



The Proposal of a Coastal Atlas Project - São Paulo State, Brazil

The Project

- The first attempt to develop the project was motivated by the need to systematically store and manipulate information about marine and coastal region to support the **establishment of protected areas** in São Paulo State, Brazil
- The Coastal Atlas Project has been developed collaboratively with representatives from São Paulo State Environmental Agency (SMA), University of São Paulo (USP), National Space Agency (INPE).

The Project

1^o Meeting - 27-28/11/2008 – Ilhabela – SP

Main Goals – Marine Protected Areas, created in 2008-
scientific and technical efforts to support management
strategy and plan

- Assess the current level of knowledge about marine and coastal environment over south eastern Brazil by assembling and reviewing information that is currently scattered throughout published literature and various databases.
- Propose a set of Research Projects to develop the level of general understanding of the coastal marine areas
- Organize a task force to coordinate fund-raising and planning efforts.

The Project

- development of 4 main project themes

1. Marine Habitats
2. Coastal environments
3. Biodiversity of Islands
4. Information System and Database

Information Model and Database Group - Definition

- Incompatibility with several different environmental databases existing (CETESB, BIOTA, Coastal Management...)
- Need to develop an open service (free!) and with the participation (at least at the beginning) of several sectors of society (government, university, decision makers) promoting different forms of partnership and a greater involvement of the several entities involved with the project
- Define a strategy and an implemental plan of action for the next two years
- Presentation of a set of actions with specific operating activities that define what the database will be



Coastal Atlas

The Project

- The main goal of the Coastal Atlas is to create technologies that gather, distribute and analyze spatial information → available on the Internet
- Spatial information provides a spatial/geographic context to planning, management, and resource allocation allowing a better understanding of, and thus better management of an area (**Strain** *et al*, 2005)

PACO – Coastal Atlas Project

3 approaches

- Scientific “what will we do?”
- Technical “How are we gonna do it?”
- Management “How people will use it?”

PACO – Coastal Atlas Project

Scientific

- Development of new methodologies and knowledge related to Geographic Information Science and Technology
- New models, indices, simulations, solutions for environmental issues involving handling and analysis of geographic data.

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Technical

- Practical issues in developing a webatlas
- Technological solutions (Hardware, software, OS, Infra-structure, ontologies, standards, policies)
- Human Resources
- Funding

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Management

- Delimitation and definitions of priority areas and Scales (MPAs)
- Monitoring and mapping main activities (fishing, tourism, navigation.)
- Application of classifications – sensibility, vulnerability... Etc. (defined or not in the scientific approach)
- Represent spatially research results (I.e. link to scientific articles)

PACO

ICAN

FAPESP
CNPq
CAPES



Science



Analysis
tools



Technical

INPE
Petrobrás



PACO

Access
Information

Support

Management



SMA, Ibama, NGOs

The Project

Phase 1 Developing

Definitions

▼
Identification
of needs

▼
*Data mining and
providing*

▼
Technical Methodologies
& standards

Human Resources
Institutional Support

Government

Economic
Activities

Society

Education

Software

Hardware

Ontologies/
Metadata

Conception and
Physical Base
(server)

Technical
development
Implementation

Training

Project
Management

Military
Federal
State
Municipality

Fishing
Industry
Port
Nautical
Tourism
Oil and Gas
Construction

NGOs
Community
Third Sector

Schools
Universities
Research
Institutes

IOC

ODINCARSA

IOD

ICAN

International
Standards

National
Standards

Sistema Nacional de
Informações do
Gerenciamento
Costeiro

Sistema Integrado
de Gerenciamento
recursos Hídricos

RQMA

Sistema Nacional de
Informação sobre
Meio Ambiente

BIOTA

The Project

Phase 2
Implementation

Technical Propose

Develop tools and Prototypes

Documentation

Database

Coastal
Atlas

Phase 3
Support & Maintain

Update

Adapt

Share

disclosure

Challenges for implementation

- Data Quality and availability
- Heterogeneity of Landscapes and processes
- Scaling and Limits

