Hungarian Space Office

SZENT ISTVÁN UNIVERSITY

esa

→ 7th ADVANCED TRAINING COURSE ON LAND REMOTE SENSING

4–9 September 2017 | Szent István University | Gödöllő, Hungary

URBAN MAPPING PRACTICAL

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with contributions from Akpona Okujeni
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Study area

- City of Berlin, Germany
- 891,68 km²
- 3.52 Mio inhabitants
- 52° 31′ N, 13° 24′ O
- ~ 0.5 Mio street trees
- Extensive park areas and urban forests
- Abundant digital information freely available: http://fbinter.stadt-berlin.de/fb/

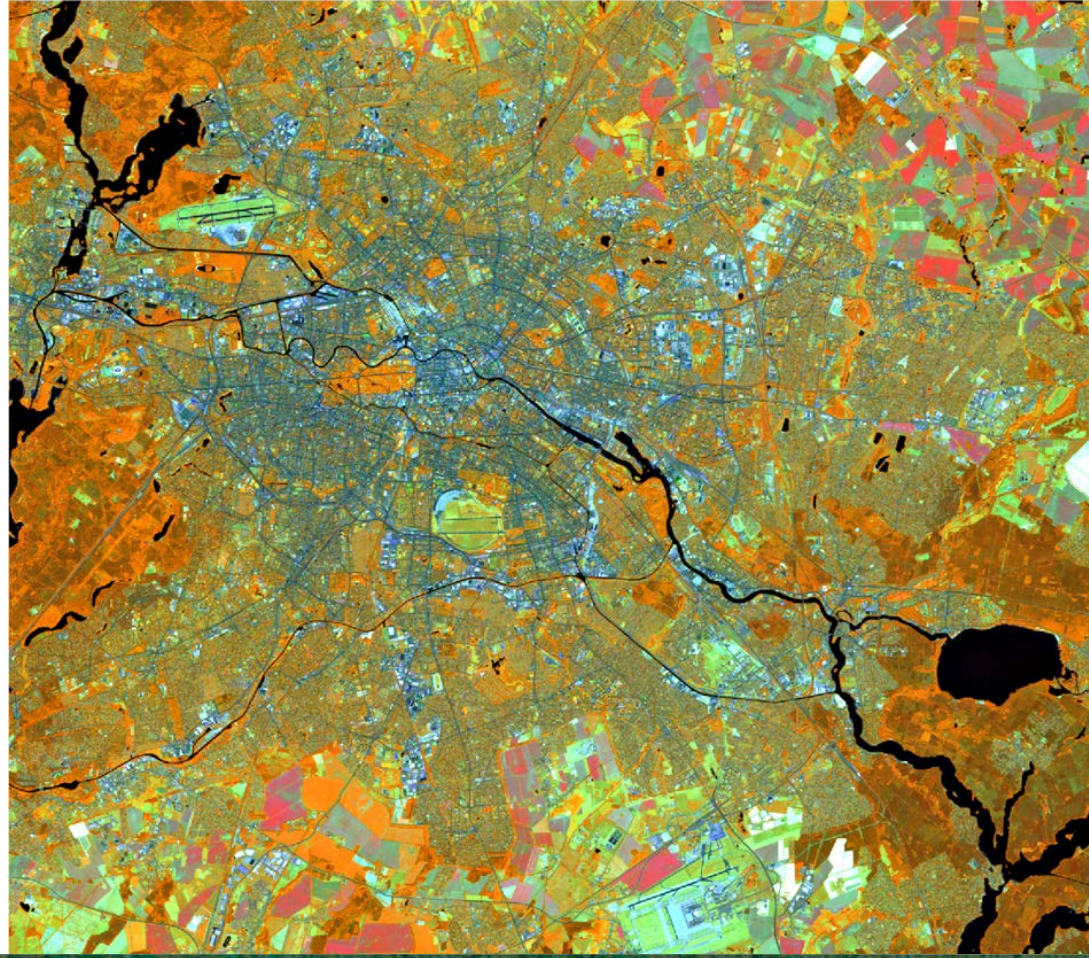
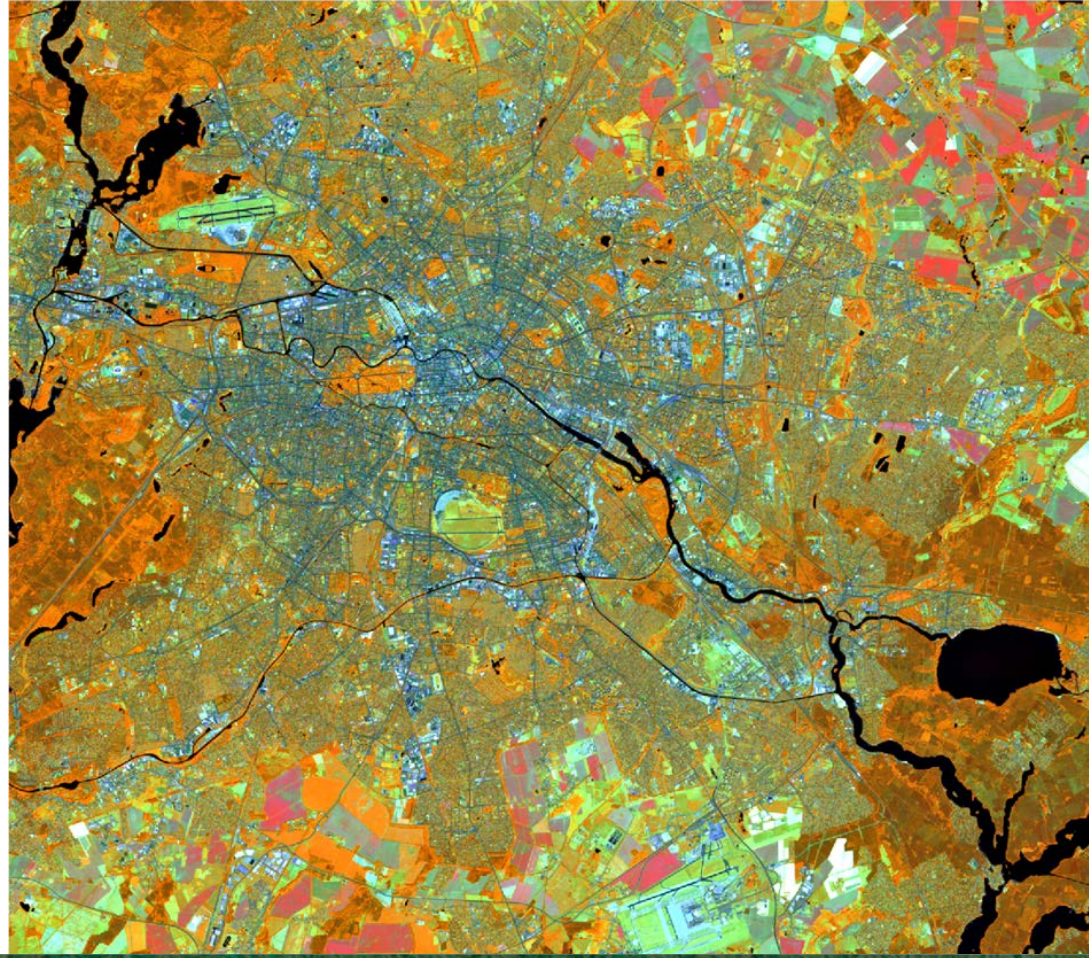


