

Applied spatial data for sustainable development strategy in Germany

Stephan Arnold

Areal Statistics, Federal Statistical Office, Germany

Federal Statistical Office

Headquarter: Wiesbaden



Außenansicht des Statistischen Bundesamtes in Wiesbaden

Branch Office: Bonn



© Statistisches Bundesamt

Content

Areal Statistics – data source

**National Sustainable Development Strategy:
Urban Expansion Monitoring**

National Remote Sensing Project „Cop4Stat_2015plus“

European Context

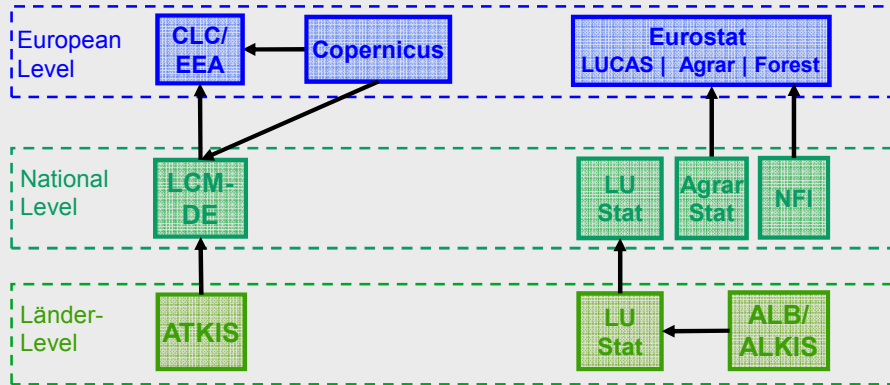
Outlook

Requirements

- **Spatial decision making processes** need robust information bases
- **Harmonised statistics** on Land cover and Land use
- **Unified mapping criteria**
 - Comparable **minimum mapping unit size**
 - Common **data capture time / interval**
 - Comparable **thematic content** definitions

Data flow from national to European level

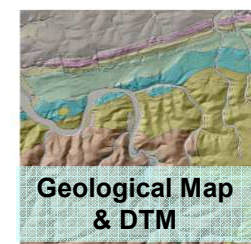
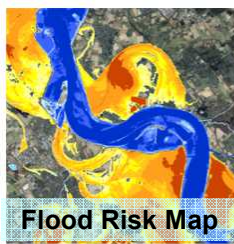
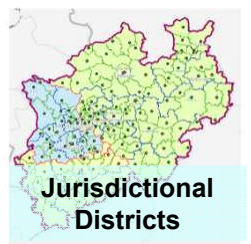
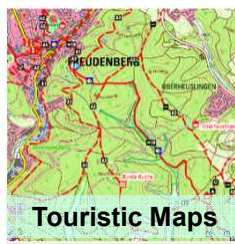
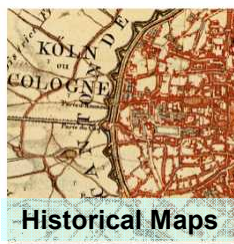
- **Data source** for official areal **statistics** (right side):
Cadastral Data (ALB/ALKIS)
- Separated from topographic data sets / geographic census (left side)



