Science for Natural Resources

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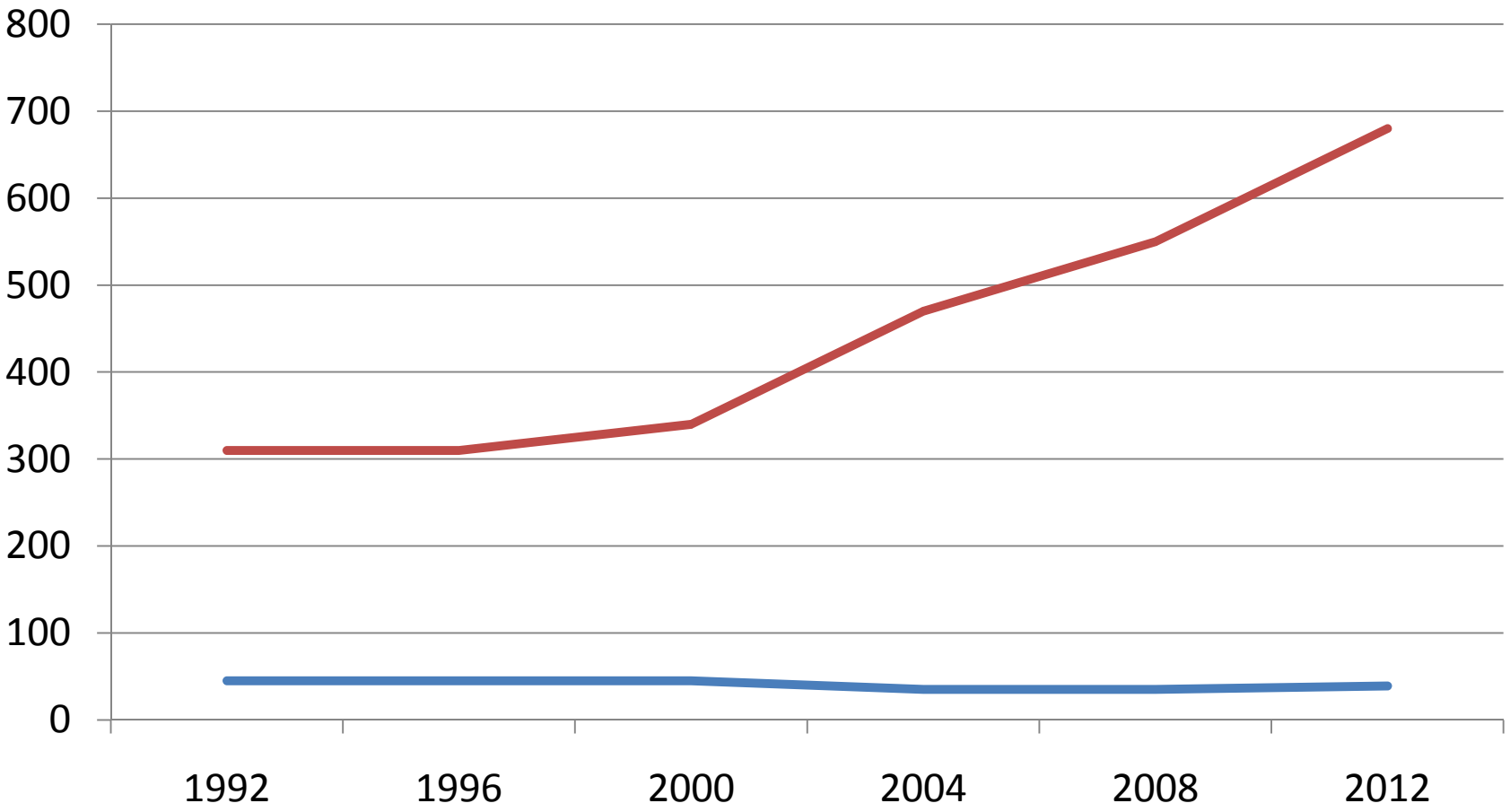
Lower grades, deeper, harder to find

