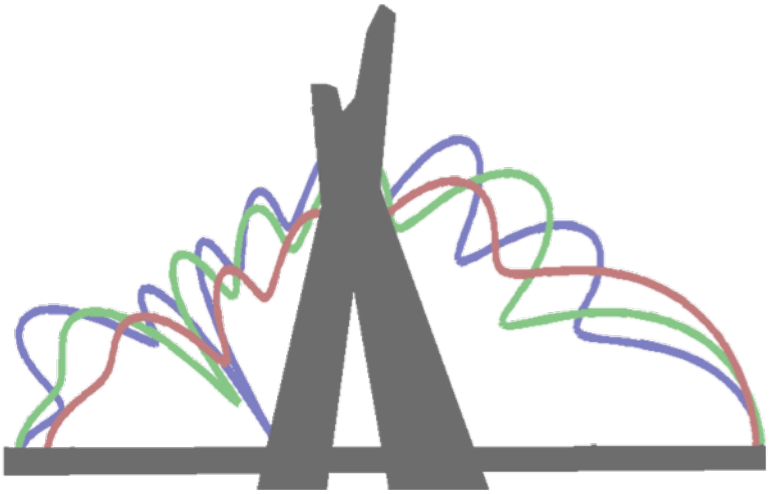
Sao Paulo School of Advanced Science on Atmospheric Aerosols

Properties, Measurements, Modeling, and Effects on Climate and Health



Boarding Passes

- Please remember to print or email your boarding passes

- If you only get it at the airport, you'll have to mail it to us.

New Shuttle schedule

- We have printed a new schedule to accommodate the requested changes.
  - Don’t be late, the shuttle will not wait!

- Brazilians at the Hotel will organize the shuttles:
  - Daniel Oliveira, Cybelli Barbosa, Rafael Reis, Gizelli Lima, Helber Gomes, Marcos Giralda, Ismael Luis, Rafael Palácios

Hotel Checkout

- Note that Hotel checkout time is at noon.
  - If your shuttle is later, you can leave your luggage at the reception; and go sightseeing
- Checkout takes sometime, specially if 15 people arrive at the same time!
  - Try to do it 1h before the shuttle time!

Support


FAPESP


PRP USP
PRÓ-REITORIA DE PESQUISA


IFUSP
Instituto de Física da USP


PRCEU
USP


MAC
MUSEU DE ARTE CONTEMPORÂNEA
da Universidade de São Paulo


ABAS
ASSOCIAÇÃO BRASILEIRA DE AEROSSÓIS
E SANEANTES DOMISSANITÁRIOS


RoMiotto
Instrumentos de Medição


Sao Paulo School of
Science on Atmospher
Properties, Measurements, Modeling, and Effec

38 People!

Local organizing committee

Prof. Henrique M. J. Barbosa (USP)
Prof. Paulo Eduardo Artaxo (USP)
Prof. Alexandre Lima Correia (USP)
Prof. Márcia Akemi Yamasoe (USP)
Dra. Ariane Frassoni (INPE)
Prof. Dr. Theotonio Pauliquevis (UNIFESP)
Dr. Eduardo Landulfo (IPEN)

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André Pugliesi
Marco Franco
Giovanni Santos
Lucas Cagnotto

Guido Hay
Matheus Tolentino
Amanda Vieira
Bruno Meller
Fernanda Macedo
Izabel Andrade

