Zugänglichkeit von energiespezifischen Infrastrukturen aus Fernerkundungsdaten für die Energiesystemanalyse

Susanne Weyand und Marion Schroedter-Homscheidt
mit Dank an DFD, IMF und IHR Kollegen

Deutsches Zentrum für Luft- und Raumfahrt (DLR)
Institut für Vernetzte Energiesysteme

20. Mai 2021

DLR

Implementation in Modellierungssoftware

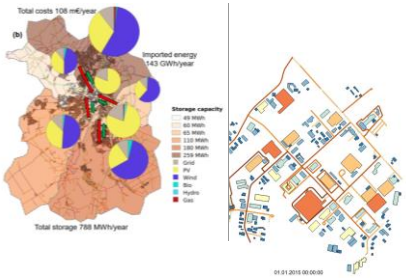
Currently:

FLEXIGIS

EO shapefile data download from Geofabrik.org

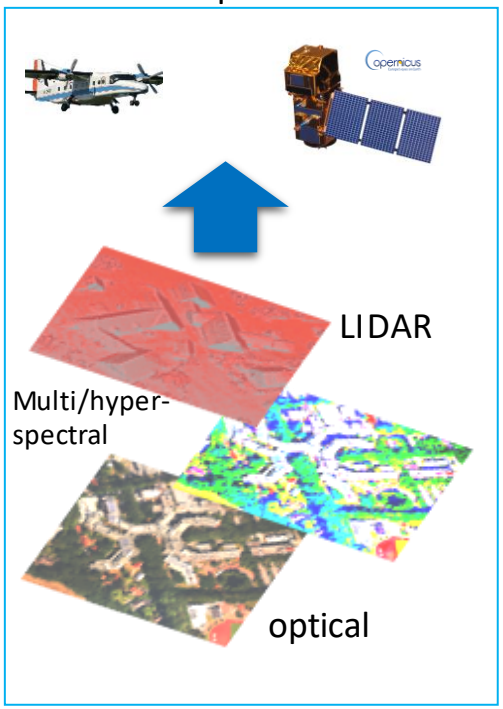
data filtering and application of modeling algorithms

Data Output: filtered shape files; energy modeling graphs



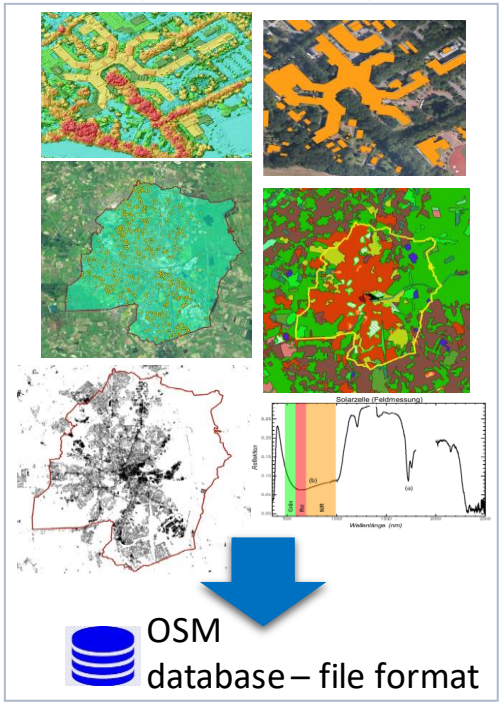
Prospective:

data acquisition



Processing

post-processing

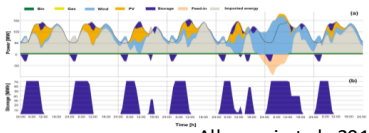


OSM database – file format

Usage

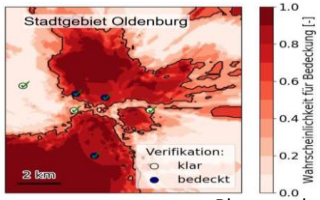
modeling & applications

FlexiGIS



Alhamwi et al., 2019

cloud camera based forecasts



Blum et al., 2020

integration of spatial and temporal high resolution data for energy system models

