

Aufbau einer Geodateninfrastruktur mittels GeoNode für das Projekt ADDFerti

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- Vorstellung Projekt ADDFerti
- Geonode
 - Architektur
 - Funktionen & Features
 - Layer
 - Maps
 - Dashboards
 - APIs
- Fazit

Projekt ADDFerti



Ghent University, BE



Aristotle University
Thessaloniki, GR



Rostock
University, DE



Bursa Uludag
University, TR



Sezer Inc., TR



Quantis, CH



A Data-Driven Platform for Site-Specific Fertigation

Projektdauer: 01.03.2021 bis 31.8.2024

Gesamtprojektförderung: 1 279 400 €

Technology Readiness Level (TRL): TRL6 (System Validated in Simulated Environment)

Förderorganisation: **ERA-NET COFUND**

ICT-AGRI-FOOD 2019 Joint Call - Call for transnational,



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Integrative teilflächenspezifische Düngung und Bewässerung

- Entwicklung einer mobilen Berechnungsmaschine mit Düsenwagen zur teilflächenspezifischen Düngung und Bewässerung (**Fertigation**)



- Einsatz innovativer Bodensensoren

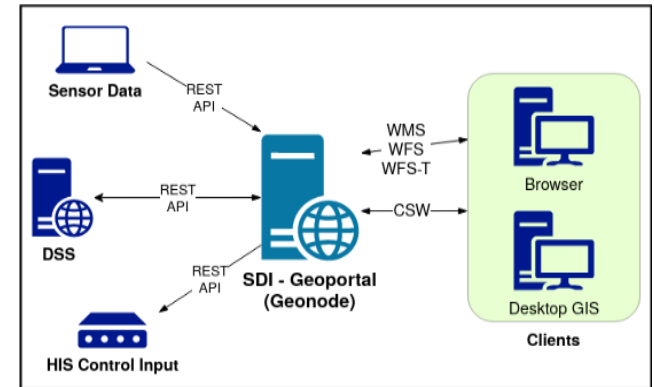


Mobiler Bodenscanner



LoRaWAN-Bodenfeuchtesensoren

- IT-Infrastruktur:**
 - Management und Speicherung von Sensordaten
 - Berechnung von Applikationskarten
 - Veröffentlichung von Applikationskarten



- 54 m Arbeitsbreite
- 530 m Schlauchlänge
- 4 unabhängig steuerbare Sektoren
- Bewässerung + Düngung
- Steuerung mittels Applikationskarten





GeoNode

- Open-Source-Content-Management-System für Geodaten
- Lösung für die Verwaltung, Freigabe und Visualisierung räumlicher Daten
- Open-Source-Architektur
- Kostenlose freie Software
- Unterstützt OGC-Standards (WMS, WFS, WCS)
- Verwendet gängige Geo-Datenformate (Shapefile, GeoJSON, Geopackage)

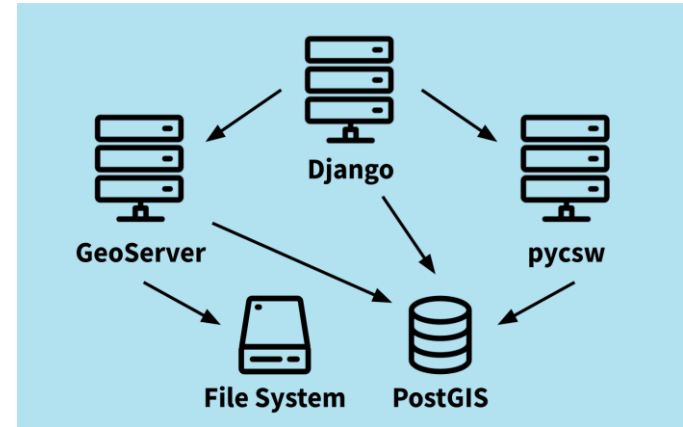
GeoNode is free software: you can redistribute it and/or modify it under the terms of the **GNU General Public License** as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.



The screenshot shows the GeoNode website homepage. At the top left is the GeoNode logo. To the right is a yellow button that says "Try the Demo". Below the logo is the text "Open Source Geospatial Content Management System". Underneath is a paragraph: "GeoNode is a web-based application and platform for developing geospatial information systems (GIS) and for deploying spatial data infrastructures (SDI)." Below this is the OSGeo logo. There are three buttons: "Latest version" (green) with "4.3.1" below it, "Stable branch" (blue) with "4.3.x" below it, and "Development" (red) with "master" below it. At the bottom, there are four links with icons: "Documentation" (document icon) with the subtext "Guides for users, developers, and administrators", "Gallery" (image icon) with the subtext "A collection of live sites built using GeoNode", "Channels" (envelope icon) with the subtext "Discussion groups for users and developers", and "FAQs" (question mark icon) with the subtext "Frequently Asked Questions about GeoNode".

