Developing remote sensing methods to retrieve the biomethanpotential of agricutural 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
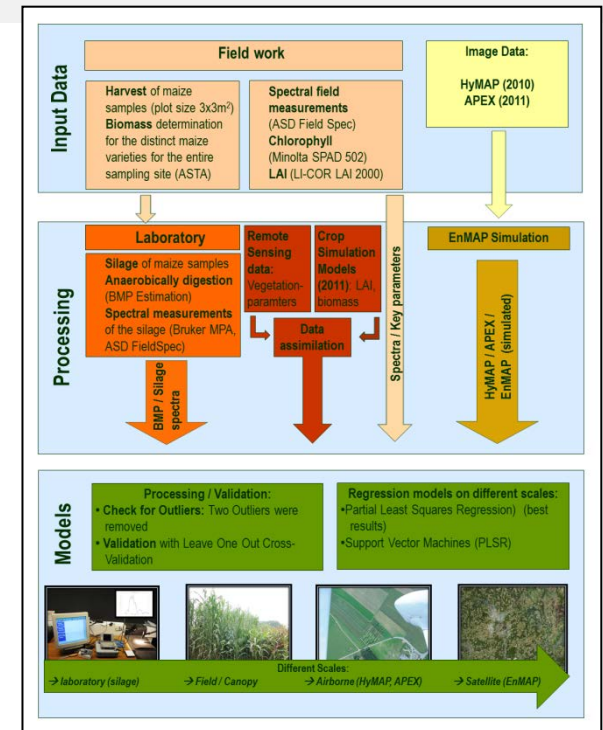
Duration :

- 15. July 2010 – 30. June 2013

Fig. 1: *General plan of the project workflow*

Deutsches Zentrum für Luft- und Raumfahrt e.V.

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

Products / Parameters:

- Substrat specific biomethanpotential BMP_{FM} will be determined: BMP related to the biomass of the substrate [m³ biogas / t fresh matter]

- Regionalized BMP_{reg} will be calculated: biomethanpotential in relation to area [m³ biogas / ha]

- Biomass estimation with crop growth models (APSIM) coupled with remote sensing data

Added Value (quantitative /qualitative):

- The regionalized biomethanpotential BMP_{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)
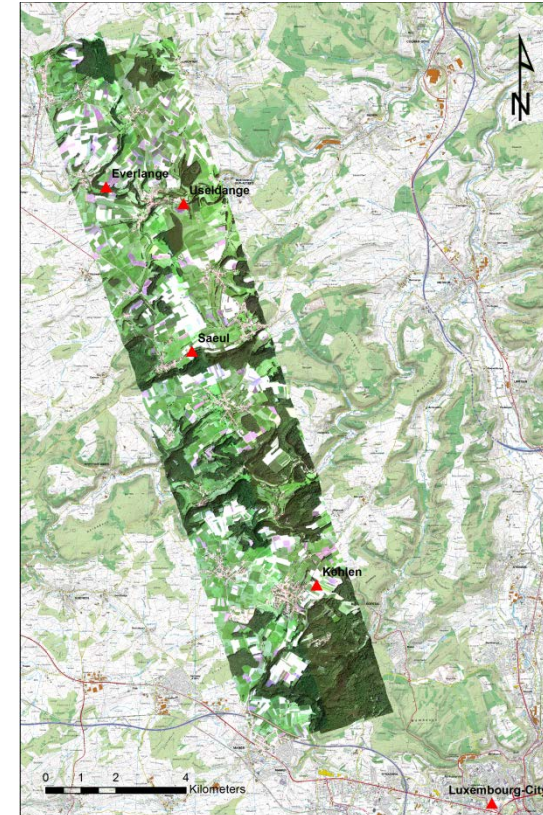

Fig.2: *HyMAP stripe 2010 with location of the sampling sites*

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

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