



BONARES
Centre for Soil Research



The BonaRes Infrastructure for open soil and agricultural research data

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MACS-G20 Workshop
Linked Open Data in Agriculture
Berlin, 27. September 2017

Data Centre Agricultural Landscapes
Leibniz Centre for Agricultural Landscape Research (ZALF)



Data & Long-term field experiments

[Learn More..](#)

About
BONARES

"BonaRes" is short for "Soil as a sustainable resource for the bioeconomy". In this funding initiative of the German Federal Ministry for Education and Research (BMBF) the focus is on the sustainable use of soils as a limited resource. The ultimate goal of BonaRes is to extend the scientific understanding of soil ecosystems and to improve the productivity of soils and other soil functions while developing new strategies for a sustainable use and management of soils. The BonaRes Portal provides information about the BonaRes projects, access to data, knowledge and models, as well as to decision support options for a sustainable soil management.

Projects



Information around the
BonaRes funding programme.



Research data



Repository for standardized
soil data.



Soil functions



Processes, modelling,
assessment and governance



Services



Solutions for practice, policy
and science.



BonaRes goals

- to extend the scientific understanding of soil ecosystems
- to secure and, if possible, increase the productivity and profitability of soil in the long term
- to develop new strategies for a sustainable use and management of soils

10 interdisciplinary joint projects



CATCHY

Zwischenfrüchte als agronomische Maßnahme zur Erhaltung der Bodenfruchtbarkeit und Ertragssicherheit
www.uni-bremen.de/microbe-plant/catchy.html



DiControl

Auswirkungen des pflanzenbaulichen Managements sowie der Anwendung mikrobieller Biokontrollstämmen auf die Bodengesundheit
<http://dicontrol.igzev.de>



I4S

Integriertes System zum ortsspezifischen Management der Bodenfruchtbarkeit
www.i4s-atb.de



InnoSoilPhos

Innovative Lösungen für ein nachhaltiges Boden-P-Management
www.innosoilphos.de



INPLAMINT

Erhöhung der landwirtschaftlichen Nährstoffnutzungseffizienz durch Optimierung von Pflanze-Boden-Mikroorganismen-Wechselwirkungen
www.inplamint.de

Standorte der an BonaRes beteiligten Institutionen



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www.bkg.bund.de

weitere Informationen: www.bonares.de

ORDIAmur

Überwindung der Nachbaurkrankheit mithilfe eines integrierten Ansatzes
www.ordiamur.de



SIGNAL

Nachhaltige Landwirtschaftsintensivierung durch Agroforstsysteme
www.signal.uni-goettingen.de



Soil³

Nachhaltiges Unterbodenmanagement
www.soil3.de



SoilAssist

Nachhaltige Sicherung und Verbesserung von Bodenfunktionen durch intelligente Landbewirtschaftung
www.soilassist.de



SusALps

Nachhaltige Nutzung alpiner und voralpiner Grünlandböden unter sich änderndem Klima
www.susalps.de



BonaRes-Zentrum für Bodenforschung
Koordination, Datenzentrum, Modellierung & Werkzeuge, Web-Portal
www.bonares.de



Soil research data: The current situation



- 
- data segmented, decentralized, heterogeneous,
 - uncertain responsibilities
 - metadata: sporadic
 - low comparability
 - poor access
 - hard to quote
 - insecure archiving

http://www.cafepress.com/+trimmed_grass_over_exposed_soil_puzzle,948769166

Tasks/objectives of the BonaRes data centre

- 
- Integration of (soil) research data into a central database for (soil) sciences
 - Ensure long-term availability
 - Use of international standards
 - Securing the rights of first use
 - Coordinating and defining standards for data collection and storage
 - Networking with existing data infrastructures

Improve the

- **re-use**
- **visibility**
- **citeability**

Tasks/objectives of the BonaRes data centre

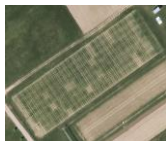
The data centre stores research data from:

- BonaRes joint projects
- Long-term field experiments (LTFE) (20-120 years, n=132)
- External sources

The data centre is networked with external databases (soil maps, data of soil zoology)



