Worker's Environmental Education Project - PEAT

3D Maritime Seismic Survey
Santos Basin, Phase VII B

Regional Module

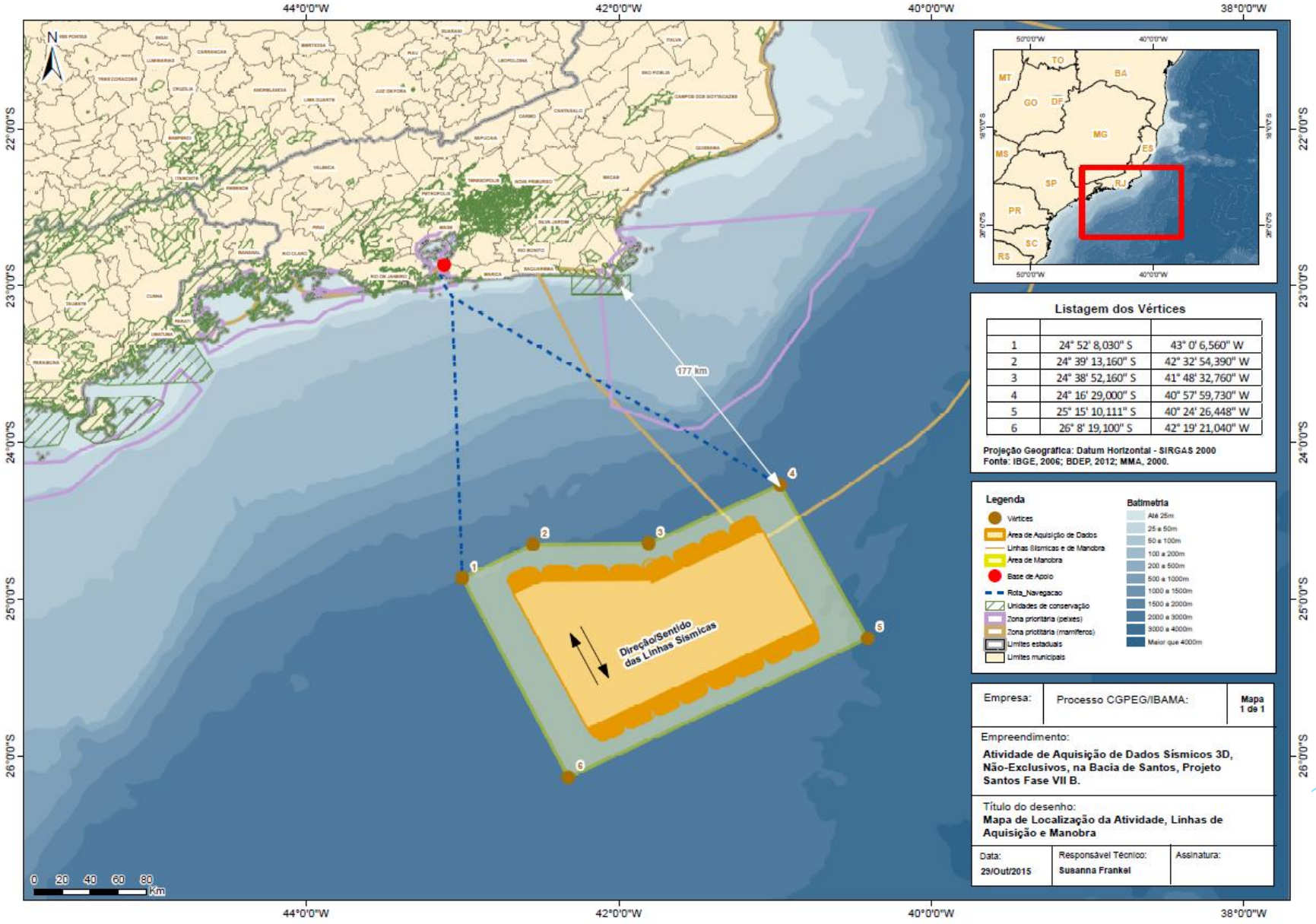
This project is a requirement of the environmental licensing process for seismic survey operations led by IBAMA.

IBAMA

CGG

EKMAN
Serviços Ambientais e Oceanográficos

Data Acquisition Area



Listagem dos Vértices

1	24° 52' 8,030" S	43° 0' 6,560" W
2	24° 39' 13,160" S	42° 32' 54,390" W
3	24° 38' 52,160" S	41° 48' 32,760" W
4	24° 16' 29,000" S	40° 57' 59,730" W
5	25° 15' 10,111" S	40° 24' 26,448" W
6	26° 8' 19,100" S	42° 19' 21,040" W

Projeção Geográfica: Datum Horizontal - SIRGAS 2000
Fonte: IBGE, 2006; BDEP, 2012; MMA, 2000.