Image data

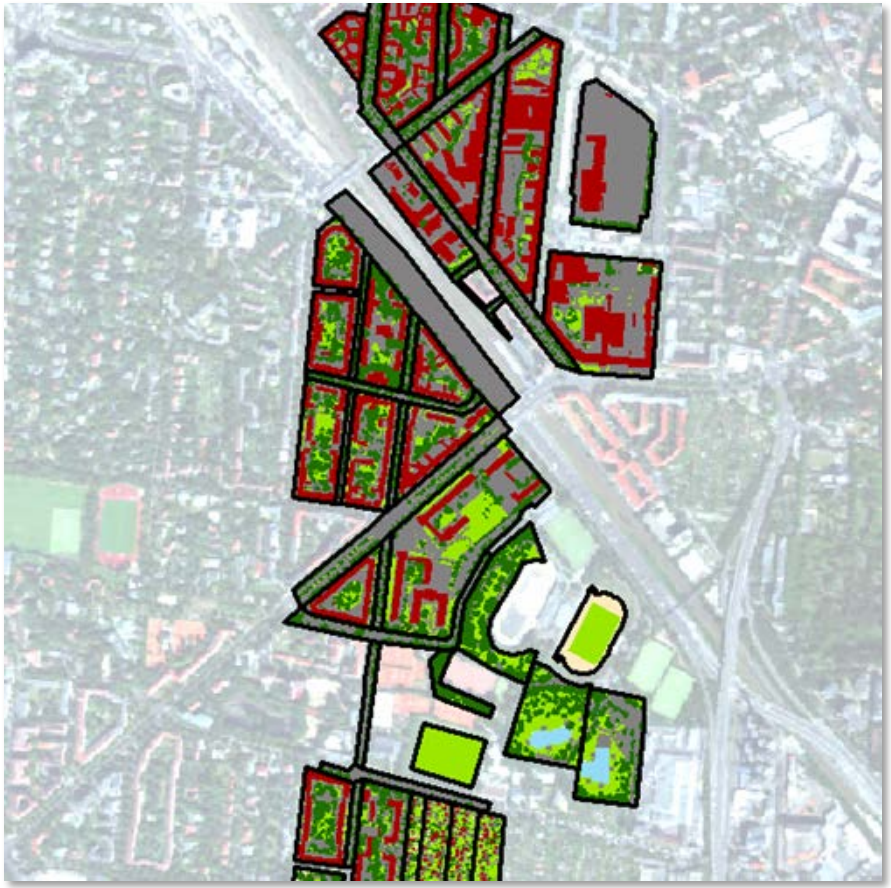
- Sentinel-2A
- 04 July 2015
- 9 spectral bands at 20 m spatial resolution
- Level 2a after Sen2Cor preprocessing



Reference data

- High resolution municipal vector data was overlayed
- Soils were manually assigned

- Fraction impervious cover
- Fraction vegetation
- (Fraction tree/low vegetation)
- 20 m raster of Sentinel data



