

SAR-EDU

An education initiative for applied
Synthetic Aperture Radar remote sensing

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Outline

1. Motivation

2. Concept „SAR-EDU“

- Structure

- Consortium

3. Content

4. Webportal

5. „SAR-EDU“ Summer School 2013

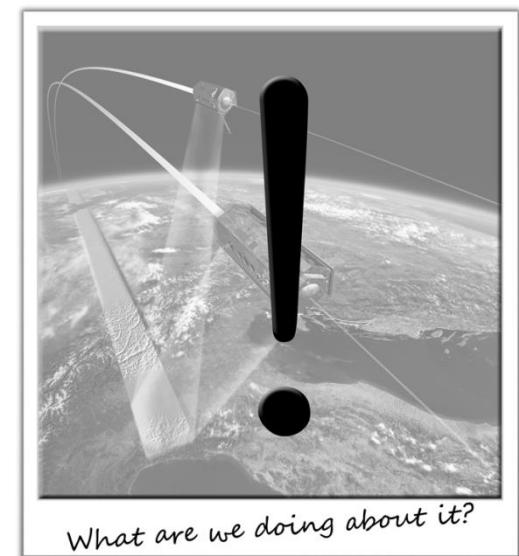
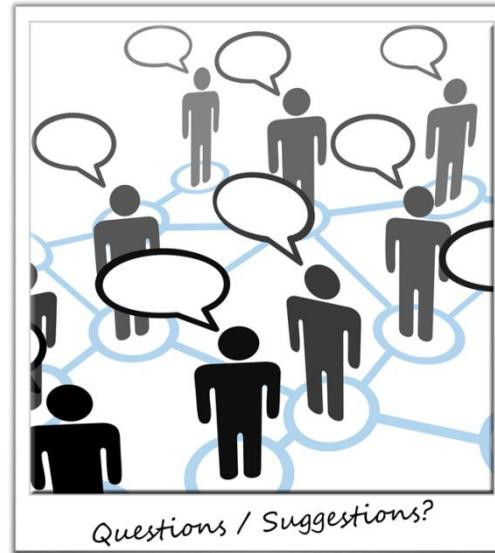
Aim of this presentation

