Validation measurements for remote sensing based agricultural monitoring: Status update for the German JECAM site DEMMIN / TERENO-NE

D. Spengler¹; N. Ahmadian²; E. Borg³; K. Harfenmeister¹; C. Hohmann¹; C. Hüttich²; S. Itzerott¹; H. Maass³; K.-D. Missling³; C. Schmullius⁴; S. Truckenbrodt³,4 & C. Conrad²,5

Affiliations: 1 Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum GFZ; 2 Julius-Maximilians-Universität Würzburg; 3 Deutsches Zentrum für Luft – und Raumfahrt e.V. (DLR); 4 Friedrich-Schiller-Universität Jena; 5 Martin-Luther-Universität Halle-Wittenberg

Objectives

Remote sensing (RS) data are becoming increasingly relevant in environmental monitoring to support decision-making processes. However, an essential requirement for method development is a suitable in-situ database. The DEMMIN test field aims at this property and combines satellite image data, in-situ data with information from farmers and foresters to improve the acquisition of valuable knowledge with three objectives:

1) Method Development
2) RS Data Validation
3) Knowledge Transfer

DEMMIN

The test site is an intensively used agricultural ecosystem. In the north the topography with an altitude difference 0 – 84.5 m above sea level is rather flat and in the south hilly to undulating. Cause of significant differences in parent substrate material and relief a high spatial variability of soil types are developed. The location of the gauging station is linked to these different conditions and its according landuse.

DEMMIN 2.0 Concept

1) Method Development
   - Regional in-situ data validation
   - Hyperspectral mapping and multi-temporal multi-sensor data validation

2) RS Data Validation
   - Method validation (e.g. crop type mapping, SAR inter-comparison experiment)
   - Project (spectrometer for surface reflectance validation)

3) Knowledge Transfer
   - Field campaigns for universities
   - Standardized acquisition of field data

Cooperation / Network / Data

Data
- Secure data transfer
- QA/QC of data
- Value-added information
- Open data access (via DOI)

Cooperation / Networking
- Cooperation with national and international universities, research institutes, companies and initiatives:
  - Official German site of the Global Crop Monitoring Network (GCMN)
  - National & international projects

Selected Scientific Projects

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<th>Determination of Soil Parameter</th>
<th>Determination of Crop Parameter</th>
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<td>Determination of Leaf Area Index based on Water Cloud Models (VW/VH)</td>
<td>Determination of surface soil organic matter content</td>
<td>Progressive crop type classification</td>
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<td>Sentinel-1 data of 2015</td>
<td>Multitemporal multispectral data (e.g. RapidEye, Landsat, Sentinel-2)</td>
<td>Based on multitemporal multispectral data (e.g. RapidEye, Landsat, Sentinel-2)</td>
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