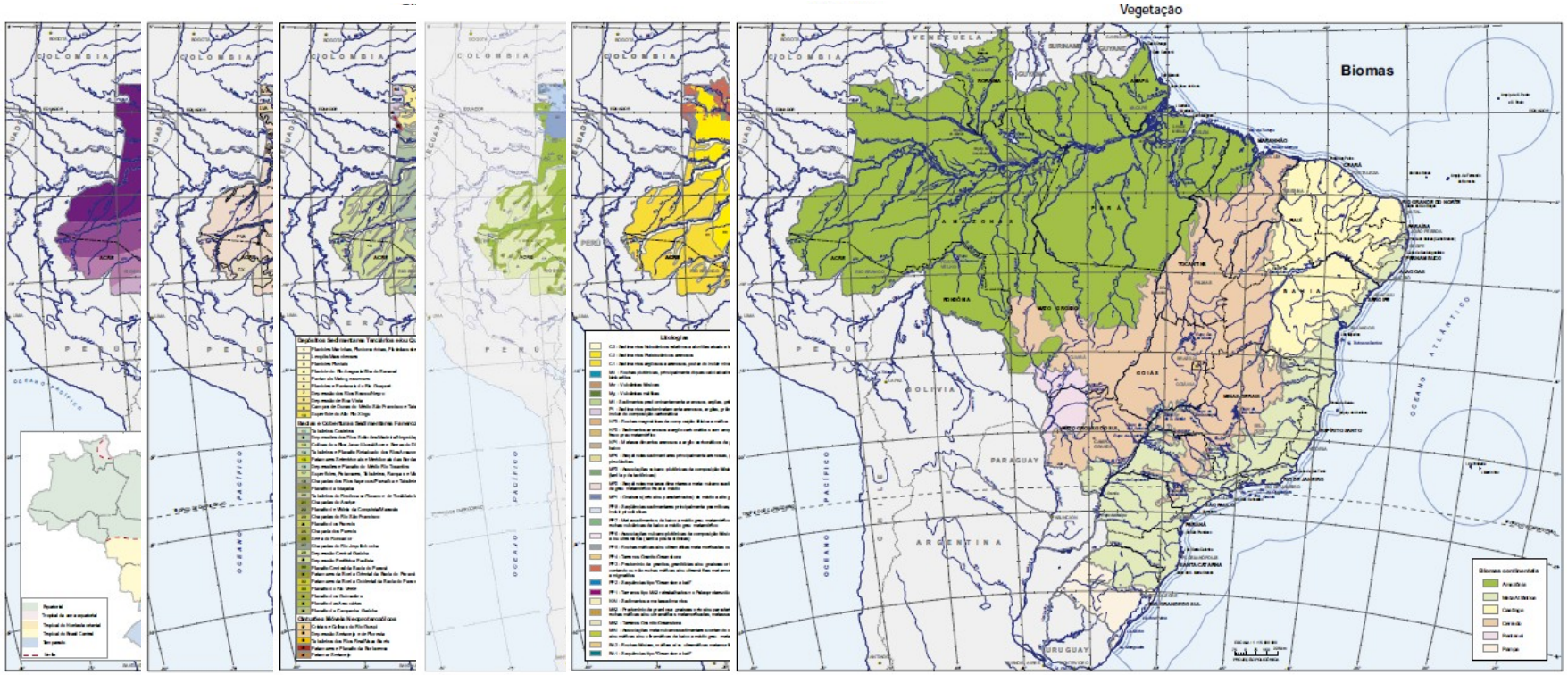

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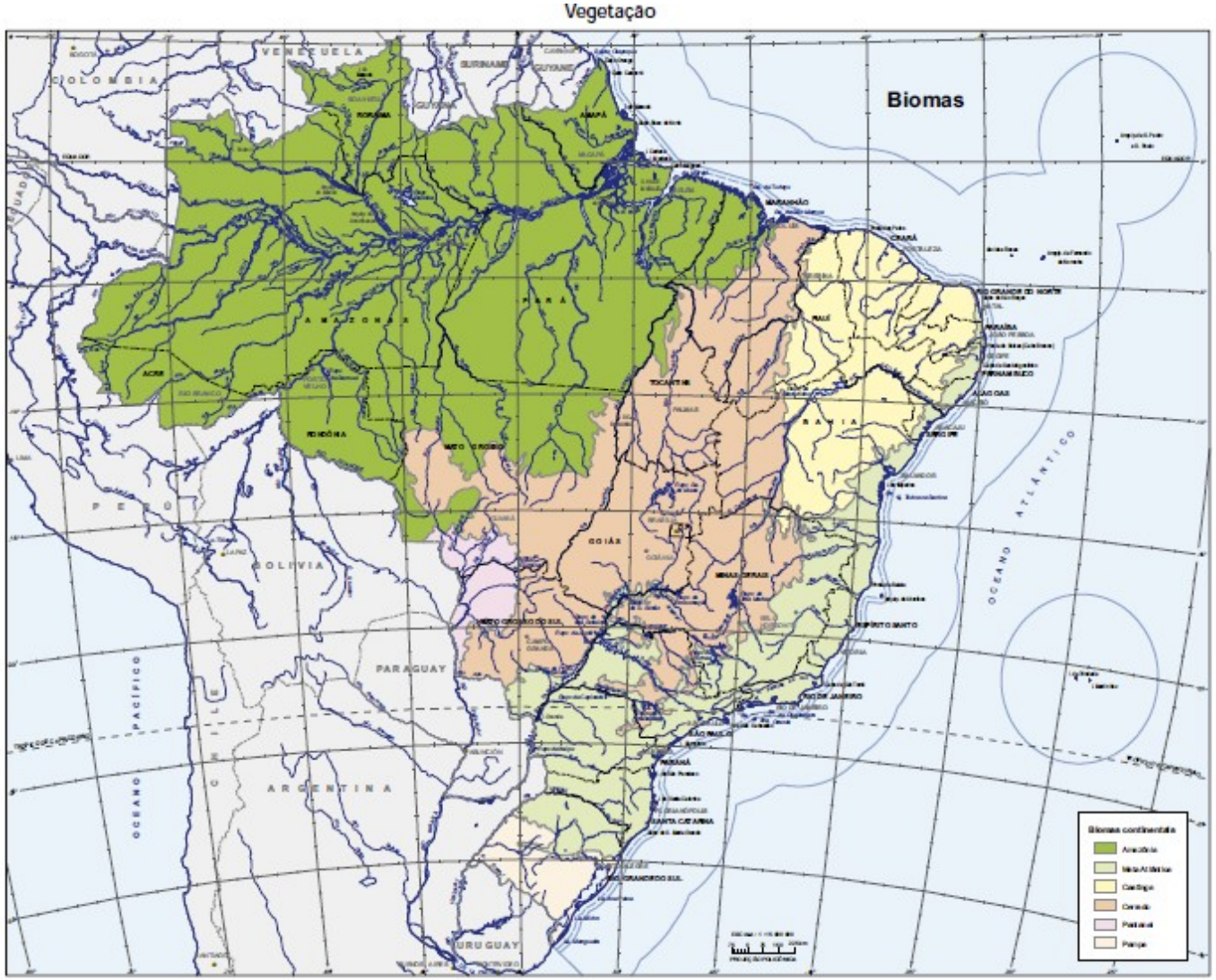

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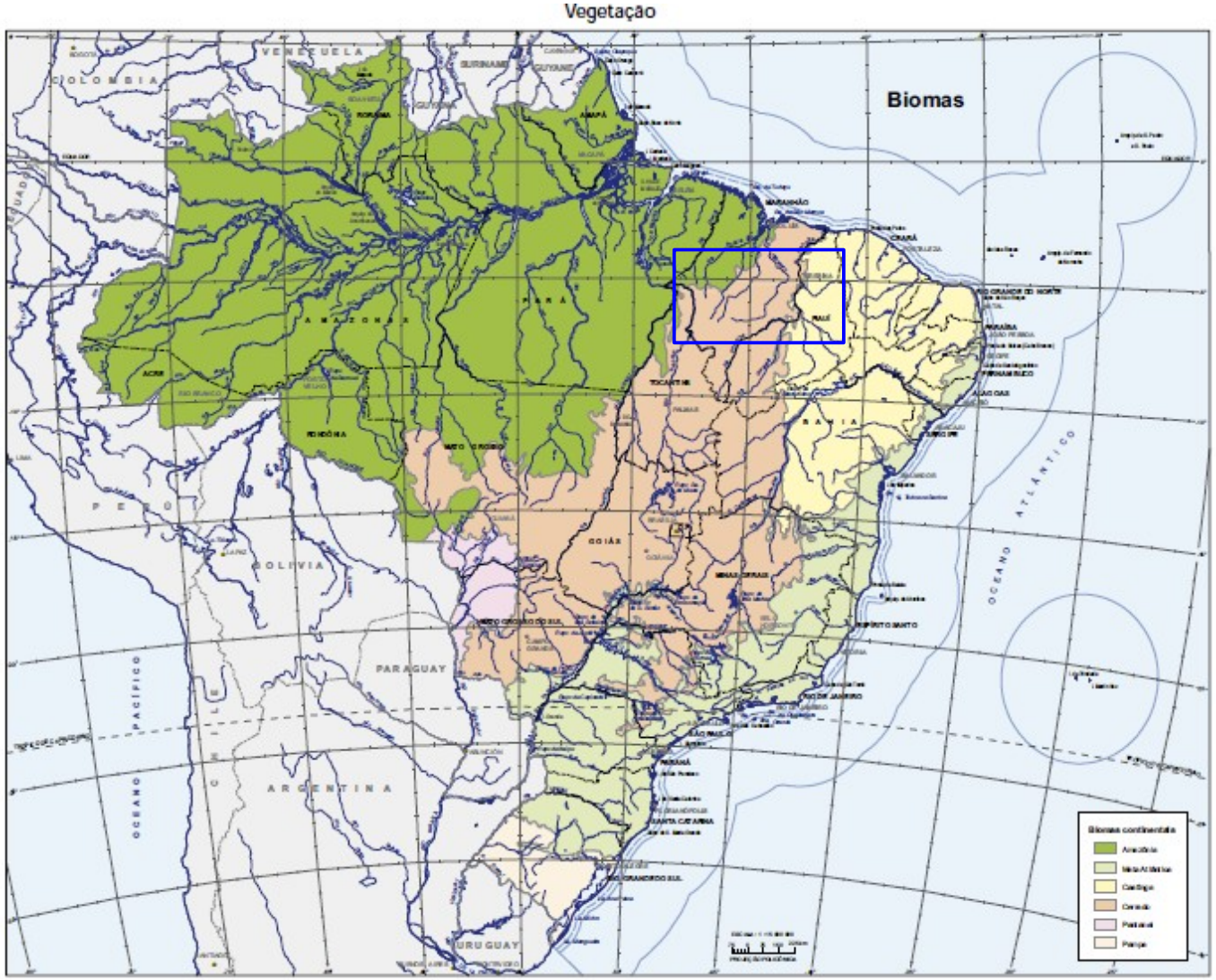