Problem



Approach

Discussion



SEASAT

SIR-A

SIR-B

SIC-C/X-SAR

ERS-1

ERS-2

ENVISAT

Sentinel-1

JERS-1

ALOS

ALOS-2

RADARSAT-1

RADARSAT-2

SRTM

TerraSAR-X

TanDEM-X

COSMO-SkyMed

TanDEM-L

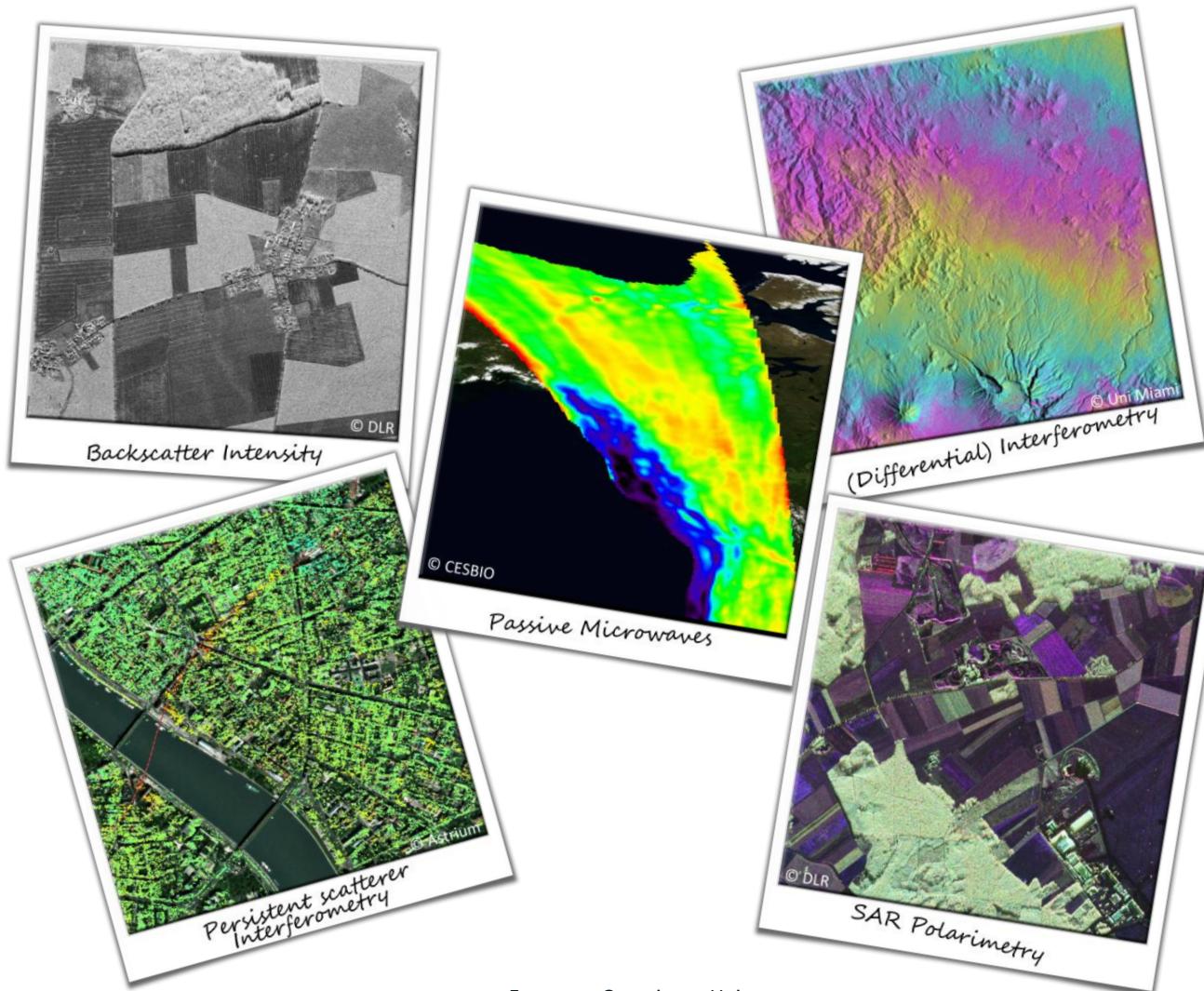
X-Band

C-Band

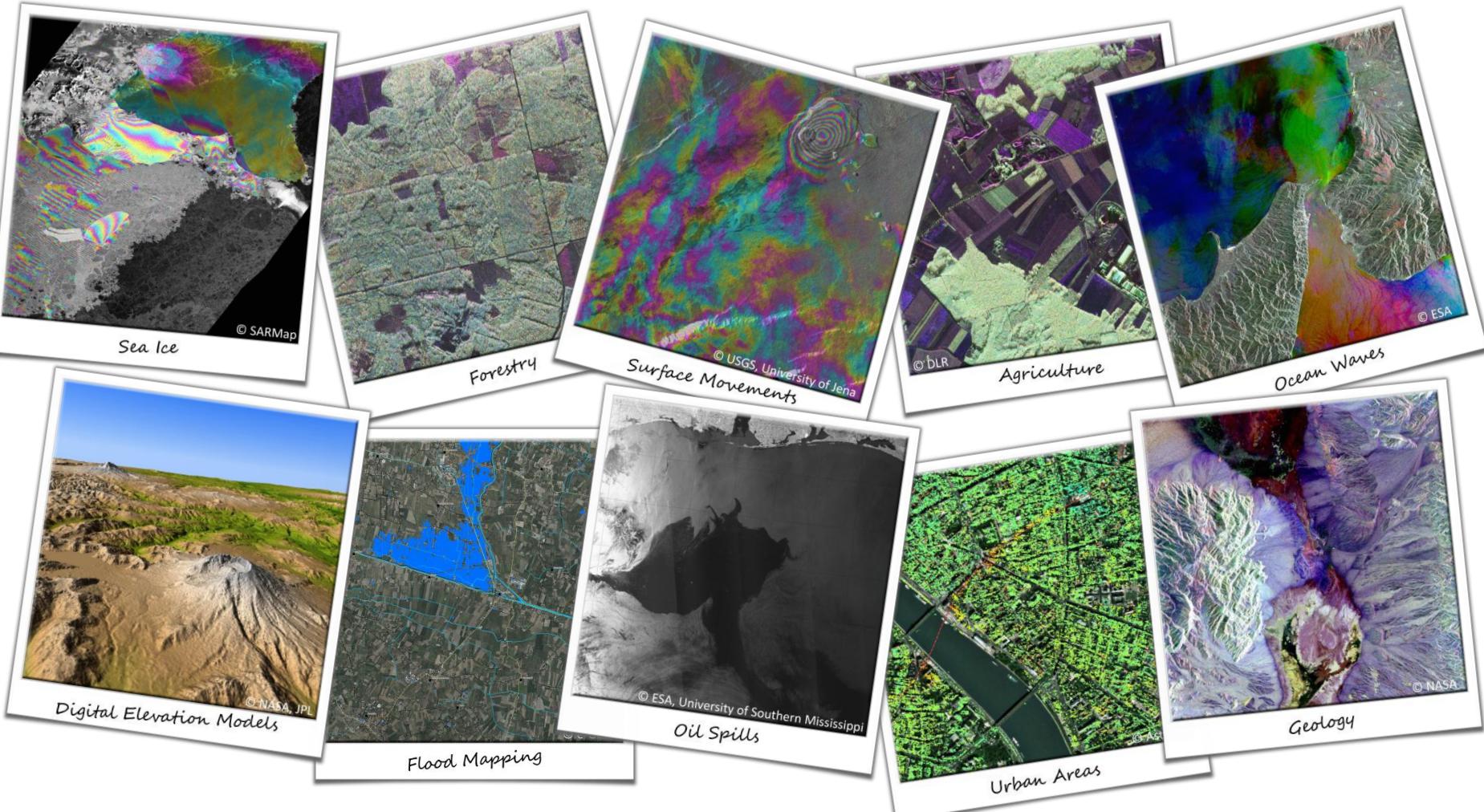
L-Band

1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015

Techniques



Applications



Coordination WP 1000

Concept WP 2000

Basics WP 3000

Mathematics

WP 3100

Physics

WP 3200

Data Processing

WP 3300

Sensor
Technology

WP 3400

Methods WP 4000

Image Processing

WP 4100

InSAR

WP 4200

Polarimetry

WP 4300

Passive
Microwaves

WP 4400

Applications WP 5000

Anthroposphere

WP 5100

Biosphere

WP 5200

Lithosphere

WP 5300

Hydrosphere

WP 5400

Cryosphere

WP 5500

Ozeanography

WP 5600

Evaluation WP 6000

Release WP 7000



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TECHNISCHE
UNIVERSITÄT
MÜNCHEN