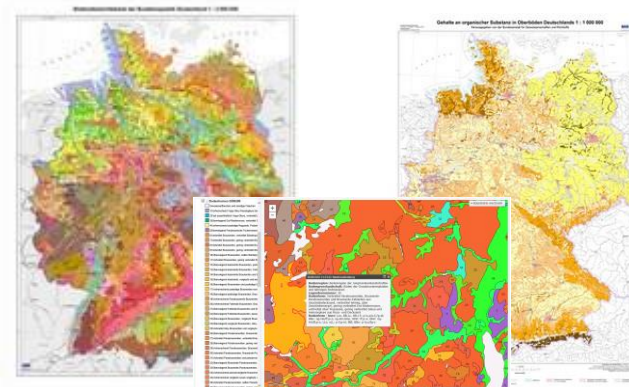
Scenarios (DWD)



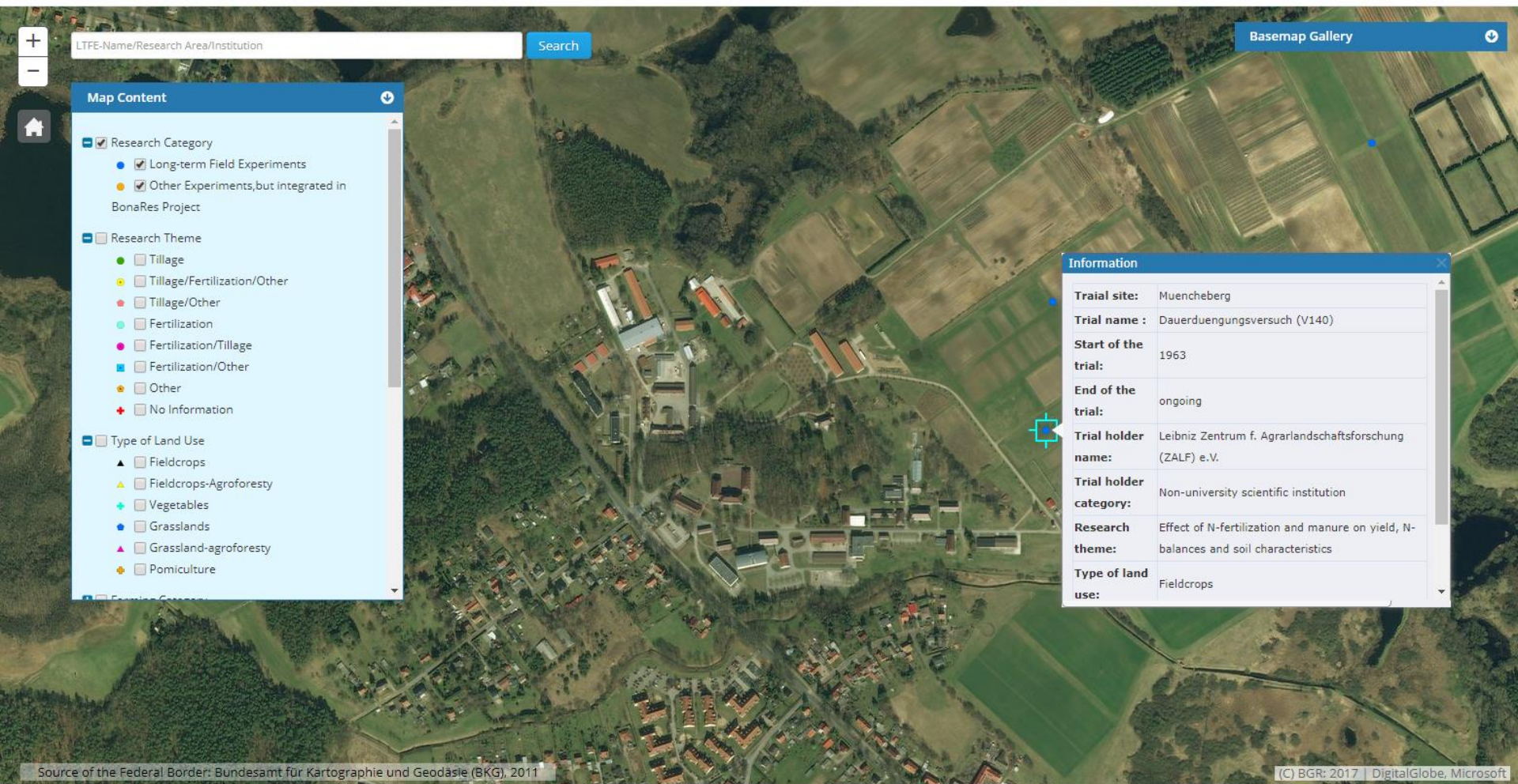
V140 1963-2014, ZALF

Tabelle Labordaten, Pflanze			
Tabelle Ertrag			
Tabelle Min. und max.			
Tabelle Regen			
Tabelle Aussaat			
Tabelle Bodenbearbeitung			
Jahr	Bodenbearbeitung	Termin	Art
1963	Saatfurche	Beetpflug	25.04.1963
1964	Saatfurche	Beetpflug	12.09.1963
1964	Scheiben	Scheibenegge	20.09.1963
1965	Schaefen	Schaefpflug	30.07.1964
1965	Herbstfurche	Beetpflug	02.11.1964
1965	Saatfurche	Beetpflug	14.04.1965
1965	Eggen	Egge	27.09.1965
1965	Eggen	Egge	28.09.1965
