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# ***Science, Technology and Innovation in São Paulo, Brazil***

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FAPESP

# State of São Paulo, Brasil



41 Million people  
34% of Brazil's GDP  
50% of Brazilian science  
13% of State budget to HE and R&D  
1.64% GDP for R&D

3 State Universities  
3 Federal Universities  
52 State Tech Faculties  
45% of the PhDs graduated in Brazil (4,937 in 2010)  
22 Research Institutes (19 state/3 federal)  
1 Research Foundation  
62% of R&D public support comes from State sources

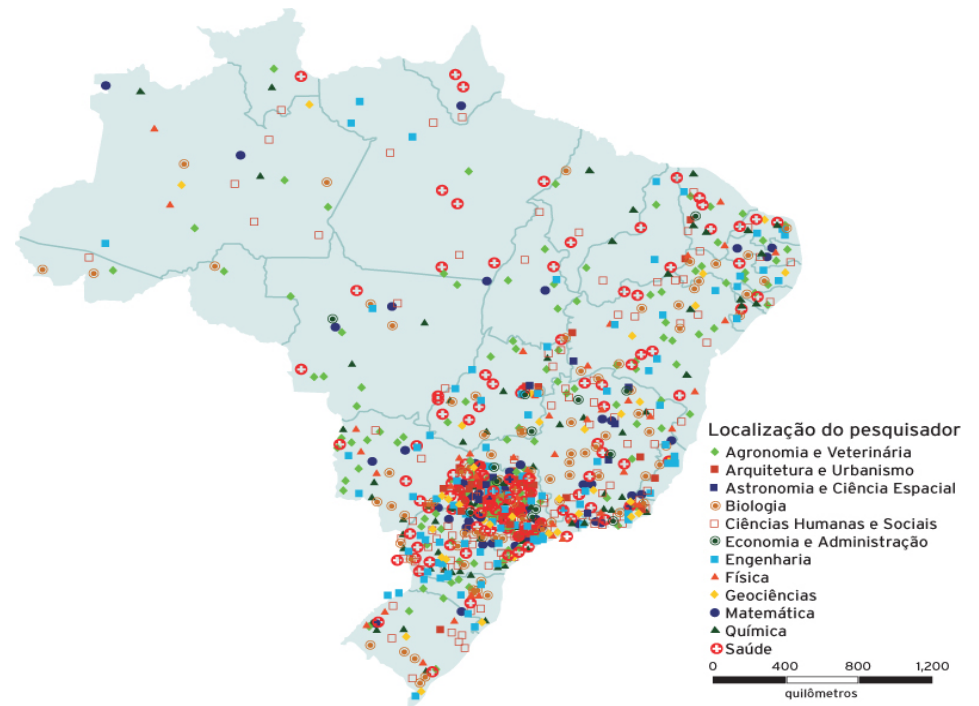


# Five decades of research funding

Mission: to support research in all fields

Since 1962:

- ✓ 105,000 Fellowships
- ✓ 92,000 Research Grants



Source: Giovanni, G. et al., "Perfil dos Bolsistas da FAPESP", FAPESP 2008

# *Fapesp: São Paulo Research Foundation*

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- 1962: Executive Decree 40.132 creates FAPESP
- 1989: New Constitution of the State of São Paulo
  - Article 271 – “The State shall grant no less than one percent of its total tax revenues to the Foundation for the Support of Research in the State of São Paulo, as a revenue to be privately managed by said foundation, to be applied in scientific and technological development”



