Agenda Item # 31

CEOS 6th Working Group for Capacity Building and Data Democracy (WGCapD)-6 Annual Meeting

DLR Oberpfaffenhofen, Germany
27th-29th March, 2017
Content

- The project
  Motivation
  Activities

- The web portal
  Version 1.0
  Version 2.0

- E-Learning
  Issues & Challenges
  Future Trends
MOTIVATION
Motivation
Motivation
SAR-EDU Summer School

- Established in 2013
- Yearly events
- Focus on Applications
- Interdisciplinary exchange

Participants of the Summer School 2013 @ Dornburg Castle
Version 1.0

40 Lessons
12 Tutorials
10 Talks

62 units
Biomass estimation using SAR data

Lesson Description

Biomass is a crucial parameter in the estimation and quantification of the global carbon cycle. In this lesson the estimation of above ground biomass from SAR data is presented. Several SAR based estimation techniques are introduced and compared to other biomass measurement techniques. Furthermore, numerous application examples of SAR data in biomass estimations on different scale levels are given.

Download [40.37 MB]
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- URL: saredu.dlr.de/
- Creative Commons Material
- Technology: Drupal CMS
- Responsive Design
VERSION 2.0
Version 2.0

BASICS
- MATHEMATICS
- DATA PROCESSING
- SAR IMAGING

METHODS
- IMAGE PROCESSING
- INSAR
- POLSAR
- PASSIVE MICROWAVE
- RADARGRAMMETRY

APPLICATIONS
- ANTHROPOSPHERE
- BIOSPHERE
- CRYOSPHERE
- HYDROSPHERE
- LITHOSPHERE
- OCEANOGRAPHY
Community

LMS

OER
Version 2.0

Social Network, e.g.

ResearchGate

Learning Platform, e.g.

Future Learn

SAREDU
Version 2.0
Figure: Milestones in the open education development (redrawn after Aydin, EDULEARN 2016).
MOOCs

Figure: Hype-Cycle after Gartner Inc.

VISIBILITY

Peak of Inflated Expectations

Plateau of Productivity

Slope of Enlightenment

Trough of Disillusionment

Technology Trigger

TIME
Figure: MOOCs in the Hype Cycle (Poelmans & Wautelet EDULEARN 16)
EO Context

Figure: Trinity of EO Data, Tools and Community to foster new and existing knowledge.
ISSUES & CHALLENGES
• Bridging the Digital Divide
• Digital Literacy
• Engaging the online learner
The Global Digital Divide

Computers Per 100 People

- Yellow (0 - 4.54)
- Orange (4.54 - 12.65)
- Brown (12.65 - 25.36)
- Gray (No Data)

Source: United Nations Global Development Goals Indicators

Cartography by: Derek Boegeard

Robinson Projection
Digital Divide

Internet Population and Penetration

Internet Population
- about 1 million users

Internet Penetration (%)
- >80
- 60 - 80
- 40 - 60
- 20 - 40
- <20

by Mark Graham (@goodplace) and Stefano Di Sabbata (@mapsthought)
Internet Geographies at the Oxford Internet Institute
October 2013 • geography.ox.ac.uk

data source: World Bank 2011
http://data.worldbank.org

SAREDU: Remote Sensing Education Initiative
IDEA: ‘SARbuntu’

'plug&play'
Linux distribution
with free SAR software packages

Obstacle:
Funding
Infrastructure for Distribution
IDEA: ‘Offline Content’

Distribution of MOOC content via USB Stick/DVD

Obstacle:

Funding Infrastructure for Distribution
Digital Literacy

- E-Safety
- Functional skills
- Creativity
- Effective communication
- Critical thinking and evaluation
- Ability to find and select information
- Cultural and social understanding
- Collaboration
An engaging online course is:

- Clearly and attractively presented (*structure, design*),
- Active and **hands-on**, 
- Authentic and meaningful (*real world examples*),
- **Collaborative** (learning as social experience),
- Reflective (learning encourages **self-observation**),
- **Responsive** (to learning abilities and preferences)
An engaging online course is:

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Future trends

Adaptive Learning

- Open University (1969)
- Online education (1990)
- E-Learning (1998)
- Open Course Ware (2000)
- Open Educational Resources (2003)
- Massive Open Online Courses (2008)
Adaptive Learning

**The Types of Intelligence**

- **Intrapersonal**: Understanding yourself, what you feel, and what you want.
- **Spatial**: Visualizing the world in 3D.
- **Naturalist**: Understanding living things and reading nature.
- **Musical**: Discerning sounds, their pitch, tone, rhythm, and timbre.
- **Logical-Mathematical**: Quantifying things, making hypotheses and proving them.
- **Linguistic**: Finding the right words to express what you mean.
- **Bodily-Kinesthetic**: Coordinating your mind with your body.
- **Interpersonal**: Sensing people’s feelings and motives.
- **Existential**: Tackling the questions of why we live, and why we die.

*Frames of Mind: The Theory of Multiple Intelligences* by Howard Gardner

Funders and Founders
# Adaptive Learning

## Overview

**TOTAL COURSES**
3
- View Report

**TOTAL USERS**
10
- View Report

### Recent Activities

![Chart showing recent activities](chart.png)

### Most Completed Courses

- **Introduction to Radar remote sensing**
  - 0% completed
- **My second course**
  - 0% completed
- **SAR Tomography**
  - 0% completed

## Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Enrolled</th>
<th>Not Started</th>
<th>In Progress</th>
<th>Completed</th>
<th>Avg Quiz Score</th>
<th>Avg Time to Complete</th>
<th>Avg Time Spent</th>
<th>% Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Radar remote sensing</td>
<td>10</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>89%</td>
<td></td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>My second course</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>SAR Tomography</td>
<td>10</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>0%</td>
</tr>
</tbody>
</table>
Development of adaptive tools and course structures
Adaptive Learning

Development of adaptive tools and course structures
Adaptive Learning

Development of adaptive tools and course structures

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Adaptive Learning

Development of adaptive tools and course structures

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Adaptive Learning

Development of adaptive tools and course structures

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Adaptive Learning

→ Data driven approaches
→ User focused learning experiences

User data protection  Free of commercial interests
FOR A FAIR SELECTION EVERYBODY HAS TO TAKE THE SAME EXAM! PLEASE CLIMB THAT TREE