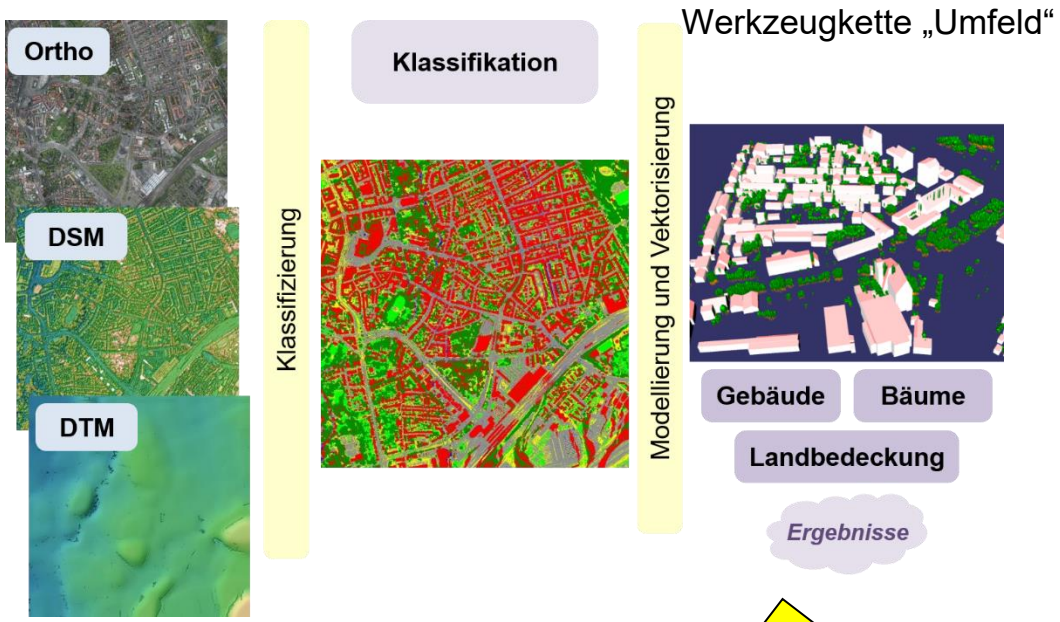
Scholz et al., 2020

Data acquisition and post-processing support from Remote Sensing Technology Institute (IMF) - Department: Photogrammetry and Image Analysis, as well as from German Remote Sensing Data Center (*DFD*) - Department: Land Surface Dynamics

3K Befliegung

Ziel: Extraktion von Gebäuden und Detektion von Solar- Anlagen

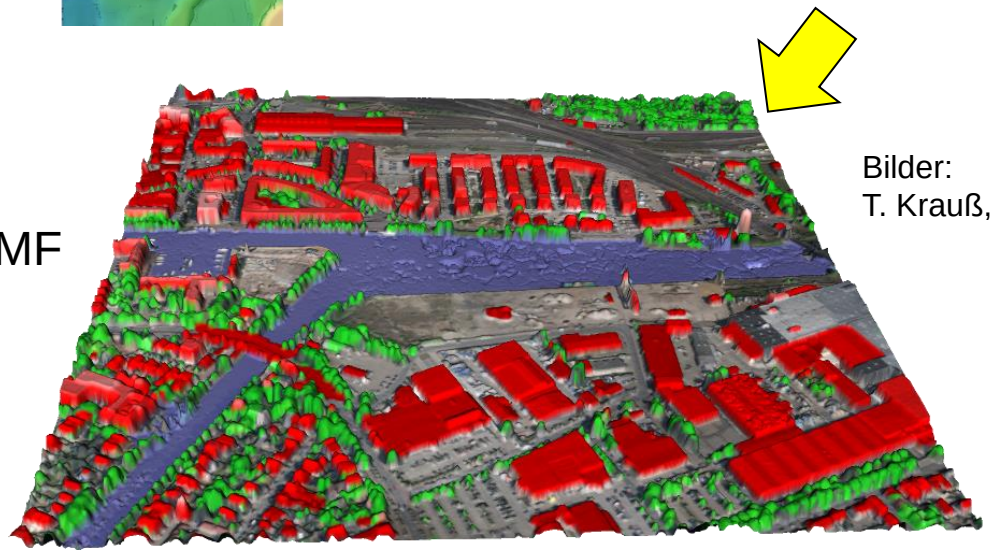
- Extraktion von Gebäuden mit der Werkzeugkette „Umfeld“ des IMF



- Detektion von Solarmodulen

  Derzeitiger Ansatz mittels eines Convolutional Neural Network (CNN) in Zusammenarbeit mit IMF

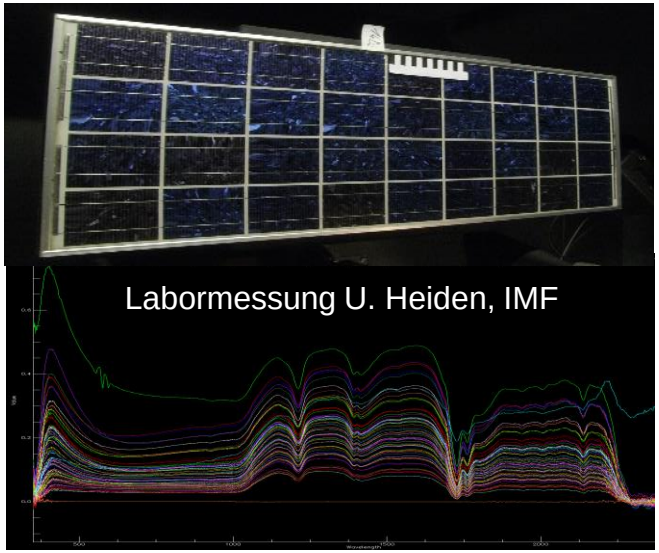
  - Manuell gelabelte Daten
  - Training des CNN
  - Ground Truthing (vor Ort geprüfte Daten)



