



Federal Agency for
Cartography and Geodesy

GAFAG

 **BKG**
Wir geben Orientierung.

Regular monitoring of landscape changes with Copernicus data

The German land cover change detection service



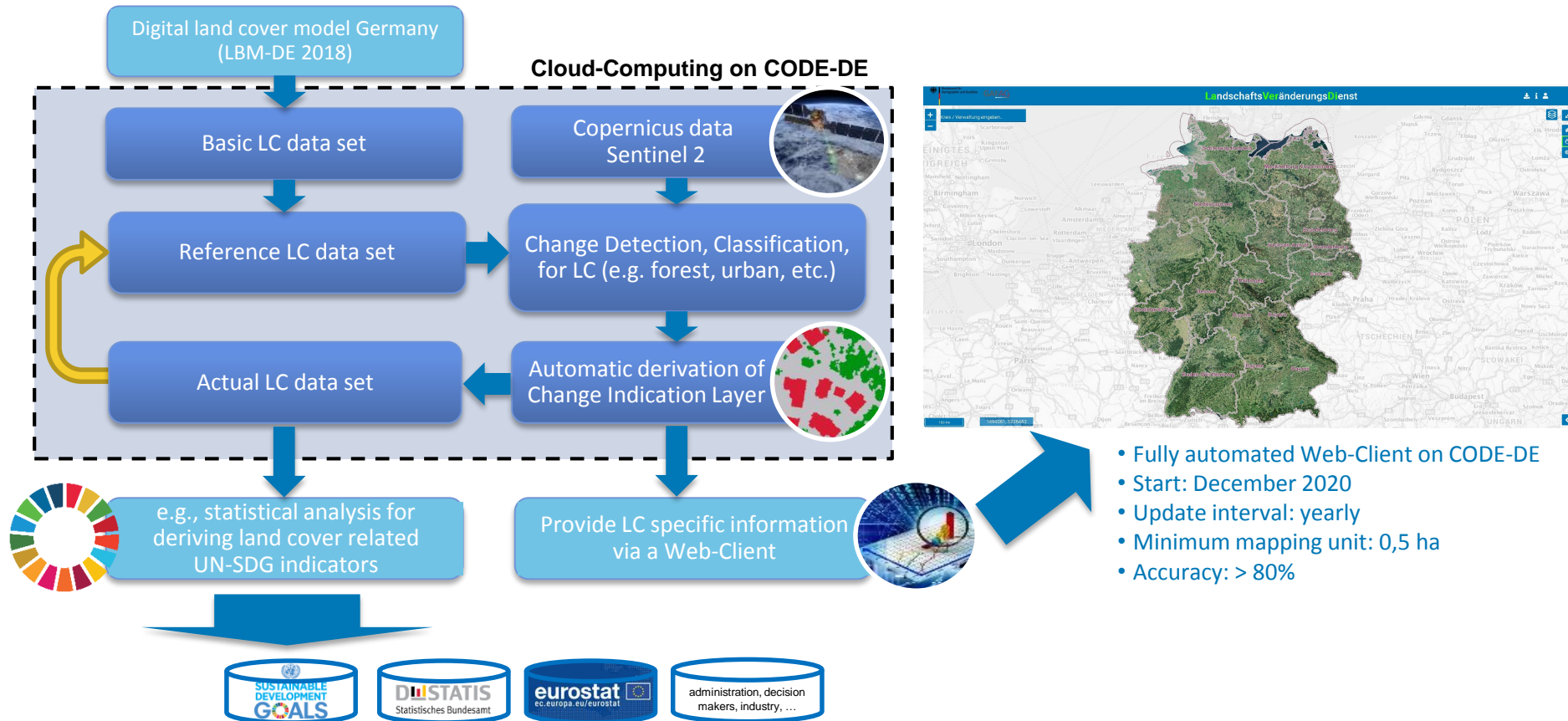
Patrick Knöfel & David Herrmann (GAF AG)

