

HYPERedu online learning initiative: Concept, current status and cooperation opportunities

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German
Space Agency
at DLR



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INRAE



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Zurich



EnMAP
education
initiative



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HYPERedu in a nutshell

- ❖ Online learning resources on principles, methods and applications of imaging spectroscopy
 - ◆ Materials: Slide collections, tutorials, videos, interactive graphics
 - ◆ MOOCs: Massive open online courses
- ❖ Target group: Students and professionals in science, public authorities, companies, MSc level with basic knowledge in remote sensing
- ❖ License: CC BY 4.0
- ❖ Language: English
- ❖ Platform: EO-College

EO-College platform

- ❖ Central platform for EO education in Germany with contributions from several groups for different EO fields and target groups
- ❖ Repository for online learning materials and courses, discussion platform and information hub



eo-college.org



September 2017



>22.000 registered users



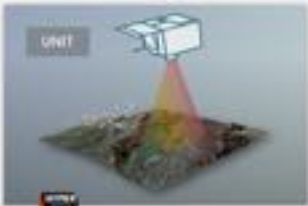
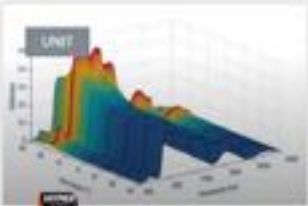

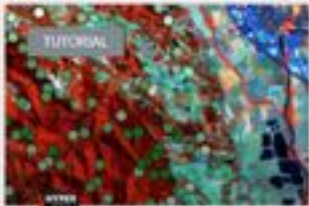
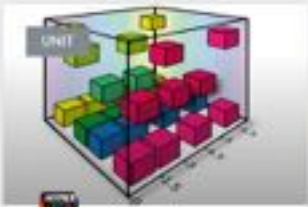
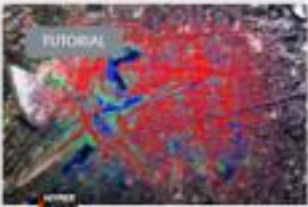

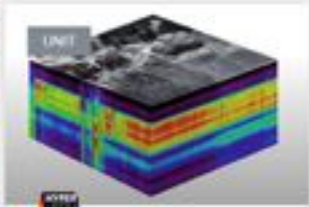
> 2.000.000 page views

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Source: Robert Eckardt,
EO-College, Sept 2022

Hyperspectral resources

 <p>UNIT</p> <p>HYPER EDU</p> <p>Sensor simulation</p> <p>HYPER Edu • January 15, 2021</p>	 <p>UNIT</p> <p>HYPER EDU</p> <p>Imaging spectroscopy of forest ecosystems</p> <p>HYPER Edu • November 26, 2020</p>	 <p>UNIT</p> <p>HYPER EDU</p> <p>Retrieval approaches of vegetation traits from imaging spectroscopy data</p> <p>HYPER Edu • October 7, 2020</p>	 <p>TUTORIAL</p> <p>HYPER EDU</p> <p>Regression-based mapping of forest aboveground biomass</p> <p>HYPER Edu • September 3, 2020</p>
 <p>UNIT</p> <p>HYPER EDU</p> <p>Dimensionality reduction of imaging spectroscopy data</p> <p>HYPER Edu • April 26, 2020</p>	 <p>TUTORIAL</p> <p>HYPER EDU</p> <p>Regression-based unveiling of urban land cover</p> <p>HYPER Edu • March 31, 2020</p>	 <p>SOFTWARE</p> <p>EnMAP-Box</p> <p>HYPER EDU</p> <p>EnMAP-Box</p> <p>HYPER Edu • September 25, 2019</p>	 <p>UNIT</p> <p>HYPER EDU</p> <p>Principles of imaging spectroscopy</p> <p>HYPER Edu • September 23, 2019</p>

Hyperspectral resources on EO-College



<https://eo-college.org/resource-spectrum/hyperspectral/>

Hyperspectral basic MOOC



The screenshot shows the website interface for the MOOC. At the top, there is a navigation bar with 'eo college' logo and links for COURSES, EVENTS, RESOURCES, DISCUSSION, SOFTWARE, and ABOUT. A search icon, 'Log in', and 'Register' button are also present. The main content area features a large banner with the title 'Beyond the Visible - Introduction to Hyperspectral Remote Sensing' and a 'View Course details' link. Below the banner is a smaller version of the course card with a 'Not Enrolled' status and a 'Login to Enroll' button. The background of the banner shows a composite of hyperspectral images, including a blue-toned landscape and a green-toned agricultural field.