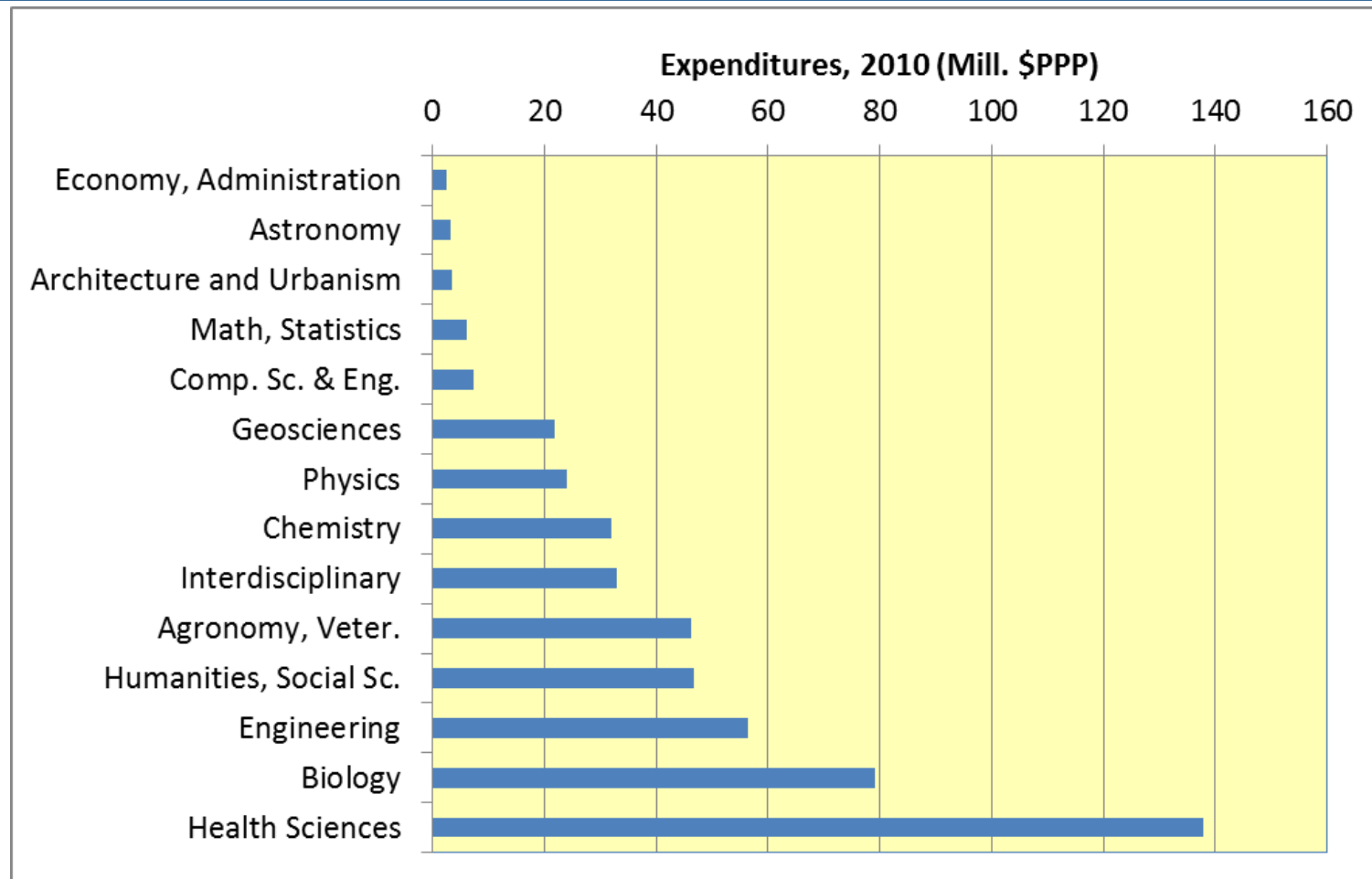
# ***Fapesp: São Paulo Research Foundation***

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- All proposals are peer reviewed (20,600 proposals in 2011)
- Annual budget: US\$ 500 M in 2012
  - **Fellowships** (2,600 SI, 2,400 MSc, 3,900 DrSc, 1,700 Post-docs, 800 other)
  - **Academic R&D** (Thematic, Regular, Young Investigators)
  - **University-Industry Joint R&D**: Microsoft, Agilent, Braskem, Oxiten, GSK, SABESP, VALE, Natura, Petrobrás, Embraer, Padtec, Biolab, Cristalia, Whirlpool, Boeing , GSK, BP...
  - **Small business R&D**: 1,200 SBE's (two PIPE+PAPPE awards per week in 2011)