Legenda

- Vértices
- Área de Aquisição de Dados
- Linhas Sísmicas e de Manobra
- Área de Manobra
- Base de Apoio
- Rota_Navegacao
- Unidades de conservação
- Zona prioritaria (peixes)
- Zona prioritária (mamíferos)
- Limites estaduais
- Limites municipais

Batimetria

- Até 25m
- 25 a 50m
- 50 a 100m
- 100 a 200m
- 200 a 500m
- 500 a 1000m
- 1000 a 1500m
- 1500 a 2000m
- 2000 a 3000m
- 3000 a 4000m
- Maior que 4000m

Empresa:	Processo CGPEG/IBAMA:	Mapa 1 de 1

Empreendimento:
Atividade de Aquisição de Dados Sísmicos 3D, Não-Exclusivos, na Bacia de Santos, Projeto Santos Fase VII B.

Título do desenho:
Mapa de Localização da Atividade, Linhas de Aquisição e Manobra

Data:	Responsável Técnico:	Assinatura:
29/Out/2015	Susanna Frankel	

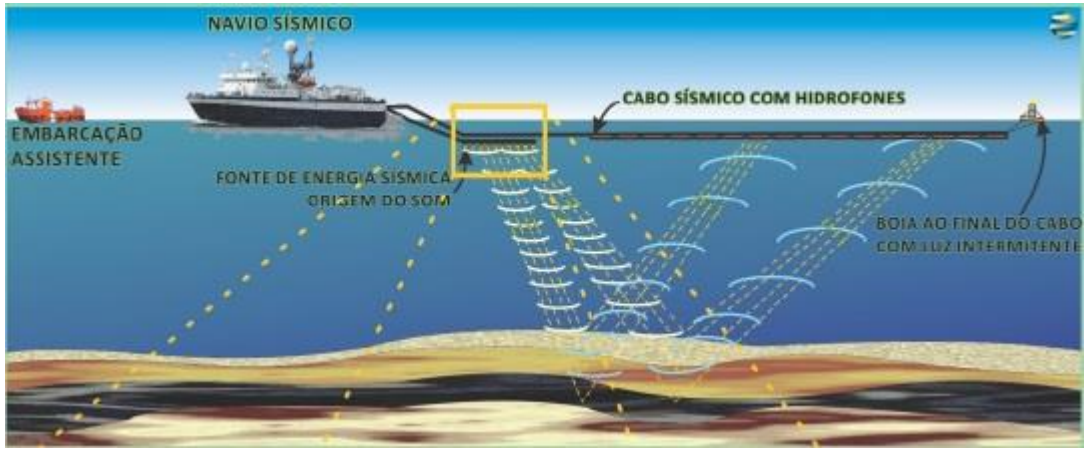
Seismic Vessel– Oceanic Vega

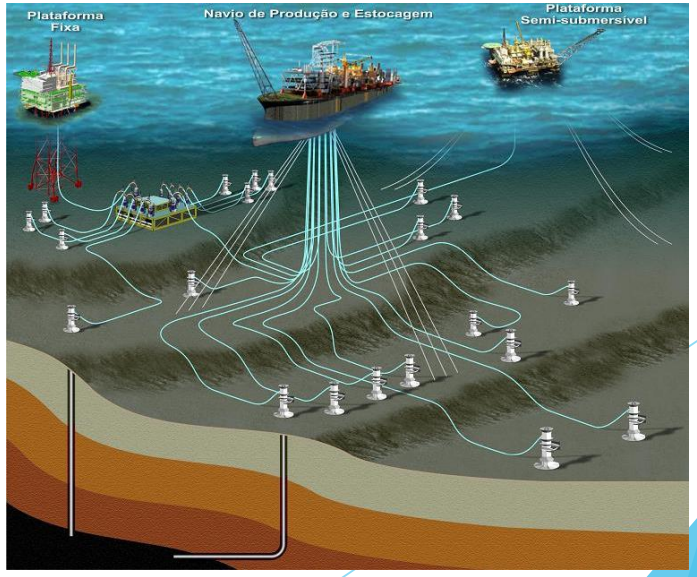
Support Vessel– Bourbon Cormorant

Support Vessel– Ocean Dream

What is the purpose of your work on the ship?