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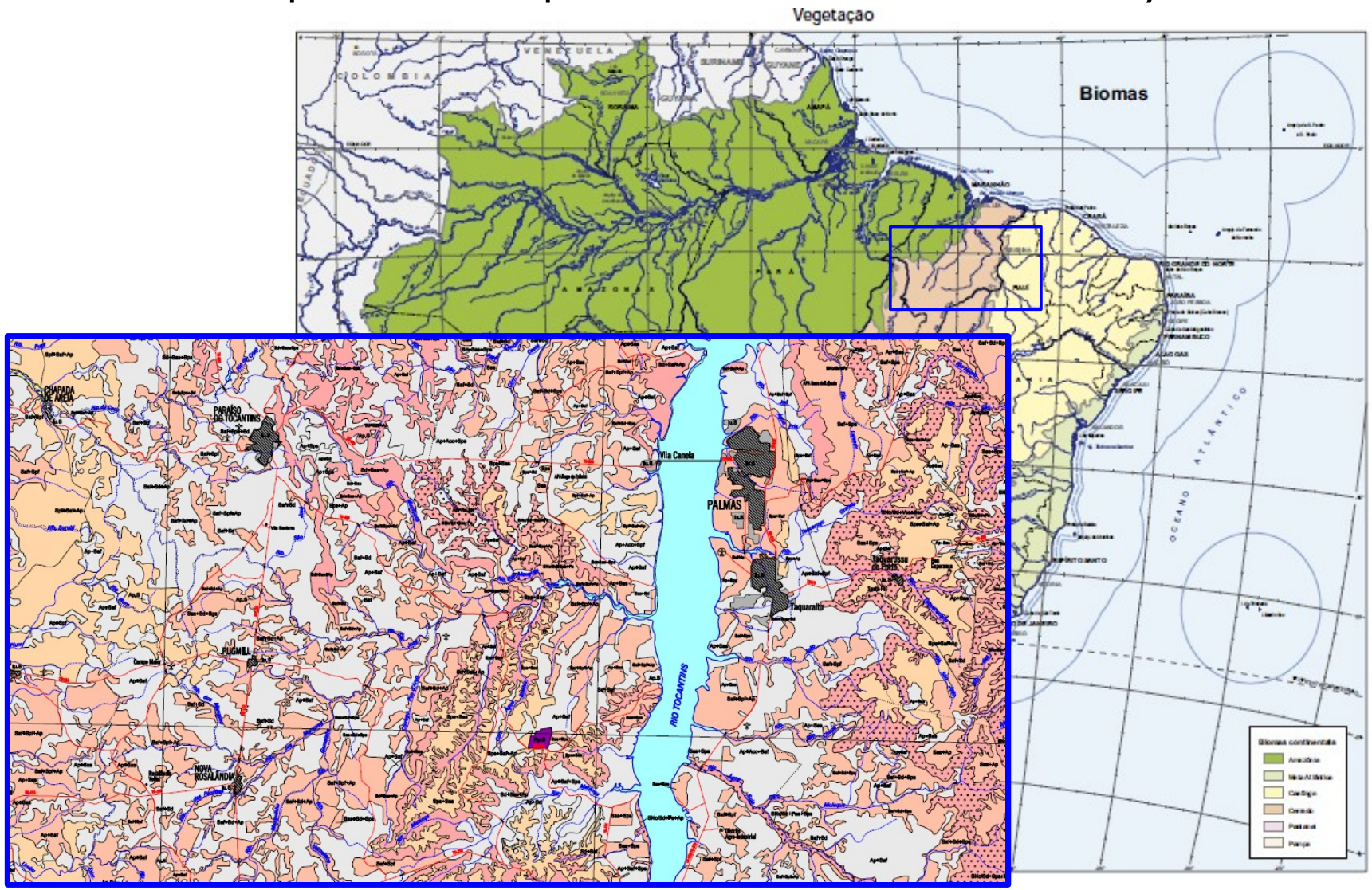
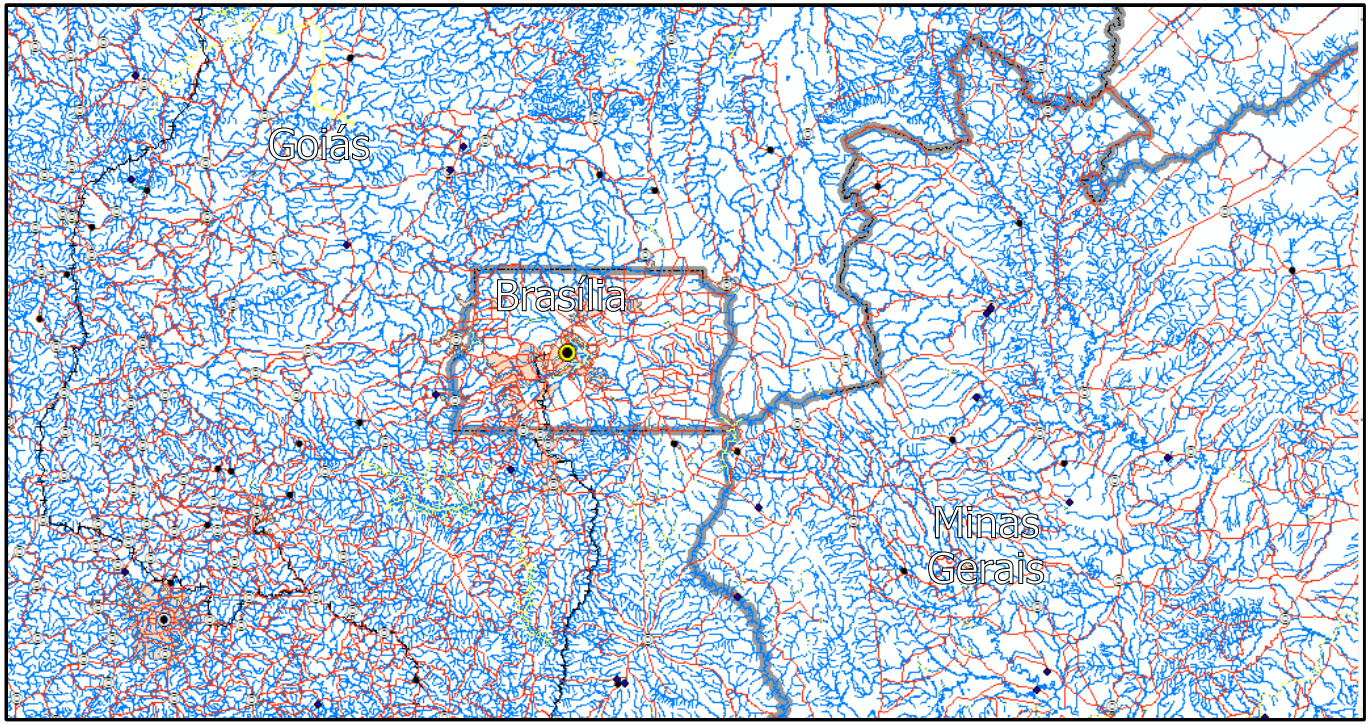


Mapping Brazil in 1:250.000 scale (BC250)

The necessity of updating Brazilian maps in the 1:250,000 scale was defined in VI National Geography and Cartography Conference (CONFEGE), conducted in 2006 by the IBGE.

The BC250 project aims to provide society with mapping of the entire Brazilian territory at 1:250,000 scale through a continuous digital cartographic base, compatible with the accuracy requirements of the National Cartographic System (SCN) and the appropriate standards of National Spatial Data infrastructure (NSDI).



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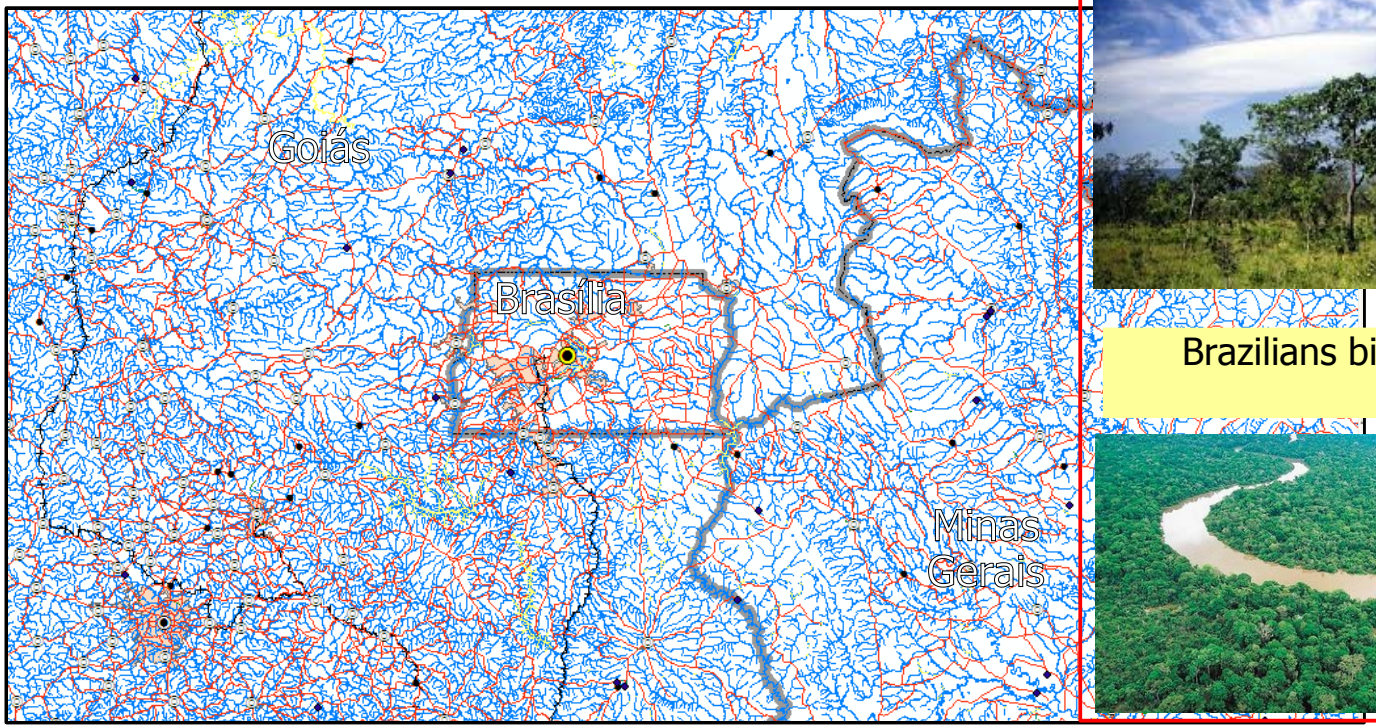

Brazilians biomes.