1967	Schaefen	Schaefpflug	10.08.1966
1967	Eggen	Egge	20.09.1966
1967	Saatfurche	Beetpflug	08.11.1966
1967	Grubbern	Feingrubber	06.03.1967
1967	Grubbern	keine Angabe	11.04.1967
1967	Grubbern	keine Angabe	19.04.1967
1968	Herbstfurche	Beetpflug	15.11.1967
1968	Grubbern	keine Angabe	20.03.1968
1969	Schaefen	Schaefpflug	14.08.1968
1969	Herbstfurche	Beetpflug	30.10.1968
1969	Grubbern	Feingrubber	05.04.1969
1969	Grubbern	Feingrubber	18.04.1969
1970	Herbstfurche	Beetpflug	29.10.1969

LTFE

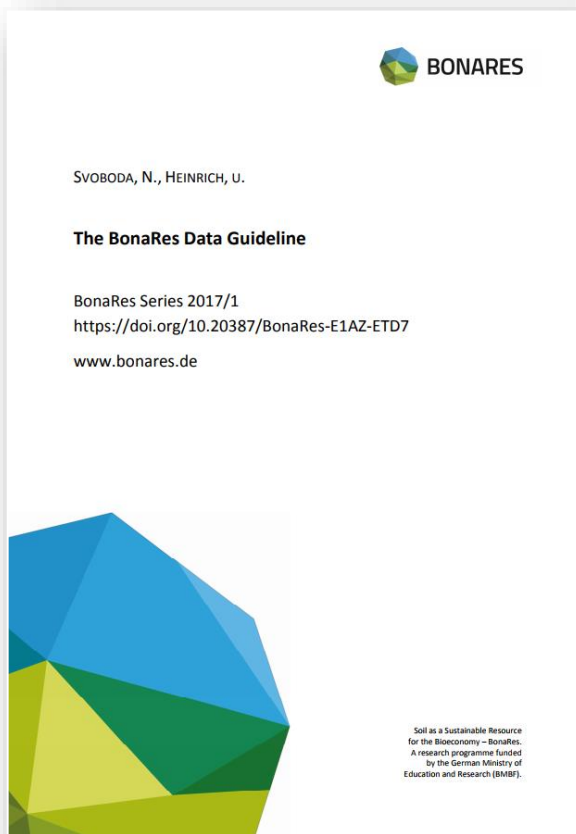


Soil information (BGR)

