03.07.2020

Supported by:

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

Deutsches Zentrum für Luft- und Raumfahrt
German Aerospace Center

# Analysis of forest ecosystem processes and mapping of biotic stress

Trier University

EnMAP
Hyperspectral Imager

Abstract:

The scope of the project is the scientific preparation of the hyperspectral satellite mission EnMAP (Environmental Mapping and Analysis Program). The scientific lead of the mission lies with the Remote Sensing section at GFZ Potsdam, supported by a Core Science Team (ECST). Tasks of the ECST include (i) updating the EnMAP Science Plan, (ii) organising and conducting workshops and summer schools, (iii) coordinating networking and dissemination activities, and (iv) developing algorithms for processing and analysing hyperspectral data as well as implementing them into the free software package EnMAP-Box, developed in the frame of the EnMAP scientific preparation program.

Within the project, the department of Environmental Remote Sensing and Geoinformatics at the University of Trier:

- Recorded and pre-processed several airborne hyperspectral data sets to be published on enmap.org,
- Evaluated and developed algorithms for deriving biochemical vegetation traits from leaf to canopy level using imaging spectroscopy,
- Mapped and modelled the extent and severity of drought stress in forests
- Worked on mapping forest infestations of bark beetles and the kauri dieback disease,
- Compared and developed physically-based reflectance models and inversion techniques,
- Created tools for the EnMAP-Box for finding the optimal spectral index for regression problems and for calculating the directional area scattering factor (DASF) and canopy scattering factor (CSC).
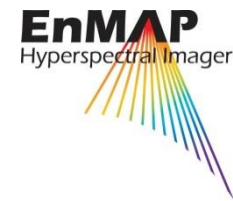
ECST Phase III – Forests and Natural Ecosystems

Duration: 01.03.2016 – 31.12.2019

EO Data Source: EnMAP, Sentinel-2, HySpex, AISA

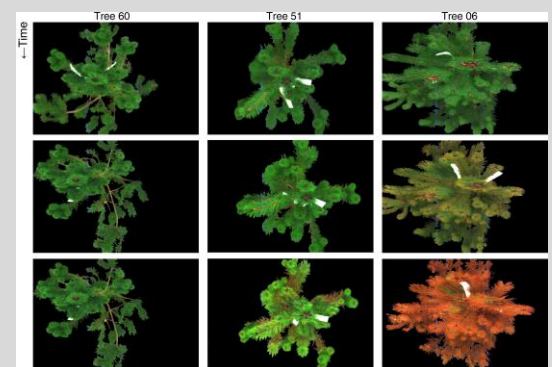**Support Program**: EnMAP Utilization Preparation

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http://www.enmap.org/
https://www.uni-trier.de/?id=40541

RGB true color depictions of field imaging spectroscopy data of conifers treated with different herbicides over the course of several weeks (left column shows an untreated tree from the control group). While one herbicide works slowly and only leads to subtle spectral changes, the other one (right column) works quite fast and generates very clear changes to reflectance.

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FORESTS AND FORESTRY

EnSAG Phase II: Forests and Natural Ecosystems

University Trier; Landesforsten Rheinland-Pfalz

Abstract:

The scope of the project is the scientific preparation of the hyperspectral satellite mission EnMAP (Environmental Mapping and Analysis Program). The scientific lead of the mission lies with the Remote Sensing section at GFZ Potsdam, supported by a Science Advisory Group (EnSAG). Tasks of the EnSAG include (I) developing and updating the EnMAP Science Plan, (ii) organising and conducting workshops and summer schools, (iii) coordinating networking and dissemination activities, and (iv) developing algorithms for processing and analysing hyperspectral data as well as implementing them into the free software package EnMAP box, developed in the frame of the EnMAP scientific preparation program.

Within the project "EnSAG Phase II", the successful work of the EnSAG is continued by addressing new scientific challenges in the field of hyperspectral remote sensing. The EnSAG group at the department of Environmental Remote Sensing and Geoinformatics at the University of Trier is responsible for the development of algorithms in the field of forests and natural ecosystems. Further activities include the organization of workshops and summer schools and networking with the national and international scientific community.
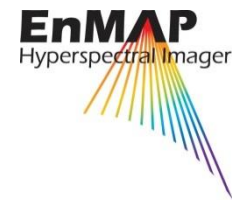
EnSAG – Forests

Duration: 01.01.2013 – 31.12.2015

EO Data Source: EnMAP, Sentinel-2, RapidEye, Landsat 8 OLI

Support Program: EnMAP Utilization Preparation

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