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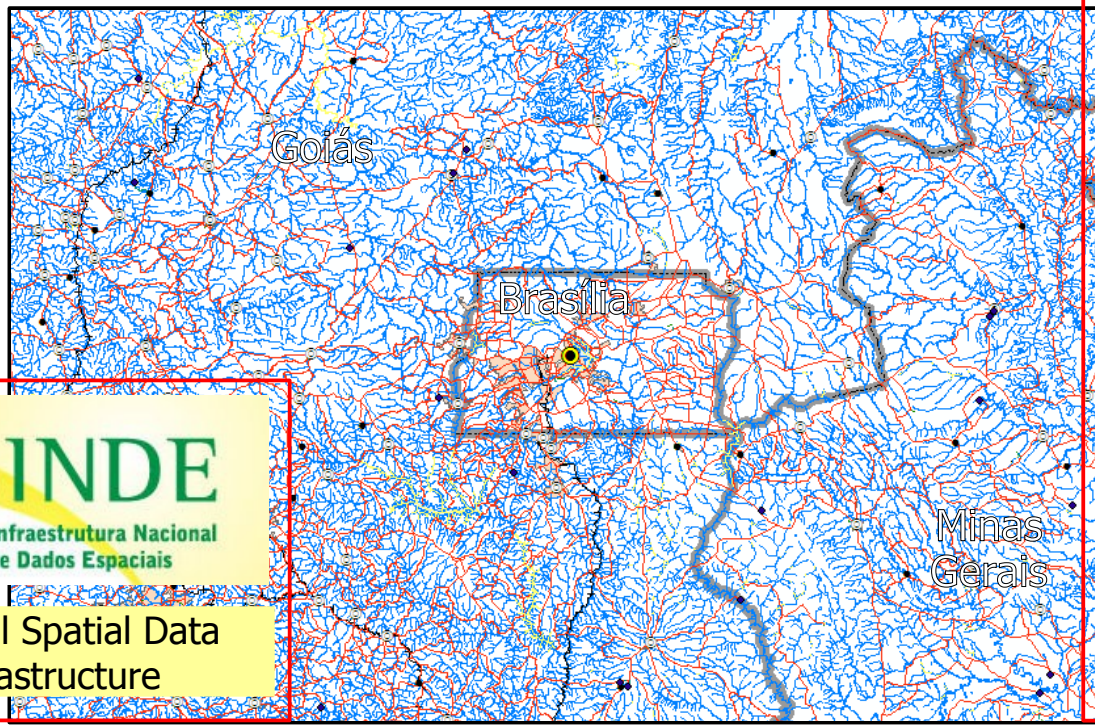
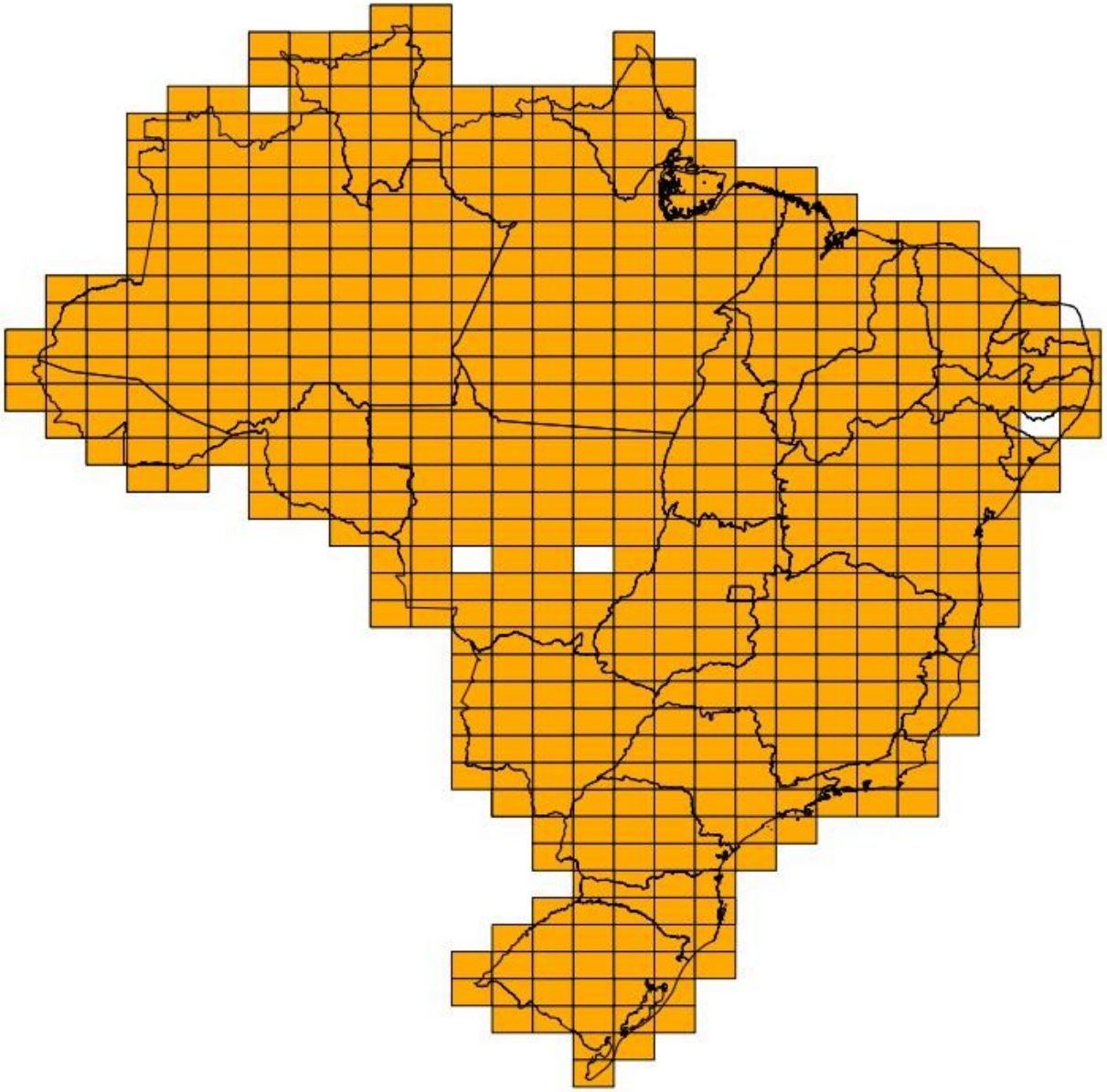


Brazilians biomes.

INDE
Infraestrutura Nacional de Dados Espaciais

National Spatial Data Infrastructure

Schedule production



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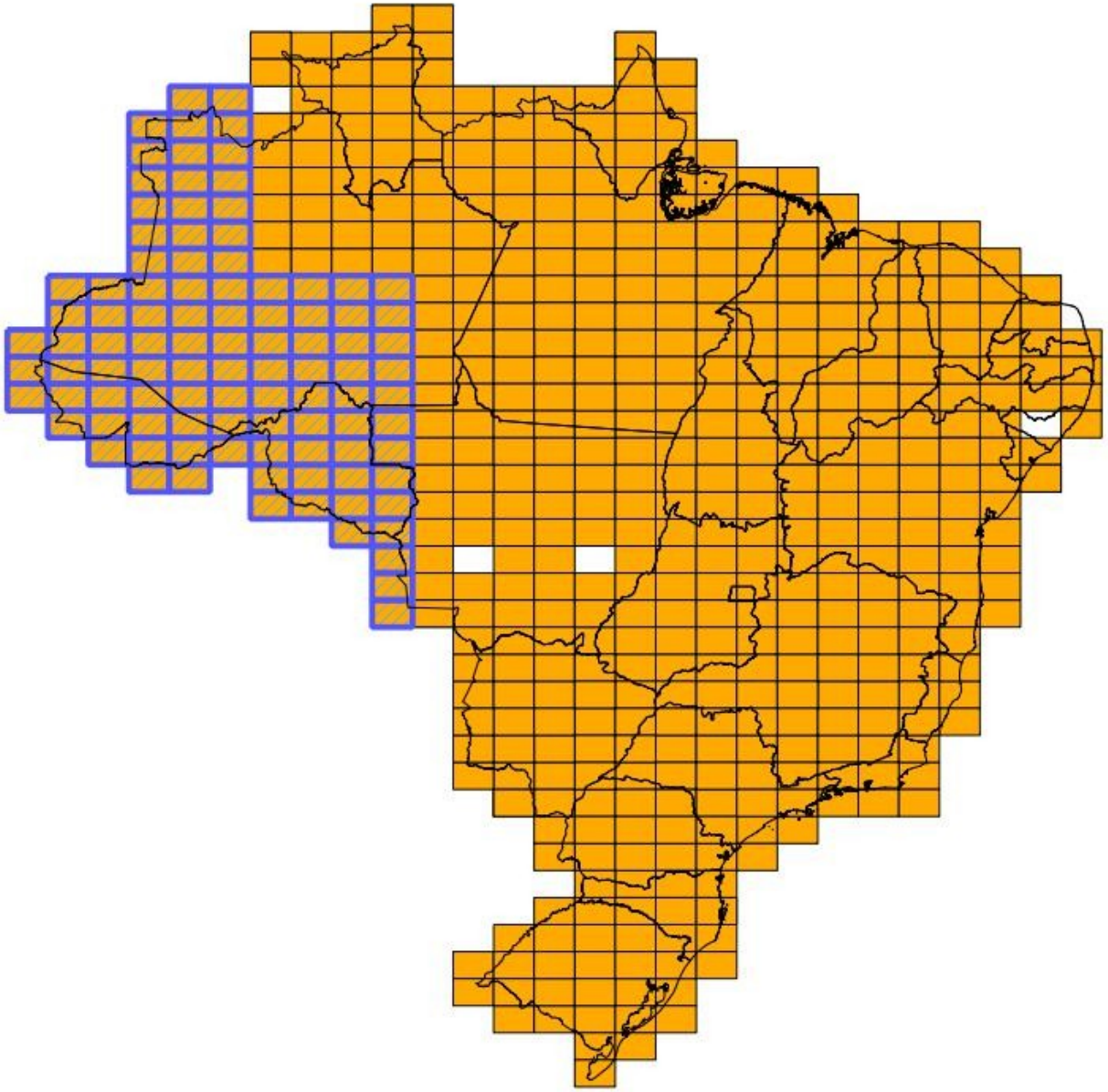
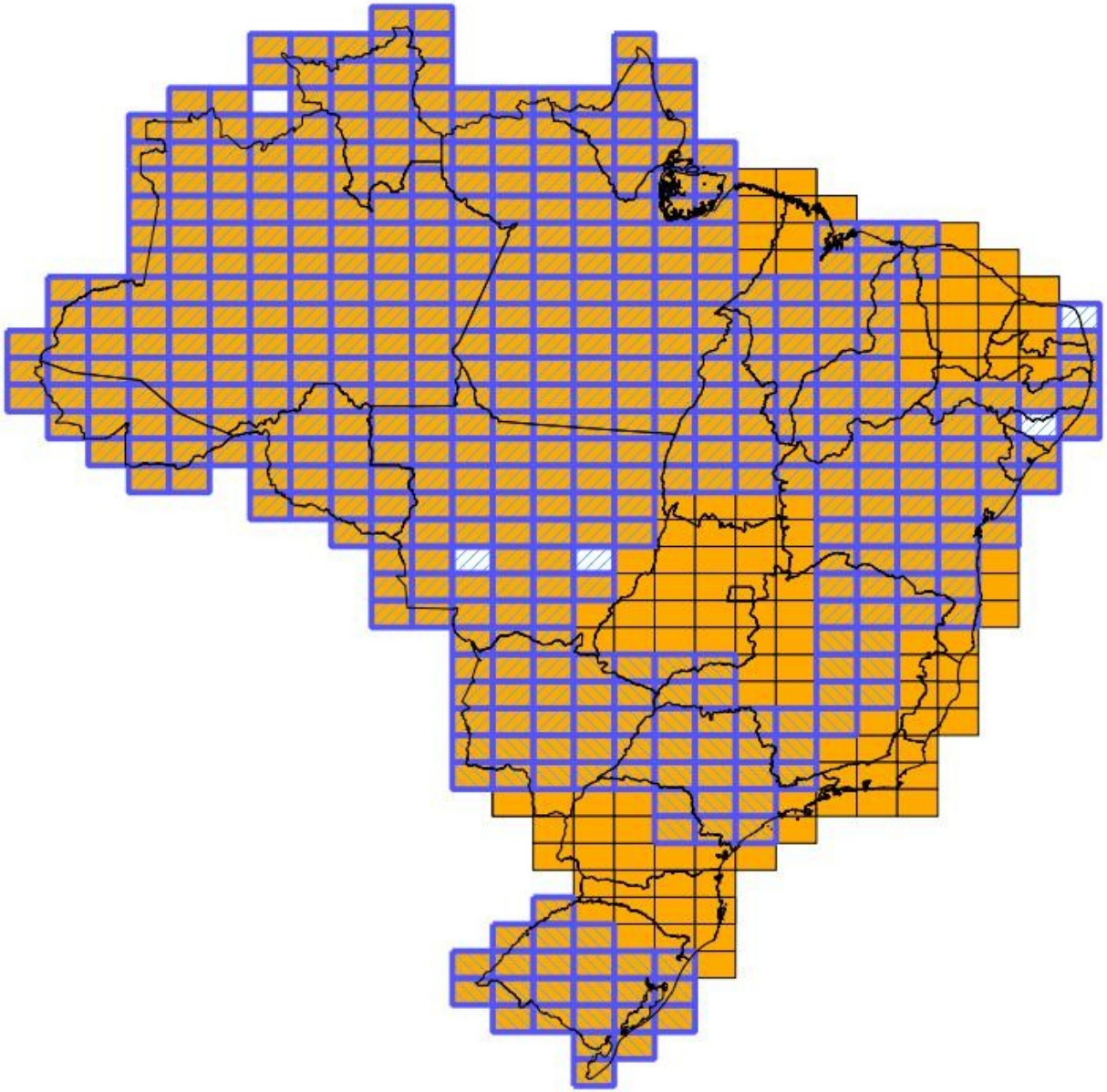