<https://geonode.org/>

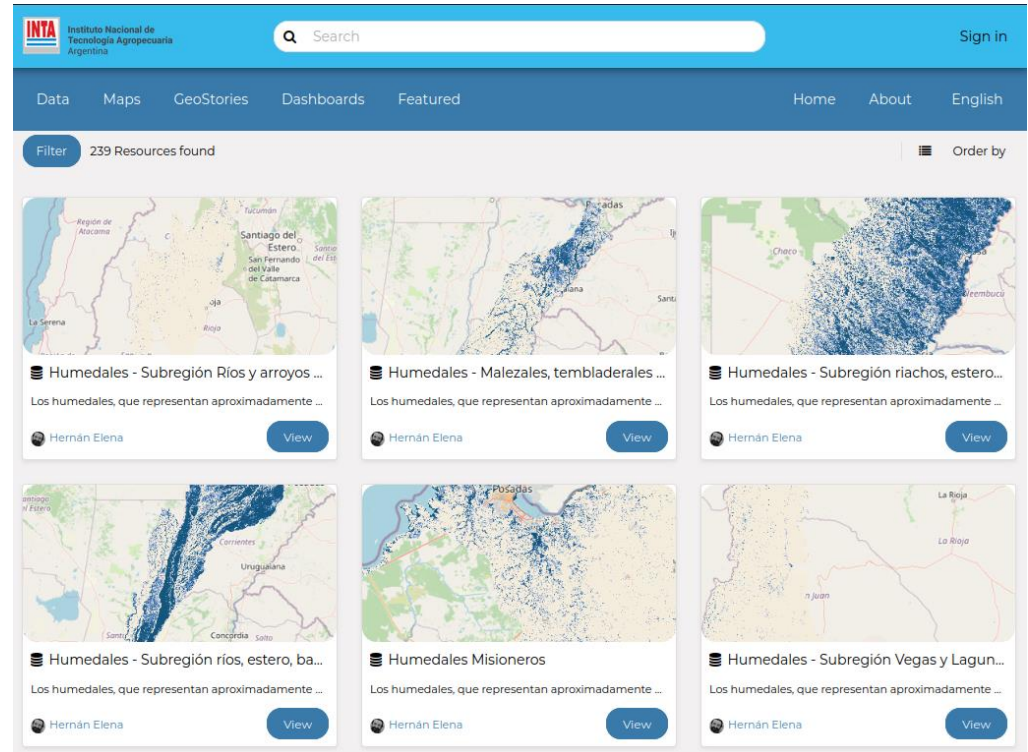
- **Komponenten:**
 - **Django** als Webframework (Sprache: Python)
 - **Geoserver** zur Veröffentlichung der Geodaten
 - **OpenLayers** als WebGIS
 - **pycsw** als Metadatenkatalog
 - **PostgreSQL + PostGIS** als Datenbank für Vektordaten
 - Rasterdaten und Dokumente werden im **Dateisystem** abgelegt
- **Installation:**
 - Standardmäßig auf Ubuntu-Server mittels Docker



GeoNode Quellcode:

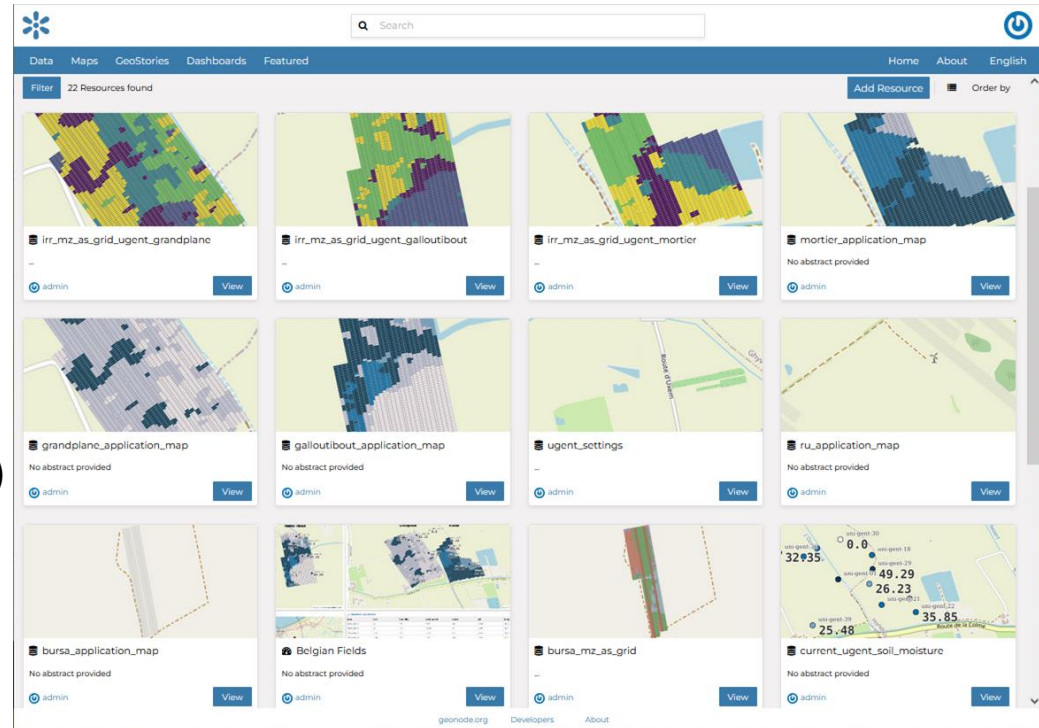
<https://github.com/GeoNode/geonode>

- Vektor- und Rasterdaten
 - Upload
 - Shapefile
 - GeoJSON
 - GeoPackage
 - KML, KMZ
 - GeoTIFF
 - Download
 - Shapefile
 - GeoJSON
 - GeoTIFF
- Symbolisierung kann per online-Editor angepasst werden
- Metadaten und Keywords