Lecturers





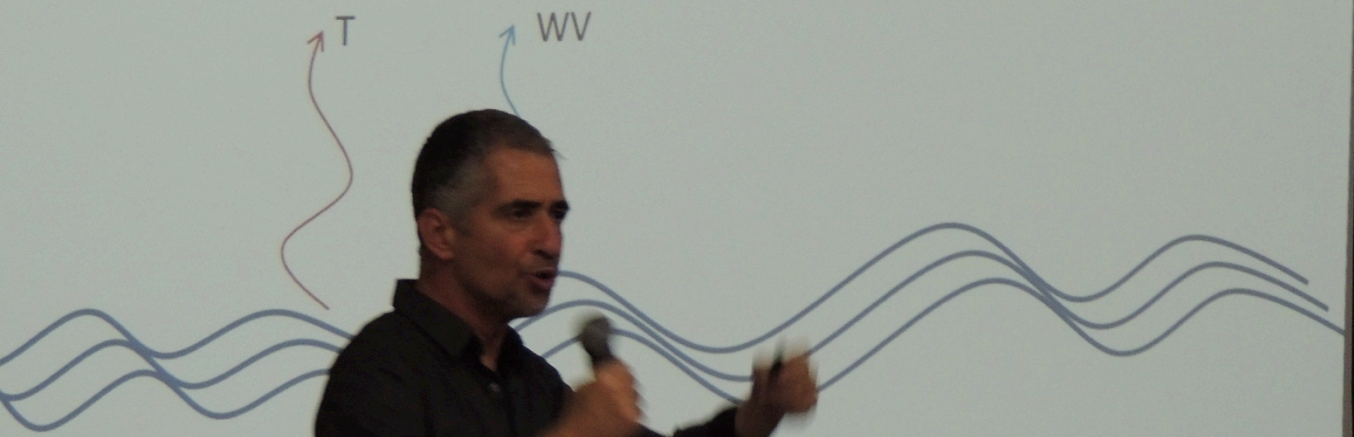


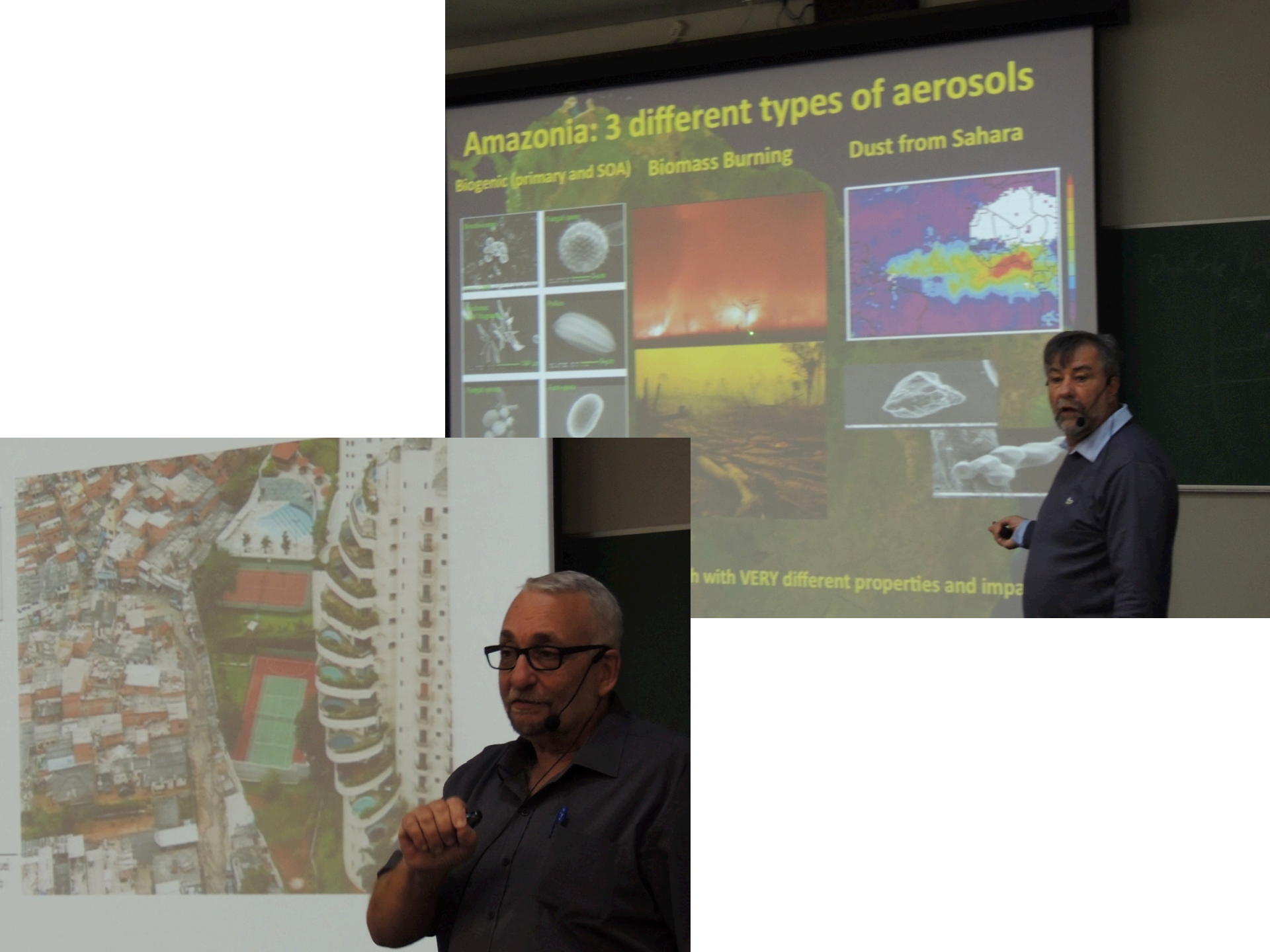





Earthdata Search
Earthdata Search
EOSDIS Worldview
JSTAR Mapper
Giovanni
Aeroso/Watch -- sa...
Aeroso/Watch -- sa...
20190722 1300 UTC