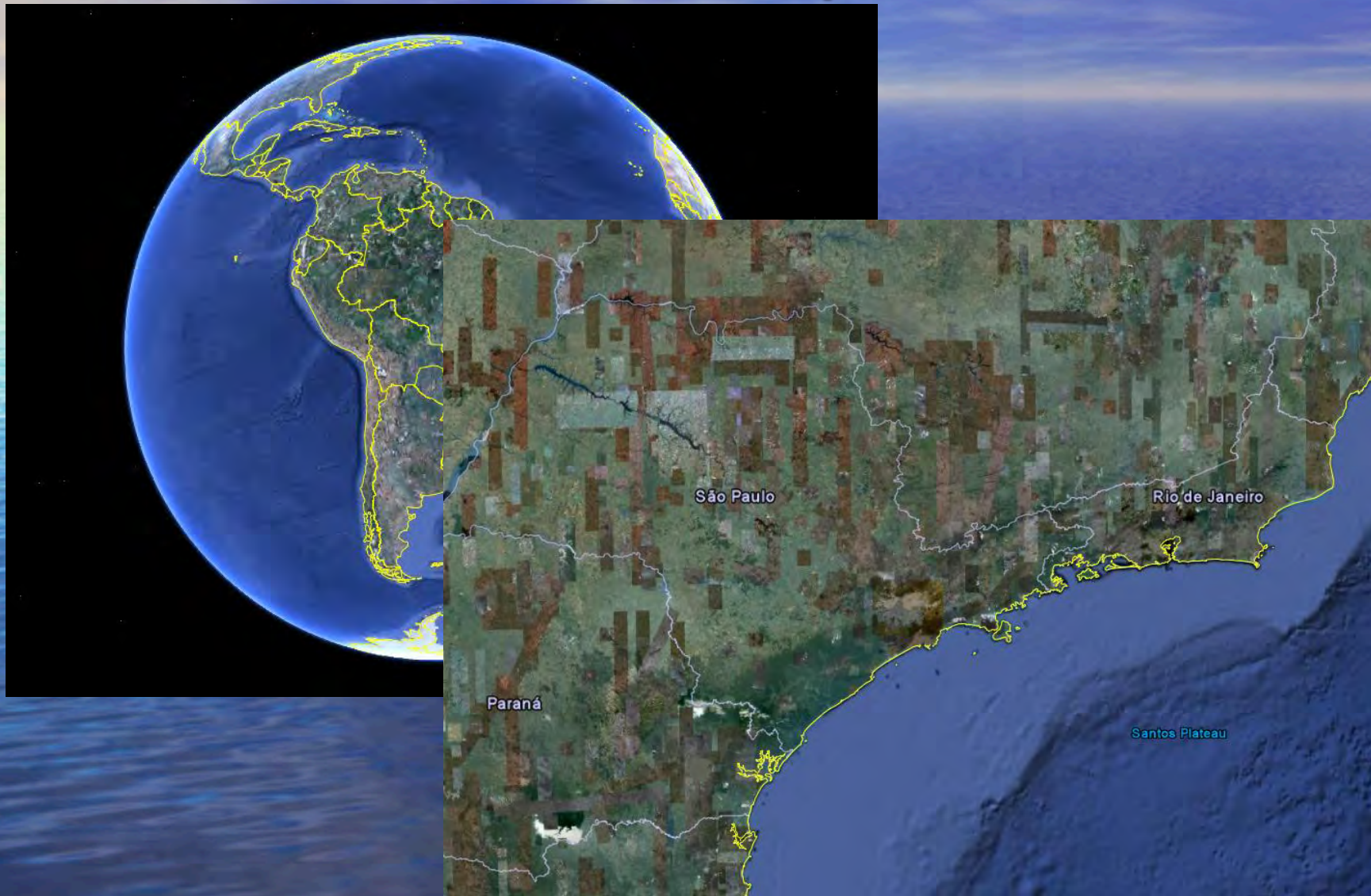
Data Quality

- Several (I mean... SEVERAL) different sources of information with diverse levels of data and metadata quality and formats.
- Question of the Data/Information and intellectual propriety - Companies and Universities – (Important issue since one of the main primary objective of the atlas is gathering scientific information for conservancy proposes). (promote seminar for Data Sharing and Dissemination) – *Zimmerman, 2008 – New Knowledge from Old Data*

Heterogeneity of Landscapes and processes

- São Paulo Coast / continental shelf
 - Different
 - landscapes
 - Levels of preservation
 - Processes (antropic / Natural)
 - Political / socioeconomic issues