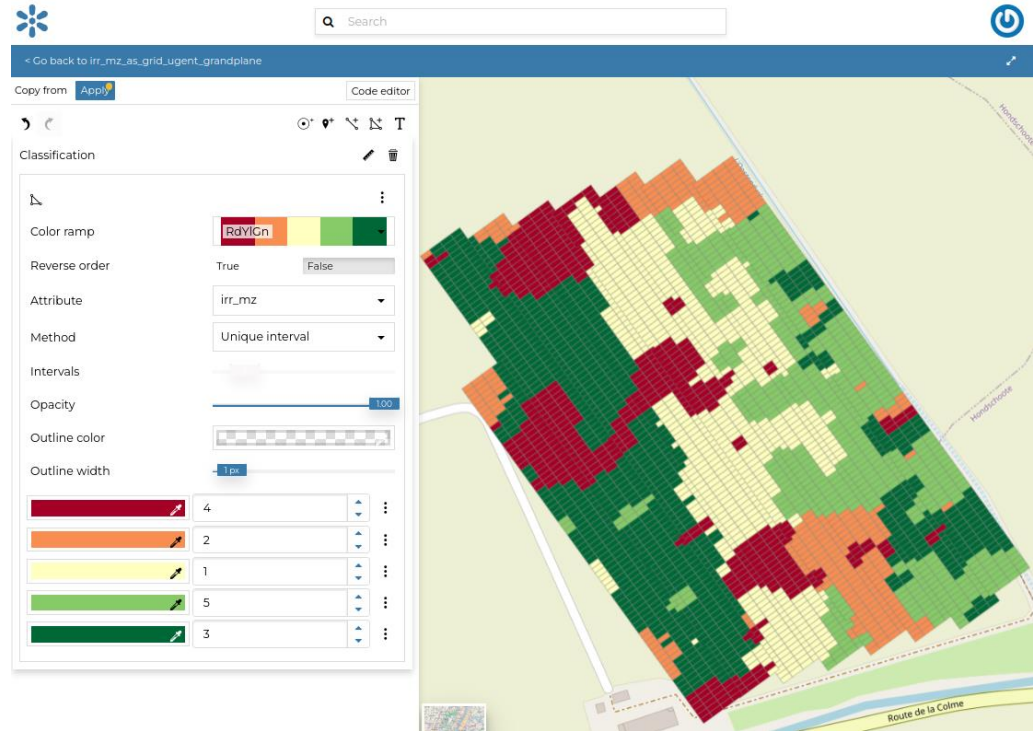


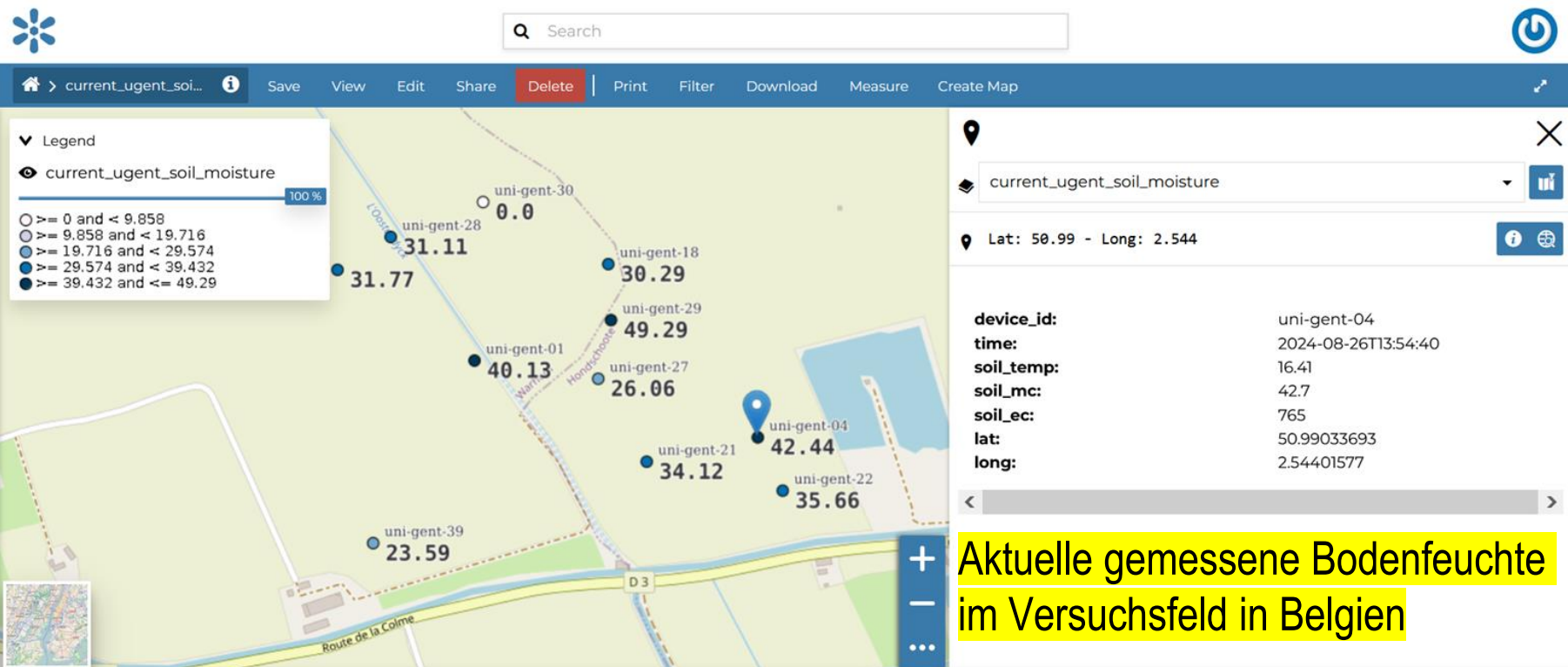
Nationales Institut für Agrartechnologie <https://geo-backend.inta.gob.ar>