WV feedback:
Suppose we face global warming

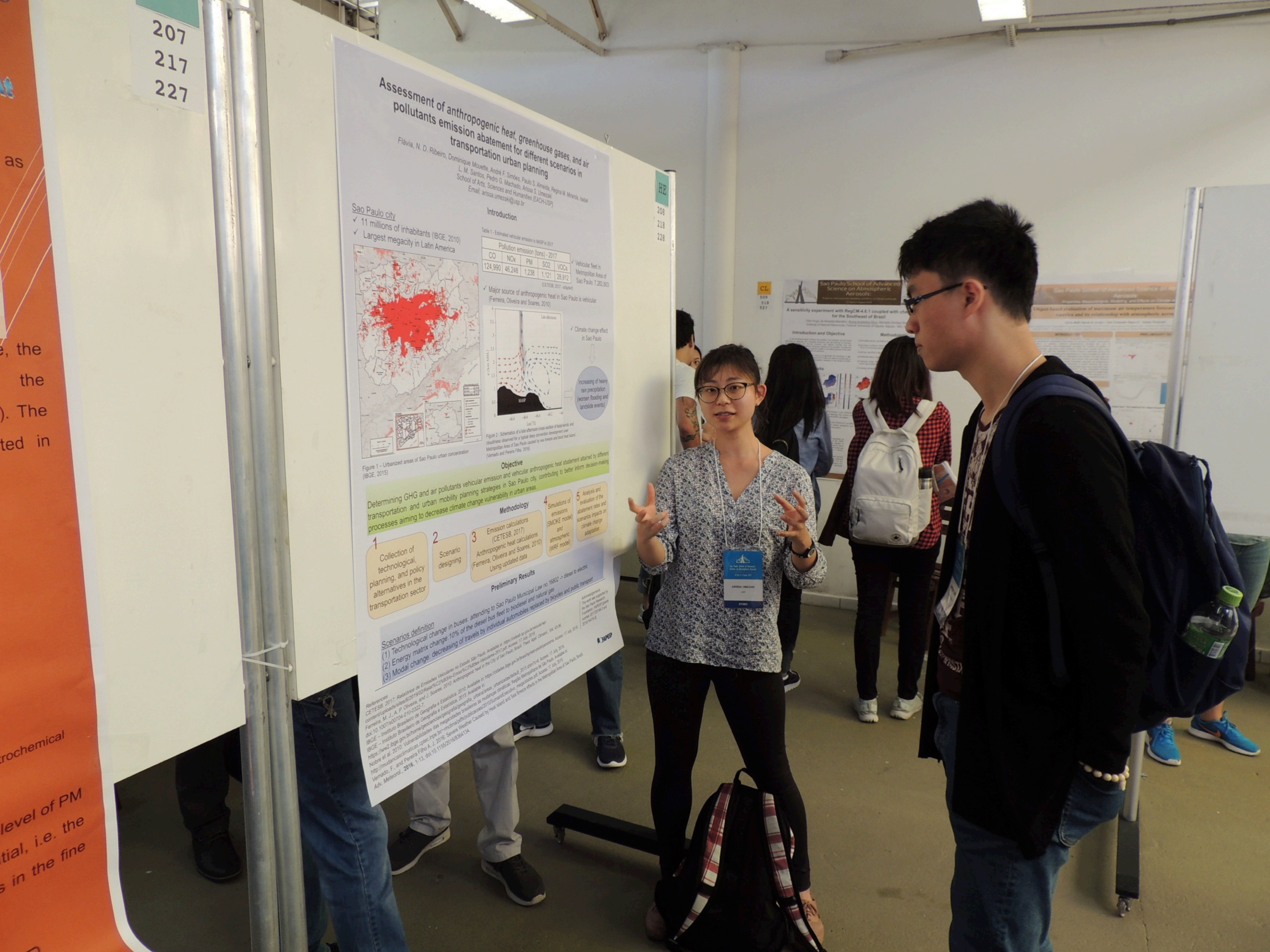


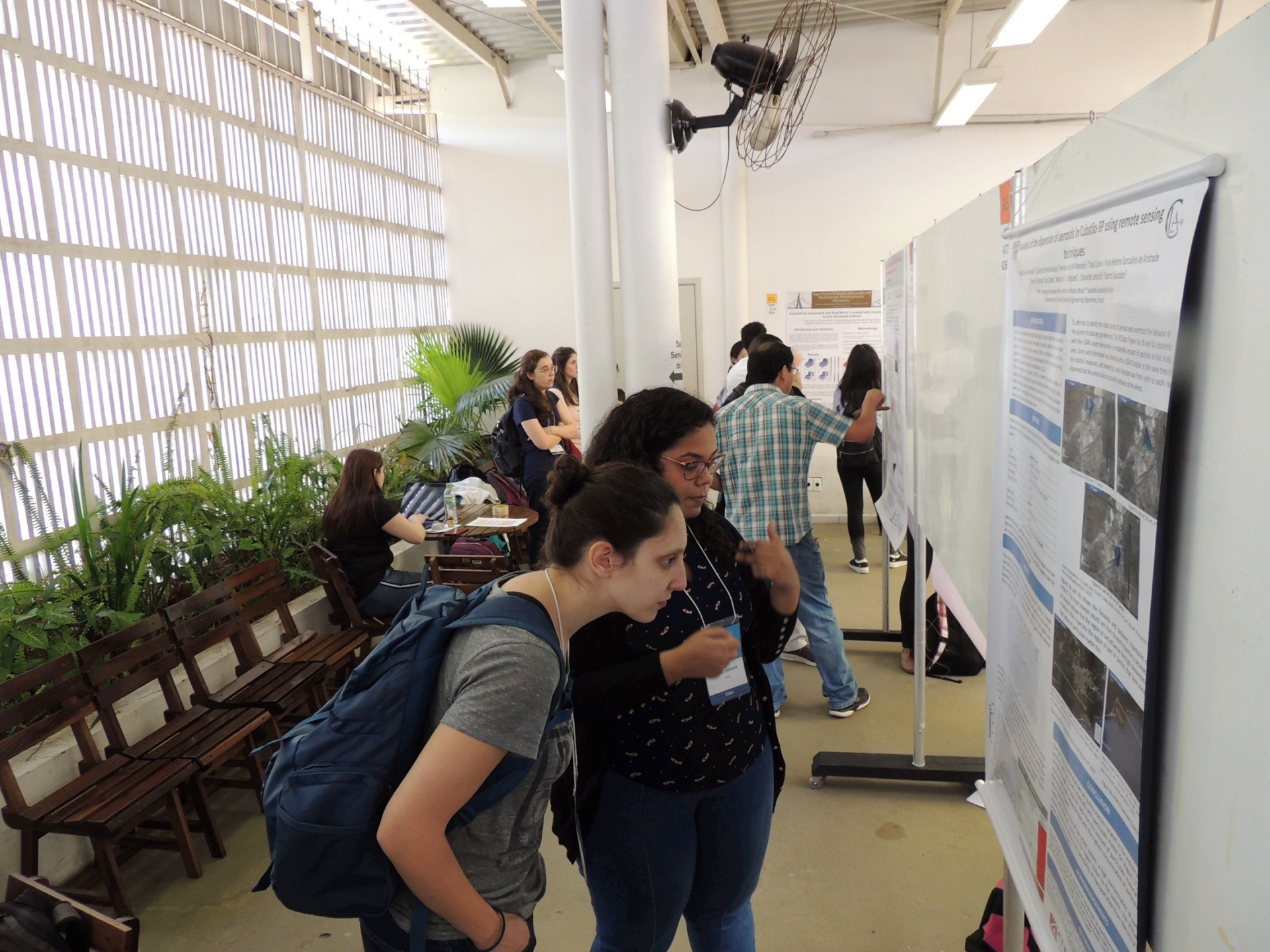

Amazonia: 3 different types of aerosols
Biogenic (primary and SOA)
Biomass Burning
Dust from Sahara
with VERY different properties and impa

Which emissions can be calculated on line by a chemistry-climate model?