Federal Agency for Cartography and Geodesy, Frankfurt am Main, Germany

LaVerDi – LandschaftsVeränderungsDienst

Land Cover Change Detection Service

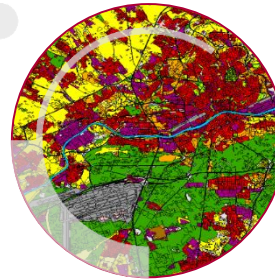
Main objective: Provide free continuous data of land cover changes from automatic change detection analysis of Copernicus satellite images (Sentinel 2)



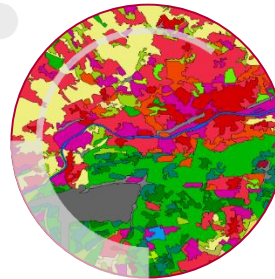
Landbedeckungsmodell

- Produced every three years (2015, 2018 etc.)
- MMU 1ha
- Based on topographic reference of federal states land surveying authorities supported by remote sensing data
- 31 LC classes, 16 LU classes

LN/LB

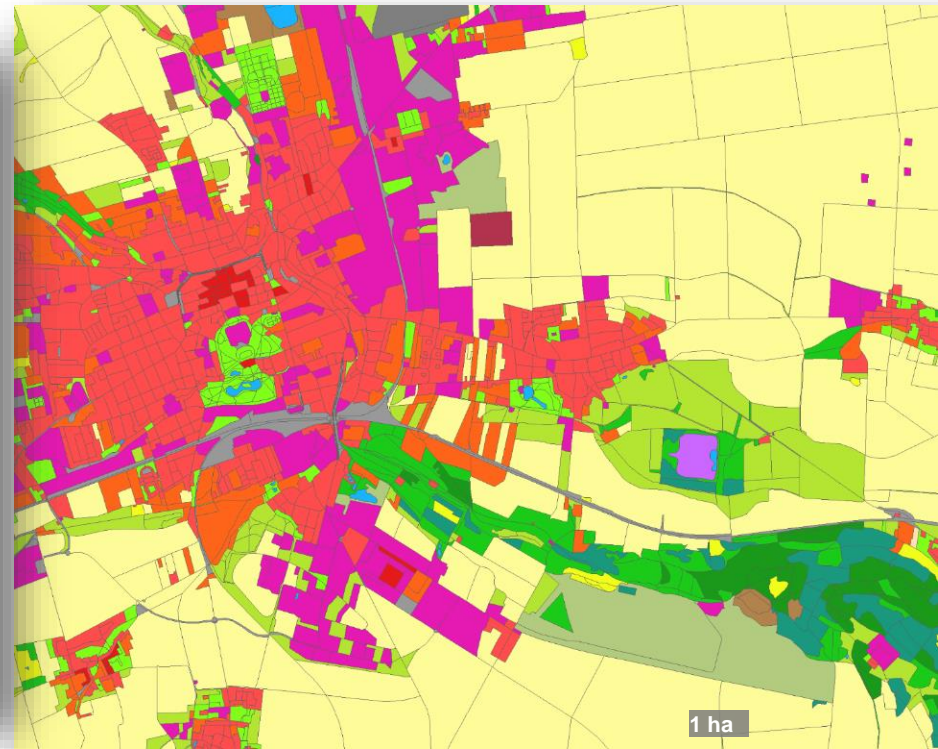
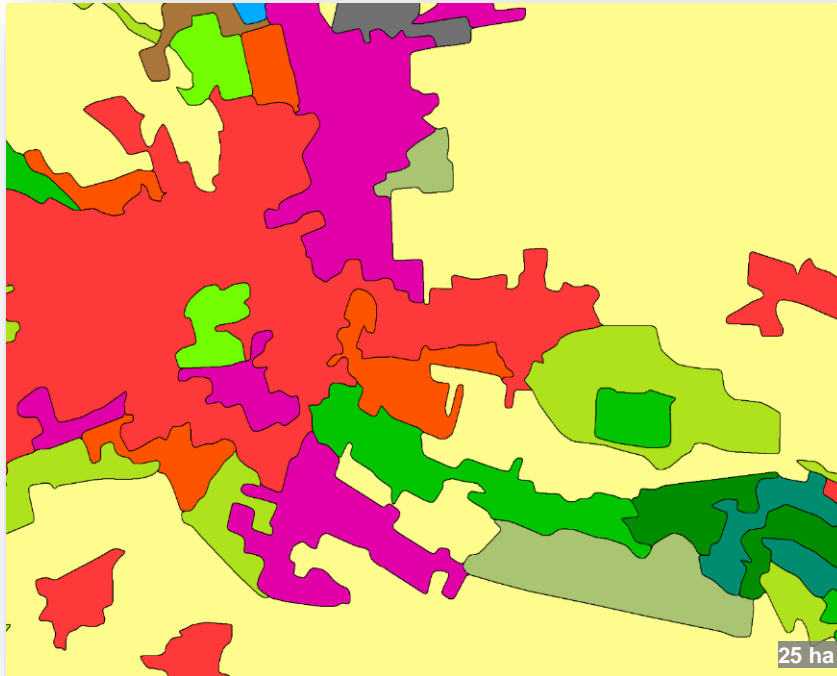