HYPERedu
MOOC "Beyond
the Visible"

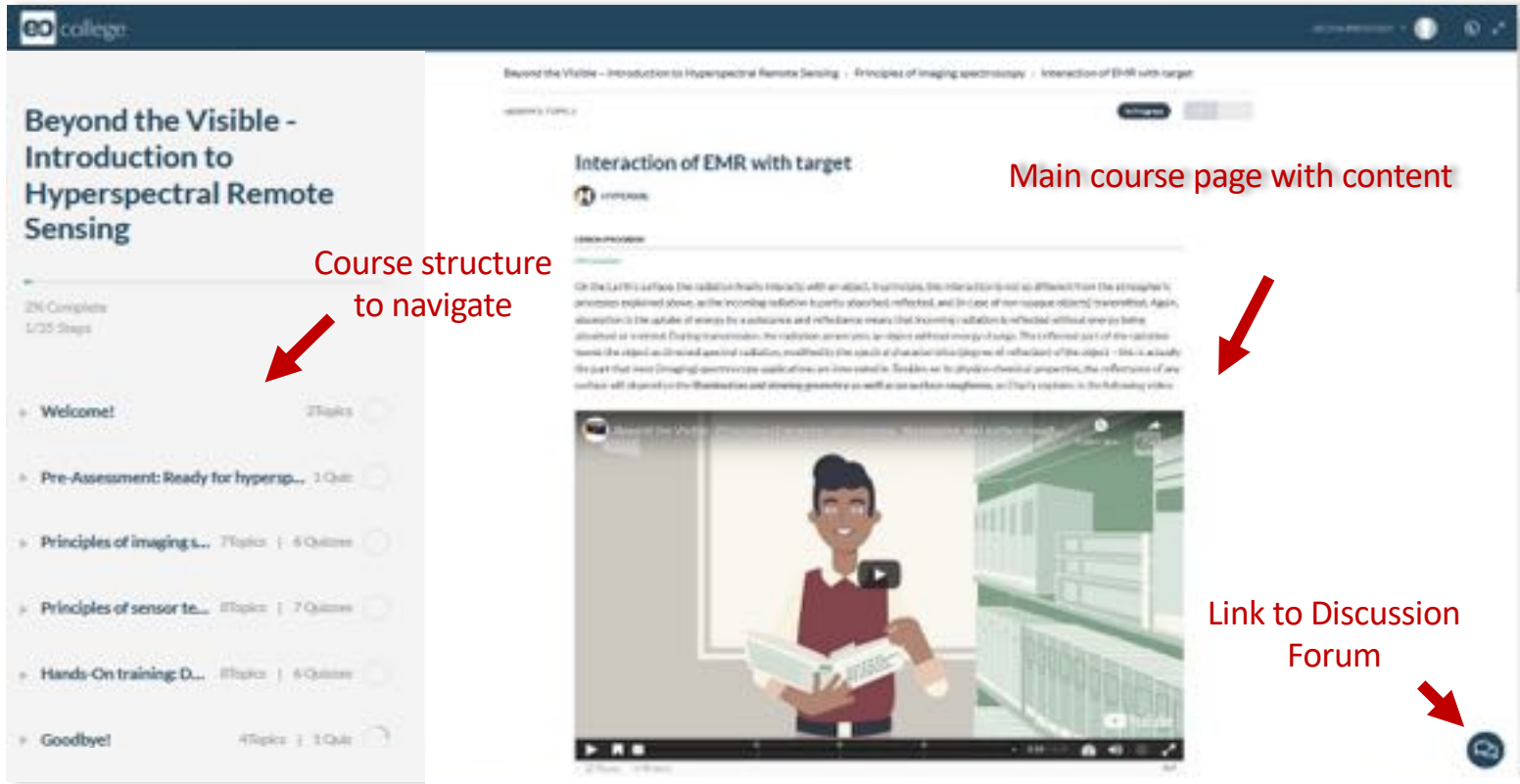


[https://eo-college.org/
courses/beyond-the-visible/](https://eo-college.org/courses/beyond-the-visible/)

- ❖ Contents: Principles of imaging spectroscopy, sensor technology and data acquisition techniques, data and software
- ❖ Language: English language
- ❖ Length: ~ 5-8 hours (self paced)
- ❖ Certificate: Final assignment

COMING SOON (Nov 2022): Revised Basic MOOC
New: Offline course document, making of video,
video subtitles in German, Spanish and Portuguese