Posters


SPSAS on Atmospheric Aerosols


207
217
227
Assessment of anthropogenic heat, greenhouse gases, and air pollutants emission abatement for different scenarios in transportation urban planning
HE
208
218
228
Sao Paulo city
11 millions of inhabitants (IBGE, 2010)
Largest megacity in Latin America
Introduction
Pollution emission (tons) - 2017
CO
NOx
PM
SO2
VOCs
124,990
46,248
1,238
1,121
28,912
Major source of anthropogenic heat in Sao Paulo is vehicular (Ferreira, Oliveira and Soares, 2010)
Climate change effect in Sao Paulo
Increasing of heavy rain precipitation (worsen flooding and landslide events)
Figure 1 – Urbanized areas of Sao Paulo urban concentration (IBGE, 2015)
Objective
Determining GHG and air pollutants vehicular emission and vehicular anthropogenic heat abatement attained by different transportation and urban mobility planning strategies in Sao Paulo city, contributing to better inform decision-making processes aiming to decrease climate change vulnerability in urban areas.
Methodology
1 Collection of technological, planning, and policy alternatives in the transportation sector
2 Scenario designing
3 Emission calculations (CETESB, 2017) Anthropogenic heat calculations (Ferreira, Oliveira and Soares, 2010) Using updated data
4 Simulations of emissions (SMOKE model) and atmospheric (WRF model)
5 Analysis and evaluation of the abatement rates and scenarios impacts on climate change adaptation
Preliminary Results
Scenarios definition
(1) Technological change in buses: attending to Sao Paulo Municipal Law no.16802 -> diesel to electric
(2) Energy matrix change: 10% of the diesel bus fleet to biodiesel and natural gas
(3) Modal change: decreasing of travels by individual automobiles replaced by bicycles and public transport
References
FAPESP
CL
Sao Paulo School of Advanced Science on Atmospheric Aerosols
A sensitivity experiment with RegCM-4.6.1 coupled with che
Introduction and Objective


techniques

HE
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HE
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Oxidative Potential of Particulate Matter Collected at a Brazilian Petrochemical Complex

Sofia Caumo[1], Alison Traub[2], Greg Evans[2] and Pérola de Castro Vasconcellos[1]

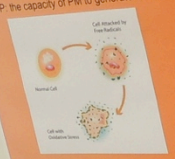
[1]Institute of Chemistry, University of Sao Paulo, 05508-000, São Paulo, SP, Brazil.

[2]Chemical Engineering and Applied Chemistry, University of Toronto, M5S 3E5, Toronto, Ontario, Canada

Email: sofia.caumo@usp.br

Introduction

- PM may induce injury in cells through ROS generation[1]
- OP: the capacity of PM to generate ROS[1]

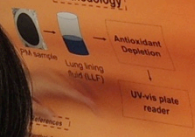


- Antioxidants: defense layer in respiratory system[1]
- The population who live around this site are getting sick[2]

Objective

- To examine the ability of PM collected between 2015 and 2017 around this site cause depletion in human antioxidants, called OP.

Methodology



Results

- PM concentration varied through these years, as Table 1 shows.

Table 1 – PM concentration, size and period of sampling

Year	Period	PM size	PM conc. ($\mu g.m^{-3}$)
2015	Spring	TSP	49
2016	Winter	TSP	39
2017		$PM_{2.5}$	21

- The OP results of ascorbate and glutathione, the most abundant antioxidants[1], presented the highest level of depletion in 2017 (Figure 1). The values were higher than assays conducted in Toronto[1].

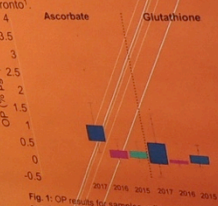


Fig. 1: OP results for samples collected near the petrochemical complex

Discussion

- These results suggest that the highest level of PM does not mean a high oxidative potential, i.e. the fraction more hazard[illegible] in the fine portion.

Acknowled[illegible]

Sao Paulo city

- ✓ 11 millions of i
- ✓ Largest mega

Figure 1 – Urbanized are
(IBGE, 2015)

Determining GH
transportation a
processes aimi

1

Collection o
technologica
planning, and p
alternatives in
transportation se

Scenarios de
(1) Technolo
(2) Energy m
(3) Modal ch

References

CETESB. 2017: Relatórios
content/uploads/sites/6/201
Ferreira, M. J., A. P. Oliveira
doi:10.1007/s00704-010-03
IBGE – Instituto Brasileiro d
IBGE – Instituto Brasileiro d
https://ww2.ibge.gov.br/hom
Nobre et al. 2010; Vulnerabi
http://mudancasclimaticas.c
Vemado, F., and Pereira Filh
Adv. Meteorol., **2016**, 1-13.

Best Poster Awards

1. Aerosol properties and measurements
2. Anthropogenic aerosols and their effects on health
3. Aerosol-cloud-radiation interaction
4. Remote sensing of aerosols
5. Aerosols perturbations on climate, and modeling of their effects.

