Developing remote sensing methods to retrieve the biomethanpotential of agricultural areas with special focus of the upcoming EnMAP mission

Objectives:

- Development of methods for:
  - Estimation of the substrate-specific biomethanpotential ($BMP_{FM}$) and the regionalized biomethanpotential ($BMP_{reg}$) by using hyperspectral data
  - Estimation of the biomass by using crop growth models (APSIM) with coupled remote sensing information

Duration:


Fig. 1: General plan of the project workflow
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Products / Parameters:

- Substrat specific biomethanpotential $\text{BMP}_{FM}$ will be determined: BMP related to the biomass of the substrate [m$^3$ biogas / t fresh matter]
- Regionalized $\text{BMP}_{\text{reg}}$ will be calculated: biomethanpotential in relation to area [m$^3$ biogas / ha]
- Biomass estimation with crop growth models (APSIM) coupled with remote sensing data

Added Value (quantitative / qualitative):

- The regionalized biomethanpotential $\text{BMP}_{\text{reg}}$ can be estimated directly by using hyperspectral data
- Cost reduction by a rapid non destructive method to analyze energy crops under in-situ conditions
- Multiple estimation and development of the biomethanpotential during the vegetation period on large areas is possible (e.g. EnMAP)

Fig.2: HyMAP stripe 2010 with location of the sampling sites
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Involved User Organisation:
- CRP Gabriel Lippmann
- ASTA
- CONVIS

Additional:
- Project Area: North-west of Luxembourg City, between Kehlen and Nagem (2011), respectively Kehlen and Useldange (2010)
- Image data: HyMAP, APEX, if applicable Tetracam miniMCA
- Currently Cross-Validation is applied, if the dataset is enlarged a independent set will be used for validation

Contact information:
Prof. Dr. Thomas Udelhoven, Environmental remote sensing and geoinformatics department, University of Trier, udelhoven@uni-trier.de, (+49) 651 – 201 4513