

# Mapping Brazil in 1:250,000 scale

João Bosco de Azevedo



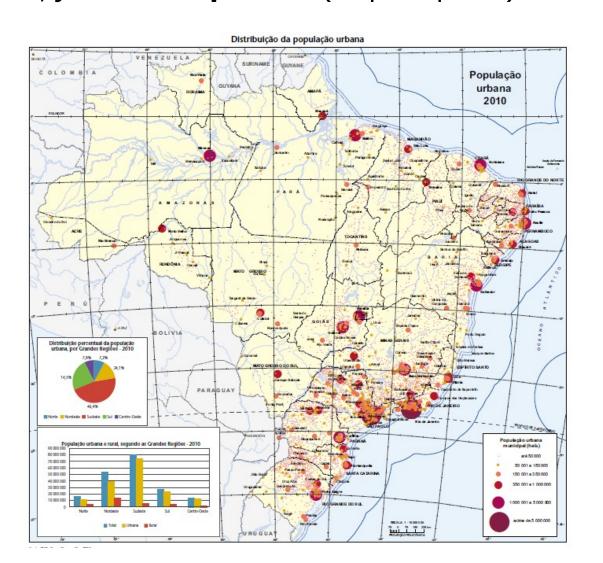
The Brazilian territory attracts attention because of its area, the fifth largest area of the world. It comprises **8,514,876,99 km**<sup>2</sup> that go the equatorial zone until the subtropical zone of South America, occupying half of the continent and bordering most of its countries.

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.



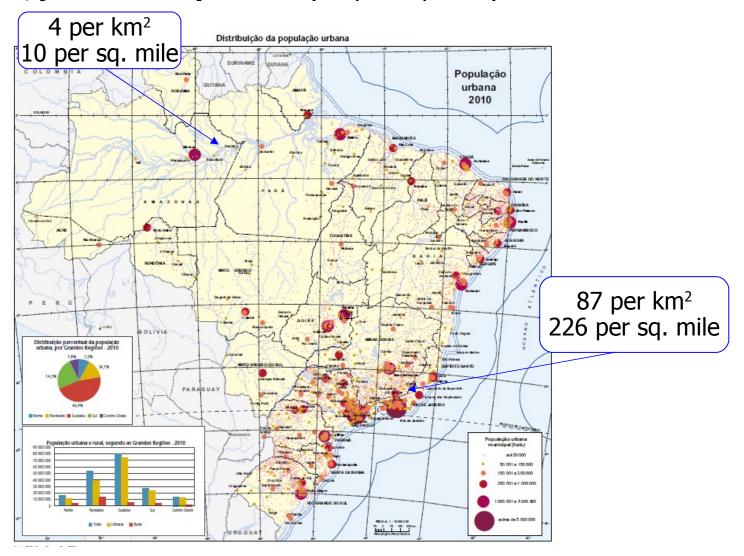


Brazil is one of the most populous countries in the world, with over **190 millions** people according to Census 2010, and its population density is relatively low, just over **22 per km**<sup>2</sup> (57 per sq. Mile).



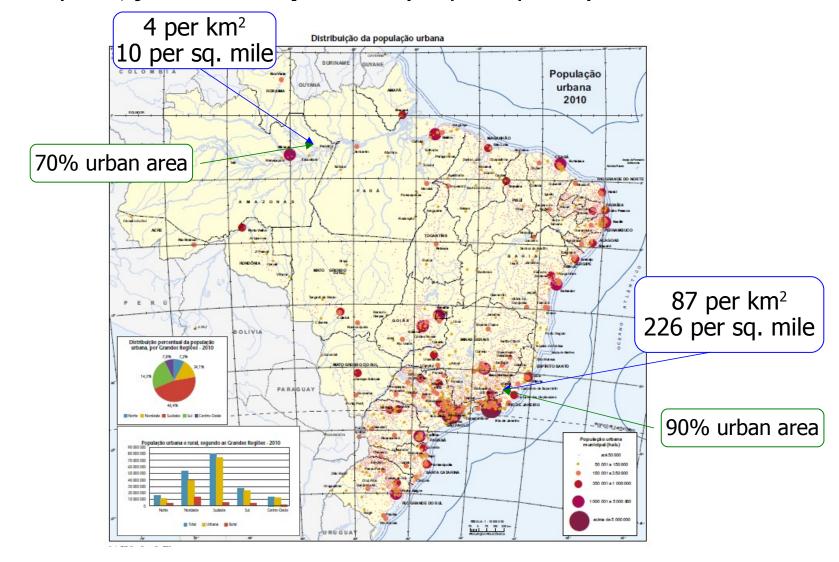


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### **IBGE**



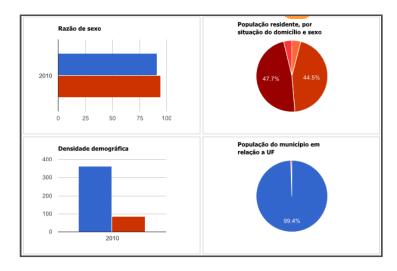
"To portray Brazil by providing the information required to the understanding of its reality and the exercise of citizenship"