EOS
Earth Observation Services
JENA



GFZ
Helmholtz-Zentrum
POTS DAM

FAU
FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG



TU Clausthal

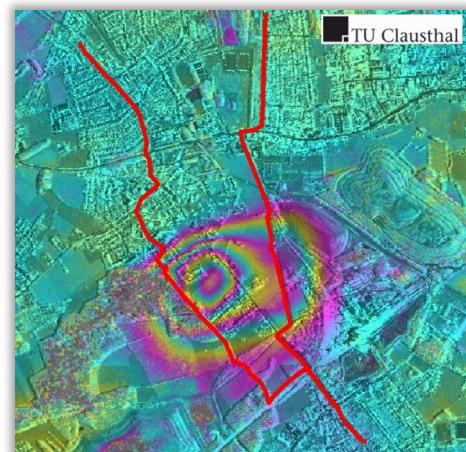
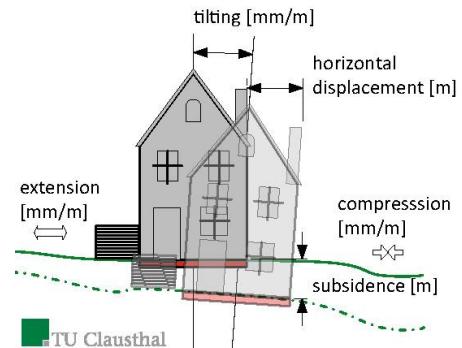


Anthroposphere

- ↗ Measurement techniques & Limitations
- ↗ Data requirements and delivery
- ↗ Optimisation of SAR deformation measurement
- ↗ Application examples
 - ↗ Underground hard coal mining
 - ↗ Mining coal dump
 - ↗ Lignite opencast mining
 - ↗ Natural gas storage
 - ↗ Nuclear weapons testing
 - ↗ Structure deformation
 - ↗ Monitoring of moving targets with ATI



TU Clausthal
Clausthal University of Technology



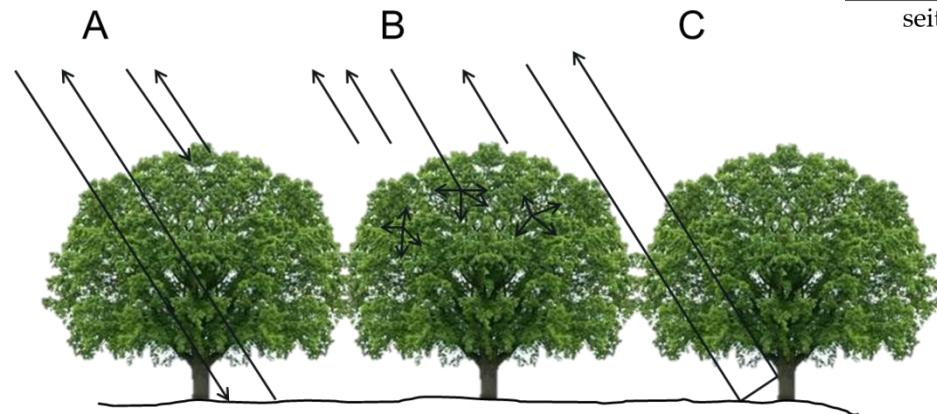


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Biosphere

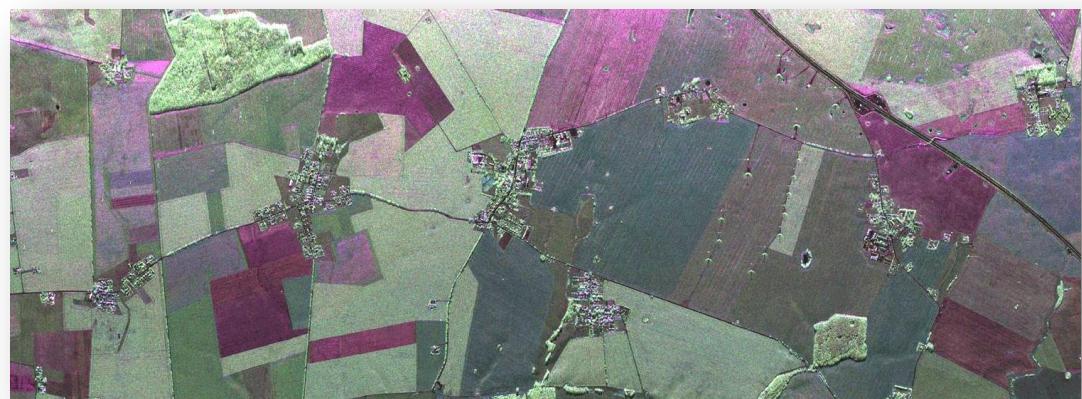
Biomass

- ↗ Basics
- ↗ Methods
 - ↗ Forest monitoring
 - ↗ Biomass estimation
- ↗ Examples