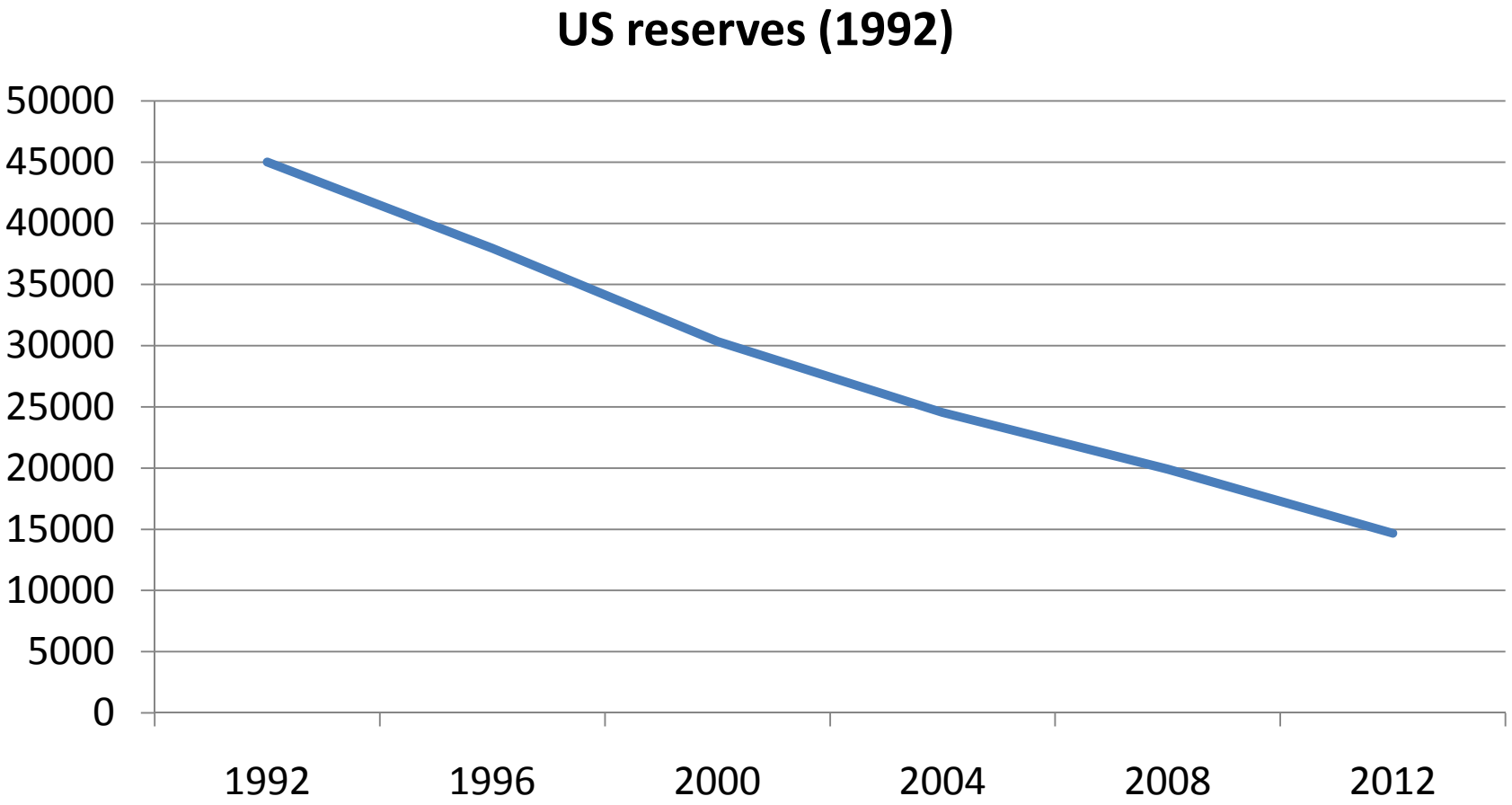
www.clearonmoney.com

Copper Reserves (million tons)



http://minerals.usgs.gov/minerals/pubs/commodity/copper/

US Copper reserves from 1992 (1992 reserves – mine production)