Aerosol properties and measurements

Alexandra Beal

Londrina, Brazil

- State Londrina University (UEL)

- Poster: *Evaluation of soluble ions in water and metals in hail and particulate atmospheric matter in the south of Brazil.*

Anthropogenic aerosols and their effects on health

Jéssica C. Santos Silva

Santa Catarina, Brazil

- Federal University of Paraná

- Poster: *Integrated Evaluation Of Atmospheric Pollution And Health Risks In An Industrial Area From Santa Catarina State*

Aerosol-cloud-radiation interaction

Eshkol Eytan Liebeskind

Kiboutz Palmachim, Israel

- The Weizmann Institute of Science

- Poster: *The Clouds' Twilight Zone in the Longwave Infrared and its potential Green-house Effect*

Remote sensing of aerosols

José Carlos Tacza Anaya

Peru, but Lives in São Paulo

- Mackenzie Presbyterian University

- Poster: *Variation of the atmospheric electric field as an indicator of anthropogenic atmospheric pollution*

Aerosols perturbations on climate, and modeling of their effects

Syed Ahsan Ali Bokhari

Islamabad, Pakistan

- Pakistan Meteorological Department

- Poster: *Response of South Asian Regional Climate to atmospheric aerosols in RegCM4*

and we eat a lot


IFUSP


ABAS
PRPUSP
RoMinutti
IFUSP
PRCEU
USP
FAPESP


SPSAS on Atmospheric Aerosols


IFUSP
RoMiotto
PRPUSP
ABAS
FAPESP
MAC
PRCEU USP
ADRIA

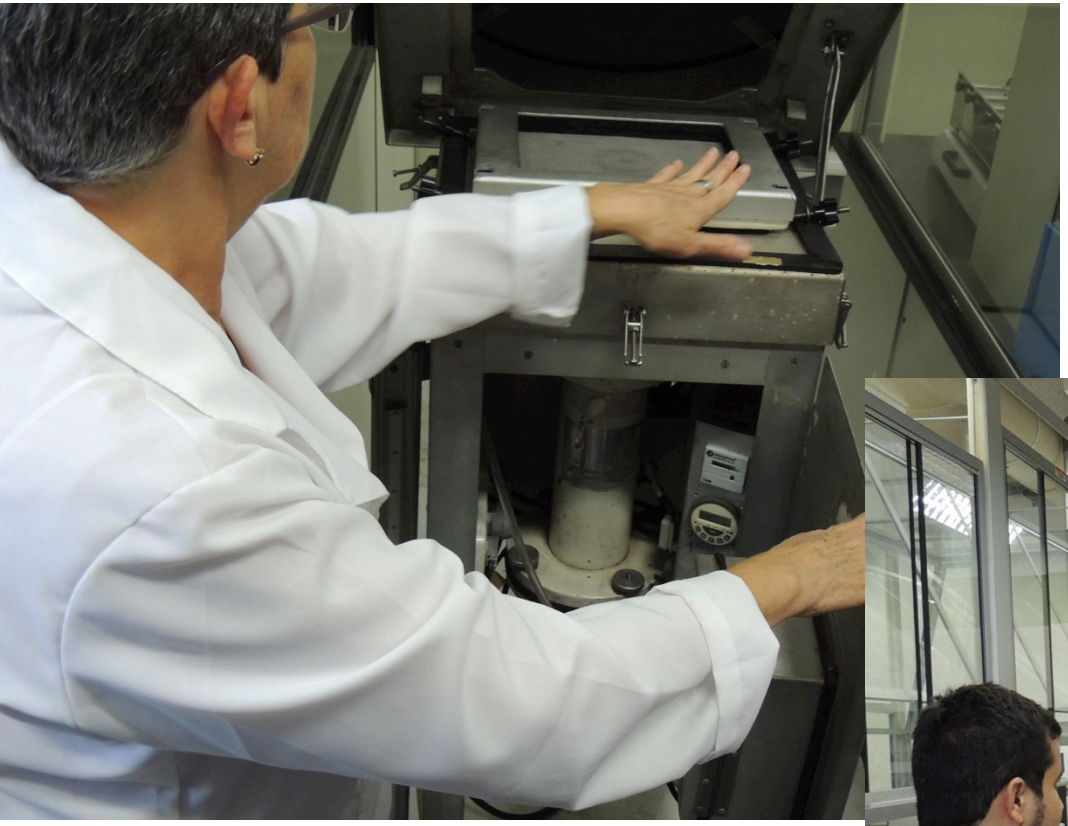

IFUSP

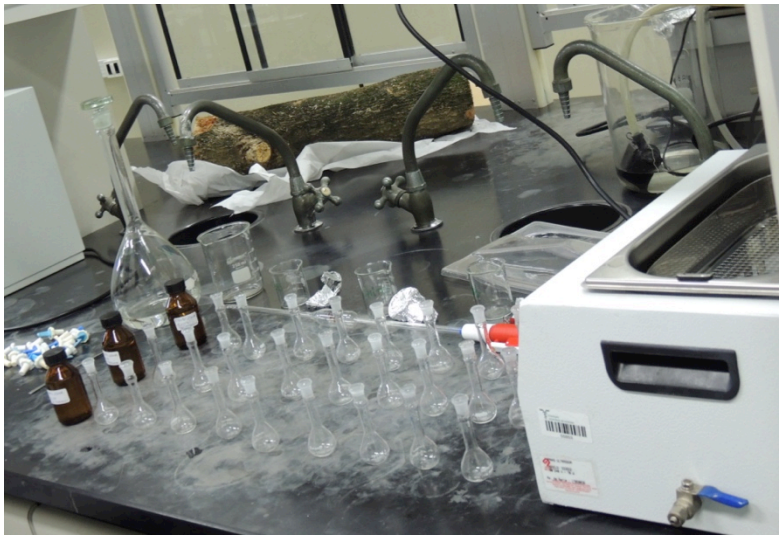
Farewell dinner

Dancing Party

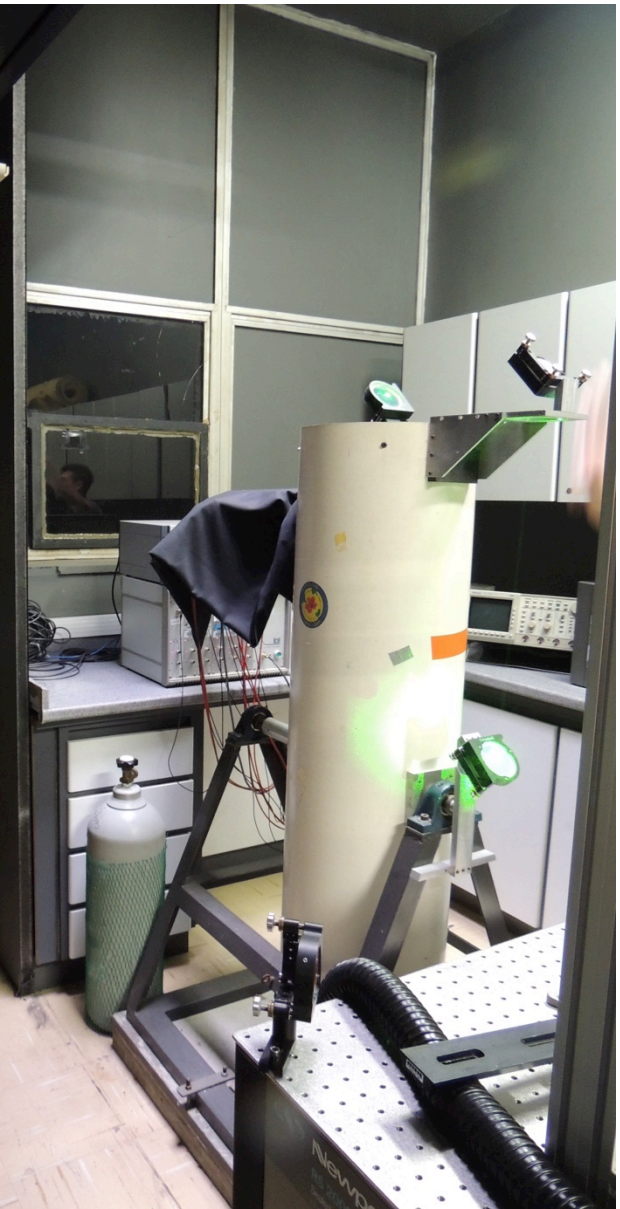