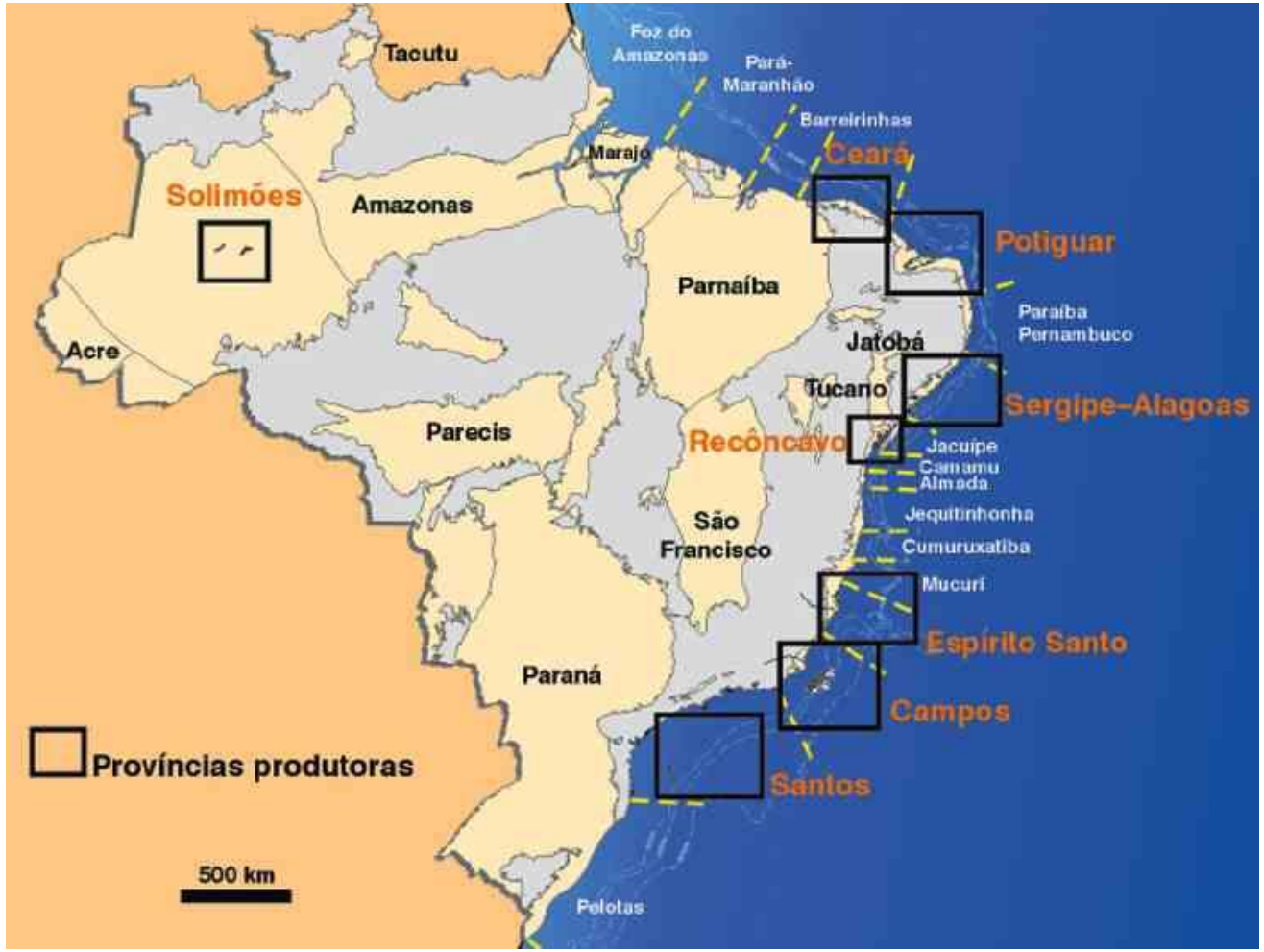
EXPLORATION ACTIVITIES				PRODUCTION ACTIVITIES			
Seismic aquisition data; Processing	Data analysis	Survey	Reservoir delimitation	Studies	Planning and developing	Production	Abandon





Why we produce oil?

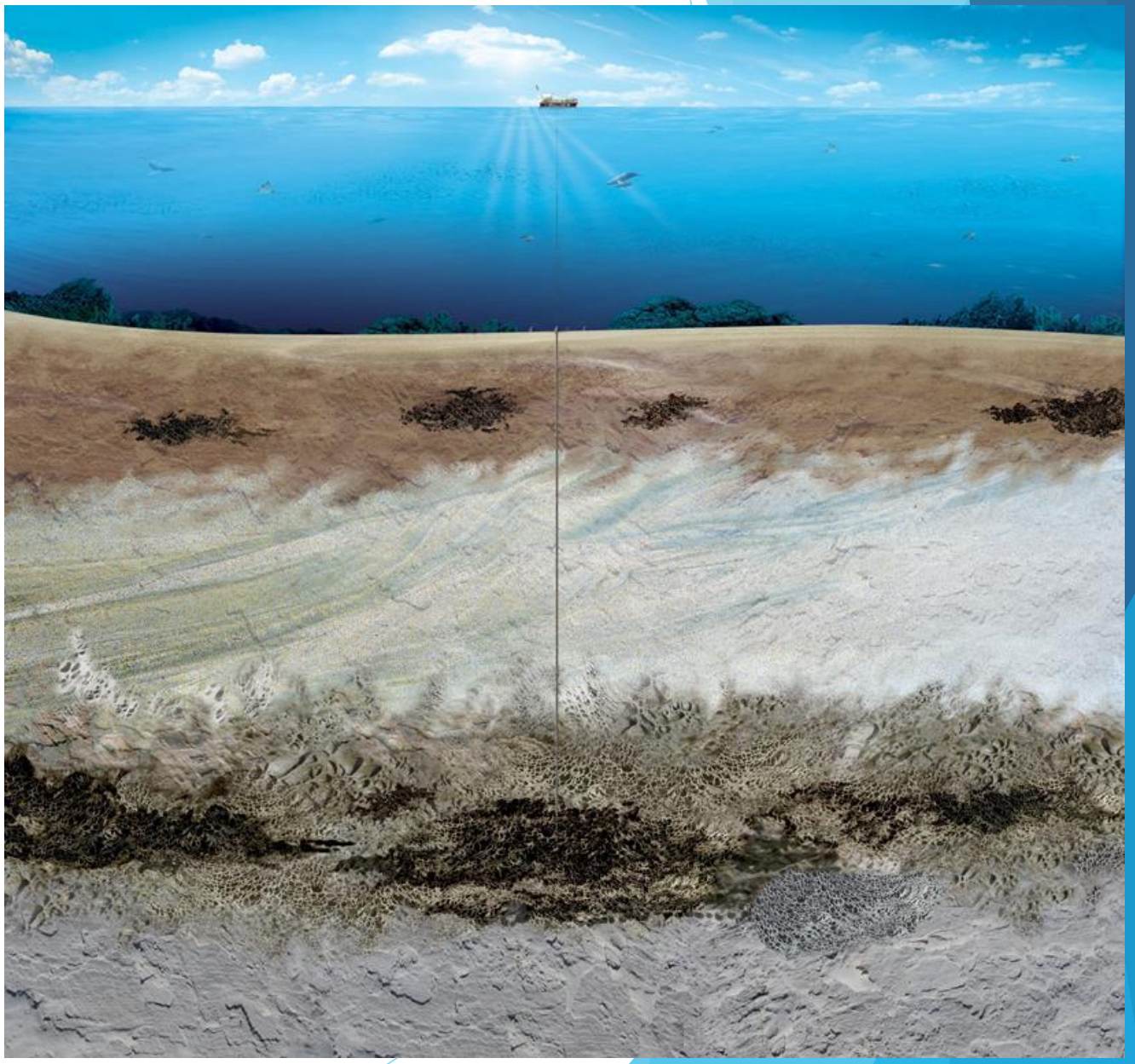
Sedimentary basins. Oil/gas Producing Areas