# ***FAPESP expenditures, 2010***

## ***By field of science***

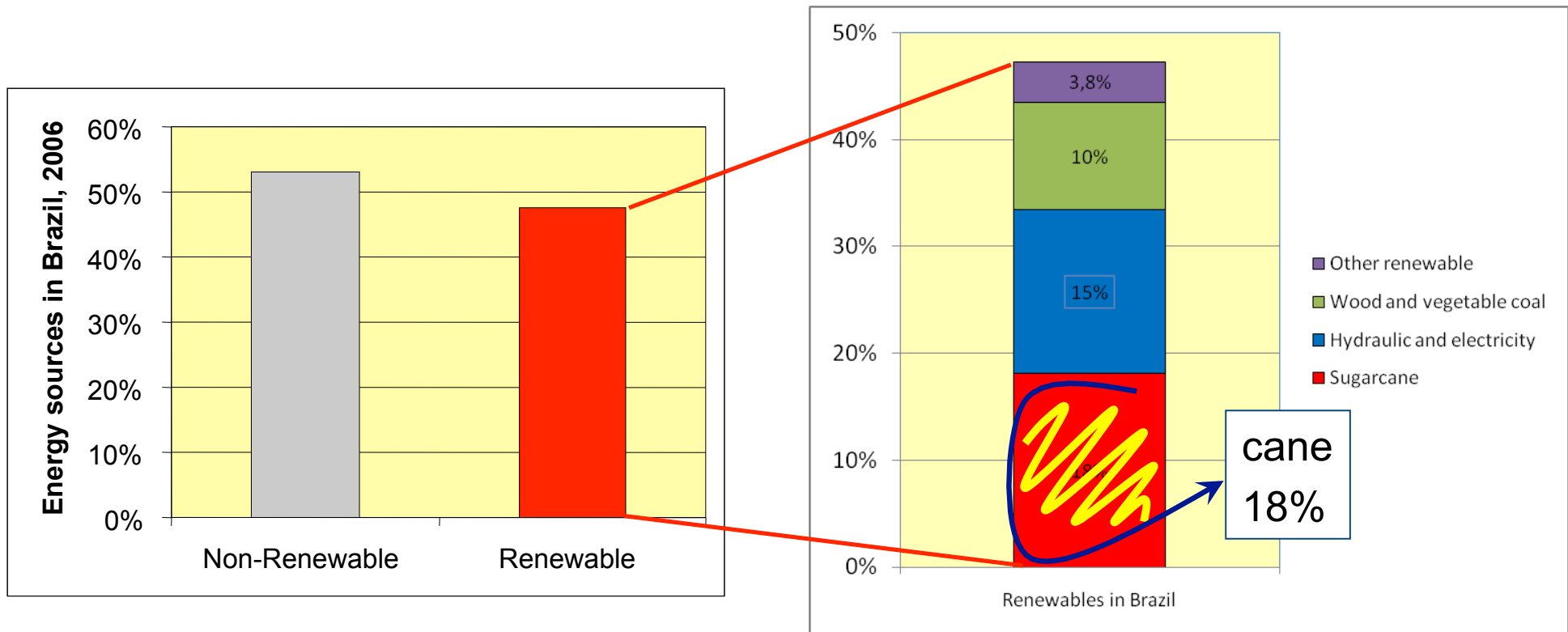


# ***FAPESP: Basic Science Focus***

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- In the World and in Brazil there is in an “utilitarian” view about Science
  - Science that makes business more competitive
  - Science that heals the sick
  - Science that makes the poor rich
- In addition, FAPESP also values a not so “utilitarian” item
  - Science that makes mankind wiser
    - In all fields there are fundamental questions
    - Philosophy, Archeology, Literature, High Energy Physics, Cosmic Rays, Astronomy, Evolution,..

# ***Brazil: 47% of energy from renewable sources (2009); 18% from sugarcane***



Renewables in Brazil: 47%; World: 13%; OECD: 7,2%

# *FAPESP's Green Economy Research Programs*

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- BIOEN-FAPESP: Bioenergy research
- BIOTA-FAPESP: Biodiversity and conservation research
- GCG-FAPESP: Global Climate Research



# *FAPESP's Green Economy Research Programs*

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- BIOEN-FAPESP: Bioenergy research
  - Feedstock, processing, green chemistry, engines, sustainability
  - 300+ scientists (50 from abroad); 600+ graduate students
  - R\$ 73 million (FAPESP); R\$ 55 million (State Government); R\$ 5 million (industry)
- BIOTA-FAPESP: Biodiversity and conservation research
  - 150 scientists; 500 graduate students
  - R\$ 93 million
- GCG-FAPESP: Global Climate Research
  - 70 scientists; 100 graduate students
  - R\$ 65 million

# *Biodiversity Virtual Institute*

## *BIOTA*

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- A network of 200+ scientists
- Characterize the biodiversity of the State of São Paulo, and define mechanisms for its conservation and sustainable use
  - Study the biodiversity in São Paulo (now in Brazil)
  - Disseminate data, information, and knowledge about São Paulo's biodiversity and its importance.
  - Increase public and private organizations' capacity in managing, monitoring and using biodiversity.
  - Promoting informed decisions
- <http://www.biota.org.br/>



# SP Environment Secretary bases Resolution on BIOTA research



SECRETARIA DE ESTADO DO MEIO AMBIENTE

GABINETE DO SECRETÁRIO

PUBLICADA EM 14/03/88 – SEÇÃO I – PÁG.36

RESOLUÇÃO SMA-15 DE 13 DE MARÇO DE 2008.

Dispõe sobre os critérios e parâmetros para concessão de autorização para supressão de vegetação nativa considerando as áreas prioritárias para incremento da conectividade.

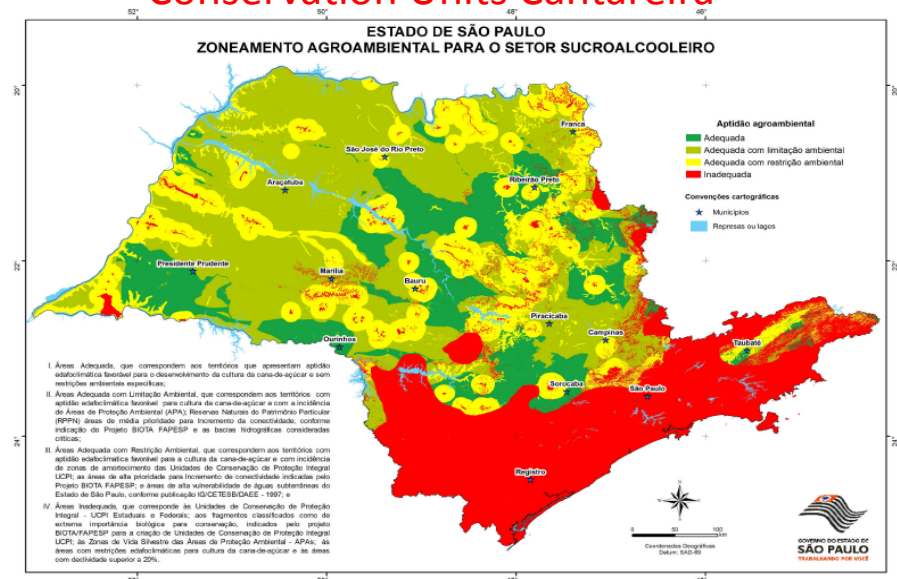
O **SECRETÁRIO DE ESTADO DO MEIO AMBIENTE**, em cumprimento ao disposto nos artigos 23, VII, e 225, § 1º, I, da Constituição Federal, nos artigos 191 e 193 da Constituição do Estado, nos artigos 2º e 4º da Lei federal nº 6.938, de 31 de agosto de 1981, e nos artigos 2º, 4º e 7º da Lei estadual nº 9.509, de 20 de março de 1997, e