CLC



Landbedeckungsmodell 2018

LBM-DE2018 → CLC 25ha

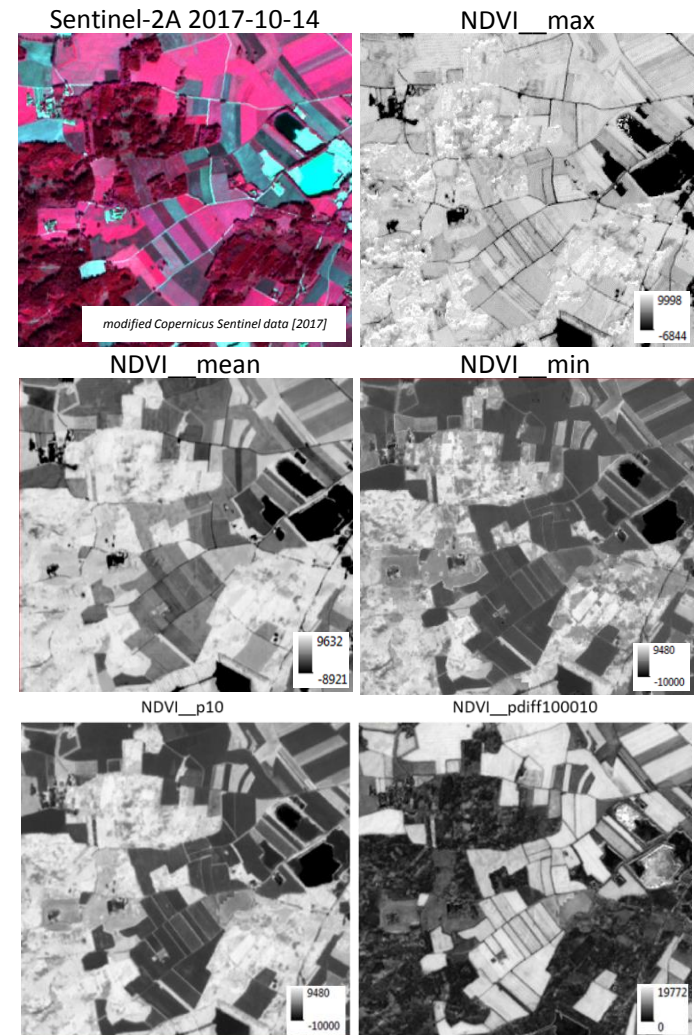