São Paulo State – a quick overview



São Paulo State Coast – South





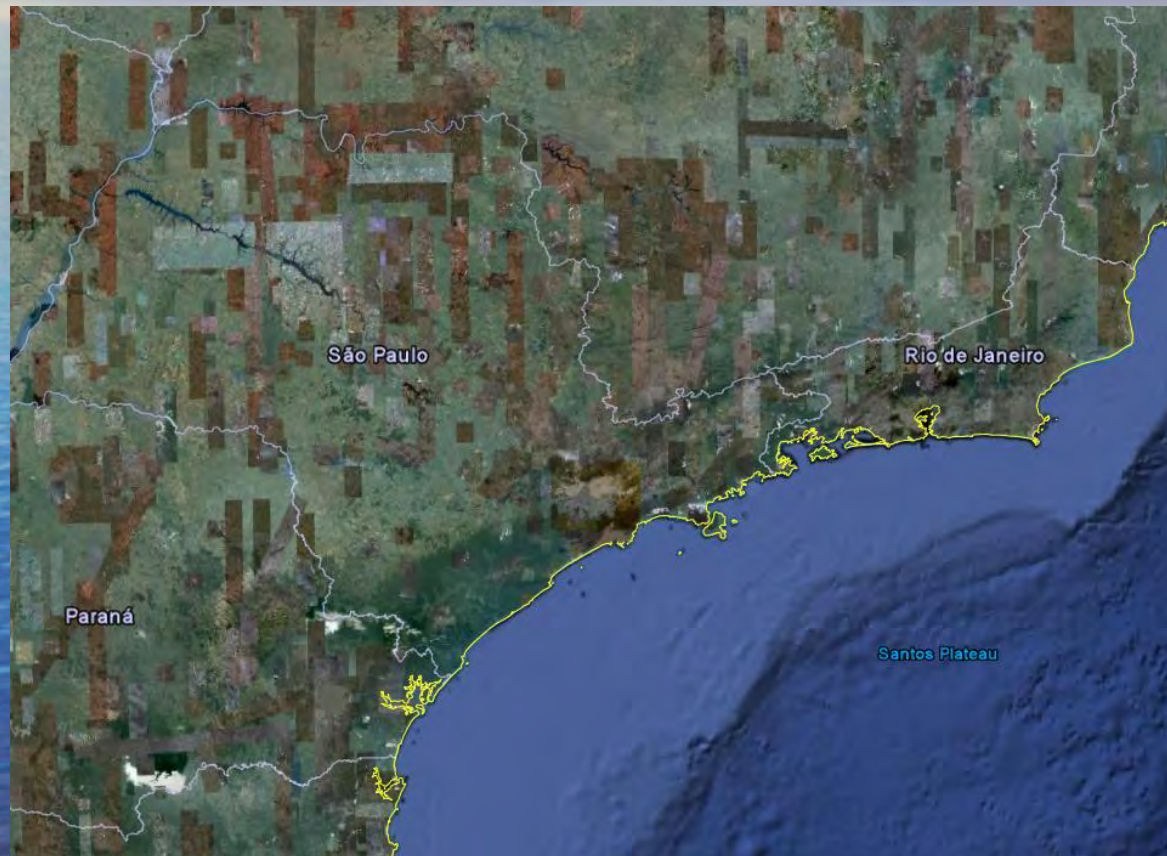








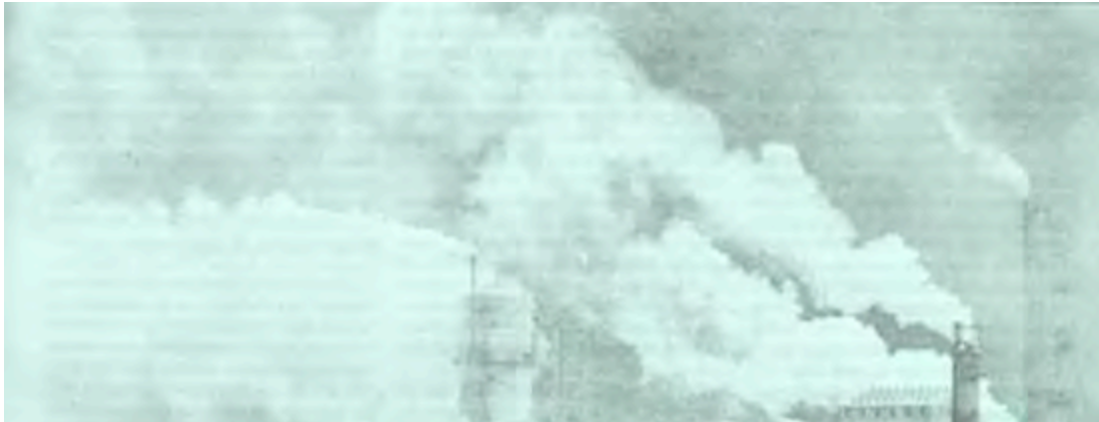
São Paulo State Coast – “Santos Region”