Considerando os resultados obtidos pela equipe de pesquisadores do Projeto Biota FAPESP e as informações presentes no mapa de "Áreas prioritárias para incremento da conectividade" e "Áreas prioritárias para criação de Unidades de Conservação" resultantes do Projeto Biota FAPESP;

- Several Governor Decrees and Resolutions

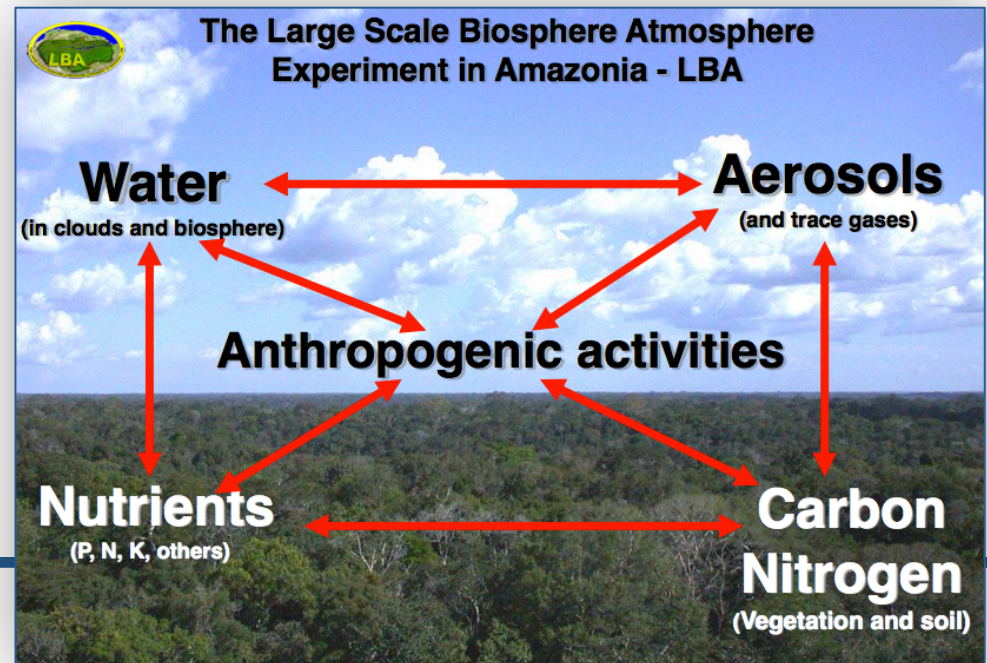
- Decree 53.939, 06Jan09 – Legal Reserves

- Decree 54.746, 04Sep09 – Conservation Units Cantareira



# *FAPESP Research Program on Global Climate Change*

- Global Climate Modelling
  - Supercomputer – 15 Tflops sustainable
    - FINEP + FAPESP
  - Water, Carbon and Nitrogen cycles,
  - Agriculture and husbandry
  - Ecosystems
  - Aerosols,
  - Land use change,
  - Human dimensions



# ***FAPESP's Research Program on Bioenergy (BIOEN): 5 divisions***

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## **BIOMASS**

Contribute with knowledge and technologies for Sugarcane Improvement Enable a Systems Biology approach for Biofuel Crops

## **PROCESSING AND ETHANOL TECHNOLOGIES**

Increasing productivity (amount of ethanol by sugarcane ton), energy saving, water saving and minimizing environmental impacts

## **BIOREFINERIES AND ALCOHOL CHEMISTRY**

Complete substitution of fossil fuel derived compounds Sugarchemistry for intermediate chemical production and alcoholchemistry as a petrochemistry substitute

## **ENGINES**

Flex-fuel engines with the same performance, consumption, pollutant emissions and durability as the engines would run on a particular fuel blend

## **IMPACTS**

Studies to consolidate sugarcane ethanol as the leading technology path to ethanol and derivatives production Horizontal themes: Social and Economic Impacts, Environmental studies and Land Use



2008 > 2009 > 2010 > 2011 > 2012

1<sup>st</sup> Call

BBEST

- 
1. Improvements in the feedstock: building a better cane plant for energy – EnergyCane; sugarcane agriculture; other feedstocks

Partner: ETH

2. Production of Ethanol and other products: hydrolysis, pyrolysis, gasification, fermentation, distillation

Partners: Oxiten, Dedini

3. New processes in alcohol-chemistry

Partners: Braskem

4. Ethanol based engine and fuel cell development

Partners: PSA Citroen

5. The Economics of Ethanol, Ethanol production and the environment, Social impacts, the new agriculture of food and energy