# "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



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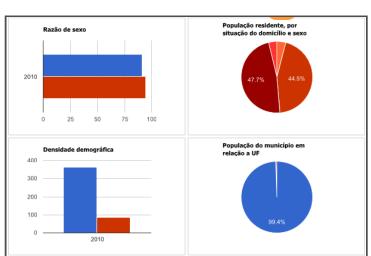


# "To portray Brazil by providing the information required to the understanding of its reality and the exercise of citizenship"

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 <u>geographic information</u> in <u>statistical applications</u> yields large benefits to NSOs as it <u>reduces the cost and time</u> 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.

Geographic Information



Statistical Applications



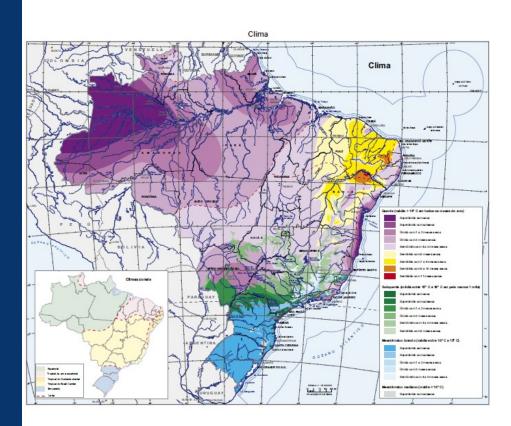


IBGE = Geographic Information + Statistical Information

Aplications: Censuses/Spatial Data Infrastructures

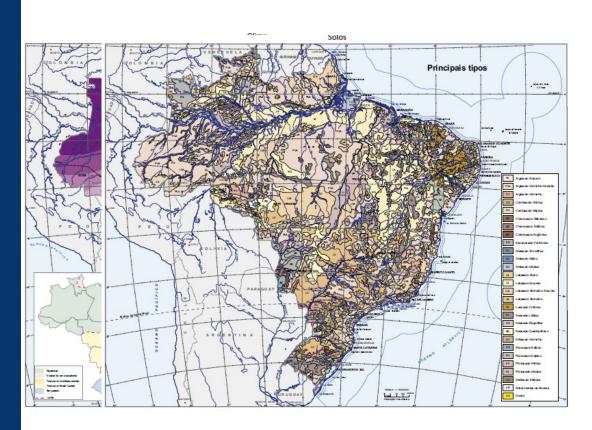


IBGE holds a significant amount of data on natural resources, stored in a database configured to allow the generation of derived data which can be valuable to the management of such resources and the evaluation of environmental quality.



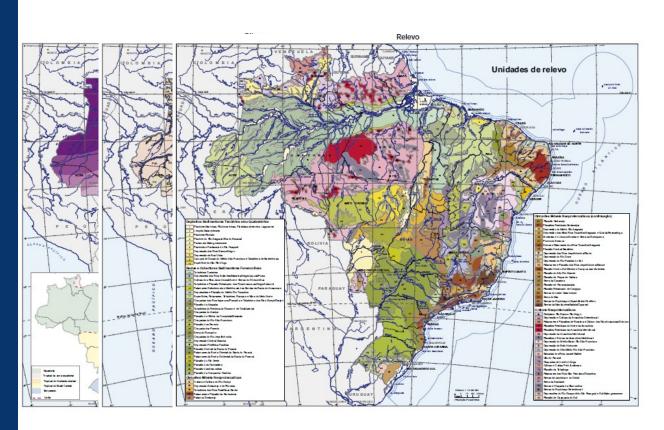


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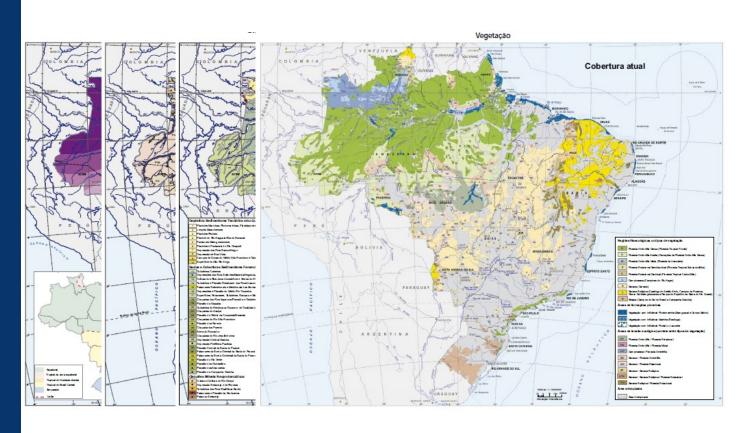