http://minerals.usgs.gov/minerals/pubs/commodity/copper/

Resources are not they became

Clarence Ayres and Erich Zimmermann
Thomas De Gregory

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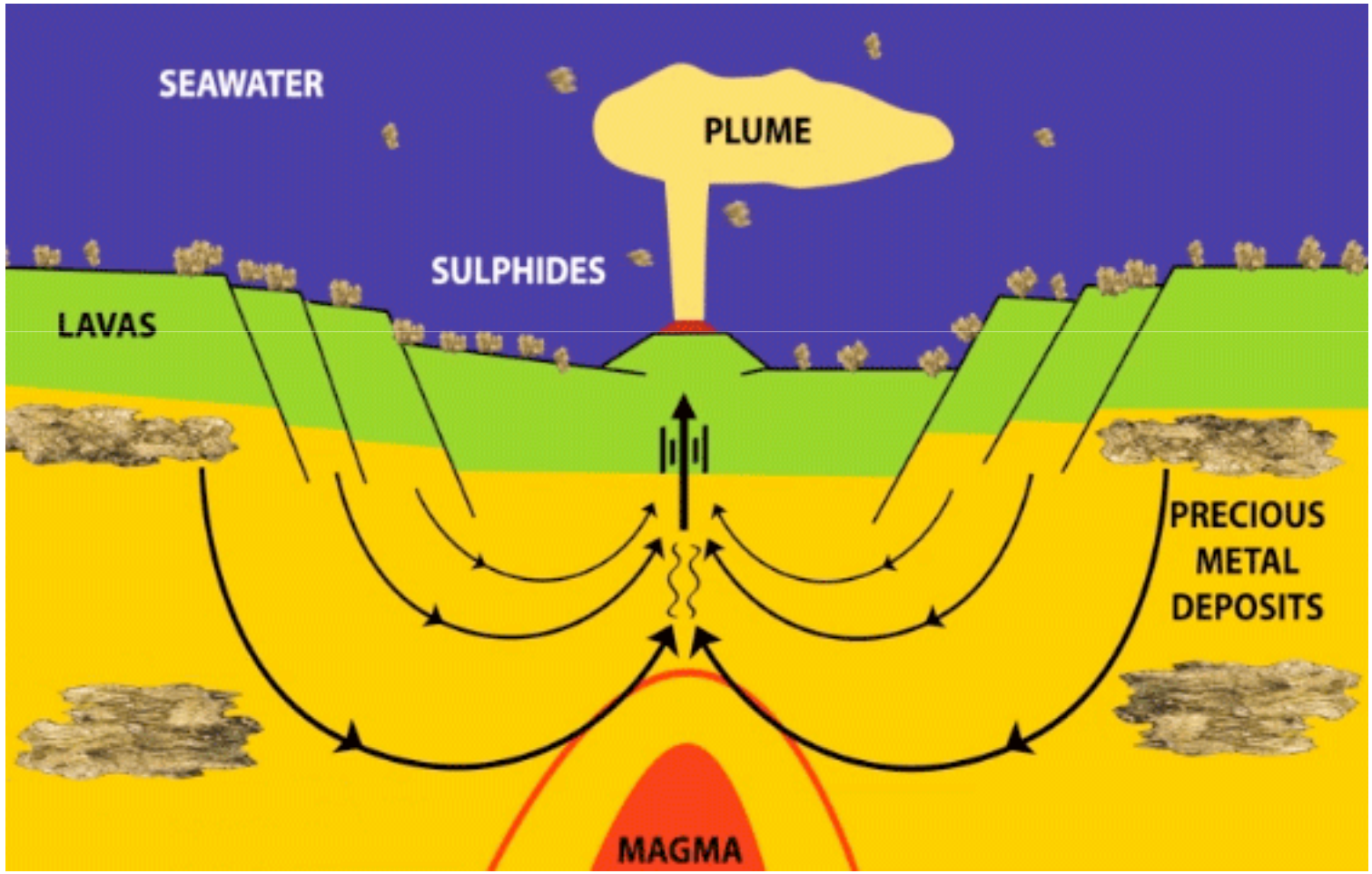
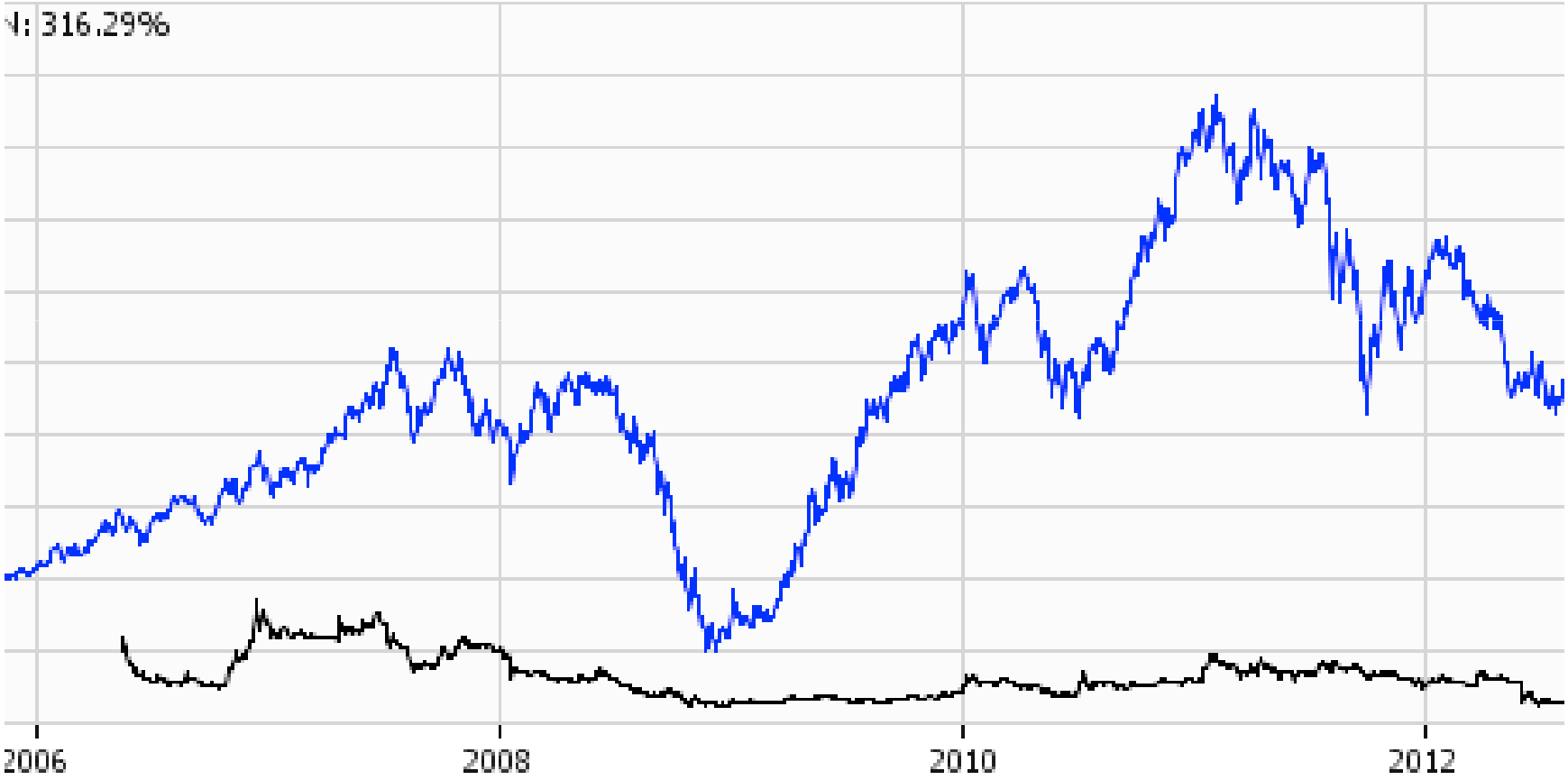
Ocean mining



