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INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

Online Remote Sensing Education Experience at the Brazilian National Institute for Space Research

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The 37th International Symposium on Remote Sensing of Environment
Earth Observation for Development and Adaptation to a Changing World
Tshwane, South Africa, 8 - 12 May 2017

ISRSE37
TSHWANE 2017

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CAPACITY BUILDING INITIATIVES

➢ **EARTH OBSERVATION DIRECTORATE – OBT**

➢ **CENTER FOR WEATHER FORECAST AND CLIMATE STUDIES - CPTEC**

➢ **AMAZON REGIONAL CENTER - CRA**

OPEN SOURCE SOFTWARE

Geotechnology available as open source software with no use restrictions

Environmental Modelling System

TerraME

General purpose GIS's

TerraView

Distributed Hidrological Modelling

TerraHidro

Library to develop geographical applications

TerraLib

Data Mining System

GeoDMA

Remote sensing imagery vector editor

TerraAmazon

Environmental Risks Monitoring, Analysis and Alert

TerraMA²

Mapping land use land cover of the deforested areas of the Brazilian Legal Amazon

TerraClass

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Remote Sensing Education at OBT

Face-to-Face & in Portuguese

❑ Graduate Program in Remote Sensing (MsC and PhD)

- 500+ students

❑ Short Courses in GIS and Remote Sensing (40 h)

- 4665 people trained (1999-2016)

❑ Course for Teachers (Elementary School): Remote Sensing Technology applied to Environmental Studies

- 1200 teachers trained (1997 – 2016)

Remote Sensing Education at OBT

Online Education & in Portuguese

❑ Distance learning program in GIS and Remote Sensing

- 900 people trained (2004-2016)

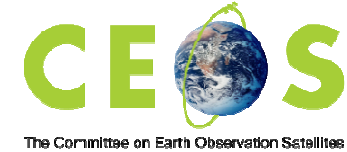- Brazil, Lusophone countries in Africa and Latin America

Multilateral Cooperation – CEOS WGCapD

Online Education – Different Models

International e-learning course on Introduction to Remote Sensing for Educators	❑ February to June, 2013. ❑ Anglophone Countries in Africa. ❑ 71 registrations/29 selected/16 sucessfully completed. ❑ Instructors: CNES/IRD, CONAE, INPE, ISRO, NASA, NOAA, SANSA, UNOOSA e USGS.	❑ Long term initiative – 4 months ❑ 100% online
WGCapD & WGDisasters Distance Education Course Webinar Series on Remote Sensing Technology for Disaster Management	❑ April to June, 2015. ❑ Africa, Asia, Europe, Americas and Oceania. ❑ 144 registrations /99 selected/46 sucessfully completed ❑ Instructor: INPE, ISRO, ESA, NOAA, USGS e NASA	❑ Medium term initiative – 2 months ❑ 100% online

Support for live stream	❑ Civil Security: Understanding the Risks, Preventing Disasters, and Mitigating the Impacts with Earth Observation (EO) Applications and Services
	    ❑ Quebec City: Oct., 2015
	    October 29, 2015
	❑ One Earth – One Health Workshop: Contributions of Earth Observations (EO) to Public Health Practices
		❑ Short term initiative – 1 day

Center for Weather Forecast and Climate Studies - CPTEC

Center of Excellence
WMO-CGMS Virtual Laboratory for Education and Training in Satellite Meteorology

Activities include: organizing training, workshops, preparing and teaching courses and helping Partners with Advertisement and translation to Portuguese of some modules

- ❑ **Training Events held in 2016**
  - Workshop on aerosol-cloud-precipitation interactions in Amazonia during the acridicon chuva campaign
  - Training for GEONETCast-Americas Reception Station, Products and SIGMACast Software
  - Fire Detection and Monitoring by Satellite
- ❑ **Training Events planned for 2017**
  - Training Access and Use of JPSS and GOES-R Imagery for Environmental
  - Applications Fire Detection and Monitoring by Satellite
  - Satellite Meteorology (online course, 2nd semester)
  - **Monthly Webinars**

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Amazon Regional Center - CRA

Face-to-Face & Online

- TerraAmazon System
- Basic concepts on remote sensing, digital image processing and geoprocessing
  - Tutorials and Instructors (**Portuguese, English, French and Spanish**)
  - **Video-classes – YouTube – channel INPE-CRA**
  - **Site for online course (under development)**
  - Presentations and hands-on activities
  - Pre and post students assessment
  - Online support after course
  - Discussion Forums
  - Publications

Lessons Learned & Best Practices

1- Define main goal

- Build Awareness
- Build Skills

2- Map and Align

- Expected Learning Outcomes;
- Competencies;
- Learning Activities;
- Assessment.

3- Plan with these <u>pillars</u> in mind:

- Two-way communication (dialogue);
- Focus on learner;
- Match your technology with your goal;
- Hands-on to build skills.

4- Training evaluation.

5- Lessons Learned report.

Lessons Learned & Best Practices

Open Educational Resources – Discoverable Learning Materials

http://learningcenter.obt.inpe.br/

https://vimeo.com/inpeselper

https://www.youtube.com/channel/
UCu1VyAc8Vb7Ai0LfynOptnw

THANK YOU!

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