DEMMIN
German Calibration and Validation Site for Remote Sensing

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Climatological models forecast a significant climate change (Period: 100 years)

- increase of annual mean temperature between 2.5 to 3.5 °C,
- decrease of annual mean precipitation of up to 30%

**DEMMIN is part of TERENO – German North-Eastern Lowlands Observatory**

*Free data access via TERENO data portal: http://teodoor.icg.kfa-juelich.de*
Durable Environmental Multidisciplinary Monitoring Information Network (DEMMIN)

- CAL/VAL site for remote sensing missions and methods at agricultural areas (since 1999)
- Cooperation with Farmers managing approx. 30,000 ha
- Test-site region has an dimension of 50 to 50 km²
- Mean Size of fields is 80 ha and in maximum 300 ha

DEMMIN Objectives

Combination of in-situ data and remote sensing data analysis for:

- Crop parameter estimation (crop type, crop status, crop pattern)
- Soil parameter retrieval (soil moisture, organic matter)
- Evapotranspiration modelling

→ High resolution data analysis (automatic data processing and analysis of multi sensor data (e.g. TSX, Sentinel-1 & 2, Landsat-8 + in-situ + modelling)
Data infrastructure

Agrarian meteorological network: 40 weather stations (GFZ: 20, DLR: 20)

Soil moisture measuring network: 62 gauging stations (agricultural fields)

15min data interval / Web-based data access

Soil documentation & soil analysis at each soil moisture station: ~110 soil profiles, ~1 m depth; Parameter: texture, pH, CaCO3, OM

Crop data from association of local agricultural companies, Yield Mapping

Phenology data: 5 observation stations (German Meteorological Service - DWD)

Soil maps, DEM 10, etc.

Large RS Database (> 50 Datasets / year)
Project GLAM.DE

**SAR**
(Sentinel-1, TerraSAR-X)
- Backscatter, coherence
- Dual-pol decomposition

**Optical**
(Sent.-2, Lands.-8, RapidEye)
- Vegetation indices
- Spectral feature analysis

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**Multitemporal / Multisensoral time series analysis**

**Comprehensive data mining algorithms**
- Permutation approach
- SVM, Random Forest

**Biophysical parameters**
(e.g. LAI, Biomass, plant water content)

**Soil parameters**
(e.g. Surface Soil Moisture, organic matter)

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**Crop yield modelling**

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**Agricultural Information Service**

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GLAM.DE is supporting the effort of the DLR, started to become DEMMIN an official member of JECAM initiative - Process is still ongoing
Thank you for your attention!

Дякую

Looking forward to welcome you at our poster