Toronto Stock Exchange



New developments and recent additions

Calendar of meetings

8 June - World Oceans Day

Secretary-General and Oceans

Video on UNCLOS in action

THE CONVENTION AND THE RELATED AGREEMENTS

- United Nations Convention on the Law of the Sea
- Agreement relating to the implementation of Part XI of the Convention
- 1995 United Nations Fish Stocks Agreement
  - Review Conference
  - Informal Consultations
  - Assistance fund
- Meeting of States Parties to the Convention
- Status of the Convention and of the Agreements
- Deposit of charts/lists of coordinates under the Convention
- Suspension of innocent passage

OCEANS AND THE LAW OF THE SEA IN THE GENERAL ASSEMBLY

- United Nations Open-ended Informal Consultative Process
- Reports of the Secretary-General
- General Assembly resolutions
- Other General Assembly documents
- Official Records of the General Assembly
- A regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects
- Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction

THEMES

- Marine biological diversity beyond areas of national jurisdiction

BODIES ESTABLISHED BY THE CONVENTION

-

- Commission on the Limits of the Continental Shelf
- International Seabed Authority
- International Tribunal for the Law of the Sea

- ITLOS Trust Fund

SETTLEMENT OF DISPUTES

- Choice of procedure under article 287 of the Convention
- International Court of Justice
- International Tribunal for the Law of the Sea
- Lists of Arbitrators and Conciliators
- List of experts

THE DIVISION, ITS FUNCTIONS AND ACTIVITIES

- H.S. Amerasinghe Fellowship
- TRAIN-SEA-COAST
- Technical Cooperation Trust Fund - United Nations and The Nippon Foundation of Japan
- Technical Assistance
- United Nations publications prepared by the Division
- Study - Available assistance to and measures that may be taken by developing States

Natural resources (1) - physics

resources.woodlands-junior.kent.sch.uk

Natural resources (2) - chemistry

collectionsonline.nmsi.ac.uk
www.uh.edu

Natural resources (2/3) - biochem

Metaphosphate Glass-Fertilizer

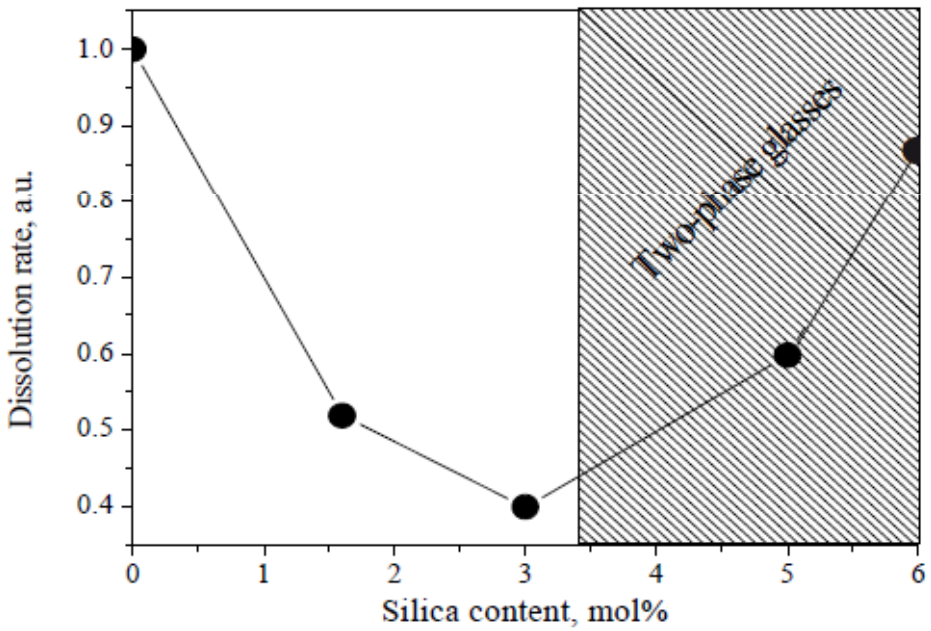


Figure 8:

Relative variation of glass dissolution rate versus silica content (set C)

(Ivanenko et al 2007)