Hyperspectral basic MOOC



The screenshot shows a MOOC interface with a dark blue header and a light grey sidebar. The main content area is white. The sidebar on the left contains a course structure with the following items:

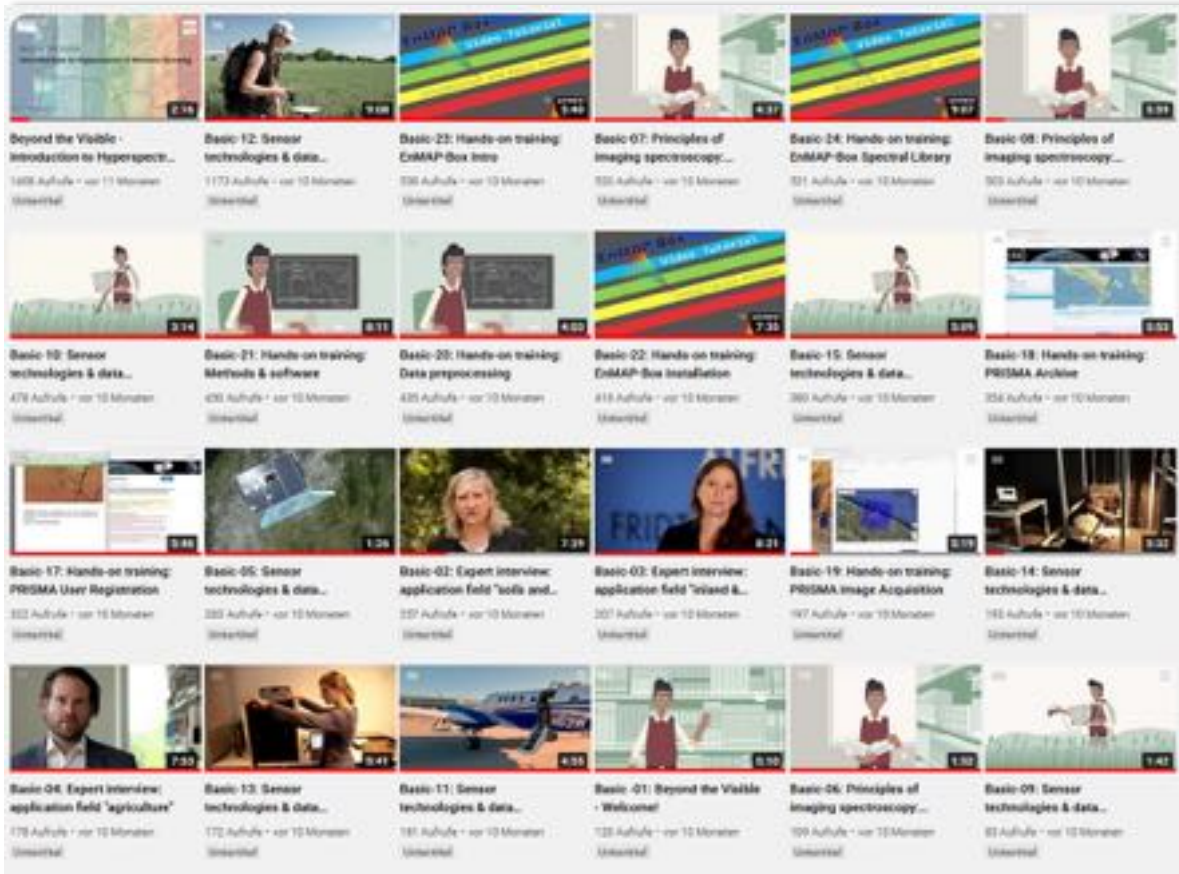
- 2/3 Complete
1/25 Steps
- Welcome! 2 Topics
- Pre-Assessment: Ready for hypersp... 1 Quiz
- Principles of imaging s... 7 Topics | 6 Quizzes
- Principles of sensor te... 8 Topics | 7 Quizzes
- Hands-On training: D... 8 Topics | 6 Quizzes
- Goodbye! 4 Topics | 1 Quiz

The main content area displays the title 'Interaction of EMR with target' and a video player. The video player shows a 3D illustration of a person in a red sweater holding a book and a tablet, standing in a modern building. The video player has a play button and a progress bar.

Annotations with red arrows point to specific elements:

- 'Course structure to navigate' points to the sidebar.
- 'Main course page with content' points to the main content area.
- 'Link to Discussion Forum' points to a circular icon in the bottom right corner of the video player.