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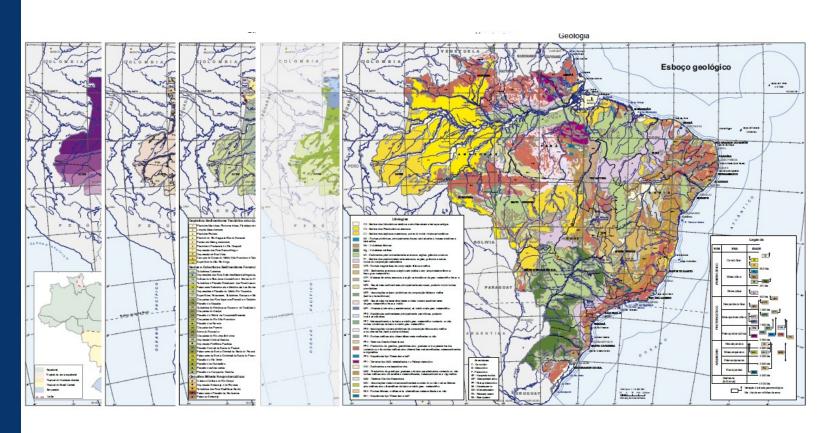


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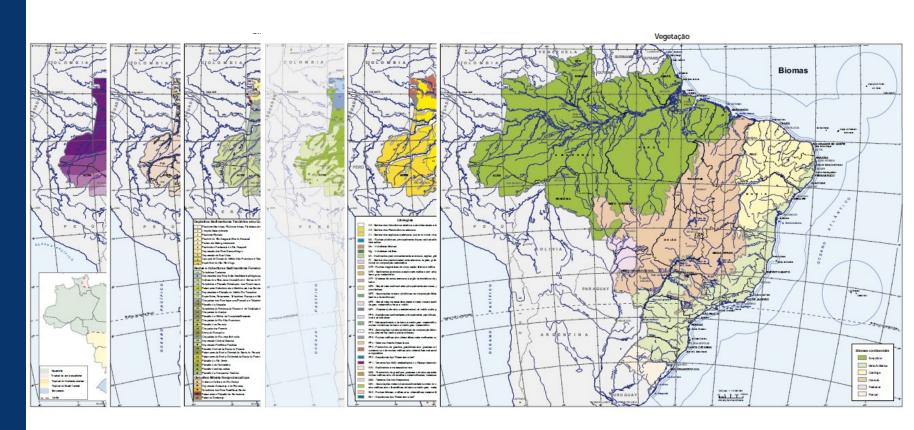


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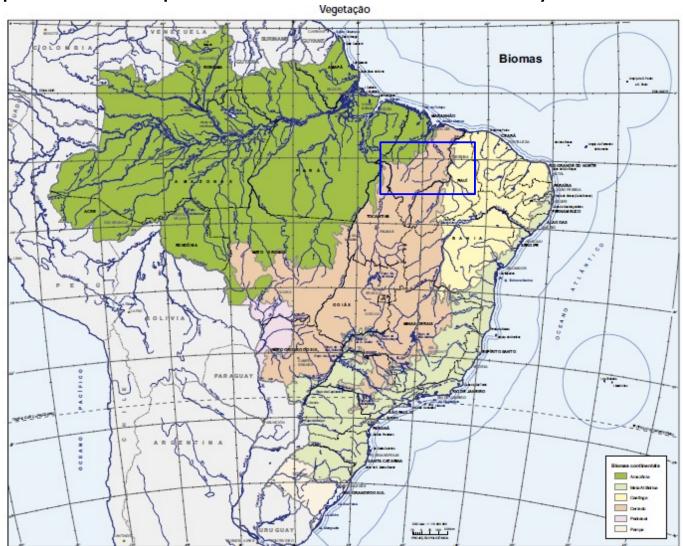


These informations are available in the atlas produced by IBGE and in the maps of Brazil at 1:5,000,000 scale. For environmental studies are also provaided maps with more detail and accuracy.