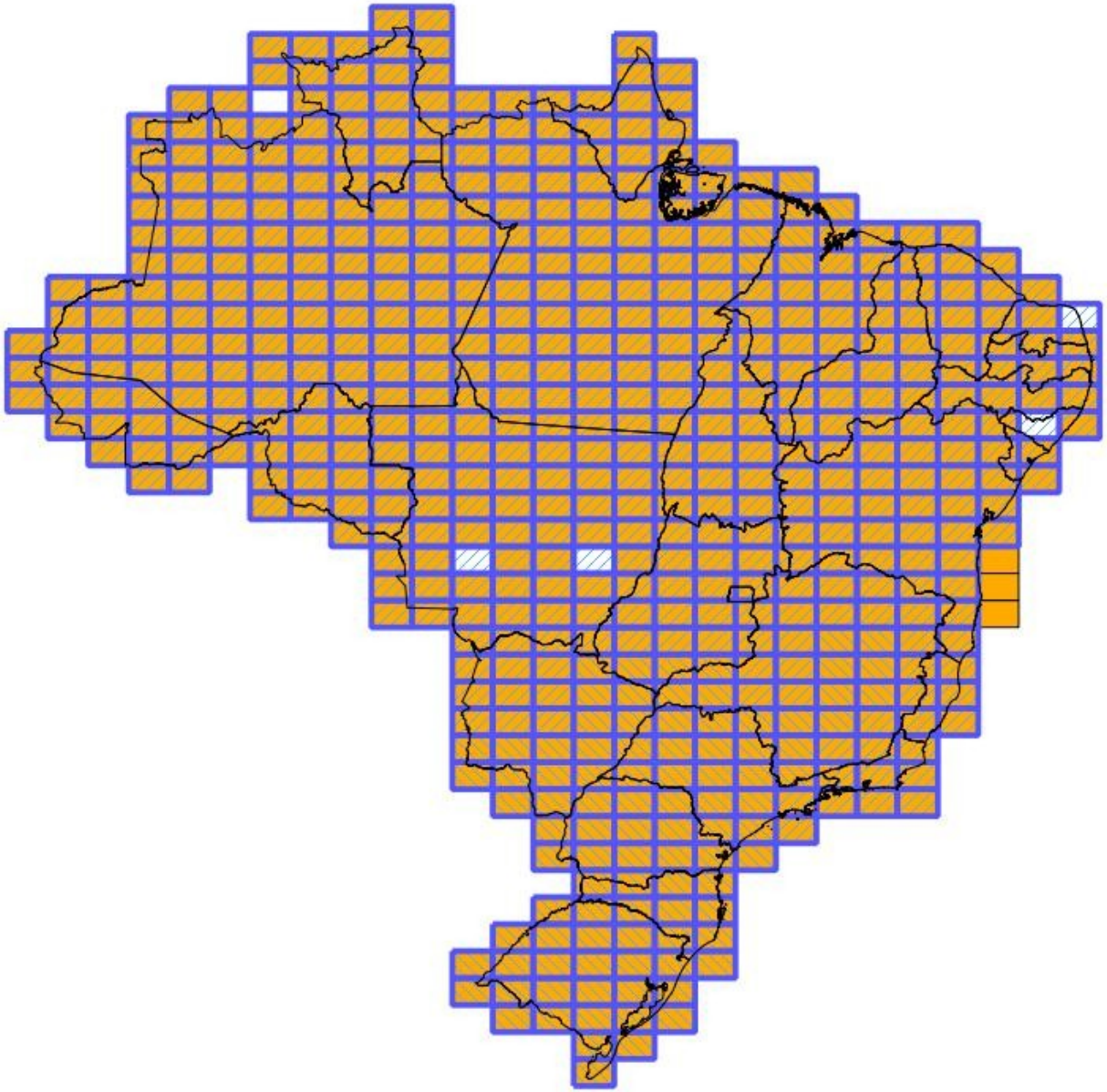
2008

Schedule production



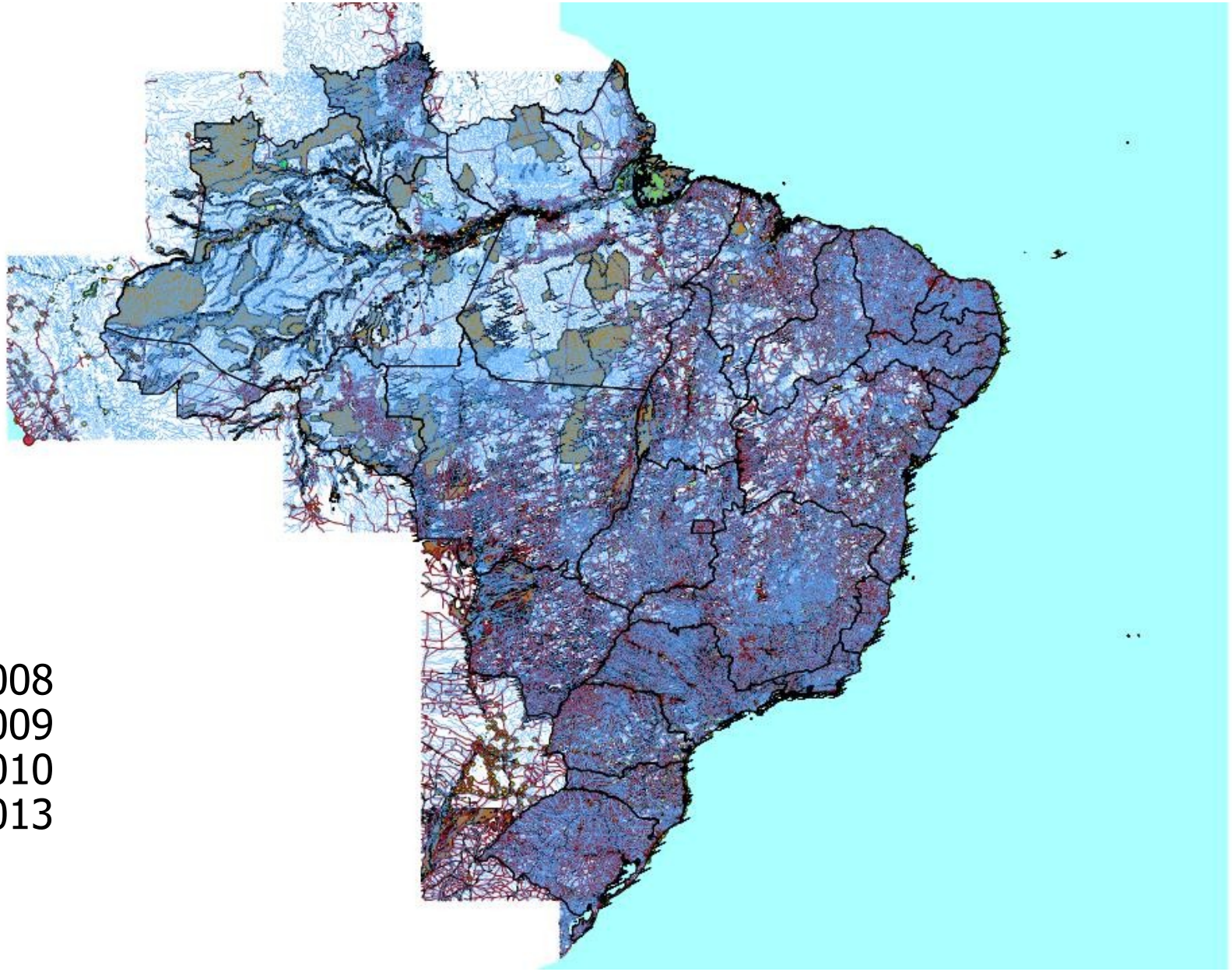
2008
2009

Schedule production



2008
2009
2010

Schedule production



2008
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Methodology

The surveys and updates of mapping features are based on Landsat TM images with 30m spatial resolution. The sensor was chosen as it covers the whole territory. Where the images had 20% clouds' coverage, CBERS images were used.