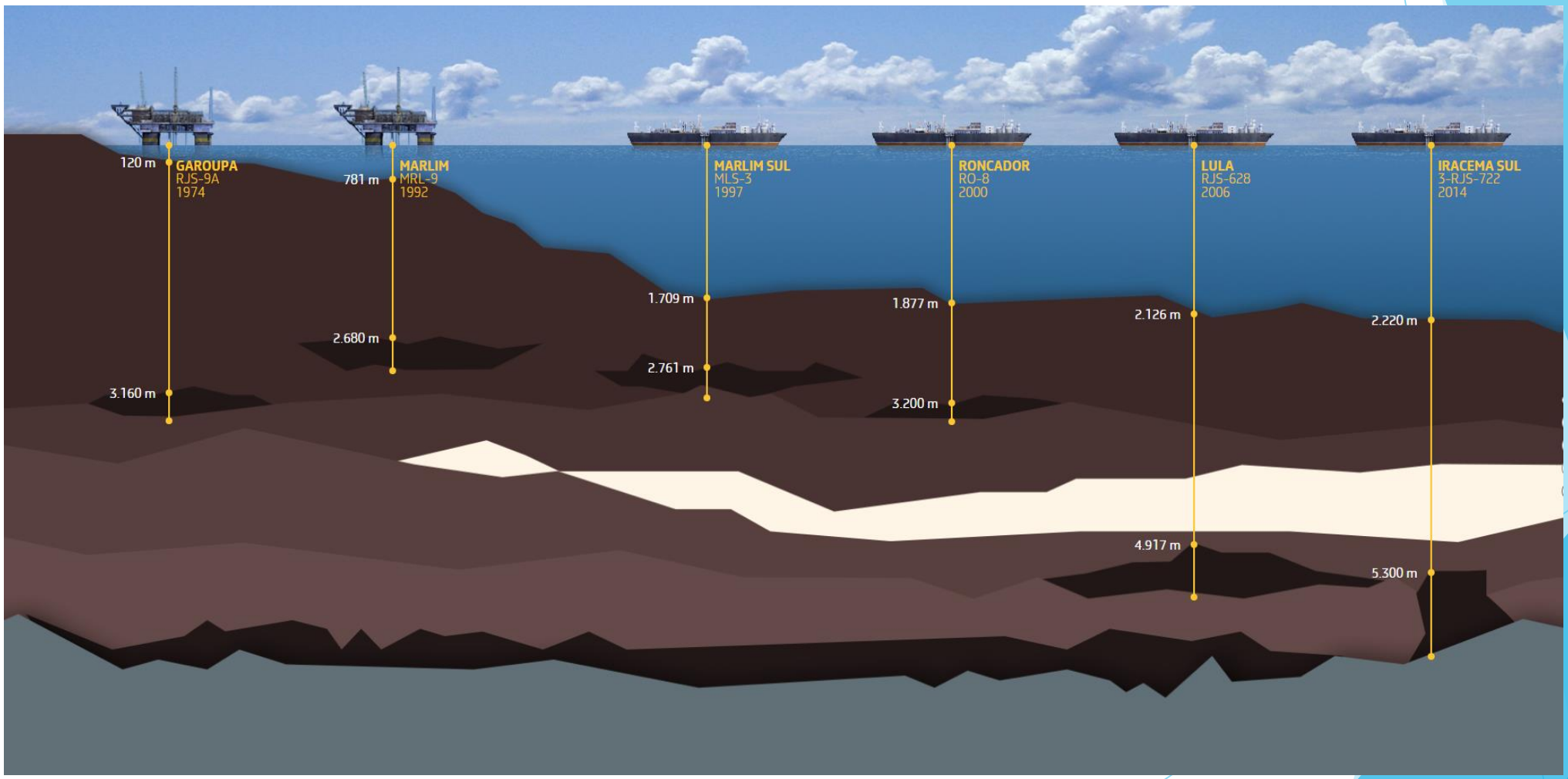
Eight basins supply the brazilian domestic production of oil: Solimões, Ceará, Potiguar, Sergipe-Alagoas, Recôncavo, Espírito Santo, Campos e Santos.