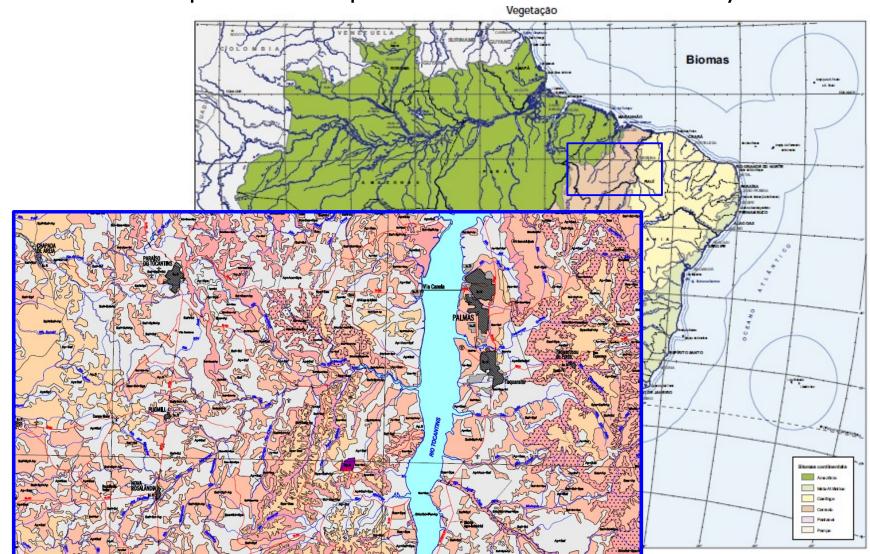


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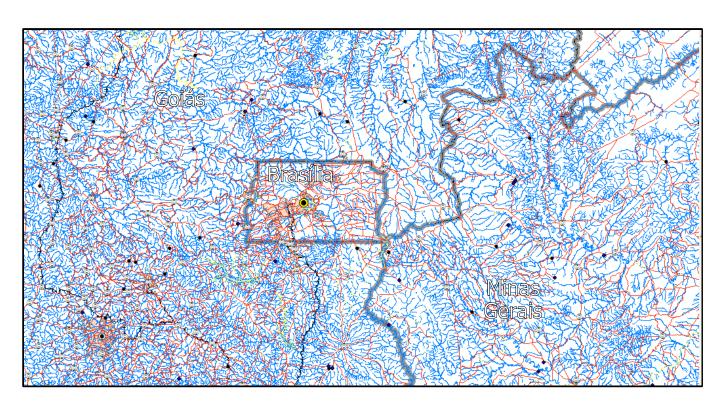


# Mapping Brazil in 1:250.000 scale (BC250)



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).

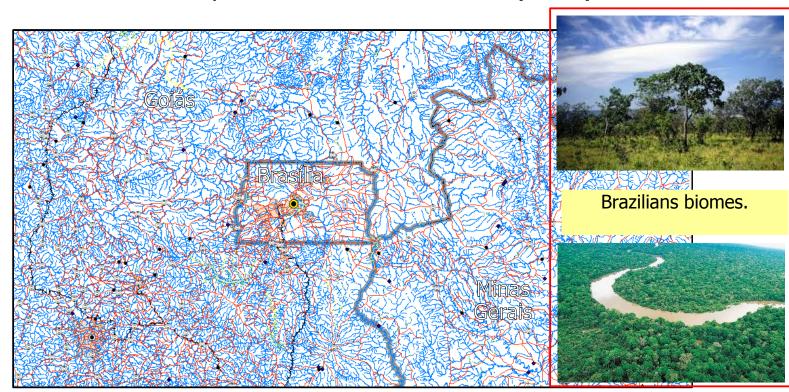


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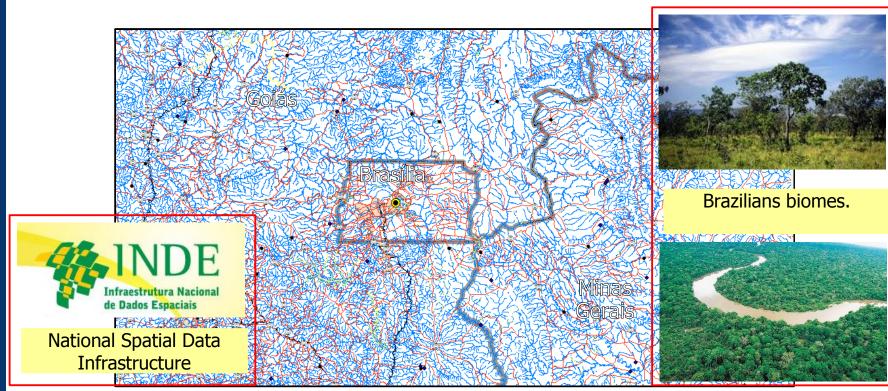