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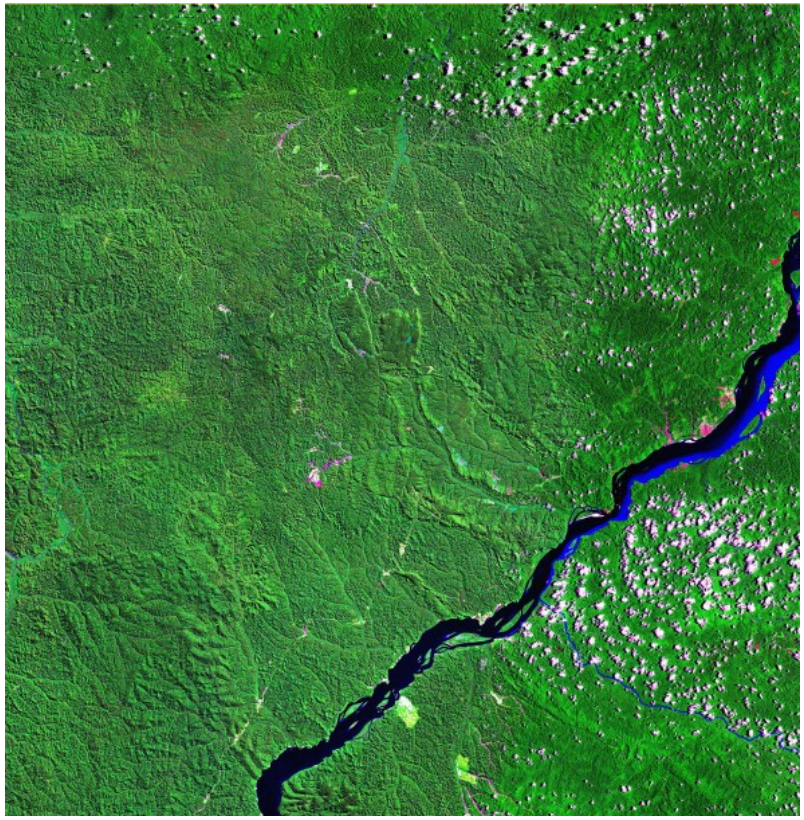

Landsat TM

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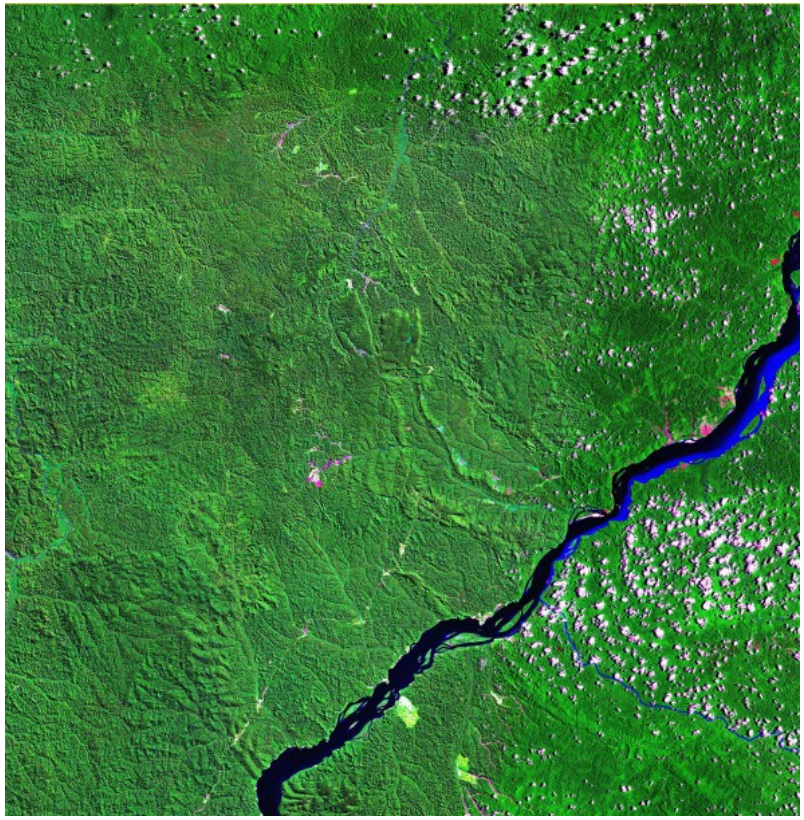

Landsat TM

CBERS

Methodology

The images were orthorectified using Digital Terrain Model (SRTM 90 m) and control points. The images accuracy is bellow 125m in planimetry and 50m in height. All information is referred to SIRGAS2000.

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Maps Update

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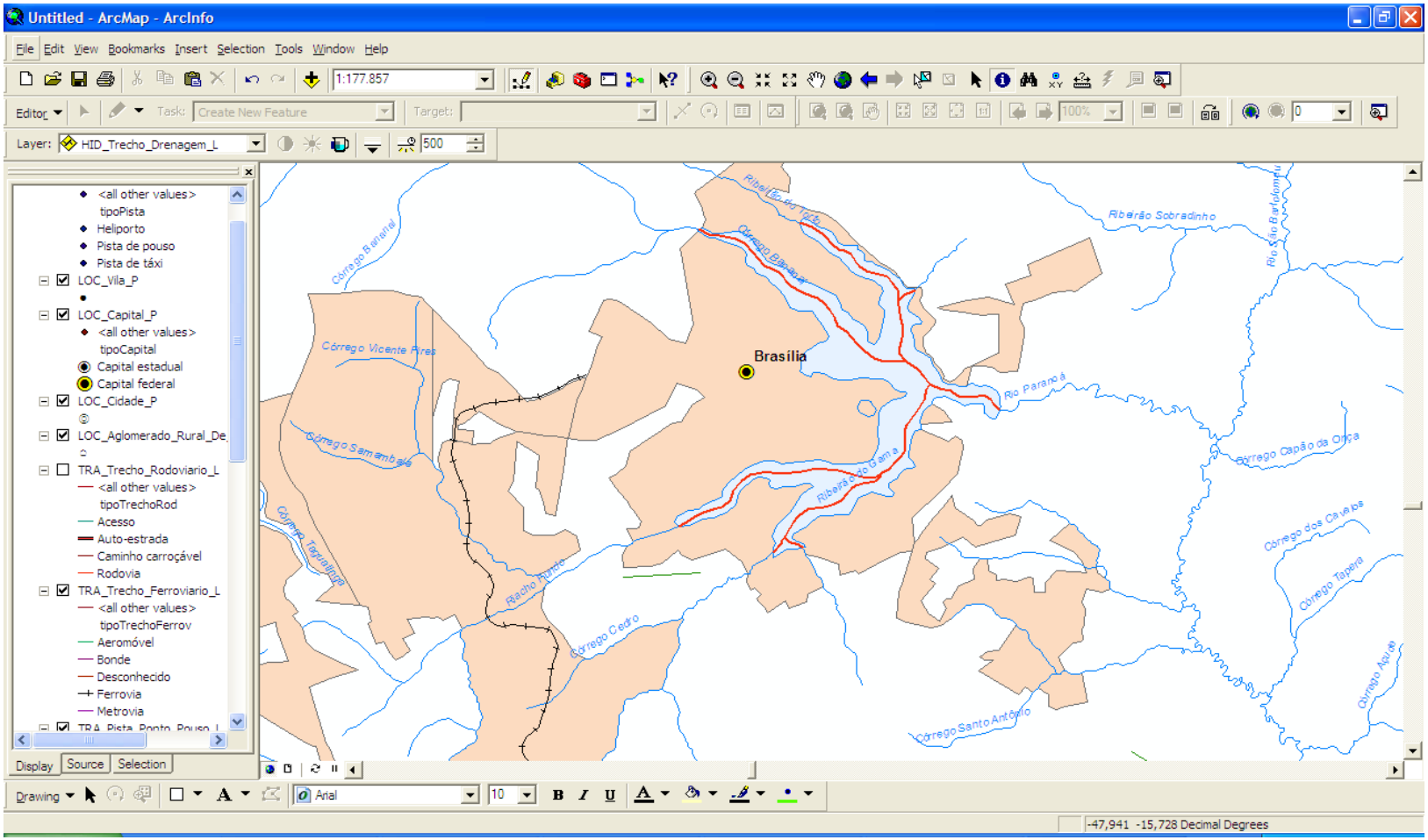

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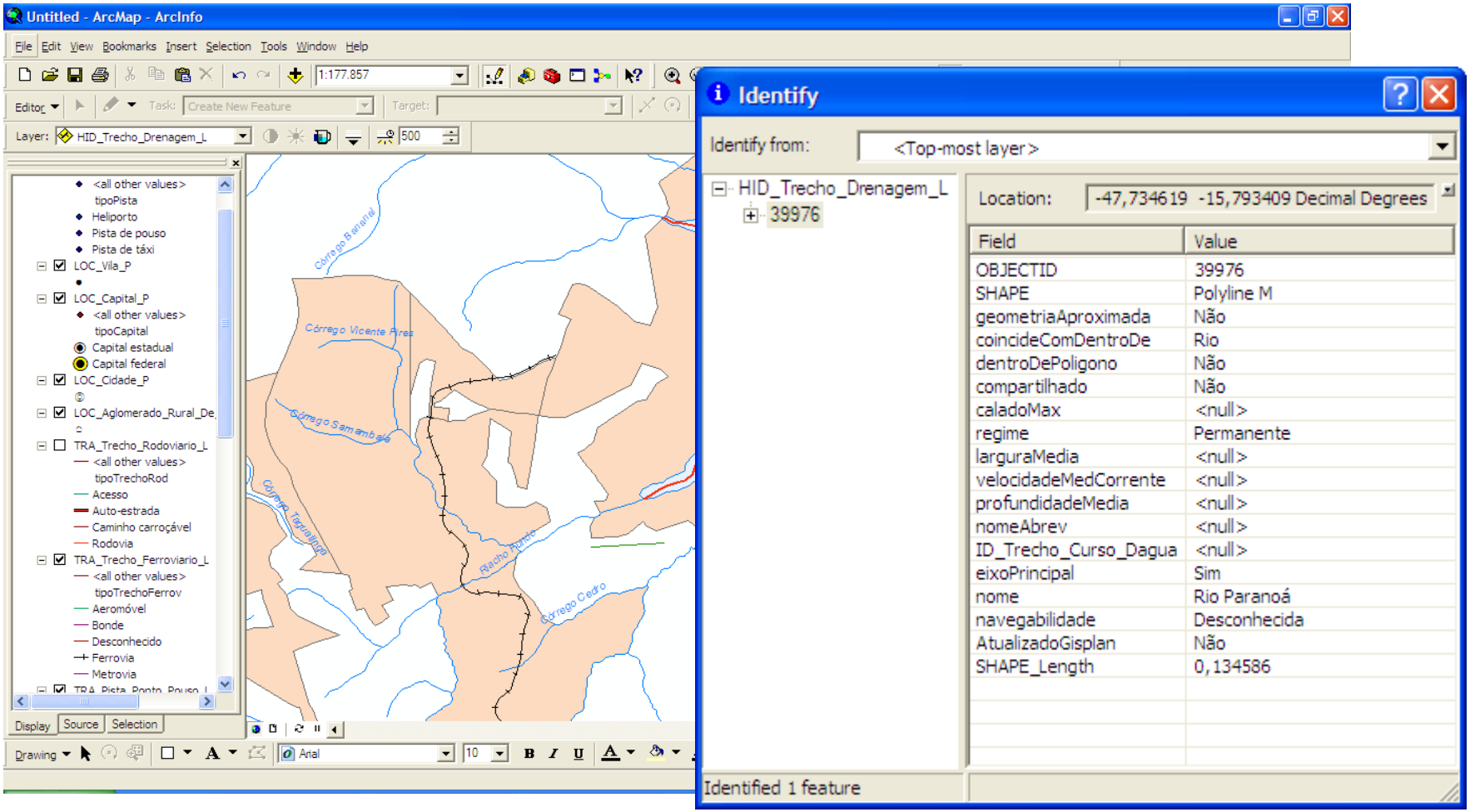