- Umringe der Felder (Polygon)
- Karten mit Feldeigenschaften (Polygon)
 - Feldkapazität
 - Permanenter Welkepunkt
 - Dichte
- Wetterdaten (CSV)
- Live-Bodenfeuchte (Punkte)
- Applikationskarten (Polygon)

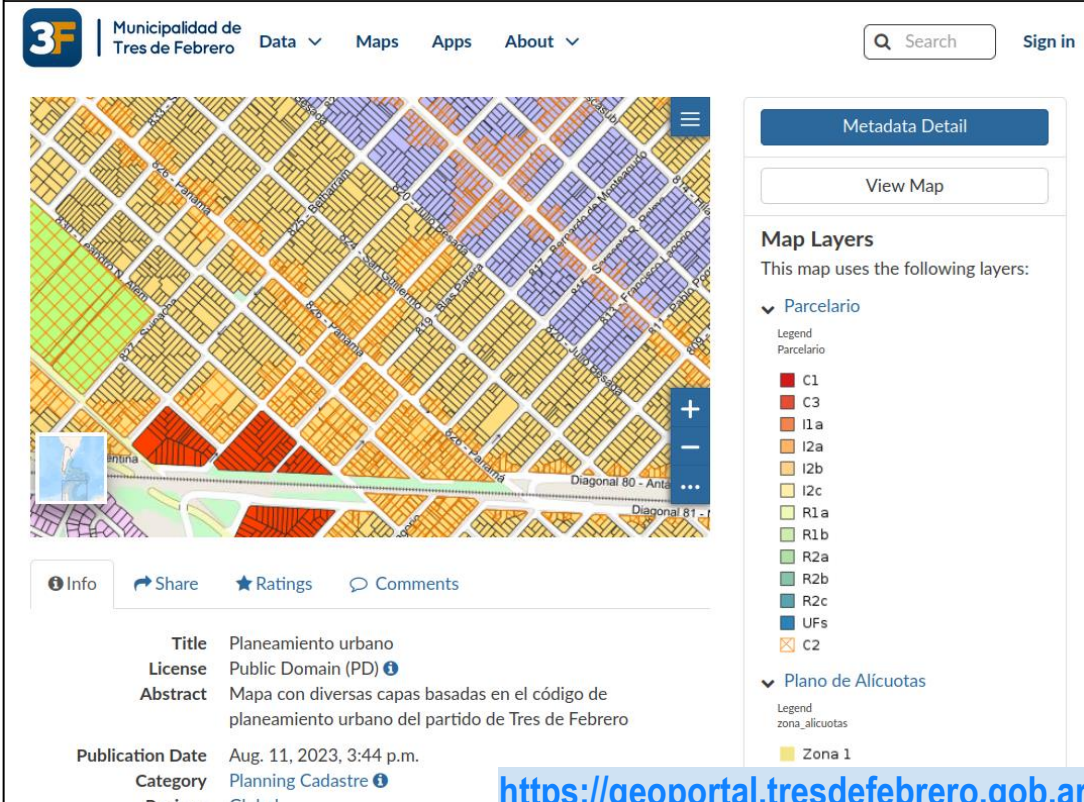


- Symbolisierung mittels
 - Web-Editor
 - SLD (styled layer descriptors)
- Style
 - Uniform
 - Klassifikation nach Attribut
- Beschriftungen (Labels)