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Folie 5

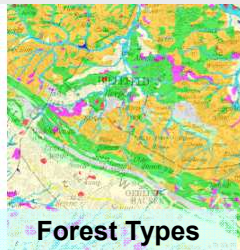
Federal State NRW's geodata products



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Folie 6

Federal State NRW's geodata products



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Folie 7

Topographic reference data ATKIS BasisDLM

Scale:
1:10.000-
1:25.000

**Street
Blocks,**

**Roads
as lines**



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Folie 8

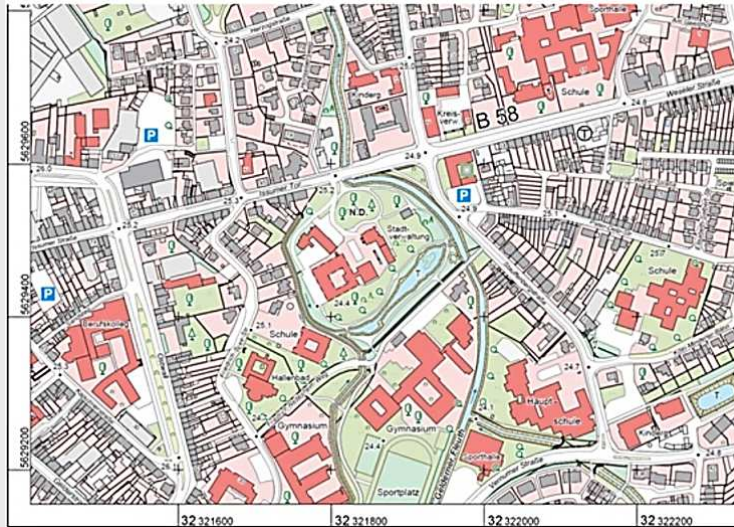
Cadastral data ALKIS

Scale:
1:1.000-
1:5.000

Single
Parcels,

Single
Buildings,

Roads as
polygons

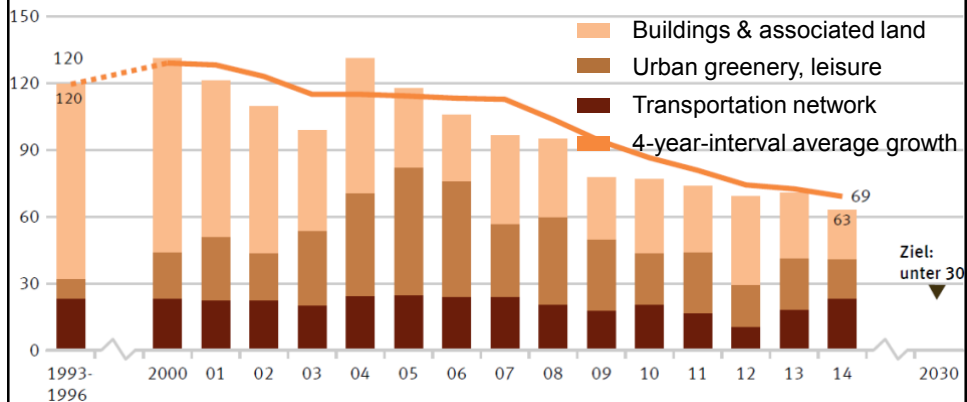


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Folie 9

Urban Expansion Indikator

- Settlement area growth rate in hectare / day
- 30 ha goal for 2020, below 30 ha in 2030,
Netto-Zero expansion until 2050

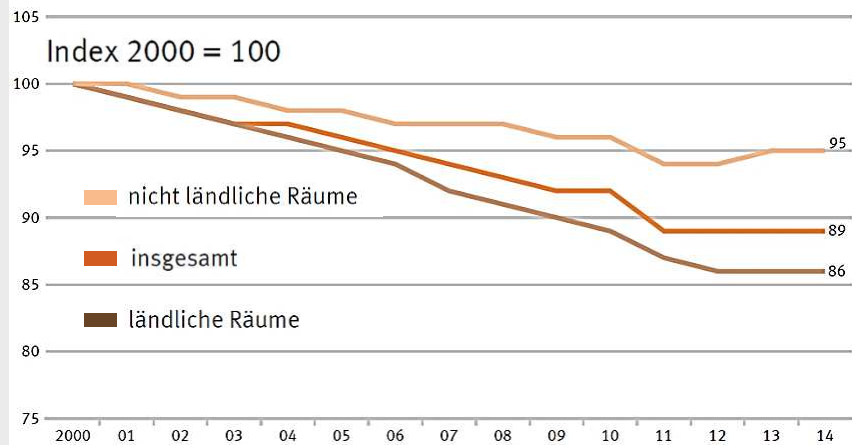


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Folie 10

Settlement Density

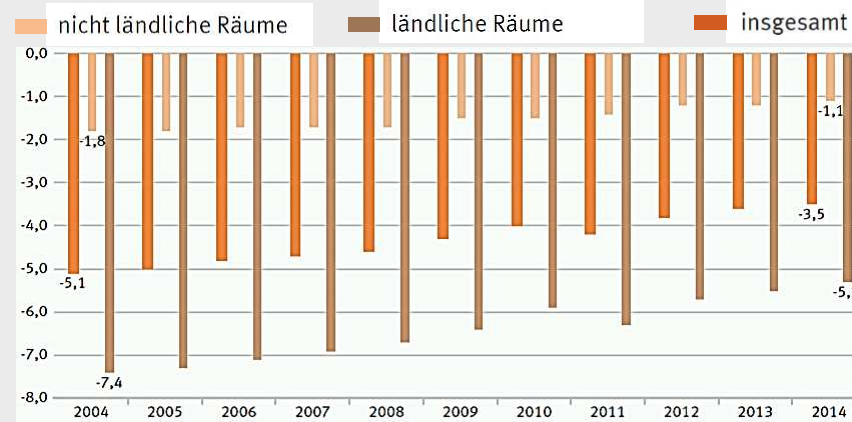
- **Inhabitants** per sqkm Settlement area
- Minimum target is to **stabilize** settlement density