Land Cover Change Detection Service

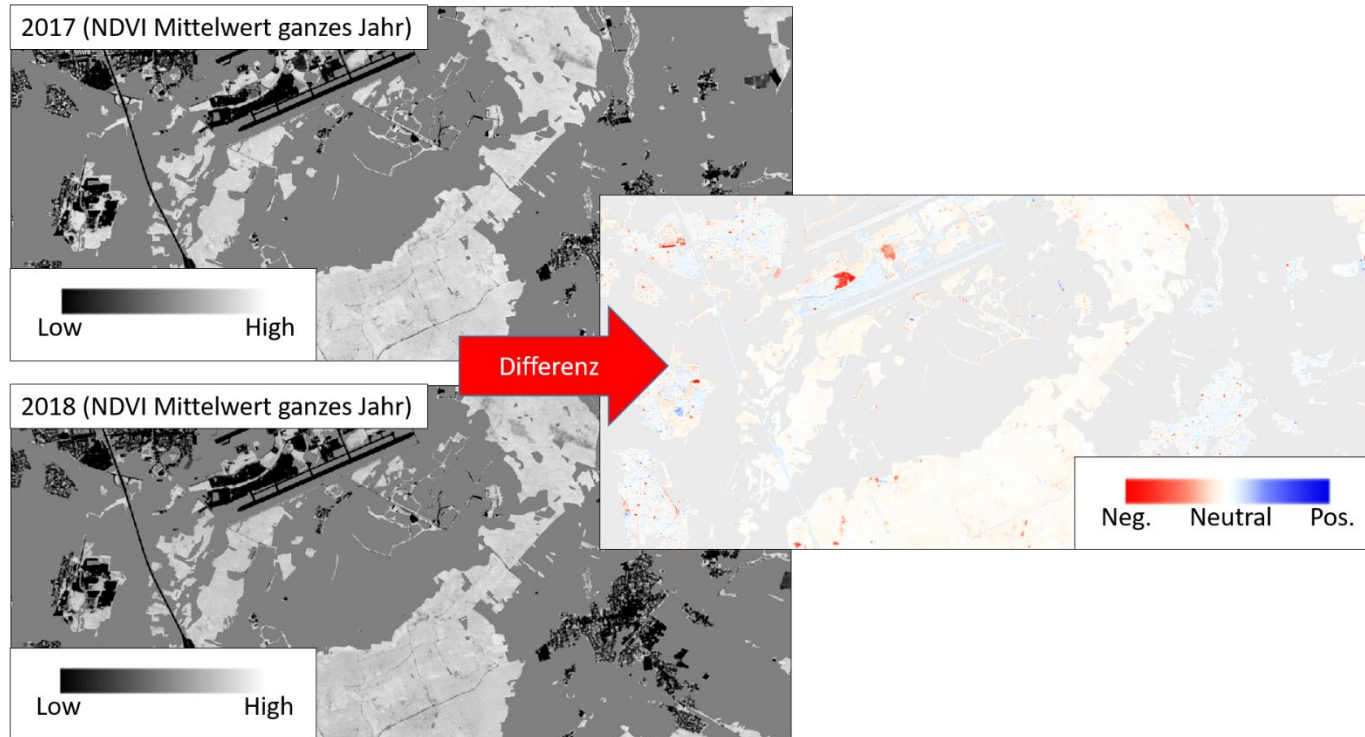
LaVerDi - **L**andschafts**V**eränderungs**D**ienst