Natural resources (3) - biology

http://www.bactechgreen.com/s/SnowLake.asp#

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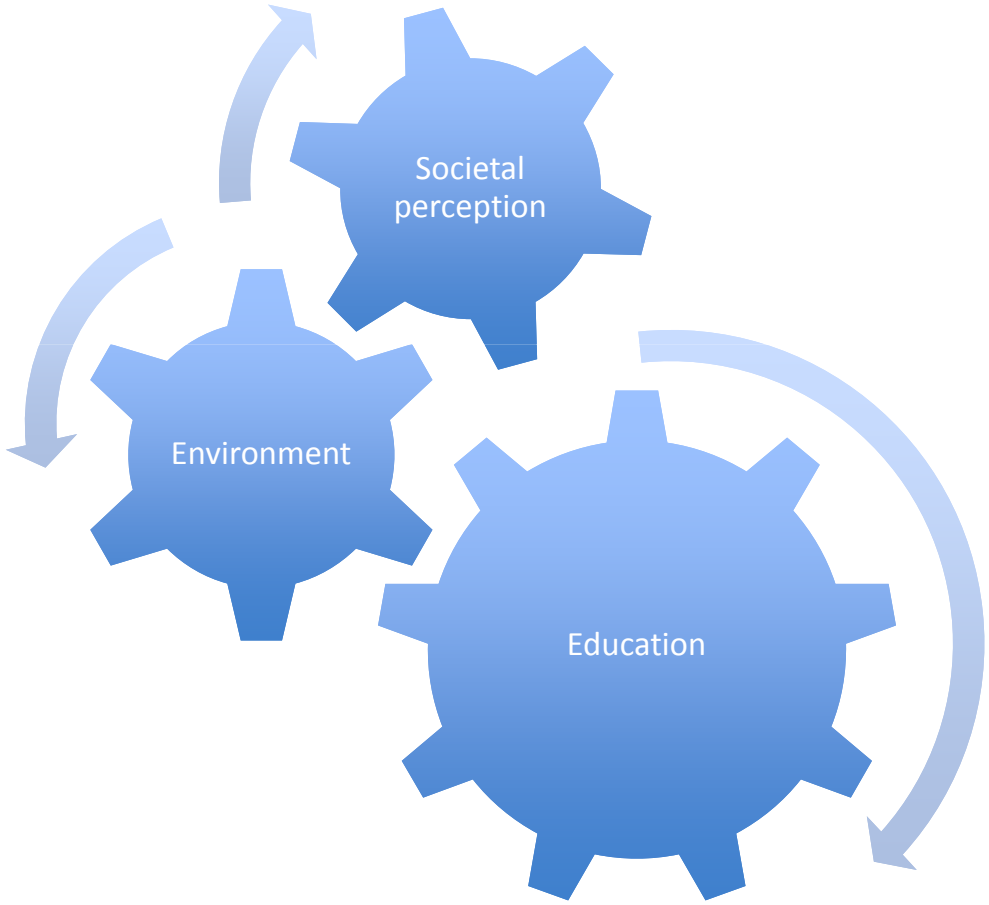
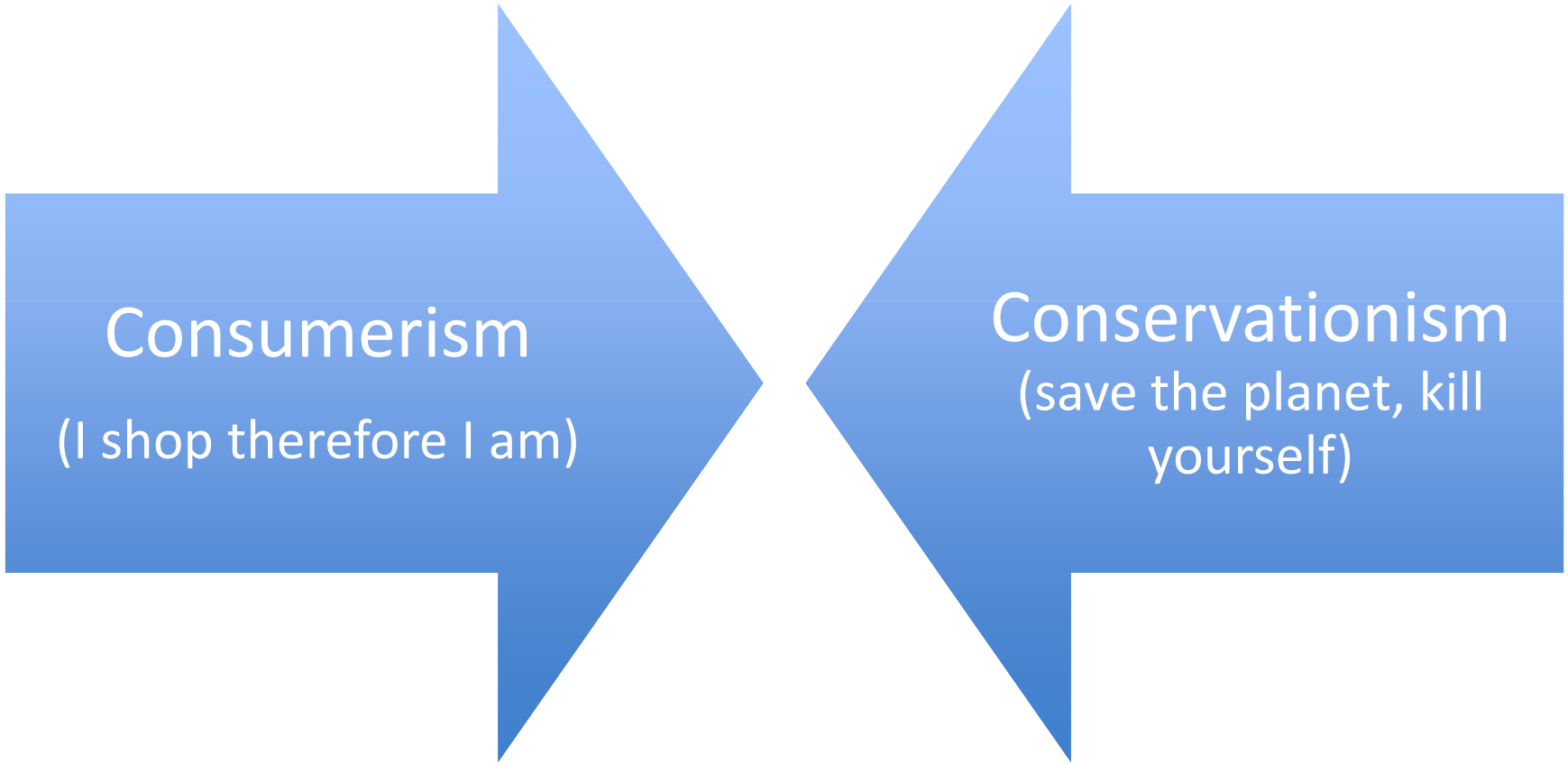


Science for natural resources



Ayres and Zimmermann on the significance of technology for natural resource

- Natural resources do not just exist; they become.
- The neutral stuff of nature becomes useful resources because new technologies make it possible to find or extract, or to process them, or because new technologies transform previously useless materials into useful ones.
- From the technological point of view resources are a function of technological advance itself.