Geospatial Vectorial Data Structure

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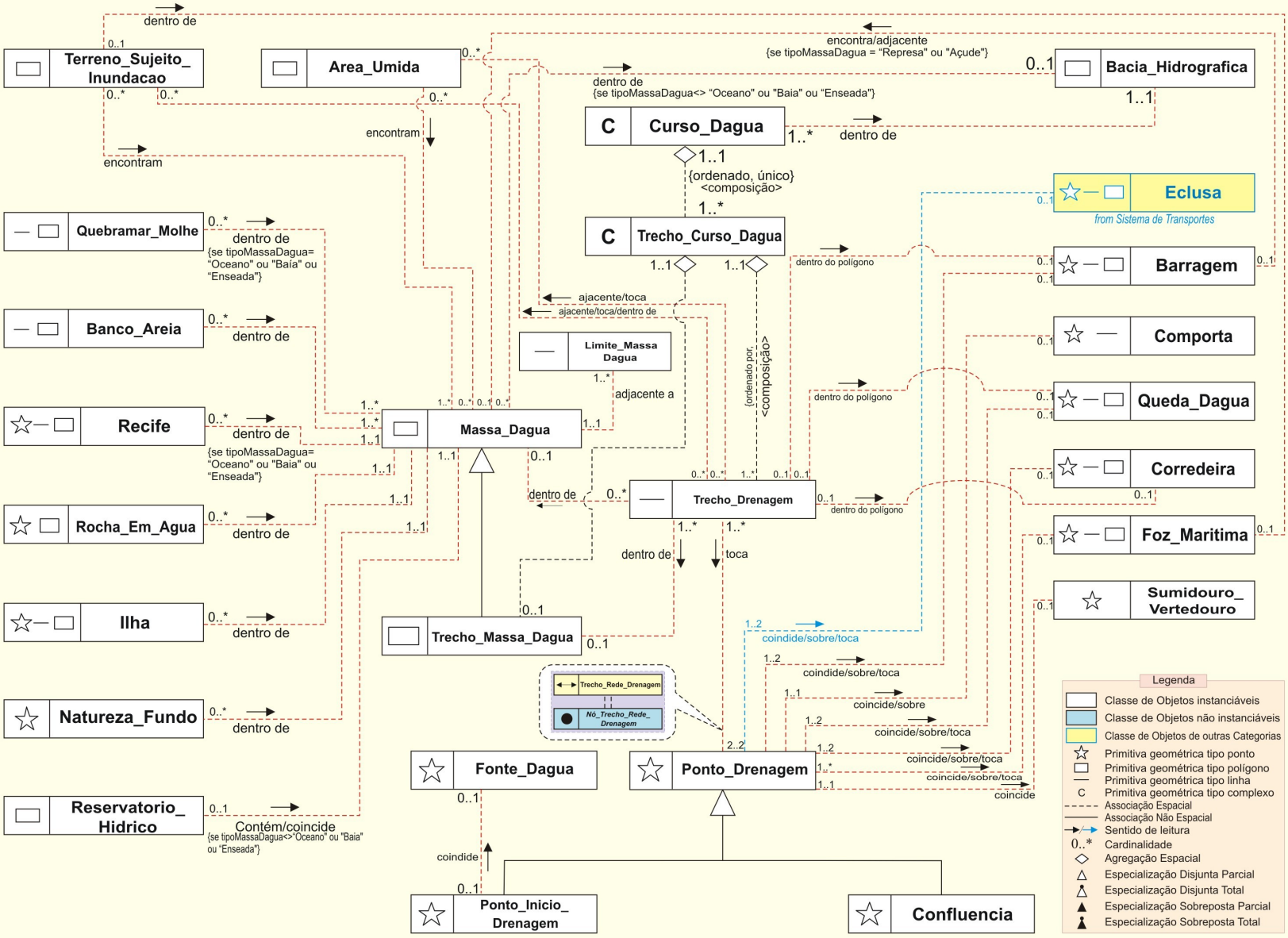
Instituto Brasileiro de Geografia e Estatística

Diagrama de Classe simplificado modelado em OMT G extendida pelo CEMND referente a Categoria HIDROGRAFIA



Geospatial Vectorial Data Structure

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Classe	Descrição			Código	Primitiva geométrica		
Trecho_Massa_Dagua	Segmentos de cursos d'água representados por poligonos, que possuem fluxo d'água.			1.05			
Atributo	**Tipo**	**Tamanho**	**Descrição**	**Dominio**	**Descrição**	**Requisito**	**Fotografia**
nome	Alfanumérico	80	Nome completo da instância	A ser preenchido	-	NULO	-
geometriaAproximada	Boleano	-	Indica que a geometria adquirida é aproximada, em relação a escala prevista para o produto cartográfico.	Sim	-	NÃO NULO	-
				Não	-		
tipoTrechoMassa	Alfanumérico	12	Indica o tipo do trecho de massa d'água. Nota: rios e canais represados mesmo que o nome usual indique ser lago ou lagoa etc, será atributo tipoTrechoMassa = Represa/açude ou Rio ou Canal Exemplo de um trecho de massa d'água: nome=Lago de Itaipu tipoTrechoMassa=Represa /açude (obs.: o trecho de drenagem terá o nome = Rio Paraná).	Rio	Corrente contínua de água, mais ou menos caudalosa, que deságua noutra, no mar ou num lago, e, que, excedam a 0,8 mm na escala da Carta.	NÃO NULO	1.05 a
				Canal	Curso de água artificial que serve de interligação entre corpos de água maiores, podendo ser navegável ou não, que excedam a 0,8 mm na escala da Carta		1.05 b / c
				Represa/aAçude	Depósito d'água formada pelo acúmulo das águas represadas, que possuem fluxo d'água.		1.05 d
				Laguna	Águas quietas, separadas do mar apenas por uma restinga de areia e com o qual mantém comunicação intermitente. Esta situação ocorrerá no final de cursos d'águas		1.05 e
				Foz marítima	Ponto mais baixo no limite de um sistema de drenagem (desembocadura) onde o curso d'água descarrega suas águas no oceano, em uma baía ou enseada. Esta situação ocorrerá no final de cursos d'águas		1.05 f
regime	Alfanumérico	30	Indica o regime da ocorrência da água, para a linha de drenagem.	Permanente	Nunca seca, mesmo no período de estiagem, podendo porém ser de nível variável.	NÃO NULO	-
				Permanente com grande variação	Possui água durante todo o ano, mas apresenta grande variação de nível em função do regime de chuvas.		-
				Temporário	Possui volume de água inconstante em função do regime de chuvas, podendo ser intermitente ou periódico.		-
				Temporário com leito permanente	Possui volume de água inconstante em função do regime de chuvas, podendo ser intermitente ou periódico, porém mantém bem definida a calha original.		-
				Seco	Cuja existência é condicionada às enxurradas do período chuvoso, passado o qual, geralmente, seca ou fica reduzido a um filete d'água, sendo que seu leito está sujeito a mudança de posição, mais ou menos freqüente.		-
salinidade	Alfanumérico	16	Qualidade da água, em função da quantidade de sais existentes em massas de água naturais - um oceano, um lago, um estuário ou um aqüífero.	Desconhecida	-	NÃO NULO	-
				Doce	Entre 0 e 0,5 mg/l		
				Salgada	Salinidade média aproximada de 35 mg/l.		
nomeAbrev	Alfanumérico	50	Nome ou abreviatura padronizada.	A ser preenchido	-	NULO	-

Brazilian Geographic Names Database

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The BNGB contains geographic names presented in the Brazilian mapping with their location, category and mapping scale, as well as historical and linguistic information associated for their standardization and certification as official name.

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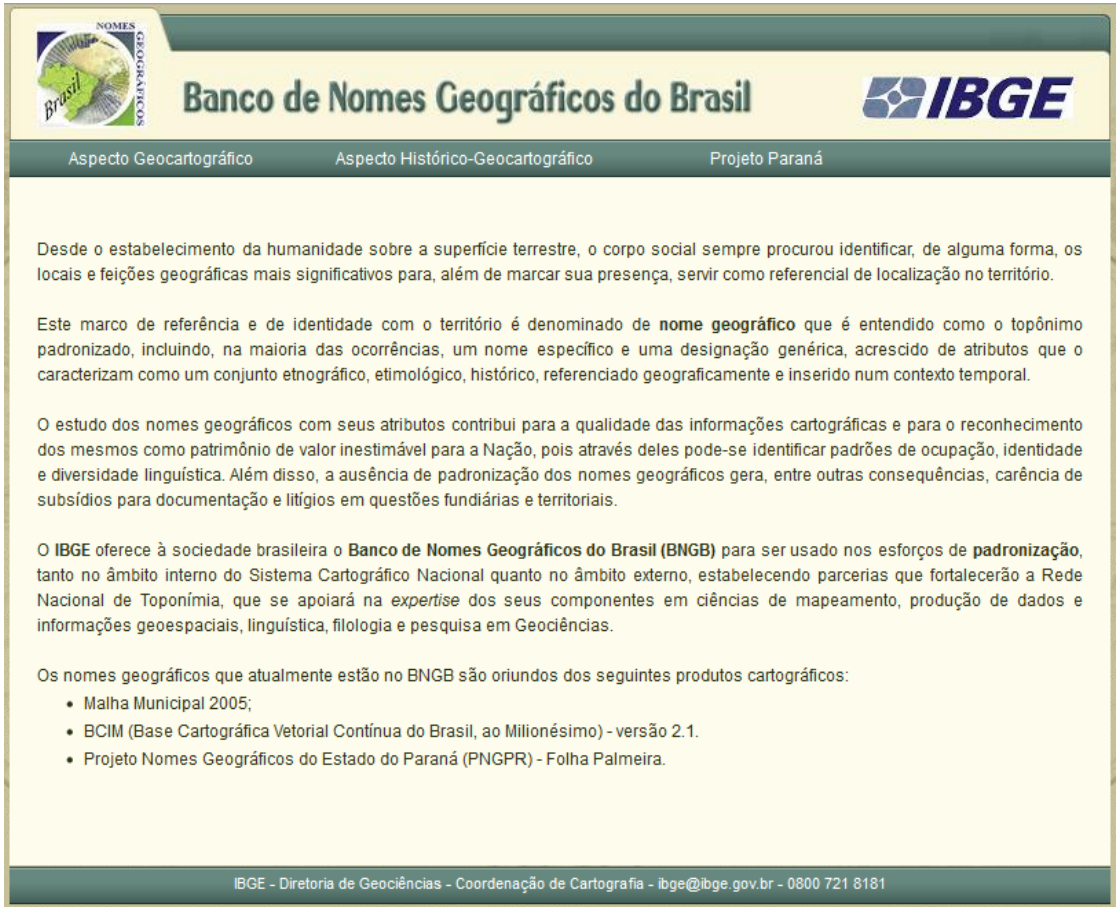