Agriculture

- ↗ Basics
 - ↗ Sensor parameters
 - ↗ Target parameters
- ↗ Methods
- ↗ Applications



(R=HH, G=VV, B=HV) © DLR

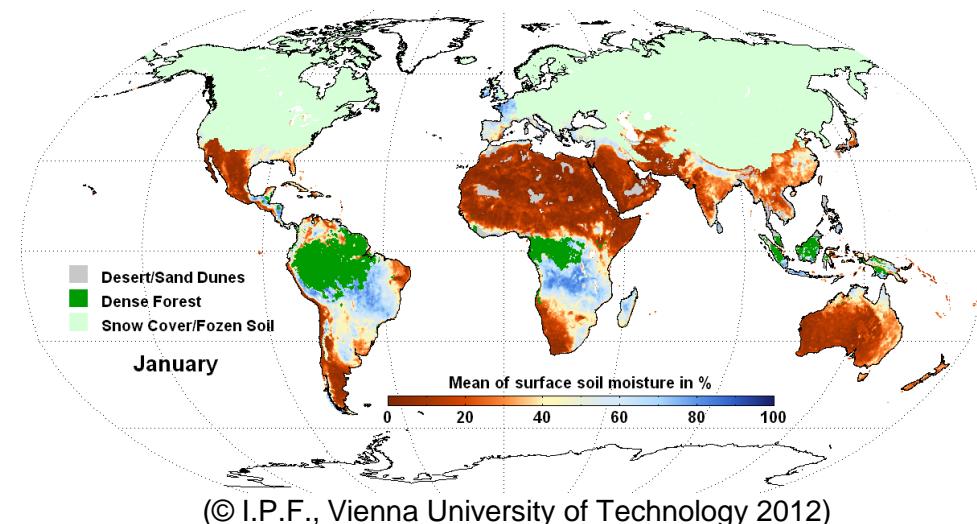
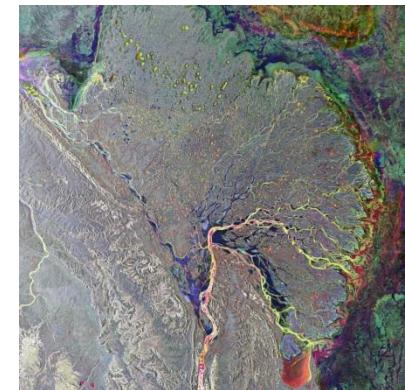
Hydrosphere