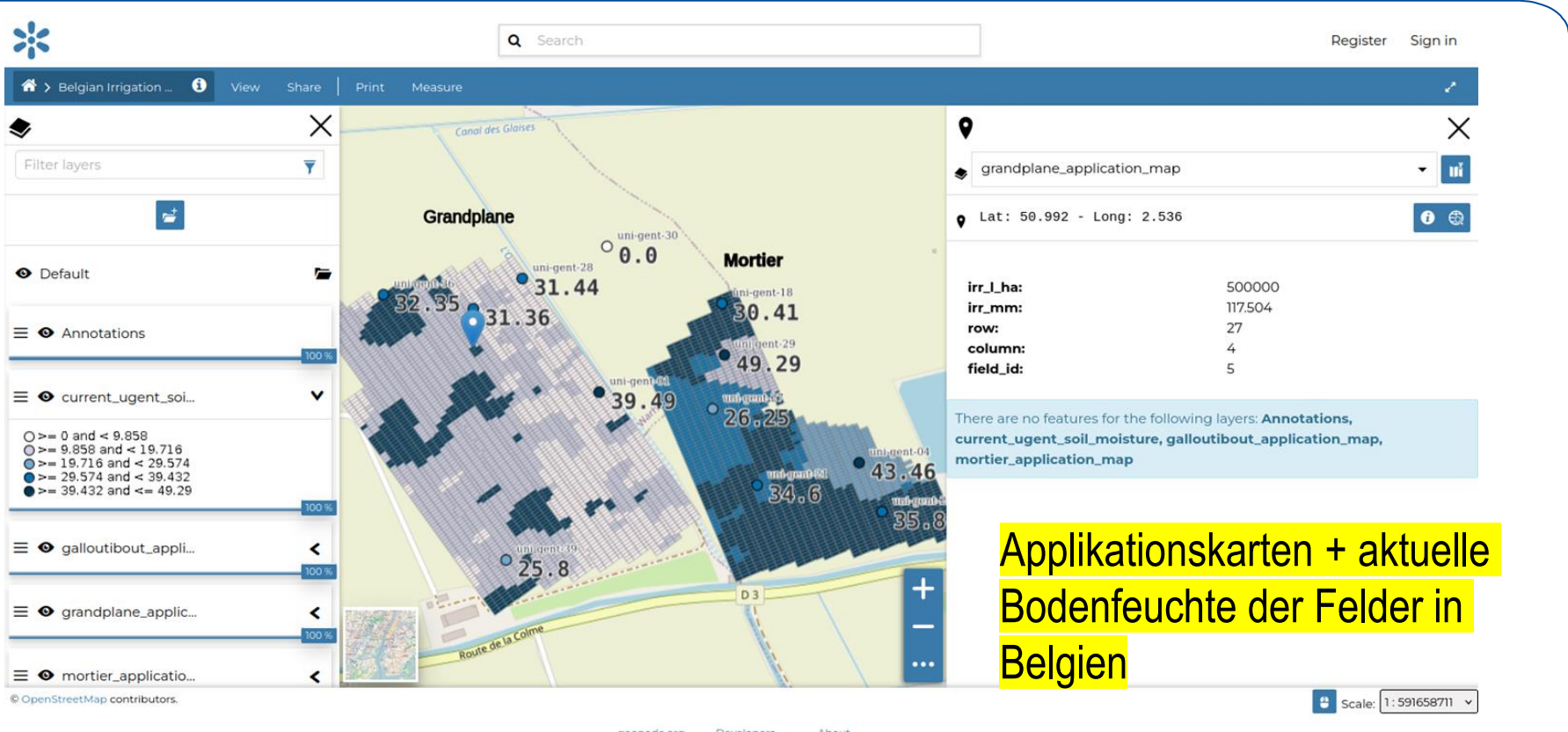
- Thematische Karten
- Datenquellen
- Layerkatalog
 - Hintergrundkarten
 - OpenStreetMap
 - OpenTopoMap
 - Sentinel-2
- Erstellte Karten können mittels Link in andere Websites eingebunden werden



The screenshot shows a web interface for the 'Municipalidad de Tres de Febrero'. The main map displays a cadastral plan with various colored parcels. A legend on the right side is expanded to show two layers: 'Parcelario' and 'Plano de Alicuotas'. The 'Parcelario' legend includes categories like C1, C3, I1a, I2a, I2b, I2c, R1a, R1b, R2a, R2b, R2c, UFs, and C2. The 'Plano de Alicuotas' legend shows 'Zona 1'. Below the map, there is an 'Info' section with the following details:

Title	Planeamiento urbano
License	Public Domain (PD) ⓘ
Abstract	Mapa con diversas capas basadas en el código de planeamiento urbano del partido de Tres de Febrero
Publication Date	Aug. 11, 2023, 3:44 p.m.
Category	Planning Cadastre ⓘ