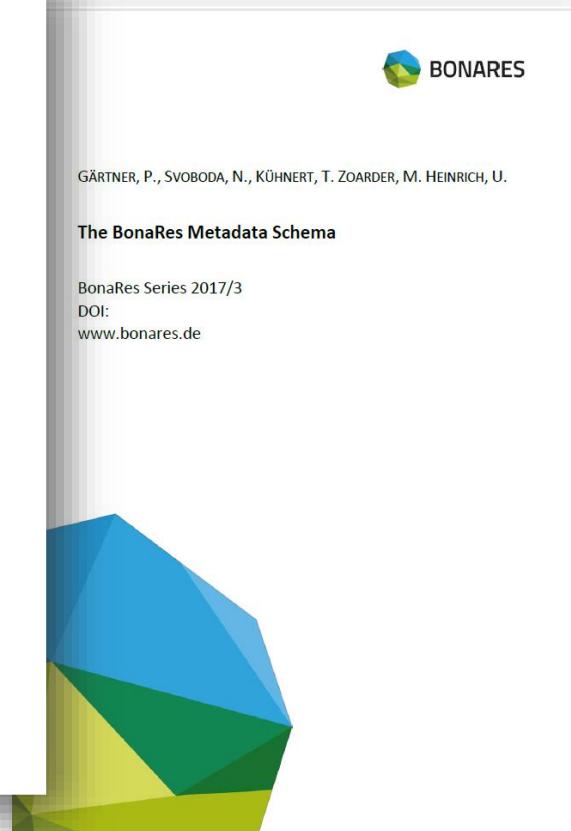


The framework conditions

The BonaRes Data Guideline



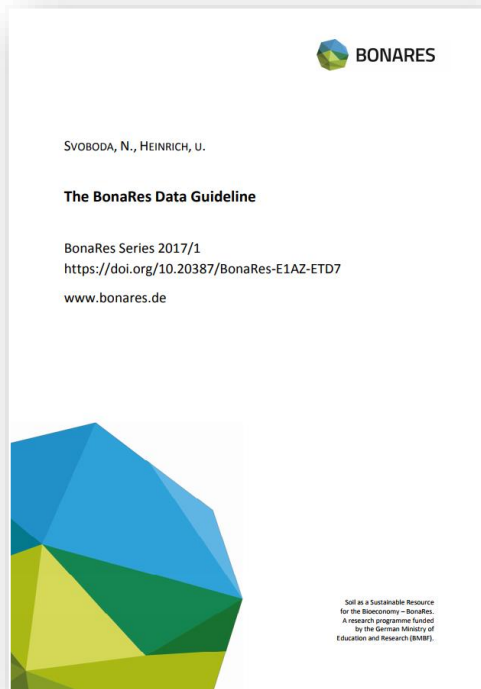
BonaRes Metadata Schema



BonaRes Relevant Standards



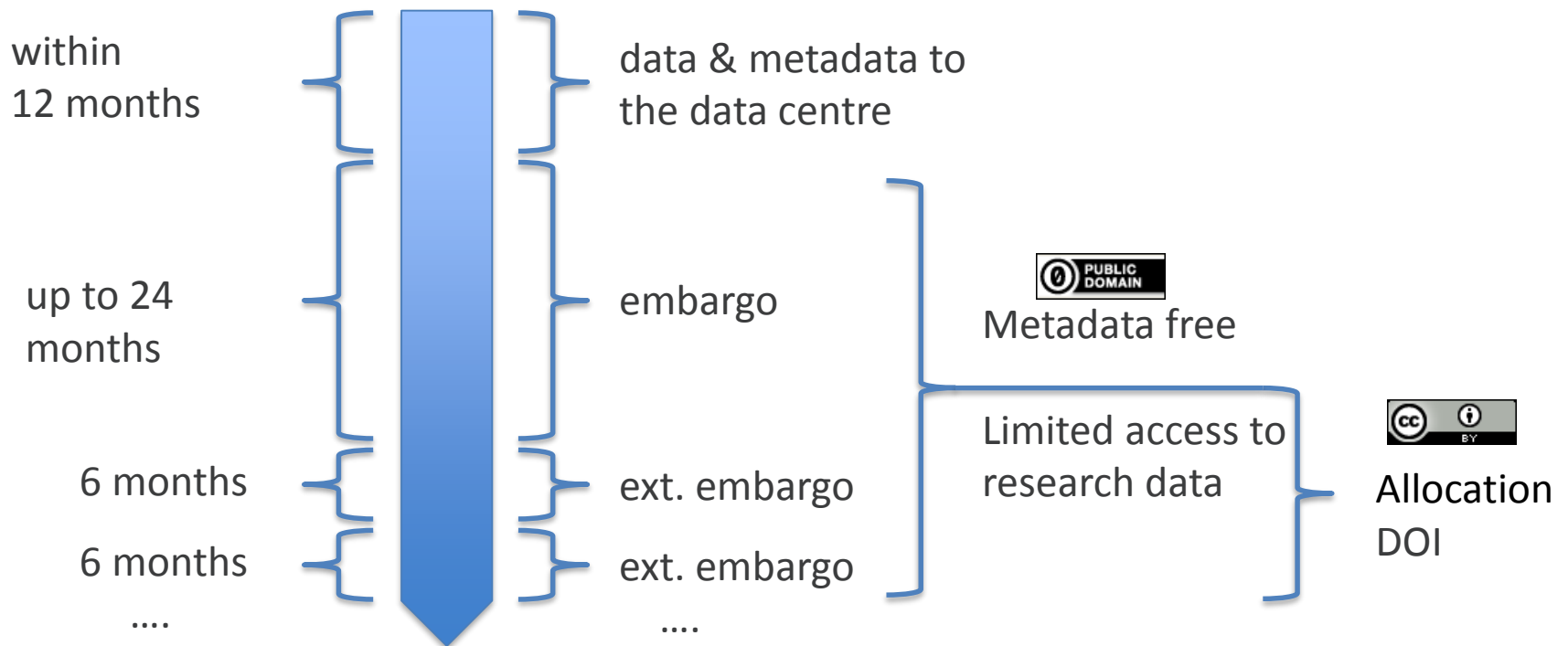
The BonaRes Data Guideline



- Data guideline **coordinated & agreed** in the BonaRes project
 - Each data record receives a unique license
 - License: Creative Commons (CC 4.0)
 - CC-0 for metadata
 - CC-BY for research data (recommended)
 - Rights of first use and ownership
 - Disclaimer of liability
 - <https://doi.org/10.20387/bonares-e1az-etd7>

The legal framework (Timeline)

DATA COLLECTION



DATA PROVISION FOR FREE POST-UTILIZATION (RE-USE)

The legal framework(The Licenses)

2001 / 2010 Budapest Open Access Initiative

2003 Berlin Declaration

2010 Allianz Initiative

2014 Appeal for the use of open licences in science
(Allianz Initiative)

2015 Guidelines on the handling of research data
(DFG)

„We recommend CC-BY or an equivalent license as the optimal license for the publication, distribution, use, and reuse of scholarly work.“

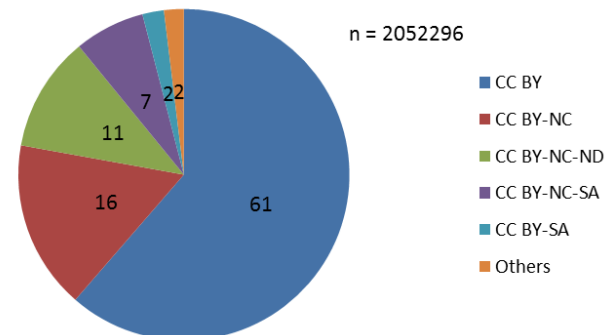
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The legal framework(The Licenses)

- **Licenses** define what users can do with copyrighted works without having to ask the author for permission in individual cases.
