FluTuES

Fluxos Turbulentos no Espírito Santo

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UFES

Meaípe, novembro 2018

Objetivos

1. Andamento do projeto

2. Sugestões

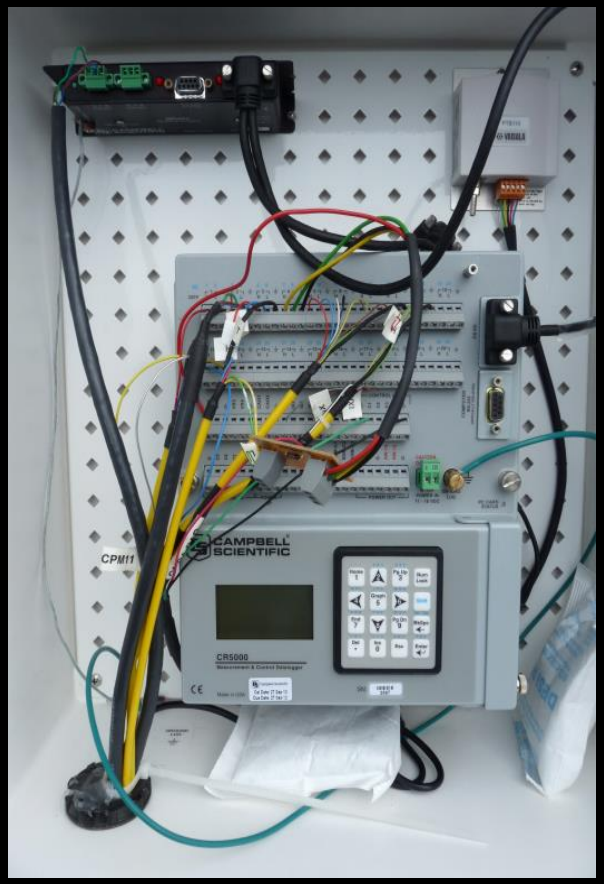
3. Passos futuros

Projeto FluTuES

Meaípe 01 – Cantinho do Curuca

Coleta contínua de dados

Sistema de aquisição de dados



Pressão atmosférica

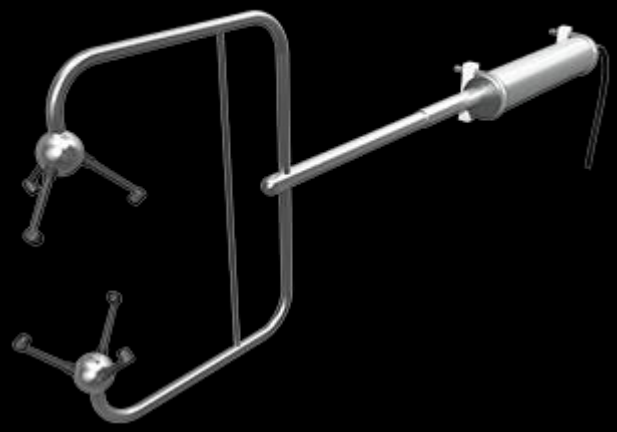
Radiação líquida

Saldo radiômetro

Temperatura do ar (ºC)

Umidade relativa do ar (%)

Velocidade e direção dos ventos



Fluxo de água e
dióxido de carbono (CO_2)

Solo

Temperatura do solo

5 cm

Fluxo de calor no solo

Operacionalização do sistema

http://www.iag.usp.br/meteo/liam/default.html

http://www.iag.usp.br/meteo/liam/default.html

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Laboratório de Interação Ar-Mar (LIAM)

Principal investigator: Jacyra Soares, PhD

The transfer of energy, mass and momentum between different surfaces (ocean, ice, sand, etc) and the atmosphere occurs through the vertical turbulent fluxes and it is an important aspect of possible climate change that the planet is suffering. These fluxes provide the coupling between, for instance, the ocean and atmosphere representing thus a key process in the climate system. Besides climate change, the knowledge of the turbulent exchange over different surfaces is crucial to:

i. Diagnostic and prognostic studies applied to numerical weather forecasting,
ii. Environmental assessment using operational dispersion models of atmosphere and ocean,
iii. Oceanographic investigations,
iv. Biogeochemical studies,
v. Wave forecasting models,
vi. Maritime engineering, etc.

The main activities carried out at LIAM are focused on observational and numerical investigations of physical phenomena related to atmospheric and oceanic boundary layers.

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Projects

- **FluTuA**
  Turbulent fluxes over the Atlantic Ocean
  Fluxos Turbulentos sobre o Atlântico

- **ETA**
  Study of the air turbulence in the Antarctic region
  Fluxos Turbulentos sobre Espirito Santo

- **FluTuES**
  Turbulent fluxes on Espírito Santo
  Fluxos Turbulentos sobre Espírito Santo

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FluTuES

Turbulent fluxes over Espírito Santo

Fluxos Turbulentos sobre o Espírito Santo

The overall objective of FluTuES project is the direct observational determination of the components of the radiation balance and the vertical turbulent fluxes of sensible heat, latent heat and momentum in the region using sensors of fast and slow responses installed in micrometeorological towers. The energy balance at the surface also will be numerically investigated and thus the development of the surface boundary layer. These simulations will allow, among other things, a better understanding of surface-atmosphere interactions in different contexts of the Espírito Santo coastal region. The towers will be located at different places, always, near the ocean.