New Partners: BP, Boeing

## My Researcher ID BIOEN

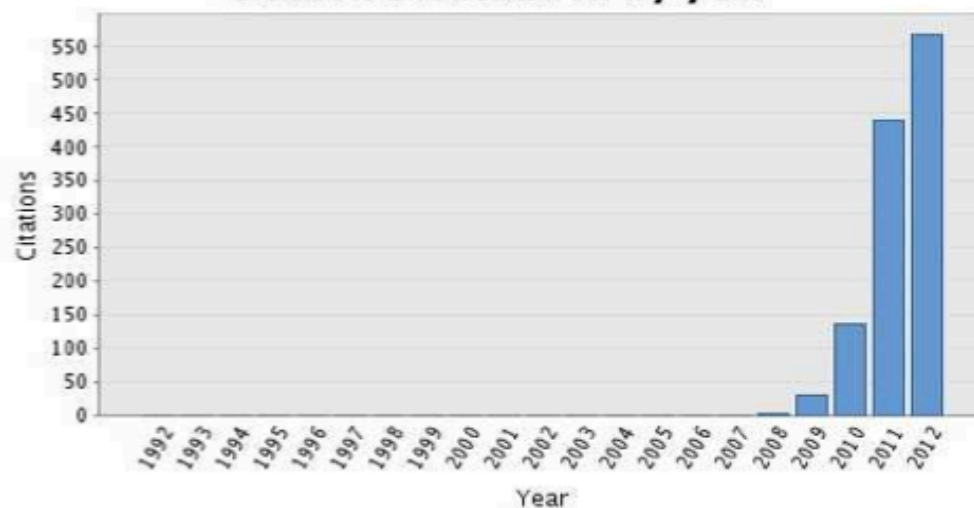
**ResearcherID: H-6149-2012**

**URL: <http://www.researcherid.com/rid/H-6149-2012>**

### My Publications: Citation Metrics

This graph shows the number of times the articles on the publication list have been cited in each of the last 20 years.  
Note: Only articles from Web of Knowledge with citation data are included in the calculations. [More information about these data.](#)

**Citation Distribution by year**



Total Articles in Publication List: 427

Articles With Citation Data: 365

Sum of the Times Cited: 1180

Average Citations per Article: 3.23

h-index: 16

Last Updated: 10/30/2012 15:53  
GMT

85% of the articles have been cited

# ***FAPESP: international agreements for joint research funding***

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- Agreements with foreign funding agencies, universities and companies

RC-UK (UK)  
KCL; Surrey;Southampton;Nottingham;  
Birmingham (UK)  
DFG (Ge); Baviera (Ge)  
ANR;CNRS;INSERM;INRIA;INRA (Fr)  
ISTP;U. Toronto;U. W. Ontario (Ca)  
Hebrew Univ. Jerusalem (Israel)  
BE-BASIC (Netherlands)

UE-CNPq (Bioenergy)  
CONICET (Ar)  
CONICYT (Ch)  
NSF (CNIC, ICC, Biodiversity)  
Microsoft Research, Boeing; MIT (U.S.)  
FCT (Portugal)  
Erasmus Rotterdam University (Netherlands)

- 242 joint proposals supported, 2005-2010
  - France 85; U.S 52; Germany 39; U.K. 20; Argentina 10; Canada 12; Portugal 8; Netherlands 4 (2012)