Lab Visits

Chemistry





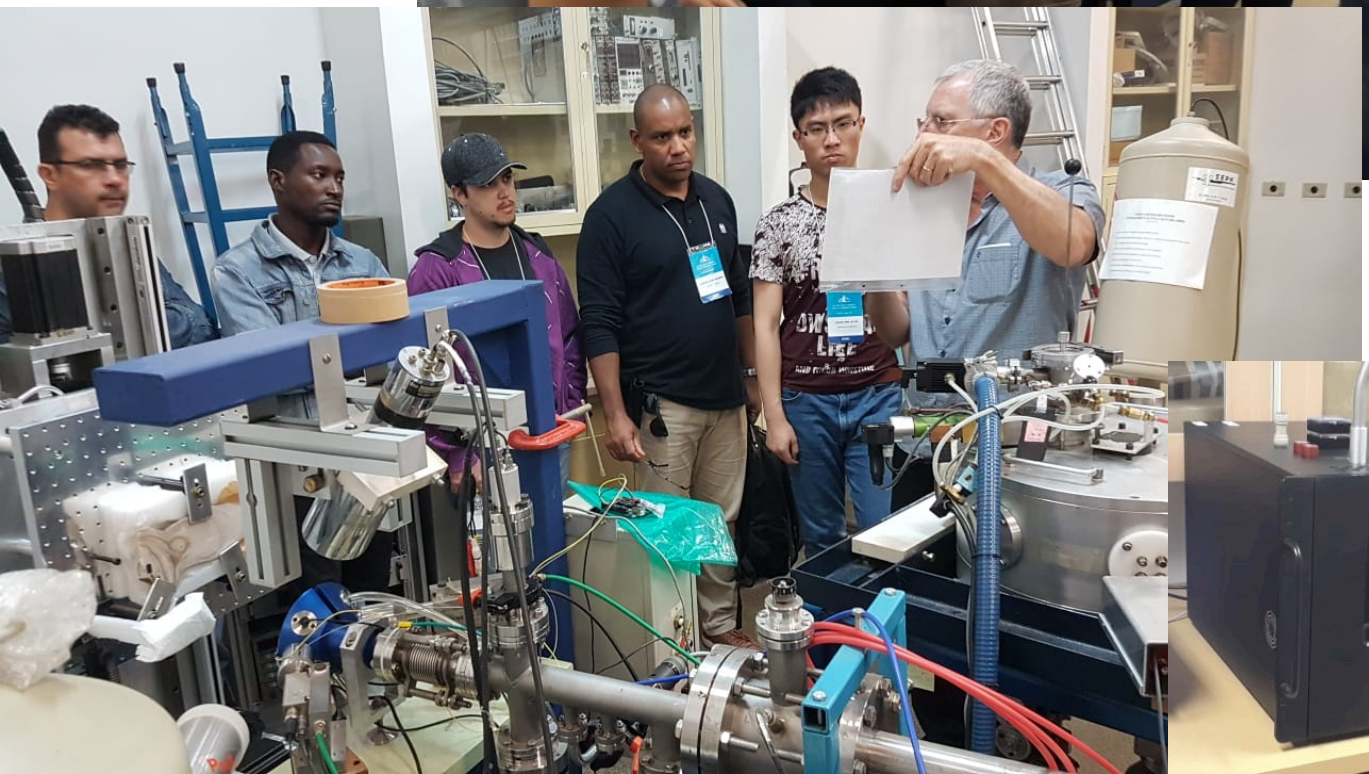
IPEN



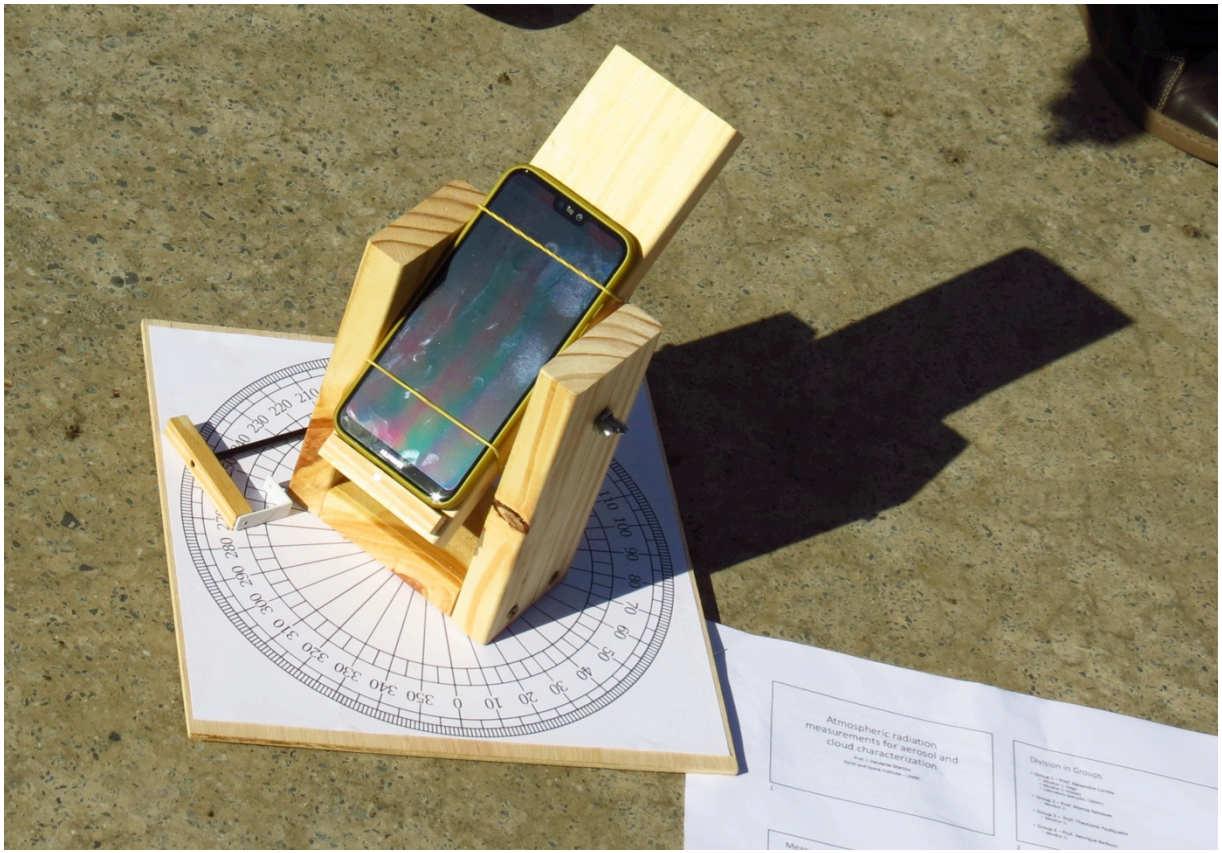
Geology

Meteorology

Physics

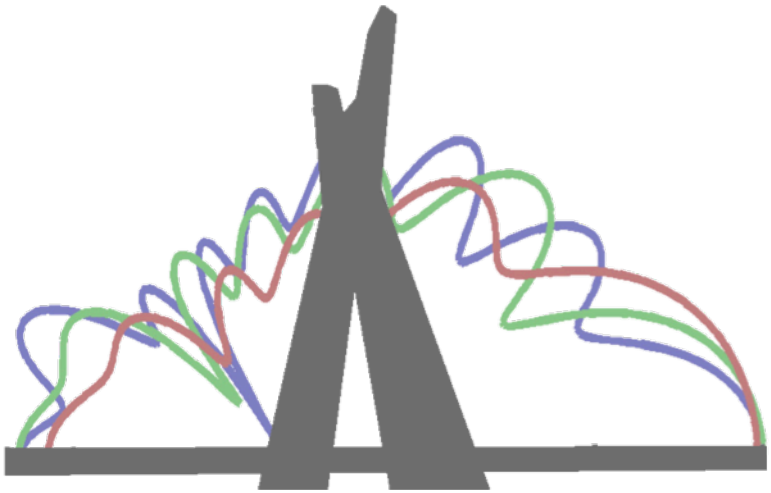


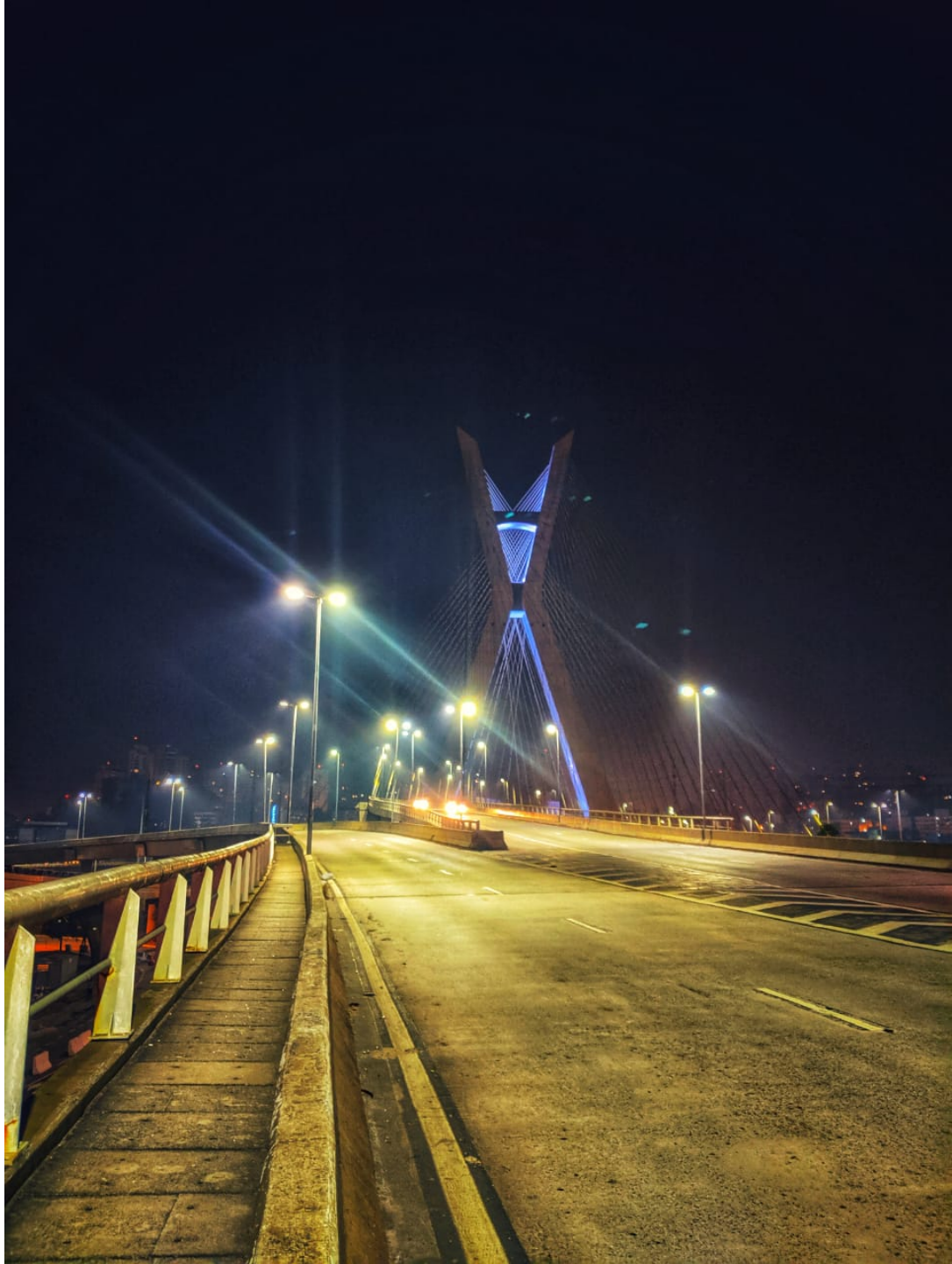
Cellphone Photometer



And you stayed late working on your data!

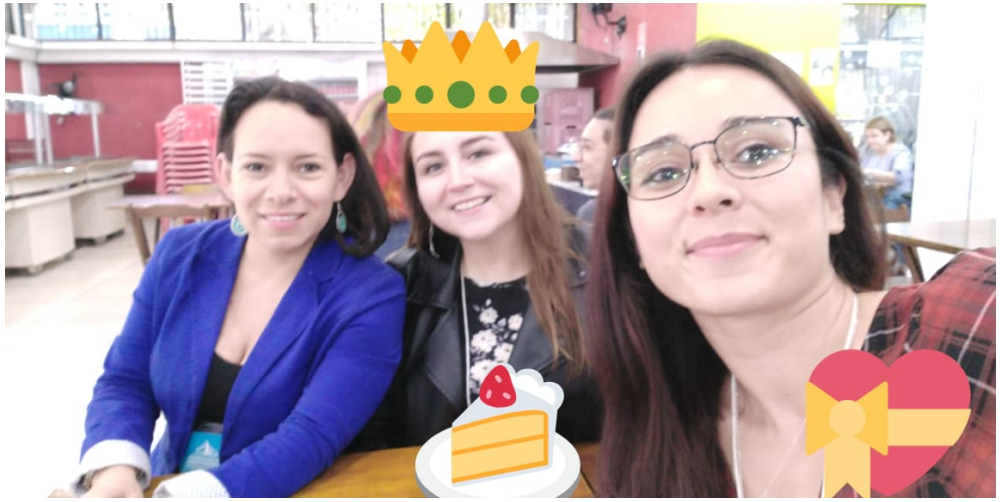
Enjoying Sao Paulo





Sight seeing in Sampa

Lots of food




Arena das Dunas, em Natal: o padrão FIFA para estádios chegou de vez ao Brasil.


Coca

Thank you all!