Banco de Nomes Geográficos do Brasil

Aspecto Geocartográfico | Aspecto Histórico-Geocartográfico | Projeto Paraná

Desde o estabelecimento da humanidade sobre a superfície terrestre, o corpo social sempre procurou identificar, de alguma forma, os locais e feições geográficas mais significativos para, além de marcar sua presença, servir como referencial de localização no território.

Este marco de referência e de identidade com o território é denominado de **nome geográfico** que é entendido como o topônimo padronizado, incluindo, na maioria das ocorrências, um nome específico e uma designação genérica, acrescido de atributos que o caracterizam como um conjunto etnográfico, etimológico, histórico, referenciado geograficamente e inserido num contexto temporal.

O estudo dos nomes geográficos com seus atributos contribui para a qualidade das informações cartográficas e para o reconhecimento dos mesmos como patrimônio de valor inestimável para a Nação, pois através deles pode-se identificar padrões de ocupação, identidade e diversidade linguística. Além disso, a ausência de padronização dos nomes geográficos gera, entre outras consequências, carência de subsídios para documentação e litígios em questões fundiárias e territoriais.

O **IBGE** oferece à sociedade brasileira o **Banco de Nomes Geográficos do Brasil (BNGB)** para ser usado nos esforços de **padronização**, tanto no âmbito interno do Sistema Cartográfico Nacional quanto no âmbito externo, estabelecendo parcerias que fortalecerão a Rede Nacional de Toponímia, que se apoiará na *expertise* dos seus componentes em ciências de mapeamento, produção de dados e informações geoespaciais, linguística, filologia e pesquisa em Geociências.

Os nomes geográficos que atualmente estão no BNGB são oriundos dos seguintes produtos cartográficos:

- Malha Municipal 2005;
- BCIM (Base Cartográfica Vetorial Contínua do Brasil, ao Milionésimo) - versão 2.1.
- Projeto Nomes Geográficos do Estado do Paraná (PNGPR) - Folha Palmeira.

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Brazilian Geographic Names Database

In 2010, were initiated systematic surveys to collect geographical names for the BC250, that are available through the Brazilian Geographic Names Database (BNGB).

The BNGB contains geographic names presented in the Brazilian mapping with their location, category and mapping scale, as well as historical and linguistic information associated for their standardization and certification as official name.

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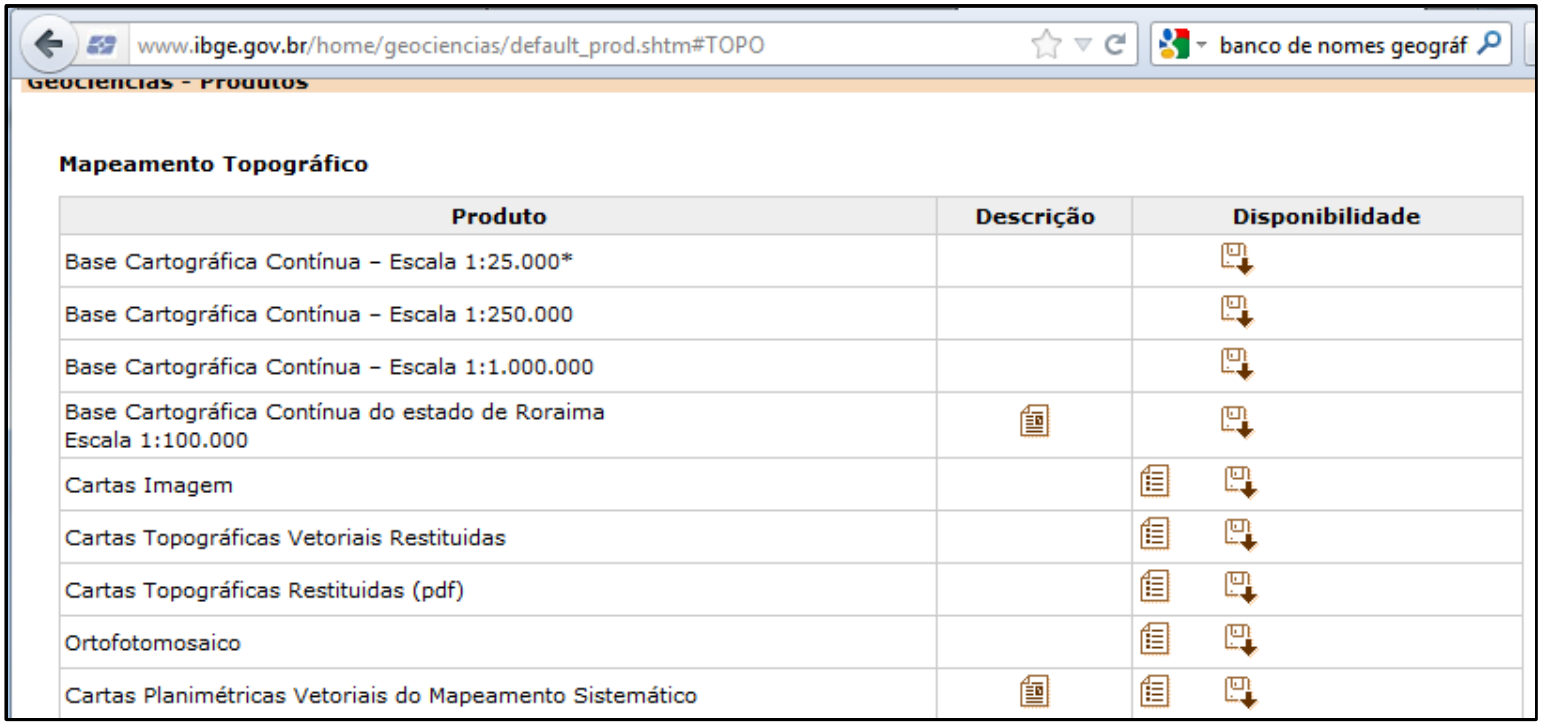
Mapping Download

BC250 is available for download at the IBGE homepage.

In October 2013, an unique database of 1:250,000 Brazilian mapping will be made available .



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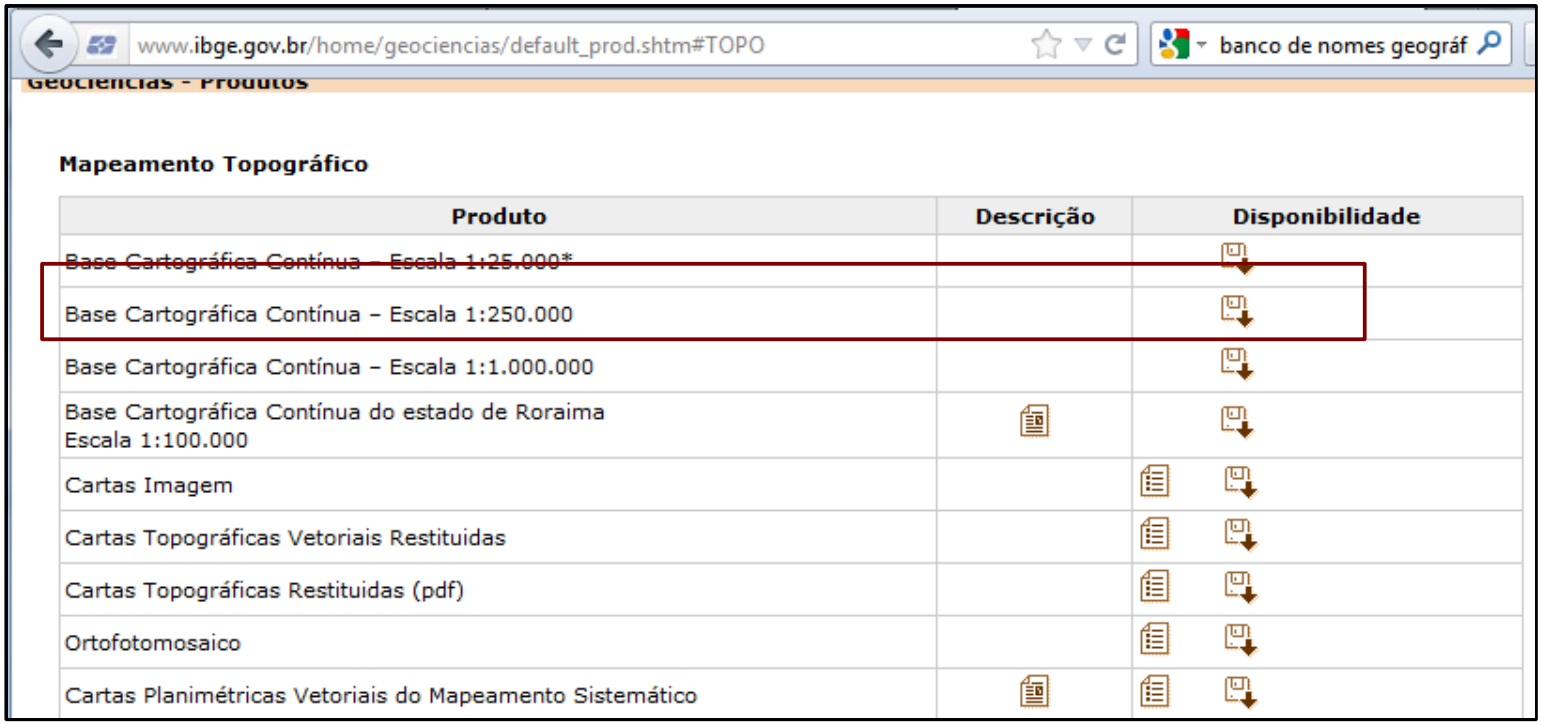