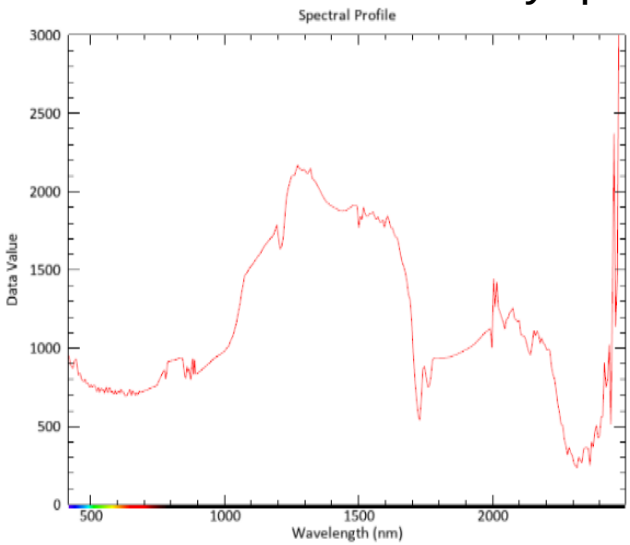
Bilder:
T. Krauß, IMF

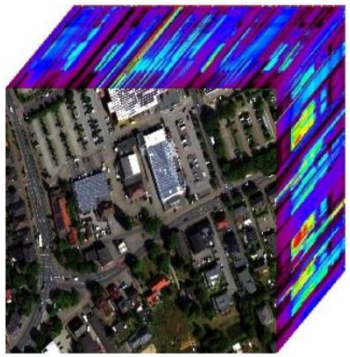
Beispiel: Hafen Oldenburg, 3K-Befliegung vom 30.07.2019