Folie 11

Open Area Loss

- **Open area loss** in sqm / inhabitant
- In **rural areas** 4 x more negative change than in urban areas



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Folie 12

NACHHALTIGE ENTWICKLUNG IN DEUTSCHLAND

Indikatorenbericht 2016



Statistisches Bundesamt

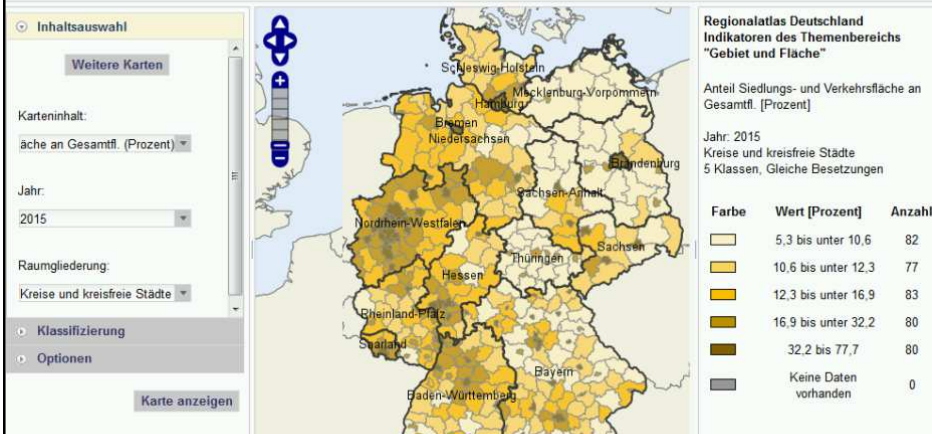


Indicator Report 2016 for National Sustainable Development Strategy

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Folie 13

Interactive Online-Atlas: Settlement Area in %

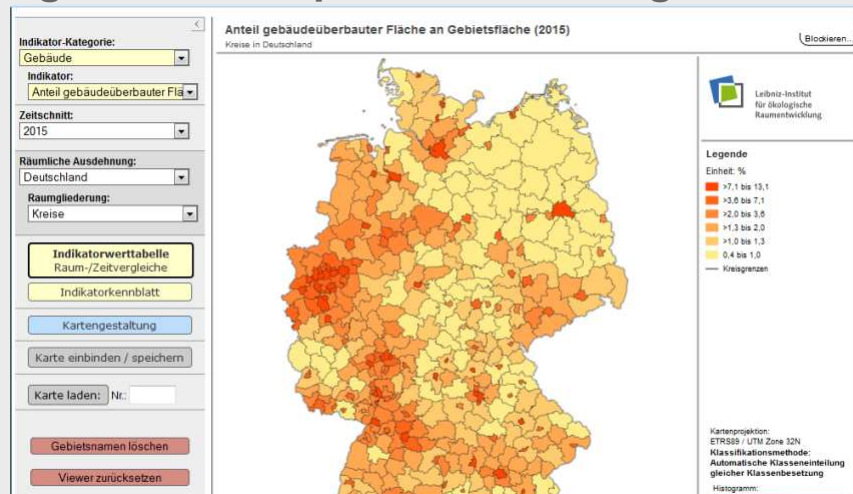


<https://www.regionalstatistik.de/genesis/online/logon>

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Folie 14

Regional Development Monitoring



www.ioer-monitor.de/

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Folie 15

Cop4Stat_2015plus
Copernicus for Statistics
(national Copernicus fund BMVI)

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Folie 16

COP4STAT_2015plus (2015-2018)

■ Project partner:

- Federal Statistical Office, (Destatis), Wiesbaden & Bonn
– project lead
- Federal Agency for Cartography and Geodesy, (BKG), Frankfurt
– cooperation partner
- Land surveying authorities (representative working group on separation LC/LU)
– associated to project, kept up-to-date

■ Time schedule:

- Project sketch submitted 31.01.2014
- Answer to call for tender 31.10.2014
- Project life time April 2015 – Juli 2018