From „Time Feature“ to Change Layer

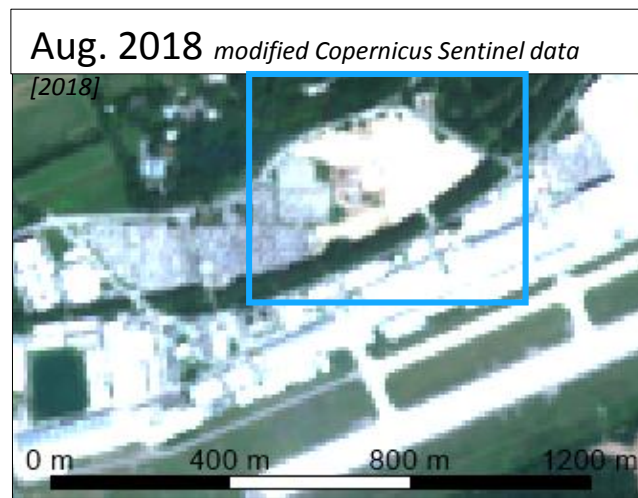
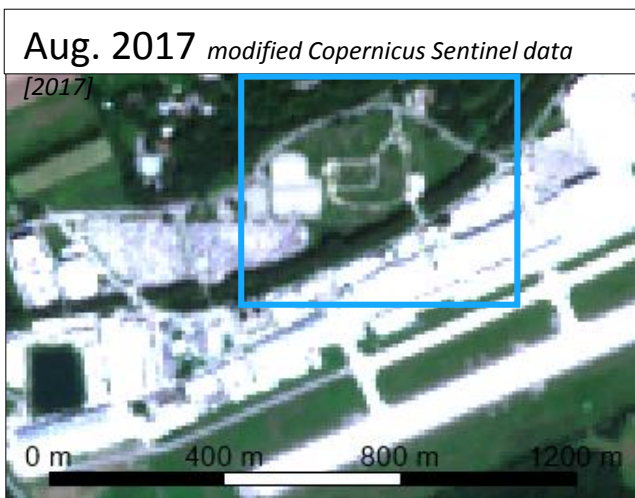
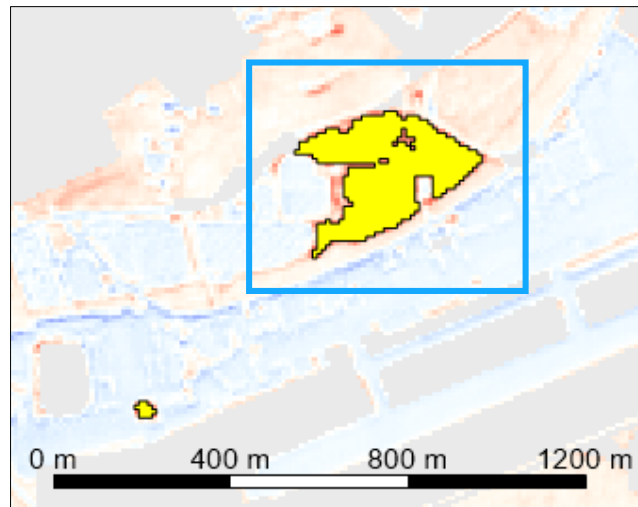
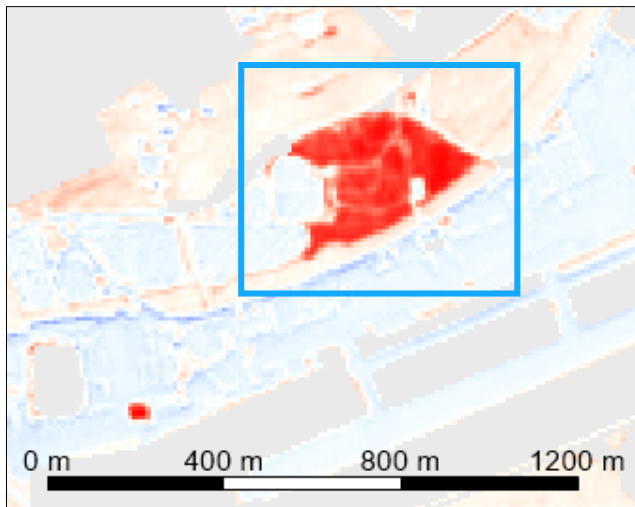
1. Standardized data preparation (Sentinel-2 time series)
(scenes with <70% cloud cover)
2. and time feature calculation
3. Difference calculation of selected Time Features
4. Change analysis within certain reference (LBM-DE) land cover classes
5. Derivation of the Change Indication Layer (CIL)
6. Change-Layer: rule-based determination of a change probability and derivation of the direction of change (e.g. from forest to settlement)