Pre-salt

- The pre-salt is an oil reserve area found under a deep layer of salt rock.
- The pre-salt reserves found in Brazilian coast are the deepest in the world.
- They represent the largest oil field ever found in a pre-salt layer.
- The word "pre" in pre-salt refers to geologic time and not to depth. It means that this layer was formed before the salt layer.

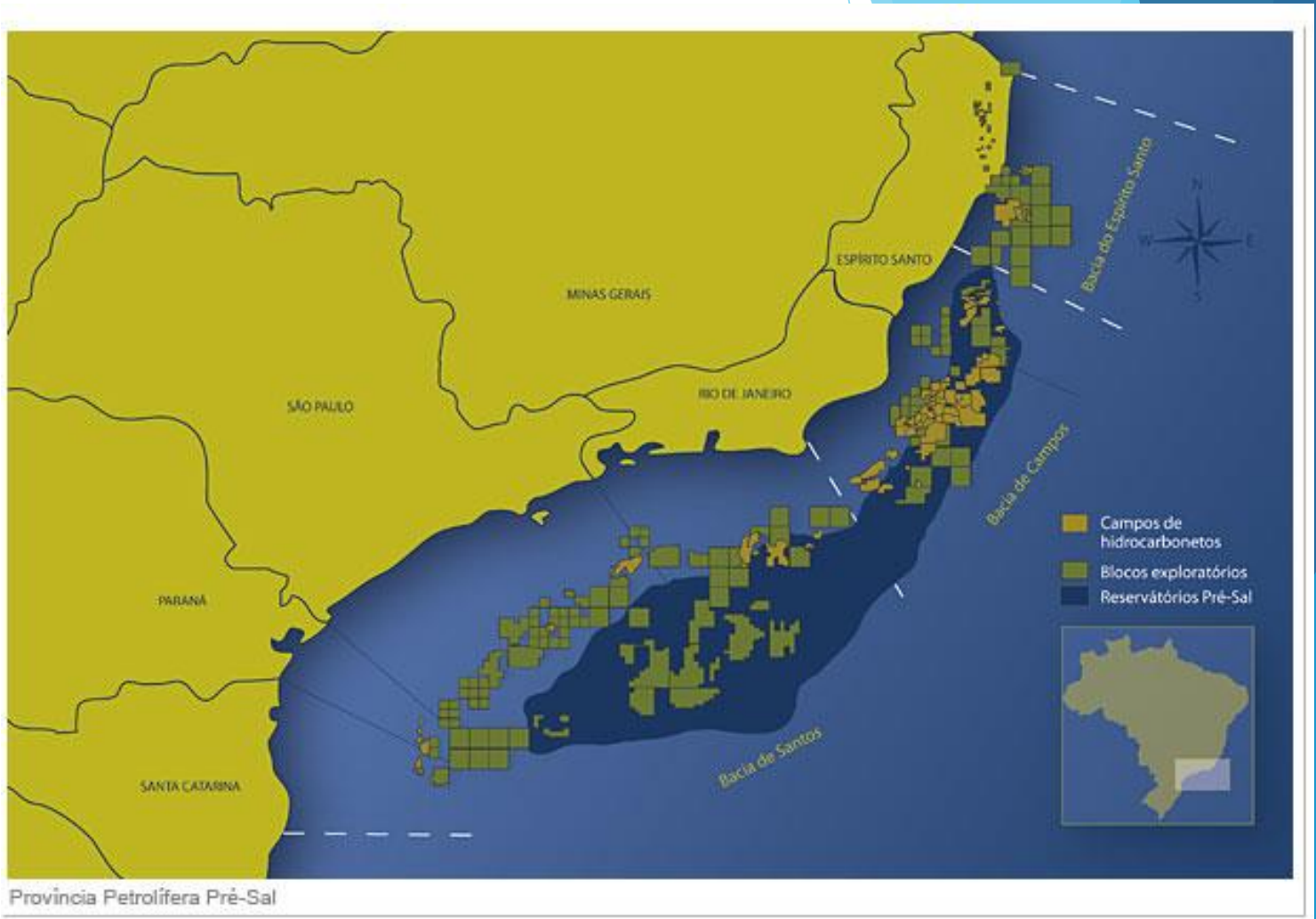


Pre-salt


120 m
GAROUPA
RJS-9A
1974
781 m
MARLIM
MRL-9
1992
MARLIM SUL
MLS-3
1997
RONCADOR
RO-8
2000
LULA
RJS-628
2006
IRACEMA SUL
3-RJS-722
2014
1.709 m
2.680 m
2.761 m
3.160 m
1.877 m
3.200 m
2.126 m
4.917 m
2.220 m
5.300 m