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Folie 17

COP4STAT_2015plus Project goals

- **Usability assessment** of Copernicus products for data needs of **Statistics** on LC and LU
- Fulfill **requirements** on European level
 - (Eurostat: LUCAS): separation of LC & LU,
 - grassland / arable land; soil sealing, (semi-)natural areas
 - Use intensity, seasonal patterns, status, condition of land

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Folie 18

COP4STAT_2015plus

■ Input data

- optic satellite imagery: *Sentinel-2*, *RapidEye*, *Landsat*
- RADAR data : *Sentinel-1* (optional)
- Copernicus products: High Resolution Layer (HRL), to be tested
- Land cover model of Germany LBM-DE as additional source
- ATKIS Basis-DLM (authoritative topographic reference data)
 - No direct access to cadastral parcel geometries !
- Building foot prints LOD 1, (extracted from cadastral data)

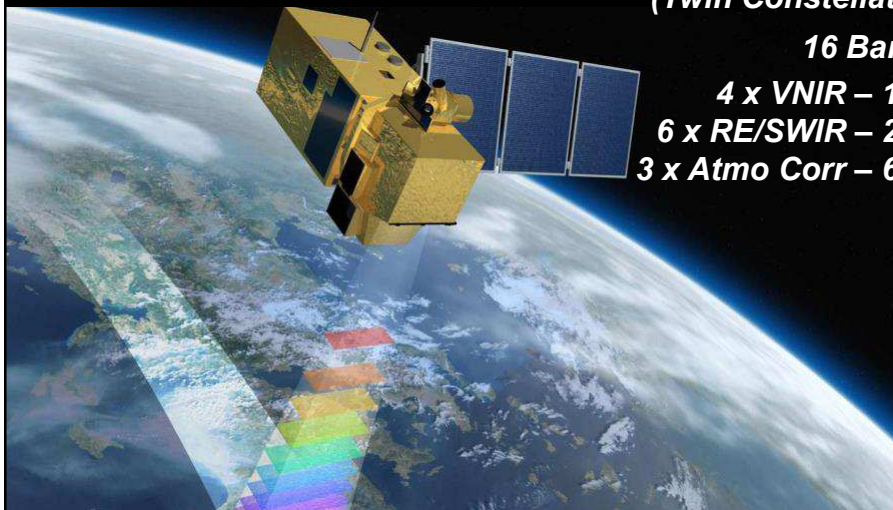
■ Main test site

- Südhessen, region of Frankfurt - Darmstadt

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Folie 19

Sentinel-2A+B

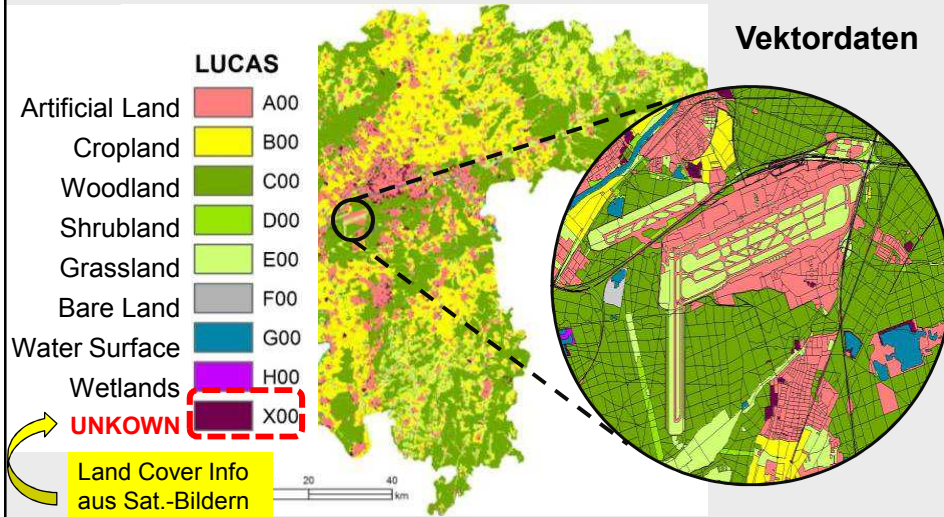


Orbit height 786 km
Swath width 290 km
Revisit rate 5 days
(Twin Constellation)

