

University of Cologne

Faculty of Mathematics and Natural Sciences

The role of GLOBE in the reformed teacher education programs at University of Cologne

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German Federal State of North Rhine-Westphalia

- **Educational Standards**
- Core curricula for elementary and secondary schools



University of Cologne

- Teacher education
- Scientific education

SMAP Protocol and

GLOBE data

Validation data

Motivate and Attract

Requirements	Approaches
Linked scientific research and teacher education	e.g. Earth Observation Programs
Profession oriented education	e.g. Inquiry-based Learning
Internationalization of education	Network of GLOBE, universities and

Implementation

TR 32

Field Measurements

Remote Sensing

Modelling

schools

STEM-disciplines,

languages



The GLOBE Program

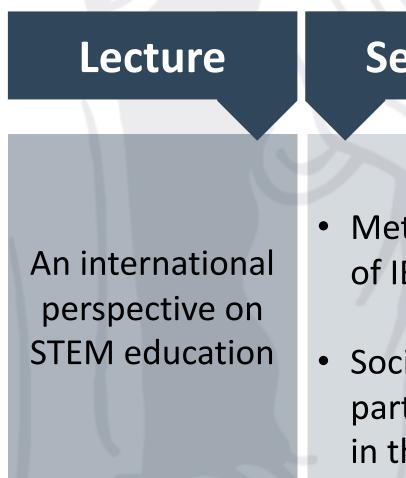
- Protocols and datasheets
- Database and data visualization
- Smartphone-Apps
- Science



International GLOBE lecture series at

- **University of Cologne** Pre-service teachers
- Students of natural sciences
- Students interested in IBL
- In-service teachers

Teaching



- Training and
- Network for students and teachers
- Embedding **GLOBE** into school curricula's

Jennina

 Methodology of IBL

- Societal participation in the frame of Citizen Science
- certification

 Statistical Analysis of environmental

data

Crossdisciplinary approaches in STEM education

Workshops



GLOBE Seminars

- Pre-service teachers
- Students of natural sciences



GLOBE Workshops at Learning Laboratory Pulheimer Bach

- Pre-service
- teachers In-service teachers
- Students of natural sciences

Transregional Collaborative Research Center 32

programs

Cross-disciplinary

Integration

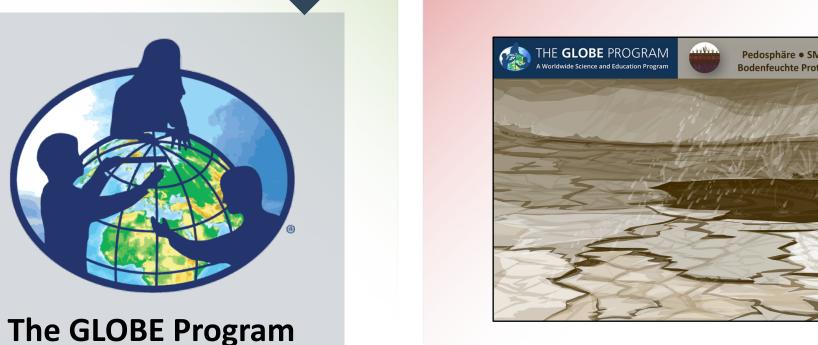
Soil Moisture Pattern Analysis using SAR data and Modelling. A project in the Frame of TR32: Patterns in Soil, Vegetation and Atmosphere. www.tr32.de

Research

Outreach

Objectives

Spin-off





Translated SMAP eLearning Module



Online-evaluation of GLOBE lecture series

Jet Propulsion Laboratory California Institute of Technology





Internationalization

- Traineeship for GLOBE students in cooperation with Jet Propulsion Laboratory (USA)
- Students exchange in cooperation with University of Toledo (USA) and Mount Royal University (Canada)
- Translating Protocols and eLearning-Modules in cooperation with GLOBE Implementation Office
- Cooperation with international institutions and partners within the frame of GLOBE

Interdisciplinary Cooperation

- GLOBE's inquiry based learning approach provides points of entry for all STEM disciplines and facilitates cross-disciplinary collaboration at University of Cologne
- Methods provided by GLOBE are applicable both in teachers education programs and in science programs

Students' Perception

support of low achievers.



digital learning, early inquiry and the

Students to Science (MASS)

MASS shows the relevance of natural

sciences to real life by focusing on

www.mass4education.eu

Smartphones and Apps are suitable

using Smartphones

tools for monitoring data. Approaches using Smartphones for environmental research and STEM-education will be developed, piloted and analyzed.

Environmental Monitoring

Stiftung | Jugend | Beruf Wissenschaft

Phase 1

- Development of IBL teaching formats with GLOBE
- Network building within UoC, nationally and internationally
- GLOBE Training for students and teachers

Phase 2

- Translating GLOBE E-Learning tutorials into German
- International student exchange with GLOBE partners
- Cross-disciplinary teaching formats

Phase 3

- Establishment of research projects
- University Network for Science Education and Research
- Further Development of IBL teaching formats

2015 2016 2017 2018 2019 2020 2021