Pre-salt

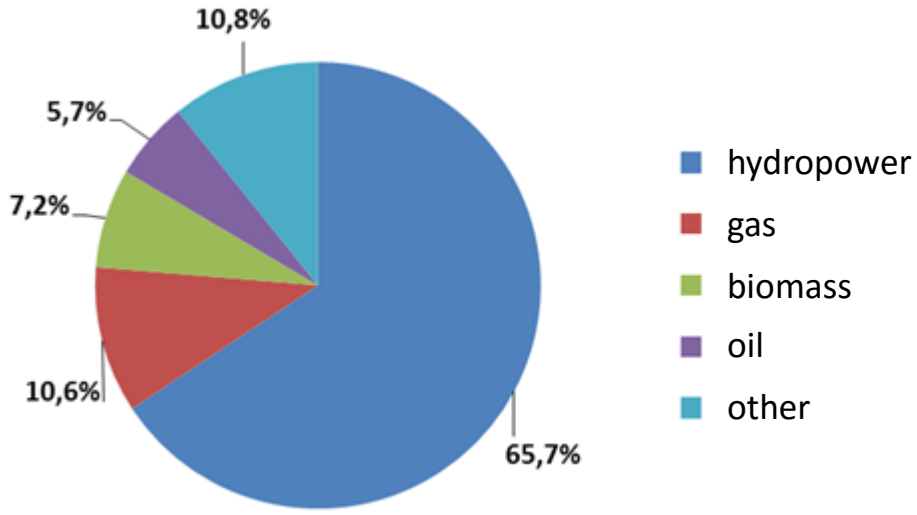
- The pre-salt layer has roughly 800 km long by 200 km wide.
- The daily production of oil in pre-salt layer increased from about 41,000 barrels/day in 2010 to 1 million barrels/day in mid 2016.



Província Petrolífera Pré-Sal

Source: http://portalcabo.wordpress.com/2009/09/13/o-pre-sal-e-seus-conceitos-e-seus-tributos/

Brazilian energy model



- Renewable x non renewable?
- Clean energy?

What are the problems in the oil production?

Why this activity is so controlled?

Environmental and social impacts

- Concentration of richness and power
- Coastal cities growth without infrastructure - violence and poverty
- Generation of expectations
- Conflicts with others activities, like fishery
- Risks for navigation
- Oil spill hazard
- Danger to the lives of workers
- Pollution - residues, emissions and efluents
- Possible interference in the life of marine mammals – whales and dolphins