16 Bands:

4 x VNIR – 10 m
6 x RE/SWIR – 20 m
3 x Atmo Corr – 60 m

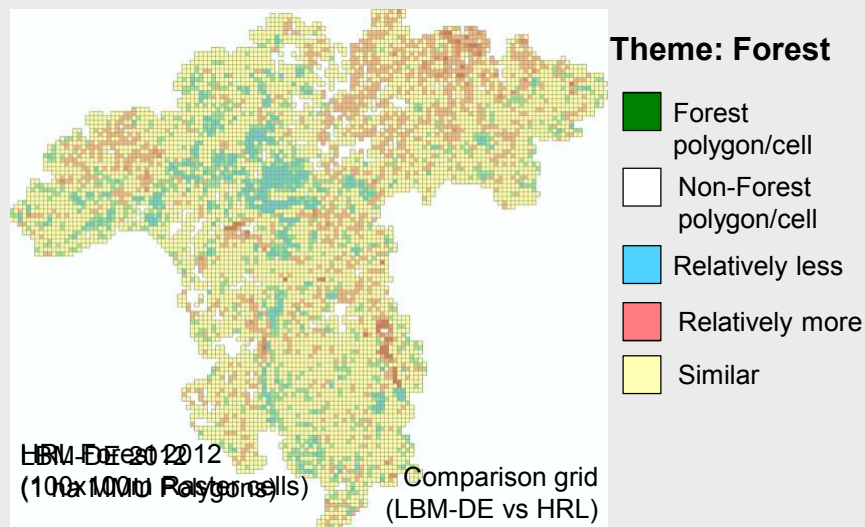
Semantic Transformation ATKIS - LUCAS



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Folie 21

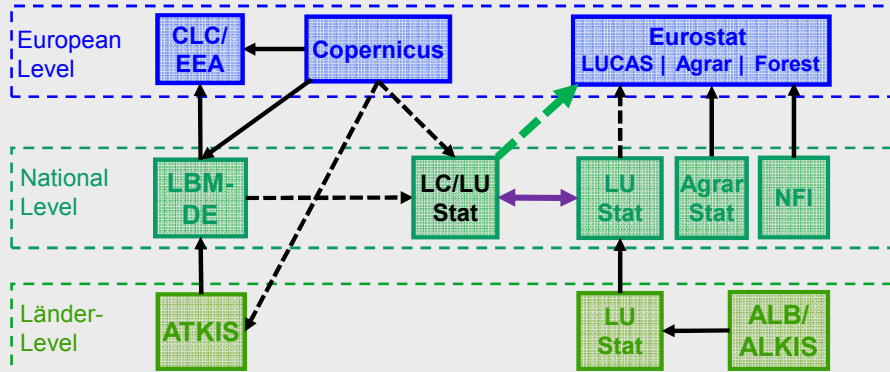
Standardized comparison of data sources



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Data flow from national to European Level

- Testing of **additional data source**: Remote Sensing for LC/LU statistics
- Option to integrate topographic data sources



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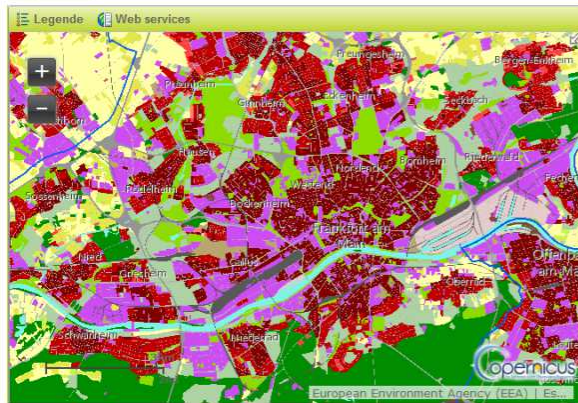
Folie 23

European Copernicus Products

Urban Atlas 2012

Partially validated product; summary results available in the technical library

Map View Metadata Download



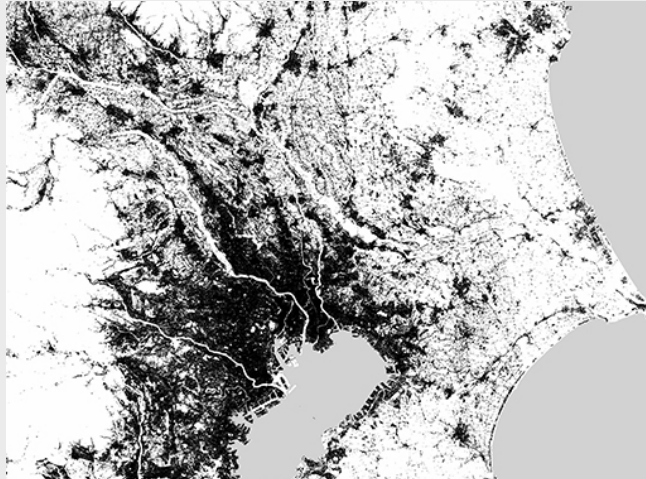
Print User corner

- FAQ
- Ask the service desk
- Contract opportunities
- EAGLE
- Land use cases
- Publications
- Technical library