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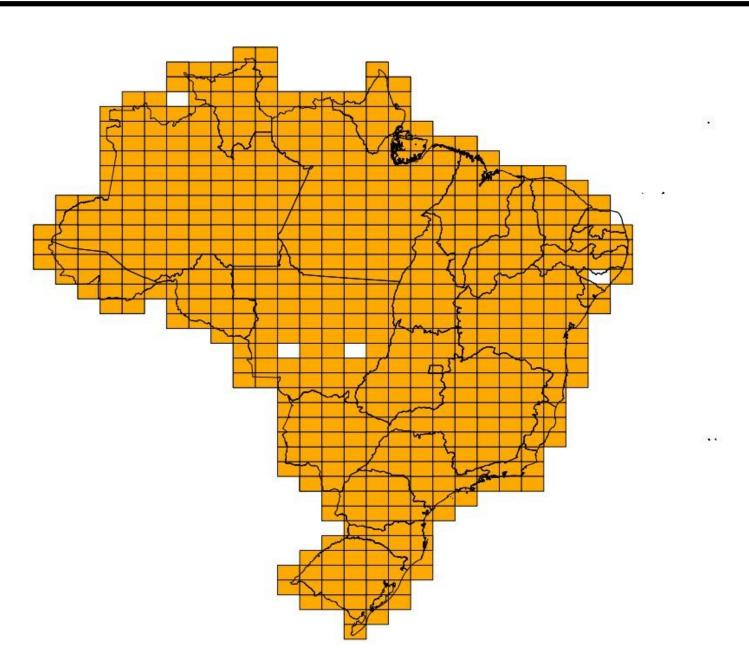


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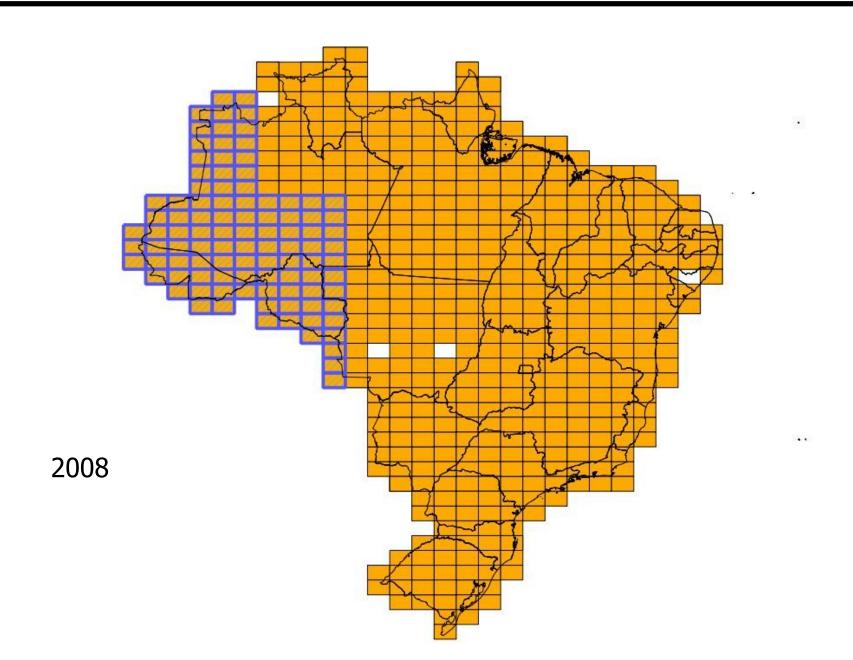
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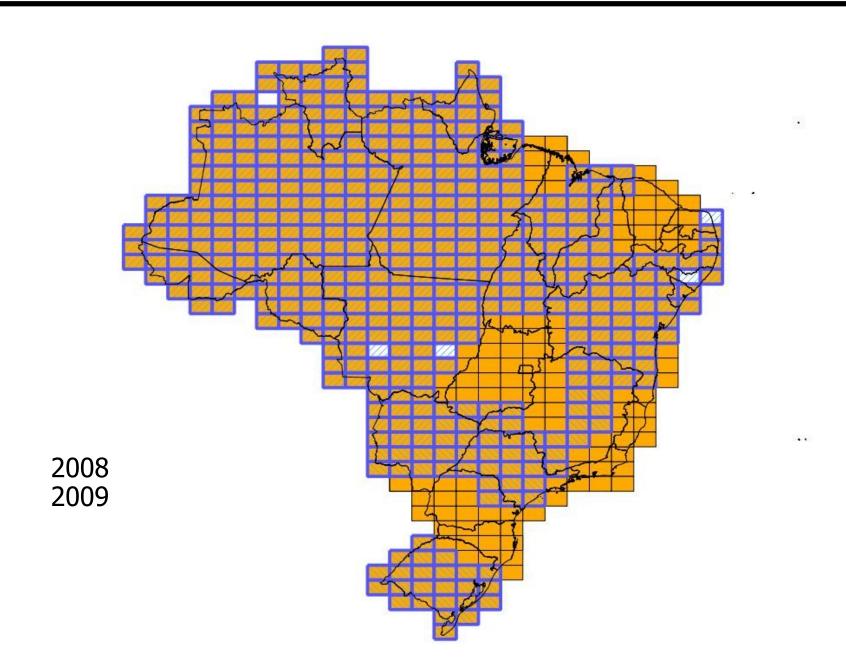