Brazilian environmental law

- Control of potencially polluting activities

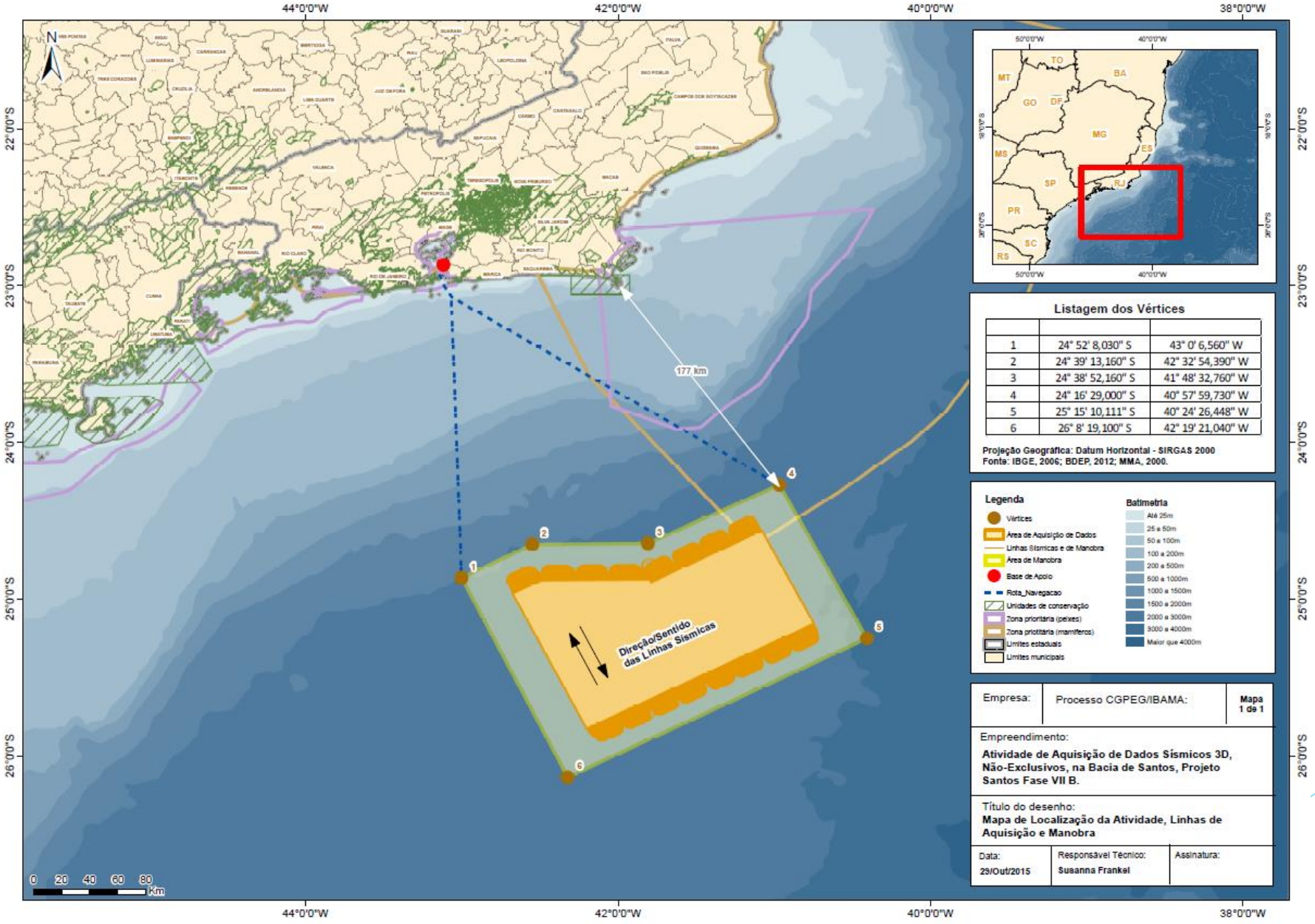
  - National Environment Policy/1981 - Indicates a lot of environment protection measures. Creates SISNAMA and CONAMA.
  - CONAMA n^0 01/1986 – It provides the basic criteria and guidelines for elaboration of enrivonmental impact studies (EIA-RIMA).
  - Federal Constitution (Art. 225)/1988 - Everyone has the right to an ecologically balanced. It imposes to the government and society the duty to defend it and preserve it for present and future generations.
  - Environmental Crimes Law /1998 - It defines in Article 60, as an environmental crime punishable by imprisonment, fine or both, the practice of potentially polluting activities without proper environmental licensing.
  - CONAMA n^0 265/2000 – In response to oil spill occurred at Guanabara Bay in 2000. It determines the need for environmental audit.

Case Studies

Conflicts – the ocean as a common area to serveral activities:

- seismic work routine changing the local artisanal fishery activity;
- Threat to local biodiversity.