- Licences should be standardised, open, legally sound and internationally understandable
- The author should not have to pay for the use of the licences

Alliance of Science Organisations in Germany recommends:



- There is no other standardized licensing system for scientific publications that is used in a comparable manner.
- Creative commons licenses are legally compliant and can be adapted to national legal systems if necessary.
- Your data can be evaluated in a machine-readable way.
- Its modular structure enables science-oriented solutions - for example, for discipline-specific forms of re-use or different publication formats.

Metadata

CC0 1.0 Universal (CC0 1.0) Public Domain Dedication

The Data

This is a human-readable summary of the [Legal Code \(read the full text\)](#).

[Disclaimer](#)

No Copyright



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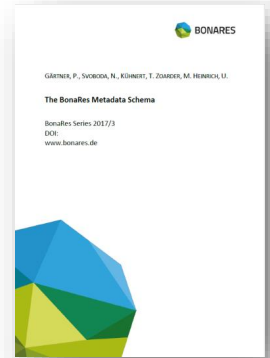
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The BonaRes metadata schema



- data sharing
- data discovery
- Interoperability ...
- data DOI
- citeable ...
- credits in reference list

URL der DOI Foundation Server für die Umleitung der Benutzer zur DOI

DOI Registrierung

Registrant (DZA – ZALF)