Ayres and Zimmermann on the significance of technology for natural resource

- This is to say that social policy regarding public eduction, research and **science can have strongly positive effect on tha rate at which new resources can be discovered and created**.

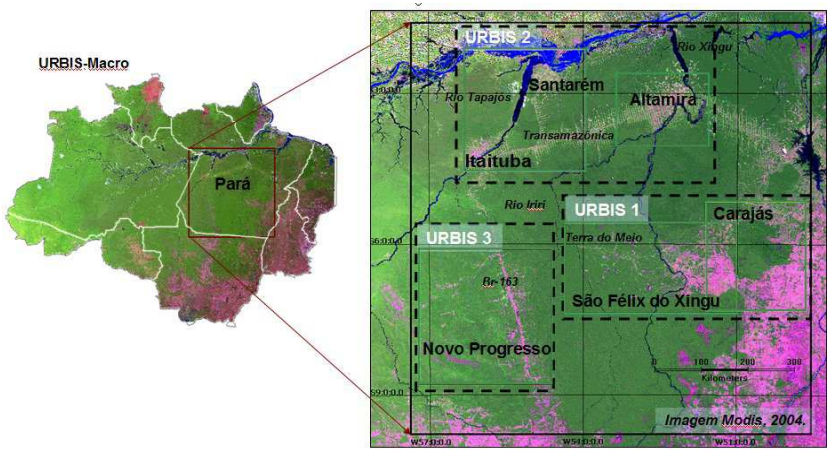
Research Project

Urbis Amazon – Ana Cláudia Duarte Cardoso

Vision: **To face the challenge and the historical opportunity of promoting a development model suitable to economic, social, environmental, and cultural needs of the Amazon Region**

Aims

- **May cities work as a key to promote sustainable development in the region?**
- **To understand the urban dimension in the Amazon** and its peculiarities.
- **To understand the relationship between urban** (where people are concentrated) **and rural** (where natural resources are concentrated) **in the Amazon**.
- To create a typology of networks to articulate metropolis, cities, localities, and riverine communities; **to support decision making and the conception of public and private policies**.

