



MINISTÉRIO DA CIÊNCIA, TECNOLOGIA, INOVAÇÕES E COMUNICAÇÕES  
**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

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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**



General purpose GIS's



Environmental Modelling System



Distributed Hidrological Modelling



TerraLib

Library to develop geographical applications



Data Mining System



TerraMA<sup>2</sup>

Environmental Risks Monitoring, Analysis and Alert



TerraAmazon

Remote sensing imagery vector editor



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





# 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



GoToMeeting  
by citrix

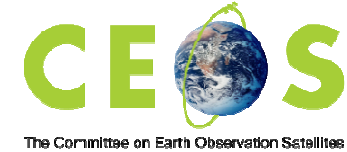


GoToWebinar  
by citrix



# Multilateral Cooperation – CEOS WGCapD

## Online Education – Different Models



<p><b>International e-learning course on Introduction to Remote Sensing for Educators</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> February to June, 2013.</li> <li><input type="checkbox"/> Anglophone Countries in Africa.</li> <li><input type="checkbox"/> 71 registrations/29 selected/16 successfully completed.</li> <li><input type="checkbox"/> Instructors: CNES/IRD, CONAE, INPE, ISRO, NASA, NOAA, SANSa, UNOOSA e USGS.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Long term initiative – 4 months</li> <li><input type="checkbox"/> 100% online</li> </ul>
<p><b>WGCapD &amp; WGDIsasters Distance Education Course Webinar Series on Remote Sensing Technology for Disaster Management</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> April to June, 2015.</li> <li><input type="checkbox"/> Africa, Asia, Europe, Americas and Oceania.</li> <li><input type="checkbox"/> 144 registrations /99 selected/46 successfully completed</li> <li><input type="checkbox"/> Instructor: INPE, ISRO, ESA, NOAA, USGS e NASA</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Medium term initiative – 2 months</li> <li><input type="checkbox"/> 100% online</li> </ul>
<p><b>Support for live stream</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Civil Security: Understanding the Risks, Preventing Disasters, and Mitigating the Impacts with Earth Observation (EO) Applications and Services</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Quebec City: Oct., 2015 October 29, 2015</li> </ul> </li> <li><input type="checkbox"/> <b>One Earth – One Health Workshop: Contributions of Earth Observations (EO) to Public Health Practices</b></li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Short term initiative – 1 day</li> </ul>



# 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**





# 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

Capacitree





# 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 pillars in mind:

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

## 4- Training evaluation.

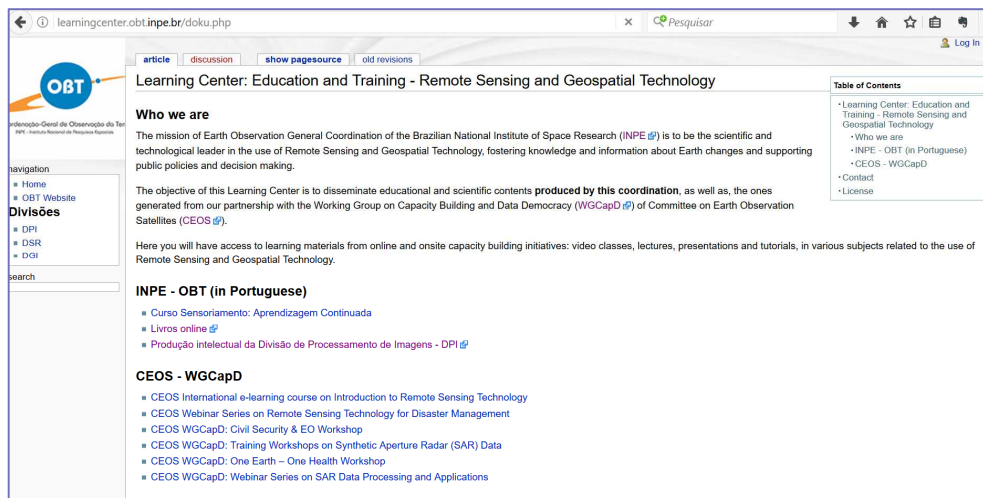
## 5- Lessons Learned report.



# Lessons Learned & Best Practices

## Open Educational Resources – Discoverable Learning Materials

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

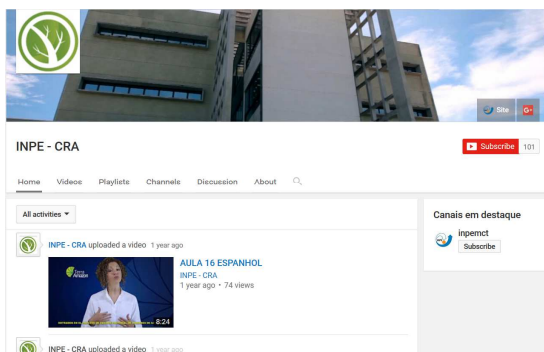


The screenshot shows the website [learningcenter.obt.inpe.br/doku.php](http://learningcenter.obt.inpe.br/doku.php). The page title is "Learning Center: Education and Training - Remote Sensing and Geospatial Technology". It features a navigation menu on the left with links to Home, OBT Website, and Divisões (DPI, DSR, DGI). The main content area includes sections for "Who we are", "The objective of this Learning Center", "Here you will have access to learning materials", "INPE - OBT (in Portuguese)", "CEOS - WGCapD", and "CEOS - WGCapD: Webinar Series on SAR Data Processing and Applications". A "Table of Contents" sidebar is also visible.

<https://vimeo.com/inpeselper>



The screenshot shows the Vimeo channel page for "INPE & SELPER-BRASIL". It displays four video thumbnails: "Projeto TOPODATA - Marcio Valeriano - Parte 1", "Projeto TOPODATA - Marcio Valeriano - Parte 2", "Projeto TOPODATA - Marcio Valeriano - Parte 3", and "INPE\_INSTITUCIONAL". Each video has a play button and a view count.



The screenshot shows the YouTube channel page for "INPE - CRA". It features a header with the channel name and a "Subscribe" button. Below the header, there is a video thumbnail titled "AULA 16 ESPANHOL" with 74 views. The page also includes a "Canais em destaque" section with a link to "inpenct".

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

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THANK YOU!

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