Objekt

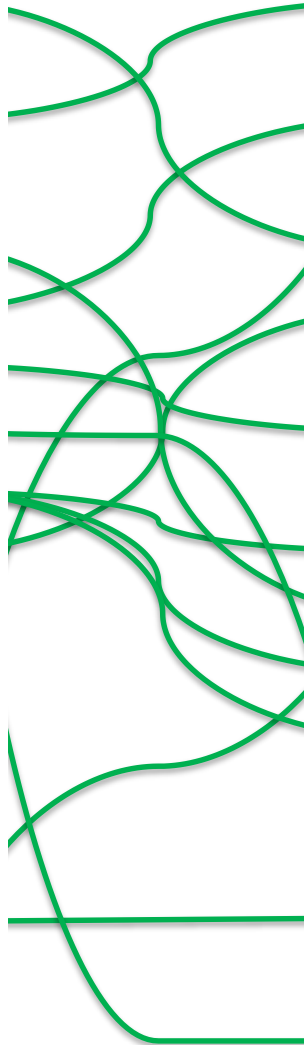
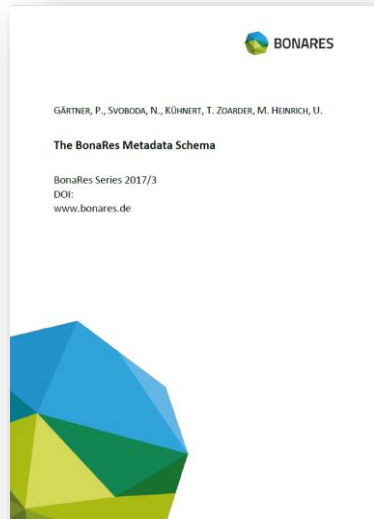
Prefix (zugewiesen)

Suffix (von Hosting-Einrichtung gewählt)

<http://bonares.de/10.20387/726855>

Originally mandatory

BonaRes mandatory



The BonaRes metadata schema

- Attribute Metadata



Thumbnail
No thumbnail is attached to this data model

Attributes

1 x

Name	
Long name	
Description	
Unit	
Methods	
Quality	
Data type	
Domain	
Missing value	