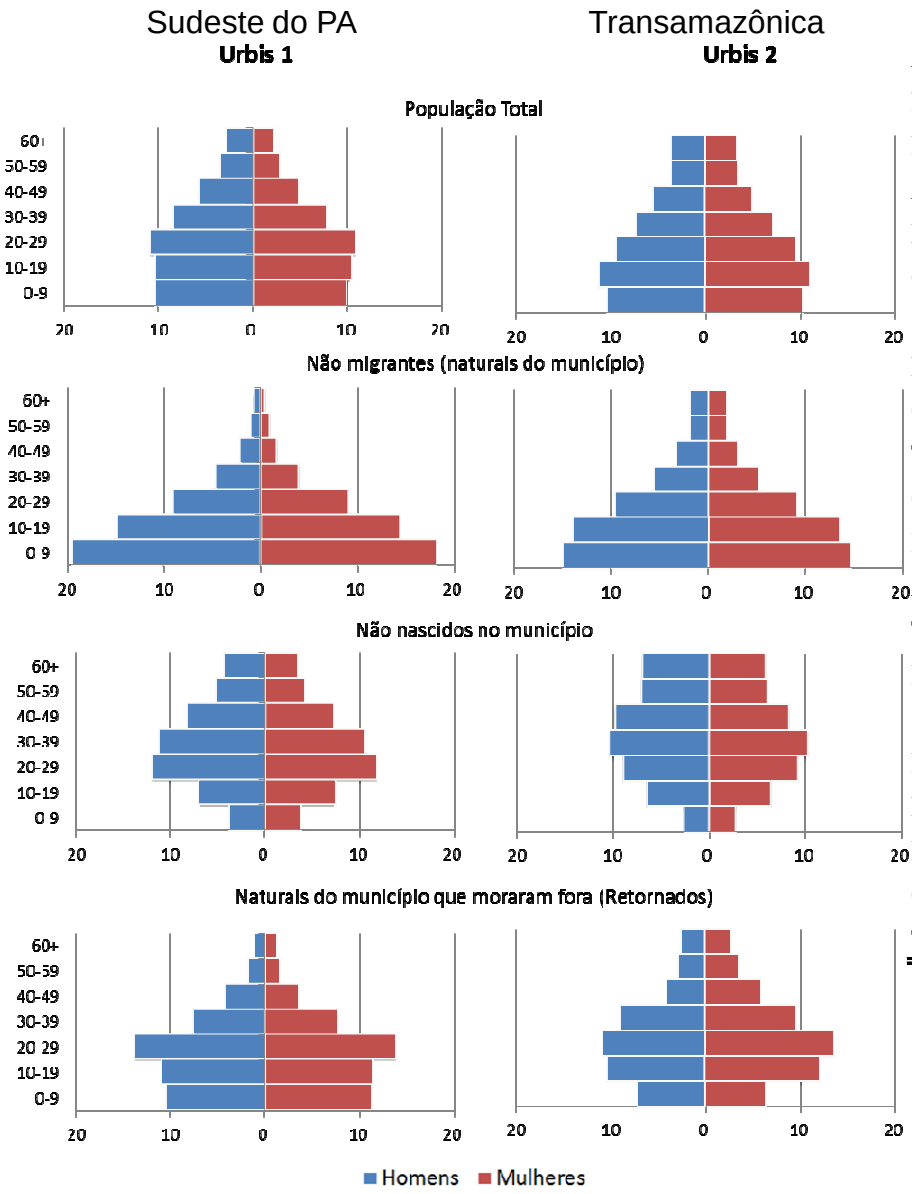


Applications for Society and for Vale

- Planning of investments at the territory
- Formulation of public policies
- Consolidation of cities
- Monitoring of socio-environmental process and economic dynamics
- Guidance to investments
- Identification of partnerships
- Resources optimization
- Improvement of infrastructure

Age pyramids 2010

50% population of Urbis 1 is migrant from outside Pará. There is return of adults and great number of migrants1 children born in the region.



Participation of micro regions in Pará sectoral production, 2005

Microrregião	Agricultura	Pecuária	Indústria	Serviços
Óbidos	3.376%	2.995%	4.970%	2.197%
Santarém	11.345%	6.171%	1.350%	3.911%
Almeirim	1.060%	0.937%	1.111%	0.782%
Portel	1.848%	0.136%	0.504%	0.150%
Furos dos Breves	0.608%	0.136%	0.958%	0.300%
Arari	0.387%	3.767%	0.000%	0.782%
Belém	0.943%	1.648%	28.427%	52.574%
Castanhal	5.486%	4.178%	0.618%	2.347%
Salgado	1.647%	0.876%	0.158%	0.932%
Bragantina	5.267%	1.056%	2.604%	1.865%
Cametá	4.670%	0.484%	0.478%	1.233%
Tomé-Açu	20.853%	2.405%	1.553%	1.083%
Guamá	8.432%	3.597%	0.776%	1.233%
Itaituba	3.842%	7.226%	1.927%	1.082%
Altamira	4.650%	3.586%	1.027%	1.715%
Tucuruí	4.138%	8.711%	14.283%	6.924%
Paragominas	11.216%	12.723%	3.407%	2.347%
São Félix do Xingu	1.293%	15.419%	0.182%	0.150%
Parauapebas	1.485%	5.369%	29.795%	8.338%
Marabá	1.408%	3.478%	4.570%	7.074%
Redenção	2.512%	9.124%	0.886%	2.197%
Conceição do Araguaia	3.535%	5.979%	0.415%	0.783%
Total PA	100.000%	100.000%	100.000%	100.000%

Fonte: Cedeplar/UrbisAmazônia

There is great economic disarticulation between micro regions in Pará. There is great economic dependence on other regions of the commercial sector

Capitalist rationality: mining and major building works implemented in the region follow the industrial logic, although other sectors could also be in that condition, but are less visible or have smaler impact in aggregate terms.

Mercantile rationality: agriculture, whether peasant or business is operated through mercantile capitalism. The capital market also houses services and trade, which may be manifestations of either upper or lower circuit.

INSTITUTO TECNOLÓGICO VALE

Paleoclimate

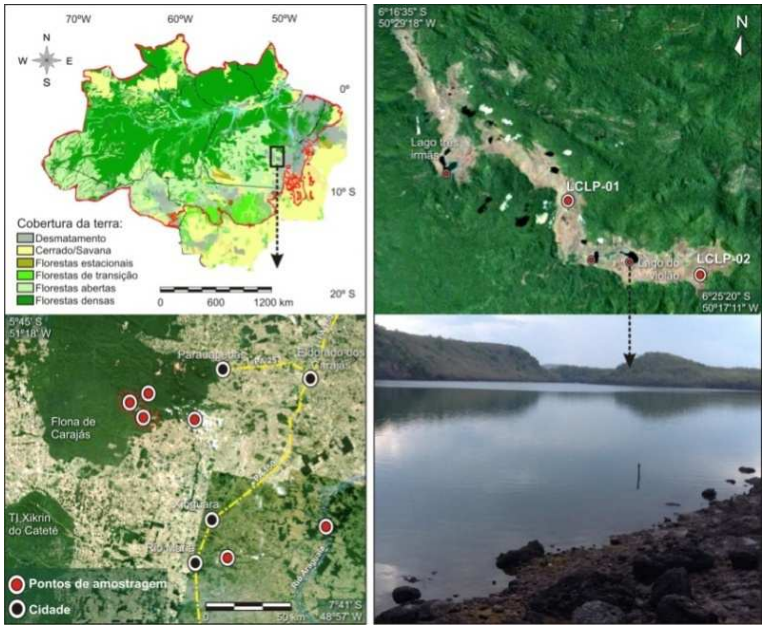
Geological, geomorphological and palynological evidences of Paleoclimate and its effects in the Tropical Forest of the southeastern Amazon region

Carmem Lara Manes
Douglas Oti
Pedro Walfir M. Souza Filho
Prafulla Sahoo
Renato Silva Jr.
Roberto Dall' Agnol
Tasso Guimarães