The FluTuES project includes different smaller projects carried out in the coastal region of Espírito Santo.

1. Meaípe Project

Investigation of the surface-atmosphere interaction in the coastal region of the monazite sands of Meaípe, Guarapari (ES)

Projeto Meaípe: Investigação da interação superfície-atmosfera na região costeira das areias monazíticas de Meaípe, Guarapari (ES)

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1.Meaípe Project

Investigation of the surface-atmosphere interaction in the coastal region of the monazite sands of Meaípe, Guarapari (ES)

Investigação da interação superfície-atmosfera na região costeira das areias monazíticas de Meaípe, Guarapari (ES)

Agradecimentos: Nossos agradecimentos a todos os moradores de Meaípe e em especial ao Sr. Geraldino Nascimento Neto (Restaurante Saborear); Sra Jacilea Alves Souza (Hotel da Léa); Sr. Jailton Nascimento (Restaurante Cantinho do Curuca) e Sr. Nhozinho Matos (Restaurante Gaeta).

Meaípe (20°39'13" S, 40°30'07" W)

The sands of the Meaípe beach, in Guarapari (ES) are monazite - type of sand with high natural concentration of heavy minerals. The thorium (232Th) is found in these sands and decays in several child nuclei, one of which is radioactive, colorless, odorless and inert natural gas called radon (220Rn). Studies carried out under controlled laboratory conditions show that radon therapy can inhibit oxidative damage and enhance antioxidant functions in humans and it is used in the treatment of inflammatory pain such as rheumatoid arthritis or osteoarthritis. However, in natural environments, studies on the inhalation of radon gas point to both benefits and harm to humans due to, perhaps, the lack of knowledge of the dosage of existing natural radiation at a given location and time.

In order to map the displacement of radon gas in the local atmosphere, this project proposes the simultaneous observational measurements of the atmospheric variables of high frequency and low frequency (performed by the USP team) and the intensity of the local radioactivity (carried out by the UFES team) in the surface boundary layer of the region.

In addition to the observational part, it will also be used a coupled ocean-atmosphere numerical model (WRF with the Noah module).

Keywords: #air-sea interaction, #surface radiation balance #surface energy balance, #radon gas, # monazite sands ,# Meaípe, #Guarapari.

Palavras-chave: #interação ar-mar, #balanço de radiação na superfície, #balanço de energia na superfície, #gás radônio, #areias monazíticas, #Meaípe, #Guarapari.

First tower: Meaipe01 (Cantinho do Curuca)

Meaípe

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Meaípe (20°39’13” S, 40°30’07” W)

Meaípe01 measurement

Cantinho do Curuca

In situ data:

- Images
- Imagens
- Real-time data
- Dados em tempo real
- Last week and data average
- Última semana e dados médios

Equipaments:

Equipment	Height (m)
Net radiation (model: CNR4) Saldo radiômetro (modelo: CNR4)	
Temperature and relative humidity (model: HC2S3) Temperatura e umidade relativa (modelo: HC2S3)	
Pressure (model:CS106) Pressão (modelo: CS106)	
Soil heat flux (model:HFP01) Fluxo de calor no solo (modelo: HFP01)	
Soil temperature (model:109) Temperatura no solo (modelo: 109)	
Anemometer sonic (model:CSAT3) Anemômetro sônico (modelo: CSAT3)	
Absolute CO2 and water vapor, barometric pressure (model:LI-7500) CO2, vapor d'água e pressão atmosférica (modelo: LI-7500)	

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Next events:

Workshop areias monazíticas
Data: 1 December 2018
Local: Meaípe - Guarapari - ES - Brasil

IX Workshop de Cristalografia
MONAZITE SANDS: Characterization and properties in Meaípe - Guarapari - ES
Data: 24 and 25 May 2019
Local: Meaípe - Guarapari - ES - Brasil

Previous events:

Costa de Meaípe


COCADA
DOCE DE JACA
DA LELA

Areia

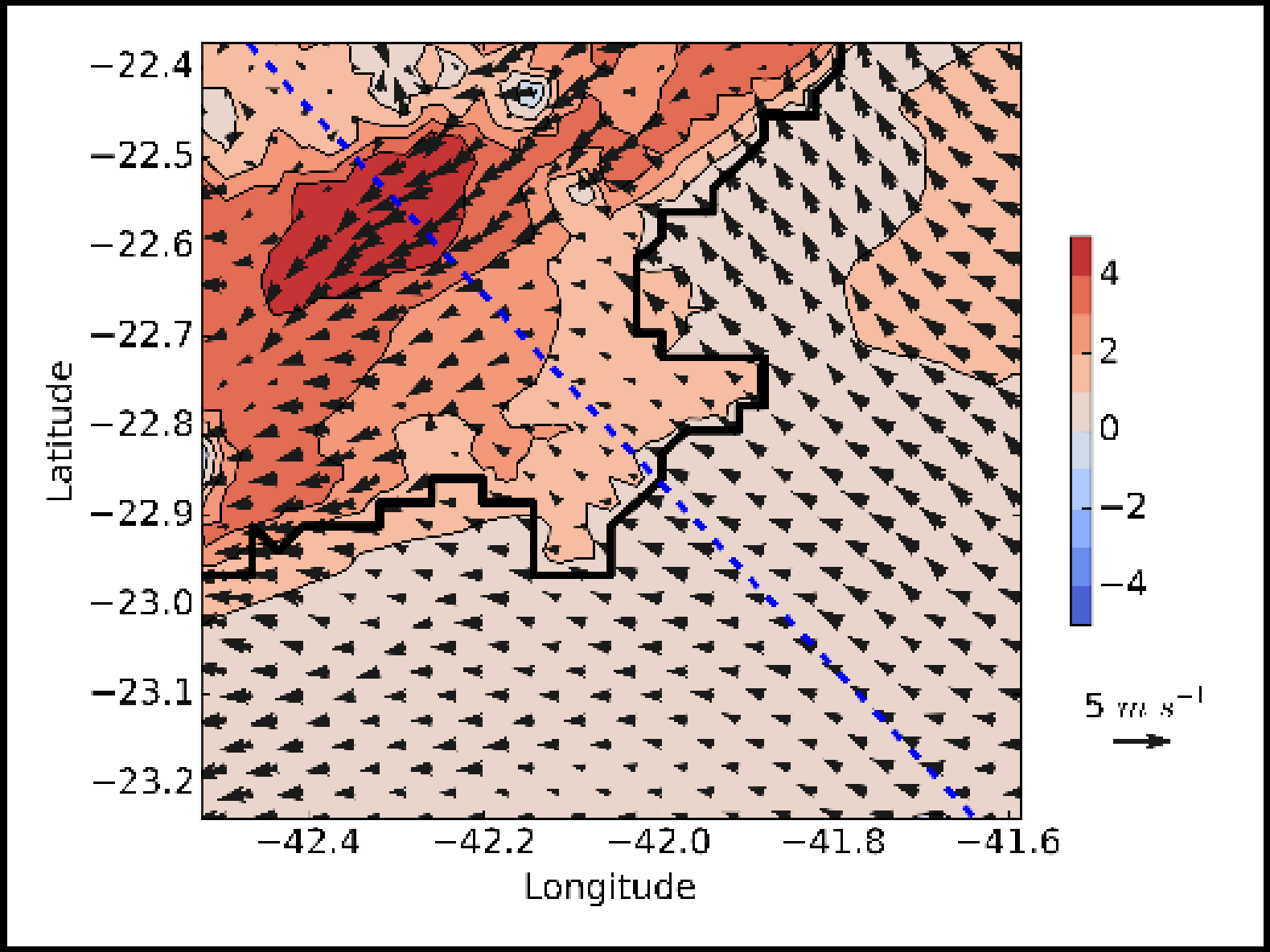

18 out 2018

Dra Flávia Noronha Dutra Ribeiro

Gestão Ambiental

Escola de Artes, Ciências e Humanidades (EACH)

Universidade de São Paulo (USP)


−22.4
−22.5
−22.6
−22.7
−22.8
−22.9
−23.0
−23.1
−23.2
Latitude
−42.4
−42.2
−42.0
−41.8
−41.6
Longitude
4
2
0
−2
−4
5 m s−1

Próxima atividade

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dias para

9th Workshop de Cristalografia Aplicada a Ciências e Engenharia de Materiais

IX - Workshop de Cristalografia

Meaipe - Guarapari - ES - Brasil

24 e 25 de Maio de 2019

O Grupo de Física Aplicada da UFES vem realizando este Workshop desde 2010.

O ***9º Workshop de Cristalografia Aplicada a Ciências e Engenharia de Materiais*** em 2019 abordará os seguintes temas:

- ***AREIAS MONAZÍTICAS***: *Caracterização e propriedades em Meaípe - Guarapari - ES*
- ***NANOTECNOLOGIA***: *Aços nanoestruturados, microtomografia, tensão residual e DRX ressonante.*
- ***O ACELERADOR SYNCROTRON SIRIUS:*** *Futuras facilidades experimentais .*

Coordenador: *Prof. Dr. Marcos Tadeu D'Azeredo Orlando - UFES*

PPGEM - Programa de Pós-Graduação em Engenharia Mecânica - UFES

Apoio: ***Hotel da LÉA, Restaurante Saborear, Restaurante Cantinho do Curuca, Restaurante Gaeta, ABCr, CAPES e CNPQ.***

CNPq CAPES ABCr

http://www.fisica-aplicada.com.br/ii-workshop-de-cristalografia

Obrigada!

Nossos agradecimentos a todos os moradores de Meaípe!!!

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