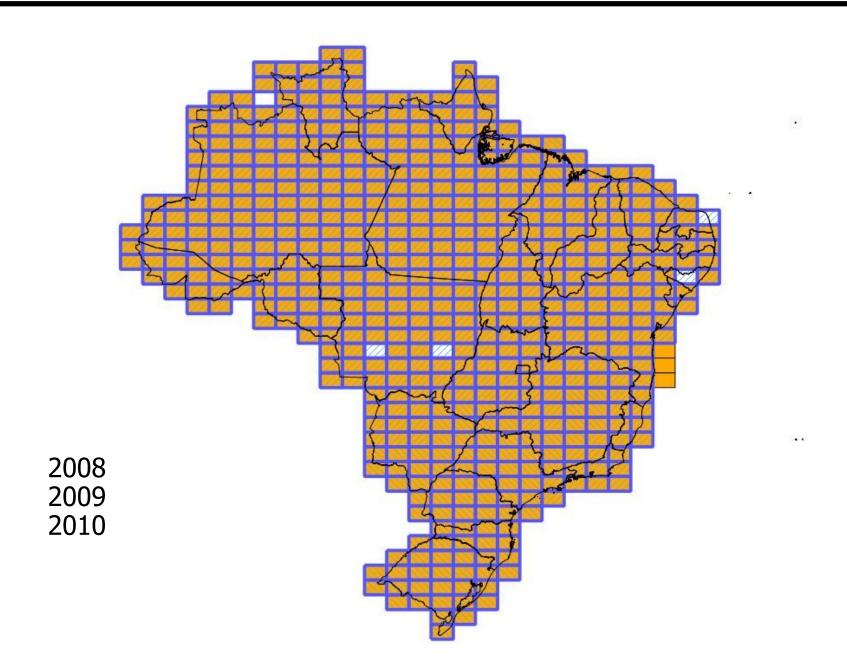




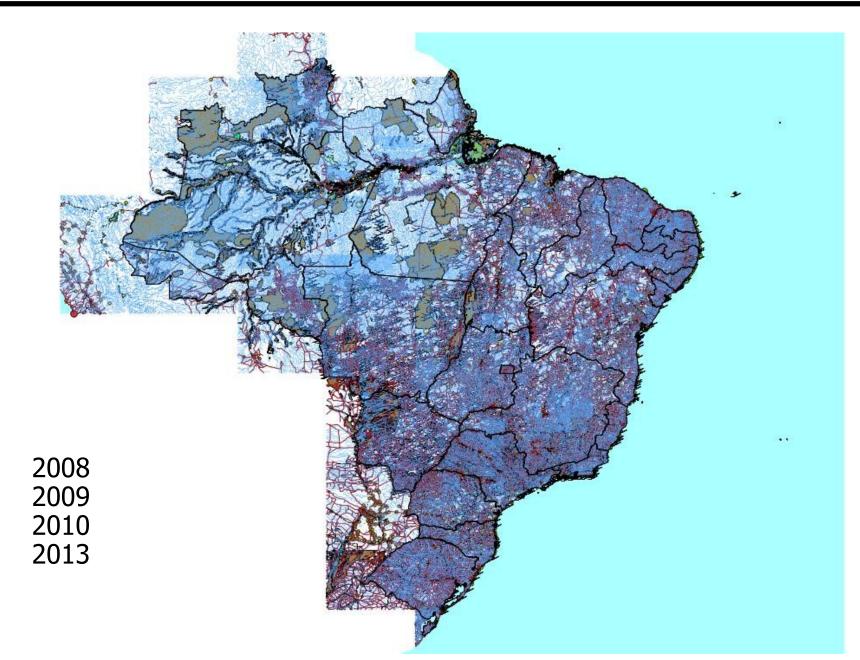










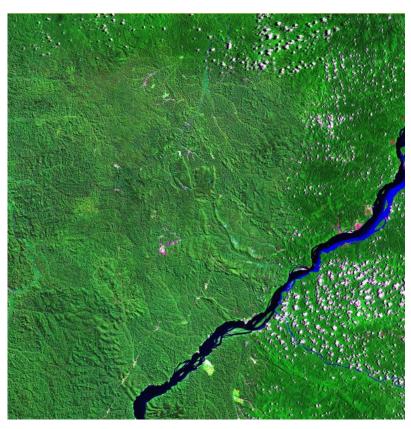




The surveys and updates of mapping features are based on Landsat TM images with 30m spatial resolution. The sensor was chosen as it covers the whole territory. Where the images had 20% clouds' coverage, CBERS images were used.