HYPERedu YouTube channel



- ❖ Instructional videos
- ❖ Screencasts on software use
- ❖ Animated lecture slides
- ❖ Expert interviews

HYPERedu on
YouTube



<https://tinyurl.com/hyperedu-youtube>

14 Oct 2022

Basic MOOC: Participants



- ❖ from different countries and continents
- ❖ young (25-45 years) and male (70 %)
- ❖ 30 % previous MOOC experience
- ❖ 60 % no contact with hyperspectral data before

14 Oct 2022

- ❖ almost 1500 participants enrolled to course since Nov 2021
- ❖ > 300 completed course

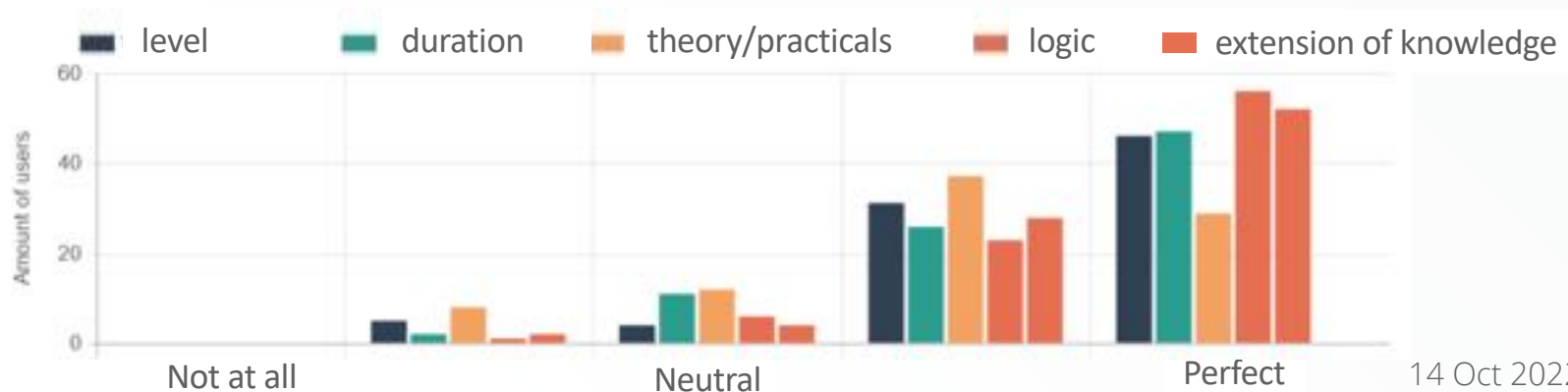


Basic MOOC: Evaluation

„I had a lot of fun taking this course. I am experienced in the field, but i have learned a lot. Congrats!“