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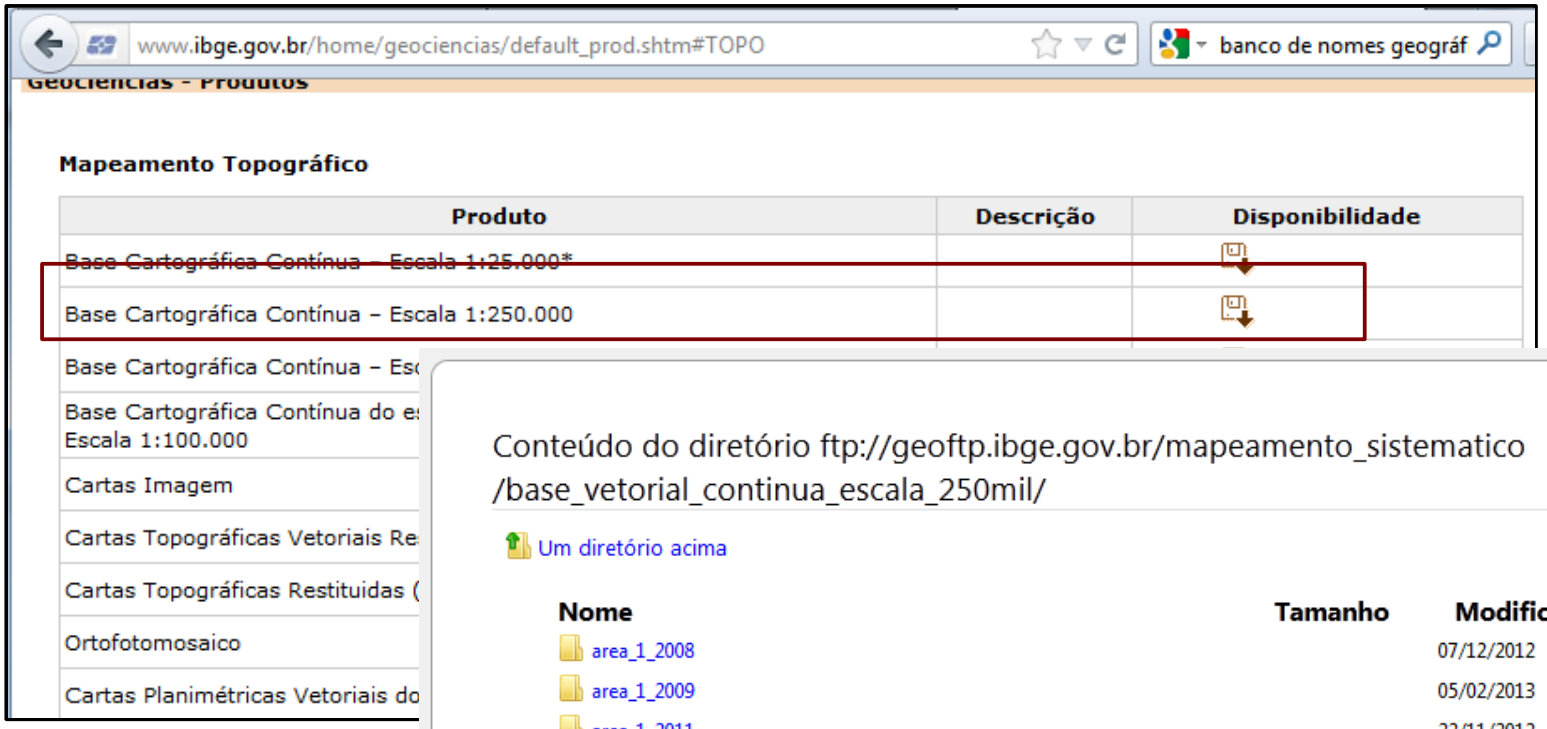

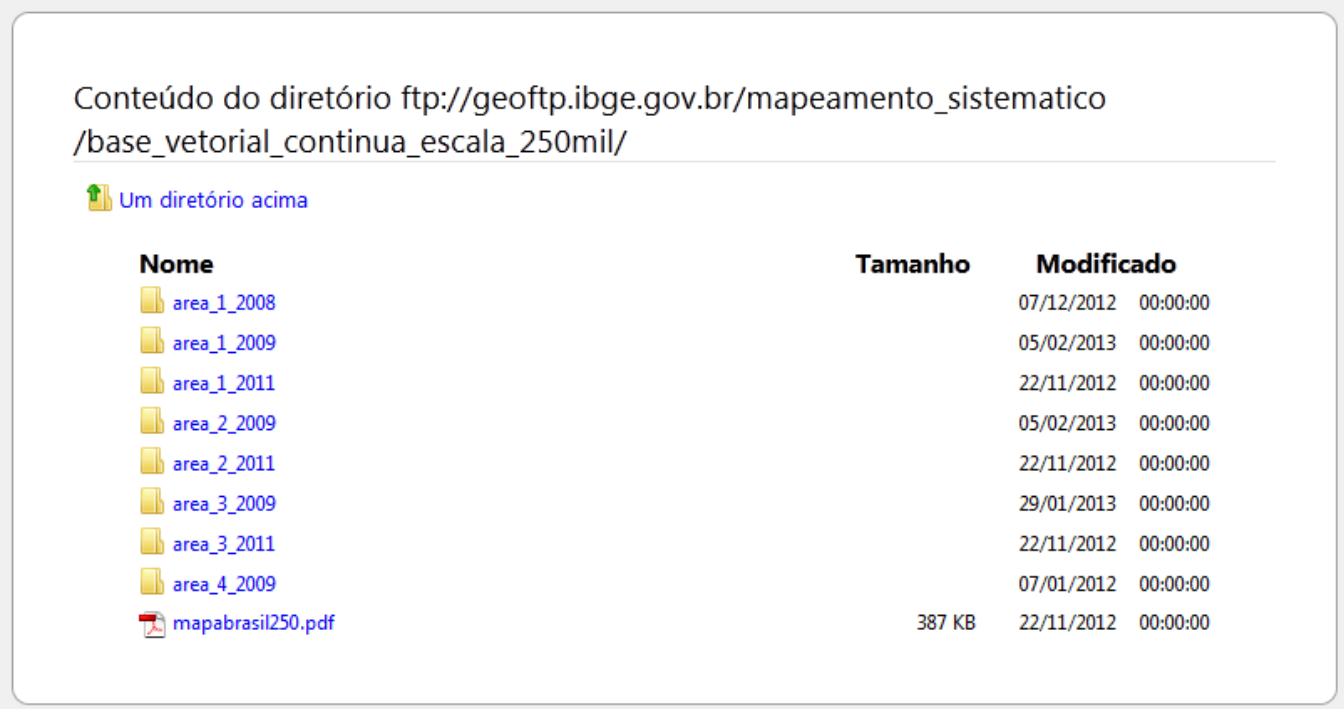

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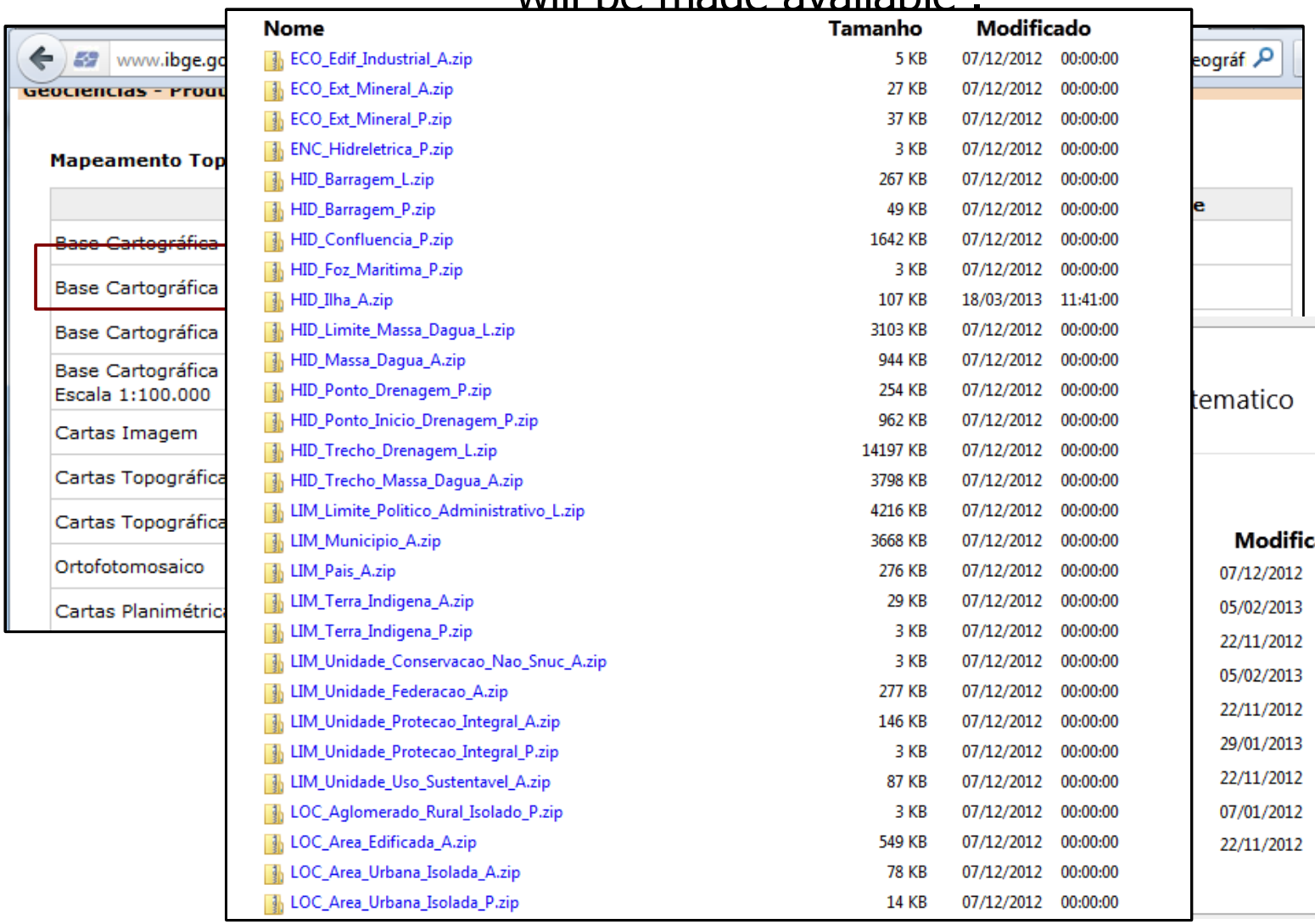

Conclusion

The BC250 project came up with the purpose of incorporating the goals of the national spatial data infrastructure in order to catalog, integrate and harmonize the existing geospatial data on Brazilian government institutions.

The integration of BC250 into INDE facilitates the location and access to geospatial informations for countless uses through internet connection as, for example, support for Brazilian natural resource mapping.

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φ = -22°49'05"
λ= -48°18'25"
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