São Paulo State Coast – Santos Region



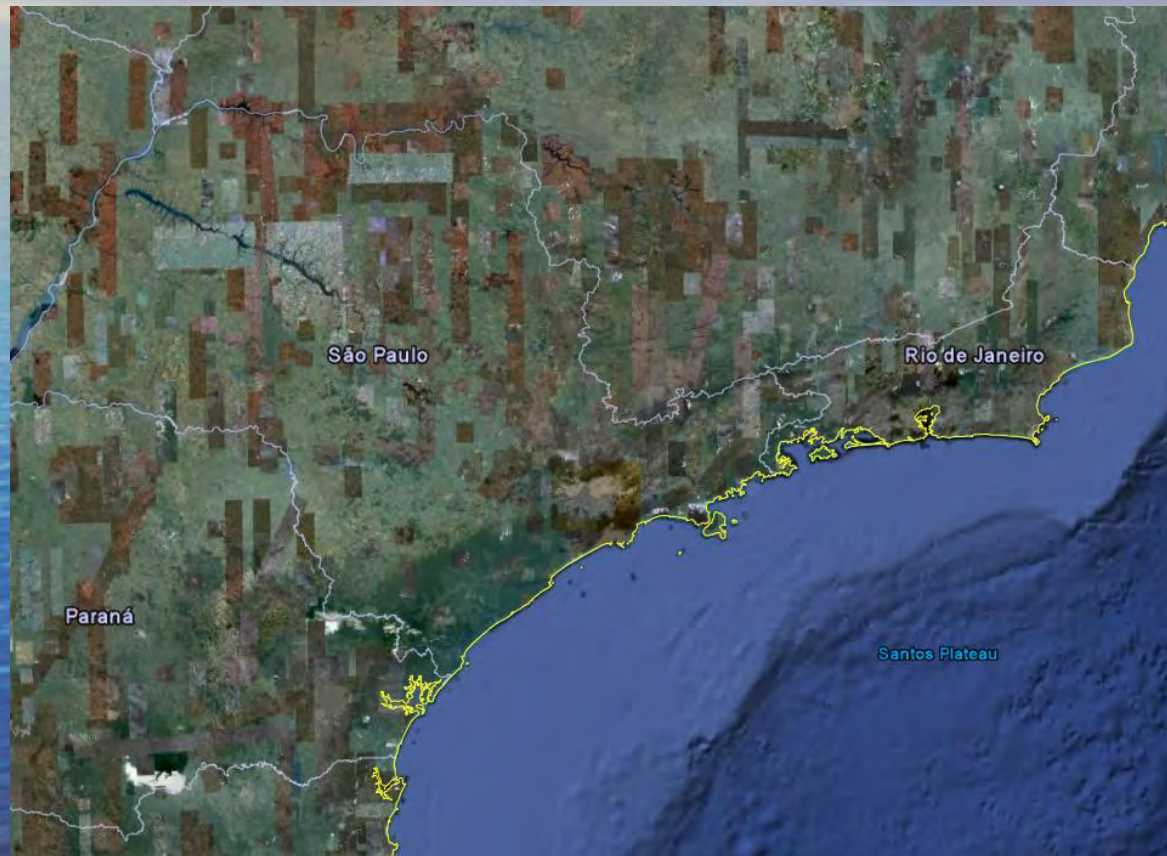




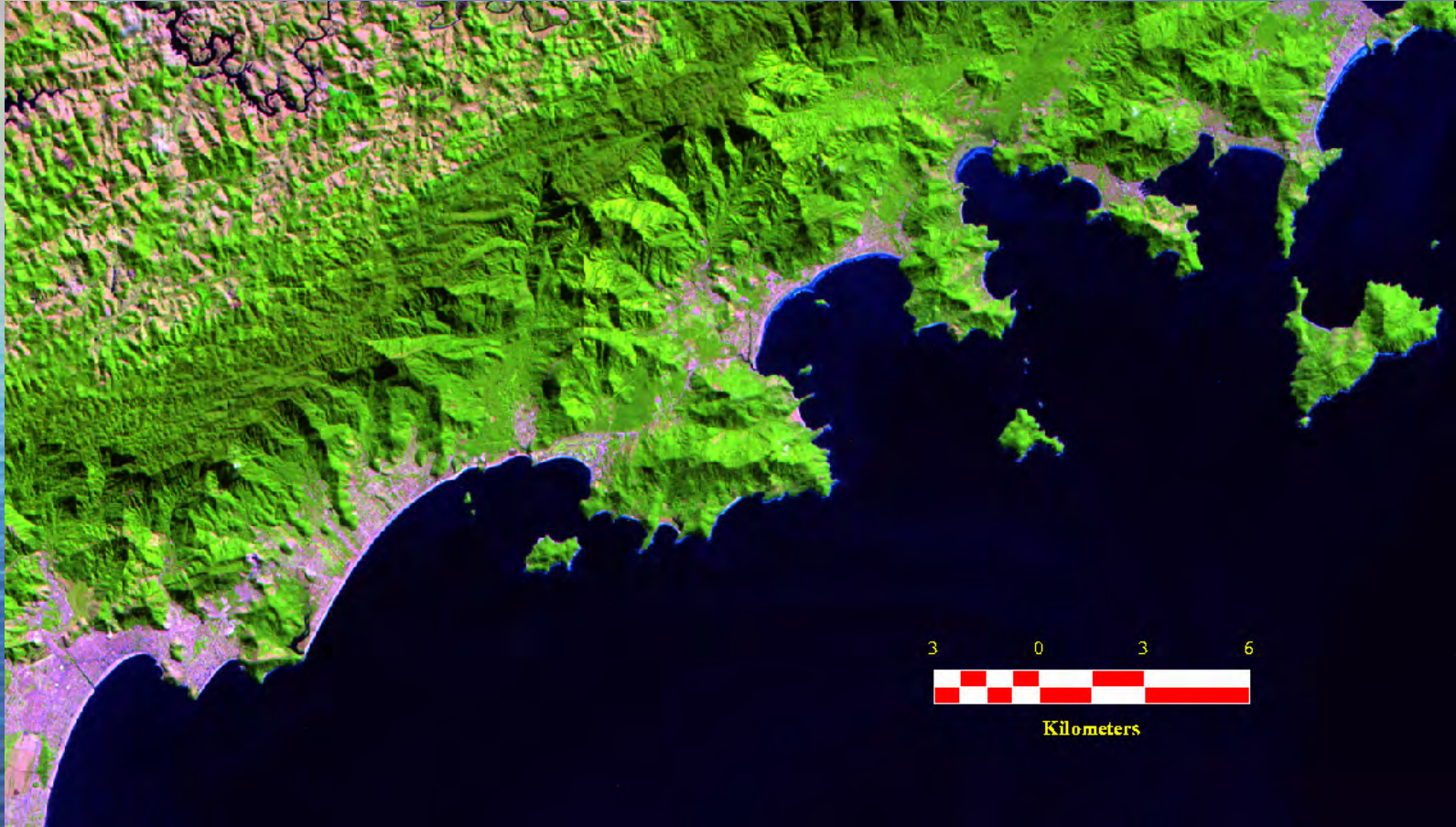




São Paulo State Coast – North



São Paulo State Coast – North



São Paulo State Coast – North





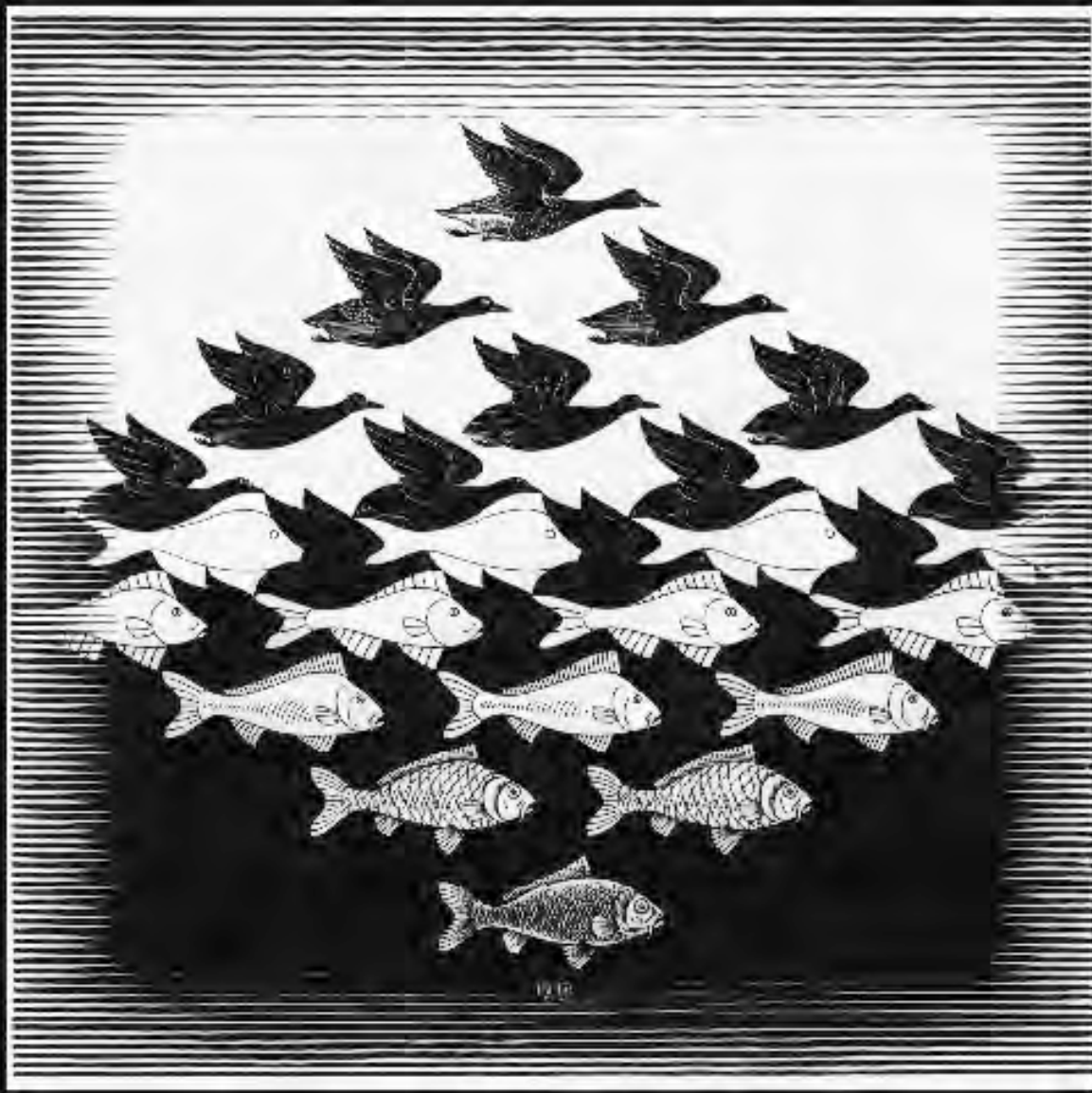




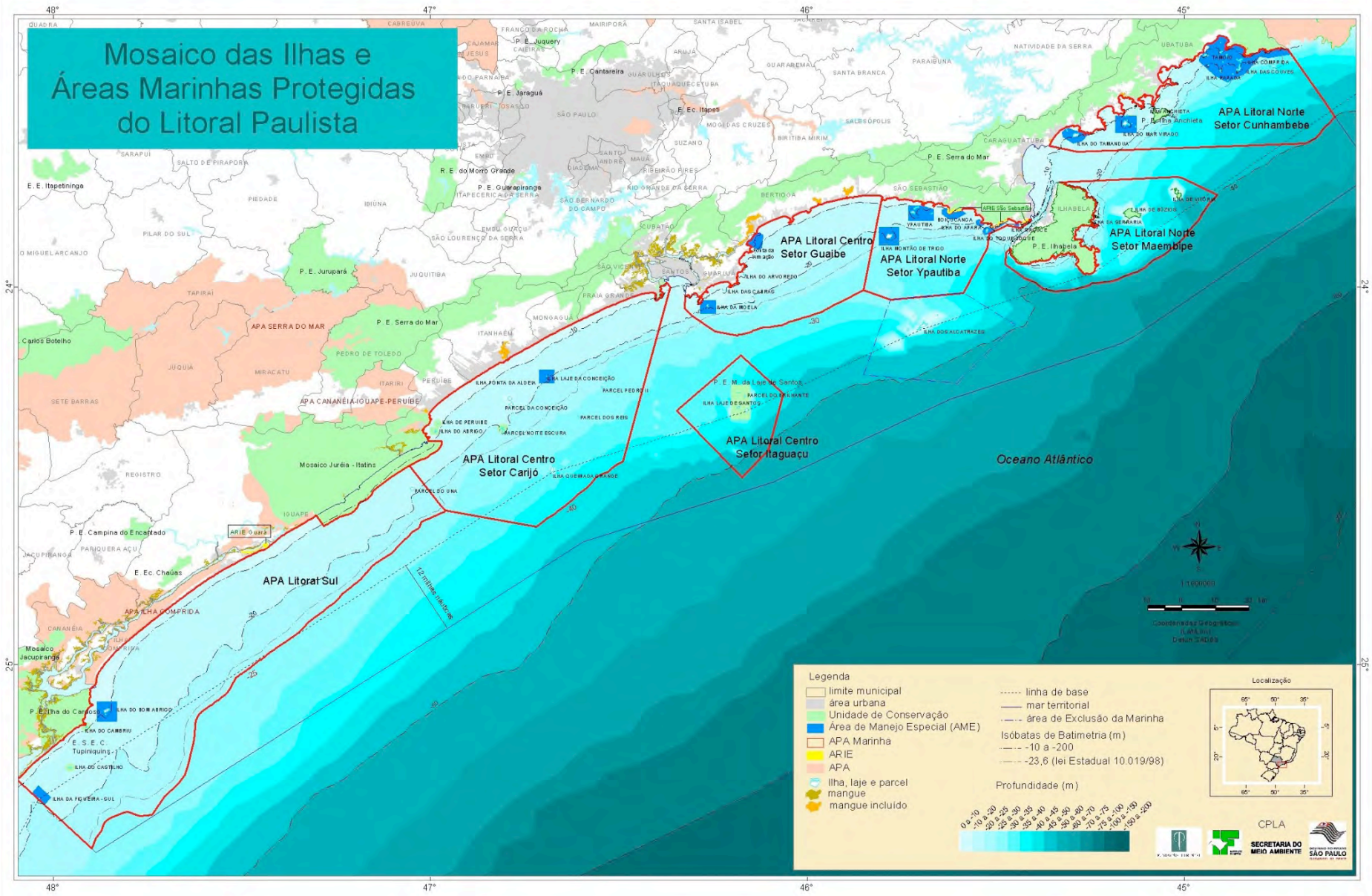
Scaling and Limits

- What is “Coastal Zone”?
- Limits and Boundaries – different regions/ aims needs different limits
- Several scales of work (i.e., erosion)

Defining coast - Boundaries



Mosaico das Ilhas e Áreas Marinhas Protegidas do Litoral Paulista



Legenda

- limite municipal
- área urbana
- Unidade de Conservação
- Área de Manejo Especial (AME)
- APA Marinha
- AR IE
- APA
- ilha, laje e parcel mangue
- mangue incluído

..... linha de base
 — mar territorial
 - - - - área de Exclusão da Marinha
 Isóbatas de Batimetria (m)
 - - - - -10 a -200
 - - - - -23,6 (lei Estadual 10.019/98)

Profundidade (m)

0 a -20
-20 a -25
-25 a -30
-30 a -35
-35 a -40
-40 a -45
-45 a -50
-50 a -60
-60 a -70
-70 a -80
-80 a -100
-100 a -200