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Landsat TM

**CBERS** 



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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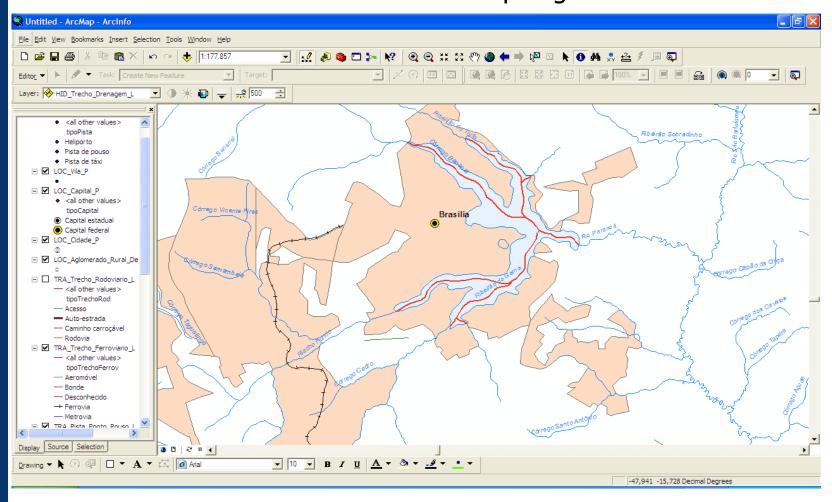




### **Maps Update**



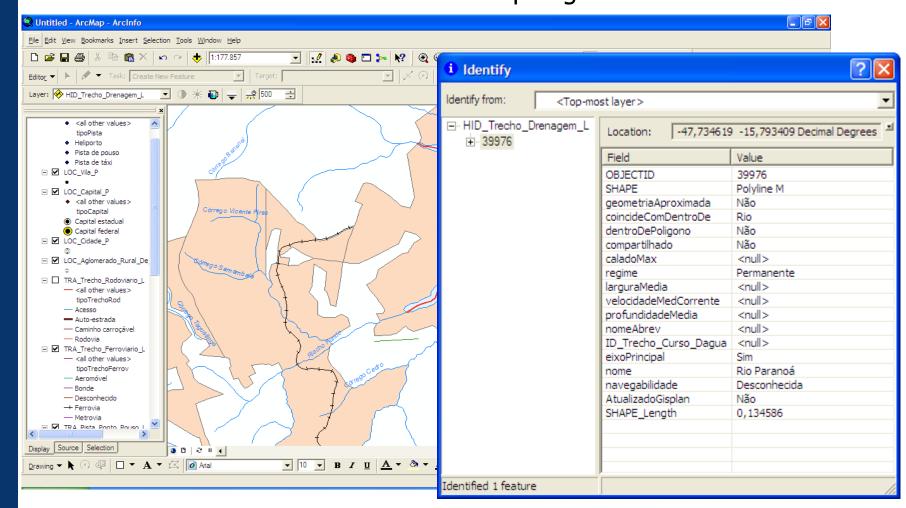
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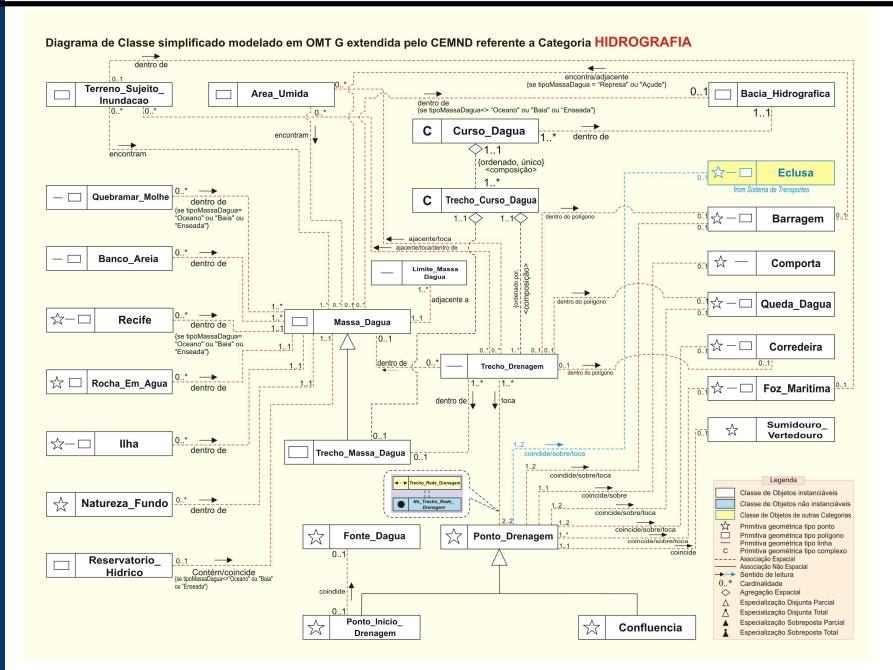