EIOIS

EARTH OBSERVATION SERVICES

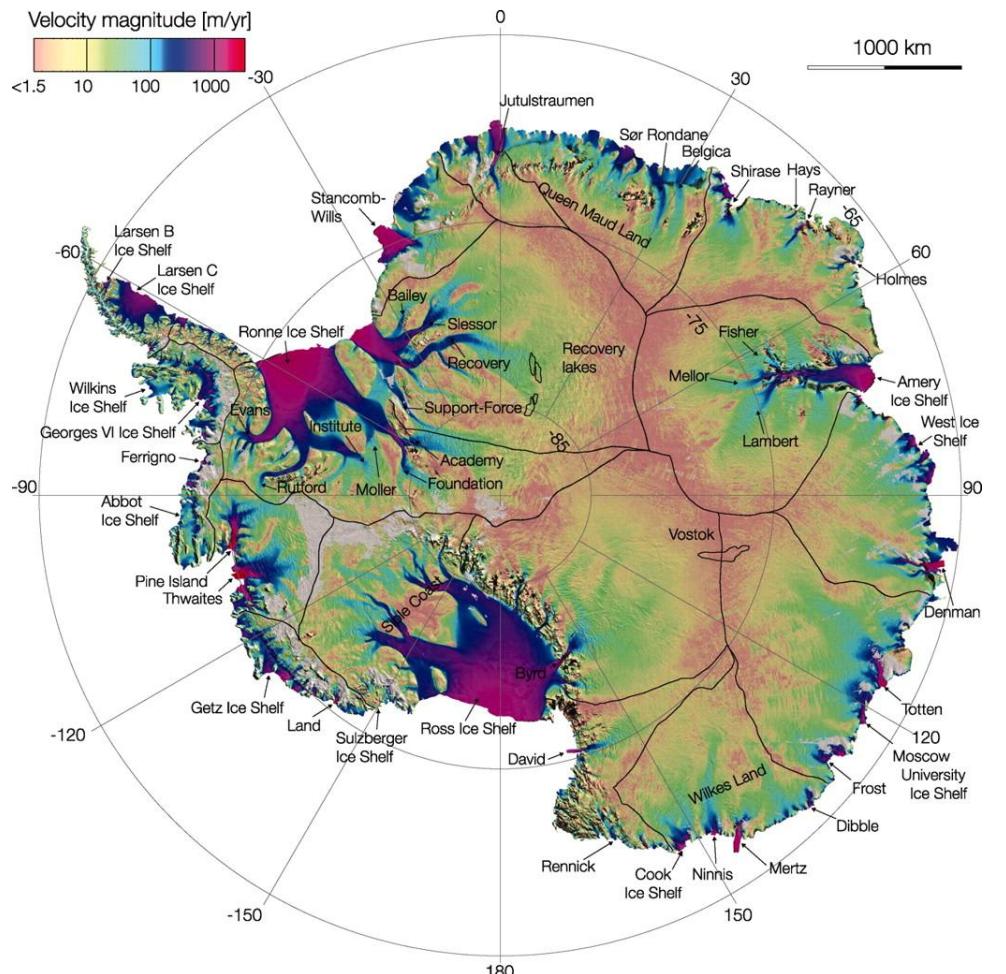
- ↗ Introduction
- ↗ Soil Moisture
- ↗ Other Applications
 - ↗ Wetlands, Water Bodies, Floods
 - ↗ Precipitation
 - ↗ River Velocity
- ↗ Sensors & Missions

Fig. 79: Lena Delta, largest delta in the Arctic, seen by Envisat ASAR. Color composite, R: 10 Mar 2008, G: 22 Oct 2007, B: 13 Jun 2008
(©2012 ESA Multi-media gallery)



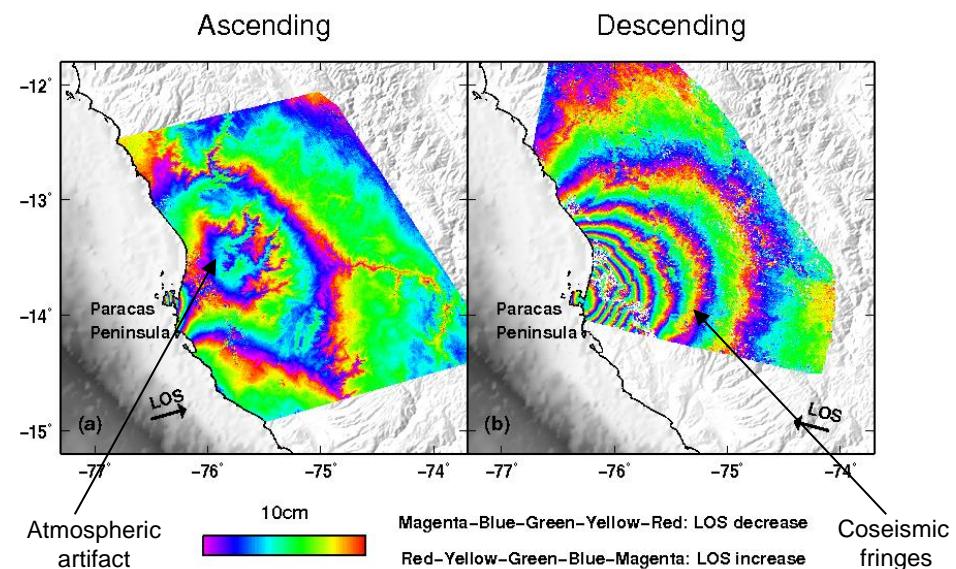
Cryosphere

- ↗ Physical principles
- ↗ Snow Cover
- ↗ Glaciers & Ice Sheets
- ↗ Sea Ice
- ↗ Permafrost