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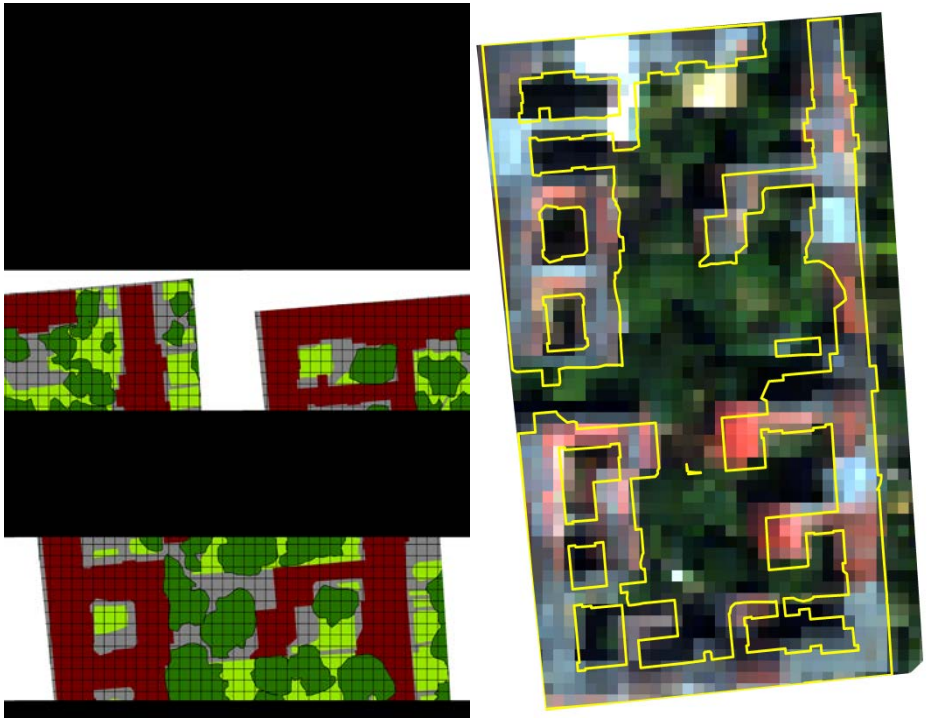
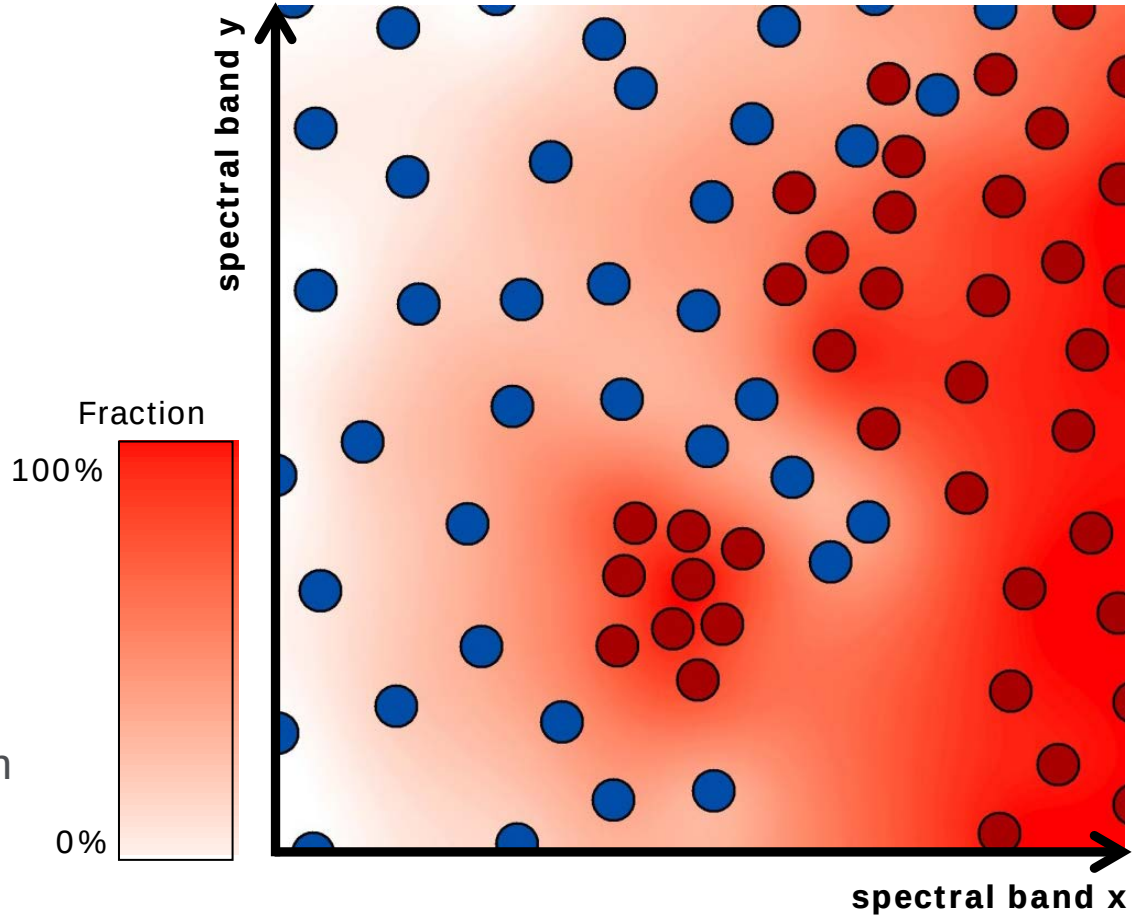
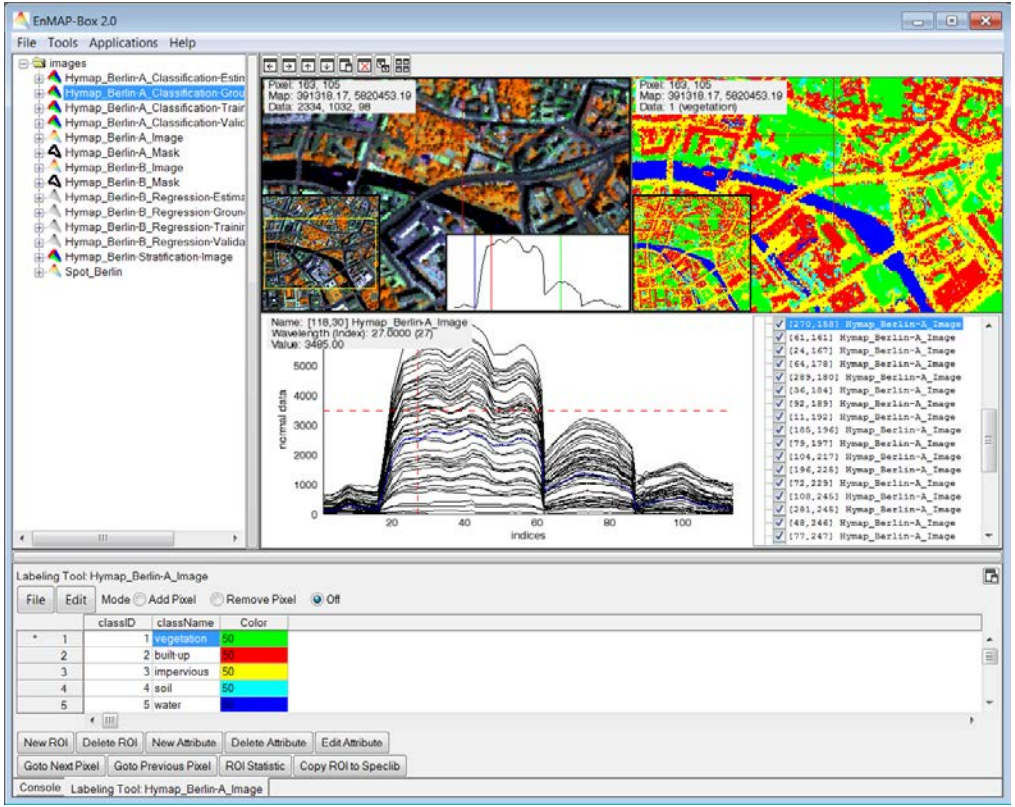


Example for vector-raster overlay (here 4 m)

Methodology

- Reference data (fractions at pixel level) are used for training regression model
- Support vector regression (non-parametric, kernel-based) for mapping impervious and vegetation fraction
- Accuracy assessed using measure for quantiative evaluation: Root mean squared error (RMSE), Mean absolute error (MAE), etc.



Software

- EnMAP-Box 2.x (IDL Version)
- Free and open source
- www.enmap.org
- Starting with version 3 the EnMAP-Box will be delivered as Python plug-in for QGIS