# ***FAPESP international collaboration: bringing foreign scientists to SP***

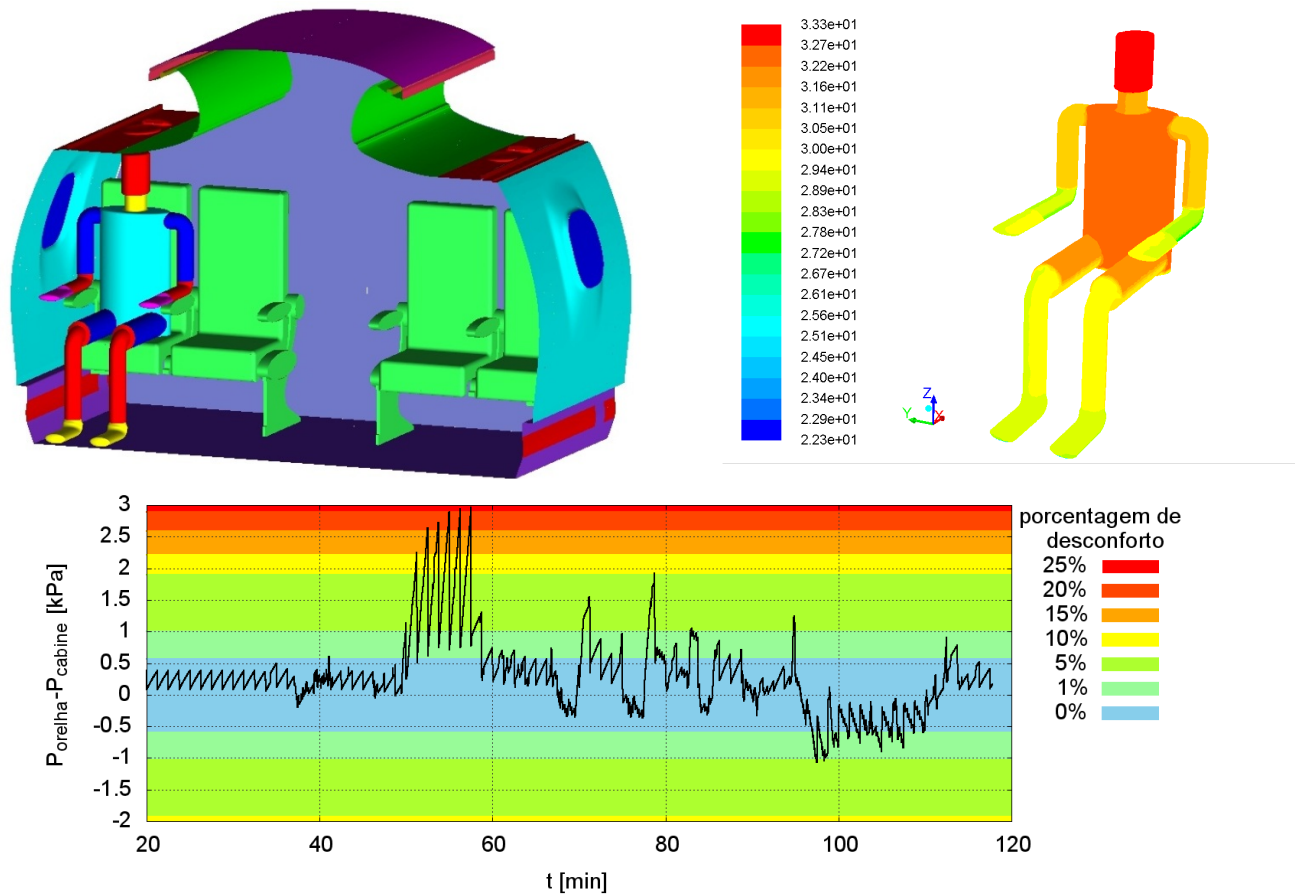
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- Post doctoral fellowships
  - Stipend, travel, some research money
- Young Investigator Awards (1.5 awards per week)
  - Stipend, travel, research money
- Visiting scientists
  - 205 in 2010 (travel, stipend; 2 weeks to 12 months)
- São Paulo Schools of Advanced Science (SPSAS)
  - Each one with 50-100 young Dr students from abroad
- São Paulo Excellence Chairs (SPEC)
  - For top notch scientists from abroad: full research grant for staying 3 mo. per year in SP for 3-5 years