Lithosphere

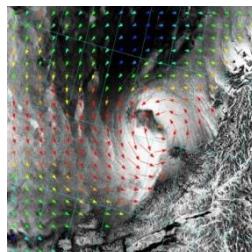
- ↗ Introduction to Plate Tectonics
 - ↗ Earthquakes
 - ↗ Interseismic deformation
 - ↗ Postseismic deformation
 - ↗ Volcano deformation
 - ↗ Landslides
 - ↗ Anthropogenic deformation



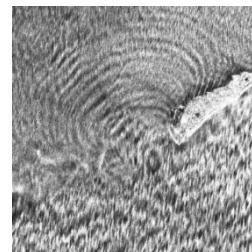
Oceanography



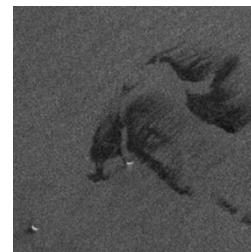
- ↗ Overview
- ↗ Surface Wind
- ↗ Ocean surface waves
- ↗ Ocean surface currents
- ↗ Oil detection



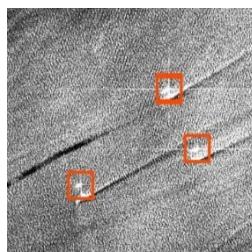
Wind



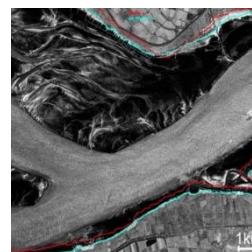
Sea State



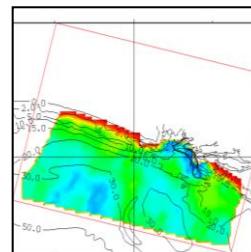
Oil



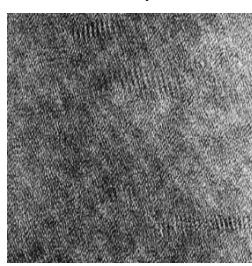
Ships



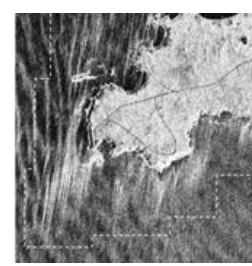
Land-Water Line



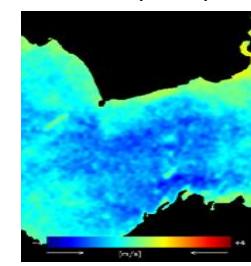
Bathymetry



Wave groups



Wave breaking



Surface Currents

SAR-EDU Webportal

<http://portal.sar-edu.uni-jena.de/>

- Presentations
- Scripts
- Tutorials
- Videos
- Interactive Content
- Weblinks/Further reading
- ...

The screenshot shows the homepage of the SAR-EDU Portal. At the top, there's a navigation bar with the SAR logo and the text "SAR-EDU Portal". Below the header is a banner featuring a satellite in space and the text "Remote Sensing Education Initiative". The main content area includes a "Home" link, a search bar, and a "Navigation" sidebar with links for "Add content", "My account", and "Log out". The central content area contains a summary of the project, a "Read more" link, and an "Add new comment" link. A small RSS feed icon is also visible.

creative
commons !!!