HySpex Befliegung

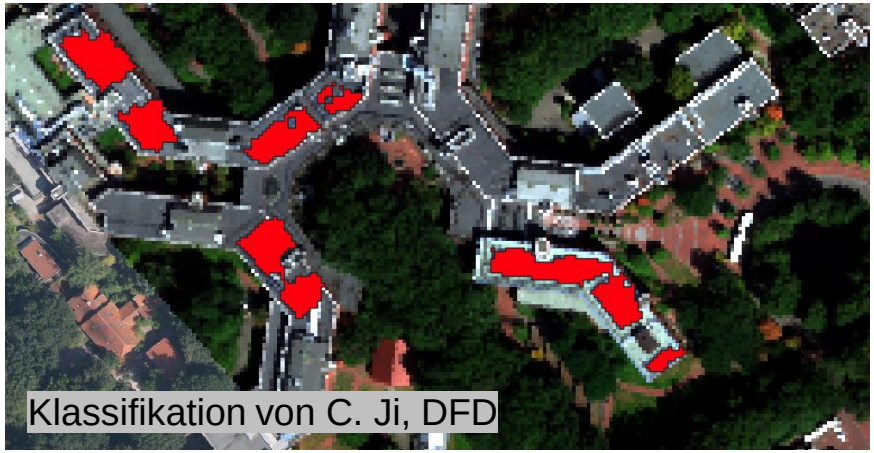


HySpex 2019



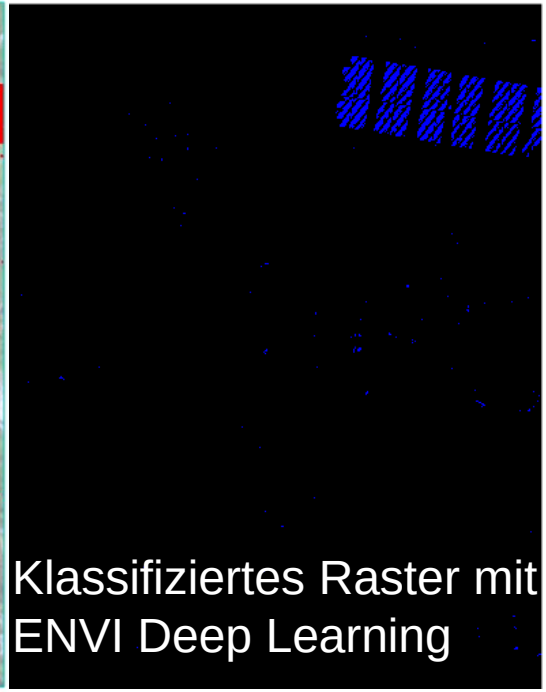


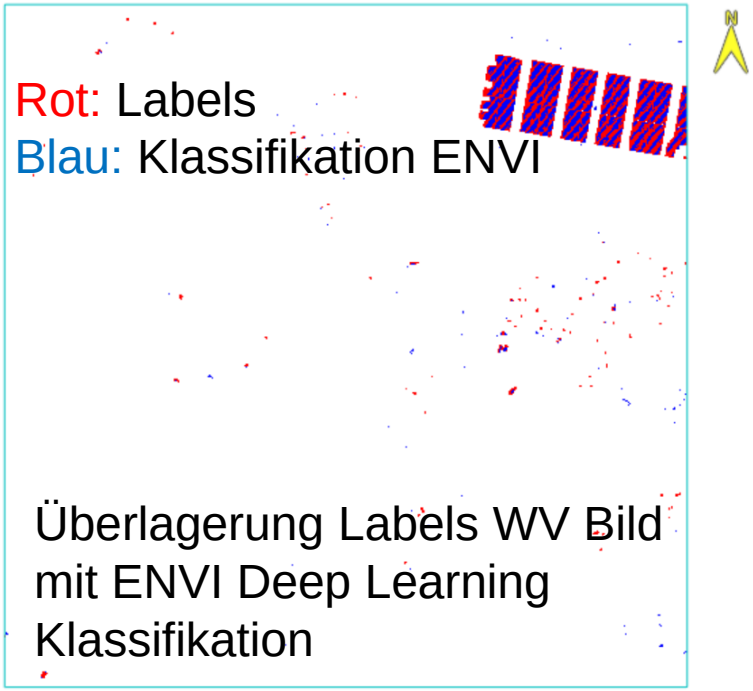
Charakteristische Merkmale



WorldView-2 Daten

- Ziel: Extraktion von PV Anlagen



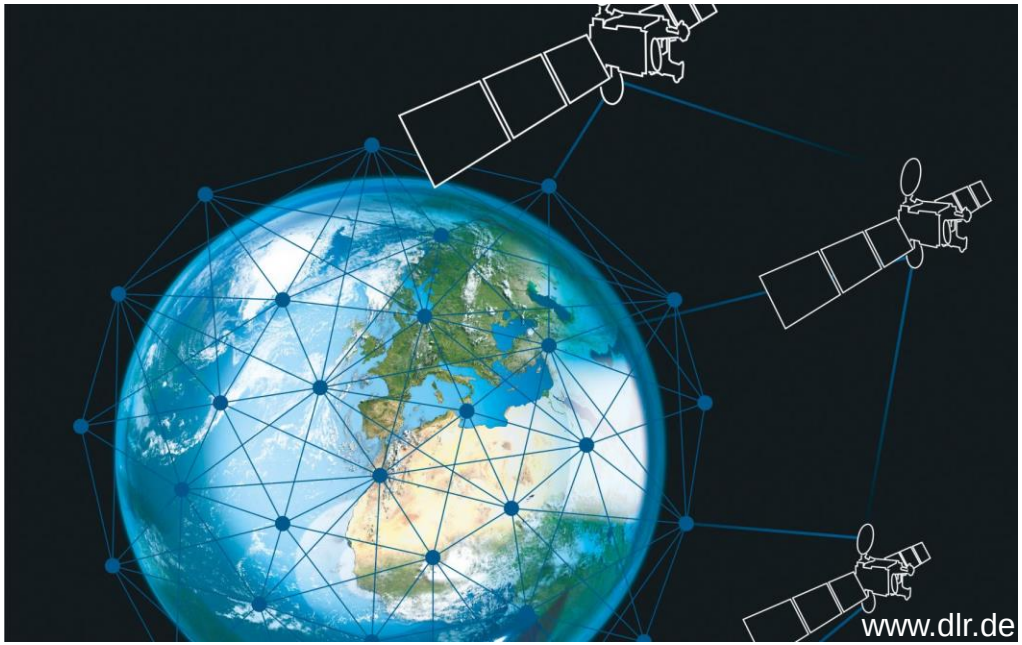


- Problem bei Reduktion der räumlichen Auflösung?

Welche Geodaten wünsche ich mir …

- Frei verfügbare hochauflösende Flugzeug, Satelliten und OSM Daten…
  … um möglichst konsistente Inputparameter für die Energie-Systemanalyse zu erzeugen.
- Frei verfügbare Ground Truthing Daten…
  … um die optimale Kombination von OpenStreetMap, Flugzeug und Satellitendaten zu quantifizieren.

https://www.osmocoder.de/



https://www.openstreetmap.fr/