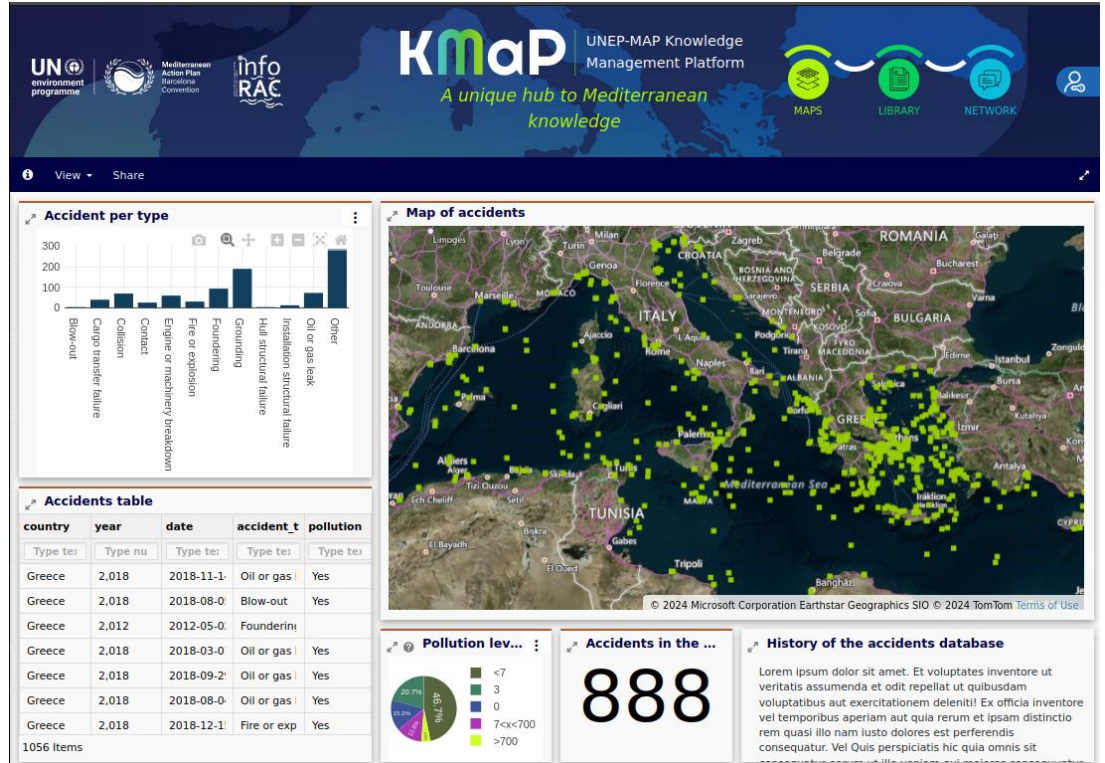
At the bottom right of the screenshot, the URL <https://geoportal.tresdefebrero.gob.ar> is highlighted in blue.



The screenshot shows the ADDferti Map web application interface. At the top, there is a search bar and navigation links for 'Register' and 'Sign in'. Below the search bar, a blue navigation bar contains 'View', 'Share', 'Print', and 'Measure' options. On the left side, there is a 'Filter layers' section with a list of layers: 'Default', 'Annotations', 'current_ugent_soi...', 'galloutibout_appli...', 'grandplane_applic...', and 'mortier_applicatio...'. The 'current_ugent_soi...' layer is expanded, showing a legend with five soil moisture ranges: $>= 0$ and < 9.858 , $>= 9.858$ and < 19.716 , $>= 19.716$ and < 29.574 , $>= 29.574$ and < 39.432 , and $>= 39.432$ and $<= 49.29$. The map displays two areas: 'Grandplane' and 'Mortier'. Various data points are overlaid on the map, each labeled with a 'uni-gent' ID and a numerical value representing soil moisture. For example, 'uni-gent-30' has a value of 0.0, 'uni-gent-28' has 31.44, and 'uni-gent-18' has 30.41. A legend on the right side of the map provides details for the selected layer: 'grandplane_application_map'. It lists 'irr_l_ha: 500000', 'irr_mm: 117504', 'row: 27', 'column: 4', and 'field_id: 5'. Below this, a message states: 'There are no features for the following layers: Annotations, current_ugent_soil_moisture, galloutibout_application_map, mortier_application_map'. At the bottom right, there is a scale indicator showing 'Scale: 1:591658711'.

Applikationskarten + aktuelle Bodenfeuchte der Felder in Belgien

- Datenquellen
 - Layerkatalog
 - Kartenkatalog
- Dashboard-Elemente
 - Tabellen
 - Diagramme
 - Karten
 - Text
- Beispiel:
 - Bodenfeuchtemonitor
 - Unfallstatistiken
 - Corona-Fallzahlen



Kmap | UNEP-MAP Knowledge Management Platform
A unique hub to Mediterranean knowledge

UN environment programme | Mediterranean Action Plan | info RAC

MAPS | LIBRARY | NETWORK

View - Share

Accident per type

Accident Type	Count
Blow-out	~50
Cargo transfer failure	~50
Collision	~50
Contact	~50
Engine or machinery breakdown	~50
Fire or explosion	~150
Foundering	~150
Hull structural failure	~150
Installation structural failure	~150
Oil or gas leak	~150
Other	~250

Map of accidents

Map showing accident locations across the Mediterranean region, with numerous yellow markers indicating accident sites.