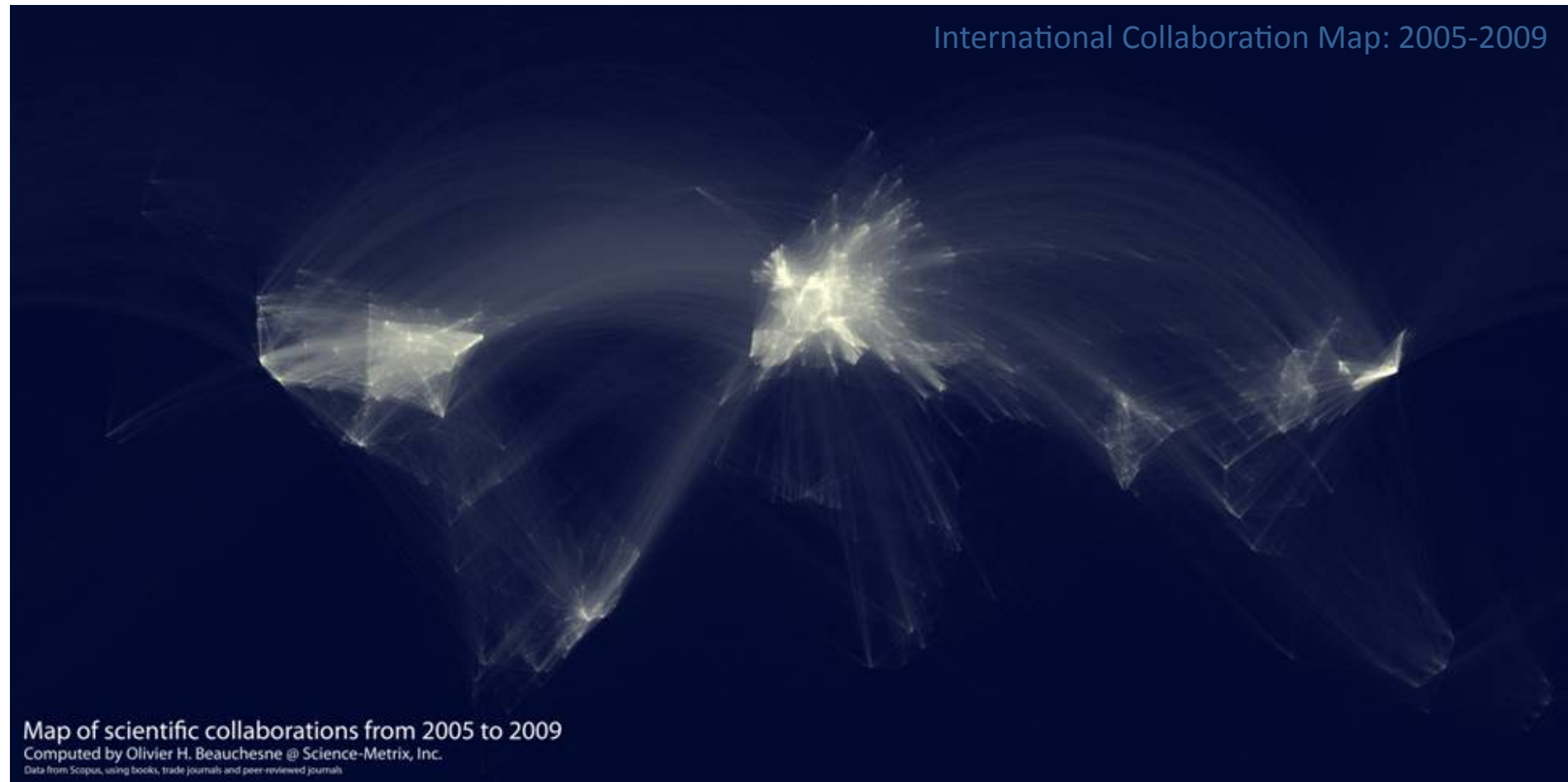


# Aircraft Confort Engineering Center

## Embraer – FAPESP



# Science is built on continuous exchange.



# São Paulo & Brazil



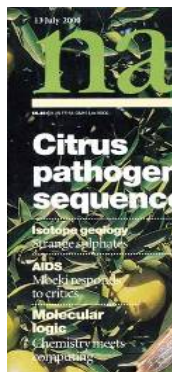
*Thank you!*



# São Paulo & Brazil







## Invertebrate Systematics



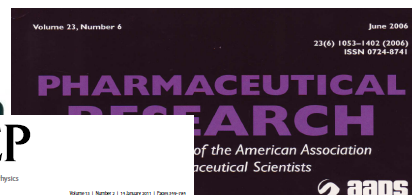
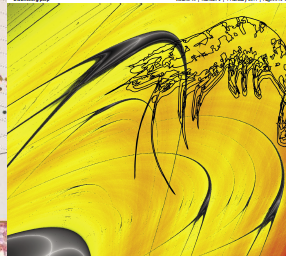
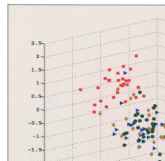
www.publish.csiro.au/journals/ist



## Analyst

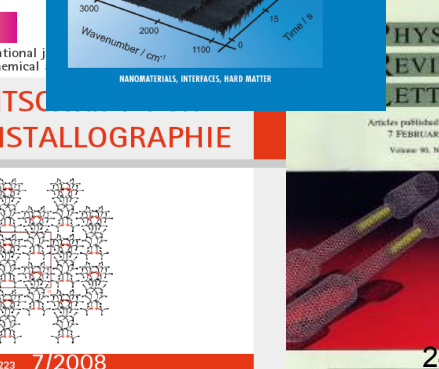
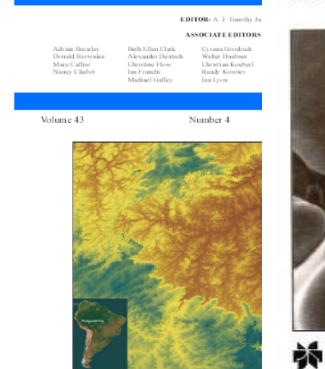
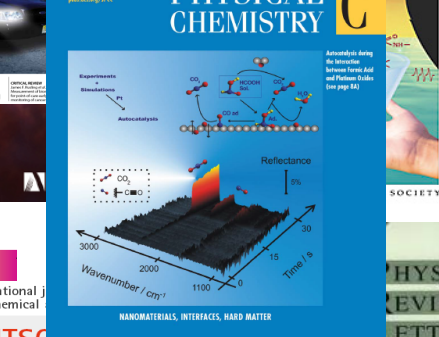
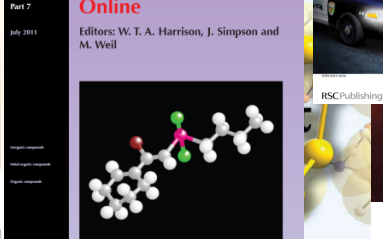
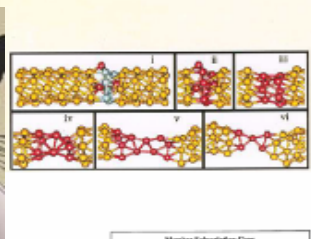
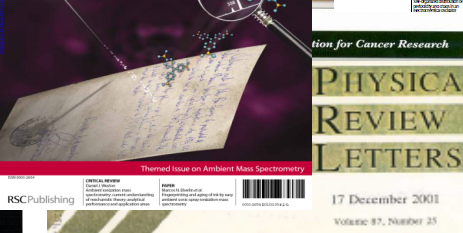
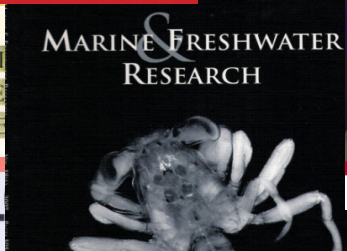
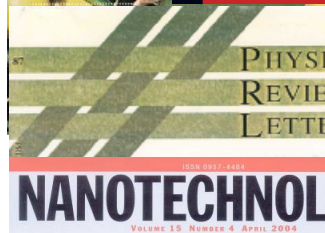
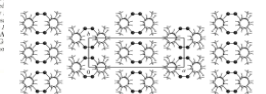