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Folie 24

Global Products: Global Urban Footprint

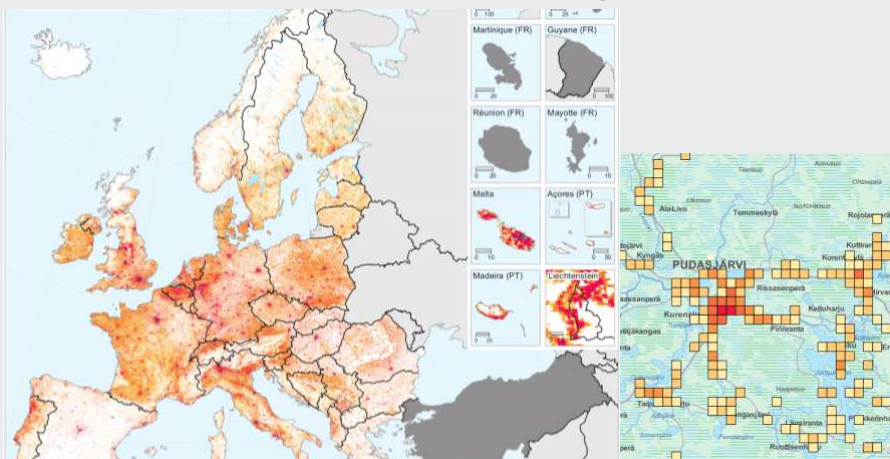


http://www.dlr.de/eoc/en/desktopdefault.aspx/tabid-9628/16557_read-40454/

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Folie 25

GEOSTAT: Population Density Grid



http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_yearbook_introduction

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Folie 26

National Fora and Events

- Dresden Land Use Symposium, May 2017 (yearly)
- International Land Use Symposium, 1.-3. Nov. 2017, Dresden
 - Big Data and the City as a Complex System
 - Historic Settlement and Landscape Analysis
 - Urban Morphological Analysis
- Dresden Nexus Conference, 17.-19. May 2017
 - UNEP, UN Habitat, FAO, UNESCO, int. Universities
- National Forum Remote Sensing & Copernicus 2017, Berlin
- Intergeo, Berlin, Oktober 2017
 - Knowledge and Action for the EARTH, Smart GI

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Folie 27

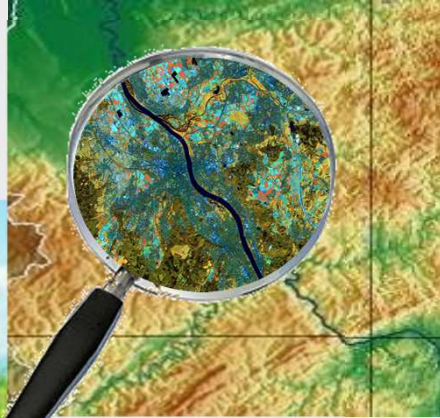
Outlook

- **Remote Sensing** supports official areal statistics
- **Harmonization** with European level and among MS
- Raster-oriented **Online Atlas for LC & LU** (planned)
- **Big Data** analysis new field for statistics
- **Memorandum of Understanding** between DESTATIS and BKG (national mapping agency)
- **Spatial Data Infrastructure** (GDI-DE / INSPIRE) helps provide, disseminate, search, find, use and **integrate spatial data** for planning and monitoring purposes on local, regional and national level

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Folie 28

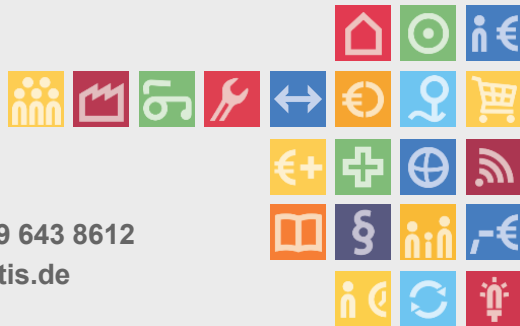
We are curious about
results ...
Any questions ?



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Folie 29

Thank you for your attention
谢谢



Stephan Arnold
Telefon: +49 (0) 228 / 99 643 8612
stephan.arnold@destatis.de
www.destatis.de