Accidents table

country	year	date	accident_t	pollution
Greece	2,018	2018-11-1	Oil or gas	Yes
Greece	2,018	2018-08-0	Blow-out	Yes
Greece	2,012	2012-05-0	Foundering	
Greece	2,018	2018-03-0	Oil or gas	Yes
Greece	2,018	2018-09-2	Oil or gas	Yes
Greece	2,018	2018-08-0	Oil or gas	Yes
Greece	2,018	2018-12-1	Fire or exp	Yes

1056 Items

Pollution lev...

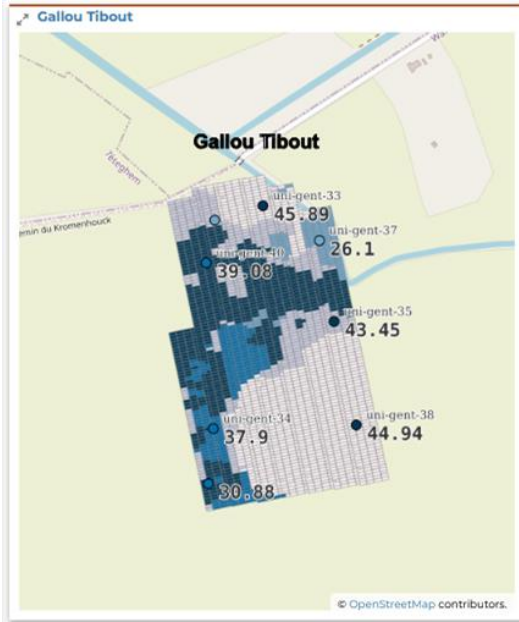
Pollution Level	Percentage
<7	20.7%
3	64.9%
0	13.3%
7<=700	
>700	

Accidents in the ...

888

History of the accidents database

Lorem ipsum dolor sit amet. Et voluptates inventore ut veritatis assumenda et odit repellat ut quibusdam voluptatibus aut exercitationem deleniti! Ex officia inventore vel temporibus aperiam aut quia rerum et ipsam distinctio rem quasi illo nam iusto dolore est perferendis consequatur. Vel Quis perspiciatis hic quia omnis sit



mortier_application_...

- >= 18.924 and < 37.384
- >= 37.384 and < 42.804
- >= 42.804 and < 44.904
- >= 44.904 and < 55.424
- >= 55.424 and <= 55.425

100%

grandplane_applicati...

- >= 34.444 and < 51.056
- >= 51.056 and < 67.668
- >= 67.668 and < 84.28
- >= 84.28 and < 100.892
- >= 100.892 and <= 117.504

100%

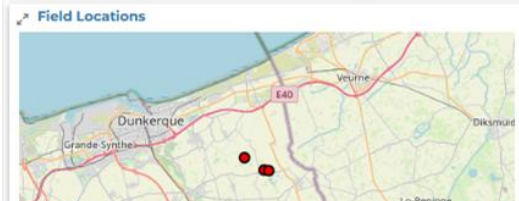
galloutibout_applicati...

- >= 20.884 and < 28.66
- >= 28.66 and < 36.436
- >= 36.436 and < 44.212
- >= 44.212 and < 51.988
- >= 51.988 and <= 59.764

100%

current_ugent_soil_m...

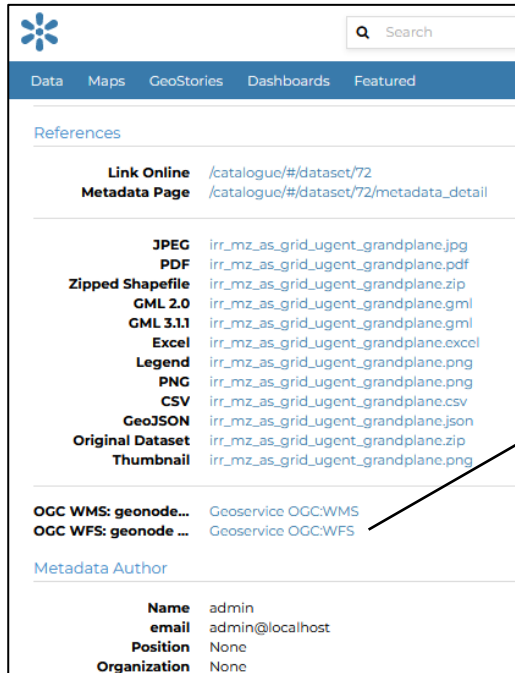
< 100%



Weather Les Moeres

date	rain	humidity	wind_speed	clouds	uvi	temp
2024-08-21	0	53	9.03	88	4.89	18.44
2024-08-22	0	45	10.03	54	4.87	22.1
2024-08-23	1.73	72	12.32	99	4.95	21.67
2024-08-24	7.84	89	5.87	100	3.44	15.7
2024-08-25	0	47	7.24	20	4.58	18.94

- Layer werden von GeoNode automatisch als WMS/WFS/WCS veröffentlicht



Search

Data Maps GeoStories Dashboards Featured

References

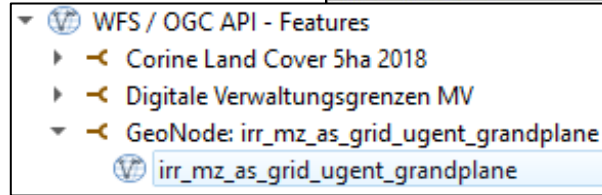
Link Online /catalogue/#/dataset/72
Metadata Page /catalogue/#/dataset/72/metadata_detail