Localização

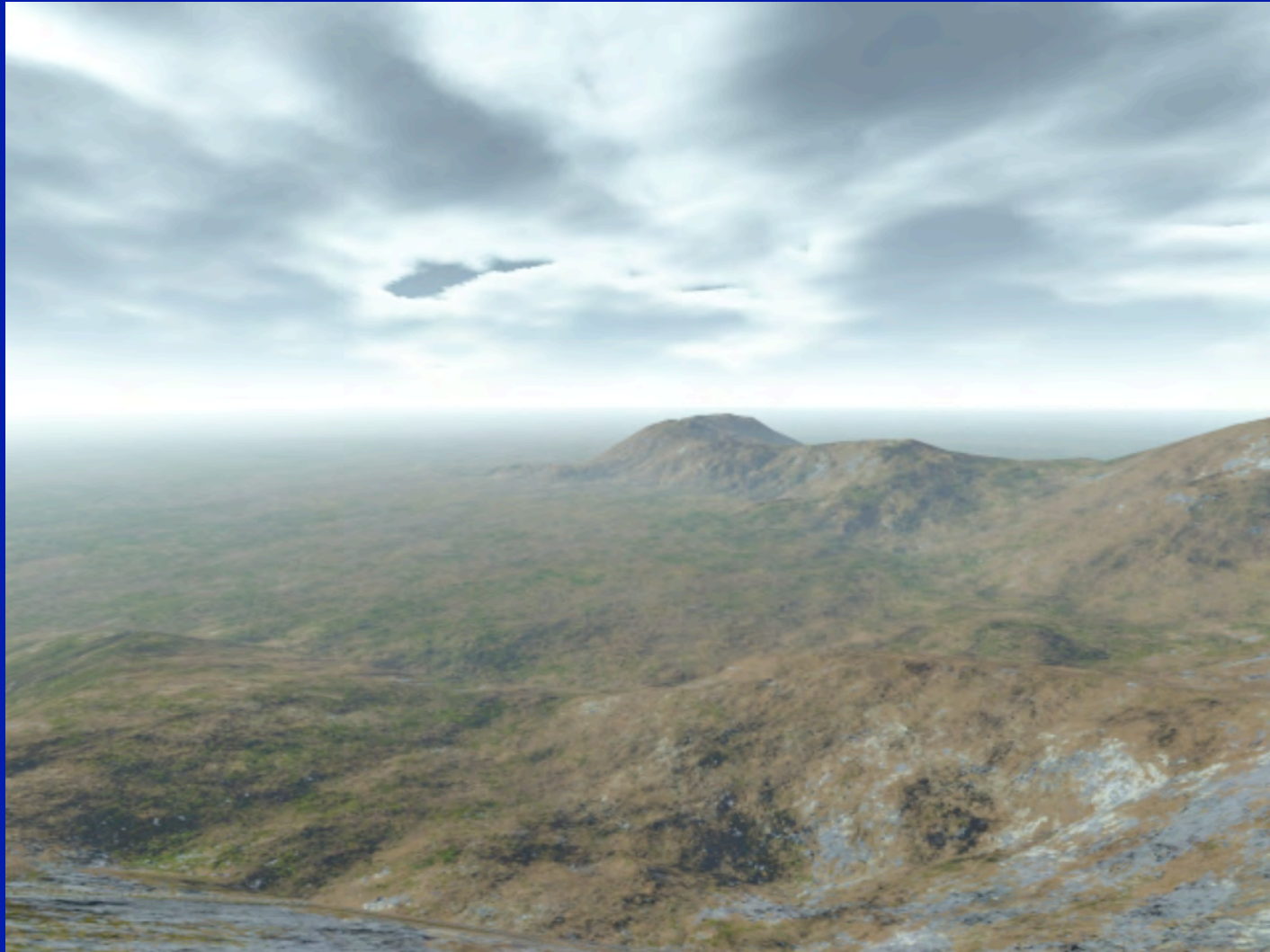
CPLA
SECRETARIA DO MEIO AMBIENTE
SÃO PAULO

Defining coast – Boundaries – Time – “Paleo Landscapes project”



Castelhanos Beach Today– Ilhabela - SP

Defining coast – Boundaries – Time – “Paleo Landscapes project”