Difference calculation and change detection



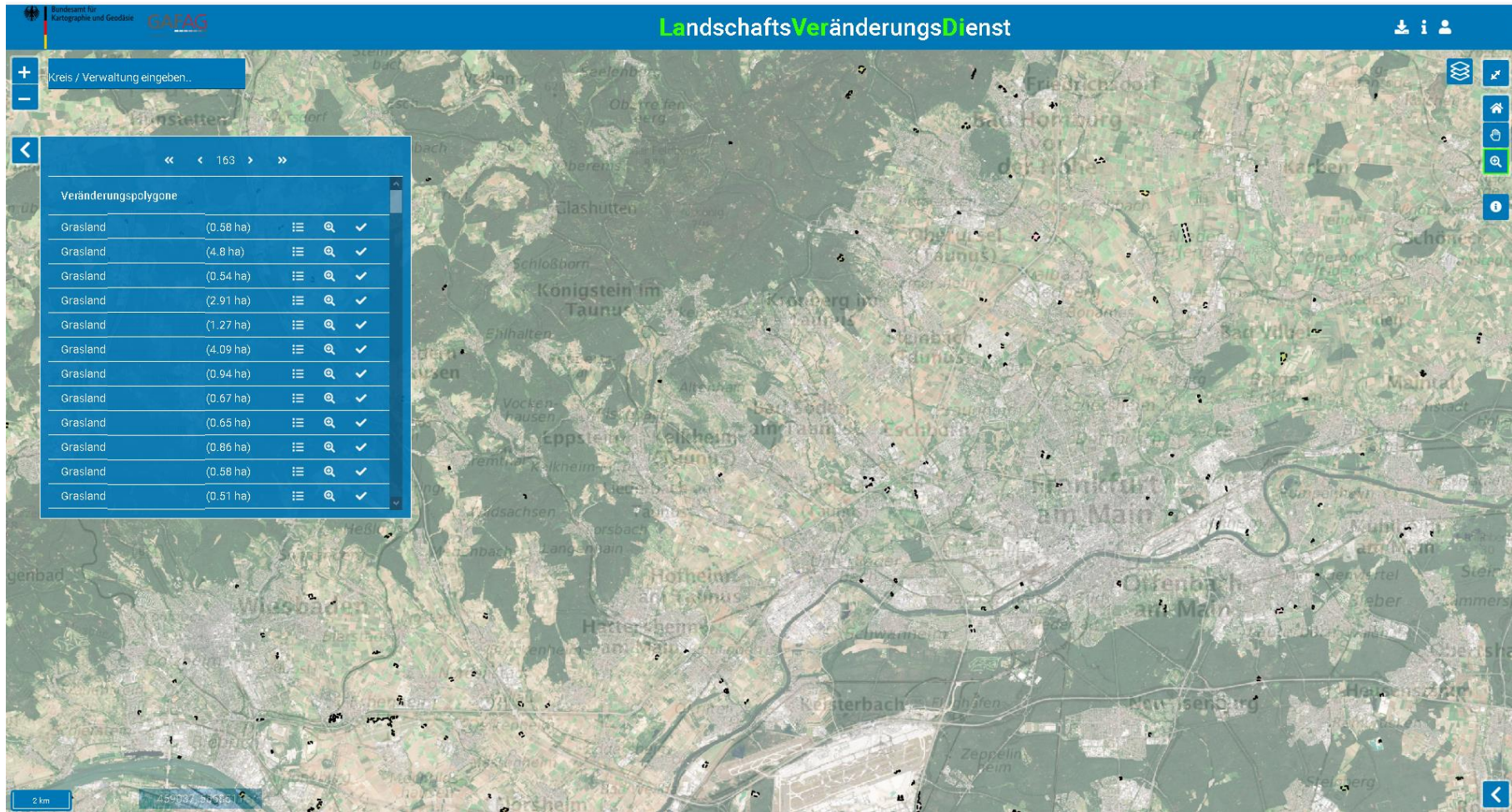
Change Indication Layer



LaVerDi – Web Client at CODE-DE



LaVerDi – Live Demo



LaVerDi – German land cover change detection service

- Fully automated web client on CODE-DE
- Start: December 2020
- Update frequency: annually
- Minimum mapping unit: 0.5 ha
- Accuracy: > 80%





Federal Agency for
Cartography and Geodesy



Thank you for your kind attention!

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