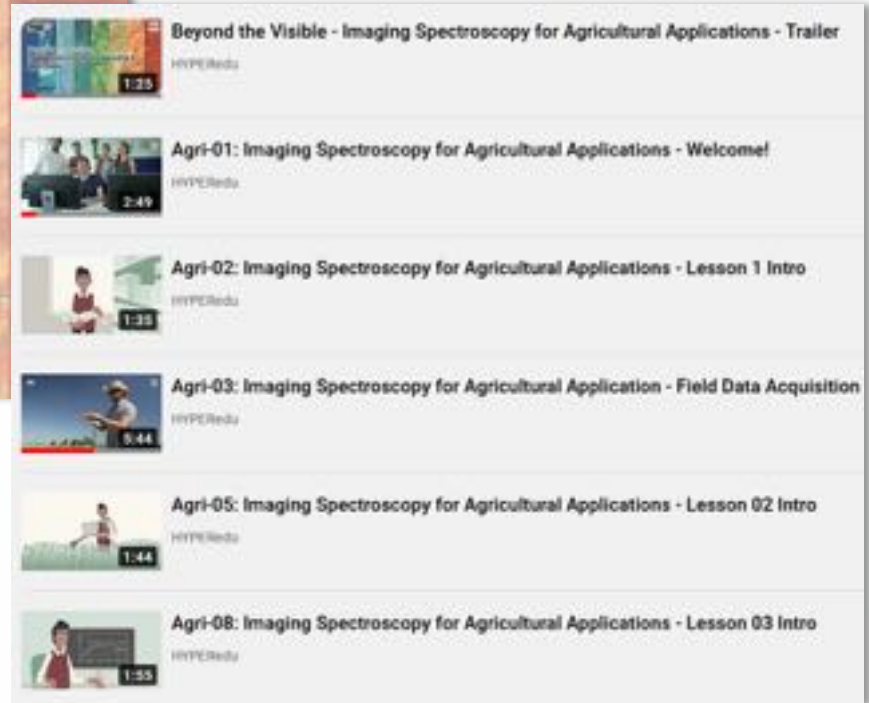
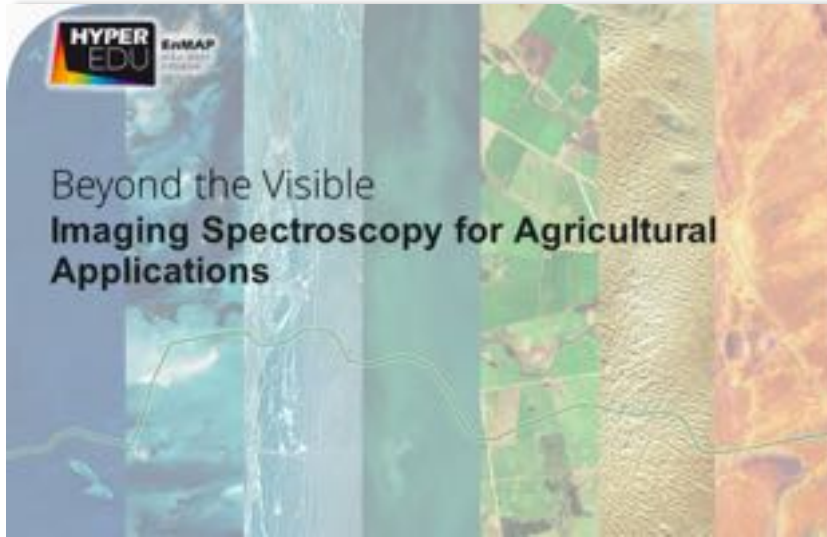
„I think one of the best remote sensing MOOC I've ever attended“

- ❖ More practical exercises
- ❖ More subsequent MOOCs on specific application fields
(Agriculture 24%, Water 20%, Urban 17%, Soil 17%, Geology 14%)



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COMING SOON (Nov 2022): Mini-MOOC Agriculture



Beyond the Visible - Imaging Spectroscopy for Agricultural Applications - Trailer
HYPERedu 1:25

Agri-01: Imaging Spectroscopy for Agricultural Applications - Welcome!
HYPERedu 2:49

Agri-02: Imaging Spectroscopy for Agricultural Applications - Lesson 1 Intro
HYPERedu 1:25

Agri-03: Imaging Spectroscopy for Agricultural Application - Field Data Acquisition
HYPERedu 3:44

Agri-05: Imaging Spectroscopy for Agricultural Applications - Lesson 02 Intro
HYPERedu 1:44

Agri-08: Imaging Spectroscopy for Agricultural Applications - Lesson 03 Intro
HYPERedu 1:55

Basic MOOC: Contributing people and partners



Concept, content and realisation

Arlena Brosinsky
Charlotte Wilczok
Saskia Foerster



Screencasts

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Fabian Thiel

Technical support

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Tobias Burger
Christian Hohmann
Marcel Ludwig
Heinrich Hecht
Antonia Cozacu
Katrín Koch
Pauline Müller



Voice of Charly

David Beamish



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Robert Eckardt
Tino Sieland



Content / starring field work

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Matthias Woche, Benedikt Hartweg,
Marco Maier, Stefanie Steinhauser



Content/starring

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Nicole Köllner
Mathias Bochow
Astrid Bracher
Mariana Soppa
Nicole Pinnel
Andreas Hueni &
AVIRIS-NG team

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Brendna Braga
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Poblador

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Theres Kuester

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Sebastian Fischer
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Tobias Storch
Nora Meyer zu Erpen

Beta-testing

Theres Kuester
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Helge Daempfling
Fabian Faßnacht
Christopher Loy

Project partners



UNIVERSITÄT GREIFSWALD
Wissen lockt. Seit 1458



Cooperation partners



Production



How you can get involved...

- ❖ Use HYPERedu materials (videos, tutorials, slide collections....)
- ❖ Collaborate in the development of further resources and courses
- ❖ Promote HYPERedu in your networks
- ❖ Give us feedback



Contact

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HYPERedu
overview



MOOC "Beyond
the Visible"



HYPERedu on
YouTube