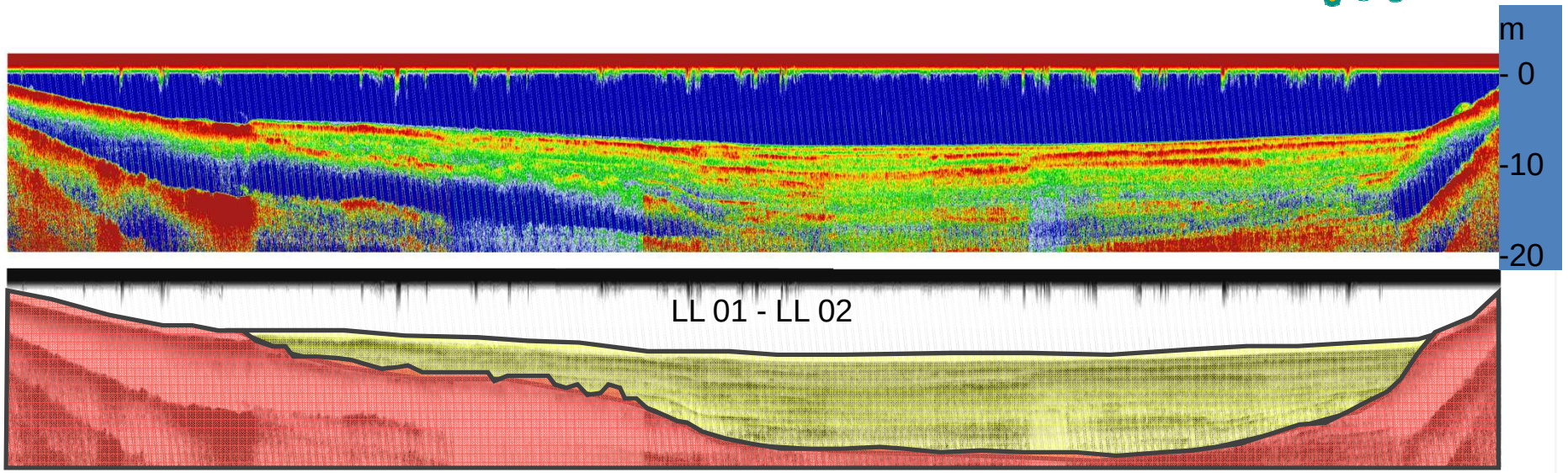
Vision / Objective:
To identify Cenozoic paleoclimate changes in the southeastern Amazon region and its effects on the Tropical Forest based on geological, geomorphological, sedimentological and palynological evidences in an interdisciplinary approach.

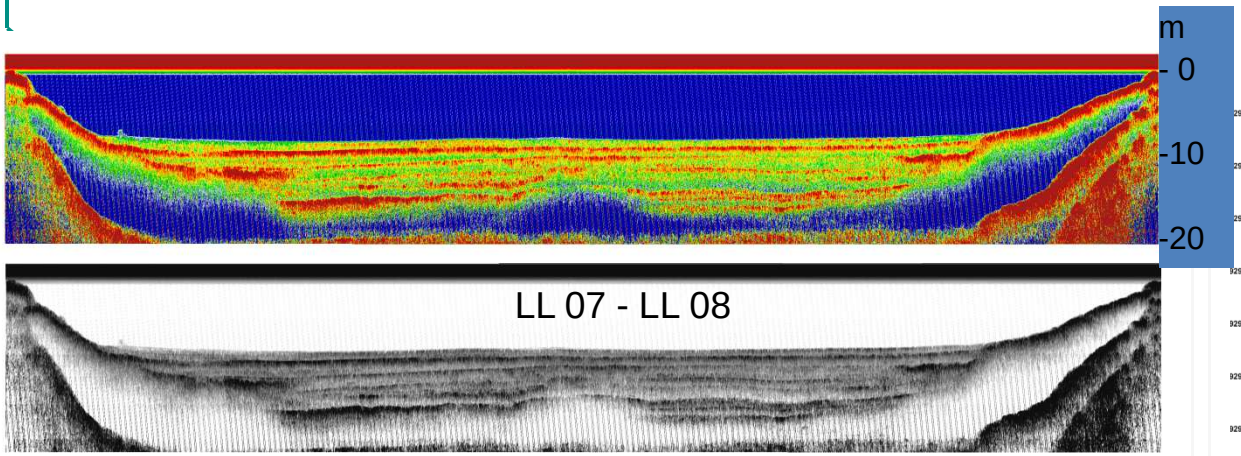
Expected results

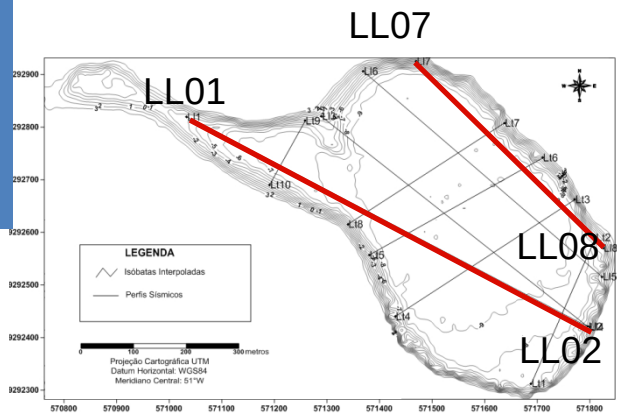
- Definition of the paleoclimate during the upper Cenozoic in the southeastern Amazon.
- Models of the evolution of the tropical forest and geomorphology.
- Formation of an interdisciplinary research group on Amazon Paleoenvironment and Paleoclimatogy during the Cenozoic.



Shallow seismic of the Violão lake







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