SAR-EDU
Summer School
für
Angewandte
Radarfernerkundung

23. – 26. 09. 2013
in
Jena

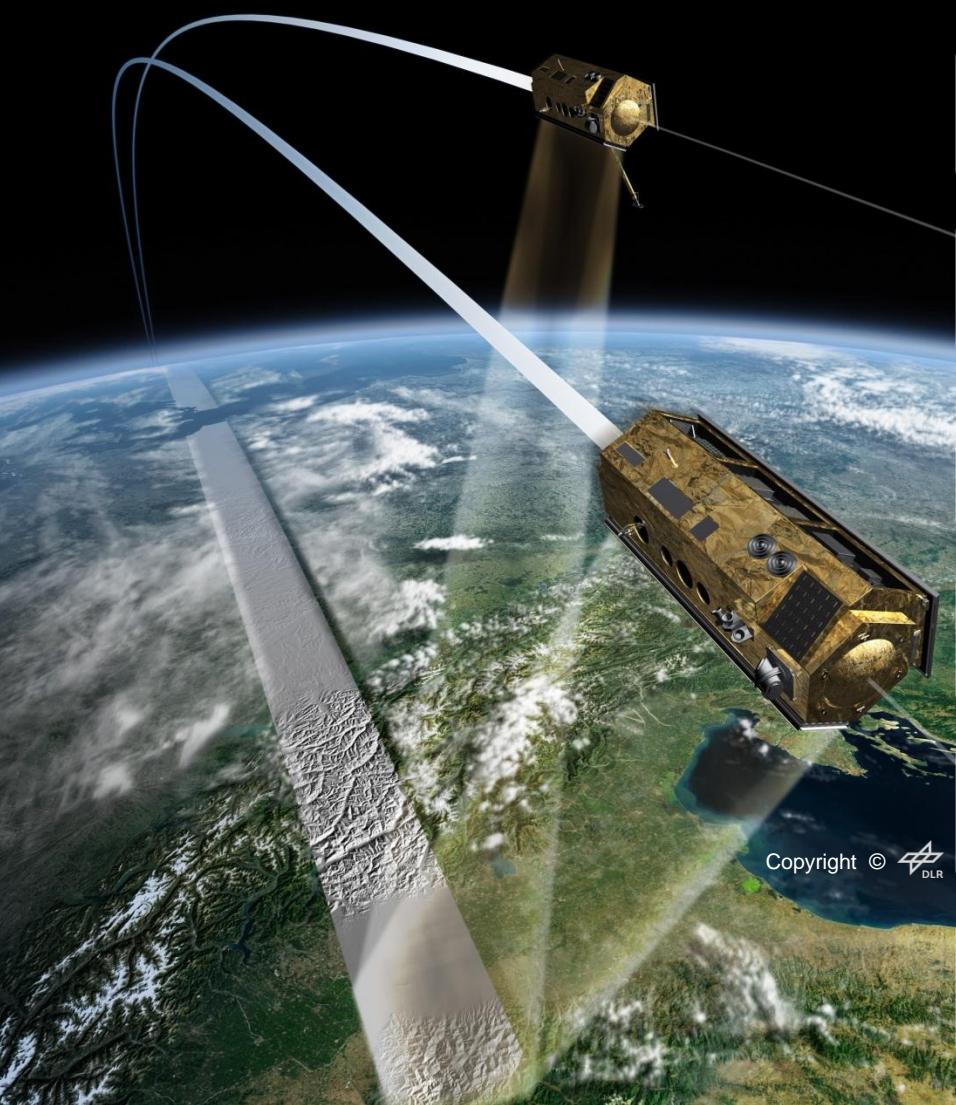
„Teaching the Teachers“

- **Math. & Physical. Basics**
- **SAR Basics**
- **Interferometry**
- **Polarimetry**
- **Data processing**
- **Applications**
 - *Anthroposphere*
 - *Biosphere*
 - *Hydrosphere*
 - *Kryosphere*
 - *Lithosphere*

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http://sar-edu.uni-jena.de/sites/summer_school_13.html



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Thank you for your attention!