Foreign key

1 x

Identifier	
Table	
Column	

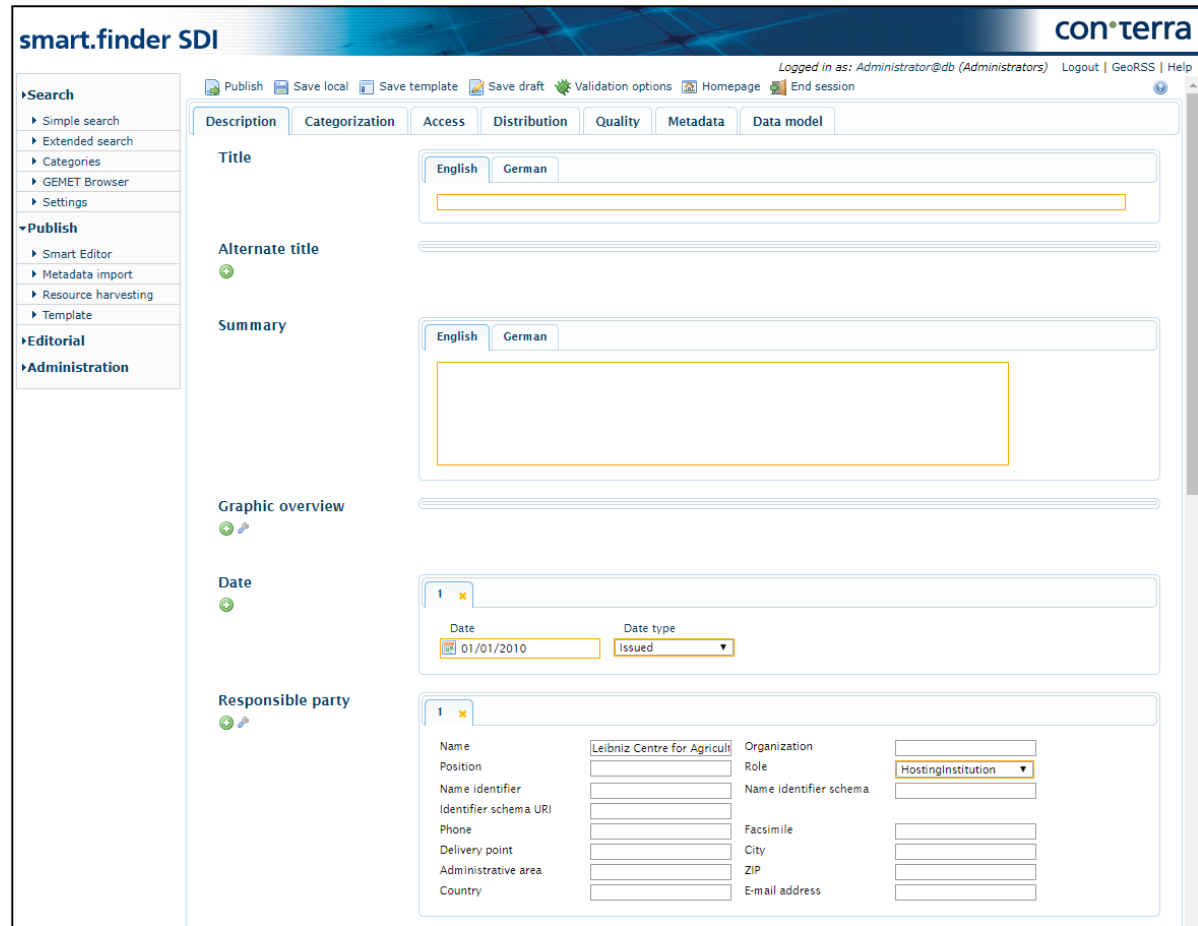
Zone_Code

FID	SDP	Special Development Plan
11	TNS	Transitional
12	MDR	Medium-density Residential
13	LDR	Low-density Residential
14	VAC	Vacant

BonaRes – Metadata Editor

For comfortable metadata upload and editing

- user management
- saving locally
- save templates
- save drafts
- different validation options for INSPIRE, DataCite and BonaRes schema
- export (xml, csv)



The screenshot shows the 'smart.finder SDI' interface for editing metadata. The top navigation bar includes 'Publish', 'Save local', 'Save template', 'Save draft', 'Validation options', 'Homepage', and 'End session'. The user is logged in as 'Administrator@db (Administrators)'. The left sidebar contains a menu with 'Search' (Simple search, Extended search, Categories, GEMET Browser, Settings), 'Publish' (Smart Editor, Metadata import, Resource harvesting, Template), 'Editorial', and 'Administration'. The main content area has tabs for 'Description', 'Categorization', 'Access', 'Distribution', 'Quality', 'Metadata', and 'Data model'. The 'Description' tab is active, showing fields for 'Title' (with English and German language options), 'Alternate title', 'Summary' (with English and German language options), 'Graphic overview', 'Date' (with a date picker set to 01/01/2010 and a dropdown for 'Date type' set to 'Issued'), and 'Responsible party' (with a table for contact information including Name, Position, Name identifier, Identifier schema URI, Phone, Delivery point, Administrative area, Country, Organization, Role, Name identifier schema, Facsimile, City, ZIP, and E-mail address).