JPEG irr_mz_as_grid_ugent_grandplane.jpg
PDF irr_mz_as_grid_ugent_grandplane.pdf
Zipped Shapefile irr_mz_as_grid_ugent_grandplane.zip
GML 2.0 irr_mz_as_grid_ugent_grandplane.gml
GML 3.1.1 irr_mz_as_grid_ugent_grandplane.gml
Excel irr_mz_as_grid_ugent_grandplane.excel
Legend irr_mz_as_grid_ugent_grandplane.png
PNG irr_mz_as_grid_ugent_grandplane.png
CSV irr_mz_as_grid_ugent_grandplane.csv
GeoJSON irr_mz_as_grid_ugent_grandplane.json
Original Dataset irr_mz_as_grid_ugent_grandplane.zip
Thumbnail irr_mz_as_grid_ugent_grandplane.png

OGC WMS: geonode... Geoservice OGC:WMS
OGC WFS: geonode ... Geoservice OGC:WFS

Metadata Author

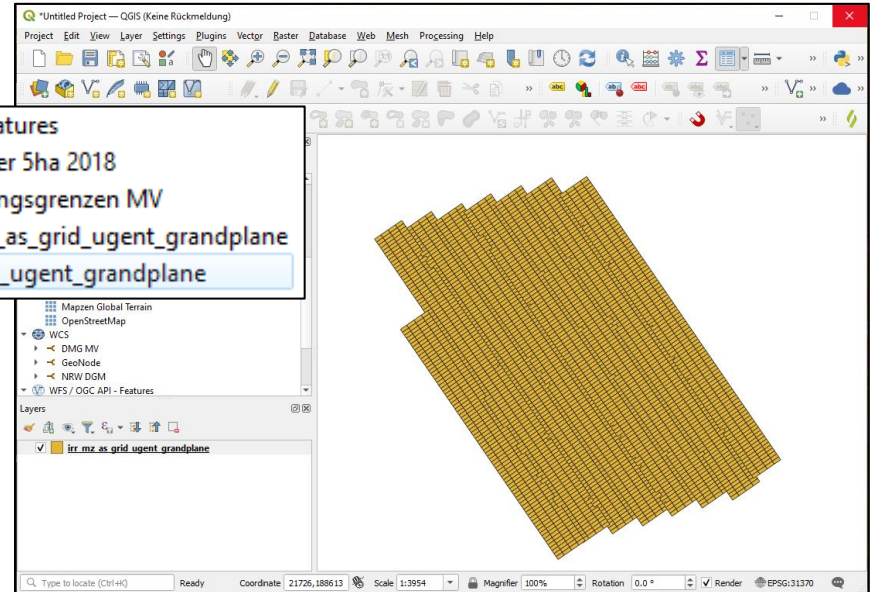
Name admin
email admin@localhost
Position None
Organization None



WFS / OGC API - Features

- Corine Land Cover 5ha 2018
- Digitale Verwaltungsgrenzen MV
- GeoNode: irr_mz_as_grid_ugent_grandplane

irr_mz_as_grid_ugent_grandplane



Untitled Project — QGIS (Keine Rückmeldung)

Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help

Mapzen Global Terrain
 OpenStreetMap

WCS
 DMG MV
 GeoNode
 NRW DGM

WFS / OGC API - Features

Layers

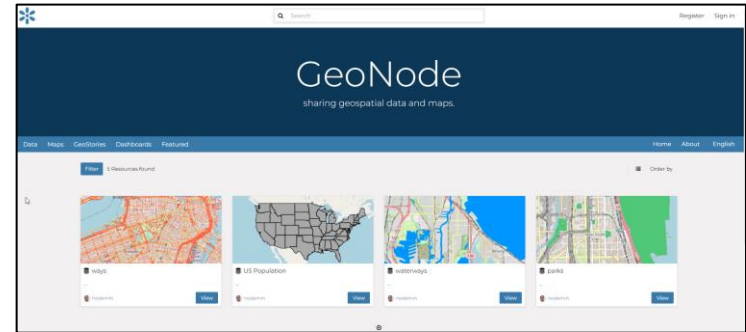
irr_mz_as_grid_ugent_grandplane

Type to locate (Ctrl+K) Ready Coordinate: 21726,188613 Scale: 1:3954 Magnifier: 100% Rotation: 0.0° Render EPSG:31370



Fazit

- Ausgereiftes Open-Source-Softwareprojekt.
- Konsistente und benutzerfreundliche Oberfläche.
- Ermöglicht es Nutzern ohne Vorkenntnisse Geodaten auszutauschen und interaktive Karten zu erstellen.
- Durch offene APIs konnte der Up- und Download von Geodaten automatisiert werden.
- Durch Benutzer- und Rollenmanagement konnten für jeden Datensatz die Rechte genau bestimmt werden.
- Gute Lösung, um ad hoc eine Geodateninfrastruktur aufzubauen.





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