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### **Geospatial Vectorial Data Structure**





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Classe		Descrição		Código	Primitiva geométrica		
Trecho_Massa_Dagua	Segmentos de o	Segmentos de cursos d'água representados por polígonos, que possuem fluxo d'água.		1.05			
Atributo	Tipo	Tama nho	Descrição	Domínio	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	
geometria: iproximata	Doleano			Não	-	1.11011020	
tipoTrechoMassa Alfanumérico		Indica o tipo do trecho de massa d'água.	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.		<u>1.05 a</u>	
		merico 12	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).	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
	Alfanumérico			Represa/aAçude	Depósito d'água formada pelo acúmulo das águas represadas, que possuem fluxo d'água.	NÃO NULO	<u>1.05 d</u>
				Laguna	Aguas 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		<u>1.05 e</u>
				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			Permanente	Nunca seca, mesmo no período de estiagem, podendo porém ser de nível variável.		-	
			Indica o regime da ocorrência da água, para a linha de drenagem.	Permanente com grande variação	Possui água durante todo o ano, mas apresenta grande variação de nível em função do regime de chuvas.		-
	410 (			Temporário	Possui volume de água inconstante em função do regime de chuvas, podendo ser intermitente ou periódico.	NÃO NULO	-
	Alfanumenco			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.	NAO NULO	-
				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 Alfanumé		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			
	Alfanumérico			Doce Salgada	Entre 0 e 0,5 mg/l Salinidade média aproximada de 35 mg/l.	NÃO NULO	-
nomeAbrev	Alfanumérico	50	Nome ou abreviatura padronizada.	A ser preenchido	•	NULO	-



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



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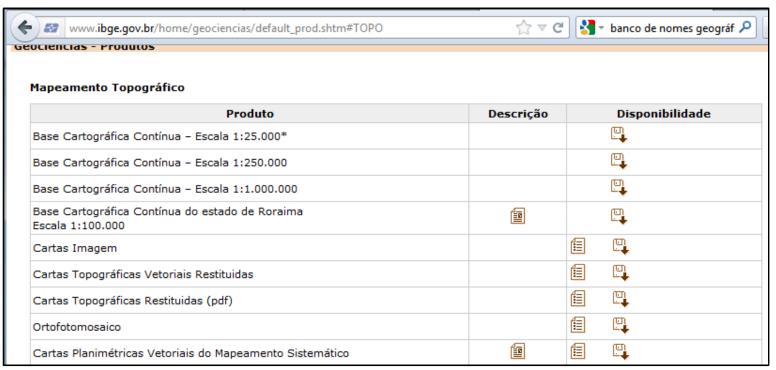
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BC250 is available for download at the IBGE homepage.

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





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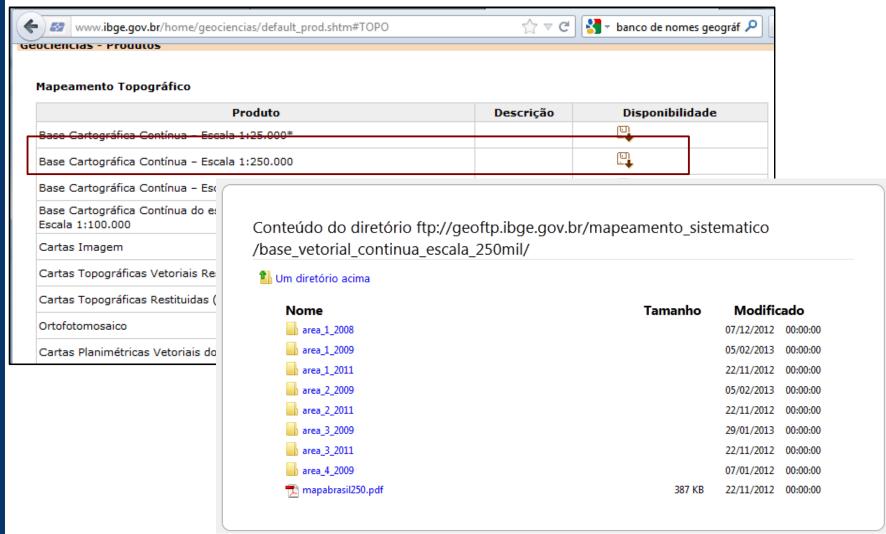
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Geociencias - Produ	ECO_Ext_Mineral_A.zip	27 KB	07/12/2012 00:00:00				
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	LOC_Area_Urbana_Isolada_A.zip	78 KB	07/12/2012 00:00:00				
	LOC_Area_Urbana_Isolada_P.zip	14 KB	07/12/2012 00:00:00				

#### **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.



### **Directorate of Geosciences**



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