## Cancer Research PCCP



## Zeitschrift für Kristallographie

## NEW CRYSTAL STRUCTURES



11/21/12  
Asteroids • Comets • Craters • Interplanetary Dust • Interstellar Medium  
Lunar Samples • Meteors • Meteorites • Natural Satellites • Planets • Telesites  
Origin and History of the Solar System

reglead

Published by The American Chemical Society

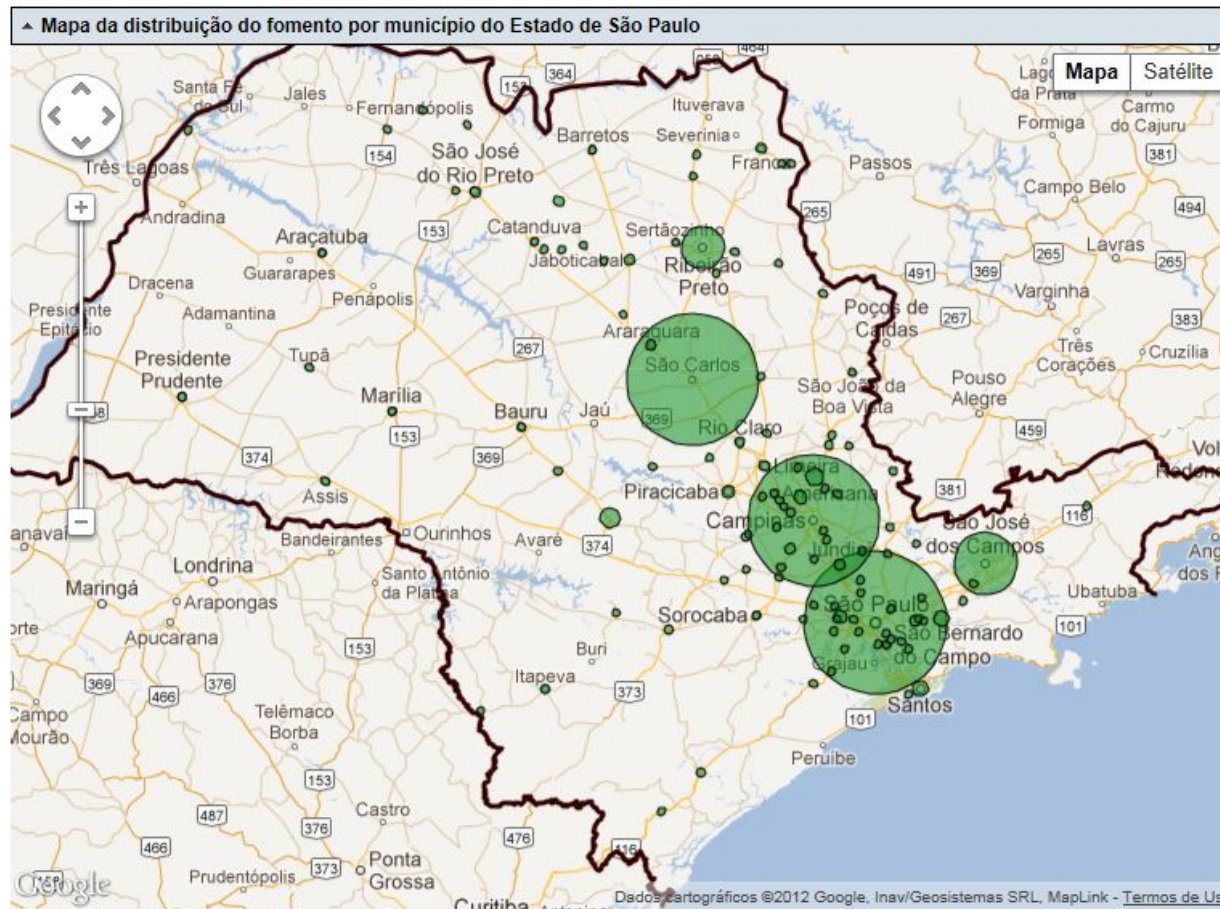
Published by The American Chemical Society

Published by The American Physical Society

Published by The American Physical Society



# Geographical distribution of PIPE projects



Find at <http://www.bv.fapesp.br/pt/266/pesquisa-em-empresas-de-pequeno-porte/>