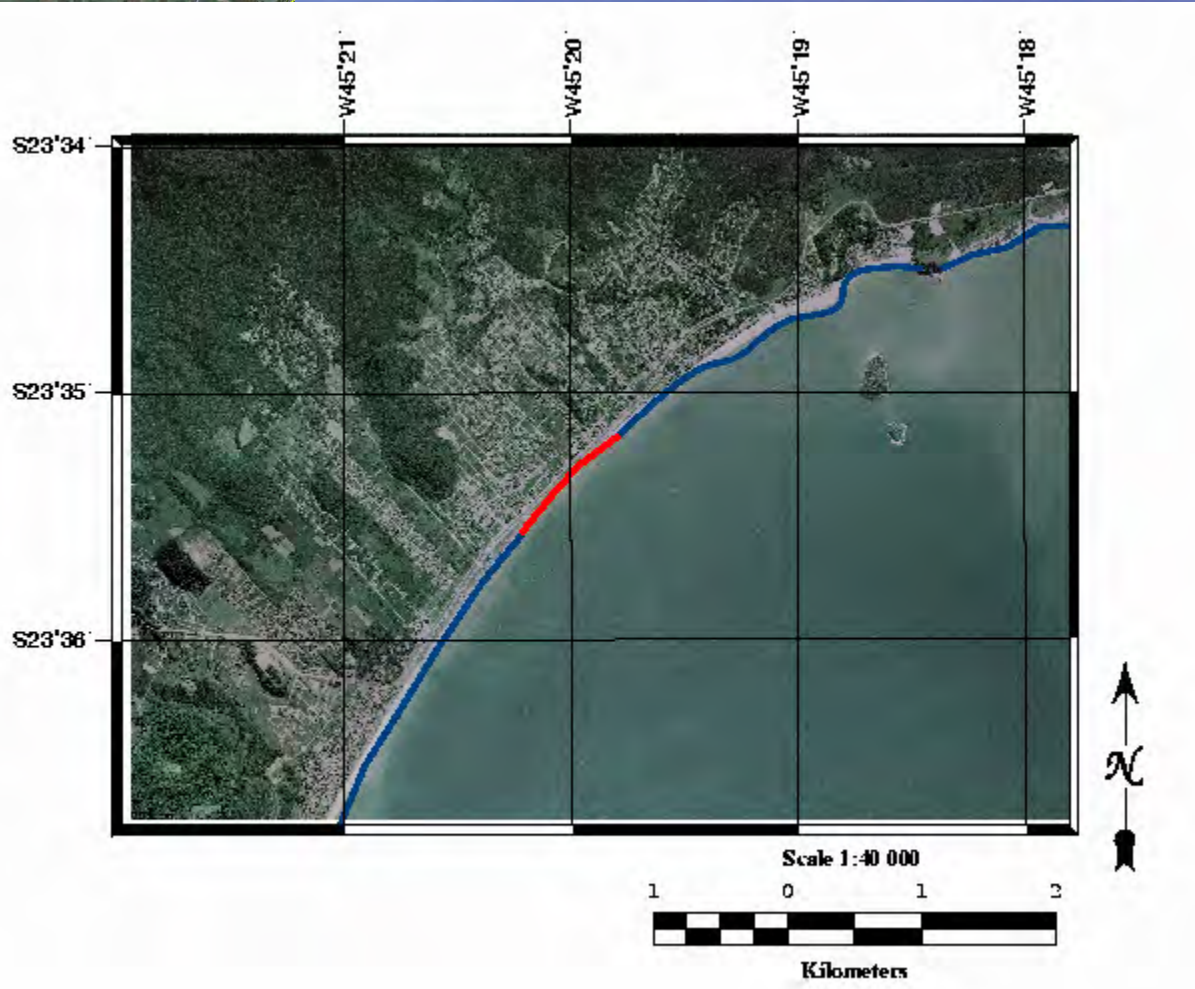
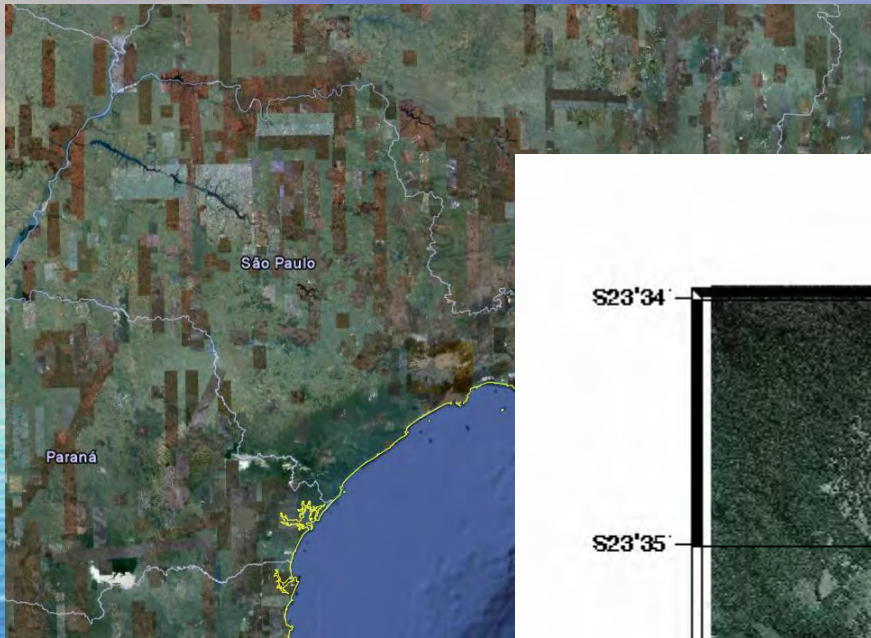
Castelhanos LMG





What is the Appropriate scale?

Example: Caraguatatuba Area



Example: Caraguatatuba Area



UFLA – Collaboration Propose

<http://www.lemaf.ufla.br/inventarioflorestal/ferramenta.html>

The image displays a complex web-based interface for forest inventory management. It features several overlapping Mozilla Firefox browser windows. The primary window shows a dashboard with navigation tabs for 'Cobertura Vegetal 2005', 'Cobertura Vegetal 2007', 'Análise ambiental', and 'Análise'. A central table provides a detailed breakdown of land cover classes for the year 2005.

Classe	Área (ha)	Porcentagem (%)
Campo	366227.73	35
Campo rupestre	14136.3	2
Campo cerrado	5609.97	1
Cerrado	272963.84	26
Cerradão	0.09	1
Eucalipto	105619.95	11
Floresta estacional decidual montana	0.09	1
Floresta estacional semidecidual montana	273147.21	26
Floresta estacional semidecidual sub montana	1037.97	1
Floresta ombrófila alta montana	263.16	1
Floresta ombrófila montana	13709.79	2
Floresta ombrófila sub montana	38.25	1
Pinus	8.28	1
Vereda	193.77	1

Below the table, there is a bar chart titled 'Mapeamento 2005' showing the distribution of these classes. To the right, a map of the region is displayed with various colored patches representing different land cover types. The interface also includes a search bar, a sidebar with a tree structure, and various tool icons like 'Alterar Referência', 'Adicione Elemento', 'Gerar Relatório', and 'Documentação'.