Case Studies - A day of work on the seismic acquisition data



Case Studies

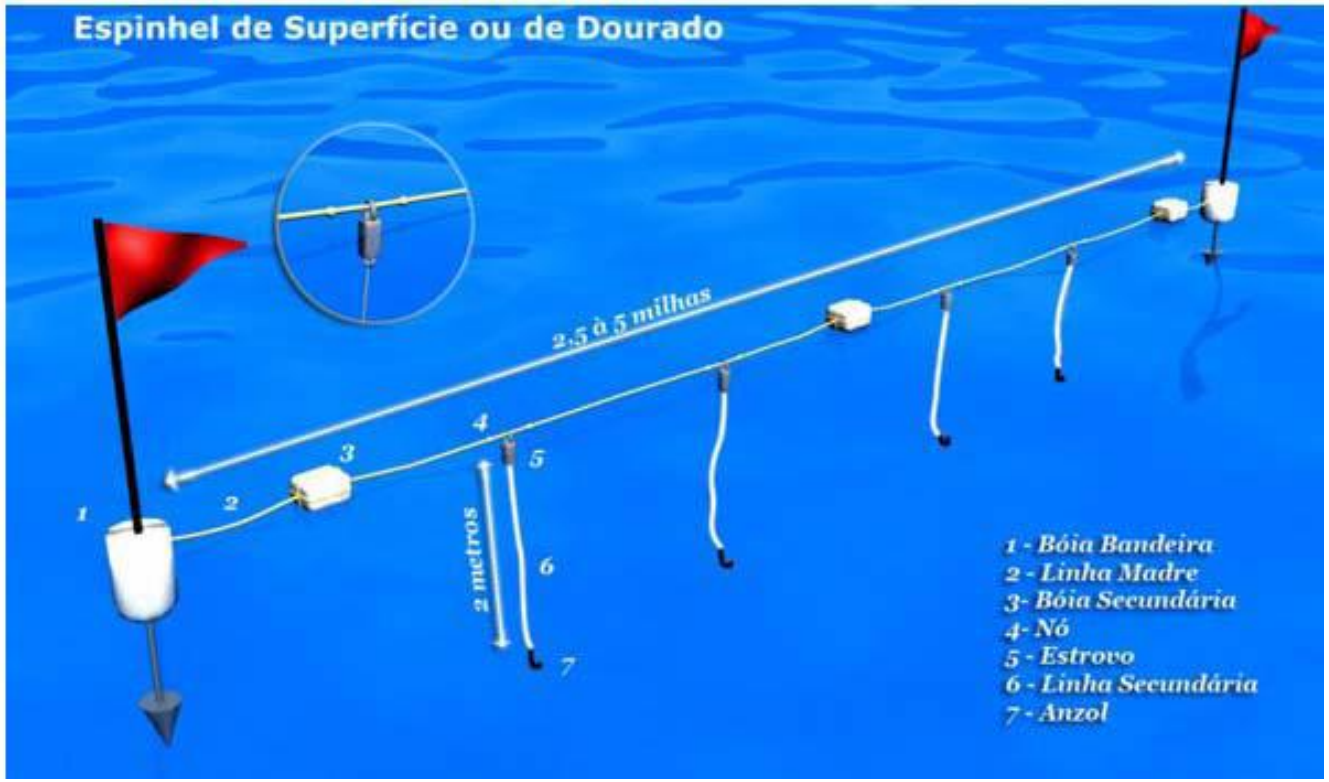
A day of work on the seismic vessel

interruption of the seismic activity - conflict of use with a fishery boat

Estudo Ambiental de Sísmica, 2008 – Ecology Brasil.

Case Studies

a day of work on the seismic vessel



Fonte: Estudo Ambiental de Sísmica, 2008 – Ecology Brasil.

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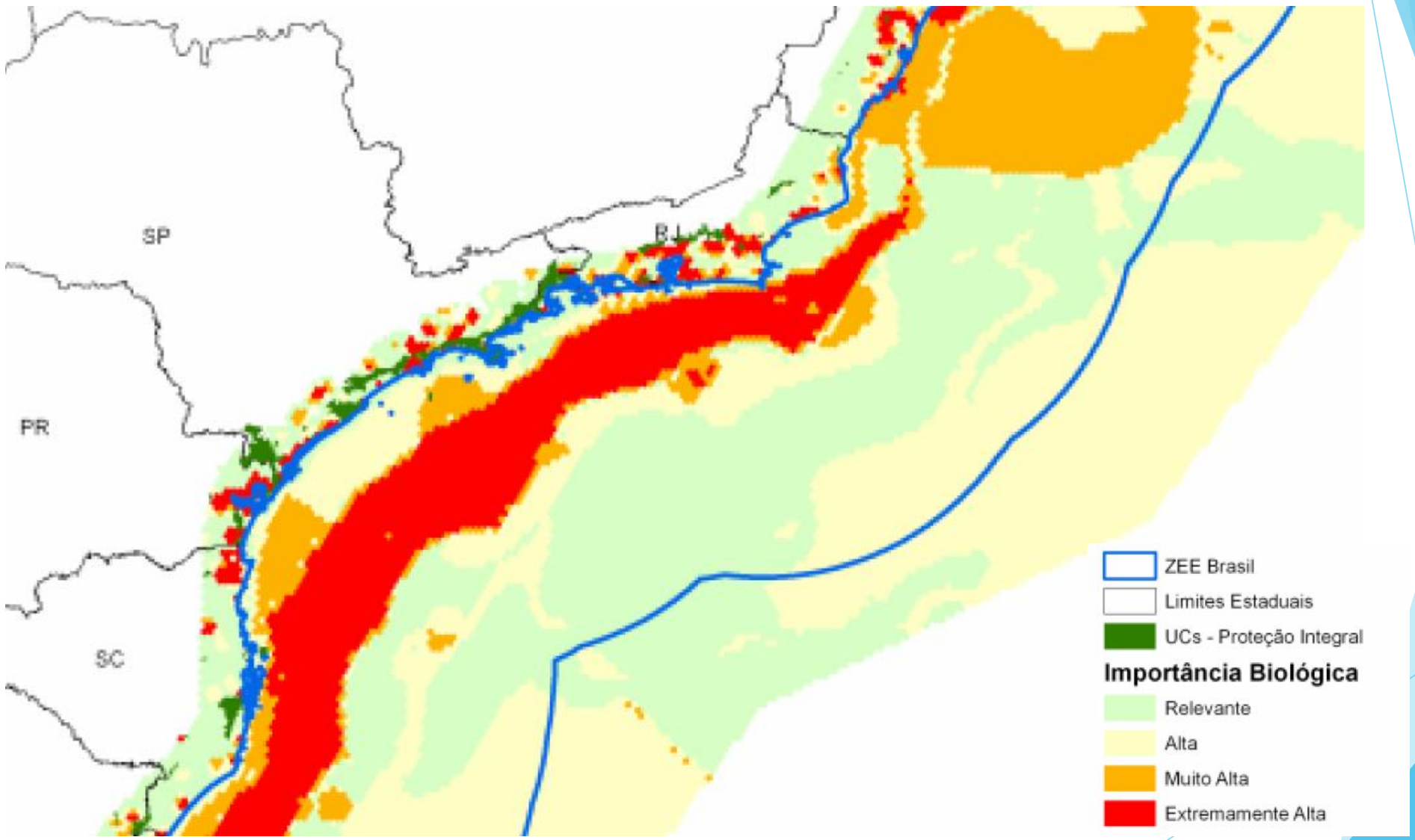

Group work

Conflicts

- The ocean is a public good of common use
- Environmental public management prioritizes a specific use
- Who wins and who loses with the activity?