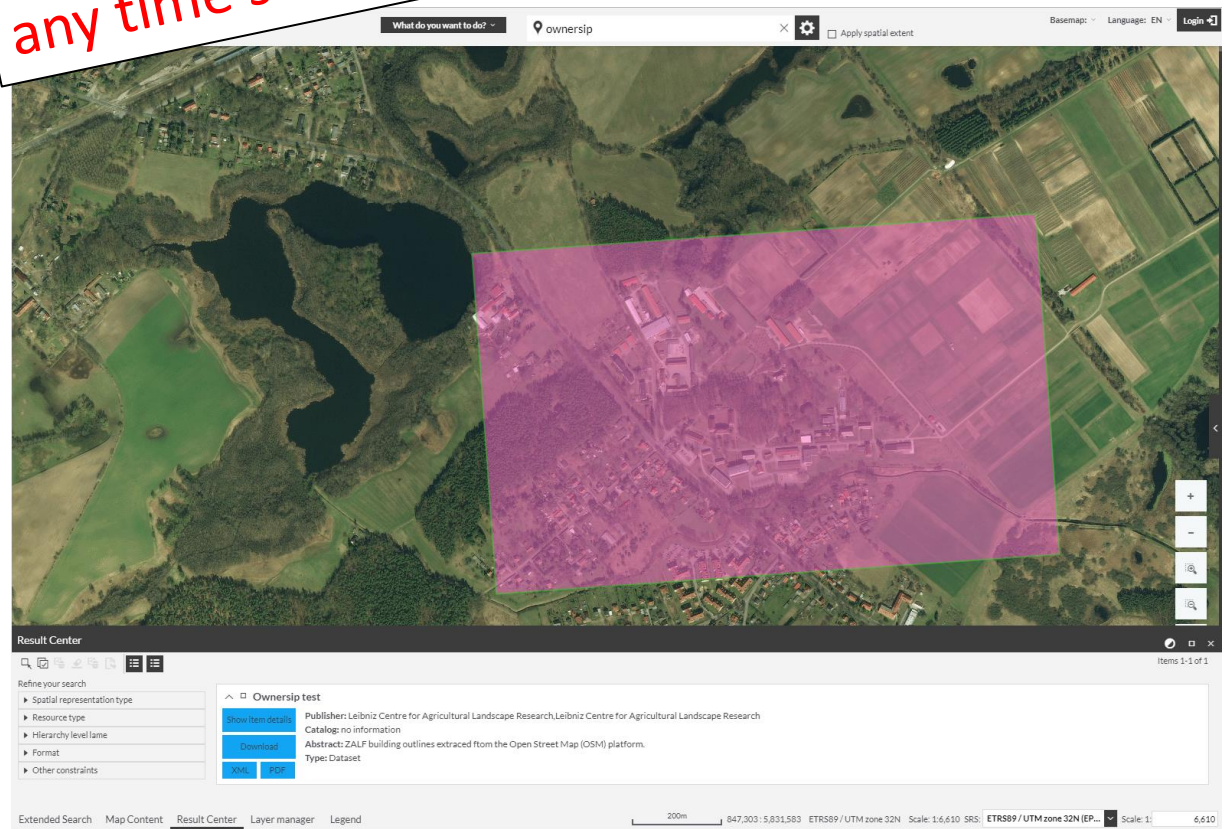
<https://b-web-e.bonares.de/terraCatalog/Start.do>

BonaRes – Data Portal

any time soon ...

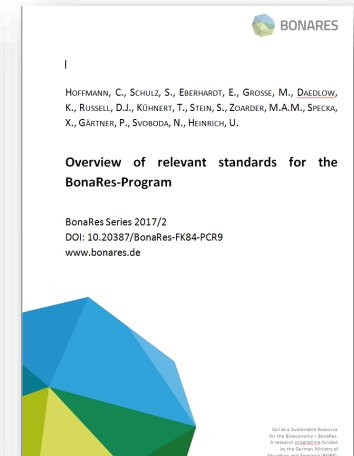
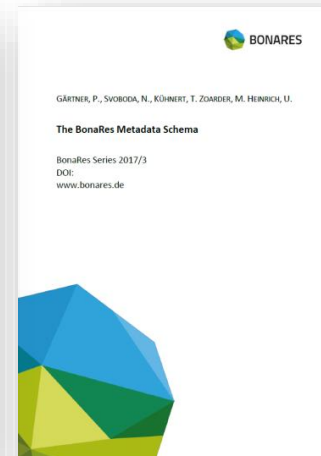
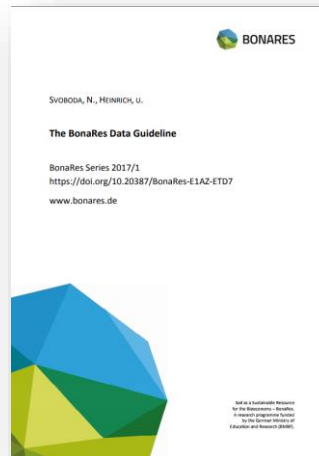
Data provision

- Search (simple, advanced)
- Spatial search
- Thesaurus (GEMET, AGROVOC)
- Data download after expired embargo period
- Services: OGS (WMS, WFS, CSW)



The BonaRes Data Centre supports you with...

- Research Data Management
- Simple metadata upload
- Convenient and efficient description of metadata
- Reliable memory
- User administration
- Licences
- Embargo
- DOI



Thank you for your attention



This project is funded by the German Ministry for Education and Research (BMBF) in the framework of the funding measure "Soil as a Sustainable Resource for the Bioeconomy - BonaRes" (grant 031A608).

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